ACRP

REPORT 30

AIRPORT COOPERATIVE RESEARCH PROGRAM

Sponsored by the Federal Aviation Administration

Reference Guide on Understanding Common Use at Airports

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AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP REPORT 30

Reference Guide on Understanding Common Use at Airports

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AIRPORT COOPERATIVE RESEARCH PROGRAM

Airports are vital national resources. They serve a key role in transportation of people and goods and in regional, national, and international commerce. They are where the nation's aviation system connects with other modes of transportation and where federal responsibility for managing and regulating air traffic operations intersects with the role of state and local governments that own and operate most airports. Research is necessary to solve common operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the airport industry. The Airport Cooperative Research Program (ACRP) serves as one of the principal means by which the airport industry can develop innovative near-term solutions to meet demands placed on it.

The need for ACRP was identified in *TRB Special Report 272: Airport Research Needs: Cooperative Solutions* in 2003, based on a study sponsored by the Federal Aviation Administration (FAA). The ACRP carries out applied research on problems that are shared by airport operating agencies and are not being adequately addressed by existing federal research programs. It is modeled after the successful National Cooperative Highway Research Program and Transit Cooperative Research Program. The ACRP undertakes research and other technical activities in a variety of airport subject areas, including design, construction, maintenance, operations, safety, security, policy, planning, human resources, and administration. The ACRP provides a forum where airport operators can cooperatively address common operational problems.

The ACRP was authorized in December 2003 as part of the Vision 100-Century of Aviation Reauthorization Act. The primary participants in the ACRP are (1) an independent governing board, the ACRP Oversight Committee (AOC), appointed by the Secretary of the U.S. Department of Transportation with representation from airport operating agencies, other stakeholders, and relevant industry organizations such as the Airports Council International-North America (ACI-NA), the American Association of Airport Executives (AAAE), the National Association of State Aviation Officials (NASAO), and the Air Transport Association (ATA) as vital links to the airport community; (2) the TRB as program manager and secretariat for the governing board; and (3) the FAA as program sponsor. In October 2005, the FAA executed a contract with the National Academies formally initiating the program.

The ACRP benefits from the cooperation and participation of airport professionals, air carriers, shippers, state and local government officials, equipment and service suppliers, other airport users, and research organizations. Each of these participants has different interests and responsibilities, and each is an integral part of this cooperative research effort.

Research problem statements for the ACRP are solicited periodically but may be submitted to the TRB by anyone at any time. It is the responsibility of the AOC to formulate the research program by identifying the highest priority projects and defining funding levels and expected products.

Once selected, each ACRP project is assigned to an expert panel, appointed by the TRB. Panels include experienced practitioners and research specialists; heavy emphasis is placed on including airport professionals, the intended users of the research products. The panels prepare project statements (requests for proposals), select contractors, and provide technical guidance and counsel throughout the life of the project. The process for developing research problem statements and selecting research agencies has been used by TRB in managing cooperative research programs since 1962. As in other TRB activities, ACRP project panels serve voluntarily without compensation.

Primary emphasis is placed on disseminating ACRP results to the intended end-users of the research: airport operating agencies, service providers, and suppliers. The ACRP produces a series of research reports for use by airport operators, local agencies, the FAA, and other interested parties, and industry associations may arrange for workshops, training aids, field visits, and other activities to ensure that results are implemented by airport-industry practitioners.

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FOREWORD

By Marci A. Greenberger
Staff Officer
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ACRP Report 30: Reference Guide on Understanding Common Use at Airports provides a reference guide and tools that can assist airports and airlines exploring the possibility of and evaluating the appropriateness of integrating "common use" in their operations. An accompanying CD-ROM, *CRP-CD-74*, includes a virtual tour that provides an alternative source of and approach to the information found in the reference guide. The report will be useful to airports and airlines, from those responsible for operations, information technology, business management, to the CEO.

The reference guide and CD-ROM enable stakeholders to view information relevant to their areas of expertise and interest. The CD-ROM also includes spreadsheet models to allow users to plug in relevant information, which can be used in analyzing and evaluating how to integrate common use.

Under ACRP Project 10-05, Barich, Inc., developed a reference guide for airports, airlines, and other stakeholders to identify and understand the financial, operational, liability, safety, customer service, and competitive elements of a common-use approach to the utilization of airport facilities and the provision of services.

"Common use" most generally refers to a technological method that airlines use to process passengers: at the ticket counter, at self-service kiosks, or at the gates. However, "common use" is discussed as an operating philosophy that an airport can use in managing and administering the airport. As such, this represents a paradigm shift in the traditional tenant-landlord relationship.

Barich, Inc., accomplished the research, in part, by conducting a review of relevant documentation, gathering information from existing and potential users and industry associations, and preparing the reference guide. The accompanying CD-ROM provides a virtual interactive tour of an airport, allowing the user to focus on specific areas of interest.

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SUMMARY

Reference Guide on Understanding Common Use at Airports

The aviation industry has seen dramatic changes in the past two decades with significant growth during the 1990s; a significant industry disruptive event on September 11, 2001; and an economic decline resulting in a sharp rise in fuel prices that has substantially changed the economics of airline operations and a decline in growth. During this period, airlines have adapted to the changes in various ways, many of which have resulted in adaptability issues for airport operators, thus raising the question of "is there a better way" to be more flexible and responsive to airline service changes in good and bad times. From an airline perspective, cost reduction since September 11 has been a prominent focus. From an airport operator perspective, adapting to and accommodating changing flight services by incumbent carriers as well as new entrant services has been a key focus. In recent years, offering more cost-effective solutions to retain or encourage new services in the face of service reductions has become a key focus. Airport operator interests in common use have been heightened by the potential for achieving a reasonable balance between airline and airport operator interests. The implications of transitioning from a traditional model (of airline facility use and leasing focused on dedicated facilities) to common use has elicited varying and, often, conflicting perceptions of benefit and cost.

Objectives

The objective of this research was to develop a reference guide for airport and airline professionals to use in making informed decisions about implementing common use. In preparing the guide, the research team was to explore the topic beyond the technology aspects of common use and investigate and provide guidance on all aspects of an airport operation that might be affected by a non-dedicated common-use facility. The primary objectives of the reference guide can be summarized as follows:

1. Identify and understand the financial, operational, liability, safety, customer service, and competitive elements of common use in terms of utilization of airport facilities and the provision of services;
2. Provide detailed analyses and information so as to enable individual airports and airlines to evaluate the feasibility and applicability of implementing common use; and
3. Provide common practices for evaluating, implementing, operating, and maintaining common-use facilities and services.

Approach

In performing this research, the research team accomplished three major activities: data collection, data analysis, and document preparation. The foundation of the data collection activity was a collection of carefully developed surveys, specifically tailored to collect

information from a sample population of airports, airlines, stakeholders, and entities from other industries. To gather high-quality data, the research team developed an interview and survey list for airports and airlines. The research team decided on two important factors: (1) data must be collected from representatives of airports and airlines of differing sizes and makeups and (2) the survey process would be supplemented by site interviews or work sessions with airports and airlines to ensure sufficient data were collected from all divisional sections of both. The research team then worked with a small subset of airlines and airports to sift through the details of the survey and prepare the final set of survey questions. The research team then prepared an interview list, based on the following demographics:

- Size of airport (an appropriate mix of large, medium, small, and non-hub)
- Airlines with hub and non-hub operations
- Airports and airlines that have experience with common use, with an emphasis on the following:
  – Significant international common-use utilization
  – Significant domestic common-use utilization
  – Using different CUTE vendors to cover a wide spectrum of providers
- Airports that present special considerations

The data collection activity resulted in completed surveys from 20 airports (11 of which participated in onsite interviews) and 11 airlines (3 of which participated in workshop sessions). All demographic criteria listed above were met through survey information received. As part of the data collection process and to gain additional insight to the international common-use market, the research team conducted a literature search and pulled information from *ACRP Synthesis 8: Common Use Facilities and Equipment at Airports.* Finally, the research team interviewed aviation-related stakeholders and representatives from other industries for further insight.

All of the information was gathered, analyzed, and detailed to prepare this Reference Guide. As the research team continued to work with the document content, it became apparent that the amount of information which needed to be conveyed and the broad audience expected to use the information created a challenge in organizing the printed document. To address this challenge, the research team developed an electronic visual flythrough of an airport. This flythrough allows readers to use personal computers and web browsers to navigate an imaginary airport and pull up sections of the document that apply to that portion of the airport. This solution allows readers to use the material in ways that make sense to them and reduces the need to search for data in the printed document.

Results

The result of this research is a comprehensive Reference Guide that gives airport operators the information and tools necessary to make decisions about common use. This product also provides guidance on the issues and opportunities important to the airlines in conducting business at common-use airports. This Reference Guide is written to permit readers to make their own decisions based on current industry facts and unique business objectives at each airport. In addition, the airport flythrough provides readers with an interactive tool to gain a deeper insight into common use and how it applies to various areas of an airport operation.

CHAPTER 1

Common Use at Airports

Introduction

The research project had the following objectives:

1. Identify and understand the financial, operational, liability, safety, customer service, and competitive elements of common use relevant to the utilization of airport facilities and the provision of services;
2. Provide detailed analyses and information so as to enable individual airports and airlines to evaluate the feasibility and applicability of implementing common use; and
3. Provide common practices for evaluating, implementing, operating, and maintaining common-use facilities and services.

To meet these objectives, this Reference Guide has been designed to be a comprehensive source of common-use-related information and a comprehensive decision-making tool for use by airport operators, airlines, and other entities interested in considering common-use initiatives. The Reference Guide considers common use as more than simply technology and includes analysis and review of all areas and functions within an airport that might be affected by a non-dedicated shared-use facility. This Guide identifies common-use issues and opportunities and provides guidance for decision-making efforts, recognizing that there are a multitude of common-use variables.

This Reference Guide is written for airport and airline professionals and meets the following goals:

1. Presents the current range of common-use facilities and services used throughout the industry;
2. Identifies and summarizes the critical issues that surface when considering, implementing, or utilizing a common-use approach;
3. Summarizes industry knowledge with resources and currently available material to provide information on common-use approaches; and
4. Presents an implementation section that evaluates common criteria related to each approach.

This chapter provides a background section to understand common use and its environment as well as an overview of the Reference Guide's organization, elements, purpose, and usability.

Understanding Common Use

For this Reference Guide, Common Use and Common-Use Systems have been defined as follows:

- **Common Use** is a facility allocation and management approach intended to maximize airport facility access and allocation through non-dedicated resources. It is an alternative to the traditional approach which uses proprietary/exclusive-use models.

- **Common-Use Systems** are airport-operator-provided hardware and software systems that provide an interface through which airline-proprietary systems can operate with increased facility utilization and flexibility.

The aviation industry has seen dramatic changes in the past two decades with significant growth during the 1990s; a significant industry disruptive event on September 11, 2001; and an economic decline resulting in (1) a sharp rise in fuel prices that has substantially changed the economics of airline operations and (2) a decline in growth. During this period, airlines have adapted to the changes in various ways, many of which have resulted in adaptability issues for airport operators raising the question of "is there a better way" to be more flexible and responsive to airline service changes in good times and bad times. From an airline perspective, cost reduction since September 11 has been a prominent focus. From an airport operator perspective, adapting to and accommodating changing flight services by incumbent carriers as well as new entrant services was a key focus. In recent years, offering more cost-effective solutions to retain or encourage new services in the face of service reductions has become a key focus. Airport operator interests in common-use approaches have been heightened by the potential for achieving a reasonable balance of airline and airport operator interests. The implications of transitioning from the traditional model (of airline facility use and leasing focused on dedicated facilities) to common use has elicited varying and, often, conflicting perceptions of benefit and cost.

Reference Guide Overview

There were many ways to sort, format, and present the data in this Reference Guide. This Guide was written primarily for airport and airline executives in charge of making decisions about common-use solutions at airports. Readers will come from diverse backgrounds having a wide range of experiences in their own functional areas of expertise. The main purposes of this Guide are to

- Identify common-use issues and opportunities; and
- Assist in and guide the decision-making process of potential common-use implementation efforts.

To address these goals, this Guide has two major parts: the main text and an appendix section. Keeping the target audience in mind, the main text, that is, Chapters 2 through 5, is brief, providing analysis highlights in an abridged format. The detailed analysis, which contains crucial information for decisionmakers, is provided in the appendix section because of length. References in the main text guide readers to the appropriate detailed analysis. This approach was selected so that readers interested in particular areas can find such sections quickly without having to read discussions that are not of interest.

The remaining chapters of this Guide cover the following:

- Chapter 2 focuses on how common use is applied throughout the aviation industry and sheds light on common-use implementations in other industries.
- Chapter 3 presents analysis and implementation considerations associated with common use.
- Chapter 4 discusses cost-benefit issues and considerations associated with common use and provides tools for guiding an airport operator through the initial steps of assessing the value that a common-use solution can provide to an airport.
- Chapter 5 provides a roadmap to common-use installations, if the airport operator decides to pursue common use.

The Reference Guide is accompanied by a Virtual Airport on CD-ROM (and available as an ISO image on the TRB website) to make the material easily applicable and useful to such a large

audience. The research team determined that enabling readers to travel through an airport virtually, and thereby enable them to access relevant research material for any given area of the airport, would help readers focus on information of interest to them personally. Readers can run this tour on a computer, using a standard web browser, and travel through the airport and see the various areas of an airport and how common use could be applied. At each step, the virtual tour will allow readers to select from a list of pertinent information about that area of the airport and will pull up related information.

Figures 1-1 and 1-2 are early renderings of scenes from within the virtual tour. Figure 1-1 shows a generic airport terminal. Figure 1-2 presents a collage of Common-Use Self-Service (CUSS) kiosks from different perspectives.

The Reference Guide is structured so that airport operators and airlines wishing to pursue common use can consider doing so in a building-block approach. Such an approach allows airport operators and airlines to implement common-use initiatives in a logical order. This logical order will support smaller implementation projects, which will build on one another to reach the final common-use goal for the specific circumstances that an airport operator or airline may be in.

Figure 1-1. Generic airport terminal.

Figure 1-2. CUSS kiosks collage.

CHAPTER 2

Common Use as Applied Throughout the Industry

It is difficult to talk about common use without considering common use as a technology solution. The industry today is filled with acronyms that force the association of common use and technology, such as CUTE (Common-Use Terminal Equipment), CUSS (Common-Use Self Service), and CUPPS (Common-Use Passenger Processing Systems). Common use is a broad topic that covers many areas of the airport and affects airport and airline operations, leases, and facilities, to name a few.

It is important to understand the current trends and applications at airports within the United States with respect to common use. These trends are affected by the overall trends in the aviation industry. To gain a good view of the overall trends in the industry, the research team interviewed airports in Canada and used research material gathered from European airports. Over the past 10 years, the aviation industry has seen dramatic volatility, including a passenger downturn in 2001/2002, escalation of jet fuel prices in 2007/2008, and a decrease in passenger demand because of the economic downturn in 2008/2009. With each change in the market, the effect on airport facilities has been clear—lower traffic levels and reduced airline schedules which in turn reduce the need for capital construction projects.

Prior to 2001, and between 2002 and 2007, airport capacity and airport capacity planning were high priorities. Increased passenger counts at most major U.S. airports, along with increased flight activity, were creating a demand for increased passenger facilities. During these times, construction of new gates, concourses, and terminals were considered. It was also during these times that common use at U.S. airports began to be considered. Many U.S. airport operators were aware of the use of common use outside of the United States, and these strategies were starting to be considered at more U.S. airports. Airports such as Las Vegas McCarran International Airport, JFK Terminal 4 (shown in Figure 2-1), Toronto Pearson International Airport, and Vancouver International Airport were esteemed as examples of common use in North America. Airports that implemented common use began implementing at limited locations, usually driven by international air traffic, and then began considering implementing common use at domestic gates and terminals.

Although the main reason for these trends tended to be accommodating the growth of airlines while reducing, or at least deferring, capital costs, the volatility of the industry caused a shift in thinking. When jet fuel prices surpassed $180 per barrel in the summer of 2008, many airlines took immediate actions to reduce costs, reduce flight schedules, and reduce service. Some airlines went out of business, while others filed for bankruptcy. These changes caused the industry to contract, which in turn affected the airports and their abilities to grow. Now, rather than planning for increased traffic, airport operators were dealing with double-digit percent declines in passenger traffic. Some airports lost airlines, either because airlines went out of business or because of reallocation of service to different markets. Many airport operators were seeking ways to reduce expenses, while maintaining the high level of customer service their travelers had come

Figure 2-1. JFK—Terminal 4.

to expect. Consideration was given to how airports could operate most efficiently, which, in some cases, meant shutting down portions of the airport, while still maintaining concession revenues.

Airlines and airport operators are now looking at common use in view of this changing economic environment. Rather than looking at common use to help with the growth of passenger traffic, airlines and airport operators must consider how, or if, common use can help in light of the current reduction in passenger traffic. All of this information is important in understanding the current state of the industry, and in helping decision making about whether or not to pursue common use at an airport.

According to the International Air Transport Association (IATA), airlines operating in the U.S. region are the only airlines that have been able to shrink capacity in line with the decrease in demand and are currently forecast to turn a small profit in 2009 (IATA, 2009). The Air Transport Association (ATA) reports that the total number of passengers travelling on U.S. airlines continues to decline (ATA, 2009). The FAA forecasts that the overall mark of one billion passengers is now at 2021, rather than 2016 as forecast in 2008 (FAA, 2009a).

The FAA is also interested in common-use facilities in relation to the FAA's NextGen implementation plan. On the NextGen website, NextGen is defined as follows:

> The Next Generation Air Transportation System (NextGen) is a transformation of the National Airspace System (NAS), including our national system of airports, using 21st century technologies to ensure future safety, capacity and environmental needs are met—FAA, 2009b.

In particular, during the landing, taxi, and arrival phases of the NextGen plan, there is a need to provide aircraft with gate assignments and how optimal use of gates and airport facilities will affect the efficient flow of traffic into and out of ramp areas.

How common use is applied in the current environment is discussed in the following sections:

- U.S. Applications (General)
- U.S. Airport Applications (Considerations)

- U.S. Application (Airport Characteristics)
- Current Range of Common-Use Facilities and Services within the United States
- Cost-Benefit (Overview)
- Other Industries

U.S. Application (General)

Many U.S. airport operators are taking the building-block approach to common use, starting with international facilities, and possibly airport-operator-owned/controlled facilities, and then determining how to progress from there. Very few airport operators have implemented full common use throughout their airports. Several airport operators have implemented common use at their international gates. Operators managing smaller airports are beginning to implement common use at their domestic gates. Other airport operators have implemented common use in a single terminal, which serves both international and domestic flights.

When an airport operator is considering implementing common use, the operator must consider many factors, including the airport's specific carrier allocation, the size of the airport, the use of current facilities, and planned future use of facilities. These and many more considerations are discussed in Chapter 3 and the associated appendixes. Current research indicates that there are various ways to analyze these factors. Some airport operators, based on the carrier allocation, choose not to implement common use at all. Other airport operators choose to implement common use in their non-hub gates and terminals.

The research revealed that a current trend in U.S. airports is that implementation of common use in areas primarily used by hub carriers is not normally considered. If an airport is considered a hub for an airline, that airline generally is using the current facilities to full capacity and may even require additional facilities. In addition, an airline with a large number of gates at a particular airport can control the growth, or contraction, of services within the scope of their lease space.

Another trend is to implement common use at primarily international gates. This is seen as helpful in gaining international service for an airport, given that the international airlines are more accustomed to common-use systems at airports and their service to a U.S. city tends to be a limited number of flights per day or week. Airport operators provide common use at their international gates to make it more attractive for international airlines to provide service to their airports.

Examples of airport operator approaches to common use can be found in the case studies included in Appendixes A1 through A4. These case studies highlight specific airports and the reasons for, and experiences with, their implementation of common use.

U.S. Airport Applications (Considerations)

In considering common-use implementations, airport operators must work closely with the airlines servicing their airports. When considering common use, an airport operator, working with the airlines, needs to determine if the common-use resources will cost less than, or at least equal to, the cost of using dedicated resources. As airlines move toward lowering their overall costs to keep in line with the market, airport operators become an important source of cost savings for the airlines when considering where they are going to provide service, reduce service, or simply cease operations.

An airport operator should consider many aspects when looking at whether or not to move to common use. Examples, based on the case studies in Appendixes A1 through A4, include

effects on planning, facilities, business, airside and landside operations, design and construction, and curbside and off-site operations. Additionally, airport operators must consider technology implications, because technology is a major element of enabling common-use resources.

Airport operators that implemented common use needed to consider the effects to the facilities. In some cases, airport operators needed to take over maintenance operations traditionally managed by the airlines. In these cases, the airport operators either took over the work themselves or put contracts in place to provide those services. These maintenance services included millwork, equipment such as bag scales and bag belts, janitorial services within traditionally airline-leased space, passenger boarding bridges, and other equipment. Many airport operators already provided at least some of these services; in such cases, the effects are to increase these existing services.

Airport operators also had to consider business effects when implementing common use. These effects included taking over assignment of resources, such as gate counters, check-in counters, baggage claims, and other common-use resources. Other effects included asset ownership, leasing changes, and management of resource assignments to support existing food and retail concessions. These business effects were the most challenging areas to deal with and required a good working relationship with the airlines operating at the airport. In many of the interviews and research, it was clear that an early working relationship with the airlines was key to the success of the common-use implementation.

In most cases, if an airline is using their gates at full capacity, then the airport operator needs to consider what benefit implementing common use will bring. At many airports, full gate utilization is defined as six to eight turns per gate—sometimes this is because of noise restrictions that limit the hours of operations and sometimes other factors are involved. An airport operator needs to determine what criteria will be used to identify full gate utilization. Even with full gate utilization, some airport operators may determine that a common-use implementation is still appropriate and continue to move forward. Other factors relevant to making that determination are discussed in Chapter 4.

Operational effects also needed to be carefully examined when considering a common-use implementation. On the airside, airport operators became responsible for many elements that they had not been responsible for in the past. Airport operators had to keep in mind that if a gate had been moved to common use, the airport operator needed to take ownership of passenger boarding bridges (see Figure 2-2) if they did not already own them. Thus, a financial cost had to be considered that might not normally have been considered in plans to move to a common-use implementation. Airport operators also became responsible for gate striping. Many airport operators developed a common gate striping schema to support multiple airlines and multiple aircraft types at common-use gates.

Gate assignment responsibilities also had to be managed for all airlines using the common-use gates. This management was performed by the airport operator, airline consortium, third-party contract, or other management process that allowed all airlines fair and reasonable access to these resources. Airport operators needed to consider the cost implications, service levels, and staffing implications of managing gate assignments. In assigning gates, other resources such as check-in desks and baggage claims were managed through the same mechanism.

Landside operations were being affected because of the possible movement of airlines from one area of an airport to another. In practical application, airlines generally were not moved around an airport; however, the management of the curb and curbside resources (e.g., curb-side check-in) were considered.

Common use also affected the design and construction of new facilities at an airport. Designers considering implementing common use in a new construction project needed to consider

Figure 2-2. Passenger boarding bridge.

effects to passenger flows, facility usage, and aircraft gate utilization. All of these considerations are discussed further in Chapter 3.

Airlines had to be able to have a guaranteed level of service, because in a common-use implementation they did not necessarily have control of the maintenance and repair of those facilities. Airport operators had to consider providing a service level agreement for all services which the airport operator provided. Airport operators had to remember that the airlines needed these resources for core business operations such as checking in passengers, boarding planes, and other mission-critical tasks. Although the airport operator was the facility owner, the airline had their business model affected when common-use resources did not function properly. For careful airport operator considerations, Chapter 3 presents the issues and opportunities presented by the airlines, broken out per divisional section.

U.S. Application (Airport Characteristics)

When looking at common use at airports, the type of airport (i.e., hub, non-hub, or origin and destination airport) is important. Implementing common use at each of these types of airports has different considerations and success factors.

Hub Airports

Hub airport operators that have implemented common use have tended to implement it at international gates and check-in counters, if they have them, and at non-hub airline locations, in some limited cases. Implementing common use at the international gates enables the airport operator to create flexibility for international traffic and gain an understanding of common-use resources with airlines more commonly using these types of resources outside of the United

States. As hub airport operators gain a better understanding of how to operate in a common-use environment, they may consider implementing in non-hub gates.

Non-Hub Airports

Non-hub airports have different needs and different operating requirements than hub airports. Non-hub airports are smaller than hub airports and often do not have one carrier that dominates a large percentage of the air traffic at that airport. In the case of non-hub airports, factors involved in determining whether or not to implement common use are different than at hub airports.

Origin and Destination Airports

Origin and destination airports may be hub or non-hub airports. Most of the passenger traffic for the local market starts at that airport and ends at that airport. As a rule, there are fewer through-passengers. These airports are usually in destination cities (e.g., Las Vegas and Orlando), where there is high demand for passenger service. Factors that must be considered in these locations are space constraints, efficient utilization of the facility and resources, and the need to support a larger number of air carriers.

Current Range of Common-Use Facilities and Services within the United States

Many airport operators are considering the implementation of common use at various levels of operation as follows:

- Wireless for Operations: 39% implemented or to implement within 2 years. An additional 28% to implement in 3–5 years.
- Common Ramp Display Information (RIDS): 50% implemented or to implement within 2 years. An additional 14% to implement in 3–5 years.
- Managed Campus-Area Network for All Tenants: 48% implemented or to implement within 2 years. An additional 15% to implement in 3–5 years.
- Passenger Self-Boarding Gates: 10% implemented or to implement within 2 years. An additional 35% to implement in 3–5 years.
- Off Airport Check-In: 24% implemented or to implement within 2 years. An additional 32% to implement in 3–5 years.
- Common Bag Drop: 18% implemented or to implement within 2 years. An additional 33% to implement in 3–5 years.
- Baggage Tracking Services: 26% implemented or to implement within 2 years. An additional 30% to implement in 3–5 years.

Figure 2-3 illustrates the information above (ACI, 2009).

These results reflect a building-block approach to common use that allows airport operators to implement portions of common use over time while achieving the most value for all parties involved. In many cases, airport operators implement a common cabling backbone as one of the first elements of common use. This allows the airport operator to better manage the cabling infrastructure installed in the airport, while positioning the airport operator to add services in the future.

With any major shift in process, there is also a shift in culture. Airport operators need to be prepared to address cultural changes, which not only affect the airport operator, but the local airline station personnel as well. To address this issue, Appendix A5 discusses some fundamental concepts when managing organizational change.

Technology is an important enabler for any common-use implementation. Technology does not drive these changes, but the use of technology facilitates the move to a common-use facility.

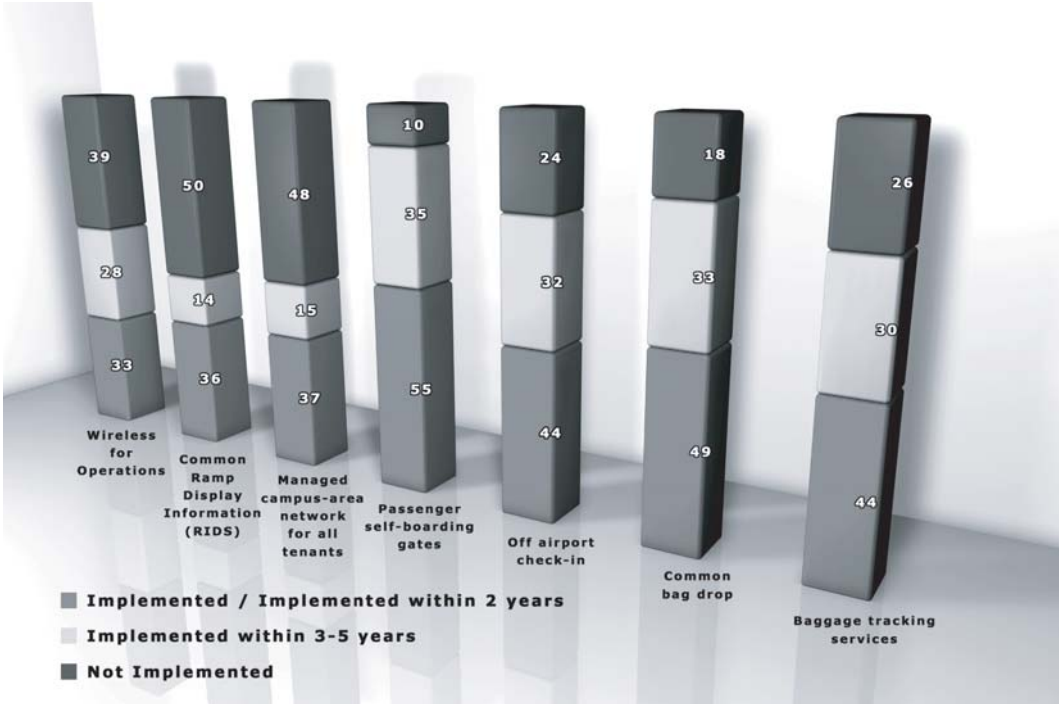

Figure 2-3. Common-use considerations (in %).

As with any technology, costs, changes in staffing needs and customer service, and training and providing the right level of service for the facilities must be addressed.

Cost-Benefit (Overview)

An airport operator considering common use must also consider the costs and benefits associated with common use. Chapter 4 reviews the costs and the benefits of common use in detail. Some of the costs that an airport operator should consider are summarized in the following subsections.

Services

When an airport operator is beginning to determine whether or not to pursue common use, it may be valuable to hire a consultant who understands the industry and common-use facilities and can provide help ranging from an initial set of business-level assessments through technical system design.

Staff

Any change in how an airport is operated will affect the airport operator's staff. This includes existing staff, as well as any new staff required to support the new operations. Common-use facilities affect all levels of the airport operator, including senior management, management, and operational staff.

Facilities Modifications

Changes to existing facilities may be required for a common-use facility implementation. An airport operator will need to carefully consider how, or if, a common-use facility implementation

will affect the existing facilities and account for those costs accordingly. This may also require design and construction services.

Assets

Depending on the type of common-use implementation, the airport operator may need to procure additional assets. Assets could be purchased from the airlines (e.g., with passenger boarding bridges) or could be procured to replace airline assets (e.g., flight displays or ground servicing equipment).

Business Drivers

The following business drivers need to be considered when looking at common-use implementation:

- Maximize existing facility utilization
- Avoid or defer capital costs
- Maximize facility flexibility
- Decrease the airport's cost of doing business
- Decrease the airline's cost of doing business
- Improve the quality of service to airlines
- Improve the quality of service to passengers
- Increase opportunities for airlines to add or expand service
- Gain a competitive advantage over other airports

Other Industries

When considering common use, it is also valuable to look at what industries outside the aviation industry are doing that might be related to common use. This section summarizes the research conducted by the research team in understanding similar efforts in related industries. A more detailed discussion of this section is provided in Appendix A6.

Examples of the industries considered are

- Banking and finance
- Transportation (road, rail, air, and water transportation infrastructure, including computer-controlled just-in-time delivery systems, optimization of distribution through hubs, and traffic and operations centers consolidated into key locations, and regulation of the transport of hazardous materials)
- Public works (water supply, drainage, and wastewater)
- Power (electricity, oil, gas, and nuclear materials and power)
- Information and communications (telecommunications and information technology)
- Emergency services (emergency health services and public health)
- Fire departments and law enforcement agencies
- Agriculture and food (meat, poultry, and egg products)
- National monuments and icons

Among the industries researched, transportation, public works, and power share many similarities:

- Heavy emphases on facility and infrastructure operations and maintenance
- Strong regulatory oversight
- Increasingly sophisticated, knowledgeable, and more demanding customers
- External effects of economy and energy costs greatly affect operational costs

The research reflects a combination of a literature review and interviews. For focus, the researcher team considered the following questions:

- What **external drivers** might influence another sector or industry to consider alternative service delivery options and/or business arrangements?
- What **business functions and/or processes** would most likely be considered for improvement?
- What **role** does **technology play** and what **types of technology** are considered in improvement initiatives?
- What underlying **decision-making framework and considerations** were in play with regard to change initiatives?

External Drivers

External drivers (e.g., increasing regulations, increasing customer demands, and increasing operational costs) lead industries to consider new ways to increase efficiency and effectiveness, thereby leading to increased customer service and satisfaction and decreased operating costs.

Business Functions and/or Processes

All of the above-mentioned industries have or are engaged in creative re-thinking and decision making relative to service provision and delivery. These decisions involve a recognition and determination of the core business and/or services and trying to determine the best ways to continue and move forward. Industries considered alternative service delivery or provision options and optimization in response to an ever-changing business environment.

Research indicates that the term "common use" is not readily used outside the aviation industry; however, there were many examples of industries implementing common-use types of arrangements and actively considering alternative service delivery options. These arrangements typically were described in terms of contractual language and included outsourcing, strategic partnerships, collaborative partnerships, strategic alliances, inter-organizational relations, collaborative entrepreneurships, coalitions, and joint ventures, as well as inter-agency, inter-regional, and shared services. These arrangements also included public-private partnerships of which there are many forms (e.g., contract operations, concession, design-build, design-build-operate, build-own-operate-transfer, and asset sale).

Technology Types and Role

Information technology was viewed as integral to overall operations and in being able to meet business demands. Five prevailing strategies for information technology, as shown in Figure 2-4, were identified:

- Business Driven
- Real Time
- Mobile
- Integrated
- Secure

Decision-Making Framework and Considerations

Decision-making frameworks and considerations for change management were consistent across industries. Industries operate within a framework for improving performance with appropriate consideration for assessing and analyzing current performance, identifying key opportunities to

Figure 2-4. Technology types and roles.

maintain effectiveness while improving efficiency, and developing a strategy for action. Key considerations include

- An effective improvement process
- Considering change management principles
- Assessment
- Strategic planning
- Tools for improvement

No universal solution was identified within any industry or example reviewed. Organizations assessed their existing situations, cultures, and business to determine response to factors affecting their business. Plans and courses of action were tied to organizational strategies and business objectives. Action ranged from process improvement, training or re-skilling, and/or technology implementation to outsourcing to public-private partnerships.

CHAPTER 3

Analysis and Implementation Considerations

This chapter discusses analysis and implementation considerations associated with common use in terms of the following major operational areas:

1. Planning
2. Design and Construction
3. Terminal Operations
4. Airside Operations
5. Facilities Maintenance
6. Business Considerations
7. Technology

Each area is discussed within a section. Within each of these sections, various common-use application areas at airports applicable to the respective operational area are discussed. Each section contains a brief summary, a description of the airport application area, and issues to consider. Details about the issues to be considered are discussed in various appendices.

Planning

This section provides information needed by airport operators in considering and planning for the many aspects of common use. The information in this section is built on in subsequent sections of this chapter. This section consists of the following:

- Initial Planning Steps—First steps that airport operators should consider when evaluating common use
- Airport Operational and Physical Characteristics—Viability and benefit of common use, when considering these issues
- Counting the Cost—Criteria to be used in helping the airport operator evaluate the viability of common use within the airport
- Airport Procedural Considerations—Important aspects for the airport operator to consider as plans are put in place to move to common use

Note: Detailed information on each of these operational areas can be found in Appendix B1.

Initial Planning Steps

Description

Three steps were identified as being essential to a successful implementation of common use:

- Develop a change in airport operator and airline way of thinking
- Thoroughly define the business reasons behind common use
- Include airlines as business partners

Issues to Consider

1. **Develop a change in airport operator and airline way of thinking.** Throughout the ranks of airport management and airline operations, common use is often considered an "IT" issue. Common use adds the best value when all divisions and management of airports, along with airline partners, contribute to the planning and business justification of implementations.
2. **Thoroughly define the business reasons behind common use.** There are business reasons why airport operators consider common use. Chapter 4 presents many of these reasons and includes tools to help airport operators determine their specific business reasons.
3. **Include airlines as business partners.** A common mistake for airport operators is to plan the implementation of common use without early input from airline business partners. Consider how best to keep airline partners active and participating in the ongoing planning and continuous improvement process. For example
   - Establish *a loyal partner program,* where criteria for the program are presented clearly to the airlines. Such criteria may include reaching a set threshold for years of continued service. As part of the program, consider special arrangements with airlines achieving loyal partner status. Airports noted successful relationships can be formed in a positive manner, specifically regarding preferential and non-exclusive-use arrangements. Some airports extended this status to the dominant carrier. Although airports reported success in implementing such programs, care must be taken not to alienate other airlines or violate Federal regulations regarding equal treatment of air carriers.
   - Work with airline partners to include corporate airline staff as well the local station manager and staff.

Airport Operational and Physical Characteristics

Description

Capacity constraints are not the only factor in determining the beneficial utilization of common use. Given that common use is not a "one-size-fits-all" solution, the operational and physical characteristics of an airport should be taken into account as well when considering the viability and benefit of common use. Three characteristics of an airport factor into the evaluation of common use. These are

- Airport Size
- Physical Configuration of the Airport
- Airline Operations within the Airport

Issues to Consider

1. **Airport Size.** The FAA defines airport size by the percent of airline passenger enplanements and categorizes airports as "large, medium, small, or non-hub" (TRB, 2003, pp. 11–12). Airport sizes, ranging from non-hub to large-hub are all finding benefit for common use. Small-hub airports increasingly are pursuing the implementation of common use.
2. **Airport Physical Configuration.** Airport physical configuration refers primarily to the layout of airport terminals, concourses, and baggage handling systems. Figure 3-1 compares these configurations. Much like airport size, physical configuration does not necessarily dictate the benefit of common use, but it can affect the viability of the implementation of common use significantly.
3. **Airline Operations.** Within any of the airports, an airline may operate what is referred to as "hub" operations. An airline hub operation is an airport that an airline uses as a transfer point to get passengers to their intended destinations. Airline operations probably has the greatest affect on both viability and benefit for common-use installations.

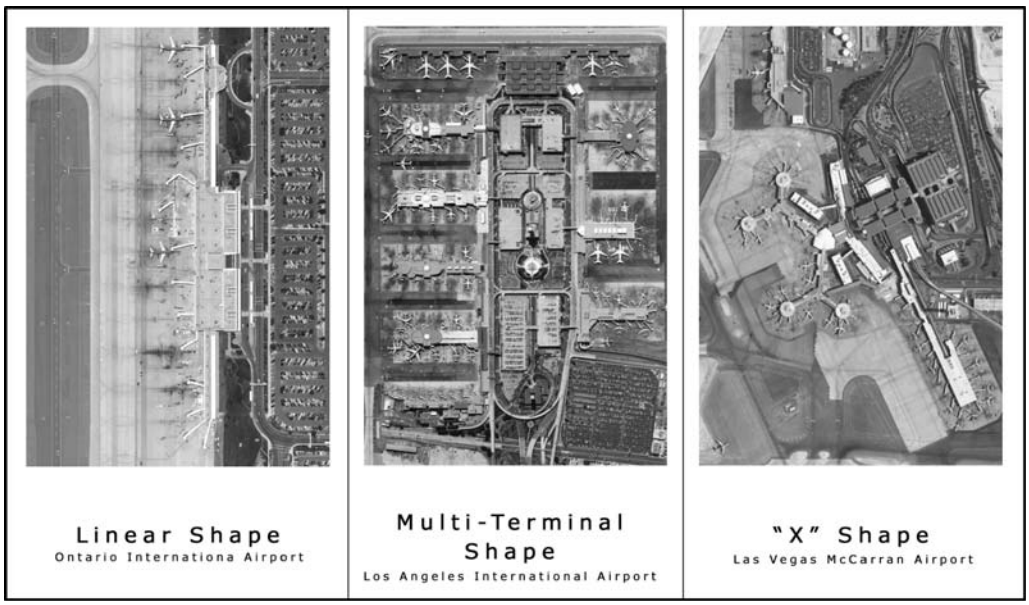

Figure 3-1. Physical airport configuration comparison.

Counting the Costs of Common Use

Description

This section presents many of the aspects of common use where costs can be accumulated—sometimes substantial, and often times, overlooked:

- Facility flexibility
- The true costs of owning common-use assets
- The true costs of services and support
- The costs of technology

Chapter 4 provides further detail on cost issues.

Issues to Consider

1. **Initial Assessment of Use—Facility Flexibility.** Facility flexibility is a key benefit of implementing common use. Many of the benefits associated with facility flexibility are identified in Chapter 4. In providing this flexibility, airport operators should consider the following:
   - Adding the ability to use existing capacity during non-peak hours of operation. Doing so may or may not result in new flights.
   - Limitations in check-in counter space. A typical common-use model is to maximize turns per gate, thereby avoiding "bricks and mortar" costs. Even though gate capacity may increase, an airport operator should ensure there is sufficient counter space to accommodate peak-hour operations.
   - Limitations in check-in counter operations. As with limitations in space, the airport operator must consider limitations with the operations of the check-in counters.
   - Throughput capacity of in-line baggage screening compared with peak-operations under the planned common-use model.
   - Potential choke points at security check points, as shown in Figure 3-2.
   - Added congestion in hold room areas.
2. **Assessing the True Costs of Ownership with Common-Use Assets.** Common use typically results in airport operators owning and maintaining more of airport assets associated with the

Figure 3-2. Security check point—potential choke point.

operation of a common-use gate or other common-use areas. As a result, airport operators often have to buy assets from airlines. In doing so, the following issues should be considered:

- Ascertain the true value of the airline asset at the time of acceptance.
- Consider the cost of upgrade or replacement of major assets (e.g., passenger boarding bridges) due to operational differences under common use.

3. **Assessing the True Costs of Services and Support.** Throughout this chapter, the costs of services and support are discussed. In planning for common use, airport operators should consider the service and support elements discussed throughout this chapter, along with the ones summarized here. This is not an easy assessment and takes continued re-evaluation. As one airport operator stated: "All airport divisions struggle with staffing issues. Over time, we have not had any real rationale for figuring out staffing needs: we try it to see what works." Airport operators should consider:
   - Increases in operational hours support. Airlines are concerned that aviation organizations are typically static and not equipped to manage the dynamic environment of common use.
   - Contract and labor issues. Organizational and contract hurdles can affect the support and operations of common-use gates.
4. **Assessing the Costs of Technology.** In planning for common use, airport operators should evaluate how common use may affect existing technology infrastructure. Key considerations include
   - Ownership of communications infrastructure and demarcation points between airport operator equipment and airline-owned equipment.
   - Costs of supporting technology systems such as gate management and others.
   - Operational costs of technology support.
   - Emerging trends in technology that may affect common use.

Airport Procedural Considerations

Description

In considering the successful implementation of common use, airport operators have noted several procedural considerations that must be assessed. Many of these considerations typically are included as part of the lease process for common-use gates.

Issues to Consider

1. **Use Criteria.** Airport operators need to determine whether common use should be *mandatory or voluntary,* what happens if an *airline fails to meet the minimum use, give-back criteria and take-back criteria* (e.g., some airport operators have worked with the airlines to define conditions so that airlines can give back common-use facilities if the airlines no longer wants them; however, airport operators should determine if this approach will be appropriate for their airports or if take-back criteria will be better or some combination thereof), and *expansion of use* (e.g., how will airlines be allowed to expand their operations into additional common use facilities if needed).
2. **Use of Airline Assets and Equipment.** In general, airlines prefer to maintain the right to use proprietary applications or equipment under prescribed conditions. There can be valid situations where an airport operator may wish to allow the use of airline proprietary equipment at a common-use location.
3. **Preparation of Policy and Procedural Documents.** Airport operators noted the need for the preparations of policy and procedural documents to help with the planning and operation of common use. Some of the documents may already exist; others would be specifically established for common use.

Design and Construction

This section provides information needed by the airport operator in incorporating common use in a design and construction project. This section considers design and construction to be the physical addition of a new gate, concourse, or terminal which requires the use of professional engineers, architects, and licensed contractors. The information in this section is built on in subsequent sections of this chapter. This section discusses the following:

- Initial Design—First steps airport operators should consider when incorporating common use in design projects.
- Design Cycle—How incorporating common use in the design phase affects the design of the project.
- Construction—During construction, elements of common use must be monitored and considered and decisions must be made so that the construction project is not affected by schedule delays.
- Testing and Commissioning—Important testing and commissioning items to be considered during a construction project.

Note: Detailed information on each of these operational areas can be found in Appendix B2.

Initial Design

Description

The initial design phase is the phase of a construction project that must be completed prior to the actual designers and constructors being hired. This phase sometimes includes the creation of a design narrative, a set of requirements, or some type of document to convey information to the team that will design the project. This is also the phase where the delivery method is chosen (e.g., design/bid/build, Construction Manager at Risk, and other delivery methods).

Issues to Consider

1. **Coordination with Airlines.** Coordination with the airlines operating at the airport is paramount (see Figure 3-3). In many cases, it is not just the airlines that will be initially

Figure 3-3. Coordination with airlines.

affected by the construction project, but all airlines operating at the airport, because a move toward common use can affect other areas of the airport not considered part of the original construction project. Airlines should be brought in early in the initial design process so that their needs and requirements can be identified. The design manager should coordinate with the airline station, corporate, and IT personnel—all will have input for the initial design considerations.

2. **Airport Culture.** As discussed in the Planning section of this Chapter, the airport operator's culture will need to be considered, and possibly changed, to implement common use successfully. The airport operator's culture also can affect how decisions are made—ultimately, the culture of each airport will affect how and if a decision to include common use in the design project will be made.
3. **Goals for the Project.** Not all construction projects lend themselves to include a common-use element. The team must identify the goals of the project and determine if these goals can be met implementing common use or not. If the project is not addressing passenger processing, then there probably is no effect on common use. If the project is to increase, or somehow affect passenger processing capacity, the airport operator should determine if common use will apply.
4. **Non-Airport Influences.** Many projects have outside influences that affect the overall project. These should be identified in the initial design phase. If outside influences are identified, and common use is considered, the airport operator must determine if these outside influences will affect common use positively or negatively.
5. **Airport Master Plan.** As a construction project is considered, the effect on the overall airport master plan and the airport layout plan should be considered.
6. **Staffing.** A staffing analysis should be performed to evaluate the need for IT specialists and other staff to operate and maintain the common-use system.

Design Cycle

Description

The design cycle is the portion of a construction project when the engineers, architects, and other design disciplines work closely with the airport operator to convert the requirements, goals, and desires identified in the initial design phase into physical drawings and specifications for use by the construction contractor. This process usually is iterative, as the designers become familiar with the initial design and understand the goals of the airport operator.

Issues to Consider

During the design cycle, the effects of common use must be considered. Coordination with other design disciplines is essential.

Construction

Description

Once a project has been fully designed and construction documents have been prepared, the construction process begins, depending on the delivery method. Although elements of the construction process can begin at different stages with the different delivery methods, the final construction documents will dictate when final construction of the project is started. During this time, constructability issues will surface, and many elements could affect common use.

Issues to Consider

1. **In-Field Design Changes.** The design of a project probably will be changed as physical construction begins. Technology and operations liaisons should be considered for construction projects that include common use. Airlines should be coordinated with during the construction project to address in-field design changes.
2. **Inspections.** Inspecting is critical for any construction project. Inspectors will look for code and safety violations, but there also needs to be an inspection for usability of the space.

Testing and Commissioning

Description

At the end of the construction project, but prior to beneficial use of the space, testing and commissioning must occur to ensure that the systems needed to support common use are operating properly and will support the airlines' business processes.

Issues to Consider

1. Effects on passenger processing flow
2. Effects on existing facility systems and technology
3. Test plans
4. Commissioning plans
5. Final acceptance

Terminal Operations

This section discusses operational issues and opportunities for areas inside the airport facility, when considering a common-use installation. Relevant areas of effect and services include the following:

- Check-in Counter Assignments
- Gate Area Assignments
- Passenger Processing in Shared-Use Areas
- Airline Back Office
- Terminal Security
- Terminal Services Operation
- Janitorial Services
- Curbside

Note: Detailed information on each of these operational areas can be found in Appendix B3.

Terminal Check-in Area and Curbside Operations

Description

This section discusses the issues and opportunities of a common-use installation within the airport terminal check-in area (see Figure 3-4) and curbside check-in areas. Airline concerns and opportunities are noted first, followed by concerns and opportunities drawn from the experience of airport operators.

Issues to Consider

1. **Airline Business Issues and Opportunities.** Airlines noted several business reasons why common use may be a viable solution for counter and self-service check-in. Many of the reasons are the result of proper planning and implementation of the business issues and opportunities. Airlines typically are against common-use installations where the installation hinders the airline business process. For the airline, the business process dictates the counter configuration.
2. **Airline Operational Issues and Opportunities.** Airlines invest substantially in evaluating passenger flow methodologies. Once a methodology is established, the airline begins to migrate all check-in counter operations to the new model. Airlines noted that common use can affect their passenger flow methodologies adversely, if not properly planned for.

   Self-service check-in is an increasingly important element of processing passengers through the check-in process. Airlines are opposed to common-use self-service (CUSS) when it hinders the airline's operational process for self-service check-in.

   Airlines noted that the size of their airport operation is not the primary decision factor. If the airport is not facility-constrained, it typically does not make sense to the airline to be forced to share gates and counters or to pay for a common-use system. In such cases, the airport operator should prepare and present its business case analysis.

Figure 3-4. Terminal check-in area.

Airlines expressed concern that airline operations must not be affected by airport outages of any kind. In providing common use, airport operators should plan to mitigate outages caused by the common-use system.

Airlines expressed considerable concern about the risk of lost functionality with the common-use system, when compared with the functionality the airline-specific systems provide to each operation.

3. **Airline Facilities Issues and Opportunities.** Airlines noted that when common use is planned and implemented appropriately, it can provide a proper level of facility flexibility. Generally speaking, some counters controlled by the airport operator and available for overflow and so forth are seen as beneficial. Common-use space can sometimes be space-constrained. Airlines noted that common baggage sort and baggage screening areas can tend to be space-constrained. Airport operators should work with the airlines in planning for common-use spaces. Airlines noted a need to coordinate storage space requirements, especially in gate and ticket counter areas.
4. **Airport Performance Issues and Opportunities.** The following performance and operations related items were addressed by airport operators with regard to applying common use in the terminal check-in area:
   - Establishing the Performance Criteria. Airport operators should work closely with airlines in establishing performance criteria for check-in areas.
   - Establishing the Operational Criteria. Airport operators should work closely with airlines in establishing the operational criteria for check-in areas.
   - Define the function of the counters. Using the performance and operational characteristics established, airport operators can then layout optimum counter configurations and queuing areas.
   - Define counter configurations suited for check-in space. Figure 3-5 illustrates how a counter module might look after this step is complete.
5. **Curbside Check-In.** Depending on the airport, curbside check-in may or may not be a significant part of the airport's processing of passenger check-in—there is no clear trend.

Figure 3-5. Counter module example.

Airport operators and airlines see added flexibility to curbside check-in through the use of self-service check-in kiosks. As with terminal check-in counters, airport operators may experience similar benefits and obstacles for curbside check-in. Two significant hurdles that most airports must overcome when moving to common use for curbside check-in is how to process bags from multiple carriers and training the staff performing the check-in under each airline's host system that may operate from that counter.

6. **Passenger Queuing and Processing.** Designing the check-in facility to provide optimum processing of passengers is a primary emphasis for airport operators and airlines.
7. **Staffing Considerations.** Improving the use of passenger self-service can increase the need for passenger assistance. Also, with common use, airport operators often are called on to assist passengers. Two positions should be considered:
   - Terminal Operations FTE
   - Airline Affairs FTE
8. **Accessibility.** Accessibility issues arise with the areas in which passengers interface. For check-in areas, this includes self-service check-in kiosks and graphic display devices. Graphic display devices can include wayfinding, airline information, and flight information displays. Further discussion on accessibility issues in these areas is in the Technology section of this Chapter.

Gate Area

Description

This section discusses the issues and opportunities of a common-use installation within the airport terminal gate area. Issues regarding the airside and ramp control areas of the gate are discussed later in this Chapter. Airline-specific concerns and opportunities are noted first and are followed by concerns and opportunities drawn from the experience of airport operators.

Issues to Consider

1. **Airline Issues and Opportunities.** Airline issues and opportunities regarding common-use gate operations are presented in the Airside Operations section of this Chapter. Specific to the gate, in relation to other terminal areas, the airlines noted that they prefer their back offices near their gates.
2. **Airport Issues and Opportunities.** Performance-related items were addressed by airport operators with regard to applying common use in the terminal gate areas. Few U.S. airports are fully configured for common use throughout all gates. However, several airport operators are considering a phased-in approach to common use. Regarding the management of common-use gates, airport operators require routine monitoring of gate activity. Although gates are common use, over time, airlines may install proprietary equipment at the gates they normally operate from. In the layout of the gate area, airport operators should consider the use of passenger self-service kiosks in key gate area locations.

Related Terminal Services

Description

This section discusses the terminal services typically associated with common-use installations. Airline concerns and opportunities are noted first and are followed by concerns and opportunities drawn from the experience of airport operators.

Issues to Consider

1. **Airline Issues and Opportunities.** Airlines generally are in favor of airport operators providing terminal services as noted in this section, provided that costs and service standards are carefully planned for.

2. **Airport Issues and Opportunities.** At most airport locations, wheelchair services typically are provided by the supporting airline. Terminal cleaning services generally are provided by airport operators, except for airline hub operations, where hub airlines maintain a lump sum cleaning and maintenance agreement for major locations.

Airside Operations

This section addresses Airside Operations applications and issues that should be considered when evaluating common use. Airline concerns and opportunities are noted first, followed by concerns and opportunities drawn from the experience of airport operators.

Figure 3-6 illustrates the airport area of impact, which includes the following primary operational items:

- Owning and Assigning Common-Use Gates
- Providing Ramp Control Services
- Owning and Maintaining the Passenger Boarding Bridges
- Owning and Maintaining the Inbound Baggage Handling Area
- Owning and Maintaining the Outbound Baggage Handling Area
- Providing Ramp and Ground Handling Services
- Providing Common-Use Ramps for Cargo Operations

Note: Detailed information on each of these operational areas can be found in Appendix B4.

Figure 3-6. Airside operation space.

For each airport area discussed in this section, the issues and opportunities to be considered by airport operators are grouped as follows:

1. Airline Business Issues and Opportunities
2. Airline Operational Issues and Opportunities
3. Airline Facilities Issues and Opportunities
4. Airport Performance Issues and Opportunities
5. Airport Physical Considerations Issues and Opportunities
6. Staffing Considerations Issues and Opportunities
7. Accessibility Considerations Issues and Opportunities

Owning and Assigning Common-Use Gates

Description

When considering common use, airport operators generally start at the gate. For airport operators, this area generally has the greatest effect on business. The options, however, for how to implement common use and how much to implement, are as varied as there are airports. Consideration of the concerns and opportunities presented in this section, along with the tools provided further in this Guide, will help airport operators make informed decisions about whether common use at the gates is appropriate and, if so, how to best plan for successful installations.

Issues to Consider

1. **Airline Business Issues and Opportunities.** Airlines noted several business reasons why common-use gates may be an advantage. Many of the reasons are the obvious result of proper planning and implementation of the business issues and opportunities noted here in this section. These include
   - Adding real value to the airport operator and airlines
   - Providing airlines with the functionality they need and airport operators with the flexibility they need
   - Maximizing utilization of gate positions and lowering overall airline facility costs
   - Paying per turn for gate usage, when an airline is in need of only a few slots per day
   - Accommodating the temporary need of an airline
   - Accommodating new entrant airlines, seeking limited gate use and minimal capital costs
   - Providing International gate operations

   Airlines typically are against common-use installation where the airport operator's installation opposes the airline business process. Airlines do not see the benefit of imposing common use if the particular airline maximizes the gate capacity. Airlines should have a financial reason to move to common use. The airline provides gate capacity to generate a revenue stream. Some airlines prefer that airport operators not get involved with airline affairs in terms of the use of gate and sublease opportunities.
2. **Airline Operational Issues and Opportunities.** It is generally regarded by airlines that the best potential facility candidates for common-use systems include baggage claim, gates, and stand-alone kiosks. These, if properly planned for, can be successful. The size of airport operation is not the primary factor. Airlines oppose operating from a common-use gate because, typically, this operation is not "common" to the other airport locations they operate from. Airport operators should properly plan for the gate reallocation methodology and coordinate with the airlines. Airlines expressed a need for airport operators to define the airport's use of Remain Over-Nights (RONs) properly when working in common use. Airlines expressed concerns that airline operations must not be affected by airport outages of any kind. There are several operational reasons why common-use gates may be an advantage.

3. **Airline Facilities Issues and Opportunities.** Airlines noted the following:
   - Concerns regarding the consistency of the assignment of gates and operating space.
   - That the airport operator should provide space, but not dictate how the space is used, given that airlines typically design the gate setup to board passengers as it best seems to fit them.
   - Common-use space can sometimes be space-constrained.
   - Common baggage sort and baggage screening areas can tend to be space-constrained.
   - Airport operators should work with the airlines in planning for common-use spaces.
   - A need to coordinate storage space requirements, especially in gate and ticket counter areas.
   - When common use is planned and implemented appropriately, it can provide a proper level of facility flexibility.
4. **Airport Performance Issues and Opportunities.** The following items were addressed by airport operators with regard to applying common use in the airside gate area:
   - Set the culture, goals and vision, directed from the Airport executive level, down. Define the business case by involving Airport Operations, Business/Finance, Technology, and Facilities.
   - Define gate management responsibilities.
   - Establish appropriate means and methods for managing the normal scheduling of gates.
   - Define gate occupancy times and criteria for compliance.
   - Define rules for scheduling of gates and for resolving gate conflicts.
   - Define rules for scheduling of gates during irregular operations. Establish clear rules regarding the scheduling of which airlines get preference during peak or irregular operations.
   - Define rules for RON and remote parking.
5. **Airport Physical Considerations Issues and Opportunities.** Issues and opportunities related to the physical considerations of the airside gates are discussed in detail in Ramp Control Services in this chapter.
6. **Staffing Considerations Issues and Opportunities.** The management of common use gates introduces activities, and thus staff, not normally found in daily operations of airports operating without common use. Airport operators noted that the following staff positions should be considered:
   - Gate Manager/Planner.
   - Airline Liaison.
   - Airline Interface to the airport operator.
7. **Accessibility Considerations Issues and Opportunities.** Accessibility issues related to common use gate management are discussed in detail in Providing Ramp Control Services and in the Terminal Operations Section of this Guide.

Providing Ramp Control Services

Description

When considering common-use and gate operations, the airport operator generally assumes the ramp control services for the common-use gates. Some airport operators have assumed full ramp control services for all gates, common use or not. Although, this may be a growing trend for airports of all sizes, any one of the following three models can be seen at airports:

- Airline provides the services through airline employees or through contracted services
- Airport control through contracted services
- Airport control through airport employees

Ramp controllers coordinate and control departure and arrival operations of aircraft within the ramp area and ensure that aircraft are serviced and loaded. Consideration of the concerns and opportunities presented in this section, along with the tools provided further

in this Reference Guide document will help airport operators make informed decisions regarding ramp control services within common-use operations.

Issues to Consider

Related issues are presented in Owning and Assigning Common-Use Gates.

1. **Airline Business Issues and Opportunities.** Some airlines noted that if done properly, the airport operator can provide Ramp Control Services more cost effectively than can the airline. Airlines typically are against common-use installation where the airport operator opposes the airline business process. Airlines expressed concern in the handling of labor contracts when the airport operator provides some of the ramp control services. At best, this can be confusing in a common-use environment.
2. **Airline Operational Issues and Opportunities.** Some airlines think it best for the airport operator not to get involved with airline operations in the ramp control area. Some airlines expressed that the ability to dictate risk should be with the airline. Airlines expressed concern regarding the level of trained and experienced staff an airport operator may provide to perform ramp control services. Airlines noted that airport operators should properly plan for, and coordinate with the airlines the gate reallocation methodology. This issue is discussed in detail in Owning and Assigning Common-Use Gates. Airlines expressed concern that airline operations must not be affected by airport outages of any kind.

   When airport operators provide ramp control and ground handling services, airlines expressed concern about which airlines would get scheduling preference during peak or irregular operations. Airport operators that elect to participate in these services will ultimately need to choose between airlines and the resulting winners and losers from a customer perspective. How these decisions will be made should be defined and followed in agreement with the airline partners.
3. **Airline Facilities Issues and Opportunities.** Airlines noted that
   - Airport operators sometimes schedule flights in gate areas not suitable for their aircraft.
   - When common use is planned and implemented appropriately, it can provide a proper level of facility flexibility. Generally speaking, some gates controlled by the airport operator and available for overflow, etc.
4. **Airport Performance Issues and Opportunities.** The following performance related issues and opportunities were addressed by airport operators with regard to providing ramp control services to common-use gates. Related issues regarding gate assignments can be found in Owning and Assigning Common-Use Gates.
   - Define the information sharing, communication, and coordination requirements between all stakeholders involved with ramp control
   - Manage gate operations at each gate
   - Control gate use based on the operational characteristics of each gate
   - Establish consistent gate striping requirements
   - Consider passenger boarding bridge issues
   - Manage and control the baggage sortation pier assignment and criteria
   - Establish and maintain an effective training program
5. **Airport Physical Considerations Issues and Opportunities.** In general, physical considerations issues and opportunities, with regard to ramp control, have been discussed throughout this section. Regarding the overall layout of the airport, airport operators noted the following:
   - Ramp control depends highly on the ability to monitor the gate areas visually.
   - The location and number of ramp control towers must be considered to ensure effective monitoring of the common-use gates and off-gate parking areas. Some airport operators have thus invested capital for the construction of new tower locations.

- Consideration should also be given to the overall concourse design layout. Some airport operators noted that linear designs are far easier to monitor than X designs. In addition, X designs tend to cause blockages.

6. **Staffing Considerations Issues and Opportunities.** Airlines and airport operators noted the need to select ramp control managers and operators already trained and experienced in ramp control. Airport operators noted consideration must be given to the hours of operation. Careful consideration must also be given to labor requirements when staffing these hours and coordinating work requirements with airline ramp control personnel. Airport operators noted that the following staff positions should be considered:
   - Ramp Tower Manager
   - Ramp Controller
   - Ramp Managers
7. **Accessibility Considerations Issues and Opportunities.** Airport operators noted the need to consider accessibility issues for service contractors. The primary accessibility issue is with the operations of passenger boarding bridges.

Providing Ramp and Ground Handling Services

Description

The airport operator assumes some level of control and/or ownership of ground handling services. These services may include

- Air starter and ground power units
- Baggage handling
- Catering handling
- Cleaning
- De-icing
- Lavatory service
- Liaison with fuel suppliers
- Push back and towing
- Steps and air bridge service
- Water service

These services may be provided through various means. Airlines can provide service either through their employee base or through a third party, exclusive of airport involvement. Airport operators can control the number of ground handling companies and the bidding process for airlines to select from. Airport operators can mandate ground handling services through one company or through airport-provided services.

Issues to Consider

1. **Airline Issues and Opportunities.** Typically, airlines prefer to either use their own staff or control outsourced handlers. When it comes to ramp control services, the airlines maintain that there is a material safety issue in providing services in and around the aircraft. One airline noted that for above-the-wing services, it always employs in-house staff. Even when the airline outsources the services, any given airline holds their handlers to a service level that cannot be subject to another carriers operation.
2. **Airport Issues and Opportunities.** Frequently, it is the smaller airports that are looking into airport-provided ground handling services. Smaller airports also claim certain advantages for airlines when the airport operator provides the ground handling services. For airports considering providing ground handling services, electing not to pursue common-use ground handling services provided opportunities to consider how to help manage the services provided.

Figure 3-7. Airport maintenance.

Facilities Maintenance

This section provides information on considering and planning for the many aspects of facility maintenance, one of which is shown in Figure 3-7, in a common- or shared-use function. The information in this section is built on throughout the subsequent sections of this chapter. This section discusses

- Terminal and Airside Facility Maintenance Support
- Maintaining Major Equipment Used in Common- and Shared-Use Facility Space

Note: Detailed information on each of these operational areas can be found in Appendix B5.

Terminal and Airside Facility Maintenance Support

Description

This section discusses the issues and opportunities with providing facility maintenance support to common-use installations within the Terminal and Airside areas primarily at the common-use gates, ticket counters, and shared-use facility area. Maintenance of the technology systems associated with common use is discussed in later sections of this Chapter.

Issues to Consider

1. **Airline Issues and Opportunities.** Most airlines agreed that the airport operator is in a good position to provide facility maintenance in the common-use areas. Even within a predominantly common-use airport or common-use facility within the airport, the airline still must maintain certain exclusive-use areas. Airlines generally view that airport operators spend too much on facility maintenance. Coordination and communication are needed.
2. **Airport Issues and Opportunities.** In providing facility maintenance service in a common-use facility, the airport operator places a high priority on providing a consistent level of service. Considering the full breadth of the facility, an airport operator views the maintenance of all items important: be it common-use or exclusive-use space. Airport operators report that many times, airport facility maintenance staff are called out for or will voluntarily repair

facility issues in exclusive-use areas. In general, airport operators view this as part of their responsibilities; however, many airport operators and airlines alike are attempting to track to a greater detail the costs and assets associated with facility maintenance. To help with this, airport operators are tracking the responsibilities through established and controlled means. Table 3-1 is an example of a facility matrix used by one airport operator. Even with a matrix, airport operators must regularly coordinate issues with airlines and monitor progress.

An increasing number of airport operators either have or are investigating the use of sophisticated maintenance management systems. Airport operators generally noted that, even with maintenance management systems, tracking staff and changes throughout a facility is challenging.

3. **Staffing Considerations.** In general, staffing requirements will vary from airport to airport, depending on the level of outsourced providers and the level of airline-provided facility maintenance. Airport operators should plan for at least one additional staff member to conduct regularly scheduled facility inspections.

Maintaining Major Equipment Used in Common- and Shared-Use Facility Space

Description

This section discusses the issues and opportunities when airport operators assume responsibility for maintaining and perhaps ownership of major equipment used in common- or shared-use applications (e.g., passenger boarding bridges and baggage conveyor systems). Maintenance of the technology systems associated with common use is discussed in later sections of this Chapter.

Issues to Consider

1. **Airline Issues and Opportunities.** Most airlines agreed that the airport operator is in a good position to provide maintenance services on the major equipment assets used in common or shared use areas. In general, airlines think that airport operators charge too much for preventive maintenance and general upkeep of these assets. In cases where one airline is the predominant user of an asset, such as with bag belts or bag claim devices, the predominant user generally favors maintaining ownership and/or maintenance of that asset.
2. **Airport Issues and Opportunities.** In most cases, airport operators prefer to assume maintenance of the major assets used in common- or shared-use functions. Airport operators noted that the cost of ownership of the major assets typically was higher than planned. Airport operators typically consider that performing a Predictive or Preventive Maintenance (PM)/monitoring program a best practice and, in the long run, saves money over a reactive maintenance program. Maintaining a major piece of equipment operated by someone other than the one responsible for maintenance can lead to issues with failure resolution ("who-done-it"). As with general facility maintenance, airport operators typically agreed that using a sophisticated maintenance monitoring system was important.
3. **Staffing Considerations.** As with general facility maintenance, staffing requirements will vary from airport to airport. Staff requirements may include
   - Monitoring assets
   - Managing a preventive maintenance program
   - Help desk and troubleshooting
   - Problem resolution
   - Managing contractor staff

Business Considerations

This section addresses business issues and opportunities that should be considered when evaluating common use. The discussion is a high-level overview of the financial decisions that will need to be made, as well as a look at the results of research as to the common practices in the

Table 3-1. Facilities maintenance matrix.

D = Department of Aviation A = AIRLINE	MAINTENANCE MATRIX															
	AIRLINES EXCLUSIVE SPACE							AIRLINES JOINT SPACE							
	Holdrooms	Apron Area	Upper Level Offices	Lower Level Offices	GSE	Baggage Make-Up	Loading Brdgs/Bag Slide	Loading Brdgs/Bag Slide	Baggage Claim	Holdrooms	Apron Area	Ticket Counter	Ticket Office	Common Area	Sky Cap Podium
1. Access Control	D	--	D	D	D	D	D	D	D	D	--	D	--	D	--
2. Apron Sweeping	--	D	--	--	--	--	--	--	--	--	D	--	--	--	--
3. Conveyors/luggage movement sys.	--	--	A	A	A	A	--	--	D	--	--	D	--	D	D
4. CUTE System	D	--	D	D	--	D	--	--	D	D	--	D	D	D	D
a. Network cable plant	D	--	D	D	--	D	--	--	D	D	--	D	D	D	D
b. Telephone system cable plant(DOA)	D	--	D	D	D	D	D	D	D	D	--	D	D	D	D
c. Fids/Bids	D	D	D	D	--	D	--	--	D	D	--	D	D	D	D
5. Electrical															
a. Distribution	A	D	A	A	A	A	D	D	D	D	D	D	D	D	D
b. Exterior	D	D	A	A	A	D	D	D	D	D	D	D	D	D	D
c. Interior	A	--	A	A	A	A	D	D	D	D	D	D	D	D	D
d. Repairs	A	D	A	A	A	A	D	D	D	D	D	D	D	D	D
e. UPS/emergency power backup sys.	D	D	A	A	A	D	D	D	D	D	D	D	D	D	D
e. Relamping	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
6. Elevators/escalators	--	--	--	--	--	--	--	--	--	--	--	--	--	D	--
7. External/Internal roll-up doors	--	--	--	--	A	A	D	D	D	--	--	D	--	D	D
8. Exterior/Interior Doors	A	A	A	A	A	A	D	D	D	D	D	D	D	D	D
9. Fire Protection															
a. Fixed automatic systems	D	D	D	D	D	D	--	--	D	D	D	D	D	D	D
b. Portable fire extinguishers	D	A	D	D	D	D	A	D	D	D	A	D	D	D	--
c. Sprinkler/alarm	D	D	D	D	D	D	D	D	D	D	D	D	D	D	--
10. Furniture	D	--	A	A	A	A	--	--	D	D	--	--	A	D	A
11. General Maintenance															
a. Exterior	D	--	D	D	D	D	D	D	D	D	--	D	D	D	D
b. Non-structure	A	A	A	A	A	A	M	D	D	D	D	D	D	D	D
c. Structure	D	--	D	D	D	--	--	--	--	D	--	D	D	D	--
12. General Repairs	A	--	A	A	A	A	D	D	D	D	--	D	D	D	D
13. Heating and air conditioning															
a. Air distribution	D	--	D	D	D	D	D	D	D	D	--	D	D	D	--
b. Cooling	D	--	D	D	D	D	D	D	D	D	--	D	D	D	--
c. Heating	D	--	D	D	D	D	D	D	D	D	--	D	D	D	--
d. Operation	D	--	D	D	D	D	D	D	D	D	--	D	D	D	--
14. Janitorial	D	A	A	A	A	A	D	D	D	D	A	D	A	D	A
15. Keys/locks	D	--	D	D	D	D	D	D	D	D	--	D	D	D	D
16. Line layout															
a. Aircraft line	--	D	--	--	--	--	--	--	--	--	D	--	--	--	--
b. Lead-in	--	D	--	--	--	--	--	--	--	--	D	--	--	--	--
c. Line painting	--	D	--	--	--	--	--	--	--	--	D	--	--	--	--
17. Pest control	A	--	A	A	A	A	A	D	D	D	--	D	D	D	D
18. Public address system	D	--	--	--	--	--	--	--	D	D	--	D	--	D	D
a. Baggage ticket paging	D	--	--	--	--	--	--	--	D	D	--	D	--	D	D
b. Gate paging	D	--	--	--	--	--	--	--	D	D	--	D	--	D	D
c. General paging	D	A	D	D	--	D	--	--	D	D	A	D	D	D	D
19. Ramp Painting	--	D	--	--	--	--	--	--	--	--	D	--	--	--	--
20. Roof repairs	D	--	D	D	D	D	D	D	D	D	--	D	D	D	--
21. Sewage	--	--	A	A	A	A	--	--	D	--	--	--	D	D	--
a. Distribution	--	--	D	D	D	D	--	--	D	--	--	D	D	D	--
b. Fixtures	--	A	A	A	A	A	--	--	D	--	D	--	D	D	--
22. Signs															
a. Exterior (including gates)	--	D	--	--	--	--	D	D	--	--	D	--	--	D	D
b. Interior	D	--	D	D	--	--	D	D	D	D	--	D	D	D	D
23. Ticket counter/podium	A	--	--	--	--	--	A	D	--	D	--	D	D	D	D
24. Trash removal (dumpsters)	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
25. Water systems															
a. Boiler/hot water heater	--	--	D	D	D	D	--	--	D	--	--	--	D	D	--
b. Distribution	--	D	D	D	D	D	A	D	D	--	D	--	D	D	--
26. Window cleaning															
a. Exterior	D	--	D	D	D	--	--	D	D	D	--	--	D	D	--
b. Interior	D	--	D	D	D	--	--	D	D	D	--	--	D	D	--

industry today. Airline concerns and opportunities are noted first, followed by the concerns and opportunities reflecting the experience of airport operators.

Airport areas of impact are as follows:

- Check-In Area
- Gate Area
- Shared-Use Facilities
- General Business Considerations
- Leasing Options for Common-Use Technology Support

Note: Detailed information on each of these operational areas can be found in Appendix B6. Detailed and related costing information can be found in Chapter 4 of this Guide.

Check-In Area

Description

This section describes the business considerations for airport operators who assume the responsibility of owning and assigning check-in counters in a common-use model.

Issues to Consider

1. **Airline Issues and Considerations.** Most airlines stated a preference for leasing the counter exclusively, with airline-provided equipment. As with airport gate counters, most airlines do not see the need to move to common use when the airport operator has sufficient check-in counter space. Airlines stated a preference for a rates and charges model that distributed the cost of the common-use system across only the airlines using the common-use system. Airlines find themselves having to work in various business models, when it comes to check-in counters. Airlines maintain, as part of their business model, the ability to market themselves as terminal of choice, starting at the airport terminal check-in area. Common use limits their ability to do so.
2. **Airport Issues and Opportunities.**
   - *Cost Distributions.* Although no approaches for distributing costs to common-use assets are defined, airports surveyed generally used a hybrid compensatory type model as shown in Figure 3-8. The cost centers used in this model usually consist of a Terminal Area Cost Center, Airfield Area Cost Center, and Ground Side/Support Area Cost Center (see Figure 3-9).
   - *Rates and Charges.* Airport operators use various charging models to recover costs associated with common-use check-in counters. Some of these models include Per Time Use, Per Passenger, Per Check-in Counter Position, Per Total Counters and Per Aircraft Turn. Appendix B7 provides examples of use rates and the accompanying basis, or charge model, currently in practice at various unidentified airports.
   - *Leasing Considerations.* The current trend is for shorter term airline agreements. Of the airport operators surveyed, only 27% currently used a term agreement over 10 years in duration (see Figure 3-10).

Gate Area

Description

This section describes the business considerations for airport operators who assume the responsibility of owning and assigning gate counters and podiums in a common-use model.

Issues to Consider

1. **Airline Business Issues and Opportunities.** As with airport check-in counters, most airlines do not see the need to move to common use when the airport operator has sufficient gate capacity. Airlines stated a preference for a rates and charges model that distributed the cost

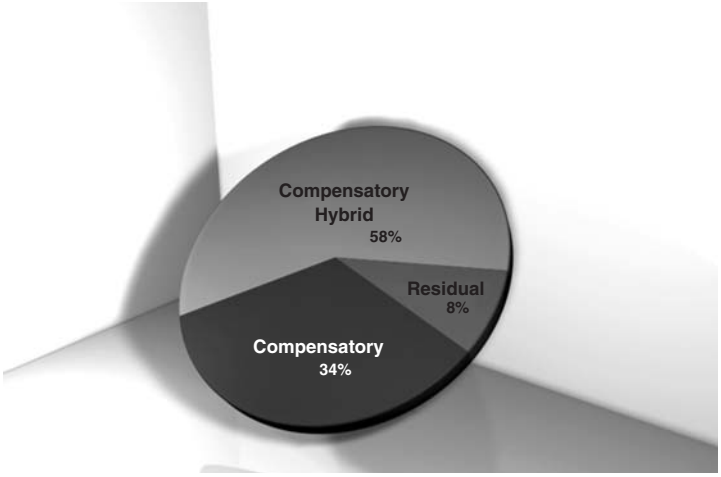

Figure 3-8. Cost distribution model.

Terminal Area Cost Center	Airfield Area Cost Center	Ground Side/Support Area Cost Center
Concourses	Landing areas	Parking Facilities
Boarding areas	Runways	Cargo Facilities
Pedestrian bridges	Taxiways	Aircraft Maintenance
Tunnels	Ramps	General Aviation
Lobbies	Aprons	Roadway Systems
Offices	Adjacent infield area	Inflight Kitchens
Baggage facilities	Perimeter dike	Hotels
Storage areas	Drainage pumping stations	Rental Cars
	Field lighting	Other Related Facilities
	Navigational aides	
	CFR support facilities	
	Cart roads	

Applied Operating Costs		Applied Capital Costs
Operations and Administration	Police	Debt Service
Maintenance	Fire	Equity Amortization
	Utilities	

Figure 3-9. Cost centers.

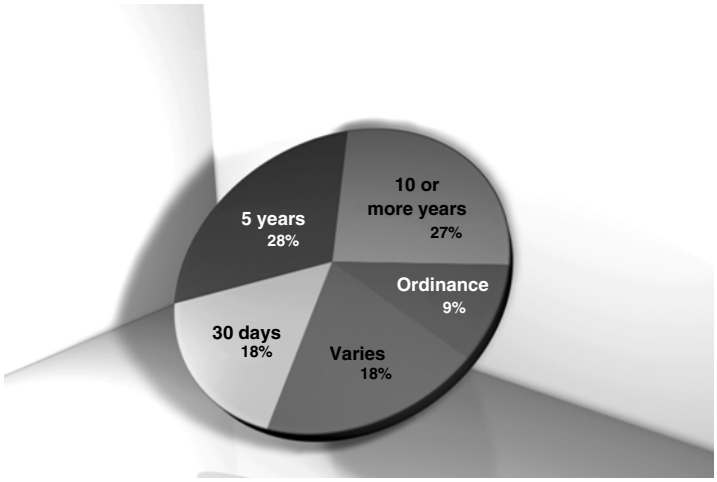

Figure 3-10. Term of use agreement.

of the common-use system across only the airlines using the common-use system. Airlines maintain, as part of their business model, the ability to market themselves as an airline of choice, starting at the airport terminal check-in area and continuing on to the gates. Common use limits their ability to do so.

2. **Airport Performance Issues and Opportunities.**
   - *Cost Distribution.* As with the cost distribution methods described for check-in counters, airport operators generally use a single Terminal Cost Center to distribute costs to gates, typically applied by total square footage of common-use gate spaces, to obtain the amount needed to recover for use of the spaces associated with a common-use gate.
   - *Rates and Charges.* The most common rate model used to charge back expenses allocated for use of a common gate is the Per Turn rate. Many airport operators further define a Per Turn rate by aircraft class turned or by type of gate, such as with, or without, a loading bridge. Other common rate models in practice include
     - Per landed weight
     - Per passenger
     - Per use
     - Per turn, versus other models. A per turn gate fee, as shown in Figure 3-11), may be charged by dividing the allocated gate revenue requirement by the total estimated turns.)
     - Threshold for break-even on per-turn costs. In its fundamental application, the threshold for break-even on a per-turn basis can be obtained by calculating the total cost applied to all common use gates, which may include costs for gate equipment, dividing that total cost among total common use gates to obtain the cost per gate. The cost per gate is then

$$\frac{\boxed{\text{Total Sq. Ft. Common-Use Gates}} \times \boxed{\text{Terminal Revenue Rqmt for Common-Use Gates per Sq. Ft.}}}{\boxed{\text{Estimated Total Turns}}}$$

Figure 3-11. Gate fee per turn.

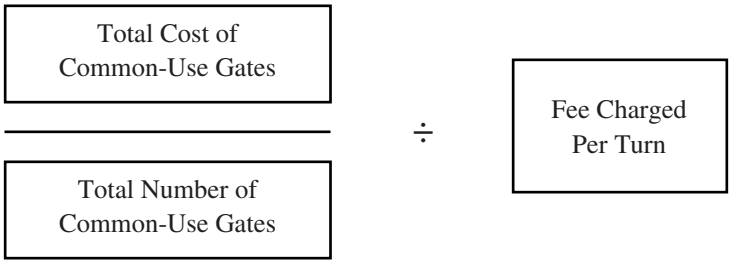

Figure 3-12. Number of turns needed for break-even per gate.

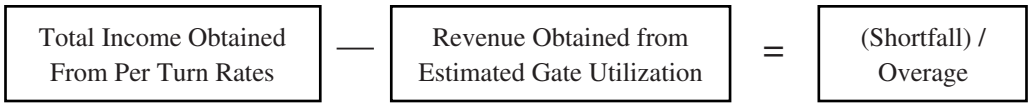

Figure 3-13. Formula for (shortfall)/overage.

divided by the per turn fee charged by the airport operator to identify the number of turns needed to recover the costs of the gate, as shown in Figure 3-12.

A shortfall or overage, as shown in Figure 3-13, can occur when the anticipated income is greater or lesser than the revenue obtained from the per turn rate based on estimated gate utilization. Based on the rates and charges provided by a major U.S. airport, the following 6-step example, as shown in Tables 3-2 through 3-7, presents a practical application for analyzing break-even using a per turn rate reflecting different gauges of aircraft.

- *Leasing Considerations.* Such considerations include
  - Use of preferential gate assignment by a non-signatory airline
  - Grandfathering/preferred arrangements
  - Minimum use and take-back criteria (see Figure 3-14). Not all airports implement a formal set of take-back criteria. In practice this is sometimes an unwritten policy such as if an airline drops below a certain number of turns, the airport operator will evaluate and take back use of the gate if needed. Figure 3-14 shows how surveyed airport operators defined minimum use in connection with take-back evaluations.

Shared-Use Facilities

Description

This section describes the business considerations for airport operators who assume the responsibility of owning and assigning shared-use facilities in a common-use model.

Table 3-2. Step 1: Identify costs per gate.

Cost Per Gate	
Sq. Ft. of Total Common Gates	12,500
(÷) Number of Common Gate	5
(=) Avg. Sq. Ft. per Common Gate	2,500
(x) Common Gate Sq. Ft. Rate	$350
(=) Total Sq. Ft. Cost per Gate:	$875,000
(+) Cost for Gate Equipment & Others:	$40,000
(=) Total Cost Per Gate:	**$915,000**

Table 3-3. Step 2: Estimate turns.

Estimated Turns	Estimated Annual Turns	Estimated Annual Turns Per Gate = Annual Turns (÷) No. of Gates (5)	Daily Turns Per Gate = Annual Turns Per Gate (÷) 365 Days
Wide body (200 +)	4,000	800	2.19
Narrow Body (100 - 199)	8,000	1,600	4.38
Regional (50 - 99)	500	100	0.27
Commuter (0 - 49)	1,000	200	0.55
Total	13,500	2,700	7.4

Table 3-4. Step 3: Establish charge per turn.

Charge Per Turn	Estimated Annual Turns per Gate	Assigned Weight FACTOR	Weighted Annual Turns (=) Estimated Annual Turns per Gate (X) Weight	Per Turn Rate (=) Total Cost Per Gate (÷) Estimated Annual Turns Per Gate (x) Assigned Weight Factor
Wide body (200 +)	800	1.8	1,440	$516.00
Narrow Body (100 - 199)	1,600	1	1,600	$287.00
Regional (50 - 99)	100	0.7	70	$201.00
Commuter (0 - 49)	200	0.4	80	$115.00
Total	2,700		3,190	

Table 3-5. Step 4: Calculate anticipated income.

Anticipated Income	Revenue Per Gate Per Aircraft Class (=) Per Turn Rate (x) Estimated Annual Turns per Gate	
Wide body (200 +)	$412,800	
Narrow Body (100 - 199)	$459,200	
Regional (50 - 99)	$20,100	
Commuter (0 - 49)	$23,000	
	Class	$915,100
Anticipated Income (=) Total Revenue Per Gate (x) Number of Common Gates (5)		$4,575,500

Table 3-6. Step 5: Calculate potential income (100% utilization).

Potential Income (100% Utilization)	
Total Cost Per Gate	$915,000
(÷) Total Estimated Average Turns/Year for All Aircraft Class	2,700
(=) Average Cost per Turn	$338.89
(x) Total Estimated Average Turns/Year for All Aircraft Class	2,700
(=) Estimated return per gate	$915,000
(x) Number of Common Gates	5
(=) Potential Income (100% utilization)	$4,575,000

Table 3-7. Step 6: Calculate anticipated (shortfall)/overage.

Anticipated (Shortfall)/Overage	
Anticipated Income	$4,575,500
(-) Potential Income (100% utilization):	$4,575,000
(=) Anticipated (Shortfall)/Overage:	$500

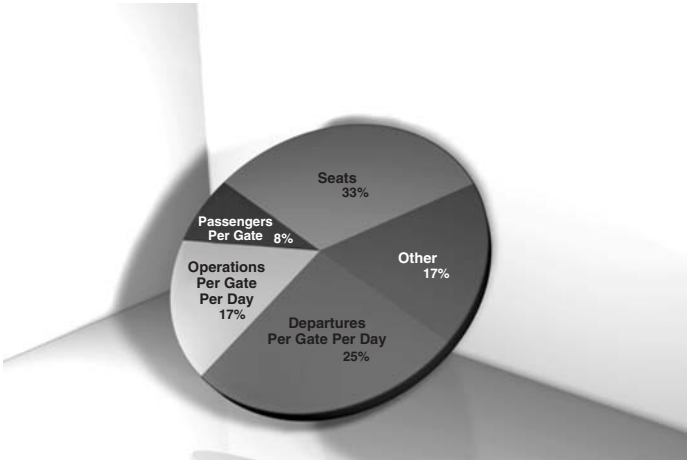

Figure 3-14. Criteria used to define minimum use.

Issues to Consider

1. **Airline Business Issues and Opportunities.** Airlines typically recognize the need for shared-use facilities, such as with baggage claim areas. Airlines did express concern about how airport operators attempted to recover costs.
2. **Airport Performance Issues and Opportunities.**
   - *Cost Distribution.* Costs for the maintenance, operation, and capital recovery of shared-use facilities may be prorated among the airlines according to a shared-use formula or based on their respective share of airline-leasable square footage.
   - *Rates and Charges.* Various rate mechanisms are used to recover costs for use of shared facilities, including the 90/10 split formula, per passenger fee, leased square footage, 10/45/45 formula, and other formulas.

General Business Considerations

Description

This section describes business considerations applicable across all aspects of common use.

Issues to Consider

1. **Leasing Considerations.** When establishing a leasing agreement for common use, the following items should be considered:
   - The airport operator's right to relocate the airline operation
   - How damage to common-use assets will be charged
   - Whether the airline may use either its own printer stock or airport-supplied common stock
   - Rules and allowances for modifications to airport-owned common-use equipment
   - Network usage requirements and any other airport-owned special systems supporting the common-use operation
   - Allowances on airline deployment of technologies
   - Placement of airline-owned signage
2. **Liability and Safety.** When asked about liability and safety issues directly associated with the check-in counter area, airport operators stated that there have not been any significant issues. Issues are generally addressed through standard liability clauses maintained in the Lease Agreement.
3. **Assets.** Because common-use assets are shared by all airlines, airport operators should build budget contingencies for damaged assets that cannot be charged directly to the responsible

party. Having a lease or operating agreement that clearly defines how damage to common-use assets will be charged is also operationally important.

4. **Competitive Factors.** From the airline perspective, common use often removes a competitive advantage. If not planned and implemented properly, common-use installations can adversely affect an airline's ability to process passengers (both at check-in and at boarding) in the means it sees best, thus giving a very important advantage to its competitors.
5. **Customer Service.** Airport operators view common use as a means to improve customer service. For the airline, common use can hinder the ability to provide customer service at the level the airline requires. Unlike the airport operator, who is concerned about only the customers using its facility, the airline must address customer service across all facilities it services. To address the different perspectives, airport operators should include customer service issues as one of the key early planning items with airlines.
6. **Marketing.** Airport operators generally market common use as a means of lowering the airline's cost of entry. For some airlines, common use is becoming a decision point for entering a new market, while other airlines view common use as a deterrent to entering the market.
7. **Environmental/Sustainability.** Common use is enabling airport operators to use new and sometimes creative ways to improve the sustainability of the airport environment. Common use provides the ability to consolidate resources from many airlines, to one, thereby promoting resource reductions in the following:
   - Power consumption
   - The footprint of physical machines
   - Thermal output (cooling requirements)
   - The costs of disposal hardware

     Some of the examples noted included
   - Technology:
     - Consolidation of communication infrastructure (e.g., copper, fiber, electronics) from many airline systems into one
     - Overall server and personal computer reductions
     - Reductions in telecommunication rooms
     - Reduction of emissions by providing a common source for aircraft pre-conditioned air. This allows planes to shutdown their auxiliary power units, which expend CO_2 gases and cost the airlines fuel to run. Significant cost savings and significant reductions in emissions are expected.
   - Through a common means of aircraft trash collection, one airport recycles coffee grounds, saving several tons of refuse a year.

Leasing Options for Common-Use Technology Support

Description

Airport operators typically lease technology maintenance service (and sometimes equipment) through one of the following means:

- The airport operator purchases equipment and provides maintenance services (either through contracted services, or in-house staff, or a combination of the two).
- The airport operator purchases equipment and airlines establish and pay for third-party maintenance service through a Common-use Local Users Board (CLUB) arrangement.
- Airlines lease equipment and maintenance services through a CLUB arrangement.
- Individual airlines lease equipment and maintenance services directly with third-party providers.

Issues to Consider

Some airlines think common-use CLUBS are problematic, given that most airlines are trying to cut costs rather than bolster the system, resulting in unacceptable service conditions. On the other hand, airports tend to care about maintaining and improving the system.

Technology

This section addresses technology issues and opportunities that should be considered when evaluating common use. The technologies and resources that may be required to support those technologies are discussed as well. Emerging technologies are presented briefly—these new technologies will have an overall effect on common use. As with many technologies, overarching industry effects also apply, so there is a discussion on PCI, sustainability, and business continuity.

Airline concerns and opportunities are noted first, followed by concerns and opportunities drawn from the experience of airport operators. A critical concern for the airlines is that implementation of common-use technologies often results in loss of airline-specific functionality in the equipment replaced. This loss can be both customer-facing functionality and operational functionality. To the extent these issues cannot be resolved, the "costs" to the airlines can be very significant. For example, some airlines have invested in developing ticket readers or gate information display systems that are not supported by most common-use installations. The airport operator should work with the airlines in identifying the potential for lost functionality and establish a mutual resolution.

Airport areas of impact include the following:

- Common-Use System Software—Agent Facing
- Common-Use System Software—Passenger Facing
- Airport Communications Infrastructure
- Common-Use Supporting Systems and Software
- Emerging Systems/Software and IT Issues
- Business Continuity, PCI-DSS, and Environmental Concerns
- IT Maintenance

Note: Detailed information on each of these areas can be found in Appendix B8.

Common-Use System Software – Agent Facing

Description

The first widely used and accepted common-use system software was IATA's Common Use Terminal Equipment (CUTE). It is known as an "agent-facing" system, because it is used by airline agents to manage passenger check-in and boarding. Whenever an airline agent logs onto the CUTE system, the terminal is reconfigured and connected to the airline's host system. From an agent's point of view, the agent is now working within his or her airline's information technology (IT) network.

CUTE was first implemented in 1984 for the Los Angeles Summer Olympic Games (Finn, 2005). It was at this point that IATA created the recommended practice (RP) 1797 defining CUTE. From 1984 until the time of the research, approximately 400 airports worldwide have installed some level of CUTE. Since 1984, several system providers have developed systems that, given the vagueness of the original CUTE RP, operate differently and impose differing airline

system modifications and requirements. This has been problematic for the airlines, which must make their software and operational model conform to each unique system. Making these modifications for compatibility's sake has been a burden for the airlines.

Given the deficiencies of CUTE, IATA developed a new standard of RPs for agent-facing common-use systems called Common-Use Passenger Processing Systems (CUPPS). The first draft of the RPs and associated Technical Requirements (TR) are complete and received unanimous approval at the Joint Passenger Services Conference (JPSC), conducted jointly by ATA and IATA. In addition to IATA, the CUPPS RP was adopted by ATA (RP 30.201) and ACI (RP 500A07), giving the RP industrywide endorsement.

In the current common-use environments, using CUTE applications, where system configurations differ from airport to airport, airlines tend to have more configuration management requirements on the back end. A prime purpose for CUPPS is to address this issue from a technology standards perspective, allowing airlines to manage only one configuration for all common-use airports in which they participate. From the airline perspective, having to deal only with the systems they implement greatly simplifies their operations.

Subsequent IATA plans are that the CUPPS RP will fully replace the current CUTE RP in fall of 2009. This action will eliminate airline concerns about continuing system compatibility to manage multiple system/vendor compatibility. As of the writing of this Guide, CUPPS is undergoing proof-of-concept testing at selected airport sites in the United States and other locations throughout the world. It is expected that this testing will be completed during the summer of 2009. Following completion of testing, IATA will update the TR and release it for use by the system providers. The Common-Use Self-Service (CUSS) Management Group is monitoring the progress of the CUPPS committee to assess future migration with CUPPS.

Issues to Consider

- **Airline Issues and Opportunities.** Many of the airlines, which oppose CUTE, have stated that once CUPPS is proven to meet expectations, these airlines will support CUPPS installations.
  - Grace period to move from CUTE Applications.
  - Costs, timing, and convenience of the certification and recertification process of CUPPS.
  - The ability to use airline proprietary systems at common-use locations.
  - Costs and effort to add an entrant airline to an existing CUPPS airport site.
  - Airlines have different needs for different types of paper stock.
- **Airport Performance Issues and Opportunities.**
  - CUTE-to-CUPPS Migration/Phasing requirements are as follows:
    - As with airlines, airport operators are anxious for and optimistic about the approved release of CUPPS.
    - Recognizing the near-release of CUPPS, IATA has developed recommended statements (see Table 3-8) for inclusion in Airport Request for Proposal Packages. These statements will help the migration of a CUTE-to-CUPPS platform.
  - Printers are critical for an agent-facing common-use system.
- **Physical Considerations.** Millwork can be affected by the installation of an agent-facing common-use system. Such equipment needs to be readily accessible for support and maintenance. In order to support multiple airlines, the amount of equipment installed at the check-in counters and the gates may differ from the amount of equipment installed with a proprietary system.
- **Staffing Considerations.** Staffing issues are discussed in the technology maintenance section later in this chapter.
- **Accessibility.** The airport operator needs to consider accessibility issues to support airline staff who may be using the equipment.

Table 3-8. IATA CUPPS RFP Guidelines (Sept 17, 2008).

Items to Consider:
Technical Specifications for CUPPS will not be finalized prior to May 2009.
Requirements and draft specifications will likely change based on experience from the CUPPS Pilot Projects. The extent and nature of these changes is difficult to predict.
The CUPPS Recommended Practice (RP) provides a hardware overview. Details are contained in the Requirement Specifications and draft Technical Specifications.
CUPPS will require a robust, standards based data network.
Airlines will be encouraged to transition from their current common use applications to the new CUPPS specifications within three years.
Airlines, following IATA Resolution 792, will be using 2D Bar Codes on boarding passes. Magnetic stripes (ATB2) will not be supported.
The CUPPS label has been applied to various concepts and products in anticipation of the new standard.
Actions Recommended for All Stakeholders:
Get the latest information available about CUPPS from www.iata.org and www.cupps.aero.
Become familiar with the draft CUPPS standards and be prepared to evaluate suppliers' compliance with: IATA - RP1797, ATA - RP30.201, and ACI - RP500A07.
Take advantage of the cost savings offered by using new technologies and not using old technologies.
Focus on the performance and results to be achieved.
Require CUPPS Bidders to:
Include costs to monitor the status of CUPPS and report on impact to the project.
Explain their approach to CUPPS compliance and their transition methodologies to CUPPS from a CUTE environment, and specific plans for supporting airlines during the transition period to CUPPS (e.g. until 2012).
Ensure designs are based on the current published final and draft CUPPS governing documents.
Identify any known deficiencies with bidder's proposed solution and expected CUPPS governing documents.
Identify costs to update the solution to accommodate the final version of the CUPPS governing documents.
Consult with airlines to determine their intended schedule for CUPPS compliance.
Actions Not Recommended:
Do not reference or base RFPs on the technical provisions of IATA RP 1797 published prior to 2008, that were written for CUTE and CUTE CLUBS.
Do not automatically specify workstations and devices that have traditionally been deployed for dedicated or CUTE environments.
Do not focus on the methods a supplier uses to achieve the required results and performance.
Contacts for Further Information:
Samuel Ingalls, Las Vegas McCarran Airport (CUPPS Chair): sami@mccarran.com
Bill Heppner, Alaska Airlines (CUPPS Co-Vice Chair): bill.heppner@alaskaair.com
Thomas Jeske, Lufthansa Airlines (CUPPS Co-Vice Chair): Thomas.jeske@dlh.de

Source: CUPPS 2008. "IATA CUPPS RFP Guidelines," Sept 17 Retrieved May 16 2009 from http://www.cupps.aero/documents.

Common-Use System Software—Passenger Facing

Description

In 2003, IATA published the Common Use Self Service (CUSS) Recommended Practice for multiple airlines to provide a check-in application for use by passengers on a single [kiosk] device (*Simplifying the Business Common Use Self Service*, 2006). CUSS devices run multiple airlines' check-in applications, providing the ability to relocate the check-in process away from traditional check-in counters. Passengers can check in and print boarding passes for flights in places that heretofore were unavailable. CUSS kiosks are typically located either at or near the check-in counters, or within queuing stations in the check-in areas, but other examples of kiosk locations include parking garages, rental car centers, and even off-site locations such as hotels and convention centers.

Approximately 80 airports worldwide have CUSS installed. CUTE has existed since 1984 while CUSS has existed since 2003. Only 60 airports worldwide have implemented both CUSS and CUTE. IATA recently updated the CUSS specification to CUSS 1.2, which addresses many of the airline-related concerns with CUSS 1.0 and 1.1.

Issues to Consider

1. **Airline Issues and Opportunities.** Typically, airlines tend to have more objections to CUSS than CUTE. Issues noted by the airlines include the following:
   - Airport operators may install CUSS kiosks in locations where an airline agent cannot see the equipment.
   - The costs of CUSS kiosks are expensive, starting at $12,000 per kiosk.
   - Airlines have developed software work-arounds for the different ways platforms operate.
2. **Airport Performance Issues and Opportunities.** CUTE and CUSS are not always installed together. In the United States, many airport operators are hesitant to install CUSS, primarily for two reasons:
   - The focus for U.S. airports has been on common-use gates. Only recently have airport operators begun to investigate common-use self-service seriously.
   - The airlines have already installed proprietary kiosks.

   Airport operators should determine if airlines will be permitted to use proprietary paper stock or be required to use the common-use paper stock. As with agent-facing common use, paper stock and printers are essential to a successful CUSS installation. Airline connectivity back to the host is required for CUSS kiosks. CUSS kiosks are becoming popular for remote check-in, both on the airport campus (e.g., at rental car centers and parking garages) and off the airport campus (e.g., at hotels, convention centers, and cruise ship terminals).
3. **Physical Considerations.** Placement of CUSS kiosks is important. Airport operators should work with the airlines to ensure that the placement of kiosks does not prevent airlines from using kiosks. Some airlines require that the kiosks be within sight of their agents for customer service/satisfaction considerations. Other airlines permit kiosks to be installed farther away so as to reduce passenger congestion in and around the check-in counters.
4. **Staffing Considerations.** Staffing considerations are addressed in the Technology Maintenance section.
5. **Accessibility.** Accessibility is a key issue for self-service kiosks. Several states are addressing accessibility, as well as the Federal Americans with Disabilities Act (ADA). Although self-service kiosks can be designed to accommodate accessibility issues (e.g., height, reach range, and other mobility challenges), the software provided by the airlines must also be designed to use any non-standard input devices added to the kiosk for better accessibility.

Airport Communications Infrastructure

Description

Wired and wireless networks (often referred to as premises distribution systems [PDS]) are the backbones of all other technology systems. The PDS allows technology systems to be interconnected throughout the airport campus and, if necessary, to the outside world. Although a PDS is not necessary in a common-use environment, it allows for the management of another finite resource—the space behind the walls, under the floors, in the ceilings, and in roadways.

Issues to Consider

1. **Airline Issues and Opportunities.** Airlines state that network connectivity in a common-use environment causes poor application performance and hampers trouble-shooting. When implementing common use in an airport, the airport operator often does not have an upgrade program in place to ensure that the technology solution remains current. Airport operators need to work with airlines to ensure that a technology refresh in a common-use environ-

ment does not adversely affect airline business. Airlines noted that airport operators should work to ensure that the common-use system has the necessary redundancies to ensure uptime is kept at acceptable standards.

2. **Airport Performance Issues and Opportunities.** Airport operators that provide a common communications infrastructure can better manage the pathways, resources, and space within the airport. Both passenger-and agent-facing common-use systems have exhibited latency issues when using a wireless connection. Support of system connectivity back to the airline host system and support of connectivity from airline back-offices to airline point-of-presence locations on the airport campus must be addressed early on. Network configurations—the actual configuration of the network, and the protocols that an airport operator's network uses, seriously affect the ability to connect the common-use system to the airline host system.
3. **Physical Considerations.** IT infrastructure is supported and routed through telecommunication closets, main distribution rooms, and core network rooms. Effective design of room spacing.

Common-Use Supporting Systems and Software

Description

This section presents and discusses other technology solutions which may be used to support common use. These solutions will vary by airport, depending on the decisions made by the airport operator, as well as factors such as airport configuration and operational decisions.

Issues to Consider

1. **Airline Issues and Opportunities.** Most U.S.-based airlines do not need a local departure control system. This makes the business case for purchasing such a system very difficult. Airlines tend not to use airport-operator-supplied baggage reconciliation systems. Airlines provide many applications to their agents for conducting business. Airlines today have to create data feeds for each airport specific to flight information. Airlines generally are concerned with problem reporting and resolution.
2. **Airport Performance Issues and Opportunities:**
   - Local departure control systems
   - Gate and Resource Management Systems
   - Baggage Reconciliation System
   - FIDS / BIDS Information Displays
   - GIDS Gate information Displays
   - RIDS
   - Operational Database. As shown in Figure 3-15, the AODB can facilitate data sharing, reduce data entry, and ensure that the data integrity throughout the airport operator's systems is more maintainable.
   - Dynamic Signage—airline information, wayfinding
   - Telephony
   - Wireless
3. **Accessibility.** According to the U.S. Access Board, dynamic displays are a key item to support accessibility.

Emerging Systems/Software and IT Issues

Description

This section discusses some of the emerging technology solutions coming to the aviation industry over the next several years. These technologies focus on the passenger processing expe-

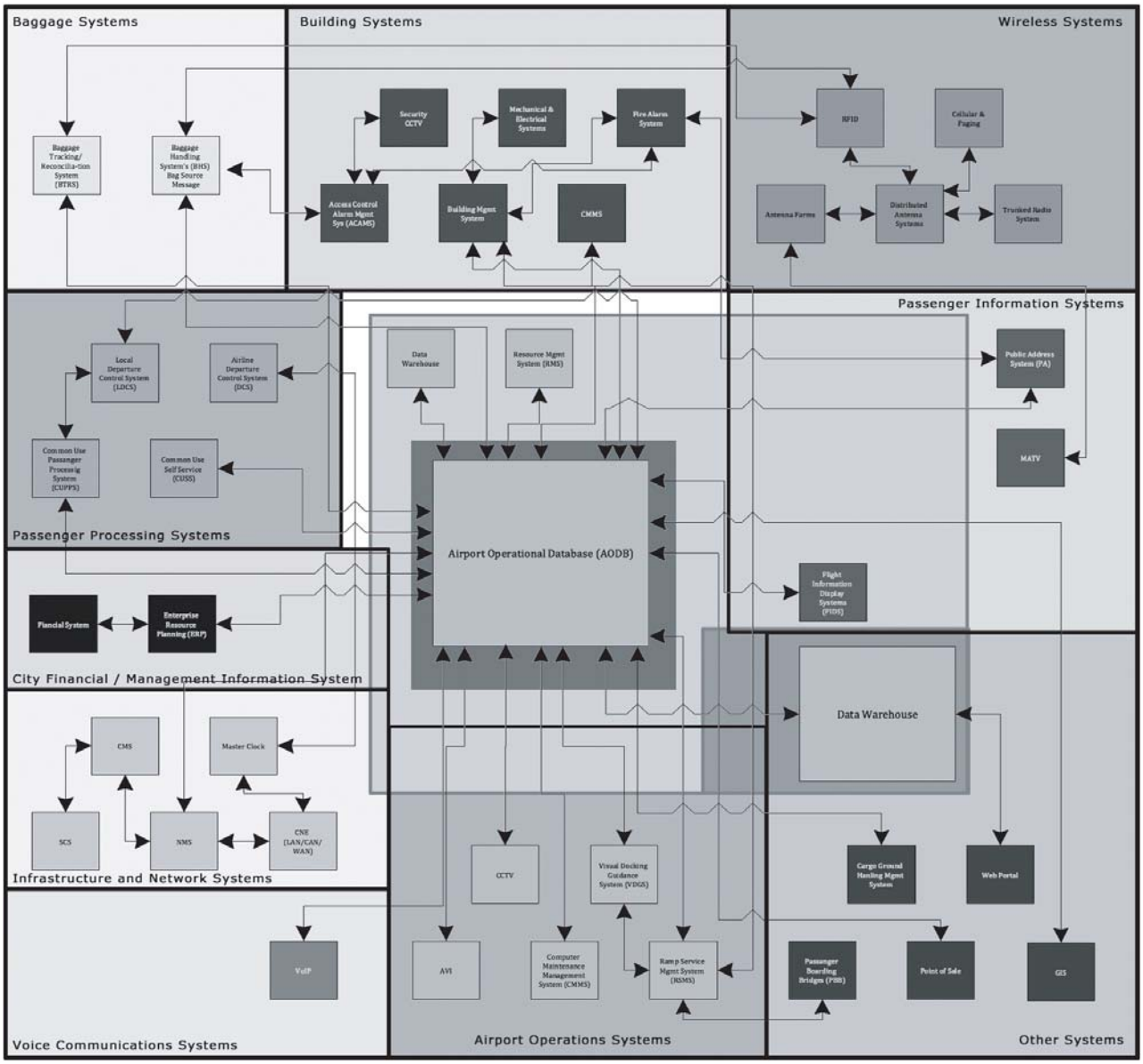

Figure 3-15. Air operations database (AODB).

rience and are designed to reduce the overall cost to the airlines of processing a passenger. Because these technologies focus on passenger processing, any common-use implementation should keep these emerging technologies in mind, as well as how they may affect various business processes.

Issues to Consider

1. Electronic boarding pass scanners are now being installed in several airports to support the bar coded boarding pass initiative by IATA.
2. IATA and ACI have created working groups to explore a common bag drop solution.
3. Self Tagging is currently in limited use outside of the United States.
4. AIDX, a subset of CUPPS, is a new data exchange standard that aims to simplify the exchange of flight data from airlines to airport operators.

Business Continuity, PCI-DSS, and Environmental Concerns

Description

This section discusses key business initiatives from an IT perspective that affect common-use implementations.

Issues to Consider

1. Business continuity is the process of ensuring that the business can operate should a disaster occur that affects IT systems. This is especially important for common-use implementations, given that the airport operator now owns IT systems that are key to the airlines business operations.
2. Sustainability is a key component in today's aviation environment. Sustainability can range from turning off monitors and computers when not in use to full integration of building management systems to reduce power consumption at low-use times. Sustainability is also key in the design and construction process. ACI has created a working group under the Business and Information Technology Committee (BIT) which is addressing sustainability issues for IT.
3. The payment card industry (PCI) security standards council, an assembly of major credit card companies (e.g., Visa, MasterCard, and American Express), was formed to manage the ongoing evolution of the PCI Data Security Standard (DSS).

Information Technology Maintenance

Description

This section discusses issues and opportunities associated with providing maintenance on common-use systems installed in airports. For common-use systems, maintenance support is either provided by airport operators or by third-party companies contracting directly with the airline(s). Airport-provided maintenance support typically includes a combination of airport staff and third-party contractor support.

Issues to Consider

1. **Airline Issues and Opportunities.** Airlines want the maintenance services provided to meet airline business requirements. Airline preference as to who provides the service varies depending on the specific airline business model. Some airlines stated that they have found airport operators are not always entirely knowledgeable about the systems and, therefore, the services provided may not be adequate. A primary concern voiced by airlines is that the Service Level Agreements are often negotiated between the airport operator and the service provider with little airline input. Some airlines noted that when implemented properly, airport operators provide very good maintenance service.

   Airlines noted that communication is important. Because each airport can have unique policies as to how maintenance is provided, it can be difficult for airlines to stay current with how and what changes are going to be made. Airlines also noted not having good communications with the airport operator regarding problem issues that may be between airline applications and airport-provided technology systems and infrastructure.
2. **Airport Performance Issues and Opportunities.** Establishment of a maintenance program presents the following issues and opportunities for the airport operator:
   - Determine whether the maintenance model will be an airport- or airline-controlled model.
   - Establish the goals of the maintenance program in coordination with the airlines.
   - Determine responsibilities of support levels, where different support levels indicate a specific extent of technical assistance.
   - Determine requirements for a Service Level Agreement (SLA).

- Establish the Change Management Process in support of the SLA. (Appendix A5 contains further information about change management processes and procedures.)
- Implement a continuous improvement program. Table 3-9 shows the frequency and type of problem calls. Note the excessive printer issues.

3. **Staffing Considerations.** Various IT support staff members may be required as follows:
   - Technology Liaison with airlines
   - Level 1 Technician Support—Helpdesk Technician
   - Level 2 Technician Support
   - Training—The airport operator will have to provide ongoing training as staff members migrate in and out of support roles.

The actual number of staff may vary, depending on the size and type of installation.

Table 3-9. Frequency and types of problem calls.

Common-Use System Problem Calls - Issue Classifications (12-month Period)				
Specific Issues	**Admin**	**Data**	**Printer**	**Boarding Pass Printer**
	Application Admin	Corrections	Any issue related to printing	Any issue related to boarding pass printers/printing
	Systems Admin	Updates		
	System Configuration			
	Application Security			
	Physical Security System Config			
	Multiple monitors not displaying			
	Network Admin			
	215	175	402	6
	Equipment	**Kiosk**	**Reader**	**Training**
	Replace/Repair of: Computers	Any issue related to one or more kiosks	Boarding pass readers	Any individual or group training
	Peripherals excludiing readers and printers		Bag Tag readers	
	Installation/Relocation and connection			
	15	2	12	1
	Monitor	**Supplies**	**Security**	
	Single monitor does not display	Card stock for boarding passes	Systems related to physical security	
	Indicates hardware only	Paper	Systems related to physical security	
		Bag tags		
	30	31	0	
	Bag Tag	**Facilities**	**Unkown**	
	Bag Tag printers	Any component related to the housing or support of common use systems or equipment	Could not be determined	
		Signage		
				TOTAL
	44	11	8	**952**

CHAPTER 4

Business Value Assessment

When an airport operator is considering common use, it is necessary to first analyze the cost-benefit issues and considerations associated with common use. This chapter provides (1) information to help identify and analyze these cost-benefits and (2) tools for guiding an airport operator through the initial steps of assessing the value that a common-use solution can provide to the airport. Decisionmakers interested in common use need to understand the following high-level concepts:

- Each aspect of common use has specific costs associated with it and may provide different sets of benefits.
- Business drivers dictate the type of common-use solution that may be implemented.
- Different common-use solutions have different sets of benefits and costs associated with them.

This chapter approaches common-use related cost-benefit issues with the following methodology:

- Establishing an understanding of cost considerations by common-use area.
- Breaking down specific benefits by business driver.
- Providing self-assessment tools to enable airports to assess
  - Intangible factors to identify if an airport is a candidate for common use.
  - Tangible factors to determine costs and provide the basis for the airport to determine if sufficient value can be obtained.

To facilitate this approach, Chapter 4 has three sections: Cost Considerations by Area, Cost-Benefit Breakdown by Business Driver, and Business Strategy Assessment.

Cost Considerations by Area

Each key area of common use has a specific set of costs associated with it. However, many of these areas have overlapping or shared costs. To provide a thorough understanding of the cost factors affecting common use, this section provides independent discussions specific to planning and design as well as the primary common-use functions of check-in counters, curbside check-in, off-site check-in, gate areas, flight and baggage information displays, ramp control services, and ground handling services. Within each of these areas, costs are addressed in terms of assets, facility modifications, services, staff, and intangibles. These costs reflect a range of factors that should be considered for each area. Not all costs will be necessary for each implementation; additional costs, which may not be discussed here, could be incurred by the airport operator or other key stakeholders.

Planning and Design

Planning and design consists of the effort required to take a common-use project from concept to implementation. Many of these costs will be necessary for any level of common-use implementation. Appendix C1 has a more detailed breakdown.

Services

Consulting and design support is the primary cost associated with the planning and design effort. During this phase, consultants may be needed to help with business-level assessments, airport capacity planning, airport master planning, and other services so that the airport operator can develop a clear understanding of the goals to accomplish. The following are typical key tasks for consultants:

- Identifying potential benefits
- Developing a business model
- Planning for and facilitating initial discussions with airlines
- Developing a common-use model that accommodates airlines' business models
- Conducting a study for how common use should be implemented
- Defining use criteria
- Establishing control responsibilities
- Assessing IT and facility infrastructure
- Assessing equipment assets to be transferred from airline to airport
- Preparing an RFP for the design project
- Developing schematic designs (possibly in conjunction with other disciplines)
- Developing functional requirements
- Developing construction drawings (possibly in conjunction with other disciplines)
- Developing technical specifications
- Preparing an RFP for installation of the system

Once the planning and initial requirements are developed, the airport operator may need to engage design consultants, architects, engineers, and other professional services to create a design that may be installed or constructed. This section does not distinguish among delivery methods of projects. Additional costs related specifically to the delivery method may be incurred. Project delivery methods include design-bid-build, design-build, and construction manager at risk, among other methods. Also, if the project is an upgrade to an existing terminal, the project could be done as a non-construction project, given that there may be no need for engineering or architectural services.

Staff

The airport operator's staff involvement throughout the planning and design phase is a significant cost that must be considered. Although a third-party design team can do much of the planning and design work, the direction and support required by the executive, management, and operational staff should not be underestimated.

Executive Level. Executive-level staff must provide the planning direction and probably will need to attend meetings to address the following key issues:

- Changes in airport and airline culture
- An initial airport definition of a common-use business model
- Airlines as business partners
- Accommodation of airline business models
- How common use should be implemented
- Definition of use criteria
- Establishment of control responsibilities

After the planning phase, an executive staff member will be needed to oversee the design project as the project sponsor.

Management Level. Management-level staff must provide input into the planning process and probably will need to attend meetings to address the following key issues:

- How common use should be implemented
- Definition of use criteria
- Establishment of control responsibilities
- Definition of IT and facility infrastructure requirements
- Definition of requirements for major equipment asset ownership

After the planning phase, a management staff member will be needed to manage the design project, provide design coordination, and attend design review meetings.

Operational Level. Operational-level staff must provide input into the planning process and probably will need to attend meetings to address the following key issues:

- How common use should be implemented
- Definition of IT and facility infrastructure requirements
- Definition of requirements for major equipment asset ownership

After the planning phase, key operational staff members will be needed to provide ongoing support to the design project by attending design review meetings.

Common-Use Implementation

The primary common-use functions addressed here include terminal check-in area, curbside check-in, off-site check-in, gate areas, flight/baggage information displays, ramp control services, and ground handling services. Many of these functions will have costs in common that would not necessarily be replicated if multiple functions were implemented. Also, the ramp control and ground handling services would likely only be implemented in conjunction with a gate area common-use solution.

Terminal Check-in Area

This section addresses the terminal check-in area. For a detailed listing of cost breakdowns, see Appendix C1.

Assets. Costs associated with new assets in the terminal check-in area depend heavily on the scale and scope of the common-use implementation. These costs could include

- General IT infrastructure upgrades
- CUTE/CUPPS hardware and software components
- Dynamic signage system hardware and software components
- Common-Use Self-Service (CUSS) Kiosks
- Voice over Internet Protocol (VoIP) System
- Millwork for check-in counters, display backwalls, dynamic signage cabinets, and CUSS kiosks
- Bag scales
- Baggage conveyers

Facility Modifications. Modifications to existing facilities may be required in order to accommodate new passenger processing practices and new systems implemented in the terminal check-in area. Facility modifications may include

- Security checkpoints
- Hold rooms
- Check-in areas

- Bag screening areas
- Baggage make up areas
- Telecommunication rooms
- Infrastructure pathways

Services

Outside services may be required to accommodate new passenger processing practices. These may include the following.

Consultants and Designers. Consultants, and possibly designers, probably will be needed to provide the following support:

- Identifying maximum counter availability during peak-hour operations as compared with gate capacity
- Addressing passenger processing challenges
- System design and implementation
- Counter configuration and signage design
- Assessment of modifications needed
- Design and construction of modifications

Contracts. Service contracts associated with the terminal check-in area may include

- Common-use systems warranty and maintenance
- Janitorial services
- Skycap services
- Wheelchair services

Certifications. Technology systems that operate to an industry standard may require certifications of the platforms and the applications in order for the solution to be considered a standard solution. These costs can affect both the airport operator and the airlines that use those solutions. Certification requirements associated with the terminal check-in area may include

- Common-use passenger processing certification
- CUSS certification

Staff. Implementing common use will affect the airport operator's staff. The level of effect will reflect the scale and scope of the implementation and how common use will be supported and maintained.

Executive Level. An executive staff member will need to serve as the project sponsor for the design and implementation of common use.

Management Level. At the management level, two full-time positions may need to be created to address specific ongoing common-use-related issues, if such responsibilities are not being met by the airport operator's current staff. These positions would be

- A manager to oversee new service development, policy and procedures development and enforcement, and design and implementation project management.
- A manager to work with the airlines to accommodate business processes and understand passenger flow methodologies and to negotiate and manage contracts on behalf of the airport.

In addition to new positions that may need to be created, management-level staff will need to be involved in defining rates and charges specific to the common-use implementation.

Operational Level. Operational staff members will be needed to provide design and installation project support as well as the following:

- Participation in design reviews
- Daily operations of new services (e.g., management of check-in counter assignments and monitoring of check-in counter usage)

- Maintaining new assets
- Help desk support
- Legal counsel for liability issues
- Customer service support
- Marketing program development and implementation
- Environmental impact assessment and support
- Financial support for account management
- Technology support for infrastructure and systems

Beyond the costs associated with staff time, at the operational level there will be additional costs for staff training to provide the necessary program support.

Intangibles. Implementing common use in the terminal check-in areas has intangible costs as well. Among these are

- Minimization of the unique branding capability of airlines
- Increased operational risk to the airlines because of the loss of control over system performance and functionality
- Increased risk to the airport because of the financial uncertainty during low-utilization periods, liability for effect on airline operations, and liability for safety.

Curbside Check-In Areas

This section addresses the curbside check-in areas. For a detailed listing of cost breakdowns, see Appendix C1.

Assets. Costs associated with new assets in the curbside check-in areas depend heavily on the scale and scope of the common-use implementation. These costs could include

- General IT infrastructure upgrades
- CUTE/CUPPS hardware and software components
- Dynamic signage system hardware and software components
- Millwork for curbside check-in counters and dynamic signage cabinets
- Bag scales
- Baggage conveyers

Facility Modifications. Modifications to existing facilities may be required to accommodate new passenger processing practices and new systems implemented to support common-use curbside check-in. Facility modifications could include

- Bag screening areas
- Baggage make up areas
- Telecommunication rooms
- Infrastructure pathways

Services

Outside services may be required to accommodate new passenger processing practices. These may include the following.

Consultants and Designers. Consultants will likely be needed to provide the following support:

- Addressing passenger processing challenges
- System design and implementation
- Counter configuration and signage design
- Assessment of modifications needed
- Design and construction of modifications

Contracts. Service contracts associated with the curbside check-in areas may include

- Common-use systems warranty and maintenance
- Janitorial services
- Skycap services
- Wheelchair services

Certifications. Certification requirements associated with the curbside check-in areas may include

- Common-use passenger processing certification
- CUSS certification

Staff. Implementing common use will affect the airport operator's staff. The level of effect will reflect the scale and scope of the implementation.

Executive Level. An executive staff member will need to serve as the project sponsor for the design and implementation of the common-use solution.

Management Level. At the management level, two full-time positions may need to be created to address specific ongoing common-use related issues, if such responsibilities are not being met by the airport operator's current staff:

- A manager to oversee new service development, policy and procedures development and enforcement, and design and implementation project management
- A manager to work with the airlines to accommodate business processes and understand passenger flow methodologies and to negotiate and manage contracts on behalf of the airport

In addition to the positions that may need to be created, management-level staff will need to be involved in defining rates and charges specific to the common-use implementation.

Operational Level. Operational staff members will be needed to provide design and installation project support as well as the following:

- Daily operations of new services (e.g., management of check-in counter assignments and monitoring of check-in counter usage)
- Maintenance of new assets
- Help desk support
- Legal counsel for liability issues
- Customer service support
- Marketing program development and implementation
- Environmental impact assessment and support
- Financial support for account management
- Technology support for infrastructure and systems

Beyond the costs associated with staff time, at the operational level there will be additional costs for staff training to provide the necessary program support.

Intangibles. Implementing common use in the curbside check-in areas has intangible costs as well. Among these are

- Minimization of the unique branding capability of airlines
- Increased operational risk to the airlines because of the loss of control over system performance and functionality
- Increased risk to the airport because of the liability for impact on airline operations and liability for safety
- Cross-training on all airline applications for curbside operators

Off-Site Check-In Operations

This section addresses off-site check-in operations. Costs may vary greatly. For example, a CUSS kiosk at a hotel or convention center may impose little or no cost to the airport operator, while a staffed check-in counter at an airport-owned rental car facility probably would be the full responsibility of the airport operator. For a detailed listing of cost breakdowns, see Appendix C1.

Assets. Costs associated with new assets for off-site check-in operations reflect the scale and scope of the common-use implementation. These costs could include

- General IT infrastructure upgrades
- Dynamic signage system hardware and software components
- CUSS Kiosks
- Millwork for check-in counters, dynamic signage cabinets, and CUSS kiosks

Facility Modifications. Modifications to existing facilities may be required in order to accommodate new passenger processing practices and new systems implemented in support of the off-site check-in operation. Facility modifications could include

- Bag screening areas (a new induction point may be necessary at the airport to support off-site operations)
- Baggage make up areas (a new induction point may be necessary at the airport to support off-site operations)
- Telecommunication rooms

Services

Outside services may be required to accommodate new passenger processing practices. These may include the following.

Consultants and Designers. Consultants and designers probably will be needed to provide the following support:

- Addressing passenger processing challenges
- System design and implementation
- Counter configuration and signage design
- Assessment of modifications needed
- Design and construction of modifications

Contracts. Service contracts associated with the off-site check-in operation may include

- Common-use systems warranty and maintenance
- Third-Party provider of off-site check-in operation

Certifications. Certification requirements associated with the off-site check-in operation may include CUSS certification.

Staff. Implementing common use will affect the airport operator's staff. The level of effect will reflect the scale and scope of the implementation.

Executive Level. An executive staff member will need to serve as the project sponsor for the design and implementation of the common-use solution.

Management Level. At the management level, two full-time positions may need to be created to address specific ongoing common-use related issues, if such responsibilities are not being met by the airport operator's current staff:

- A manager to provide oversight of new service development, policy and procedures development and enforcement, and design and implementation project management

- A manager to work with the airlines to accommodate business processes and understand passenger flow methodologies and to negotiate and manage contracts on behalf of the airport.

In addition to the new positions that may need to be created, there will need to be involvement from the management level to define rates and charges specific to the common-use implementation.

Operational Level. Operational staff members will be needed to provide design and installation project support as well as the following:

- Daily operations of new services
- Maintenance of new assets
- Help desk support
- Legal counsel for liability issues
- Customer service support
- Marketing program development and implementation
- Environmental impact assessment and support
- Financial support for account management
- Technology support for infrastructure and systems

Beyond the costs associated with staff time, at the operational level there will be additional costs for staff training to provide the necessary program support.

Intangibles. No costs have been identified.

Gate Areas

This section addresses gate and holdroom areas. For a detailed listing of cost breakdowns, see Appendix C1.

Assets. Costs associated with new assets in the gate areas depend heavily on the scale and scope of the common-use implementation. These costs could include

- General IT infrastructure upgrades
- CUTE/CUPPS hardware and software components
- Dynamic signage system hardware and software components
- Local departure control system components
- Gate management system components
- VoIP System
- Millwork for gate counters, display back walls, boarding podiums, recheck podiums, and dynamic signage cabinets
- Holdroom furnishings
- Passenger boarding bridges
- Airport-provided utilities for aircraft (i.e., preconditioned (PC) air, power, water)

Facility Modifications. Modifications to existing facilities may be required to accommodate new passenger processing practices and new systems or assets implemented in the gate areas. Facility modifications could include

- Security checkpoints
- Hold rooms
- Check-in areas
- Bag screening areas
- Baggage make up areas
- Telecommunication rooms

- Infrastructure pathways
- Passenger boarding bridges

Services

Outside services may be required to accommodate new passenger processing practices. These may include the following.

Consultants and designers. Consultants and designers probably will be needed to provide the following support:

- Identifying maximum gate availability during peak-hour operations
- Addressing passenger processing challenges
- System design and implementation
- Counter configuration and signage design
- Assessing modifications needed
- Design and construction of modifications

Contracts. Service contracts associated with the gate areas may include

- Common-use systems warranty and maintenance
- Janitorial services for holdrooms, FIS inspection area, jet bridges, ramps and walkways
- Wheelchair services

Certifications. Certification requirements associated with the gate areas may include common-use passenger processing certification.

Staff. Implementing common use will affect the airport operator's staff. The level of effect will reflect the scale and scope of the implementation.

Executive Level. An executive staff member will be needed to serve as the project sponsor for the design and implementation of the common-use solution.

Management Level. At the management level, two full-time positions may need to be created to address specific ongoing common-use related issues, if such responsibilities are not being met by the airport operator's current staff:

- A manager to provide oversight of new service development, policy and procedures development and enforcement, and design and implementation project management
- A manager to work with the airlines to accommodate business processes and understand passenger flow methodologies and to negotiate and manage contracts on behalf of the airport.

In addition to the new positions that may need to be created, there will need to be involvement from the management level to define rates and charges specific to the common-use implementation.

Operational Level. Operational staff members will be needed to provide design and installation project support as well as the following:

- Participation in design reviews
- Daily operations of new services (e.g., management of gate assignments, monitoring of gate usage, monitoring and inspection of passenger boarding bridges, and maintaining communications on an operational level with the airport operator's staff, airlines, and ground handlers)
- Maintenance of new assets
- Help desk support
- Legal counsel for liability issues
- Customer service support
- Marketing program development and implementation
- Environmental impact assessment and support

- Financial support for account management
- Technology support for infrastructure and systems
- Security support for access control

Beyond the costs associated with staff time, at the operational level there will be additional costs for staff training to provide the necessary program support.

Intangibles. Implementing common use in the gate areas has intangible costs as well. Among these are

- Minimization of the unique branding capability of airlines
- Increased operational risk to the airlines because of the loss of control over system performance and functionality
- Increased risk to the airport operator because of the financial uncertainty during low utilization periods, liability for impact on airline operations, and liability for safety

Flight and Baggage Information Display Systems

This section addresses flight and baggage information display systems. For a detailed listing of cost breakdowns, see Appendix C1.

Assets. Costs associated with new assets in support of the flight and baggage information display systems depend heavily on the scale and scope of the common-use implementation. These costs could include

- General IT infrastructure upgrades
- Flight and baggage information display system hardware and software components
- Millwork for information display cabinets

Facility Modifications. Modifications to existing facilities may be required to accommodate new systems and assets implemented in support of the flight and baggage information display systems. Facility modifications may include

- Telecommunication rooms
- Infrastructure pathways
- Structural changes to the facility to support large-format displays

Services

Outside services may be required to accommodate new passenger processing practices. These may include the following.

Consultants and designers. Consultants and designers probably will be needed to provide the following support:

- Conduct of studies to determine quantity and placement of information displays
- System design and implementation
- Assessment of modifications needed
- Design and construction of modifications

Contracts. Service contracts associated with the flight and baggage information display systems may include

- Common-use systems warranty and maintenance
- Display device warranty and maintenance

Certifications. Technology systems that operate to an industry standard may require certifications of the platforms and the applications in order for the solution to be considered a standard solution. These costs can affect both the airport operator and the airlines that use those solutions.

Staff. Implementing common use will affect the airport operator's staff. The level of effect will reflect the scale and scope of the implementation.

Executive Level. An executive staff member will be needed to serve as the project sponsor for the design and implementation of the common-use solution.

Management Level. At the management level, two full-time positions may need to be created to address specific ongoing common-use related issues, if such responsibilities are not being met by the airport operator's current staff:

- A manager to provide oversight of new service development, policy and procedures development and enforcement, and design and implementation project management
- A manager to work with the airlines to accommodate business processes and understand passenger flow methodologies and to negotiate and manage contracts on behalf of the airport

In addition to the new positions that may need to be created, there will need to be involvement from the management level to define rates and charges specific to the common-use implementation.

Operational Level. Operational staff members will be needed to provide design and installation project support as well as the following:

- Participation in design reviews
- Daily operations of the flight and baggage information display system
- Maintenance of new assets
- Help desk support
- Customer service support
- Marketing program development and implementation
- Financial support for account management
- Technology support for infrastructure and systems

Beyond the costs associated with staff time, at the operational level there will be additional costs for staff training to provide the necessary program support.

Intangibles. Implementing a common-use flight and baggage information display system has intangible costs as well. Among these are

- Minimization of the unique branding capability of airlines
- Increased operational risk to the airlines because of the loss of control over system performance and functionality
- Increased risk to the airport because of the financial uncertainty during low utilization periods and liability for impact on airline operations

Ramp Control Services

This section addresses ramp control services. For a detailed listing of cost breakdowns, see Appendix C1.

Assets. Costs associated with new assets in support of ramp control services depend heavily on the scale and scope of the common-use implementation. These costs could include

- Ramp control vehicles
- Gate management system
- User workstations
- Cabling infrastructure
- Backup generator
- Radio equipment

Facility Modifications. Modifications to existing facilities may be required to accommodate ramp control services. Facility modifications could include

- Ramp control tower construction
- Gate modifications
- Infrastructure pathways
- Extension of systems from the terminal

Services

Outside services may be required to accommodate new passenger processing practices. These may include the following.

Consultants and designers. Consultants and designers probably will be needed to provide the following support:

- Evaluation of the opportunity to take over ramp control
- Definition of ramp control stakeholder requirements, operating agreements and procedures
- System design, installation, and configuration
- Assessment of modifications needed
- Design and construction of modifications

Contracts. Depending on the airport operator's management strategy, the airport operator may choose to provide the full ramp control operation with in-house staff or use a combination of in-house staff and contract staff to provide ramp control services.

Certifications. Technology systems that operate to an industry standard may require certifications of the platforms and the applications in order for the solution to be considered a standard solution. These costs can affect both the airport operator and the airlines that use those solutions.

Staff

Implementing common use to any degree will affect the airport operator's staff. The level of effect will reflect the scale and scope of the implementation.

Executive Level. The executive level staff must provide direction in the assumption of ramp control services and probably will need to attend meetings to address the following key issues:

- Assumption of ramp control services
- Definition of ramp control stakeholder requirements, operating agreements and procedures

Once beyond the planning phase, an executive staff member will need to oversee the design project as the project sponsor.

Management Level. At the management level, five full-time positions may need to be created to address specific ongoing ramp-control-related issues, if such responsibilities are not being met by the airport operator's current staff:

- A manager to provide ramp control management, policy and procedures development and enforcement, and design and implementation project management
- Three controllers (to cover three shifts) to coordinate and administer ramp control and gate management and serve as the liaison for the airport operations staff, tenants, and the FAA Airport Traffic Control Tower for administering flow management staging of departing aircraft and strategic gate management for arriving aircraft
- A manager to work with the airlines to accommodate business processes, understand standards for aircraft movement and separation, and handle labor contract issues

Operational Level. Operational staff members will be needed to provide design and installation project support as well as the following:

- Daily operations of monitoring ramp operations (may be full-time airport operator's staff or contract)
- Maintenance of gate striping
- Maintenance of new assets
- Help desk support
- Legal counsel for liability issues
- Financial support for account management
- Technology support for infrastructure and systems
- Security support for closed-circuit television (CCTV) and access control

Beyond the costs associated with staff time, at the operational level there will be additional costs for staff training to provide the necessary program support.

Intangibles. Taking over ramp control services has intangible costs as well. Among these are

- Increased operational risk to the airlines because of the loss of control over ramp control operations
- Increased risk to the airport because of the liability for impact on airline operations and liability for safety
- Labor issues between the airport operator, airline, and others sharing ramp control facilities and services

Ground Handling/Ramp Services

This section addresses ground handling and ramp services. This section assumes that the airport operator will contract out the actual ground handling and ramp services work and will not require procurement of any real assets. If an airport operator chose to provide these services using airport-owned assets, those costs would have to be accounted for. For a detailed listing of cost breakdowns, see Appendix C1.

Assets. No costs have been identified.

Facilities Modifications. No costs have been identified.

Services

Outside services may be required to accommodate new passenger processing practices. These may include the following.

Consultants and designers. Consultants probably will be needed to provide the following support:

- Evaluation of the opportunity to take over ground handling services
- Definition of ground handling stakeholder requirements, operating agreements and procedures

Contracts. The most likely scenario for an airport providing ground handling services would be through an outsourced contract. Contracted services may include

- Air starter and ground power units
- Baggage handling
- Catering handling
- Aircraft cleaning
- Aircraft de-icing

- Lavatory maintenance
- Liaison with fuel suppliers
- Push back and towing
- Steps and air bridge service
- Water service

Certifications. Technology systems that operate to an industry standard may require certifications of the platforms and the applications in order for the solution to be considered a standard solution. These costs can affect both the airport operator and the airlines that use those solutions.

Staff

Implementing common use to any degree will affect the airport operator's staff. The level of effect will reflect the scale and scope of the implementation.

Executive Level. The executive-level staff must provide direction in the assumption of ground handling services and probably will need to attend meetings to address the following key issues:

- Assumption of ground handling services
- Definition of ground handling stakeholder requirements, operating agreements and procedures

Management Level. At the management level, two full-time positions may need to be created to address specific ongoing issues related to ground handling, if such responsibilities are not being met by the airport operator's current staff:

- A manager to provide ground handling contract management and policy and procedures development and enforcement
- A manager to work with the airlines to accommodate business processes

Operational Level. Operational staff members will be needed to provide the following:

- Legal counsel for liability issues.
- Financial support for account management.

Intangibles. Taking over ground handling services has intangible costs as well. Among these are

- Increased operational risk to the airlines because of the loss of control over ground handling performance and functionality
- Increased risk to the airport because of the liability for impact on airline operations and liability for safety.

Cost-Benefit Breakdown by Business Driver

The business driver or motive behind considering common use dictates the type of strategy that may be appropriate. Each strategy has potential costs based on the elements or functions that may be implemented. In addition, each strategy has primary and secondary benefits that may be achieved. The primary benefits will result from the business driver specifically and the secondary benefits will come as a result of intrinsic factors associated with the solution implemented. In order to provide a thorough understanding of the potential cost factors affecting each strategy, this section refers to the previous section for each of the common-use areas included. Within this section, the primary benefits associated with each strategy are discussed in detail. The secondary benefits achieved under each strategy are presented in greater detail in Appendix C2. These benefits reflect a range of potential benefits that may be realized for each given strategy. Not all benefits will necessarily be realized for each implementation based on varying circumstances. Additional benefits, not included here, may be realized.

The ten strategies discussed here are as follows:

1. Maximize Existing Facility Utilization
2. Avoid or Defer Construction
3. Avoid or Defer Other Capital Costs
4. Maximize Facility Flexibility
5. Decrease Airport Cost of Doing Business
6. Decrease Airline Cost of Doing Business
7. Improve Quality of Service to Airlines
8. Improve Quality of Service to Passengers
9. Increase Opportunities for Airlines to Add or Expand Service
10. Gain a Competitive Advantage over Other Airports

Maximize Existing Facility Utilization

To maximize the existing facility utilization, an airport operator should consider the current use of the facilities and the types of airlines operating there. This would include considering hub versus non-hub operations, as well as frequency of flights and saturation of gate utilization. The airport operator could consider implementing common use at as many gates, check-in counters, flight information displays, baggage areas, kiosks, and curb-side locations as feasible and assuming responsibility for providing ramp control and ground handling services for common-use areas.

To determine if common use would provide sufficient value toward satisfying this motive, the airport operator should compare the costs associated with implementing common use with the benefit derived from the possible increased utilization. Although increased utilization is the primary benefit sought under this business driver, various secondary benefits may be recognized.

Costs

Potential costs associated with implementing common use so as to maximize the existing facility utilization are described in detail in the previous section within the following areas:

- Planning and Design
- Terminal Check-in Areas
- Curbside Check-in
- Flight and Baggage Information Display Systems
- Gate Areas
- Ramp Control Services
- Ground Handling/Ramp Services

Benefits

The primary benefits of maximizing existing facility utilization are as follows:

- Creation of a competitive advantage for the airport operator by increasing the potential for airlines currently at the airport to expand service in the airport and manage overflow flights cost effectively
- Creation of cost savings and efficiency by enabling the airport operator to maintain greater control of airport costs through optimization of current gates, which allows the airport operator to avoid or delay capital expenditures
- Resource maximization that allows constrained airports with low utilization for non-hub airlines to operate more efficiently, thereby enabling the airport operator to (1) reduce congestion by distributing the arrivals and departures more evenly throughout the airport and (2) handle airlines and passengers during future construction work

Avoid or Defer Construction

To avoid or defer construction of a new facility, an airport operator could consider implementing common use at gate, check-in counter, and flight information display locations where multiple airlines with a low level of daily utilization could be accommodated on a set of shared gates, thereby increasing efficiency and alleviating the immediate demand for new facilities.

To determine if common use would provide sufficient value toward satisfying this motive, the airport operator should compare the costs associated with implementing common use with the savings derived from avoided or deferred construction projects. Although cost savings are the primary benefit sought under this business driver, various secondary benefits may be recognized.

Costs

Potential costs associated with implementing common use so as to avoid or defer capital costs specifically associated with new facility construction are described in the previous section within the following areas:

- Planning and Design
- Terminal Check-in Areas
- Flight and Baggage Information Display Systems
- Gate Areas

Benefits

The primary benefits of avoiding or deferring new facility construction costs are as follows:

- Cost savings and/or increased efficiency by strategically placing common use in areas that will permit the sharing of terminal check-in areas and gates by multiple airlines, resulting in an increased capacity for current operations, holiday season spikes, scheduled charters, and future growth without having to build new gates
- Resource maximization that allows constrained airports with low utilization for non-hub airlines to operate more efficiently

Avoid or Defer Other Capital Costs

To avoid or defer capital costs not specifically associated with construction of a new facility, an airport operator could consider implementing common use at gate, check-in counter, flight information display locations, and baggage areas to alleviate the need for infrastructure and systems replacements and significant renovations.

To determine if common use would provide sufficient value toward satisfying this motive, the airport operator should compare the costs associated with implementing common use with the savings derived from avoided or deferred non-construction capital projects. Although cost savings are the primary benefit sought under this business driver, various secondary benefits may be recognized.

Costs

Potential costs associated with implementing common use so as to avoid or defer capital costs not specifically associated with new facility construction are described in detail in the previous section within the following areas:

- Planning and Design
- Terminal Check-in Areas
- Flight and Baggage Information Display Systems
- Gate Areas

Benefits

The primary benefits of avoiding or deferring capital costs not associated with construction are as follows:

- Cost savings and/or increased efficiency by reducing the capital requirements of infrastructure and system replacements and facility renovations associated with accommodating airlines starting new service, increasing service during peak or holiday seasons, terminating service, and merging with other airlines
- Resource maximization that allows constrained airports with low utilization for non-hub airlines to operate more efficiently, thereby enabling the airport operator to (1) reduce congestion by distributing the arrivals and departures more evenly throughout the airport and (2) handle airlines and passengers during future construction work

Maximize Facility Flexibility

To maximize the existing facility flexibility, an airport operator could consider implementing common use at as many gates, check-in counters, flight information displays, baggage areas, kiosks, and curb-side locations as feasible and assuming the responsibility for providing ramp control and ground handling services for common-use areas.

To determine if common use would provide sufficient value toward satisfying this motive, the airport operator should compare the costs associated with implementing common use to the benefit gained from increased flexibility. Although increased flexibility is the primary benefit sought under this business driver, various secondary benefits may be recognized.

Costs

Potential costs associated with implementing common use to maximize facility flexibility are described in detail in the previous section within the following areas:

- Planning and Design
- Terminal Check-in Areas
- Curbside Check-in
- Gate Areas
- Flight and Baggage Information Display Systems
- Ramp Control Services
- Ground Handling and Ramp Services

Benefits

The primary benefits of maximizing facility flexibility are as follows:

- Increased operational flexibility, thereby allowing the airport operator to control how check-in counters and gates are being used. This enhances the airport's ability to respond to irregular operations, peaks due to seasonal air traffic, and consolidation due to airline mergers
- Enablement of the airport operator to accommodate new business in a more timely and cost effective manner for both the airport operator and the airline due to the lack of need for facility, infrastructure, and system modifications

Decrease Airport Cost of Doing Business

To decrease the airport's cost of doing business, an airport operator could consider implementing common use at gates, check-in counters, flight information displays, baggage areas, kiosks, and curb-side locations where operational cost reductions can be shown.

To determine if common use would provide sufficient value toward satisfying this motive, the airport operator should compare the costs associated with implementing common use to the savings realized from increased efficiency of airport operations. Although operational costs savings for the airport are the primary benefit sought under this business driver, various secondary benefits may be recognized.

Costs

Potential costs associated with implementing common use in order to decrease the cost of doing business for airport operators are described in detail in the previous section within the following areas:

- Planning and Design
- Terminal Check-in Areas
- Curbside Check-in
- Flight and Baggage Information Display Systems
- Gate Areas

Benefits

The primary benefits of decreasing the airport operator's cost of doing business are as follows:

- Potential cost savings because the airport operator can optimize gate and check-in counter usage, thereby enabling the temporary shutdown of a concourse during a downturn in air traffic or the delay of capital expenditures associated with new construction
- Standardization of equipment for the airport operator, thereby resulting in lower acquisition and maintenance costs
- Cost savings as a result of reducing the capital requirements of infrastructure and system replacements and facility renovations associated with accommodating airlines' starting new service, increasing service during peak or holiday seasons, terminating service, and merging with other airlines

Decrease Airline Cost of Doing Business

To decrease the cost of doing business for airlines, an airport operator could consider implementing common use at gates, check-in counters, flight information displays, baggage areas, kiosks, and curb-side locations and assuming responsibility for providing ramp control and ground handling services for common-use areas where airlines believe operational cost reductions can be shown. Typically, this would include gates in a specific terminal area that can be easily serviced by a specific check-in counter area through which multiple airlines with low utilization could be accommodated.

To determine if common use would provide sufficient value toward satisfying this motive, the airport operator should compare the costs associated with implementing common use with the savings realized from increased efficiency of airline operations. Although operational costs savings for the airlines is the primary benefit sought under this business driver, various secondary benefits may be recognized.

Costs

Potential costs associated with implementing common use so as to decrease the cost of doing business for airlines are described in detail in the previous section within the following areas:

- Planning and Design
- Terminal Check-in Areas

- Curbside Check-in
- Gate Areas
- Flight and Baggage Information Display Systems
- Ramp Control Services
- Ground Handling and Ramp Services

Benefits

The primary benefits of decreasing the airlines' cost of doing business are as follows:

- Potential cost savings because the airport operator can optimize gate and check-in counter usage, thereby enabling the avoidance or delay of capital expenditures associated with new construction
- Cost savings resulting from reducing the capital requirements of infrastructure and system replacements and facility renovations associated with accommodating airlines starting new service, increasing service during peak or holiday seasons, terminating service, and merging with other airlines
- Cost savings for both domestic and international carriers with a low number of flights per day by enabling them to pay for only the resources that they need, including shared gate and check-in counter usage, baggage systems, communications infrastructure, passenger processing equipment, and technical support
- Potential cost savings for carriers with a large number of flights per day by enabling them to accommodate overflow flights efficiently, reduce the number of gates required as operations change, and sublease gate and check-in counter time when not needed

Improve Quality of Service to Airlines

To improve the quality of service provided to the airlines, an airport operator could consider implementing common use at gates, check-in counters, flight information displays, baggage areas, kiosks, curb-side locations, and off-site check-in locations and assuming the responsibility for providing ramp control and ground handling services for common-use areas where airlines believe an increased quality of service can be achieved.

To determine if common use would provide sufficient value toward satisfying this motive, the airport operator should compare the costs associated with implementing common use to the benefit gained from increased quality of service to the airlines. Although increased quality of service for the airlines is the primary benefit sought under this business driver, various secondary benefits may be recognized.

Costs

Potential costs associated with implementing common use so as to improve the quality of service to airlines are described in detail in the previous section within the following areas:

- Planning and Design
- Terminal Check-in Areas
- Curbside Check-in
- Off-site Check-in Operations
- Gate Areas
- Flight and Baggage Information Display Systems
- Ramp Control Services
- Ground Handling and Ramp Services

Benefits

The primary benefits of improving the quality of service to airlines are as follows:

- Improved customer service for the airlines by improving control over ground handling operations airport-wide, thereby creating greater organization and reducing the need for airlines to manage ground handling contractors, improving baggage handling performance in airports with congested baggage systems, providing greater ramp control, enabling more timely technical support, and creating new opportunities for curbside services.
- Improved flexibility and convenience for the airlines by enabling airlines to move within the airport if desired, making it easier and more cost-effective for an airline to start new service, allowing operational expansion and reduction capabilities, better facilitating irregular operations and seasonal air traffic, and creating less disruption to airlines during future construction work.
- Minimized risk to airlines by reducing the requirement for airlines to lock into a long-term agreement.

Improve Quality of Service to Passengers

To improve the quality of service provided to the passengers, an airport operator could consider implementing common use at gates, check-in counters, flight information displays, baggage areas, kiosks, curb-side locations, and off-site check-in locations where the airport operator and/or the airlines believe an increased quality of service can be provided to the traveling public.

To determine if common use would provide sufficient value toward satisfying this motive, the airport operator should compare the costs associated with implementing common use with the benefit gained from increased quality of service to the passengers. Although increased quality of service for the passengers is the primary benefit sought under this business driver, various secondary benefits may be recognized.

Costs

Potential costs associated with implementing common use in order to improve the quality of service to passengers are described in detail in the previous section within the following areas:

- Planning and Design
- Terminal Check-in Areas
- Curbside Check-in
- Off-site Check-in Operations
- Flight and Baggage Information Display Systems
- Gate Areas

Benefits

The primary benefits of improving the quality of service to passengers are as follows:

- A more convenient check-in process resulting from the creation of alternatives for check-in through curbside services, self-service kiosks, and reductions in wait times due to the ability to add check-in counter space as needed
- Greater availability of information through common-use flight and baggage information systems and dynamic signage
- Fewer gate changes because of irregular operations
- Improved performance in baggage handling at airports with constrained baggage systems
- Greater quality control over skycap and janitorial services
- A more pleasant environment for passengers as a result of a standardized look and feel within the airport, reduced congestion as a result of balancing arrivals and departures throughout the airport, and less disruption during future construction work

Increase Opportunities for Airlines to Add or Expand Service

To increase the opportunities for airlines to add or expand existing service to an airport, an airport operator could consider implementing common use at gates, check-in counters, and flight information displays to enable expansion of utilization by existing carriers and new service for new carriers. Typical locations would include shoulder gates and counters for existing carriers likely to expand and small blocks of gates and counters to attract new carriers.

To determine if common use would provide sufficient value toward satisfying this motive, the airport operator should compare the costs associated with implementing common use with the benefit gained from increased utilization from existing and new carriers. Although increased utilization is the primary benefit sought under this business driver, various secondary benefits may be recognized.

Costs

Potential costs associated with implementing common use in order to expand opportunities for airlines to enter the market are described in detail in the previous section within the following areas:

- Planning and Design
- Terminal Check-in Areas
- Flight and Baggage Information Display Systems
- Gate Areas

Benefits

The primary benefits of increasing opportunities for airlines to add or expand service are as follows:

- Airlines can enter the market more rapidly, test the market, and grow operations with minimal capital outlay for facility, systems, and infrastructure modifications.
- Cost savings for both domestic and international carriers with a low number of flights per day by enabling them to pay for only the resources that they need, including shared gate and check-in counter usage, baggage systems, communications infrastructure, passenger processing equipment, and technical support.
- Expansion of services by carriers with a large number of flights per day by enabling them to efficiently accommodate overflow flights and seasonal spikes in air traffic without needing to pay for dedicated gate and check-in counter space.
- Minimized risk to airlines by reducing the requirement for airlines to lock into a long-term agreement.

Gain a Competitive Advantage over Other Airports

To gain a competitive advantage over other airports, an airport operator could consider implementing common use at gates, check-in counters, flight information displays, baggage areas, kiosks, curb-side locations, and off-site check-in locations and assuming the responsibility for providing ramp control and ground handling services for common-use areas to create a combination of cost savings, flexibility, quality of service, and expansion of utilization capabilities so as to attract passengers and airlines from competing airports.

To determine if common use would provide sufficient value toward satisfying this motive, the airport operator should compare the costs associated with implementing common use with the

benefit gained from additional carriers and passengers. Although an increase in carriers and/or passengers is the primary benefit sought under this business driver, various secondary benefits may be recognized.

Costs

Potential costs associated with implementing common use in order to gain a competitive advantage over other airports are described in detail the previous section within the following areas:

- Planning and Design
- Terminal Check-in Areas
- Curbside Check-in
- Off-site Check-in Operations
- Gate Areas
- Flight and Baggage Information Display Systems
- Ramp Control Services
- Ground Handling and Ramp Services

Benefits

The primary benefits of gaining a competitive advantage over other airports are as follows:

- Reduced barriers to entry and expansion for airlines by enabling airlines to enter the market more rapidly, test the market, and grow operations with minimal capital outlay for facility, systems, and infrastructure modifications
- Cost savings for both domestic and international carriers with a low number of flights per day by enabling them to pay for only the resources that they need, including shared gate and check-in counter usage, baggage systems, communications infrastructure, passenger processing equipment, and technical support
- Expanded services by carriers with a large number of flights per day by enabling them to efficiently accommodate overflow flights and seasonal spikes in air traffic without needing to pay for dedicated gate and check-in counter space
- Minimized risk to airlines by reducing the requirement for airlines to lock into a long-term agreement
- Greater quality of service for the airlines by creating customer service improvements to the airlines by improving control over ground handling operations airport-wide thereby creating greater organization and reducing the need for airlines to manage ground handling contractors, improving baggage handling performance in airports with congested baggage systems, providing greater ramp control, enabling more timely technical support, and creating new opportunities for curbside services
- Improved flexibility and convenience for airlines by enabling airlines to move within the airport if desired, making it easier and more cost-effective for an airline to start new service, allowing operational expansion and reduction capabilities, better facilitating irregular operations and seasonal air traffic, and creating less disruption to airlines during future construction work
- Minimized risk to airlines by reducing the need for airlines to lock into a long-term agreement
- Greater quality of service to the passengers through a more convenient check-in process as a result of creating alternatives for check-in through curbside services, self-service kiosks, and reductions in wait times because of the ability to add check-in counter space as needed.
- Greater availability of information and navigation through common-use flight and baggage information systems and dynamic signage
- Reduced gate changes due to irregular operations
- Improved performance in baggage handling at airports with constrained baggage systems
- Greater quality control over skycap and janitorial services

- A more pleasant environment for passengers as a result of a standardized look and feel within the airport, reduced congestion by balancing arrivals and departures throughout the airport, and less disruption during future construction work.

Business Strategy Assessment

This business strategy assessment has been designed to help airport operator staff determine the appropriateness of a common-use solution. This assessment is not intended to provide a recommendation for a specific solution, but to help airport operators determine if their airports are candidates for common use, and if so, draw out the information required to accomplish the first two steps in selecting a common-use solution:

- Business Feasibility Analysis
- Business Value Analysis

The Business Feasibility Analysis (see Appendix C3) provides questions to draw out issues that may or may not support further investigation. Airport operators must determine whether, in their estimation, there is sufficient cause to pursue common use.

If a determination has been made to move forward, the airport operator should complete the business value analysis worksheets (see Appendix C4). The business value analysis provides a structure for the airport operator to identify expected costs and benefits from the common-use strategy being considered. The business value analysis worksheets are intended to enable the airport operator to develop a basis for discussion with the airlines. In conjunction with these efforts, Chapter 5 provides a roadmap to facilitate decision making about common-use implementation.

Airport operators will find it helpful to have the documents listed in Table 4-1 available when completing this business strategy assessment.

Table 4-1. Documents needed for business strategy assessment.

Document	Revision Number	Revision Date	Checklist
Airport Master Plan			☐
Gate Use Policy			☐
Rates and Charges			☐
Demographic Study			☐
Sample Airline Lease Agreement			☐
IT/Communications Master Plan			☐

CHAPTER 5

Common-Use Implementation – A Framework for Success

The roadmap for airport common use is designed to help airport operators see the overall picture, define business cases, and plan implementation. This roadmap can be used for internal discussion of and education in developing a common-use airport vision and strategy. It can also be used as the basis for assessing the airport's existing and required common-use capabilities, in order to help understand its current position and develop a strategy for the future.

The roadmap emphasizes the need to balance the requirements of the airport operator and the key stakeholders (e.g., airlines, agencies, and solution and maintenance providers). Following this roadmap can assist an airport operator to break down traditional roadblocks when dealing with major implementation changes and new approaches.

This chapter presents a brief overview of what road mapping entails, its benefits, and the process involved in building a roadmap and then presents a 12-step Roadmap to Common Use and its key success factors.

Roadmapping

Definition

Roadmapping, in its simplest form, helps people to understand where they are today and where they would like to be at a stated point in the future. A roadmap provides a step-by-step transition path between these two states.

Benefits

Roadmaps provide structure, direction, and quantifiable objectives that can be shared and communicated with all stakeholders, both inside and outside the airport. Business benefits of roadmapping include the ability to

- Break transition plans into discrete and easily manageable steps
- Link airport operator business strategy decisions using a cost-benefit approach, thereby resulting in improved communication and consensus development
- Highlight the gaps between the key stakeholders
- Assist in developing priorities
- Support and develop consensus, which leads to focus and effectiveness
- Identify planned technology and asset management changes and determine when they will be introduced and/or come on line

Building the Roadmap

Roadmapping results in more than a simple roadmap document. It is an all-encompassing practice and collaboration that should involve all the key stakeholders' elements, including people, process, and supporting technology:

- **People.** The airport operator staff's engagement at all levels is key to ensuring ownership and focus. Building ownership during the iterative roadmapping process should ensure that gaps and challenges are covered during planning so as to avoid potential blocks later. It is important to involve all key stakeholders actively (i.e., terminal operations, airlines, facilities maintenance, ground handling providers, airport administration, and frontline technical staff).
- **Process.** Develop sustainable common-use approaches to ensure plans and roadmaps are actively planned over time; the process is iterative and needs supporting processes to measure progress.
- **Supporting Technology.** Implement common-use solutions and tools that result in long-term value for improved passenger processing.

Common-Use Roadmap

The steps of the Roadmap to Common Use follow and are illustrated in Appendix D.

Step 1. Audit Current State and Review Common-Use Criteria. Catalog the airport's current services and approaches as well as their interrelationships.

Step 2. Formulate a Cross-Organizational Common-Use Committee (C-U-C). An airport operator should establish a Common-Use Committee composed of representatives from all key stakeholders. The Committee composition should reflect the local airport operator's organizational structure and be tailored to the local airport situation. The Committee should include

- Appropriate airport operator representative(s) who look at the whole picture and are aware of common-use opportunities and challenges
- Appropriate airline representatives (e.g., local station managers and corporate management)
- Appropriate Government agency representatives
- Outsource aviation service providers (where appropriate)

Step 3. Perform Common-Use Gap Analysis and Cost-Benefit Analysis. The Committee should perform a formal analysis or risk assessment to identify the local criteria and framework for the cost-benefit analysis. This will serve as a basis for further activities. Elements to consider:

- Managing peaks
- Infrastructure investments
- Revenue enhancements
- Flexibility of infrastructure

Step 4. Make an Implementation Decision. During this step, the Committee should make a go/no-go decision to operate as a unified team and execute common-use strategies in a seamless process.

Step 5. Create/Refine Local Common-Use Strategy. Following a decision to move to common use, the Committee should create strategies that will foster an integrated seamless approach to common use among the airport operator, airlines, Government agencies, and other aviation service providers.

Step 6. Provide Training and Education. The Committee should, through appropriate training of frontline personnel and relevant stakeholders, ensure that all parties are implementing the new policies, practices, and procedures in accordance with the strategies created in Step 5.

Step 7. Execute the Initial Common-Use Steps. The Committee should have a unified approach to the common-use rollout to improve overall passenger processing.

Step 8. Check, Adjust, and Align to Industry Standards. Following the initial phase of a common-use strategy implementation, the Committee should meet and review the overall passenger benefits and incorporate lessons identified.

Step 9. Document Lessons Identified. The Committee should update practices, procedures, and policies. Also, the Committee should update the resources needs required to support common-use technologies and assets, as well as update and administer revised training sessions as appropriate.

Step 10. Perform a CUC Debrief. After the initial implementation, the Committee should meet to review the cost-benefit and added value to passenger processing and incorporate lessons learned from the recent implementation into the overall common-use strategy (Step 5).

Step 11. Enhance Common Use. The Committee should schedule regular communications with its associated stakeholders and share best practices identified during the implementation.

Step 12. Share Lessons Learned with the Aviation Community. On a regular basis, as the different common-use business models come on line, the Committee should share lessons learned and key operational experiences with the aviation community at large to learn from fellow airport operators who recently implemented common use.

Key Roadmapping Success Factors

- **Be compelling.** Identify common-use benefits both tangible and intangible.
- **Ensure top-down commitment.** Ensure the airport operator's executive team and key stakeholders are all on board.
- **Manage bottom-up commitment**. The airport operator's staff and key stakeholders must see the value of supporting the common-use approaches. All staff must be confident that the common-use approach will be of value and benefit to passenger processing.
- **Ensure cross-organizational commitment.** Persuading the cross-airport key stakeholders to establish and enhance common-use approaches through collaborative decision-making is imperative. Such commitment will ensure that actions result in a unified level of improved passenger processing across all airport stakeholders.

Conclusion

By introducing a simple roadmap process, an airport can begin to develop and adapt its underlying common-use approaches into more responsive passenger processing. Such planned common-use approaches can deliver both top and bottom benefits over the mid and long term. Key agents in this transformation include stakeholder intercommunication and top-down management support.

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APPENDIX A

Case Studies and Other Supplemental Information for Chapter 2

Appendix A1 Case Study: Des Moines International Airport A-2

Appendix A2 Case Study: Las Vegas McCarran International Airport A-4

Appendix A3 Case Study: Orlando International Airport A-7

Appendix A4 Case Study: Seattle-Tacoma International Airport A-9

Appendix A5 A Decision Maker's Guide to Planning and Change A-12

Appendix A6 Other Industries A-31

APPENDIX A1

Case Study: Des Moines International Airport *Small Airport on Approach to Common Use*

Des Moines International Airport

Interview Participants

Craig S. Smith, AAE., Aviation Director
Tim R. Stiles, CPA, Deputy Director, Finance and Administration
Kevin Foley, Airports Properties Administrator
Bill Konkol, Chief Aviation Technical Systems Specialist

Summary

Des Moines International Airport is constantly striving to improve customer service and has achieved one of the lowest security wait times in the nation as well as providing grab-n-go concessions service for today's passengers who are in a hurry. Des Moines International Airport saw a cost-effective opportunity to improve customer service by implementing a common-use system during the airport's concourse remodel project to meet expanding flight services. This move was intended to (1) reduce passenger congestion in the terminal by distributing airline services

better, (2) improve passenger processing time, and (3) consolidate services for ticketing and ground equipment maintenance for the benefit of both customers and airlines alike.

Profile

Des Moines International Airport, begun as a sideline business for airmail planes in the mid 1930s, has grown into a modern enterprise with passenger terminal facilities, two full-service runways, air cargo facilities, general aviation facilities, and a military base ready to meet the aviation needs and challenges for central Iowa well into the 21st Century. The airport is a critical component of the region's infrastructure for sustaining commerce, industrial activity, and supporting household and economic growth. The Des Moines International Airport employs 1,391 persons with an estimated payroll of $36.15 million. Although a normal day consists of 2,700 enplaned passengers, the airport experiences an influx of nearly double that capacity during the Iowa Caucuses.

Situation

Des Moines International Airport decided to implement a common-use system at the airport in 2009 to improve overall customer service and to take advantage of timing and cost-saving opportunities. For this small airport with limited funding for capital projects, this project is estimated to save at least $5 million by installing common-use systems rather than building out six additional hold rooms to meet expanding flight capacity needs. The timing of the project was ideal because the airport could combine this project with the concourse remodel project, thereby offsetting additional construction costs.

The Des Moines International Airport already maintains a telecommunication backbone and provides common-use services on this backbone. The future common-use system will use the installed backbone, thereby providing added benefit to the airport by using existing assets and support capabilities. Phase I of the project will install the common-use core system and infrastructure. Phase II will install the common-use system at all gates and most check-in counters.

The airport also plans on installing self-service kiosks in the lower level of the terminal and the gate hold rooms. These self-service kiosks will allow passengers to check in for any carrier at any counter or gate hold room. Plans may include curbside check-in. To support the common-use system, the airport will employ properly trained on-site technicians. The intent is to ensure problem resolution is immediate and effective. Today, when airline systems go down at the airport, proper technicians need to be called in for repairs, which results in much longer down time.

Des Moines International Airport believes that common use will provide flexibility for their airport gate operations, including handling seasonal air traffic more appropriately. Currently, their 12 gates are all operational, but are not efficiently utilized. For example, one gate is used by a single airline that has two flights per day, while, seasonally, some gates are utilized at all on certain days. Common use will provide flexibility to daily gate operations and during times of future construction projects. For instance, when Des Moines International Airport needs to close portions of the terminal for construction projects, common use will enable them to move airlines and passengers away from the closed areas. Re-aligning airport gates with the common-use system should also reduce passenger congestion in the airport by distributing airline services better throughout the terminal.

Des Moines International Airport is considering the feasibility of consolidating services such as ticketing and servicing ground equipment in the future. Common use can help this to become a reality.

APPENDIX A2

Case Study: Las Vegas McCarran International Airport *Common-Use Leadership*

Las Vegas McCarran International Airport

Interview Participants

Samuel Ingalls, AAE, Airport Information Systems Manager
Cecil Johnson, Assistant Director of Aviation, General Aviation
Bob Kingston, Assistant Director of Aviation, Facilities Division
Barbara Bolton, AAE, Aviation Business Manager
Randall Walker. Airport Director
Derrick Russell, Airport Ramp Management Supervisor

Summary

McCarran International Airport is owned and operated by the Clark County Department of Aviation. To help accommodate the airport's limited gate capacity and other limited resources, in the early 1990s, the Department decided to implement an airport-wide common-use system.

Being a destination-based airport, with a fairly equal distribution of airline services, the Department believed common use could provide much-needed facility flexibility.

Today, the entire culture of the Clark County Department of Aviation has changed from a landlord mentality to one of common use. At every level of the airport, from the Director down through all divisions within the Department, all employees focus on common use. Many of the employees within the Department only have experience in a common-use environment. Because of this pervasive view of common use, everything the Department performs and supports considers how to operate within a common-use environment.

More specifically, in 2003, executive management at Las Vegas McCarran International Airport had the vision and foresight to push for a complete overhaul of common-use standards at airports. That year, Department leadership, in partnership with IATA, ATA, and ACI, helped charter an industry-wide group, made up of airlines, airports, aviation information technology developers, and manufacturers, to re-write Common-Use Terminal Equipment (CUTE) standards that had not been updated since 1994. The outcome—the Common-Use Passenger Processing System Recommended Practices (CUPPS RP)—was unanimously accepted by the IATA, ATA, and ACI World Committees. As further testament to the airport's commitment to common-use practices, Las Vegas McCarran International Airport is participating in the pilot phase of the CUPPS RP program, which intends to prove the fundamental tenets of a true common-use system: the ability to take an airline check-in application and run it on any platform.

Profile

Las Vegas McCarran International Airport began as a private airstrip and has grown to serve approximately 44.1 million passengers annually. The airport generates nearly one half-billion dollars in revenue annually, has an economic impact of nearly $30 billion on Southern Nevada, and employs 18,500 people. Las Vegas McCarran International Airport plans to open a new Terminal 3 in 2012, despite the current slump in the aviation business. The airport plans to complete this project so as to ensure the capacity the airport needs to best serve the community in the future.

Situation

The decision to implement a common-use system at Las Vegas McCarran International Airport began with the foresight of Aviation Department leadership. A top-down approach to promoting common use at the airport has been successful because executives were able to embrace the concept and promote it throughout the organization, effectively making it part of the airport's culture. Because common use was supported and promoted by airport executives, other airport leaders were able to understand that common-use decisions are based on financial and fiscal benefits, such that the systems will drive more efficiency through the facilities and keep costs down through the reduction in capital. This knowledge has been necessary for airport leaders to understand, and more importantly, communicate effectively to airlines, given that airline buy-in was the primary factor in determining the success of the common-use implementation.

In choosing to install common use airport wide, the Department equipped all domestic and international gates and check-in counters with common-use equipment. For self-service check-in, the Department installed CUSS kiosks. Curbside and off-site check-in locations are also equipped with common-use equipment. All IT infrastructure, including the telecommunications backbone and airport special systems, are installed and provided as common use. All major facility assets (e.g., boarding bridges, baggage handling systems, and associated mechanical components) are owned by the Department and provided as common use. Additionally, the Depart-

ment services all common-use systems with internal staff and operates the ramp control in a Department-controlled common-use approach.

Common use has been successful at Las Vegas McCarran International Airport for several reasons. It has proven to provide maximum gate flexibility during times when airlines require special considerations. For example, at one time, America West would typically run 140 flights per day, needing 17 gates. Once the airline introduced a nighttime arrival package, America West had a temporary need for up to 24 gates. The installed common-use system allowed the Department to assign America West the gates used by Southwest during the day for their nighttime operations. This provided the overflow gates needed by America West and provided additional revenue to Southwest.

Common use has provided airport flexibility during times of both increased and decreased passenger volume. For instance, the airport was designed to accommodate 40 million passengers; however, they have reached capacity as high as 48 million passengers. Common use has allowed them to achieve 10 to 20% more than design capacity. During recent times when the Department was faced with closing a portion of their facility due to a 10 to 15% traffic decrease, common use enabled the Department to reduce actual revenue losses to less than 3%. This was accomplished by consolidating traffic around high-yield concessions, thus generating $1 to $1.5 million in revenue, and by shifting airlines to locations where they could save operating and maintenance costs.

Another benefit of common use has been improved ramp control efficiencies. When the Department needed to rebuild the apron areas around the gates, the Department was able to move airlines to other gates without affecting operations or incurring additional costs due to the move.

APPENDIX A3

Case Study: Orlando International Airport *Common Use—International to Domestic*

Orlando International Airport

Interview Participants

Robert Pete, PE, Assistant Director, Maintenance Department
Robert Copeland, Assistant Director, Commercial Properties

Summary

In keeping with "one of the Airports best-liked by travelers," the Greater Orlando Airport Authority seeks to maximize efficiency and use in the Airport, while adhering to reasonable standards and levels of customer service for the traveling public. The Authority's goal is to advance Orlando and Central Florida as the Premier Intermodal Gateway for Global Commerce.

Orlando International Airport has always been at the forefront of new technology development. To that end, the Authority has voluntarily participated in pilot programs, from airfield infrastructure to safety and security projects, many of which have been adopted nationwide. The

Authority is participating in the pilot phase of the Common-Use Passenger Processing System Recommended Practices (CUPPS RP) program that intends to prove the fundamental tenets of a true common-use system: the ability to take an airline check-in application and run it on any platform. Current plans are to take this common-use technology in operation in the International Concourse and apply it to domestic gates to defer capital expenditures resulting from the anticipated growth in air traffic over the next decade.

Profile

Orlando International Airport began as McCoy Air Force Base. It became Orlando Municipal Airport in 1928 primarily because commercial aircraft had become large enough to require use of the long runways that were already on site. Currently, the airport serves more than 35 million passengers annually and its four parallel runways allow for a triple-simultaneous operation. Its history and reputation are anchored in a foundation of vision and planning for the future. Its success has been in the design and construction of a flexible landside and airside terminal complex that reflects the community it serves while continuing to grow. Enhanced infrastructure and new technology will play key roles in the future development of Orlando International Airport.

Situation

In the late 1990s, the Authority procured and installed a common-use system throughout the airport area. Currently, 36 domestic gates and 16 international gates are on the common-use system. There are also 176 check-in counters for both domestic and international installed with the common-use system. However, the number of common-use check-in counters is changing. As the Authority upgrades the counters, they are installing common-use counters that have a smaller footprint.

It is the Authority's responsibility to maintain the common-use computer equipment, including monitors and keyboards at check-in counter agent positions, departure area check-in counters, and baggage recheck counters. Equipment includes check-in and boarding pass printers at the check-in counters and boarding pass readers at the check-in counters. In addition, the Authority provides the following other common-use-related systems: a local departure control system; a passenger paging audio system; 30 CUSS check-in kiosks; a gate management system; a premises distribution system (the IT backbone); and MUFIDS (Multi-User Flight Information Display System).

The Authority is pursuing further installation of common-use technology in the domestic gates because of expectations to exceed the designed capacity of their terminal under the current proprietary-use model. Implementing common use in the domestic gates will enable the Authority to defer construction costs of a new terminal building.

Because Orlando is a destination, vacation-based airport, it attracts air carriers who have short-term or limited slot requirements. Therefore, the implementation of common use can be an incentive to attract more of these types of airlines to the airport, because it reduces their startup costs for limited service to Orlando. Common use may also attract additional international carriers wishing to start operations at Orlando.

APPENDIX A4

Case Study: Seattle-Tacoma International Airport *Approaches to Common Use Leasing*

Seattle Tacoma International Airport

Interview Participants

Louis Navarro, Manager Aviation Properties
Nick Harrison, Sr. Manager Airport Operations
Borgan Anderson, Manager Aviation Finance and Budget

Summary

The Port of Seattle owns and operates the Seattle-Tacoma International Airport and serves as a fundamental facilitator of international trade, transportation, and travel to the Pacific Northwest. The vision of the Port of Seattle is to be the "cleanest, greenest, most energy-efficient port in the nation." The tagline for the Port is "Where a sustainable world is headed." The Port views the environmental programs as a competitive edge for their customers.

One of the biggest continuous improvement goals for Seattle-Tacoma International Airport is achieving high performance by establishing operational efficiencies. Operational efficiencies gained at the airport have been realized through the use of new technology that has created a shared terminal facilities operating environment. Shared facilities and equipment include a hybrid gate leasing program, common-use terminal equipment (CUTE) and common-use self-service (CUSS) kiosks for flight check in. This "Inspansion" focus, as the Port calls it, eliminates duplicate efforts, conserves resources, and reduces airport expansion requirements, resulting in reduced operational and capital development costs.

By negotiating a new agreement with airlines, which eliminated exclusive gates leases, this arrangement allows both preferential and airport-managed gates to be shared among airlines with relative ease. As a result, rates and charges now more accurately reflect actual airline use of this limited resource. In addition, it has resulted in increased aircraft turns at many of its gates, thus reducing the total number of gates necessary each day. This then translates directly into a reduced capital need for additional terminal space and makes more efficient use of terminal facilities such as the ticketing lobby, hold rooms, and concessions.

Profile

The Seattle-Tacoma International Airport has served the commercial aviation needs of the Puget Sound region for over five decades. Ranked as the 17th busiest airport in the United States, in 2008, it handled 32.1 million air passengers. In order to plan for continued projected passenger growth, the Port just finished two major landside construction projects: a longer and wider Concourse A and Gina Marie Lindsey International Arrivals Hall, which opened in the spring of 2004, and a new central terminal, which opened in the spring of 2005.

Situation

The Port chose to implement common use at its airport to support the long-term goals and strategies of the airport. These include

- Ensuring Airport Vitality—common-use solutions provide the foundation for improvements in operation and flexibility to handle the dynamic needs of the airport and airlines.
- Be a Catalyst for Regional Transportation Solutions—common use makes the most effective use of terminal facilities, supporting high-density development and enhanced customer service.
- Be a Leader in Transportation Security—components of the common-use system provide for barcode and passport reader scanning; a baggage sortation message generated by the system provides airlines with tools for positive passenger/baggage matching.
- Be a High-Performance Workplace—common use enables integration of airport and airline systems to achieve operational efficiencies and enhance management information for capacity and financial management.

Seattle-Tacoma International Airport has 15 domestic common-use gates and 8 common-use check-in counter positions in the Central Terminal building. There are 9 common-use gates and 30 common-use check-in counter positions for international flights in the South Satellite Terminal. There is one common-use baggage system that serves 10 carriers and has 14 inputs and 8 makeup devices. Although the Airport has 90% connectivity between baggage systems, the Port is working toward a greater level of connectivity in the future.

The Port's goal is to install common-use equipment at all 81 gates for cost and flexibility reasons. The capital cost for the airport to own the common-use equipment is half of what the airlines

would pay for owning it outright. Gate flexibility is paramount given that airline operations are unpredictable and can result in merged operations, which can lead to costly gate changes.

The Port is also moving to eliminate airline-exclusive gate leases in order to create operational efficiencies. In the past, airlines treated exclusive gate leases as assets and paid rent on gates even though they might be used infrequently. Control of gates enabled airlines to gain a competitive advantage at airports where the supply of gates was constrained. This new arrangement is called a Signatory Lease and Operating Agreement and combines residual and compensatory elements. It allows both preferential and airport-managed gates to be shared among airlines with relative ease and increases the number of flights that can be served each day at individual gates, reducing the need for constructing additional gates and associated terminal space. As a result, rates and charges more accurately reflect actual airline use of this limited resource.

Seattle-Tacoma International Airport's hybrid gate leasing program reflects current trends in the aviation industry to move from exclusive gates to common-use gates with shorter term airline agreements that allow airlines to re-evaluate use of their space. Under Seattle's program, gates are allocated once per year, allowing month-to-month agreements for non-signatory airlines with a 10% penalty on rates. Each year, airlines can give back gates or request the use of more gates. The Port has set fees for gates at a set rate of six turns per gate. For standard gate equipment, the Port has developed separate costs for loading bridges. Seating is built into the common-use rate, not reconciled. At their current fee structure, up to a threshold, the Port is finding that airlines would rather pay common-use charges, than lease an extra gate.

Benefits of the gate leasing program include the elimination of vacancy risks, the delineation of how much the airport can spend without consulting with airlines, and ultimately greater control for the airport over its facilities.

APPENDIX A5

A Decision Maker's Guide to Planning and Change

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Introduction

The air transportation industry is in a time of turbulent, pronounced change and needs to consider how best to position the organizations that work in this industry to excel. This is not unique to the air transportation industry—every critical infrastructure is affected: food and agriculture, energy, water, chemical, public health, emergency services, government, defense, telecommunications, banking, manufacturing, and transportation. The following create a need for a fresh look at costs, resources, and activities:

- Globalization of business creates increased financial, technical, and operational opportunities for growth, collaboration, and development.
- Technological changes create opportunities for service delivery, including service optimization, communication, and customer service.
- Competitive challenges, such as increased fuel costs, motivate the air transportation industry to seek greater efficiencies and cost-effectiveness.
- Customers increasingly demand service that is responsive, customer-friendly, and available 24/7 with a certain degree of self-service capability.
- Decreased funding, increased costs, and limited public resources drive the air transportation industry to optimize existing processes and alternative service delivery options.
- Communications impacts (including the type, amount and availability of news coverage) matter because they influence customer perceptions and later the public's expectations.

Planning and Managing Change Framework

"Creative destruction," in contrast with management philosophies based on the assumption of continuity, is required of organizations seeking to sustain long-term performance.[1] Foster and Kaplan's research indicated that emphasizing continuity does not create value at a pace sustainable with that of market changes. Similarly, maintaining the status quo often precedes a decline in performance. Organizations face dynamic conditions with accompanying opportunities and challenges. Characteristics of successful organizational change include the following[2]:

1. Change has top management support.
2. Change builds on the unique strengths of the organization.
3. Change specifics are not imposed from the top; all levels of the organization are involved in all stages of the effort.
4. Change is holistic and considers a broad range of factors.
5. Change is planned.
6. Change includes a re-evaluation of all aspects of an organization potentially affected, including authority, power, information access, and performance appraisal/reward systems.
7. Change is approached from a stakeholder's perspective.
8. Change becomes ongoing and part of continuous improvement.

The Planning and Managing Change Framework (see Figure A5-1) and guidance contained herein describes these eight criteria.

In Task 1, Assess Change Readiness, the researchers consider whether an organization is ready to embark on or engage in a change initiative, including the criteria for determining readiness. In Task 2, Plan Strategy, the researchers develop a shared understanding of external and internal

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[1] R.N. Foster & S. Kaplan (2001). *Creative Destruction: Why Companies That Are Built To Last Underperform The Market, And How To Successfully Transform Them.* New York: Doubleday, pp. 9, 10.

[2] Adapted from James O'Toole 1995 study as included in W.W. Burke (2008). *Organization Change: Theory and Practice* (2nd ed.). Los Angeles: Sage Publications, p. 279.

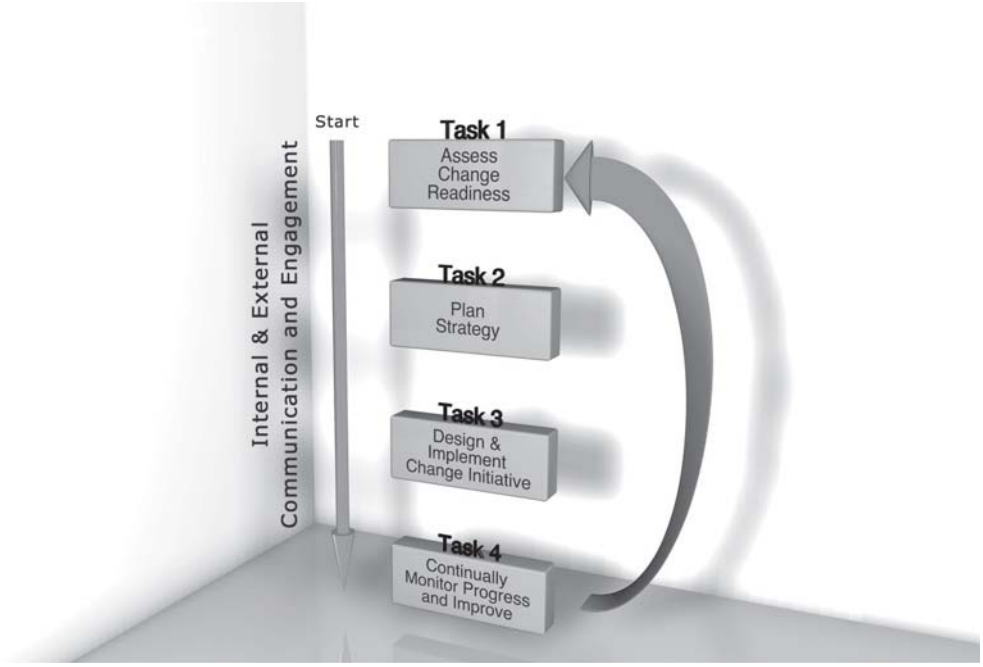

Figure A5-1. Planning and managing change framework.

variables affecting the organization, envision a new future, and assess the gap between the current state and desired future. Within this gap are elements of a strategic plan. In Task 3, Design and Implement Change Initiative, the vision and goals defined in Task 2 are translated into actionable, tactical plans for implementation. Task 4, Continually Monitor Progress and Improve, incorporates monitoring and measurement, data collection, analysis, and adjustments based on actual performance. The arrow from Task 4 to Task 1 signifies that, based on feedback, an organization may embark again on a change initiative. From start to finish, communication and engagement of internal and external stakeholders is key to a change initiative's success.

Change Readiness Assessment

Key Questions

- Is change needed?
- Is the organization ready to change?

Description

Planned or unplanned, change constantly occurs internally and externally with varying effects on organizations. No one person single-handedly creates change because change takes the input, buy-in, and committed action of many. The role of the leadership team is to provide the direction needed to focus energies appropriately at the right time and in the right ways. Organizations often begin a change process with planning, skipping the important step of assessing change readiness. An often-used equation in organizational change literature[3] is

$$C = (ABD) > X$$

[3] See W.W. Burke (2008). *Organization change: Theory and practice* (2nd ed.). Los Angeles: Sage Publications, p. 141.

where

C = Change
A = Level of dissatisfaction with the status quo
B = Clear future state
D = Practical first steps toward desired future state
X = Cost

There has to be some level of dissatisfaction (A) for a change initiative to make sense. Goals (B) and some indication of practical first steps need to exist; otherwise, the cost may be viewed as too high. There must be a sense of need and direction combined with motivation to indicate change readiness.

A change initiative is NOT right for an organization when

- Only minor changes are warranted or desired, so there is no sense of urgency.
- There is no champion or executive sponsor.
- The leadership or management team is not fully committed.
- Commitment cannot be secured from other key stakeholders.
- Resources are not or cannot be committed up front.

Assessing change readiness includes the following:

- **A sense of urgency and impetus for change.** There needs to be a balanced understanding of (1) the necessity for change based on the current external realities facing an organization (e.g., customer and supplier needs, competitors' strategies, industry trends, market challenges and opportunities, societal values, legislation and any other relevant consideration) and (2) current practices, technology, and organizational factors and their implication for changes being explored. When considering a change initiative, an organization needs to identify and understand forces driving the need for change and then link those drivers to potential effects on service provision, customers, and the organization. Critically consider and overtly identify the price of making no change versus the price of moving forward with a change. Develop a set of messages that describes this sense of urgency and compels others to action.
- **Executive champion and sponsorship.** Without executive sponsorship, many good ideas die on the vine. Someone with power, authority, and influence must champion, commit to, and participate in a change initiative. Their willingness to back and support a change initiative communicates the importance of action. This person must "have the courage to initiate change and start moving obstacles and. . . the political skill to live and succeed in the real world where there are differing objectives and conflicting demands."[4] If a member of the organization has an idea and is not the executive champion, then the organization needs to consider who should be and what steps need to be taken to gain their sponsorship.
- **Clarify the change vision.** Translate the sense of urgency or business case into a compelling picture that draws others toward the need for change. Define new people, process, and technology requirements aligned with the strategy. Specify new behaviors for the future in a way that others can see themselves within that future. The vision needs to communicate the proposed change, why it is being proposed, the sense of urgency or why now, and the effects of not changing.
- **Buy-in by key stakeholders.** This includes other leaders within the organization, the employees, and external stakeholders (e.g., customers, key business partners, vendors, and regulators). The time to engage stakeholders in conversation about factors affecting an organization is

[4] L.D. Goodstein, T.M. Nolan, J.W. Pfeiffer, J. W. (1993). *Applied strategic planning: A comprehensive guide—how to develop a plan that really works.* New York: McGraw-Hill, p 98.

early and often. This element often is met with resistance for various reasons. For example, the organization lacks information, or is afraid of revealing information about the business. Although these concerns are real and valid, they hamper change initiatives from moving forward. Stakeholders need to understand what is being suggested, why it needs to be done, and why now. Their input can provide important feedback and validate the necessity of change. Two-way engagement and buy-in align others with a shared understanding and ownership of the need for change.

- **Engage leadership at all levels.** Identify leadership roles and behaviors required for success. Establish clear accountability for fulfilling responsibilities. Set strategies for existing support and leadership of key people and initiatives. Cascade responsibility for leading change throughout the organization.
- **Plan the change initiative.** Develop a guiding team for the change initiative with deliberate selection of who should be involved. Determine what level of involvement stakeholders should have in planning and what their roles and responsibilities might be. Clarify the information people will need to make decisions. Define a preliminary schedule and timeline for completion. Obtain funding and resource labor commitments. Commitments to funding, time, and resource availability must be obtained before proceeding.
- **Communicate the change vision and purpose broadly.** Use varied means to communicate throughout the entire organization. Hold leaders accountable for communication. Encourage two-way communication.

Checklist

❒ Create a sense of urgency by identifying and clarifying basic, important issues facing the organization as a whole. Ask
  - What are areas of dissatisfaction for people in the organization?
  - How does the organization stack up competitively in the marketplace and why, including both customers and competitor factors?
  - Will this change initiative result in increased efficiency, improved quality, some sort of benefits, or cost avoidance or reductions?
  - How compelling is the cost of doing nothing?
  - Taken together, do the factors above outweigh the benefits of maintaining the status quo?

❒ Ensure an executive sponsor or champion exists with the power, authority, and influence to support change initiative in moving forward. If not, who should be engaged and what is the best way to gain sponsorship?

❒ Clarify the vision and purpose for the change initiative by asking
  - What do you hope to achieve with this change effort?
  - What needs to change in the organization for it to be successful in the future?
  - Why do these changes need to be made? What's at stake?
  - What is the likely effect of doing nothing?
  - What is a preferred future for the organization?
  - How will the organization measure the success of the change effort?
  - Is there a clear and compelling reason for adopting this change program?
  - Is objective data available to convince skeptics?
  - Do people feel the urgency to change?

❒ Engage and obtain buy-in from key stakeholders (see Section 7). Ask
  - Are all stakeholders engaged in the change process?
  - Do stakeholders take ownership of the vision and goals?
  - Do the key individuals understand that a change needs to happen, agree that a change will be effective, and see its potential for success?
  - Is the organization defining the issues to address broadly enough to engage people across the entire organization and clearly enough to be able to act on them?

Preliminary Considerations for Change Initiative

❒ Engage leadership at all levels. Ask
- Who would need to be involved initially?
- Who has the authority and influence to ensure a successful change initiative?
- Who would need to be involved over time?
- What specific mix of people would provide the most synergy for making positive changes?

❒ Determine the level of involvement and how much influence people need to have over development of new strategies. Ask
- Who has the information and experience required to develop a sound strategy?
- What level of involvement will people want and need in order to gain their support of and commitment to the proposed change efforts?
- How much of the strategy is best developed by the top leadership and how much should be co-created by a broader involvement?

❒ Clarify information people will need to make wise decisions. Ask
- What do people at different levels and functions in the organization currently know about (1) the organization's position in the marketplace; (2) how their work affects the work of others and/or the services and products the customers receive; and (3) the organization's overall strategic direction for the future.
- What do people at different levels and functions need and want to know more about?
- What will people need to know to make informed decisions?

❒ Plan the change initiative by asking:
- Have any issues associated with organizational readiness been clearly identified (e.g., history of unsuccessful projects or significant organizational changes already underway)?
- If significant issues exist, has a risk reduction plan been developed?
- Is there sufficient time available to implement the change?
- Are there sufficient financial resources available to implement the change?
- Are there sufficient human resources available to advocate and support the change?
- Are leaders and/or key stakeholders committed to the time, financial, and resource requirements?

❒ Communicate the change vision and purpose broadly to internal and external stakeholders. Solicit their feedback and concerns.

Strategic Planning

Key Questions

- Where is the organization?
- Where does the organization want to go?
- What should the organization do next and why?

Description

Strategic planning is distinct from tactical planning in that strategic planning is directly aligned with an organization's vision, mission, and objectives; whereas, tactical planning is oriented toward action and implementation. Strategic planning asks where an organization wants to go or where it needs to go and what it needs to do to get there; tactical planning, discussed in Section 5, defines how an organization is going to get there. Both types of planning are required.

Guidance provided herein is not representative of a linear progression. The reader might be wondering which comes first: assessing change readiness or strategic planning. This question

really has no definitive answer. An organization's strategic planning efforts may reveal areas in which a sense of urgency is created, in which case that organization will want to assess change readiness. On the other hand, the organization may be evaluating a proposed change and realize it does not have the sense of urgency necessary which leads to strategic planning.

In simple terms, strategic planning involves (1) planning to plan, (2) planning, (3) implementation, and (4) monitoring improvement. To begin a strategic planning effort, consider the following.

Planning to Plan

- **Ensure an executive champion and sponsorship.** As with assessing change readiness, someone with power, authority, and influence must champion, commit to, and participate in a strategic planning effort. If an organization wishes to pursue strategic planning and there is no executive champion, the organization needs to consider who should serve in this role and what steps need to be taken to gain their sponsorship.
- **Define a team for the strategic planning effort and define their roles and responsibilities.** Define who should be involved in the planning, their level of involvement, and what their roles and responsibilities should be.
- **Confirm the purpose of the strategic planning effort.** The purpose of the strategic planning effort drives the selection of methods, the level of participation and involvement, the duration, and the cost.
- **Identify stakeholder groups and define their role in strategic planning.** Determine what level of involvement stakeholders should have in planning and what their roles and responsibilities might be.
- **Select a strategic planning method.** Strategic planning has a future focus that includes analysis and formulation of strategies to reach a desired objective. To that end, it is challenging to identify a specific strategic planning approach because there are many different models. An overview of 17 different strategic planning models is presented in Table A5-1.
- **Communicate the strategic planning purpose broadly.** Use varied means to communicate throughout the entire organization. Hold leaders accountable for communication. Encourage two-way communication.

Primary criteria for selecting a strategic planning method include the organization's purpose, the desired level of internal and external stakeholder involvement and participation, the comfort level with ambiguity and facilitation, assumptions about participation, experience with strategic planning, expected duration, and budget.

Questions to Consider

- What is the organization trying to accomplish? Ask this question first and then review the methods to determine which method might be most appropriate.
- What level of involvement is warranted based on the organization's purpose? Determine the level of stakeholder involvement. Methods have differing underlying assumptions about levels of participation. For example, the applied strategic planning method recommends a smaller team of higher level managers, whereas, the large group intervention recommends the inclusion of many stakeholders.
- What is the organization's comfort level with ambiguity and/or its skills as a facilitator? Low-ambiguity readiness and fear of managing large numbers of people may sway an organization and/or a facilitator to a more linear method such as applied strategic planning.
- What are the organization's assumptions about participation? The methods presented represent a continuum of thinking from small, leadership-only to large-scale participative. Traditional

Table A5-1. Overview of strategic planning models.

Model	Select if, an organization's purpose is to
Applied Strategic Planning[5]	Envision the future and develop the procedures and operations to achieve that future
Scenario Planning[6]	Systematically raise people's understandings of their environment and of each other and foster people's questioning of assumptions and perceptions
Scenario Planning[7]	Create a set of stories about environmental elements that are critical to business success to generate insight into strategic possibilities
Scenario Planning[8]	Set strategic direction, catalyze bold action, and accelerate collaborative learning, and alignment and visioning
Large Group Intervention[9] – Search Conference	Identify, plan, and implement a shared future vision through people working to make the desired future happen, emphasizing a strong oral culture
Large Group Intervention – Future Search	Explore possible agreements between people with divergent views and interests and do consensus planning
Large Group Intervention – Real Time Strategic Change	Engage the whole system in planning for change
Large Group Intervention – ICA Strategic Planning Process	Maximize the participation of people in taking responsibility for the societies, communities, and organizations in which they live and function
Large Group Intervention – Conference Model	Redesign how work gets accomplished with consideration for people, processes, and technology
Large Group Intervention – Fast Cycle Full Participation	Redesign how work gets accomplished with consideration for people, processes, and technology
Large Group Intervention – Real Time Work Design	Redesign how work gets accomplished with consideration for people, processes, and technology
Large Group Intervention – Participative Work Design	Create a bottom-up approach to redesign how work gets accomplished with consideration for people, processes, and technology
Large Group Intervention – Simu-Real	Perform real-time work on current issues, test future designs, and learn about the system
Large Group Intervention –	Solve problems
Large Scale Interactive Events	Identify problems and improve processes
Large Group Intervention – Work Out	Discuss and explore system issues
Large Group Intervention – Open Space Technology Appreciative Inquiry[10]	Describe the purpose of an organization to identify a collectively desired future

[5]Goodstein, op cit.,

[6]P. Schwartz. (1996). *The art of the long view: planning for the future in an uncertain world.* New York: Currency Doubleday.

[7]G. Brauer (Summer 2000). Scenario planning: Springboard for strategic innovation. *Journal of Innovative Management, 5*(4), 23–30

[8]D. Scearce,K. Fulton, K., & G.B.N. Community. (2004). What if?: the art of scenario thinking for nonprofits: Global Business Network.

[9]For large group interventions see B.B. Bunker & B.T. Alban. (1997). Large group interventions: *Engaging the whole system for rapid change.* San Francisco: Jossey-Bass.

[10]D.L. Cooperrider, D. Whitney, & J.M. Stavros. (2003). *Appreciative Inquiry Handbook: The First in a Series of AI Workbooks for Leaders of Change.* San Francisco: Berrett-Koehler.

planning methods such as applied strategic planning view the source of information as largely internal, limited to specific units or divisions, and driven by senior management. With these methods, the leader is elevated and responsible for envisioning and defining strategy. In contrast, large-group interaction events are driven by open systems theory, where the source of knowledge is within the whole organization, external stakeholders, and senior management. In this case, the whole system is responsible for creating and analyzing data. Appreciative Inquiry is based on the assumption that every organization has something that works well and that these strengths are the starting point for creating positive change. When using appreciative inquiry, all employees envision and co-create an organization's future.

- What is the expected time frame or duration? The planning process may take from 1 day for some of the problem-solving methods to 1 year for scenario planning.
- What is an organization's experience with the process or approach? The processes vary for each method. At a high level, each includes some level of assessment and analysis of the organization's situation. This includes internal and external factors, the organization's sense of future direction, or simply envisioning what is possible. Alternatives are considered and then action or implementation occurs.
- What is the budget? Extended duration and/or high levels of involvement have a greater cost associated with them.
- Does the organization need outside assistance? Consultants can be a valuable planning resource by providing expertise, facilitation, and a sounding board for ideas.

The Planning Effort

Specific processes to be followed vary depending on the strategic planning method selected. A high-level overview of each strategic planning method is provided. For additional guidance on a specific method, consult the associated reference for that method. Strategic planning typically includes the following activities:

- **Developing a vision.** Developing a vision includes asking what one should be doing that one is not with an eye toward the future. A vision builds on dreams for the organization. To develop a vision, ask others to describe their dreams for the organization. The way one asks such questions is very important. When people dream, they describe and engage their passion toward the organization.
- **Formulating a mission statement.** The mission dictates the organization's direction and its functions, provides focus for the future and a guideline for decision making, and shapes the strategy. Questions to ask include: What function(s) does the organization perform? For whom does the organization perform this function? How does the organization fill this function? Why does this organization exist?
- **Defining goals and objectives.** Goals and objectives describe what the organization is striving to accomplish. Goals describe the general programmatic outcomes, while objectives specify more specific outcomes. Defining goals and objectives provides the criteria for evaluating the gap between the current situation and the desired future and in assessing and prioritizing options.
- **Gathering data and identifying the current situation.** Perform an external review of variables to determine potential effects and influences on the organization. Collect data on factors that influence the organization such as
  - External factors (e.g., social and societal factors, economics, politics, technology, and regulatory and environmental factors).
  - Industry characterization (e.g., structure, financing, degree of governmental presence, typical marketing, and service delivery strategies).
  - Competitive trends (e.g., changes in competitor profiles, market segmentation profiles, and demographics).

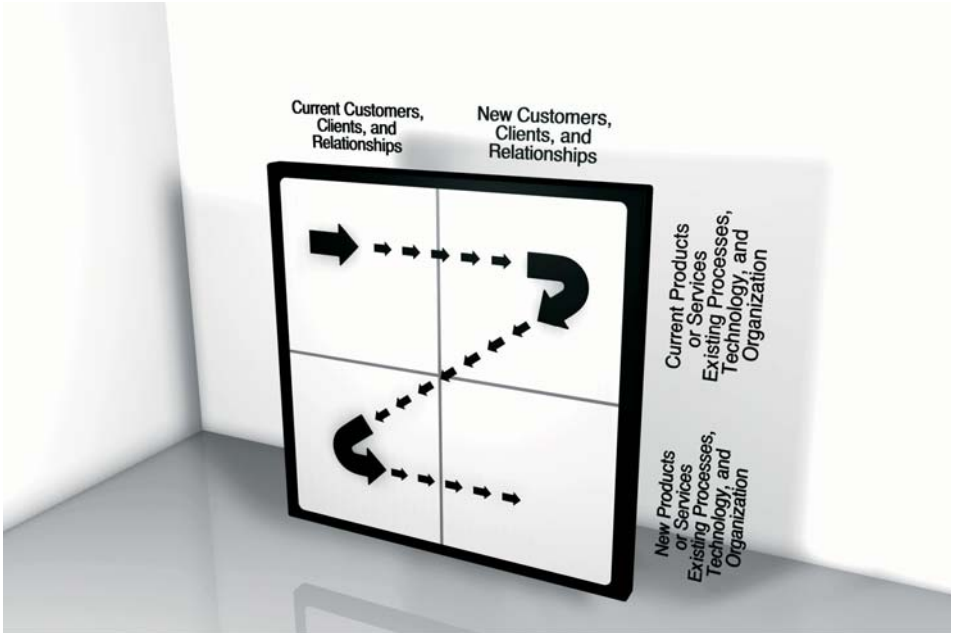

Figure A5-2. Strategic diversification today.

- Internal lines of business and associated business processes, organization structure, leadership style, communication decision making, and underlying values (e.g., personal values, organizational values, culture, and operating philosophy).
- Stakeholders (e.g., demographics, trends among, their perceptions and satisfaction).

- **Analyzing gaps.** Ask what the difference is between where the organization is and the vision? Can the gap be closed? If so, how? One method commonly used in gap analysis is the strengths, weaknesses, opportunities, and threats (SWOT) analysis where strengths are attributes that are helpful to achieving the objective; weaknesses are attributes that are harmful to achieving the objective; opportunities are external conditions that are helpful to achieving the objective; and threats are external conditions that could do damage to the organization's performance. The questions then become how strengths can be capitalized upon, how weaknesses can be improved, how opportunities can be leveraged for benefit, and how threats can be mitigated.
- **Developing high-level strategies for accomplishing the vision, mission, goals, and objectives.** Historically, strategic planning focused largely on strategic diversification[11] or the movement of current or new products and processes to new customers, clients, and relationships. Current thinking and analysis considers a much broader focus encompassing products, services, processes, technology, and organization (see Figure A5-2). Strategy development systematically identifies those strategies necessary to achieve the mission and reach the vision, taking into account the current situation and/or SWOTs that either promote or impede reaching the goals and objectives.
- **Developing a strategic plan.** Identify the vision, mission, goals and objectives, and strategies.
- **Communicating the strategic planning results broadly.** Use varied means to communicate throughout the entire organization. Hold leaders accountable for communication. Encourage two-way communication.

[11] H.I. Ansoff. (1957). Strategies for Diversification. *Harvard Business Review,* pp. 113–124.

Checklist

Planning to Plan

- ❒ Ensure an executive sponsor or champion exists with the power, authority, and influence to support change initiative in moving forward. If not, who should be engaged and what is the best way to gain sponsorship?
- ❒ Define a team for the strategic planning effort and define roles and responsibilities.
  - Who has the information and experience required to develop a sound strategy?
  - What level of involvement is expected and warranted, given the preliminary purpose of the strategic planning effort?
  - How much of the strategy is best developed by the top leadership and how much should be co-created by a broader involvement?
- ❒ Confirm the purpose of strategic planning effort.
- ❒ Engage and obtain buy-in from key stakeholders. Ask
  - Who should be involved?
  - Who has an interest in the purpose and/or outcomes of this strategic planning effort?
  - What should their level of involvement be in this strategic planning effort?
  - What is the best way to engage stakeholders in the process?
- ❒ Select a strategic planning method by asking
  - What is the organization trying to accomplish? What is its purpose?
  - What level of involvement is warranted based on the organization's purpose?
  - What is the team members' comfort level with ambiguity and/or their skills with facilitation?
  - What are the organization's assumptions about participation?
  - What is the expected time frame or duration?
  - What experience do the team members have with the process or approach?
  - What is the budget?
  - Does the organization need outside assistance?
- ❒ Communicate the strategic planning purpose broadly to internal and external stakeholders.

Planning

- ❒ Develop a vision.
- ❒ Formulate a mission statement.
- ❒ Define goals and objectives.
- ❒ Gather data and identify the current situation.
- ❒ Develop high-level strategies for accomplishing the vision, mission, goals, and objectives considering the current situation and the SWOT analysis.
- ❒ Develop the strategic plan.
- ❒ Communicate the strategic plan broadly to internal and external stakeholders. Solicit their feedback and concerns.

Change Initiative Design and Implementation

Key Questions

- What is the best approach?
- How do we implement strategies?

Description

A goal of change initiative design and planning is to translate strategies identified during the strategic planning effort into actionable implementation plans. The goal is to move the organization from its current situation to where it wants to be.

Underlying many change initiatives is the notion of changing culture, a particularly challenging endeavor. Culture provides shared meanings and norms for appropriate behavior. Often overlooked, cultural differences are the most ingrained and resistant to change. According to The Conference Board[12], certain fundamental issues must be addressed:

- The importance of individuals
- The behaviors that are assessed to determine reward and promotion
- How recognition for good work is distributed
- Interpersonal relationships
- The style of leadership and how power is managed
- The commitment to training
- The pathways of communication and the consistency of messages
- Orientation to the customer
- Boundaries of innovation and nonconformity
- How to deal with crisis and change

These considerations should be factored into any design and implementation planning efforts. The word "project" as used herein refers to a change initiative design and implementation effort, regardless of purpose or scope. A project plan translates an organization's strategies into an actionable implementation plan. A project consists of action steps to be performed to accomplish a specific set of objectives. Each project should include the following information:

- What actions or changes will occur
- Who will carry out these changes
- By when they will take place and for how long
- What resources (e.g., money and staff) are needed to carry out these changes
- Communication (who should know what?)

Projects typically follow a sequence of initiation, planning, execution, monitoring and controlling, and closeout.

Checklist

Project Initiation

❒ Ensure there is an executive champion and sponsorship. Someone with power, authority, and influence must champion, commit to, and participate in the project. Their willingness to back and support a change initiative communicates the importance of action. If an individual has been tasked with designing and implementing a project and no clear champion exists, then consider who should be and what steps are needed to gain their sponsorship.

❒ Develop preliminary project purpose. The purpose of this project is to:_____.

❒ Ensure buy-in by key stakeholders.

❒ Communicate the project purpose broadly.

Project Planning

❒ Develop a statement of work. Provide a description of the needs the project will satisfy, a description of the scope, and the relationship to the strategic plan.

❒ Develop a detailed project implementation plan, including the following:

- Identify project goals and objectives. The project goal is a clear, concise statement of the project's purpose and desired results. Project objectives are concise statements of what the project must achieve to realize the project goal.

[12] L. Schein & The Conference Board. (2001). Managing culture in mergers and acquisitions. Retrieved August 19, 2008, from http://www.conferenceboard.ca/documents.asp?rnext=857, p. 9.

- Identify project assumptions and constraints. An assumption is a circumstance or event outside the project that can affect its success. Constraints are restrictions or boundaries on the project that may limit or impede implementation.
- Identify deliverables. Prepare a cross-referenced list of tasks, deliverable names, and brief descriptions.
- Identify internal and external stakeholders or people with an interest in or influence over project work and results. Indicate how stakeholders might be affected and how they will be engaged during the project.
- Identify desired project outcomes and how those outcomes will be measured.
- Identify any risks associated with project implementation.
- Develop a detailed schedule with completion milestones.
- Develop a detailed cost estimate.

❒ Obtain any approvals for a detailed project implementation plan.

Project Execution

❒ Develop the project team. Part of forming a team is considering ground rules for behavior and interaction. Provide necessary training to support project implementation.
❒ Hold a project kickoff to align the team with the project plan and its execution.

Monitor and Control Project

❒ Develop and implement processes for change requests, evaluations, and dispositions with regard to project implementation.
❒ Develop and implement processes for performing quality assurance and other checks on implementation and quality.
❒ Develop and implement routine processes for using statistics and forecasting, analyzing, and reporting project progress, including task progress, cost expenditure, quality, and schedule.

Close Project

❒ Develop and implement closure procedures that consider final approval of deliverables and changes and project completion or exit criteria.
❒ Analyze project success and failures.
❒ Measure stakeholder satisfaction with project implementation and results.

Continuous Improvement/Monitor Progress

Key Questions

- Is the organization achieving the results it expected?
- How can the organization be more effective and efficient with greater quality?

Description

Continuous improvement programs focus attention on key issues, clarify expectations, facilitate decision making, and emphasize learning and improving.

A successful continuous improvement framework is holistic, with appropriate consideration for improving business practices, organizational strategies, and operational decision making. Measuring performance provides the means for assessing change and growth in each of these areas. To improve, an organization has to know where it is today and where it wants to go, a target measure. Taking action, analyzing, and making adjustments facilitates movement toward goals and the future vision. The Plan-Do-Check-Act (PDCA) framework (see Figure A5-3, put

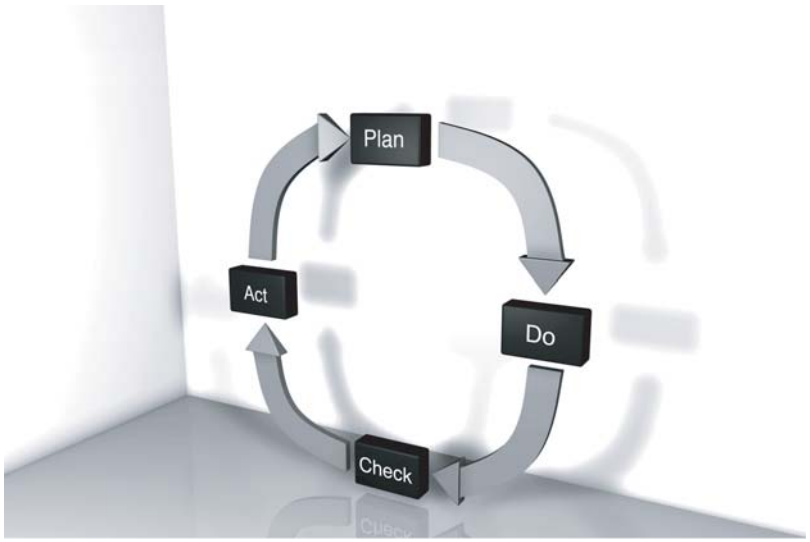

Figure A5-3. Plan, do, check, act continuous improvement.

forth by W. E. Deming, incorporates performance measurement as a key factor in continuous improvement.[13]

Performance management is the practice of actively using performance data to improve an organization's operations and performance. This practice involves strategic use of performance measures and standards to establish performance targets and goals. Performance management practices can also be used to prioritize and allocate resources, inform managers about needed adjustments or changes in policy or program directions to meet goals, frame reports on the success in meeting performance goals, and improve quality.

Performance management includes the following components:

- Performance standards—establishment of organizational or system performance standards, targets, and goals.
- Performance measures—development, application, and use of performance measures to assess achievement of performance standards.
- Reporting of progress—documentation and reporting of progress in meeting standards and targets and sharing of such information through feedback.
- Quality improvement—establishment of a program or process to manage change and achieve quality improvement in policies, programs, or infrastructure based on performance standards, measurements, and reports.

Examples of good measures[14]

- Drive performance improvements
- Actionable and relevant to work activities
- Can be updated regularly
- Clearly defined with targets

[13] W.E. Deming. (1986). *Out of the Crisis.* Cambridge, MA: Massachusetts Institute of Technology, Center for Advanced Engineering Study, p. 88.
[14] EMA, Incorporated. (2005). Developing and Implementing a Performance Measurement System (Project 99-wwf-7) Volume II. Washington, DC: Water Environment Research Foundation, p. 4–9.

- Directly tied to objectives and goals
- Process based or initiative based
- Uses industry-comparable or standard measures

Checklist

Plan

❒ Ensure an executive champion and sponsorship. If no clear champion exists, then consider who should be and what steps you need to take to gain their sponsorship.
❒ Ensure the management team demonstrates routine, visible commitment to a continuous improvement program and its implementation.
❒ Develop a policy statement regarding the commitment to and use of continuous improvement within your organization.
❒ Tie continuous improvement and performance measurement to incentive programs, especially at the executive and senior levels.
❒ Identify current processes for gathering feedback and measuring performance.
❒ Define all change initiatives and/or continuous improvement efforts currently underway.
❒ Link, align, and integrate performance measures with the organization's strategic plan and change initiatives.
❒ Develop measures and targets for each performance improvement goal and objective. Determine where information currently exists, how it will be collected, the frequency of measurement, and who is responsible for collecting data.
❒ Conduct frequent sessions among stakeholders and employees to identify improvement opportunities.
❒ Communicate the purpose of continuous improvement and performance measurement broadly.

Do

❒ Define roles and responsibilities for continuous improvement.
❒ Create an ongoing education and communication program to enable stakeholders and employees to understand the measures and involvement in continuous improvement. Provide education and training about
  - Continuous improvement and performance measurement generally
  - Specifics of the organization's continuous improvement program
  - Alignment of performance measurement with organizational strategies
  - Relationship of a person's actions on performance measures
❒ Communicate the purpose of continuous improvement and performance measurement broadly

Check

❒ Gather performance data, measure, analyze, and adjust.
❒ Report and communicate the results of the continuous improvement program.
❒ Develop routine management analysis and review of performance data.
❒ Determine whether stakeholders and employees understand specifically how what they do relates to continuous improvement and related performance measures
❒ Engage stakeholders and employees in analyzing and using data provided by the continuous improvement system.
❒ Revise measures and targets to reflect changes in the strategic plan, vision, and/or mission and continuous improvement through changes.

Do

❒ Take action and make adjustments based on performance measures.
❒ Initiate change initiatives, as warranted.

Stakeholder Engagement—Internal and External Communication

Key Questions

- Who needs to be informed?
- On what topics do they need information?
- How can the team engage them in the process?

Description

Broadly defined, a stakeholder is anyone who can be affected, either positively or negatively, by decision making and actions.

- **Employees** are the most critical group of stakeholders because they can adopt, adapt to, ignore, or obstruct any change initiative. Several different groups of employees should be treated as distinct stakeholders—executives, managers, white collar workers, support and clerical staff, blue collar workers, and union leadership.
- **Vendors, consultants, and contractors,** though often overlooked, provide critical operational support and may provide a source of valuable ideas and feedback.
- **Governing boards and community leaders** include those from which the organization derives power and authority (e.g., the mayor, city council, county commissioners, city manager, state legislature, state regulators, and federal regulators).
- **The Public** includes any other group or agency that might have an interest in the organization's activities. For example, economic organizations (e.g., business groups, property owners, and managers), consumers (e.g., ratepayers), and civic/community or media organizations (e.g., print, radio, and television).
- **Airlines** are key stakeholders in an airport and will be most affected by any decisions to change passenger processing, boarding, ramp areas, or operating areas of an airport.

Benefits to engaging stakeholders early and often in the spirit of participatory collaboration include the following:

- Reduced suspicion and fear
- Increased awareness and commitment
- Allowance for differing perspectives
- Integration of the creativity, knowledge, and experiences of diverse stakeholders
- Increased likelihood of buy-in, ownership, and acceptance
- Acknowledgment of the unique needs, situations, and interests of diverse stakeholders.

Start Here

Checklist

- ❒ Identify internal and external stakeholders who may influence or be influenced by the outcomes of this change initiative.
- ❒ Establish objectives for stakeholder outreach and involvement.
- ❒ Review existing information from customer and public opinion surveys and other research, if applicable.
- ❒ Develop a focus group of key stakeholders from a cross section of the stakeholder types identified.
- ❒ Develop a questionnaire for in-depth interviews with the focus group. Schedule and conduct interviews.

- ❒ Synthesize input from focus group interviews to inform the change initiative, particularly the planning, design, and/or implementation processes.
- ❒ Hold small group meetings with internal and external stakeholders to confirm the organization's vision, mission, and goals, and to explain the strategic planning process.
- ❒ Share the preliminary results of focus group sessions and to invite comment on preliminary potential options.
- ❒ Once implementation plans have been drafted, invite review and comment from the focus groups.
- ❒ Engage stakeholders in closing projects, identifying lessons learned, and in identifying continuous improvement areas.
- ❒ Communicate, communicate, communicate – explain the process, stakeholder involvement, and how stakeholder concerns were addressed in the final product.

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APPENDIX A6

Other Industries

Business Functions and/or Processes

Numerous industries have or are engaged in creative re-thinking and decision making relative to service provision and delivery. At its core, these decisions involve a recognition and determination of the core business and/or services and trying to determine the best ways to continue and move forward. Industries responsively considered alternative service delivery or provision options and optimization in response to an ever-changing business environment.

Research indicates that the term "common use" is not readily used outside of the aviation industry, however, there were many examples of industries implementing common-use type arrangements and actively considering alternative service delivery options. These arrangements were typically described in terms of contractual language and ranged on a continuum from outsourcing, strategic partnerships, collaborative partnerships, strategic alliance, inter-organizational relations, collaborative entrepreneurship, coalitions, joint ventures, inter-agency, inter-regional, and shared services. These arrangements also include public private partnerships of which there are many forms, including contract operations, concession, design-build, design-build-operate, build own operate transfer, asset sale, etc.

Optimization efforts were often more internally focused on specific business functions and/or processes. Formerly known as reengineering, optimization has arisen as the means to balance process requirements, outcomes, and associated costs. Many variables were considered including the following:

- Labor allocation and skill level
- Work force consolidation and cross training
- Operations and maintenance procedures and practices
- Energy and chemical consumption
- Equipment application and performance
- Process control and SCADA (supervisory control and data acquisition), automation and technology implementation
- Process improvements, asset management, and inventories
- Support systems and services
- Purchasing requirements
- Integration of SCADA and other applications
- Selective outsourcing

Business functions and/or processes often subject to optimization and/or opportunities for enhancement:

- Outline and centralized work processes and monitoring procedures
- Optimized chemical consumption

- Optimized energy consumption
- Effective maintenance management
- Staff training and development
- Integrations of operations and maintenance functions
- Adding operational and maintenance capabilities

Attention was paid to organizational considerations such as organizational structure, staffing and staff allocation, incentive programs, budget structure and policies, political drivers, union and civil service issues, capital improvement programs, administrative policies, and procedures.

Maintenance and rehabilitation was key and considered factors such as condition assessment of infrastructure; bases for repair versus replacement decisions; evaluate maintenance practices; planning systems for maintenance; develop information systems and applications; measure and improve performance; implement employee involvement and development activities; establish financing plans and strategies.

Technology Types and Role

Business Driven

Define and refine processes including interfaces, analysis and reporting needs, and select/leverage technology applications to support optimized business practices. This strategy reinforces the critical need to identify overarching programs, philosophies, and supporting business processes and then select technology and/or leverage existing technology that best supports business requirements. Benefits of a business driven strategy include the following:

- Ease of business solution integration in support of well defined business processes and expectations.
- Reduces frustration of and delays with software adoption because a clear rationale exists for how software will benefit and integrate with actual work and decision making.

Real Time

Enable real-time information access across organization. This strategy recognizes the increasingly dynamic and uncertain business environment facing the organization and how information is critical to being able to operate in an agile and customer focused manner. To be of value, information must be accurate, timely, and highly available across all levels of the organization. Benefits include the following:

- Increased agility in sensing and responding to changing business and market conditions.
- More informed decision making and at all levels within the organization.
- Engages each person in decision making.
- Drives continuous improvement by enabling measurement.

Mobile

Drive mobile application deployment. This strategy advocates greater reliance on mobile solutions to achieve higher performance by enabling transparency between the operations and the field, operations and the customer. It stresses a common mobile computing architecture to support business and operational functions. Benefits include the following:

- High value on the timely capture of information at the source.
- Increased Information access.

- Improved productivity and customer service.
- Eases application interoperability across all wireless devices.

Integrated

Anticipate and integrate access to data to facilitate management analysis and reporting. This strategy recognizes increasing demands for access to data stored in multiple systems in real time to support routine analysis, decision making, and reporting. Benefits include:

- More proactive and agile decision making.
- Quicker diagnosis, troubleshooting, and response to service disruptions.

Secure

Design and consider technology and data security. This strategy acknowledges the urgency of an information technology security to effectively protect information assets, intellectual property and customer privacy. This strategy also recognizes that other strategies suggest a broader and comprehensive approach to cyber security. Benefits include the following:

- Prevention of business and operational disruption due to cyber security incidents.
- Protection of information assets and customer privacy.

To address these strategies, organizations begin to question the following:

- Application Coverage – What software applications are currently in place to support the business needs? How well are those applications supporting business functions and/or providing critical information on demand?
- Application Sophistication – How well do existing software applications position us for moving forward? How well do software applications support data sharing, historical trending, data analysis, and reporting?
- Staff Capabilities – What types of skill sets do we currently have? What types of training is routinely provided? What types of skills do we or will we need in the future?
- Data Ownership – Are the roles and responsibilities for data ownership clearly defined and in practice? Typically, data ownership, report content, and how software is used to support business processes resides with those responsible for the data, report, or business process.
- Process and Data Integration – Do we understand the inter-relatedness of business functions and/or process and technology use or do we operate in a siloed way?
- Data Sharing, Analysis and Reporting – There often is much data that is shared or that is desired to be more accessible that resides in multiple systems. Examples include:
  - Operational data
  - Asset and maintenance management data
  - Budget, cost, and other financial data
  - Project management data
  - Employee data (in PeopleSoft or Kronos)
  - Customer data (enQuesta)
  - Documents and documentation

Organizations examine whether data sharing, analysis and reporting is largely a manual process with data being dumped into spreadsheets, emailed to the requestor, and the requestor performing additional aggregations and/or calculations to use the data.

- Architectural framework/infrastructure – Does the infrastructure support the volume and demands required? Does the infrastructure support data sharing so that data access and sharing is controlled, consistent, and flexible.

Decision Making Framework and Considerations

An Effective Improvement Process

- Demonstrate the imperative for change.
- Develop an effective process for involving the organization and other stakeholders in the improvement process.
- Assess the gap between current and desired performance.
- Develop a process for more detailed functional assessments and a plan of action for the overall improvement process.
- Implement, monitor, and modify the plan.

Consider Change Management Principles

- Establish a sense of urgency. Examine the market and competitive realities. Identify and discuss crises or opportunities.
- Create a guiding coalition. Executive sponsorship is paramount. Participation of external stakeholders is key.
- Develop a vision and strategy. Create a vision to help direct the change effort. Develop strategies for achieving that vision.
- Communicate the change vision. Engage external stakeholders.
- Empower broad-based action. Get rid of obstacles. Change systems or structures. Encourage risk taking and non-traditional ideas.
- Generate short-term wins. Plan for visible improvement in performance. Create wins. Visibly recognize and reward people.
- Consolidate gains and produce more change. Use increased credibility to change all systems, structures, and policies that don't fit new vision.
- Anchor new approaches in the culture. Create better performance through customer- and productivity-oriented behavior, more and better leadership and more effective management. Articulate connections between new behaviors and organizational success. Develop means to ensure leadership development and succession.

Assessment

- Get the organization and key stakeholders involved with the gap analysis and its ramifications;
- Ask employees and stakeholders to identify the functions and activities where improvements are possible and where performance gaps are greatest;
- Survey customers to determine what is important to them, how they view your performance, and what they believe are the performance gaps relative to expectations;
- Compare your organization with competitors and peers;
- adopt a common functionally based framework and accounting system;
- Choose the relevant set of performance measures;
- Make comparisons to others in comparable circumstances;
- Choose appropriate referents.

Strategic Planning

Through assessment, industries determine where they are relative to where they want to be. Strategic planning defines their vision, mission, values, goals, strategic plan, strategic objectives, action plan, and evaluation process. Implementation tools then become the strategic plan, a communication plan, accountability and mechanisms, and ongoing mechanisms for employee involvement and training, and systems integration and management.

Tools for Improvement

- Strategic planning
- Customer service surveys
- Internal capabilities and performance including evaluation of core competencies and contracting opportunities
- Uncovering span of control issues
- Performance measurement framework, metrics comparison.

Factor in implementation issues discusses political concerns, legal and financial issues, conflict of interest, and regulatory agency considerations.

APPENDIX B

Supplemental Information for Chapter 3

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APPENDIX B1

Planning

Initial Planning Steps

The following first-step issues are presented for the airport operator when considering common use:

1. *Develop a Change in Airport and Airline Way of Thinking:*
   a) Throughout the ranks of airport Management and airline Operations, common use is all too often considered as an "IT" issue. As a result, the decision to implement common use is based on justifications solely provided through the airport Technology organization. This is not to say that the technology justifications provided are not valid, but only that when common use is justified by technology alone, complete airport acceptance and buy-in may not have been achieved; especially over the long-term operations of common use. One airport operator interviewed noted that common use has always been driven from Technology up to Management. Therefore, they continually struggle with justifying the benefits of common use to Airport Management.
   b) Common use adds the best value when all divisions and management of the airport, along with its airline partners, contribute to the planning and business justification of the implementation. As stated by one airport operator interviewed: "Success comes when culture change is from the Director on down." The following four points summarize the efforts of airport operators where common use has been proven successful over time:
      - The decision to implement common use was driven by and supported from the Executive level down
      - Common use became a part of the airport culture
      - Airline collaboration a must at every step of the process
      - The decisions to implement common use were based on financial / fiscal benefit – Drive more efficiencies through the facilities and keep cost down through reduction in capital.
2. *Thoroughly Define the Business Reasons Behind Common Use:*
   a) There are business reasons why an airport operator considers common use. Chapter 4 of this Reference Guide presents many of these reasons, with tool sets to help the airport operator determine its own business reasons. Important to note here, is that the business reasons should consider upfront, all airport divisional responsibilities. The airport operator should work with the airport division managers to carefully evaluate each business reason and objective. In doing so, the airport operator must consider the road blocks versus the benefit. A common use solution is not necessarily a fit for every airport.
3. *Include Airlines as a Business Partner:*
   a) A common mistake for airport operators is to plan the implementation of common use, without the input from its airline business partners. As noted above, successful common use installations always had the airlines as a critical and early part of the planning process. This often is not an easy decision, especially when airport operators have heard the statements

that U.S. airlines oppose common use. However, in considering the airline's position, often, it has been poor planning and execution that has led to the opposition. In general, airline opposition can be summarized by the following:

- When the common use installation opposes the airline business process.
- When cost of operation is higher than with a dedicated environment.
- When common use limits airline functionality.

With that said, as stated by one airline interviewed: "We understand that there are airport locations and situations where common use can be of benefit. Where it makes good business sense, we will work with an airport. We would like to see a point where all applications (back office, agent facing, passenger facing) could be accommodated with common use. If this was achieved, costs would be reduced such that the airline's only infrastructure related role would be to go train users upon a new startup. If common use would evolve to a fully rich solution, then we would consider doing it at our largest locations as well."

Noted below are statements made by airlines interviewed regarding the planning phases of airport common use installations.

- The airport operators must allow the airlines to be at the forefront of all discussions/ negotiations regarding common-use.
- Airport operators often engage in meaningful dialogue when common use issues are raised. Some airport operators are proactive and some are not. We generally discuss options with the local airport operators, once they decide to pursue common use. We then attempt to cooperate with the airport operator.
- Yes, most Airports Operators engage in consultation with the airlines regarding installation plans, but unfortunately there are also exceptions where the decisions are mandated and not consultative.
- Planning matters to us, because we deal with so many providers, that we can help provide historical information on providers, and other situations.
- It always works better when we have the opportunity to provide consultation / input upfront. We look at the business case, and demonstrate how it will work for us. For example, increased capacity.
- We don't understand why common use always costs more. Airport operators typically justify common use through deferment of large capital costs, or by savings on airline operational costs, yet never has an airport operator sat down at the table and showed us these cost savings. Having prepared detailed spreadsheets producing cost comparisons of actionable data is important when trying to show an airline the cost benefit in going to common use. Even having cost avoidance issues such as, what does it cost to have a position out would be beneficial.
- Functionality is often based on the lowest common user which is a disincentive to those carriers who want to invest in more services and functionality.
- Decisions are made that we don't particularly agree with regarding equipment implemented

b) Consider how best to keep the airline Partners active and participating in the on-going planning and continuous improvement process. Airlines and airport operators alike noted one of the best benefits to common use is the ability to continuously improve the process for the betterment of both parties. Constantly brainstorming ideas to do it cheaper or better is the life-blood of a common use installation. Open channels of communications are important. It is not enough, simply to set up a monthly meeting. One airport operator noted that in doing so, after time passed, no one was attending. Ideas noted included:

- Assign an airport staff member as liaison to the airlines. Through the liaison, various means of communication can be achieved
- In setting up monthly meetings, take into account the schedules of airline staff. Recognize that station personnel can more easily accommodate the on-site meeting, than

airline Properties and IT. Look ahead to when you might need airline Properties and / or IT representatives and schedule accordingly.
- Consider the formation of an airline consortium. This may be tied to long-term financial support, and it may not. To implement a consortium effectively is challenging. As such, most airport operators have not pursued this approach.

c) Establish a "loyal partner program," where criteria for the program are clearly presented to the Airlines. Such criteria may include reaching a set threshold for years of continued service. As part of the program, consider special arrangements with airlines achieving loyal partner status. Airports noted successful relationships can be formed in a positive manner, specifically regarding preferential and non-exclusive use arrangements. Some Airports extended this status to the dominant carrier. Although Airports reported good success in implementing such a program, care must be used in implementing such a program to make sure not to alienate the other airlines or violate Federal regulations regarding equal treatment of air carriers.

d) Work with the airline partners to include not only the local station manager and staff, but also the corporate airline's staff as well.

Airport Operational and Physical Characteristics

1. *Airport Size:*
   a) The FAA defines the airport size by its percent of airline passenger enplanements and categorizes the airport under a "large, medium, small, or non-hub" classification. These are broken down as follows:
      - Large hubs are all airports that account for 1 percent or more of total airline passenger enplanements. About 30 airports meet this threshold each year.
      - Roughly 35 airports are categorized by FAA as "medium hubs" because they each account for between 0.25 and 0.99 percent of total airline enplanements.
      - The next-busiest airports, described as "small hubs," account for 0.05 to 0.249 percent of enplanements; they total about 150.
      - The remaining 300 or so commercial-service airports are referred to as "non-hubs," including about 100 (often only partly certificated) that are used by airlines on an irregular or seasonal basis (Transportation Research Board, 2009, pp. 11–12).

   b) Airport sizes, ranging from non-hub to large-hub are all finding benefit for common use. In fact, there is a growing trend of small-hub airports pursuing the implementation of common use. Typical factors considered, along with the size of the airport are:
      - Capacity Constrained
      - Airport Flexibility
      - For medium and large hub airports, the amount of international carriers often dictate the need of some level of common use
      - For small and non-hub airports, marketing and revenue opportunities often play a major role. For example, the small hub airport operator may determine that providing all of the ground control services, produces a revenue stream, and promotes a lower cost of entry for the airlines it attempts to attract.
2. *Airport Physical Configuration:*
   a) Airport physical configuration refers primarily to the layout of airport terminals, concourses, and baggage handling systems. Figure B1-1, as shown on the next page, compares these configurations.

   b) Much like the airport size, the physical configuration does not necessarily dictate the benefit of common use, but it can have a significant impact on the viability of the implementation of common use. In other words, for the same reasons as described under airport

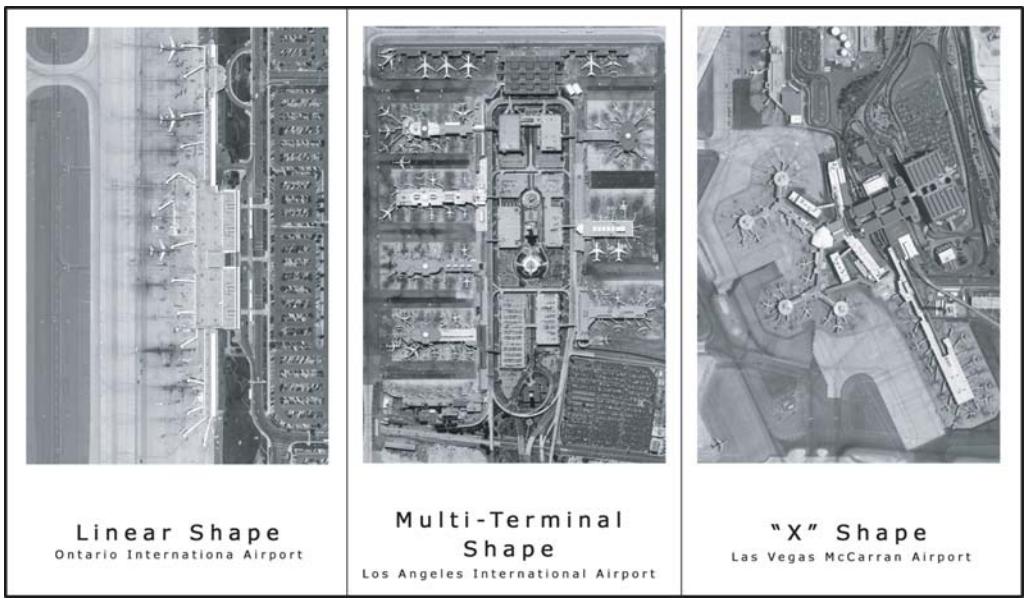


Figure B1-1. Physical airport configuration comparison.

size, the various airport configurations can also benefit from common use. However, due to the physical configuration and limitations imposed, the cost of implementing common use may outweigh the benefit. Issues that should be considered include:

- Multi Terminal / Concourse configurations may limit the ability of splitting airline operations between the terminals and concourse. Issues such as signage, roadways, and baggage systems must all be taken into consideration.
- Certain layouts of the terminals, such as "X" Terminal layouts may hinder the ability of a common use ramp control tower's view of all operations. Airport operators have noted line of site (critical for effective airside operations) is far more advantageous with a linear layout.
- Baggage handling systems separated and dedicated to specific areas of the terminal / concourse can also limit the effectiveness of a common use installation.

3. *Airline Operations:*
   a) Within any of the airports, an airline may operate what is referred to as "hub" operations. An airline hub operation is an airport that an airline uses as a transfer point to get passengers to their intended destination. It is part of a "hub and spoke" model where travelers move between airports, not served by direct flights. In contrast to an airline hub operation, airports served by a large amount of direct flights are typically referred to as "origination and destination" (O&D) airports. Many airlines also use "focus cities," which function much the same as hubs, but with fewer flights. Examples of each are shown below:
      - Airline Hub Operations – George Bush Intercontinental Airport (IAH). Continental services its hub operations here.
      - O&D – Las Vegas McCarran International Airport (LAS).
      - Focus Cities – Sacramento International Airport. Southwest Airlines considers this location as a focus city airport.
   b) Airline Operations has probably the greatest impact to both viability and benefit for common use. The following considerations are included :
      - O&D airports hold the greatest opportunity for airport wide common use considerations. In such cases, capacity constraints and facility flexibility issues are magnified when

the number of airlines operating at an airport begins to exceed the number of available gates.
- Airports with airline hub operations show the greatest success for common use with the non-hub or spoke airline operations portions of the airport.
- As stated by some airlines interviewed, common use is often needed by the airline hub operations, in an over-flow situation.

Counting the Costs of Common Use

1. *Initial Assessment of Use – Facility Flexibility:*

   Facility flexibility is a key benefit to implementing common use. Many of the benefits associated with facility flexibility are identified in Chapter 4. In providing this flexibility, the airport operator should also consider the following:
   - Adding capacity during non-peak hours of operation may or may not result in new flights. Some airport operators consider non-peak hours as "dead zones," however, airport operators have found through negotiations with airlines that accommodations can be made to fill the non-peak hours. Typically, airlines will consider the following:
     – New entrant carriers - Is it the only slot(s) available?
     – For flight times that can be adjusted, is there a cost benefit for me to do so?
     – Other airport operational incentives
   - Limitations in check-in counter space. A typical common use model is to maximize turns per gate, thereby avoiding "bricks and mortar" costs. Even though gate capacity may increase, an airport operator must ensure there is sufficient counter space to accommodate peak-hour operations. Key issues include:
     – Consider gate occupancy time in comparison with available check-in counter occupancy time. Depending on aircraft size and passenger demographics (ex. number of passenger checking in before arriving at airport), the ratio between the two can change. However, typical ratios of required use per gate between check-in counter to gate counter can range from 2:1 to as high as 4:1.
     – Consider number of check-in counters required per flight. Again, this ratio changes based on aircraft size and passenger demographics. Typical positions required for smaller aircrafts can range from 1 to 4, while larger aircrafts may require 4 to 6 check-in counter positions. Some airport operators use a calculation of the number of passengers that a given aircraft type can carry divided by 50. The resultant is the number of check-in counters necessary to process passengers for the given aircraft type.
   - Limitations in check-in counter operations. As with limitations in space, the airport operator should consider limitations with the operations of the check-in counters. Key issues include:
     – Counter configurations for common use, including:
       ▪ Millwork suitable for common use inserts
       ▪ Bag scales available for each counter position
       ▪ Counters configured for airline operations (collection of money for additional baggage, etc.).
     – Counters configured related to baggage make-up areas. Even if there is a sufficient ratio of check-in counters to gate peak-operations, there may be counters dedicated to specific gates, due to the back wall belts serving specific baggage make-up areas. For an airport operator, it may be cost prohibitive to tie all baggage systems together.

   a) Depending on how well the original facility was balanced against peak hour usage, the airport operator should consider the following facility limitations typically overlooked:
      - Throughput capacity of in-line baggage screening compared with peak-operations under the planned common use model

- Potential choke points caused at security check points due to increased passenger flow
- Added congestion in hold room areas.

2. *Assessing True Costs of Ownership with Common Use Assets:*

   Common use typically results in the airport operator owning and maintaining more of the airport assets associated with the operation of a common use gate or other common use areas. As a result, the airport operator often is in a position of having to buy assets from the airline. In doing so, the following key issues should be considered:

   a) Ascertain the true value of the airline asset at the time of acceptance. The value of the airline-owned equipments is often times much higher than an airport operator planned to pay. Before finalizing cost estimates, it is wise to sit down and negotiate the true cost with the airline. To help with this process, one airport operator developed detailed equipment asset score cards. From the airport operator's perspective, it is important to be able to assess the value of all equipment. One specific example, where this airport operator was not prepared was in taking over a building. Roof conditions and other items were not evaluated, which ended up in a considerable amount of unplanned costs.
   b) Consider the cost of upgrade / replacement of major assets due to operational differences under common use. Boarding bridges are a good example. An airline may have purchased the boarding bridge for specific aircraft. In common use this boarding bridge may be inadequate to service the various sizes of aircraft that the common use gate would be expected to accommodate. This one item can cost hundreds of thousands of dollars of unplanned costs.

3. *Assessing True Costs of Services / Support:*

   Throughout the sections of this chapter, service and support elements are discussed and drawn out. In planning for common use, the airport operator should consider these elements, along with the ones summarized here. This is not an easy assessment, and one that takes continued re-evaluation. As one airport operator stated: "All airport divisions struggle with staffing issues. Over time, we have not had any real rationale for figuring out staffing needs: we try it to see what works."

   a) Consider the increase in operational hours support. Airlines are concerned that Aviation organizations are typically static and not equipped to manage the dynamic environment of common use. Increased hours of operations can affect any of the following:
      - Operations Center – some have gone to 24 X 7 X 365
      - Help Desk – IT support
      - Terminal Services, such as Janitorial
      - Facilities Maintenance
      - Airside Operations
   b) Consider the contract and labor issues. Organizational and contract hurdles can impact the effective support and operations of common use gates. Examples include:
      - SkyCaps providing service to multiple airlines
      - Wheelchair services
      - Ramp Control Tower Operations

4. *Assessing the Costs of Technology:*

   Technology applications and infrastructure are discussed in detail later on in this Appendix. In planning for common use, the airport operator should carefully evaluate the impacts common use may have on its existing technology infrastructure. Key considerations include:

   a) Ownership of communications infrastructure and demarcation points between airport operator equipment and airline owned equipment.
   b) Costs of supporting technology systems such as Gate Management and others discussed later in this chapter.
   c) Operational costs of Technology support.
   d) Emerging Trends in Technology that may impact common use

Airport Procedural Considerations

(Note: Many of these considerations are typically included as part of the lease process for common use gates):

1. *Use Criteria:*
   a) Mandatory or Voluntary. Will common use be mandated or on a voluntary basis? This issue should be considered carefully. Many airports operators "mandate" common use, only to find themselves having to compromise on its own mandate. It is a good business practice to establish this in coordination with the airlines. The following issues and considerations have been noted:
      - Define terms of mandatory and acceptable exceptions.
      - Define rights in keeping an airline under common use verses preferential or exclusive use
      - Define rights and costs of moving an airline under common use

   b) Take Back Criteria. What happens if an airline fails to meet the minimum use? This issue is important, since justification and costs for common use are typically determined based on a minimum aircraft turns per gate. Airport operators typically have take back defined in the airline lease agreement, but in practice, seldom reported the use of the clause. Never the less, for common use, having the right, when necessary has proven beneficial, being that the airport operator can "take back" the preferential or exclusive use gate and contract with the airline on a per-use basis. Take back criteria is generally based on an airline failing to meet the minimum use requirements, over a prescribed duration of time. Other basis have included, excessive dwell time per flight, airline mergers, and others.

   c) Give Back Criteria. Some airport operators have worked with the airlines to define a criterion so that airlines can give back common use facilities if the airline no longer wants them. The airport operator should determine if this approach will be appropriate for their airport, or if the take back criteria will be better – or some combination thereof.

   d) Expansion of use. How will airlines be allowed to expand their operations into additional common use facilities if needed?

2. *Use of Airline Assets and Equipment:*

   In general, airlines prefer to maintain the right to use proprietary applications or equipment under prescribed conditions. One of the main reasons noted by airlines is when common use hinders the airline's ability to conduct business as it requires. For example, at least two airlines have developed proprietary, sophisticated Gate Information Display Systems (GIDS). Current common use systems do not allow the display of these airline GIDS. At locations where the airline has deemed it important, it has requested the right to install additional equipment and software, so that the GIDS could be displayed.

   Along with the above example, airport operators noted various instances where airlines use proprietary equipment at common use locations. Some of these instances are requested and approved; others are installed without the immediate knowledge of the airport operator. As with the example noted above, there can be valid situations where an airport operator may wish to allow the airline to use proprietary equipment at a common use location. To objectively address this situation, the airport operator should define upfront what the basis of decision will be when a request of this is made by an airline. The following should be considered:

   a) Does the installation of the proprietary equipment interfere with the safe and/or efficient use of the common use system?

   b) Does the installation of the proprietary equipment go against the stated business objective of the airport operator?

   c) Consider granting waivers when the airline business objective cannot be performed under the installed common use system.

   d) Consider granting the temporary use, in times of unique situations

e) Consider strict guidelines of removal of equipment at each completed cycle of use for the airline.

3. *Preparation of Policy and Procedural Documents:*

Airport Operators noted the need for the preparations of several policy and procedural documents to help with the planning and operation of common use. Some of the documents may already exist; others would be specifically established for common use. Some of these include:

a) Responsibilities Guidelines – One stop location where airport operator and airline define the responsibilities of both parties
b) Leasing Agreements – modified to include specific common use requirements
c) Gate Operations – modified to include ramp control requirements
d) Rates and Charges – modified to include specific common use requirements
e) Security Operations – modified to include criteria for use of airport facility by one or more airline tenants
f) Airline Operations Training – The understanding and use of policies and procedures governing common use. Airport operators noted that airline station managers are in and out at the airport. As a result, the policies and procedures put in place are not commonly understood. Continuous education would be a benefit.

APPENDIX B2

Design and Construction

Initial Design

1. *Coordination with Airlines:*
   a) As is mentioned elsewhere in this Guide, coordination with the airlines operating at the airport is paramount. In many cases, it is not just the airlines that will be initially affected by the construction project, but all airlines, as a move towards common use has the potential to impact other areas of the airport that were not considered a part of the original construction project.
   b) Airlines should be brought in early in the initial design process so that their needs and requirements can be identified. It is important to remember that the airlines will be most affected by the decision to implement a common use strategy, and their input is important to success.
   c) The design manager should coordinate with the airline station, corporate, and IT personnel, as each will have input into the initial design considerations.
2. *Airport Culture:*
   a) As discussed in the Planning section of this Appendix, the airport operator's culture will need to be considered, and possibly changed, in order to successfully implement common use.
   b) The airport operator's culture also can impact how decisions are made, and therefore the culture of each airport operator will ultimately affect how and if a decision to include common use in the design project will be made.
3. *Goals for Project:*
   a) Not all construction projects lend themselves to include a common use element. The team must identify the goals of the project, and determine if these goals can be met implementing common use, or if they do not facilitate common use.
   b) If the project is not addressing passenger processing, then there is most likely no common use impact.
   c) If the project is to increase, or somehow affect passenger processing capacity, the airport operator should determine if common use will apply.
4. *Non-Airport Drivers:*
   a) It is understood that many projects have outside influences that affect the overall project. These should be identified in the initial design phase.
   b) If outside influences are identified, and common use is being considered, then the airport operator must determine if these outside influences will impact common use in a positive or negative way.
5. *Airport Master Plan:*
   a) As a construction project is considered, the impact to the overall airport master plan, and the airport layout plan, needs to be considered. These plans could be impacted should a construction project consider using common use. Future terminals, concourses, or gate requirements may need to be reconsidered based on the impacts of a common use decision.

6. *Staffing:*
   a) A staffing analysis should be performed to evaluate the need of IT specialists and others that will be required to properly operate and maintain the common use system.

Design Cycle

1. *Constructability Impacts:*
   a) During the design cycle, the impacts of common use must be considered. For example, implementing a common cabling infrastructure will change the way that communications closets, conduit, and cable plant are designed. These affect the design in many ways, including cost.
   b) Coordination with other design disciplines is essential. Any technology project requires close coordination with disciplines such as electrical design, plumbing, and mechanical design.

Construction

1. *In-Field Design Changes:*
   a) There is a high probability that the design of a project will be changed as the physical construction begins. These changes could have impacts on common use, and must be monitored appropriately.
   b) A Technology liaison should be considered for a construction project which includes common use. This technology liaison should work closely with the constructor and the designers to address any design changes, or construction issues that arise and affect the technology portions of common use.
   c) An Operations liaison should be considered for a construction project which includes common use. This liaison should work closely with the constructor and designers to address any design changes, or construction issues that might affect the ultimate operation in common use.
   d) Airlines should be coordinated with during the construction project to address in-field design changes.
2. *Inspections:*
   a) Inspecting is a critical part of any construction project. The inspectors will be looking for code violations, and safety violations, but there also needs to be an inspection for usability of the space. When a construction project includes common use, it is important that frequent inspections be conducted to ensure that the construction project is being completed in a way that meets the goals of the airport operator.

Testing and Commissioning

- Impacts to passenger processing flow
- Impacts to existing facility systems and technology
- Test plans
- Commissioning plans
- Final acceptance

APPENDIX B3

Terminal Operations

Terminal Check-in Area and Curbside Operations

1. *Airline Business Issues and Opportunities:*
   a) Airlines noted several business reasons why common use may be a viable solution for counter and self service check-in. Many of the reasons are the obvious result of proper planning and implementation of the business issues and opportunities noted here in this section. These include:
      - When common use adds real value to the airport operator and airlines. This statement appears to be an obvious reason. However, many airport operators move towards a common use solution without first identifying the intended value of the installation for both the Airport and the airline.
      - Airlines generally agreed that common use provided potential benefit in non-hub or spoke stations. In such situations, and if properly designed and priced, common use provides the airlines with the functionality they need and the airport operator with the flexibility it needs. Further, common use can allow for maximizing utilization of check-in counter positions which has the potential of lowering overall airline facility cost.
      - Cost advantage to paying per use, when an airline is in need of handling only a few flights per day. This may be a small carrier or even a larger carrier with temporary or overflow requirements.
      - Accommodating the temporary need of an airline to cover seasonal traffic needs, or new markets under development.
      - New Entrant airlines, seeking limited counter use and minimal capital costs (remove barriers of entrance).
      - Providing facility flexibility for check-in capabilities at curbside and re-check.
      - When an airport operator is providing International operations, airlines typically supported the need for common use.
   b) Airlines are typically against common use installations where the installation negatively impacts the airline business process. For the airline, it is the business process that dictates the counter configuration. Most airlines expressed a strong desire for the airport operator to bring the airline into the decision making process early, so that the airline has an opportunity to clearly define its passenger check-in business drivers. Finding resolution to the key business drivers noted here, along with others discovered through early meetings, will greatly help in the overall implementation.
      - Counter configurations to aid in passenger processing, including baggage handling and fee collections.
      - Marketing/branding – Marketing/branding remains an important issue for airlines. Some airlines use their check-in and gate areas as the "door way" to the passenger's flying experience.

- Customer Service - Generally speaking it is not about the "price" of the common use system; it is about customer service.
- Access to airline proprietary systems - Being able to access all the individual functionality that most carriers have developed for their specific business processes.

2. *Airline Operational Issues and Opportunities:*
   a) Airlines invest substantially in the evaluation of passenger flow methodologies. Once a methodology is established, the airline then begins to migrate all check-in counter operations to the new model. Airlines noted that common use can have an adverse impact on their passenger flow methodologies, if not properly planned for.
   b) Self service check-in is an increasingly important element of processing passengers through the check-in process. Airlines are opposed to common use self service (CUSS), when it hinders the airline's operational process for self service check-in.
   c) Airlines noted that size of airport operation is not the primary factor. If the Airport is not facility–constrained, it typically does not make sense to the airline to be forced to share gates and counters, or to pay for a common use system. In such cases, the airport operator should prepare and present its business case analysis.
   d) Airlines expressed concern that airline operations must not be impacted by airport outages of any kind. In providing common use, airport operators should effectively plan for mitigation of outages caused by the common use system.
   e) Airlines expressed a big concern in the risk of lost functionality with the common use system, when compared with the functionality the airline specific systems provide to each operation.
3. *Airline Facilities Issues and Opportunities:*
   a) Airlines noted that when common use is planned and implemented appropriately, it can provide a proper level of facility flexibility. Generally speaking, some counters controlled by the airport operator are available for overflow, etc.
   b) Common use space can sometimes be space-constrained. Airlines noted that common baggage sort and baggage screening areas can tend to be space-constrained. Airport operators should work with the airlines in planning for common use spaces.
   c) Airlines noted a need to coordinate storage space requirements, especially in gate and ticket counter areas.
4. *Airport Performance Issues and Opportunities:*

   The following performance operational related items were addressed by airport operators with regard to applying common use in the terminal check-in area.
   a) Establishing the Performance Criteria. The airport operator should work closely with the airline in establishing the performance criteria of the check-in area, including:
      - Maximum throughput calculations of check-in counters, in coordination with gate peak operations. Counter throughput calculations must take into account the minimum number of positions needed to accommodate various aircraft sizes. A typical number is 2 to 4 positions for an RJ, and 4 to 6 positions for a narrow body aircraft. Another common calculation is to divide the number of passengers an aircraft type can carry by 50, and that equates to the number of required ticket counters.
      - Passenger flow calculations in the check-in area and security check points
      - Baggage handling calculations for bag weighing, screening areas, and baggage make up. Several considerations apply to the baggage make-up system(s). First, is that the back wall belts that serve specific baggage make-up areas and check-in counters that may be associated with these areas. Secondly, the throughput of the in-line baggage screening capability must balance with the number of flights at any one time. The number of flights may be greater than the number of gates since the time window for the processing of bags (about 2.5 hours) is greater than the ground time for an aircraft (between 25 and 50 minutes).

- Baggage handling calculations from curbside and other off-site bag drop off facilities.
- Available airline time per check-in counter, per departing flight – use of ticket counter time slots before gate utilization
- Consider future airline performance opportunities. Airlines are continually reworking the check-in process, with attempts of improving passenger processing, reducing dwell times, and facility utilization.

b) Establishing the Operational Criteria. Again, the airport operator should work closely with the airlines in establishing the operational criteria of the check-in area, including:
- The functional use of check-in counters: full service, agent-to-passenger ratios, re-check, and others.
- Passenger demographics (lots of bags to check, vice business traveler, etc.)
- Use of passenger self service check-in.
- Optimum passenger flow through the queuing area. This is important, since the available space will dictate how best to layout queue lines, which in turn, will help to establish placement / location of self service check in kiosks. For example, some airports are space constrained, with narrow queuing depth. In this case, placement of self service kiosks is generally best in or near the check-in counters.
- Need and function for signage over or near the counters and throughout the check-in area
- Consider check-in counter allocations physically limited to specific gates, or baggage handling systems tied to specific allocation of check-in counters. This is an important and often overlooked step. For many airports such limitations prohibit the full implementation of common use counters. If this is the case, it is important to attempt to balance the number of flights at any given time, to ensure optimum flexibility.
- Consider other airport facility limitations such as location of check-in counters to airline ticketing office or gates, or Inter or multi - Terminal configuration(s)
- Anticipate the event of airline full counter change outs, due to airline mergers, or other reasons.
- Consider need for counter space to accommodate seasonal or charter flights.
- Consider the use of airline temporary equipment and airline space requirements.
- Consider future technology or operational enhancements, such as passenger self tagging and/or common bag drop off locations. Planning for space allocation for these may be important.

c) Define the function of the counters. Using the performance and operational characteristics established, the airport operator can then layout the optimum counter configurations and queuing areas. Options may include any of the following:
- Establish all counters as common use, providing full flexibility
- Establish only a set of counters, between airlines and at the ends as common use, providing the ability to 'flex' check-in operations when required to accommodate peaking activities. This option is best used when the airport operator finds that the facility has an excess of counters.
- Use of mobile check-in counters for added flexibility in the check-in area to handle peak loads or curbside area. This function provides added mobility for gate and recheck areas.

d) Define counter configurations suited for check-in space. The options listed below should be considered when evaluating check-in configurations. Figure B3-1 represents a schematic example of how a counter module might end up looking after this step is complete.
- Full service counters –These counters are found in the more traditional counter configurations. Being full service, these counters can be used to accommodate all airline check-in services. The disadvantages for these counters include:
  - Consume a greater foot print
  - Require dedicated airline staff (one-to-one service)
  - Longer dwell times

Figure B3-1. Counter module example.

- Passenger facing check-in kiosks embedded in counter – These counters are configured to accommodate two passengers per one airline agent. As seen in Figure B3-1, this counter can be designed to consume less foot print than that of the traditional counter, thereby enabling the airport operator to install a higher number of counters. These counters can also be configured in a variety of means to help accommodate passenger services (example: passenger self service; check-in, and print boarding pass only). The disadvantages for these counters include:
  - May result in temporary congestion points due to passengers dwell time at the counter, attempting to use self service check-in with bags to check.
  - Costs are higher than traditional counters, due to equipment requirements
- Dedicated function counters – In an effort to improve passenger processing, airlines and airport operators are installing counters for specific functions such as ticket sales or baggage drop off, allowing the check-in counters to process passengers more effectively. On occasion, counters can be configured for irregular operations or rebooking functions.
- Location of free standing self service kiosks.
- Location of dynamic signage

5. *Curbside Check-In*
   a) Depending on the airport, curbside check-in may or may not be a significant part of the Airport's processing in passenger check-in. At present, there is not a clear trend either way.
   b) Airport operators and airlines see added flexibility to curbside check-in through the use of self service check-in kiosks. One airport envisions that at some point, passengers will be able to check in at a curbside common-use kiosk, choose their airline, and then proceed to a common-use bag check where boarding passes will be checked and bags will be tagged and checked by a common-use representative and enter the in-line system through a single feed. This would eliminate the need for passengers to bring baggage into the terminal and wait in line at airline counters or kiosks.
   c) As with terminal check-in counters, the airport operator may experience similar benefits and obstacles for curbside. One significant hurdle most airports must overcome,

when moving to common use curbside is how to process the bags from multiple carriers. Traditional curbside counters depended on the airline using the counter to routinely move the checked bags by cart. Ideally, and as pointed out in the Airport example noted above, the airport bag sortation and screening system should be extended out to curbside. At present, this is a cost burden most airport operators are not prepared to assume.

d) Common use curbside check-in also presents another challenge, where staff performing the check-in functions must be trained under each airline's host system that may operate from that counter.

6. *Passenger Queuing / Processing*
   a) How to design the check-in facility, to provide the optimum processing of passengers is a primary emphasis for both airport operators and airlines. Many of the airlines have invested significant cost and effort in designing new check-in processes that include the passenger queuing at the check-in counters and kiosks. The following items were noted when considering passenger processing:
      - Meet with each airline to discuss the airline's passenger processing plans and initiatives, so as to best accommodate the final design.
      - Design passenger flow around the back side of kiosks, so as to not block the view or use of the kiosk
      - Consider the demographics of the passenger. One airport operator, whose passenger demographics showed a heavy count of checked luggage, chose to place kiosks imbedded into the check-in counters, with sufficient depth between the counters and where the queuing began. When the kiosks were placed away from the counters, the airport operator was faced with flow congestion due to the excessive luggage.
      - Consider the depth of the check-in lobby.
      - Several airports are moving towards no queue lines. In this scenario, the kiosks are lined up in an order in the lobby, and then the passengers move from the kiosks freely to the bag drop area. These airports expressed better usage of their kiosks in this configuration because they were not obscured by the queue lines.
7. *Staffing Considerations*
   a) Improving the use of passenger self service, can also increase the need for passenger assistance. Also, with common use, the airport operator is often called upon to assist passengers. Two positions should be considered:
      - Terminal Operations FTE
      - Airline Affairs FTE
8. *Accessibility*
   a) Accessibility issues arise with the areas in which the Passenger interfaces. For the check-in area, this includes the self-service check-in kiosks and the graphic display devices. The graphic display devices can include way finding, airline information, and flight information displays. Further discussion on the accessibility issues in these areas can be found in the Technology section of this Appendix.

Gate Area

1. *Airline Issues and Opportunities:*
   a) Airline Issues and Opportunities regarding common use gate operations are presented in the Airside Operations section of this Appendix. Specific to the gate, in relation to other terminal areas, the airlines noted the following.
      - Airlines prefer their back office located near their gates. Accommodation to this preference working under common use is sometimes problematic.

- Associated with the gate, is the back office. At least one airport has begun pushing the idea that airports should present options to provide common use equipment and services in the airline back office areas. By doing so, the airline can truly get out of the IT support business at that particular airport.

2. *Airport Performance Issues and Opportunities:*

   The following performance related items were addressed by airport operators with regard to applying common use in the terminal gate areas.

   a) Few U.S. airports are fully configured for common use throughout all gates. However, several airport operators are considering a phased in approach toward common use. "When it makes sense, we will take control of more of the gates." In cases such as this, the airport operator should consider the following:
      - Establish a migration plan that makes sense to both the Airport and airlines. Sound business rules should be in place that will make the decision for you, when it is time to move a gate to common use.
      - Consider strategically, which gate will function best as a common use gate. Items to consider include:
        - Gate location between carriers that may require overflow use of gates
        - Gate locations for seasonal carriers
        - Gates are suited on airside with equipment suitable for various aircraft type and size
      - Consider IT infrastructure requirements. If appropriate, the airport operator should prepare the IT infrastructure, such that moving to a common use gate will be as cost effective and timely as possible.
      - Consider signage requirements.

   b) Regarding the management of common use gates, airport operators require routine monitoring of gate activity. Even though gates are common use, over time, airlines may install 'proprietary' equipment at the gates they normally operate from. This can cause delays in operation and unexpected costs to the airline, if in the event; the airport operator is forced to move the airline to another gate.

   c) In the layout of the gate area, airport operators should consider the use of passenger self service kiosks in key gate area locations. Self Service Kiosks in the gate area are being used for:
      - Checking in bags and processing baggage fees for bags that need to be checked in at the gate.
      - Recheck functions, due to flight cancellations or other irregular operations
      - Convenience factor for the business traveler who wishes to print a boarding pass for a later flight out.
      - Self service of the passenger's flight record, such as changing seat assignments, or adding additional services to the itinerary.

Related Terminal Services

1. *Airline Issues and Opportunities*

   a) Airlines are generally in favor of the airport operator providing terminal services as noted in this section, provided that costs and service standards are carefully planned for.

2. *Airport Performance Issues and Opportunities*

   a) Wheel Chair Services. At the majority of airport locations, wheel chair services are typically provided by the supporting airline. Airport operators that are either considering or have already assumed this role is on the increase. Airport operators view this service as a key customer service issue that when handled poorly, reflects directly on the image of the airport. Many times, the airline is simply not of the size of operation to easily provide this service.

b) Terminal Cleaning Services are generally provided by the airport operator, except for airline hub operations, where the hub airline maintains a lump sum cleaning and maintenance agreement for its major locations. With the recent down turn in flight operations, airport operators and airlines are evaluating cost cutting measures in this area. One airport operator reported a 50% savings in cost by converting from airport staff to an outsourced contract. Since this service is many times a shared responsibility between airlines and airport operator, another cost savings opportunity may be in consolidating the services under one.

APPENDIX B4

Airside Operations

Owning and Assigning Common Use Gates

The following issues should be considered by the airport operator when evaluating the opportunity of owning and maintaining common use gates.

1. *Airline Business Issues and Opportunities:*
   a) Airlines noted several business reasons why common use gates may be an advantage. Many of the reasons are the obvious result of proper planning and implementation of the business issues and opportunities noted here in this section. These include:
      - When common use adds real value to the airport operator and airlines. This statement appears to be an obvious reason. However, many airport operators move towards a common use solution without first identifying the intended value of the installation for both the airport operator and the airline.
      - Airlines generally agreed that common use provided potential benefit in non-hub or spoke stations. In such situations, and if properly designed and priced, common use provides the airlines with the functionality they need and the airport operator with the flexibility it needs. Further, common use can allow for maximizing utilization of gate positions which has the potential of lowering overall airline facility cost.
      - Cost advantage to paying per turn for gate usage, when an airline is in need of only a few slots per day. This may be a small carrier or even a larger carrier with temporary or overflow gate use needs. Airlines noted a true advantage for the ability to handle an additional flight or two, and not have to over-congest their existing gate or pay full price for another preferential or exclusive use gate. Airlines generally expressed a supportive position for airport operators who effectively controlled some gates in a per-turn common use environment.
      - Accommodating the temporary need of an airline to cover seasonal traffic needs, or new markets under development.
      - New Entrant airlines, seeking limited gate use and minimal capital costs (remove barriers of entrance).
      - When an airport operator is providing International gate operations. Airlines typically supported the need for common use, due to the business operations of International gates.
   b) Airlines are typically against common use installation where the airport operator opposes the airline business process. Most airlines expressed a strong desire for the airport operator to bring the airline into the decision making process early, so that the airline has an opportunity to clearly define its gate usage business drivers. Finding resolution to the key business drivers noted here, along with others discovered through early meetings, will greatly help in the overall implementation.
      - Marketing - Marketing remains an important issue for airlines. Some airlines use their check-in and gate areas as the "door way" to the passenger's flying experience. Some air-

lines noted that marketing was used more predominately on the domestic side of the Airport, to that on the international side, due to the international security requirements, however, both remain important.

- Customer Service - Generally speaking it is not about the "price" of the common use system; it is about customer service
- Access to airline proprietary systems - Being able to access all the individual functionality that most carriers have developed

c) Airlines do not see the benefit of imposing common use if the particular airline maximizes the gate capacity. Two items for the airport operator to consider:
   - Should work with the airline to determine how many turns per gate equates to full gate utilization.
   - Clearly define Airport business drivers behind making the gate common use.

d) Airlines should have a financial reason to move to common use. The airline provides gate capacity to generate a revenue stream. Common Use pricing schemes can often strip the airline of its ability to achieve the needed revenue. Key points include:
   - Prefer that airlines pay for the facilities that they use: no more, no less.
   - Standard compensatory model works best. In other words, the airline should pay for the actual cost of the gate, and not pay for other space in that rate.
   - Some airlines noted that cost per passenger is not an efficient use of fixed assets. The cost per passenger model does not necessarily promote an incentive to shrink the number of gate operations, since the airline is paying per passenger, not per gate.

e) Some airlines think it best for the airport operator not to get involved with airline affairs, as to use of gate and sublease opportunities. These airlines stated that in the end, "we will lease the gates required and they will get payment for the gates." This opinion, however, was not shared across all airlines. Some actually preferred the airport operator to negotiate other airline uses of the gate. The 'take-away' for this one is that the airport operator should make sure its business decisions for sublease gate usage are discussed early on with all its airline partners.

2. *Airline Operational Issues and Opportunities:*

a) It is generally regarded by airlines that the best potential facility candidates for common use systems include baggage claim, gates, and stand alone kiosks. These, if properly planned for are defensible.

b) Airlines noted that size of airport operation is not the primary factor. If the Airport is not gate–constrained, it typically does not make sense to the airline to be forced to share gates and counters, or to pay for a common use system. In such cases, the airport operator should prepare and present its business case analysis.

c) Airlines oppose operating from a common use gate because, typically, this operation is not "common" to the other airport locations they operate from. In many cases, common use does not work well with the airline's boarding process, which is a key success factor for the airline's business. Airlines expressed a strong desire for the airport operator to conduct effective operations planning, to avoid changes to airline operations. It should be the goal of the airport operator to continually work with the airline to improve in performance. Through this efficiencies go up and costs go down.

d) Airlines noted that airport operators should properly plan for, and coordinate with the airlines the gate reallocation methodology. Issues noted included:
   - The responsibilities of the airport operator and airlines should be clearly defined
   - The airport operator should at least perform an oversight role for problem resolution
   - Depending on the level of involvement provided by the airport operator, the airport operator should ensure personnel provided have the proper experience and expertise. Airlines noted that airport operators many times, do not have the expertise to provide a turn-key approach.

- Work with the airlines to define gate occupancy times. The operational characteristics such as aircraft size and seasonal schedules often result in the need for varied time frames. As a result, airlines would like to be a part of the decision making process up front.
- Define requirements of use for an airline that may not be operating under common use, but for a short duration, may be reallocated to a common use gate. Some airlines noted that they typically would prefer to double up equipment at the required gates / counters if common use equipment is installed.
- Define requirements for irregular operations and offloading from another gate. In such cases, some airlines expressed a need for the airport operator to consider the Airport-provision of supplemental staff.

e) Airlines expressed a need for airport operators to properly define its use of RONs when working in common use. To point out the need for this coordination, one airline noted it has 500 airplanes in their working schedule, with only 400 gates to meet the RON need

f) Airlines expressed concern that airline operations must not be impacted by airport outages of any kind. In providing common use, airport operators should effectively plan for mitigation of outages caused by the common use system.

g) Airlines noted several operational reasons why common use gates may be an advantage. Many of the reasons noted, are the obvious result of proper planning and implementation of the operational concerns and opportunities noted here in this section. These include:
- The dominant airline will typically not stand in the way of the airport operator installing common use, as long as it does not affect the operations or cost of the dominant airline.
- If the airport is gate-constrained, it makes sense for the "spoke" airlines to share gates.
- Carriers that are willing to make long term commitments to airports should be provided the opportunity to lease preferential space, but potentially with common use equipment if their utilization warrants.
- Generally international gates at both domestic and international airports and some domestic airports require use for domestic flights. In such cases, common use equipment is an advantage.

3. *Airline Facilities Issues and Opportunities:*

a) Airline noted concern with the consistency of the assignment of gates and operating space. The following items were of greatest benefit to the airlines:
- Schedule common use gates in close proximity to the airline's operating space
- To the best extent possible, schedule assignment of the same gates on a regular and consistent basis.
- Gate selection strategically near concessions and/or services for passenger

b) Airlines also stated that the airport operator should provide space, but not dictate how the space is used, since airlines typically design the gate setup to board its passengers as it best seems fit.

c) Common use space can sometimes be space-constrained. Airlines noted that common baggage sort and baggage screening areas can tend to be space-constrained. Airport operators should work with the airlines in planning for common use spaces.

d) Airlines noted a need to coordinate storage space requirements, especially in gate and ticket counter areas.

e) Airlines noted that when common use is planned and implemented appropriately, it can provide a proper level of facility flexibility. Generally speaking, some gates controlled by the airport operator and available for overflow, etc.

4. *Airport Performance Issues and Opportunities:*

The following items were addressed by airport operators with regard to applying common use in the airside gate area.

a) Setting the goals

As discussed earlier, common use has the best chance of success, when the vision and culture for common use are directed from the Airport executive level, down. Assuming,

this be the case, Airport Operations, Business / Finance, Technology, and Facilities should work together to set the goals for operating common use gate facilities. The goals should be developed, based on the business drivers discussed later in this Guide. These goals should then be reviewed with the airline business partners, and if necessary, adjusted based on airline input.

b) Define gate management responsibilities

Effective operations of common use gates require the coordinated effort of all involved. Understanding the full cost involved in operating common use, requires upfront planning of these responsibilities. Airport operators noted the following areas. Some areas of responsibilities shown are obviously airport operator or airline specific responsibilities. However, depending on the airport and its goals, these responsibilities may be shared or performed by airport or airline personnel.

- Perform Airport Liaison with airlines for gate utilization and management
  - Facilitate the Gate Management meetings as needed
  - Send monthly email notifications to remind air carriers of the schedule submission due
  - Work with airlines in continuous process improvement
- Monitor gate usage, including Remain Overnight or remote parking area
- Assign or reassign aircraft for gate capacity optimization
- Assign or reassign Remote Aircraft Parking positions as required
- Ensure timely correspondence between Airside Operations, airlines, and ground handlers to share information and advise of gate management issues.
- Develop gate usage schedules and make daily gate assignments
  - Review airline schedules
  - Manage gates between scheduled operations
  - Resolve gate usage conflicts
  - Assign gates in real-time, when required
- Manage Irregular Operations

For the airline:

- Provide timely and accurate flight schedules to Airside Operations
- Provide Airside Operations with issues and concerns for resolution
- Participate in Gate Management Meetings when conducted
- Provide immediate notification to Airside Operations, of all off-schedule flights that may impact a flight operation proceeding or following an irregular operation
- Comply with the MOD or Airside Operation's directions regarding Gate assignments
- Interact with the Gate Management System to update delayed *departure* flight information

c) Establish the appropriate means and methods for managing the normal scheduling of gates.

Airport operators typically use a gate management system to help with the facilitation of this effort. With that said, many airport operators expressed dissatisfaction with the gate management system available to them. The primary reason was that the system was selected and implemented prior understanding the means and methods as to how to effectively manage the gates. As a result, day-to-day activities are cumbersome, if not impossible to perform through the system. The Operator then ends up using external resources, such as spreadsheets or other means to supplement the gate management system. To avoid these problems, planning prior to selecting the system is always preferred. System selection is then performed, based on the results of this planning. The following are areas to consider during the planning process:

- Define airline requirements for submission of flight schedule information. This may include forms and / or airline automatic feeds. If automatic feeds will be used, make sure to define the systems interface requirements. This may also include other data sources such as OAG.

- Define the gate assignments protocol. This primarily includes defining the flow of information from the airline and other sources, to: Operations; to Ramp Tower Manager; etc, and the decision making protocol for each step. This includes the submission times (ex. 30 days prior to flights) and the requirements for advanced notification duration prior to schedule change.
- Define the distribution of consolidated gate schedule information of arriving and departing flights as supplied by each airline. Information is valuable and technology allows the easy distribution of this information. If done properly, Airport Administration, finance, and others can receive the timely distribution of information.
- Define rules for governing gate closures / routine maintenance issues.
- Define gate occupancy times and criteria for compliance. This item is discussed below in detail. It is mentioned here; since the criteria defined should be an integrated component of the resultant gate management system.
- Define rules for resolving gate conflicts. Again, this item is discussed below in detail, and is mentioned here, since the criteria defined should be an integrated component of the resultant gate management system.
- Define rules for using preferential assigned gates that may not be on the common use system.

d) Define gate occupancy times and criteria for compliance.

Since this is aircraft and airline dependent, airlines noted a strong desire to be a part of this effort. The success of this effort is critical, since the mismanagement of one airline in a common use gate has the potential of impacting the operations of another airline scheduled for use at the same gate, during the next time slot. Airport operators typically develop a simple matrix describing the gate occupancy periods, per flight and aircraft criteria. An example of such a matrix is shown in Table B4-1 on the next page.

One noted exception to the above table is with the first flight of the day for airlines. Since it typically takes the airline a longer time to start up with the first flight of the day, some airport operators are allowing a longer gate occupancy time. Airlines are in favor of this measure, since the first flight of the day typically sets the pace for National airline on-time arrivals, and if the first flight of the day is delayed, it can have a ripple effect on the other flight schedules throughout the day.

A key component of this effort is defining the maximum scheduled gate occupancy periods and the rules to follow if these periods are exceeded. Such rules assist in providing conflict resolution between airlines sharing a gate, and which may include rescheduling the next flight, pushback of the stalled flight, and criteria for when penalties will be imposed. Criteria and penalties should consider at least the following:

- Impact resulting from a delayed flight
  - Delayed departure could result in the arrival of another aircraft destined for that gate which could block the departure of the delayed flight, leading to any of a number of "on-the-fly" operations to remedy the situation.
- Impact resulting from mechanical or other failure results
  - Airline responsibility: aircraft, ground handling, etc.
  - Airport Operator responsibility: boarding bridge, construction, etc.

Table B4-1. Gate occupancy matrix.

	Regional Jet and Commuter Aircraft	Narrow Body Aircraft	Wide Body Aircraft
Originating Flight	30 minutes	1 hour	1 hour 30 min
Terminating Flight	30 minutes	1 hour	1 hour
Through/Term Fl.	1 hour	1 hour 30 min	2 hours

Also a part of this planning period is to address non-occupancy times, including:

- Decisions when there is no gate demand – this may include performing routine maintenance, or other issues that can be scheduled.
- Managing separation time between flights

e) Define rules for scheduling of gates and for resolving gate conflicts.

Airport Operators typically establish a basic set of rules that govern selection of gates. Depending on the Airport business process, the set of rules differ from Airport to Airport, but generally comprise a subset of those shown below.

- Emergency flight accommodations shall have priority over all other gate scheduling.
- Per-Gate Operational Characteristics to account for unique limitations in each gate (Availability of gate or pad that can accommodate the aircraft type). It is important to note that the rules established by the airport operator are impacted by each gate's unique operational characteristics and must be taken into consideration. Gate Operational characteristics are discussed in detail under the Ramp Control Services section of this Guide.
- Medical emergencies
- Preferential, Signatory, and/or dominant carrier priorities
- Seniority / loyalty priorities
- International arrivals have priority over domestic
- Arrivals over departures
- Arrival and departure times
- Close proximity to existing operations or connecting flights
- Boarding and ground support location
- Aircraft that have a wait time greater than 30 minutes for a gate will have priority
- Actual time on the ground
- Anticipated time of available gate
- If a conflict time still exists, the gate manager shall use all gates and gaps in schedules available to accommodate all flights on available gates
- If all gates are full and a conflict cannot be resolved on a gate, then Hard-stand operations can be activated
- First ones to submit advanced gate schedule
- Specific to International Gates:
  - Scheduled international arrivals requiring Federal Inspection Service (FIS).
  - Charter, non-scheduled, or general aviation international arrivals having made prior arrangements with Airport Operations and requiring FIS.
  - Unscheduled international arrivals or departures without prior arrangements.
  - Selected airlines' domestic arrivals and/or departures.
  - Other domestic arrivals and/or departures

f) Defining rules for scheduling of gates during Irregular Operations.

These rules may be a subset of the rules used for normal scheduling. First and foremost, airport operators noted the need to clearly define what constitutes an irregular operation or emergency flight.

g) Defining rules for Remain Over-Night (RON) and Remote Parking.

Airport Operators noted the following areas of importance.

- Who assigns and resolves conflict
- Available gates subject to gate demand each morning and to off-schedule operations throughout the night.
- Criteria for parking at common use gates:
  - Last arrivals for those gates that day or the first scheduled departures for those gates.
  - Proximity to normal airline activity

- Additional requirements at other common use gates
- Managing Off – Gate parking
- Monitoring Usage
  - Assigning numbers to all locations
  - Managing to the numbers

5. *Airport Physical Considerations Issues and Opportunities:*

   Issues and opportunities related to the physical considerations of the Airside gates are discussed in detail in Providing Ramp Control Services.

6. *Staffing Considerations Issues and Opportunities:*

   The management of common use gates introduces activities, and thus staff, not normally found in the day-to-day operations of airports operating without common use. Airport operators noted the following staff positions that should be considered:

   a) Gate Manager / Planner

      Part time to full time position, depending on the defined Airport Business process. This position can be at a technician level, controlling day-to-day gate management, and providing coordination between airlines, Ramp Control, and Airport Operations. The Primary tool to aid this position is a gate management system. Proper training is crucial for this position, as cost savings and efficiencies are recognized by both airlines and airport operators when this role is performed properly.

   b) Airline Liaison

      Part time to full time position, depending on the defined Airport Business process. This position is filled by the airport operator and coordinates the meetings and flow of information between airlines and Airport decision makers. The success of this role is defined by airline satisfaction levels, and by introduction of continuous improvement measures that help passenger processing and airline operational efficiencies.

   c) Airline Interface to the airport operator

      Each airline now takes on additional staff requirements for coordination with each of the above new airport operator positions. Careful planning with the airlines should be performed to minimize the impact of this requirement.

7. *Accessibility Considerations Issues and Opportunities:*

   Accessibility issues related to common use gate management are discussed in detail in Providing Ramp Control Services in this Appendix, and in the Terminal Operations Section of this Guide.

Providing Ramp Control Services

The following issues should be considered by the airport operator when evaluating the opportunity of providing Ramp Control Services. Other related issues are presented in Owning and Assigning Common Use Gates in this Appendix.

1. *Airline Business Issues and Opportunities:*

   a) Some airlines noted that if done properly, the airport operator can provide Ramp Control Services more cost effectively than can the airline.

   b) Airlines are typically against common use installation where the airport operator opposes the airline business process. Most airlines expressed a strong desire for the airport operator to bring the airline into the decision making process early, so that the airline has an opportunity to clearly define its gate usage business drivers. With regard to airport operators providing Ramp Control Services, the airline is concerned whether or not the airport operator is providing the service in a manner that is consistent with specific airline standards for aircraft movement and separation. In working within the standards, the airline

wants the ability to make the decisions, especially where waivers to the standards are present. Examples of such decisions given include:
- The willingness of airlines to allow waivers of wingtip separation differ from company to company
- Decisions must be made that impact the flexibility and dynamics of the ramp, and may impact the airline's ability to operate at the ramp

c) Airlines expressed concern in the handling of labor contracts when the airport operator provides a portion of the Ramp Control services. At best, this can be confusing in a common use environment.

2. *Airline Operational Issues and Opportunities:*
   a) Some airlines think it best for the airport operator not to get involved with airline operations in the Ramp Control area.
   b) Some airlines expressed that the ability to dictate risk should be with the airline. For example, allowing fifteen foot wing tip clearance, when 25 foot is called for.
   c) Airlines expressed concern regarding the level of trained and experience staff an airport operator may provide to perform Ramp Control Services.
   d) Airlines noted that airport operators should properly plan for, and coordinate with the airlines the gate reallocation methodology. This issue is discussed in detail in Owning and Assigning Common Use Gates in this Appendix.
   e) Airlines expressed concern that airline operations must not be impacted by airport outages of any kind. In providing common use, airport operators should effectively plan for mitigation of outages caused by the common use system.
3. *Airline Facilities Issues and Opportunities:*
   a) Airline noted concern that airport operators sometimes schedule flights in gate areas not suitable for their aircraft. The following items were of greatest benefit to the airlines:
      - Schedule common use gates in close proximity to the airline's operating space
      - Aircraft mechanical and power requirements are as needed
      - Sufficient space provided to properly service the aircraft.
   b) Airlines noted that when common use is planned and implemented appropriately, it can provide a proper level of facility flexibility. Generally speaking, some gates controlled by the airport operator and available for overflow, etc.
4. *Airport Performance Issues and Opportunities:*

   The following performance related issues and opportunities were addressed by airport operators with regard to providing Ramp Control Services to common use gates. Related issues regarding gate assignments can be found in Owning and Assigning Common Use Gates in this Appendix.

   a) Define the information sharing, communication, and coordination requirements between all stakeholders involved with Ramp Control. This may include any / all of the following:
      - Ramp Tower Manager
      - Other airline ramp control agents
      - FAA Tower Management and Staff
      - All airlines
      - Airport Operations
      - Airport Facilities.

      Working with the stakeholders, the airport operator should define the rules for providing service, along with the specific and shared responsibilities of the any of the listed stakeholders. In working with the stakeholders, airport operators noted the following important criteria:
      - Set the goals for airport operator controlled Ramp Management, the use of the tower(s) and automated equipment within the tower. In doing so, also define the Management area: gate areas, out to the taxiways, etc.

- Many of the tasks defined will require the communication of information among the various airport users who contribute to surface activities. To the best extent possible, for each task, a communication matrix should be established.
- The operations of one airline may affect the operations of one or many other operators.
- There is considerable need for shared situation awareness to assist both operators and FAA Tower staff, so that they can coordinate their actions in order to make the most efficient use of limited airport resources, particularly when demand exceeds supply.
- Rules related to 'blocking' in common use environments – airlines pushing back in the 'alleyways' of terminals and blocking another airline's on-time departure

b) Managing gate operations at each gate

Airport Operators expressed the need to establish an effective set of policies and procedures that dictate the management of gate operations at each gate. Such policies and procedures must be established with airline requirements taken into consideration, since airline policies and procedures differ from airline to airline. Specific issues noted by airport operators included:

- Ramp Control guidebook (what systems should be available to Ramp Control Operators, what are the typical functions performed, suggestions for staffing, interaction with the FAA and airlines, etc.)
- Airline time for staging and tear-down of equipment (PC air, and other connections)
- Managing Ground Handling Services Equipment (GSE)
  - Removal and storage of GSE, not in use by current airline at the gate. Some airport operators see this as a limiting condition to try and move various airlines to another gate that may be too far from where the airline stores their Ground Handling equipment.
  - Staging locations and timing for ground handling services equipment
  - Tug circulation space (park and drive areas)
  - Equipment Asset Tracking
- Airline reporting mechanism and protocol for:
  - Equipment malfunctions or facility problems.
  - RON or off gate parking
  - Notification of gate safety or clean up issues
- Managing internal issues that need to be compared with airlines, since their standard operating procedures may differ
- Safety Requirements
  - Responsibility of the using carrier
  - Training and Inspection requirements
  - Rules and Regulations
  - Communications / Reporting requirements
- Gate Area Clean up – Rules and Responsibilities
  - Responsibility of the using carrier
  - Airport Use agreement issue and Procedure Requirements
  - Training and Inspection Requirements
  - Control of "Airport FOD" per Federal Requirements
  - Communications / Reporting requirements

c. Controlling gate use based on the operational characteristics of each gate. Airport operators have noted a common mistake of thinking that once a common use system is installed, any airline on the system is prepared to use that particular gate, only to find out the unique operational characteristics of the gate, many times, limit the use of the gate. Controlling and using the gate specific information is a key component of success and must be available to those responsible for the management of gate facilities. Some airport

operators are importing this information into their gate management system for near-real time call up. Other airport operators maintain matrices, documenting the specific criteria at each gate, as shown by a sample gate use matrix in Table B4-2.

As seen from this table, and as noted by airport operators, operating with common use, at least the following gate criteria must be considered and logged for each gate, to ensure effective gate management:

- Aircraft size and movement restrictions for each gate
- Gate restrictions, based on size of aircraft at neighboring gates
- Aircraft power requirements, such as dual voltage connection requirements or 480 volt requirements
- Fuel pits configurations and air craft fueling location
- Passenger boarding bridge size and accessibility limitations
- Configuration of gate power, air, water, etc.
- Ground Loading Restrictions
- Front and rear door loading
- NFPA restrictions
- Gates that have limited provisioning truck access to aircraft

Table B4-2. Aircraft parking gate capabilities matrix.

AIRCRAFT	1	3	5	7	9	9A	8A	8	6	4	1A**	1B	1C	3A
A380											L2			
B747											L1			L1
MD-11											L2	$	$	L1
B767-300														
A300	L2													L1
A310														
B757-300*	L2	L2	L2	L2	L2	L2	L2							
B757-200*	L2	L2	L2	L2	L1	L2	L2							
B737-900										#				
B737-800										#				
MD-80	&													
B727	&													
DC9	&													
RJ-1														
RJ-2														
RJ-3														
PC Air Unit														

Legend

L1 Door Front Door

L2 Door Middle Door

Gates that have limited provisioning truck access

$ MD-11 in combination with B757w and smaller aircraft only

& Groundloading

No provisioning truck at R1 door

Notes

* B757 Winglets parking capability min clearance 20 feet

** When 1A is used 1 and 1B are closed

PBB slope for A380 is 8.45% (ADA 8.33%)

RJ-1 Mate PBB with RJ, with retractable floor

RJ-2 Mobile Platform

RJ-3 Ground Loading

RJ include CRJ and EMB145, note EMB145 shall use mobile bridge adaptor

d. Establishing consistent gate striping requirements. In making the common use gates prepared for the optimum level of aircraft types, most airport operators noted the need to assume the responsibility of defining, applying, and maintaining all gate striping. Whether or not an airport operator chooses to take over this responsibility, the airport operator must take the lead in clearly defining the lines of responsibility between airline and airport operator.

Airport Operators noted the need to establish a common striping plan to be applied to all common use gates. This effort must be carefully coordinated with all airlines, since symbols and colors differ between air carriers. Airport operators noted success in working with the airlines to come up with a common striping plan for their common use gates. In preparing the plan, airport operators noted the following items to consider:

- Establish a consistent set of symbols and colors to be used at all common use gates
- Set up rules for allowance of hash marks for all aircraft. Due to the difference in geometry, some airport operators apply aircraft hash marks for all aircraft using the gate, while, other airport operators establish a single, common hash mark.
- Include cargo requirements
- Establish a consistent set of all gate markings, including:
  - Boarding bridge and equipment foul lines
  - Fuel pits
  - Fuel carts
  - Safety symbols
  - Employee walk areas / bus drop off
  - Other equipment configurations / locations
- Establish airline employee safety rules to comply with, per striping plan.
- Ensure passenger boarding bridge access will comply with all sizes of aircraft using the gate
- To the best means possible, establish consistent staging of equipment.
- Consider arrivals of next generation aircraft

Figure B4-1 is an example of applying gate striping in a common use configuration.

Figure B4-1. Gate striping.

In this figure, note how the various aircraft size scenarios are tested to ensure passenger boarding bridge access. Also shown in this figure, is the airport operator's effort to establish consistent staging of equipment. For example, the fuel cart located in front of the right wing remains in this position regardless of aircraft size.

e) For Passenger Boarding Bridges, the following issues should be considered:
   - Airport Operators noted the major operational issue with passenger boarding bridges, is their consistency of operations at common use gates. Typically, airport operators purchase the PBB from airlines who probably use them for a single purpose. In using the PBB at a common use gate, airport operators often find that the purchased PBB may not necessarily meet all of the aircraft requirements. Issues noted include:
     – Size and accessibility limitations
     – Aircraft power requirements
     – Configuration of gate power, air, water, etc.
     – Increased maintenance due to overuse.
   - Monitor operational use. Even though airlines are responsible for the operation of the passenger boarding bridge, when the airport operator owns the asset, it is the responsibility of the airport operator to ensure proper operating conditions. As a result, airport operators have noted an interest in ensuring that the airline staff operating the PBB are properly trained and certified. As a part of the monitoring program, airport operators should provide regularly scheduled and ad-hoc inspections.
   - Use Airport owned Access Control System as a means of training verification. Airline PBB Operators, after completing training are granted access through the airport owned access control system. Some ACS are sophisticated enough to cancel access if training expiration dates are passed.
   - Provide security / access control requirements. Most airport operators state that it is the responsibility of the using airline to ensure that the passenger boarding bridge doors are secured upon completion of use. At common use gates, airport operators normally equip the PBB doors with some measure of access control through; keyed entry, cipher or pin code entry, card access, biometrics, or a combination thereof. In working in common use, airport operators have noted the need for additional security measures to ensure security breech is not caused through the sharing of access control keys, pin codes, or badges.
   - Prepare airline Operations Procedures defining training and use requirements.

f) For baggage carts the airport operator must manage and control the baggage sortation pier assignment and criteria. This issue becomes critical when operating under common use. Key issues include:
   - Scheduling of stage carts at the assigned outbound sort pier prior to departure time. Typically the time window is up to two (2) hours prior to departure.
   - Providing access rights to the sort pier by other users.

g) Establish and maintain an effective training program which includes all ramp control responsibilities, including airline support services such as baggage handling and passenger boarding bridge operations. The Training program should be mirrored off FAA and military training.

5. *Airport Physical Considerations Issues and Opportunities:*

In general, physical considerations issues and opportunities, with regard to Ramp Control, have been discussed throughout this section. Regarding the overall layout of the airport, airport operators noted the following:

- Ramp Control depends highly on the ability to visually monitor the gate areas.
- The location and number of ramp control towers must be consider to ensure effective monitoring of the common use gates and off gate parking areas. Some airport operators have thus invested capital for the construction of new tower locations.

- Consideration should also be given to the overall concourse design layout. Some airport operators noted that linear designs are far easier to monitor than "X" designs. In addition, "X" type designs tend to cause blockages.

6. *Staffing Considerations Issues and Opportunities:*

Airlines and airport operators noted the need to select Ramp Control Managers and operators already trained and experienced in Ramp Control. One airport operator stated they hire only former ATC controllers. Others noted similar criteria, such as the following:

- Two (2) years of full-time journey-level air traffic controller experience in an airport traffic control facility tower, OR
- Four (4) years of full-time ramp control or gate management experience at a large commercial airport.

Airport Operators also noted consideration must be given to the hours of operation. Typical ranges included either 20 hours a day (6 AM to 2 AM), to 24 X 7 hours of operation.

Careful consideration must also be given to labor requirements when staffing these hours and coordinating work requirements with airline Ramp Control personnel.

Airport Operators noted the following staff positions that should be considered:

- Ramp Tower Manager – Manages the affairs of all Ramp Control
- Ramp Controller - Coordinates and administers ramp control and gate management throughout the geographic boundaries of the Airport non-movement area on a per shift basis. Serves as focal point for the safe, efficient, and expeditious ground movement of aircraft ingress and egress within the confines of the ramp. Serves as liaison between the airport operations staff, tenants and the Federal Aviation Administration Airport Traffic Control Tower for administering flow management staging of departing aircraft and strategic gate management for arriving aircraft.
- Ramp Managers – Airport personnel responsible for monitoring ramp operations.
- Some airport operators maintain a small staff of qualified passenger boarding bridge operators. The purpose for this is to provide overflow or irregular operations support to airlines in need at common use gates. A secondary purpose is to have personnel qualified to monitor the efficient operation of the PBB.

7. *Accessibility Considerations Issues and Opportunities:*

Airport Operators noted the need to consider accessibility issues for service contractors.

The primary accessibility issue is with the Operations of Passenger Boarding Bridges.

- General access through the bridge
- Accommodating smaller aircraft (RJs) may cause excessive angles in the bridge. ADA requirements mandate a maximum Slope of just over 8% (8.33%).

Providing Ramp / Ground Handling Services

1. *Airline Issues and Opportunities*

a) Typically, airlines prefer the use of their own staff or control of outsourced handlers. By doing so, the airline has control of performance measures, and can more quickly respond to problems. If they do not perform to our level, we have the ability to get rid of or correct them.

b) When it comes to Ramp Control Services, the airlines maintain that there is a material safety issue in providing services in and around the aircraft.

c) One airline noted that for above-the-wing services, it always employs in-house staff. Even in low operations (ex. 3 times a week). This is a key component of their business model.

d) Even when the airline outsources the services, any given airline holds their handlers to a service level that cannot be subject to another carrier's operation.

2. *Airport Performance Issues and Opportunities*
   a) Although not completely true in all cases, it is the smaller airports that are looking into Airport-provided ground handling services. Reasons for this trend by small airports providing the ground handling services can be summarized as follows:
      - Increases the airport's marketability
      - Strengthens relationships with the airlines
      - Provides an alternate source of revenue
      - Provides a means to maximize equipment utilization and ultimately reduce cost by eliminating unused equipment
   b) Smaller airports also claim the following advantages for airlines when the airport operator provides the ground handling services:
      - Eases entry into the market
      - Reduces the cost for the airline
      - Provides better control over the level of service
      - Improves response time to problem calls
      - Provides one-stop shopping
   c) For Airports considering providing ground handling services, the following challenges should be considered:
      - Environmental compliance issues with deicing, secondary containment for fuel trucks, etc.
      - Public health concerns with aircraft drinking water, and international trash.
      - Regulatory compliance with Customs & Border Protection (CBP) and Transportation Security Administration (TSA) issues.
      - Procedural and Policy requirements set forth by each airline, meeting FAA standards, yet differing in application.
   d) Airports, electing not to pursue common use ground handling services provided the following opportunities to consider in how to help manage the services provided:
      - Ensure top-quality ground handling options for the airlines. One way to do this is for the airport operator to competitively bid the services and limit the number of ground handlers who have opportunity of providing service.
      - Set a minimum standard that all ground handlers must meet to continue operating at the Airport.
      - Establish a means of positive monitoring of equipment to ensure that assets are being used cost effectively. One such example given was through the use of Global Positioning System (GPS) technology to retrieve and employ its idle ramp handling equipment. In order to reduce the number of expensive GPS modules, each piece of ground support equipment (GSE), including each container dolly were permanently and uniquely labeled by a low cost Radio Frequency Identification (RFID) Tag. RFID readers and Differential GPS modules together with a Wireless LAN communication interface were installed on a limited number of patrol vans driving around the ramp. When the patrol van passes by a GSE or a group of GSE, the RFID reader identifies the GSE and the position information from the GPS will be relayed to the Control Room through an existing private Wireless LAN which is constructed for the use of a real-time ramp handling system. This application greatly saves the ground handler's budget on new equipment. Moreover the equipment location information is very useful for decision-making of pooling equipment with other ground handlers.

APPENDIX B5

Facilities Maintenance

Terminal and Airside Facility Maintenance Support

1. *Airline Issues and Opportunities:*
   a) Most airlines agreed that the airport operator is in a good position to provide facility maintenance in common use areas. Although airlines stated that they do not typically track internal costs for facility maintenance, most agreed that there was some level of financial benefit to the airport operator providing the service. In summary, airlines provided the following issues to consider:
      - Trouble tickets are all reactive, requiring time to repair
      - Communication is the key to avoid overlap of service
      - Each airport has its own policies, which make it difficult to stay up with changes
   b) Even within a predominantly common use airport, or common use facility within the airport, the airline is still required to maintain certain exclusive use areas. Again, communications is the key to effective coordination of services.
   c) Airlines generally view that airport operators spend too much on facility maintenance. Coordination and communication is needed.
2. *Airport Performance Issues and Opportunities:*
   a) In providing Facility Maintenance Service in a common use facility, the airport operator places a high priority on providing a consistent level of service. It is important that an airport operator's maintenance service is consistent and supports required customer service goals.
   b) Considering the full breadth of the facility, an airport operator views the maintenance of all items important, be it common use or exclusive use space. Airport operators report that many times, Airport facility maintenance staff are called out, or will voluntarily repair facility issues in exclusive use areas. In general, the airport operator views this as part of their responsibility; however, many airport operators and airlines alike are attempting to track to a greater detail, the costs and assets associated with facility maintenance. To help with this airport operators are tracking the responsibilities through established and controlled means, such as with a facility matrix, as shown in Table B5-1. Note that even with such a matrix, it remains important that the airport operator coordinate the issues with the airlines on a regular basis, and monitor progress.
   c) An increasing amount of airport operators either have, or are investigating the use of sophisticated Maintenance Management Systems. Through these systems, the airport operator can track assets, manage preventative maintenance, and track costs at a finer level.
   d) Airport Operators generally noted that even with maintenance management systems, tracking staff and changes throughout the facility is challenging. One airport operators is using its installed GIS (Geographical Information System) to better manage maintenance and the use of contracted staff.

Table B5-1. Facilities maintenance matrix.

D = Department of Aviation A = AIRLINE	MAINTENANCE MATRIX														
	AIRLINES EXCLUSIVE SPACE							AIRLINES JOINT SPACE							
	Holdrooms	Apron Area	Upper Level Offices	Lower Level Offices	GSE	Baggage Make-Up	Loading Brdgs/Bag Slide	Loading Brdgs/Bag Slide	Baggage Claim	Holdrooms	Apron Area	Ticket Counter	Ticket Office	Common Area	Sky Cap Podium
1. Access Control	D	--	D	D	D	D	D	D	D	D	--	D	--	D	--
2. Apron Sweeping	--	D	--	--	--	--	--	--	--	--	D	--	--	--	--
3. Conveyors/luggage movement sys.	--	--	A	A	A	A	--	--	D	--	--	D	--	D	D
4. CUTE System	D	--	D	D	--	D	--	--	D	D	--	D	D	D	D
a. Network cable plant	D	--	D	D	--	D	--	--	D	D	--	D	D	D	D
b. Telephone system cable plant(DOA)	D	--	D	D	D	D	D	D	D	D	--	D	D	D	D
c. Fids/Bids	D	D	D	D	--	D	--	--	D	D	--	D	D	D	D
5. Electrical															
a. Distribution	A	D	A	A	A	A	D	D	D	D	D	D	D	D	D
b. Exterior	D	D	A	A	A	D	D	D	D	D	D	D	D	D	D
c. Interior	A	--	A	A	A	A	D	D	D	D	D	D	D	D	D
d. Repairs	A	D	A	A	A	A	D	D	D	D	D	D	D	D	D
e. UPS/emergency power backup sys.	D	D	A	A	A	D	D	D	D	D	D	D	D	D	D
e. Relamping	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
6. Elevators/escalators	--	--	--	--	--	--	--	--	--	--	--	--	--	D	--
7. External/Internal roll-up doors	--	--	--	--	A	A	D	D	D	--	--	D	--	D	D
8. Exterior/Interior Doors	A	A	A	A	A	A	D	D	D	D	D	D	D	D	D
9. Fire Protection															
a. Fixed automatic systems	D	D	D	D	D	D	--	--	D	D	D	D	D	D	D
b. Portable fire extinguishers	D	A	D	D	D	D	A	D	D	D	A	D	D	D	--
c. Sprinkler/alarm	D	D	D	D	D	D	D	D	D	D	D	D	D	D	--
10. Furniture	D	--	A	A	A	A	--	--	D	D	--	--	A	D	A
11. General Maintenance															
a. Exterior	D	--	D	D	D	D	D	D	D	D	--	D	D	D	D
b. Non-structure	A	A	A	A	A	A	M	D	D	D	D	D	D	D	D
c. Structure	D	--	D	D	D	--	--	--	--	D	--	D	D	D	--
12. General Repairs	A	--	A	A	A	A	D	D	D	D	--	D	D	D	D
13. Heating and air conditioning															
a. Air distribution	D	--	D	D	D	D	D	D	D	D	--	D	D	D	--
b. Cooling	D	--	D	D	D	D	D	D	D	D	--	D	D	D	--
c. Heating	D	--	D	D	D	D	D	D	D	D	--	D	D	D	--
d. Operation	D	--	D	D	D	D	D	D	D	D	--	D	D	D	--
14. Janitorial	D	A	A	A	A	A	D	D	D	D	A	D	A	D	A
15. Keys/locks	D	--	D	D	D	D	D	D	D	D	--	D	D	D	D
16. Line layout															
a. Aircraft line	--	D	--	--	--	--	--	--	--	--	D	--	--	--	--
b. Lead-in	--	D	--	--	--	--	--	--	--	--	D	--	--	--	--
c. Line painting	--	D	--	--	--	--	--	--	--	--	D	--	--	--	--
17. Pest control	A	--	A	A	A	A	A	D	D	D	--	D	D	D	D
18. Public address system	D	--	--	--	--	--	--	--	D	D	--	D	--	D	D
a. Baggage ticket paging	D	--	--	--	--	--	--	--	D	D	--	D	--	D	D
b. Gate paging	D	--	--	--	--	--	--	--	D	D	--	D	--	D	D
c. General paging	D	A	D	D	--	D	--	--	D	D	A	D	D	D	D
19. Ramp Painting	--	D	--	--	--	--	--	--	--	--	D	--	--	--	--
20. Roof repairs	D	--	D	D	D	D	D	D	D	D	--	D	D	D	--
21. Sewage	--	--	A	A	A	A	--	--	D	--	--	--	D	D	--
a. Distribution	--	--	D	D	D	D	--	--	D	--	--	D	D	D	--
b. Fixtures	--	A	A	A	A	A	--	--	D	--	D	--	D	D	--
22. Signs															
a. Exterior (including gates)	--	D	--	--	--	--	D	D	--	--	D	--	--	D	D
b. Interior	D	--	D	D	--	--	D	D	D	D	--	D	D	D	D
23. Ticket counter/podium	A	--	--	--	--	--	A	D	--	D	--	D	D	D	D
24. Trash removal (dumpsters)	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
25. Water systems															
a. Boiler/hot water heater	--	--	D	D	D	D	--	--	D	--	--	--	D	D	--
b. Distribution	--	D	D	D	D	D	A	D	D	--	D	--	D	D	--
26. Window cleaning															
a. Exterior	D	--	D	D	D	--	--	D	D	D	--	--	D	D	--
b. Interior	D	--	D	D	D	--	--	D	D	D	--	--	D	D	--

3. *Staffing Considerations:*
   a) In general, staffing requirements will vary from Airport to Airport, depending on the level of outsourced providers and the level of airline provided facility maintenance.
   b) Airport Operators should account for at least one additional staff member used in conducting regularly scheduled facility inspections. Airport operators, experienced in providing facility maintenance in common use facilities, generally agreed a position of this was needed.

Maintaining Major Equipment used in Common and Shared Use Facility Space

1. *Airline Issues and Opportunities:*
   a) Most airlines agreed that the airport operator is in a good position to provide maintenance services on the major equipment assets used in common or shared use areas.
   b) In general, airlines think that airport operators charge to much for preventative maintenance and general up keep of these assets. With that said, one airline noted that they were not in objection to paying for good service.
   c) In the case where there is one airline that is the predominant user of the asset, such as with bag belts or bag claim devices, the predominant user generally favors maintaining ownership and/or maintenance of that asset.
2. *Airport Performance Issues and Opportunities:*
   a) In most cases, the airport operator prefers to assume maintenance of the major assets used in common or shared use functions. Examples were noted by many airport operators that they had plans to assume maintenance of certain assets, due to continued maintenance issues. The primary reason given included:
      - Stability of the Asset, now used by multiple airlines
      - Business Objective of the airline may be such that minor failures are overlooked. One example was noted where when a single airline used and maintained a baggage carousel, the airline overlooked the failed read rate optical system. For that airline, this function was not needed. However, under common use, the airport operator required this function to perform correctly.
   b) Airport Operators noted that cost of ownership of the major assets, typically were higher than planned. Reasons given for this included:
      - Airlines typically expect more money for the asset than the airport operator is prepared to pay.
      - Age of asset may cause unexpected failures.
      - Failure rates are also increased under common use operations, since the asset is cycled or used more than when it functioned in an exclusive use model.
      - The function of the asset may not be suitable in a common use model, resulting in unexpected upgrades or replacement.
   c) Airport Operators typically consider performing a Predictive or Preventive Maintenance (PM) / monitoring program was a best practice and in the long run saves money over a reactive maintenance program. Issues noted included:
      - The major assets usually include multiple mechanical parts, all of which, if maintained properly will generally function as required
      - An effective PM typically extends the life of the asset beyond its anticipated failure time (mean time between failure, MTBF, and ultimately beyond the expected life of the asset, thereby deferring thousands of dollars.
   d) Maintaining a major piece of equipment that is operated by someone other than the one responsible for maintenance can lead to issues with failure resolution ("who-dun-it"). Airport operators noted only a few instances where failure resolution was required. One such example was with an airline operating the passenger boarding bridge and damaging the air-

craft (auto-leveler issue). The airline operator claimed it was faulty equipment. The airport operator claimed is was incorrect use of the equipment. To resolve the issue, the airport operator had to provide staff to monitor the use of the PBB, and discovered the operator error. The end result was a change in training, and some modifications to the equipment options. Most incidents are small and are brought up in monthly station manager meetings, where they are discussed. Since all airlines know they share the costs in 'small' incidents, they typically work together to resolve such incidents.

e) As with general facility maintenance, airport operators typically agreed that using a sophisticated Maintenance Monitoring system was important. Reasons given included:
   - Asset tracking
   - Cost tracking
   - Tracking demographics and standardizing approach to PM.

3. *Staffing Considerations:*
   a) As with general facility maintenance, staffing requirement will vary from airport to airport. Typical scenarios for providing maintenance staff included the following:
      - Airport Operator maintains a level of in-house staff for first responder situations.
      - Airport Operator maintains a level of in-house staff for routine maintenance, fixtures, painting, etc.
      - Airport Operator may contract out services for specialized equipment.
   b) Other staff requirements may include:
      - Monitoring assets
      - Managing Preventative Maintenance Program
      - Help desk / trouble shooting
      - Problem resolution
      - Managing Contractor Staff

APPENDIX B6

Business Considerations

Check-In Counter

1. *Airline Business Issues and Considerations:*
   a) Most airlines stated a preference for leasing the counter exclusively, with airline provided equipment
   b) As with airport gate counters, most airlines do not see the need to move to common use when the airport operator has sufficient check-in counter space.
   c) Airlines stated a preference to a rates and charges model that distributed the cost of the common use system across only the airlines using the common use system.
   d) Airlines find themselves having to work in a variety of business models, when it comes to check-in counters, which include:
      - Lease the counter and own the equipment
      - Own the counter, and use airport provided equipment
      - Lease counter and equipment: common use
   e) Airlines maintain as part of their business model, the ability to market themselves as terminal of choice, starting at the airport terminal check-in area. Common use limits their ability to do so.
2. *Airport Performance Issues and Opportunities:*
   a) *Cost Distributions.* While there are no defined approaches for distributing costs to common use assets, Airports surveyed generally used a hybrid compensatory type model as shown in Figure B6-1.

      The cost centers used in this model usually consist of a Terminal Area Cost Center, Airfield Area Cost Center and Ground Side/Support Area Cost Center, as shown in Figure B6-2.

      Indirect costs, such as operation and administration, maintenance, police, fire, and utilities expenses are applied to these cost centers as well as capital costs such as debt service and equity amortization (see Cost Center Exhibit for additional detail).

      When charging for check-in counter use, Airports Operators generally use the terminal area cost center consisting of all direct costs allocable to the terminal area and allocated indirect costs and apply it to a space that includes the check-in counters, typically by total square footage, to obtain the amount needed to recover in association for use of the check-in counter. This is then charged through a rate mechanism such as per position per hour. Differing rates are typically provided to signatory and non-signatory airlines under the lease agreement. This mechanism and others are discussed in detail later in this section.

      Some airport operators distribute the total terminal revenue requirement into additional cost groups and assign a relative weight based on class of space, which are then normalized to equal the total terminal revenue requirement. For example an airport may use four groups consisting of: Group A (Gates, Check-in counters and Business/Service Counters); Group B (offices and VIP lounges); Group C (Baggage Areas and the FIS); and Group D (closed

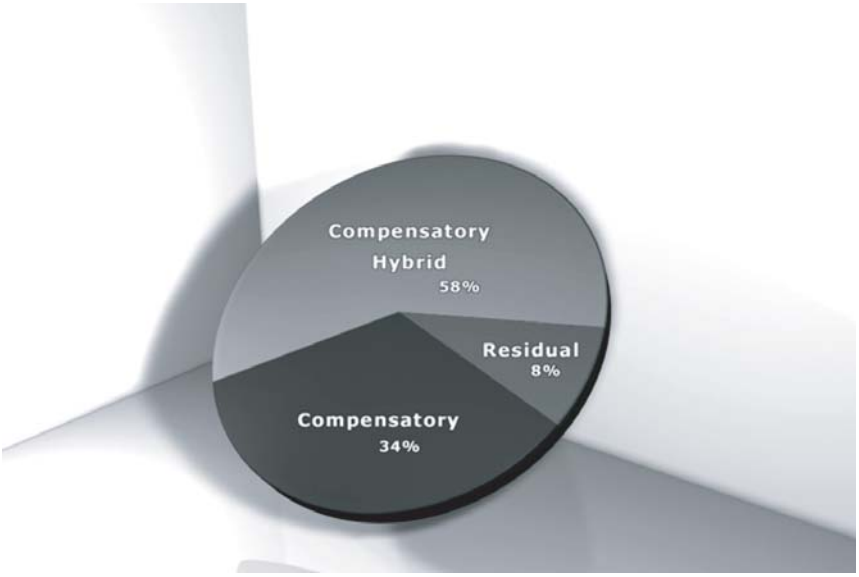


Figure B6-1. Cost distribution model.

Terminal Area Cost Center	Airfield Area Cost Center	Ground Side/Support Area Cost Center
Concourses	Landing areas	Parking Facilities
Boarding areas	Runways	Cargo Facilities
Pedestrian bridges	Taxiways	Aircraft Maintenance
Tunnels	Ramps	General Aviation
Lobbies	Aprons	Roadway Systems
Offices	Adjacent infield area	Inflight Kitchens
Baggage facilities	Perimeter dike	Hotels
Storage areas	Drainage pumping stations	Rental Cars
	Field lighting	Other Related Facilities
	Navigational aides	
	CFR support facilities	
	Cart roads	

Applied Operating Costs		Applied Capital Costs
Operations and Administration	Police	Debt Service
Maintenance	Fire	Equity Amortization
	Utilities	

Figure B6-2. Cost centers.

$$\frac{\text{Total Sq. Ft. Common Use Ticket Counters} \times \text{Terminal Revenue Rqmt for Ticket Counters per Sq Ft}}{\text{Est. Hours of Use of All Common Use Ticket Counters}}$$

Figure B6-3. Fee per hour (estimated hours of use).

storage space). The costs assigned to the space within each of these four groups then bear a weight relative to each other on a square foot basis. For example weights may be applied such as: Group A is 2.50 times the basis; Group B is 1.50 times the basis; Group C is 1.00 times the basis and Group D is 0.50 times the basis. This allows the airport operator to distribute terminal costs to the spaces that would cost more to operate.

In practice, the cost distribution method used can be a point of contention. Airlines have stated a desire to have separate cost pools for common use assets rather than using a single cost pool which may be prohibitive in providing rates for differing levels of service or options within the common use environment.

b) *Rates and Charges. Airport* operators use a variety of charging models to recover costs associated with common use check-in counters. Some of these models include: Per Time Use, Per Passenger, Per Check-in counter Position, Per Total Counters and Per Aircraft Turn. Refer to Appendix B7 for examples from lease agreements. The following paragraphs define and assess the more frequently used rates and charges model in practice today.

   i. Per time use - through the common use system, airport operators can charge per check-in counter position based on login / logout session times. An hourly fee may be charged by dividing the allocated check-in counter revenue requirement by the expected total number of hours of use of all common use check-in counters during that Fiscal Year, as shown in Figure B6-3. It may also be denominated by the total available hours, as shown in Figure B6-4.

   Estimating and using annual hours of use versus total available operating hours may lower vacancy risk associated to the check-in counter, as vacancy is built into the rate and passed to the airline. The use of an hourly rate may also provide economies of scale to airlines for efficient use of the charged space. This can benefit low-cost carriers with high volume and quick turnarounds. As a result of this strategy, some airport operators state a use limit on the hourly fee, for example, 50 passengers per check-in counter maximum and then another fee is used. This helps prevent the cost burden from being unequally allocated to airlines with lower volume.

$$\frac{\text{Total Sq. Ft. Common Use Ticket Counters} \times \text{Terminal Revenue Rqmt for Ticket Counters per Sq Ft}}{\dfrac{\text{Total Operating Hours Available for Common Use Ticket Counters}}{\text{Total Common Use Ticket Counters Positions}}}$$

Figure B6-4. Fee per position per hour (total operating hours).

$$\frac{\text{Sq. Ft. Common Use Ticket Counter Space} \times \text{Terminal Revenue Rqmt for Ticket Counters per Sq Ft}}{\text{Annual enplaned passengers}}$$

Figure B6-5. Fee per passenger.

$$\frac{\text{Sq. Ft. Common Use Ticket Counters Space} \times \text{Terminal Revenue Rqmt for Ticket Counters per Sq Ft}}{\text{Total Number of Common Use Ticket Counter Positions}}$$

Figure B6-6. Per position fee.

ii. Per Passenger - airport operators may charge per enplaned passenger, per flight for use of check-in counter space. A per passenger fee may be charged by dividing the allocated check-in counter revenue requirement by the estimated annual enplaned passengers, as shown in Figure B6-5. Using a fee per passenger prevents the economies of scale that can be achieved by airlines under an hourly rate fee, and allocates costs based on passenger volume of the airline. This rate method may be more susceptible to seasonal volatility while costs to maintain common use check-in counter spaces may be more evenly spread throughout the year.

iii. Per Check-in counter Position – A per position fee may be charged by dividing the allocated check-in counter revenue requirement by the total check-in counter positions, as shown in Figure B6-6. A per fee position may be used when the usage of a common use check-in counter is inclusive with the use of a common use gate. In this case a single fee is used to recover the cost of the check-in counter use and gate spaces.

iv. Per total counter positions – airlines can be charged an all inclusive periodic fee (total counter positions and associated equipment), usually on a monthly or annual basis. This model is typically used by application providers, directly leasing to an airline(s). In this case, airlines are generally charged on the basis of the total square footage of counters leased and may be calculated by multiplying the leased check-in counter space by the per-square foot cost of the terminal revenue requirement for all check-in counters, as shown in Figure B6-7. Using leased space versus total rentable space, as shown in Figure B6-8 lowers vacancy risk associated with the check-in counter, as vacancy is built into the rate and passed to the airline. Using leased space as opposed to total rentable space is also a growing trend in lease agreements when this rate is used.

$$\frac{\text{Terminal Revenue Rqmt for Ticket Counters}}{\text{Sq. Ft. Total Leased Ticket Counter Space}} \times \text{Sq. Ft. of Leased Ticket Counter Space}$$

Figure B6-7. Per total counter positions (total lease space).

$$\frac{\text{Terminal Revenue Rqmt for Ticket Counters}}{\text{Sq. Ft. Total Ticket Counter Space}} \times \text{Sq. Ft. of Leased Ticket Counter Space}$$

Figure B6-8. Per total counter positions (total rentable space).

Per Aircraft Turn – A per aircraft turn fee is typically used when the usage of a common use check-in counter is inclusive with the use of a common use gate. In this case a single fee is used to recover the cost of the check-in counter use and gate spaces.

c) Leasing Considerations

Currently there are trends for shorter term airline agreements. Of the airport operators surveyed, only 27% currently used a term agreement over 10 years in duration, as shown in Figure B6-9.

These shorter term leases allow airlines to "resize" more frequently and allow the airport operator to reevaluate the use of their space" (ACI, 2007).

Airport operators may also limit the annual charges to a Signatory airline for the use of any common use check-in counter during the Fiscal Year to not exceed what the airline would have been charged if it had been assigned that common use check-in counter for its preferential use. While this consideration prevents Signatory airlines from being charged in excess of their leased gate agreement, the airport operator should consider this cap when estimating usage for setting its rates and charges.

Gate Area

1. *Airline Business Issues and Opportunities:*
   a) As with Airport check-in counters, most airlines do not see the need to move to common use when the airport operator has sufficient gate capacity.

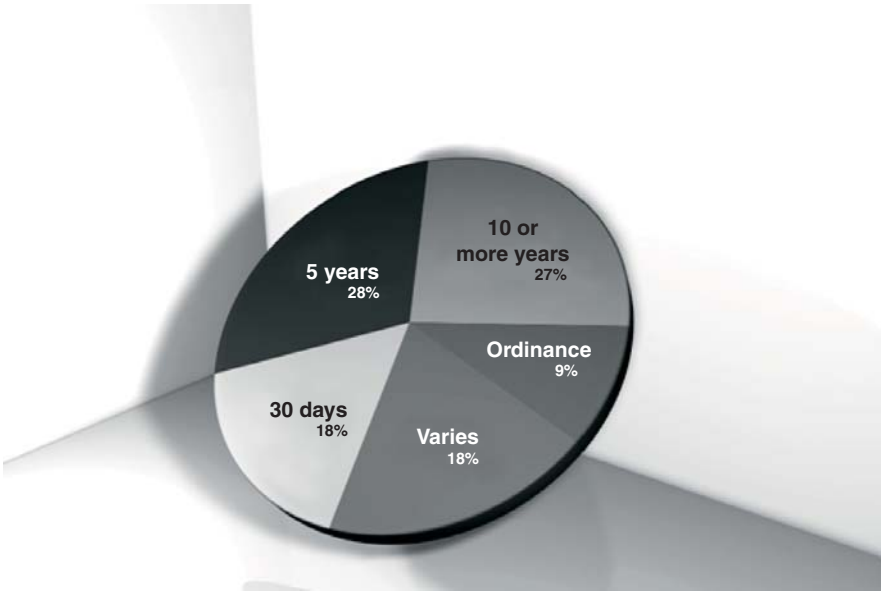


Figure B6-9. Term of use agreement.

b) Airlines stated a preference to a rates and charges model that distributed the cost of the common use system across only the airlines using the common use system.

c) Airlines maintain as part of their business model, the ability to market themselves as terminal of choice, starting at the airport terminal check-in area and continuing on to the gates. Common use limits their ability to do so.

2. *Airport Performance Issues and Opportunities:*

a) *Cost Distribution.* As with the cost distribution methods described for check-in counters, airport operators generally use a single Terminal Cost Center to distribute costs to gates (see the cost center example), typically applied by total square footage of common use gate spaces, to obtain the amount needed to recover in association for use of the spaces associated with a common use gate. Again, some airport operators distribute the total terminal revenue requirement to additional weighted cost groups that have been normalized to equal the total terminal revenue requirement. Differing rates are also generally provided to signatory and non-signatory airlines.

Remain Overnight (RON) parking revenues associated with common use gates typically offset the costs distributed to common use gates in many of the lease agreements in practice. In addition, common use technology system costs are often assessed to the Terminal Cost Center and may be allocated within the gate fee.

b) *Rates and Charges.* The most common rate model used to charge back expenses allocated for use of a common gate is the Per Turn rate. Many airport operators further define a Per Turn rate by aircraft class turned or by type of gate, such as with, or without, a loading bridge. Other common rate models in practice include:

- Per landed weight
- Per passenger
- Per use

i. Per turn, versus other models. A per turn gate fee, as shown in Figure B6-10 may be charged by dividing the allocated gate revenue requirement by the total estimated turns.

Using a flat per turn fee provides economies of scale, especially to airlines with maximized fleets of larger aircraft; however, this may cause a greater cost burden per passenger to airlines operating smaller aircraft. As a result this fee may be weighted by aircraft class, to establish a fee based on the differing types of aircraft turned at the gate. As an example, the rate could be weighted by multiplying the per turn fee by the following classes of aircraft:

– Wide body: 1.50
– Narrow body: 1.00
– Regional: 0.50
– Commuter 0.40

These per turn charges for each class of aircraft would then be normalized so that expected aggregate common use gate charges equal the common use gate revenue requirement.

In comparison, using a fee per passenger prevents the economies of scale that can be achieved by airlines under a per turn fee, and allocates costs based on passenger

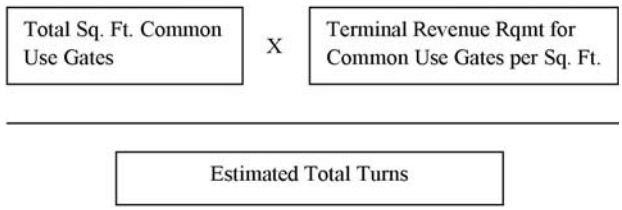


Figure B6-10. Gate fee per turn.

$$\frac{\text{Total Cost of Common Use Gates}}{\text{Total Number of Common Use Gates}} \div \text{Fee Charged Per Turn}$$

Figure B6-11. Number of turns needed for break-even per gate.

volume of the airline. While this rate method may allocate costs more evenly per passenger it also makes the airport more susceptible to seasonal volatility while costs to maintain common use gate spaces and equipment may be more evenly spread throughout the year.

Some airport operators are beginning to define rates per use of common gates. This may include providing separate rates for differing use of the common gate, such as a charge for Airside use Only, Landside Only, Arrival Only or Departure Only. In addition, peak, and off peak rates have also been considered.

ii. Threshold for break-even on per-turn costs

In its fundamental application, the threshold for break-even on a per-turn basis can be obtained by calculating the total cost applied to all common use gates, which may include costs for gate equipment, dividing that total cost among total common use gates to obtain the cost per gate. The cost per gate is then divided by the per turn fee charged by the airport operator to identify the number of turns needed to recover the costs of the gate, as shown in Figure B6-11.

A shortfall or overage, as shown in Figure B6-12, can occur when the anticipated income is greater or lesser than the revenue obtained from the per turn rate based on estimated gate utilization.

To use the per turn fee effectively, the airport operator must accurately forecast the annual estimated turns at common use gates. If the estimated gate utilization is not accurate, the airport operator can run a deficit for use of the facilities. Currently, some airport operators cap the per turn fee charged to Signatory airlines so that the per turn fees charged at a common use gate does not exceed the per gate fees charged under a preferentially leased gate. These capped turns should be accounted for when estimating gate utilization to set the per turn fee.

Break-even Analysis Example:

Based on the rates and charges provided by a major U.S. airport, the following 6-step example, as shown in Tables B6-1 through B6-6, presents a practical application for analyzing break-even using a tiered per turn rate.

c) Leasing Considerations

i. Use of preferential gate assignment by a non-signatory airline

- Subleasing requirements. Airport operators that allow the sublease of preferential gates may allow the airline to provide a markup for administrative and other costs, but may limit that to not exceed, for example 15% of those costs without requiring the excess to be paid to the airport operator. Other airport operators may require the airline subleasing the preferential gate to directly pay the operator the

$$\text{Total Income Obtained From Per Turn Rates} - \text{Revenue Obtained from Estimated Gate Utilization} = \text{(Shortfall) / Overage}$$

Figure B6-12. Formula for shortfall (overage).

Table B6-1. Step 1: Identify costs per gate.

Cost Per Gate	
Sq. Ft. of Total Common Gates	12,500
(÷) Number of Common Gate	5
(=) Avg. Sq. Ft. per Common Gate	2,500
(x) Common Gate Sq. Ft. Rate	$350
(=) Total Sq. Ft. Cost per Gate:	$875,000
(+) Cost for Gate Equipment & Others:	$40,000
(=) Total Cost Per Gate:	**$915,000**

Table B6-2. Step 2: Estimate turns.

Estimated Turns	Estimated Annual Turns	Estimated Annual Turns Per Gate = Annual Turns (÷) No. of Gates (5)	Daily Turns Per Gate = Annual Turns Per Gate (÷) 365 Days
Wide body (200 +)	4,000	800	2.19
Narrow Body (100 - 199)	8,000	1,600	4.38
Regional (50 - 99)	500	100	0.27
Commuter (0 - 49)	1,000	200	0.55
Total	13,500	2,700	7.4

established non-preferential gate fee, which is then credited in the calculation of the rentals, fees and charges for leasing airline.

ii. Grandfathering / preferred arrangements. The majority of airports surveyed do not implement any grandfathering clauses in preferred lease arrangements, or provide this on an informal basis. Some airports offer airlines preferential use gates equal in number to those held prior, without any minimum use criteria applied.

iii. Minimum use and take-back criteria, as shown in Figure B6-13. Not all airports currently implement a formal set of take-back criteria. In practice this is sometimes an

Table B6-3. Step 3: Establish charge per turn.

Change Per Turn	Estimated Annual Turns per Gates	Assigned Weight FACTOR	Weighted Annual Turns (=) Estimated Annual Turns per Gate (X) Weight	Per Turn Rate (=) Total Cost Per Gate (÷) Estimated Annual Turns Per Gate (x) Assigned Weight Factor
Wide body (200 +)	800	1.8	1,440	$516.00
Narrow Body (100 - 199)	1,600	1	1,600	$287.00
Regional (50 - 99)	100	0.7	70	$201.00
Commuter (0 - 49)	200	0.4	80	$115.00
Total	2,700		3,190	

Table B6-4. Step 4: Calculate anticipated income.

Anticipated Income	Revenue Per Gate Per Aircraft Class (=) Per Turn Rate (x) Estimated Annual Turns per Gate	
Wide body (200 +)	$412,800	
Narrow Body (100 - 199)	$459,200	
Regional (50 - 99)	$20,100	
Commuter (0 - 49)	$23,000	
	Class	$915,100
	Anticipated Income (=) Total Revenue Per Gate (x) Number of Common Gates (5)	$4,575,500

Table B6-5. Step 5: Calculate potential income (100% utilization).

Potential Income (100% Utilization)	
Total Cost Per Gate	$915,000
(÷) Total Estimated Average Turns/Year for All Aircraft Class	2,700
(=) Average Cost per Turn	$338.89
(x) Total Estimated Average Turns/Year for All Aircraft Class	2,700
(=) Estimated return per gate	$915,000
(x) Number of Common Gates	5
(=) Potential Income (100% utilization)	$4,575,000

Table B6-6. Step 6: Calculate anticipated (shortfall)/overage.

Anticipated (Shortfall)/Overage	
Anticipated Income	$4,575,500
(-) Potential Income (100% utilization):	$4,575,000
(=) Anticipated (Shortfall)/Overage:	$500

unwritten policy such as if an airline drops below a certain number of turns, the airport operator will evaluate and take-back use of the gate if needed. Figure B6-13 shows how surveyed airport operators defined minimum use in connection with take-back evaluations. Some airport operators govern the take-back criteria by a gate policy review committee, representative of airlines, when a take-back criterion is defined. Other airport operators have secondary use rights which allow them to install common use equipment at the gate.

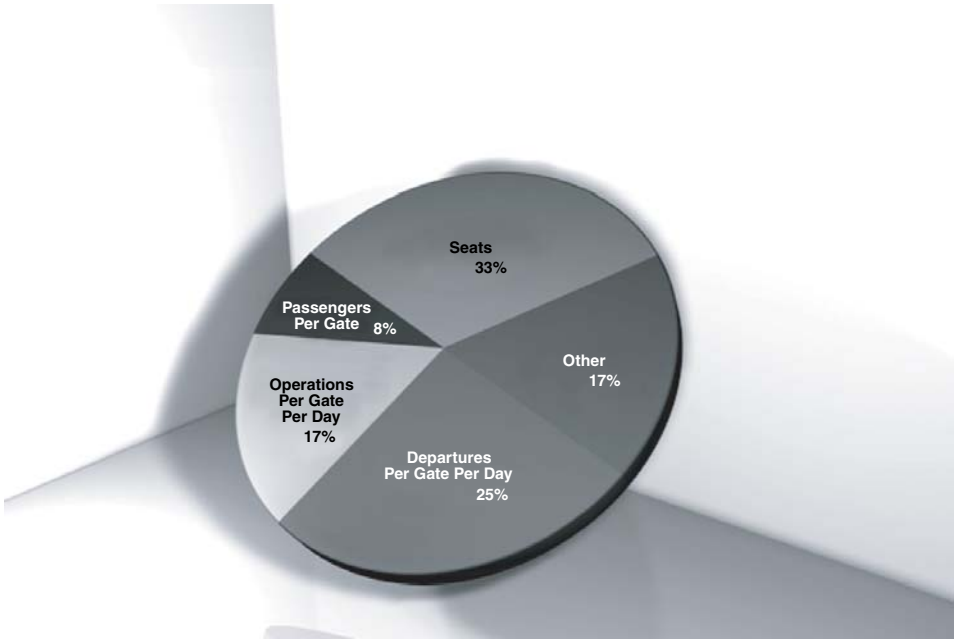


Figure B6-13. Criteria used to define minimum use.

Shared Use Facilities

1. *Airline Business Issues and Opportunities:*
   a) Airlines typically recognize the need for shared use facilities, such as with baggage claim areas. The concern that airlines expressed in this area, was in how the airport operator attempted to recover costs. Varying positions were presented by airlines, depending on the airline operation (hub / non-hub) and size. These included:
      - A small operator in an airport stated that they preferred the variable formula. Whether it is an 80/20 rule or any other, it has to be reflective of the nature of the actual cost.
      - The cost rules put in place must ensure the airlines with minimal use, pay their share of the investment, which is a good thing.
      - A large carrier stated that they typically have significant infrastructure investments. Some airlines prefer high fixed costs, with low variable rates, based on their operating structures. The 80/20 may not be appropriate to be applied to other areas of facility.
2. *Airport Performance Issues and Opportunities:*
   a) *Cost Distribution.* Costs for the maintenance, operation, and capital recovery of shared use facilities may be prorated among the airlines according to a shared use formula or based on their respective share of airline Leasable square footage. In practice, costs of shared use facilities are also incorporated into terminal rental rates or passenger fees, while some airport operators do not recover costs for shared use spaces and are offset with other revenues.
   b) *Rates and Charges.* Currently there are a number of rate mechanisms used in practice to recover costs for use of shared facilities, including: 90/10 split formula, per passenger fee, leased square footage, 10/45/45 formula and other formulas
      i. 90/10 split formula – This formula calculates a monthly fee that is charged to each airline for use of shared facilities with 90% of the shared used revenue requirement prorated according to the ratio of enplaned passengers while 10% of the shared use revenue requirement is equally allocated to all airlines, as shown in Figure B6-14. Use of this formula theoretically allows costs to be distributed to airlines in proportion to their use of the shared space. While in practice actual use may differ from proportional market share it is generally viewed as an amicable distribution of costs.
      ii. Per passenger fee – This formula calculates a monthly fee that is charged to each airline for use of shared facilities according to market share, as shown in Figure B6-15.
      iii. Leased square footage – This formula calculates a monthly fee that is charged to each airline for use of shared facilities based on their respective share of airline leasable square footage, as shown in Figure B6-16. Use of this formula may not always distribute costs to airlines in proportion of their actual use of the shared space as leased square footage may not always be indicative of passenger use, especially in light of low cost airlines.
      iv. 10/45/45 formula – This formula calculates a monthly fee that is charged to each airline for use of shared facilities by allocating 10% of the shared use revenue requirement equally among all airlines, allocating 45% based on number of flights and allocating another 45% of the shared use revenue based on number of passengers, as shown in Figure B6-17.
      v. 80/20 split formula – Similar to the 90/10 formula this formula calculates a monthly fee that is charged to each airline for use of shared facilities with 80% of the shared use revenue requirement prorated according to the ratio of enplaned and deplaned passengers while 20% of the shared use revenue requirement is equally allocated to all airlines. As an example, the following formula shows how an airport operator may define its rate.

$$RA = (20\% \times RJ / N) + (80\% \times RJ \times PA / PT)$$

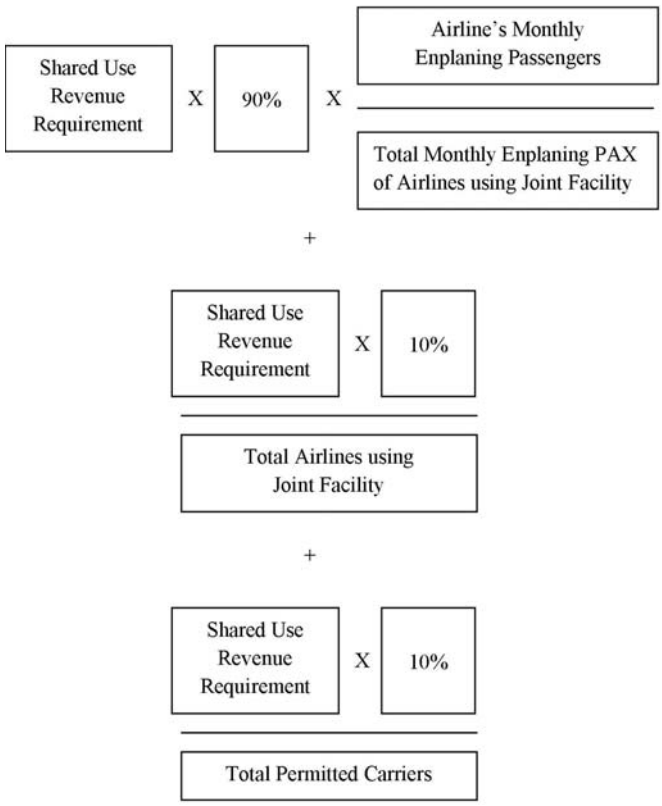


Figure B6-14. 90/10 split formula.

- *RA* is the airline's monthly rent payable for the Joint Use Area in the Relevant Terminal Unit.
- *RJ* is the total monthly rent payable for the Joint Use Area in the Relevant Terminal Unit for the Month, and the calculation of which is as follows:

$$RJ = RM \times S / 12$$

- *RM* is the annual rental rate per square foot for participating airlines in the Relevant Terminal Unit.
- *S* is the number of square feet in the Joint Use Area in the Relevant Terminal Unit.
- *N* is the number of participating airlines in the Relevant Terminal Unit required to participate in sharing the costs of the Joint Use Area.
- *PA* is the number of total passengers enplaned and deplaned by airline through the Relevant Terminal Unit during the calculation period.
- *PT* is the number of total passengers enplaned and deplaned by all participating airlines through the Relevant Terminal Unit during the calculation period.

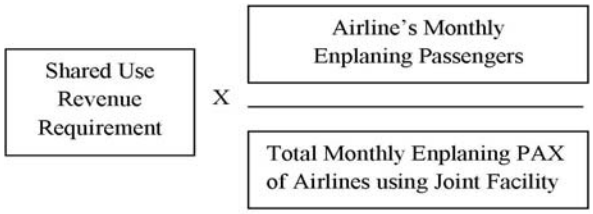


Figure B6-15. Per passenger fee.

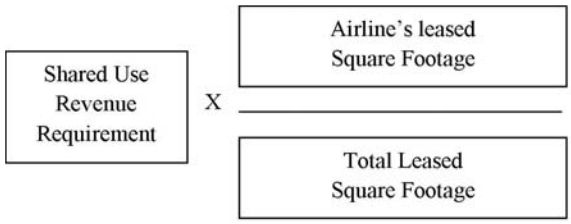


Figure B6-16. Per square footage.

General Business Considerations

1. *Leasing Considerations:*

   When establishing a leasing agreement for common use, the following items should be considered:

   a) Airport operator's right to relocate the airline operation.
   b) How damage to common use assets will be charged. While maintenance costs are typically rolled into rates and charges by airport operators, significant maintenance costs shown specifically to an air carrier should be able to be billed directly.
   c) Whether the airline may use either its own printer stock or airport-supplied common stock. Responsibilities of stock removal, load and reload should also be defined. If an airline is allowed to use its own stock, it should be subject to airport operator approval to ensure proper operation with the common use equipment.
   d) Rules and allowances for modifications to airport-owned common use equipment. Modifications can include equipment changes, adhesive markings, etc. The lease agreement should also clearly define whether the airline will be allowed to install airline-owned equipment, and if so, what criteria must be followed.

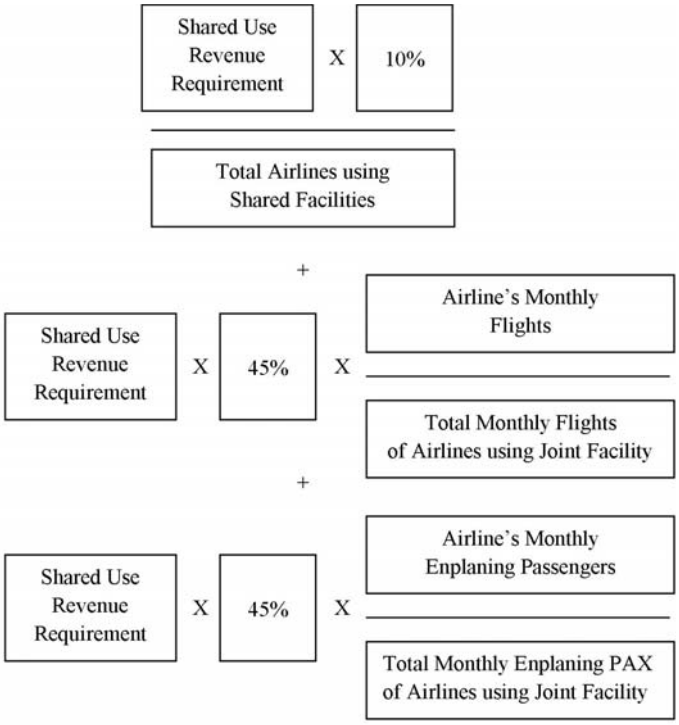


Figure B6-17. 10/45/45 formula.

e) Network Usage requirements, and any other airport-owned special systems supporting the common use operation.
f) Allowances on airline deployment of technologies.
g) Placement of airline-owned signage

2. *Liability and Safety:*

When asked regarding liability and safety issues, directly associated with the check-in counter area, airport operators stated that there have not been any significant issues. Issues are generally addressed through standard liability clauses maintained in the Lease Agreement.

3. *Assets:*

As common use assets are shared by all airlines, airport operators should build budget contingencies for damaged assets that cannot be charged directly to the responsible party. Having a lease or operating agreement that clearly defines how damage to common use assets will be charged is also operationally important.

4. *Competitive Factors:*

From the airline perspective, common use often removes their competitive advantage. If not planned and implemented properly, common use installations can adversely impact an airline's ability to process passengers (both at check-in and at boarding) in the means it sees best and thereby can remove a very important advantage to its airline competitors.

Airport operators noted promoting common use as a means of lowering the airline's cost of entry was the primary competitive factor. Airport operators and airlines are trying to balance growth and costs. This balance has caused airlines to carefully consider how changes at airports affect the airlines' overall expenses. It has also caused airport operators to find alternative ways to facilitate growth and competition, while keeping the overall charges to the airlines as low as possible. When properly planned for, airlines have noted that common use can lower the cost of entry to an airport.

Several airport operators have considered, and implemented, common use as a method of meeting their FAA competition planning requirements. This is a limited number of airports, as the FAA makes a determination and publishes a list of large and medium hub airports that it requires to prepare and submit a competition plan. These airports are characterized by having one or two airlines controlling more than 50% of the annual passenger enplanements. Several of these airport operators have identified common use as a method to enable the required competition at their airport, thus allowing the airport operator to have their Passenger Facility Charges (PFCs) approved as well as allowing the collection or a grant to be issued under the Airport Improvement Program (AIP). It has been shown in many of these competition plans that common use is a tool that can be used to provide reasonable access which is necessary to ensure that an airport has a level playing field for all entrants to the market.

5. *Customer Service:*

Airport operators view common use as a means to improve customer service. For the airport operator, common use provides the ability to implement consistency across its airport facility. This results in a means to correct any customer service issues reported quickly, across the entire common use facility.

For the airline, common use can hinder its ability to provide customer service at the level the airline requires. Unlike the airport operator, who is concerned about only the customers using its facility, the airline must address customer service across all facilities it services. For the airline, this creates a greater challenge when each airport facility is operated differently.

To solve the different perspectives, airport operators should include customer service issues as one of the key early planning items with airlines. Compromises will obviously have to be made, but if both parties have the same goal in mind, the final result will be positive for the customer.

6. *Marketing:*

As stated above airport operators generally market common use as a means of lowering the airline's cost of entry. For some airlines, common use is becoming a decision point for entering

a new market, while other airlines view common use as a deterrent to entering the market. It is up to the Airport Marketing Team to support their position with clear and substantiated facts. Using the planning and cost benefit sections of this Guide should help in defining good marketing points.

7. *Environmental / Sustainability:*

   Common use is opening the doors for new and sometimes creative ways an airport operator can improve the sustainability of the airport environment. The obvious position is that common use provides the ability to consolidate resources from many airlines, to one, thereby promoting resource reductions in the following ways:
   - Power consumption
   - Footprint of physical machines
   - Thermal output (cooling requirements)
   - Lower costs of disposal hardware

   Some of the examples noted included:
   - Technology examples included:
     - Consolidation of communication infrastructure (copper, fiber, electronics) from many airline systems into one.
     - Overall server and personal computer reductions
     - Reductions in telecommunication rooms
   - Reduction of emissions – through providing a common source for aircraft pre-conditioned air. This allows planes to shutdown their auxiliary power units which spew CO_2 gases and cost the airlines fuel to run. Significant cost savings significant reductions in emissions are expected.
   - Through a common means of aircraft trash collection, one Airport is able to recycle coffee grounds, saving several tons of refuse a year.

Leasing Options for Common Use Technology Support

- Airport operator purchases equipment and provides maintenance services
- Airport operator purchases equipment and airlines establish and pay for third-party maintenance service through a CLUB arrangement
  - Airline Perspective: Some think common use CLUBS are problematic, since ideally, most airlines are trying to cut costs rather than bolster the system, resulting in unacceptable service conditions. On the other hand, Airports tend to care about maintaining and improving the system. Some airlines don't have a problem paying for good service.
- Airlines establish lease of equipment and maintenance services through a CLUB arrangement
- Individual airline leases equipment and maintenance services directly with a third-party system provider.

APPENDIX B7

Business Considerations: Use Rate and Charge Models

Appendix B7 is a companion to the business considerations posed in Appendix B6 for common use rates and charges. This appendix (in Tables B7-1 through B7-8) provides examples of use rates currently in practice and the accompanying basis, or charge model, as indicated in the example airport's lease or fee agreement. As practice is so varied in regards to use rates and charge models, this appendix is intended to be used as a reference to current practice allowing the airport operator to examine differing mechanisms for comparison with their fee structure.

In addition to providing reference on the fees specifically used to charge for common use, this appendix provides examples of other use fees as well. As described in appendix B6, airports often apply costs to use fees based on cost centers that usually consist of a Terminal Area Cost Center, Airfield Area Cost Center, and Ground Side/Support Area Cost Center (see Figure B6-2 in Appendix B6 for additional detail). As airports typically do not have separate cost centers to charge for use common use assets, these other fees are provided to give reference on how costs may be distributed and recovered in relation to those used to charge for common use. Two cross referenced examples are provided in Tables B7-9 and B7-10 as examples of how an airport may structure its fees to recover costs. These are provided solely as an informational reference and are not intended to be viewed or used as models.

Table B7-9 shows an example of an airport's use fees. It can be seen that the costs of common use equipment are incorporated into apron area requirements and terminal building requirements.

Table B7-10 provides another example of an airport's use fees. Here it can be seen that the costs of common use equipment are incorporated into a cost center consisting of all Gates, Ticket Counters, and Business/Service Counters.

Table B7-1. Landing fees.

	Use Rate	Charge Model
Airport 1	Per one thousand pounds of the Approved Maximum Landing Weight of each aircraft, or a minimum landing fee, whichever is greater.	Maintenance & Operating expenses + administrative costs + amortization expenses – general aviation and fuel revenue +/- prior year = net expenses / total landed weights = landing rate per 1,000 lbs
Airport 2	Per 1,000-pound unit of Maximum Certificated Gross Landed Weight	Operating Expenses - Apron Area Operating Expense (8%) = Net Operating Expenses + Equipment & Capital Outlays + GO Bond Debt Service + Other Debt Service + Amortization of Capital Improvements = Total Airfield Area Cost - 100% Military Airfield Use Fee - 100% Estimated Fuel Sales - 100% Farmland Rentals = Net Airfield Area Cost / Landed Weight of all Aircraft Arrivals = Landing Fee Rate
Airport 3	Per 1,000 lbs of gross allowable landing weight of all aircraft	Landing fees are calculated on a cost center residual basis to recover all airfield costs at International Airport and the Reliever Airports operating deficit, net of airfield revenues generated from users other than the scheduled passenger and cargo airlines. Landing fee = allocable direct and indirect operating expenses + allocable equipment purchases and other capital outlays + allocable debt service and associated coverage requirements + allocable amortization of capital improvements and Maintenance & Operating projects funded by the County Airport System from internal cash + allocable amounts of required Airport System bond fund deposits - airfield revenues other than scheduled passenger and cargo airline landing fees = Net Airfield Requirement / landed weight of the scheduled passenger and cargo airlines.
Airport 4	Per 1,000 lbs of gross allowable landing weight of all aircraft	Landing Fee Rate: Total Annual Airfield Area Expenses - Surplus Airfield and Airport Support Revenues from previous fiscal year - Surplus Airfield and Airport Support Revenues previous to above fiscal year + Allowance for rental credits - Airfield area revenues from sources other than landing fees paid by the Scheduled Airlines = Airfield Area net expense - Surplus/(Deficit) in Airport Support Area cost center = Gross landing fees payable by the Scheduled Airlines Divided by composite Landing Weight forecast for the Scheduled Airlines (1,000 pounds) = Basic Landing Fee Rate (per 1,000 lbs.) Landing Fee Surcharge: Amount of surcharge (credit) attributable to Terminal Area and Groundside Area x 50% = Landing Fee Surcharge Divided by composite Landing Weight forecast for the Scheduled Airlines (1,000 pounds) = Landing Fee Surcharge rate (per 1,000 lbs.)
Airport 5	Per 1,000 lbs of gross allowable landing weight of all aircraft	Landing Fee = Airfield Revenue Requirement / projected landed weight Airfield Revenue Requirement = 1.0 times the sum of the annual debt service allocable to bondfunded Airfield capital projects and the share of annual debt service allocable to bond-funded Airport roadway projects or other bond-funded Airport infrastructure or system wide projects that is allocable to the Airfield + annual amortization allocable to equity-funded Airfield capital projects and other equity-funded projects allocable to the Airfield + annual operating and maintenance expenses allocable to the Airfield + annual interest charges used to provide interim financing for Airfield capital improvements + allocated share of annual debt service + deposits needed to replenish debt service reserve funds allocable to the Airfield to required levels + allocated share of annual capital costs, amortization and operating costs attributable to Port-occupied space in the Terminal used in connection with the management, administration or operation of the Airfield - Landing Fee premiums paid by Non-Signatory Airlines – annual aircraft parking land rental charges +/- amounts allocable to the Airfield required to maintain a Security Deposit Fund.

Table B7-1. (Continued).

	Use Rate	Charge Model
Airport 6	Per 1,000 lbs of gross allowable landing weight of all aircraft	Airport System Landing Fee Requirement divided by the composite estimate of the Total Landed Weight of all Signatory Airline Aircraft Arrivals at the Airport for the succeeding Fiscal Year Airport System Landing Fee Requirement = total of direct and allocated indirect estimated Operation and Maintenance Expenses of the Airport System; 1.25 times Airport System Annual Bond Debt Service; estimated amount of the annual requirement, including coverage, of any subordinate security or other loans pertaining to the Airport System; estimated amount, if any, for other deposits required by the Bond Ordinance or this Agreement; total amount or the pro-rata portion of the annual amortization allocation to the Terminal Building, Airfield Area and Apron Area of any Capital Improvements; total amount or the pro-rata portion of the annual amortization allocation to the Terminal Building, Airfield Area, Apron Area, Terminal Area, Other Buildings, and Reliever Airports of any Capital Improvements, including Land, placed in service; estimated amount of any assessment, judgment, or charge (net of insurance proceeds); variance of budget vs. actual expenses for operation of the Airport System - *less the total of the following credits* revenue derived from Airport System concessions, rentals and fees from nonsignatory Air Transportation Companies, other tenants, and service fees; unrestricted investment income earned; total of all Terminal Building rentals, Aircraft Gate Use Fees, and Aircraft Gate Use Fee, and Per-Turn charges from owned gates paid by the Signatory Airlines during the Fiscal Year; credit equal to the balance available in the Prepaid Airline Revenue Account

Table B7-2. Terminal rental space.

	Use Rate	Charge Model
Airport 1	per square foot per year	Total Terminal Expenses divided by terminal square footage (not including concession space) = M&O rate + capital recovery rate + debt service rate = Gross Terminal Rental Rate – janitorial credit + relocation reimbursement = Total Terminal Rental Rate per Square Foot.
Airport 2	Per square foot of rented space	Operating Expenses - Allocation to TSA Security = Net Operating Expenses + Equipment & Capital Outlays + GO Bond Debt Service + Other Debt Service + Amortization of Capital Improvements = Total Terminal Building Area Cost - 100% Basement & 2nd Floor Rentals - 50% Concession Revenue - 100% Terminal Telephone System Revenue = Net Terminal Building Area Cost / Rentable Space (Square Feet) = Basic Rate per Square Foot The average rental rate paid by the Signatory Passenger Airlines in each Fiscal Year shall not be less than the rate obtained by dividing the total of the following pro rata portion of (i) Annual General Obligation Bond Debt Service; (ii) Annual Airport Revenue Bond Debt Service; and (iii) budgeted deposits to reserve accounts established pursuant to the Bond Resolution(s) by the total area of enclosed space in the terminal building.
Airport 3	Per square foot of rented space per month	Net Terminal Building Requirement divided by the total amount of Rentable space. Net Terminal Building Requirement: total of direct and allocated indirect estimated Airport System Operation and Maintenance Expenses allocated to the Terminal Building; the total of capital outlays allocable to the terminal building; 1.25 times the pro-rata portion of Airport System Annual Bond Debt Service, if any, allocated to the Terminal Building; an amount equal to 1.10 times the Annual Accrued Debt Service on Subordinate bonds allocable to the Terminal Building; the Annual Accrued Debt Services on Junior Subordinate bonds allocable to the Terminal Building; The annual amortization of Capital Improvements financed by the County from its own resources and operating expenses that the County has chosen to amortize allocable to the Terminal Building, based on the economic life for each capital Improvement and calculated using an interest rate set to equal the average all-In cost of bonds sold by the County during the fiscal year when such Improvement i. put In service or, if no bonds were sold, set to equal comparable published average borrowing costs. in performing the calculations under this section, no amortization charges shall be included for the portion of capital expenditures that have been funded with the proceeds of County Airport System Revenue Bonds or any other obligations for which debt service Is recovered through rents, fees or other charges; approved Passenger Facility Charges; or grants-in-add; The amount of any deposit to the Operating Reserve Account allocable to the Terminal Building required by a Bond indenture; The amount of any deposit to the Reserve and Contingency Fund allocable to the Terminal Building required by a Bond Indenture; The estimated amount of any assessment, Judgment or charge (net of insurance proceeds) to become payable relating directly to the Airport System, or Its operation, allocable to the Terminal Building; The amount required to replenish the Senior Debt Service Reserve Requirement, Subordinate Debt Service Reserve Requirement, and Junior Subordinate Debt Service Reserve Requirement allocable to the Terminal Building; deduct the estimated revenue from the rental to Airlines of unenclosed operations space In the Terminal Building and the amounts of any federal operating grants from the TSA to yield the Net Terminal Building Requirement.
Airport 4	Per square foot Per Class of Space	Required Category I Rate (per square foot) * Class Rate: Category I – 1.00 Category II – .75 Category III – .5 Category IV – .25 Category V – .1 Class I. Ticket counters and holdrooms. Class II. Ticket counter back offices, VIP clubs and lounges, baggage claim lobbies, baggage service offices, curbside check-in, and administrative and operations offices located on the mezzanine or concourse upper level.

Table B7-2. (Continued).

	Use Rate	Charge Model
		Class III. Administrative and operations offices. Class IV. Inbound/outbound baggage handling areas, baggage transfer areas, and equipment rooms. Class V. Unenclosed or covered areas at ramp level. Required Category I Rate = (Aggregate annual rentals payable by the Scheduled Airlines + Terminal Area Rental Surcharge) / Divided by Equivalent Category I space (square feet) Aggregate annual rentals payable by the Scheduled Airlines = Total Terminal Area Expenses- Surplus Groundside and Terminal Revenues from previous fiscal year- Surplus Groundside and Terminal Revenues previous to above fiscal year+ Allowance for rental credits / Gross building area (square feet) = Annual cost per sq. ft. ("Basic Rate") x Airline Leased Space (square feet) Terminal Area Rental Surcharge = Annual cost per sq. ft. ("Basic Rate") x "Public" Space (square feet) = Cost of "Public" space - Terminal area revenues from sources other than aggregate rentals paid by the Scheduled Airlines - Surplus/(Deficit) in Groundside Area cost center = Amount of surcharge x 50%
Airport 5	Per square foot Per Class of Space	Terminal Revenue Requirement is distributed into four cost assignment groups: Group A (consisting of Gates, Ticket Counters and Business/Service Counters); Group B (consisting of offices and VIP lounges); Group C (consisting of Baggage Areas and the FIS); and Group D (consisting of closed storage space). The costs assigned to the rented space within each of these four groups shall bear the following relativities to each other on a square foot basis: Group A: 2.50 Group B: 1.50 Group C: 1.00 Group D: 0.50 Costs per square foot of rented space in each group is normalized to equal the Terminal Revenue Requirement. Terminal Revenue Requirement = annual debt service + the annual amortization + annual interest charges+ annual operating and maintenance expenses + deposits needed to replenish debt service reserve funds - revenues received from separately established tariffs - annual capital costs, amortization and operating costs attributable to Terminal systems dedicated to use by Air Carriers - allocated share of the remaining annual capital costs, amortization and operating costs attributable to space in the Terminal reserved for nonaeronautical facilities or activities - allocated share of the remaining annual capital costs, amortization and operating costs attributable to Port-occupied space in the Terminal used in connection with the management, administration or operation of the Airfield Area or of nonaeronautical facilities or activities at the Airport-Port's pro rata share of the remaining annual capital costs, amortization and operating costs attributable to Public Areas +/- amounts allocable to the Terminal required to maintain a Security Deposit Fund - terminal revenues derived from premiums paid by Non-Signatory Airlines
Airport 6	Per square foot of rented space per annum	Terminal Building Requirement divided by total Rentable Space on an exclusive, preferential, or joint use basis. Terminal Building Requirement: total of direct and allocated indirect estimated Airport System Operation and Maintenance Expenses allocated to the Terminal Building; 1.25 times the pro-rata portion of Airport System Annual Bond Debt Service, if any, allocated to the Terminal Building; The pro-rata portion of any subordinate security or other loans allocated to the Terminal Building; The total amount or the pro-rata portion of the annual amortization allocated to the Terminal Building, of Capital Improvements; The estimated amount of any assessment, judgment, or charge and allocated to the Terminal Building; Any estimated variance of budgeted vs. actual expenses for the operation of the Terminal Building

Table B7-3. Common use gates.

	Use Rate	Charge Model
Airport 1	Per Turn by Type of Gate: with loading bridge and without loading bridge	Per Turn Fee = cost of each gate (including rental or holdroom space but net of RON fees) / 152 turns per month (assumes that, on average, there will be five turns/day on each common use gate) Common Use Gate Requirement = Terminal Building Rental Rate X total amount of square footage of all common use gates – RON revenues associated with common use gates.
Airport 2	Per Turn by Aircraft Class; not exceed total charges under a preferential use gate. Classes of aircraft: (i) wide body (with capacity for 200 or more passengers); (ii) narrow body (100-199 passengers); (iii) regional (50-99 passengers); and (iv) commuter (less than 50 passengers),	Square footage of all Common Use Gates multiplied by Cost Pool consisting of all Gates, Ticket Counters and Business/Service Counters / total number of turns made in each class of aircraft. The charges for use of Common Use Gates by aircraft within each of these classes shall bear the following relativities to each other: Wide body: 1.80 Narrow body: 1.00 Regional: 0.70 Commuter 0.40 For rate-setting purposes, the charges per turn for each of these four classes of aircraft will be normalized so that expected aggregate Common Use Gate charges equal the Common Use Gate revenue requirement.
Airport 3	Per Turn by Aircraft Class; Classes of aircraft: narrow body aircraft operations; wide body aircraft operations	Apron Area Requirement divided by the total number of Aircraft Gates Apron Area Requirement: The total of direct and allocated indirect estimated Airport System Operation and Maintenance Expenses allocated to the Apron Area; An amount 1.25 times the pro-rata portion of Airport System Annual Bond Debt Service, if any, allocated to the Apron Area; The pro-rata portion of any subordinate security or other loans allocated to the Apron Area; The total amount or the pro-rata portion of the annual amortization allocated to the Apron Area, of Capital Improvements; The estimated amount of any assessment, judgment, or charge and allocated to the Apron Area; Any estimated variance of budgeted vs. actual expenses for the operation of the Apron Area.

Table B7-4. Common use ticket counters.

	Use Rate	Charge Model
Airport 1	Per hours used	Square footage of all Common Use Ticket Counters multiplied by the distributed terminal revenue requirement to a Cost Pool consisting of all Gates, Ticket Counters and Business/Service Counters divided by expected total number of hours of use of all Common Use Ticket Counters during that Fiscal Year.
Airport 2	Per enplaned passenger or per position per hour for each ticket counter position.	Per enplaned passenger: Terminal Building Rent X Square footage of queuing, ticketing, baggage make-up, tunnel, and skycap podiums per Airline / annual enplaned passengers Per Position Per Hour: Terminal Building Rent X Average Square footage of queuing, ticketing, baggage make-up, tunnel, and skycap podiums per Airline / Total Operating Hours (20 hours per day) / Total Ticket Counter Positions

Table B7-5. Common use baggage.

	Use Rate	Charge Model
Airport 1	Per Outbound available Seats; not to exceed total charges under a preferential use Baggage Makeup Area.	Revenue requirement based on multiplying the square footage of the assigned Baggage Makeup Area by the per-square foot cost for Baggage Areas and FIS divided by available seats Available Seats for the months of September through August of the immediately preceding Fiscal Year (the "Cost Per Available Seat" "CPAS"); and (ii) determining the ninetieth (90th) percentile CPAS among all qualifying Signatory Airlines.

Table B7-6. Joint use space charges.

	Use Rate	Charge Model
Airport 1	Charged the % value of the total annual requirement,	respective share of airline leasable square footage, per concourse $=ann req X (Airline A sq ft/tot sq ft)
Airport 2	square foot per annum for space jointly used	Ninety percent (90%) of the charge for joint use space will be prorated according to the ratio of (i) the number of each air transportation company's or airline servicing company's enplaning passengers at the Airport during the most recent month for which such information is available to (ii) the total number of enplaning passengers at the Airport during the most recent month for which such information is available of all air transportation companies and airline servicing companies using joint use space. The remaining ten percent (10%) will be prorated in equal shares among all air transportation companies and airline-servicing companies that use the joint use space and operate flight schedules five or more days per week. One equal ten percent (10%) share shall be further divided on a direct proration basis among the Permitted carriers.
Airport 3	Per 1,000 lbs of gross allowable landing weight of all aircraft	Apron Area Operating Expenses + Stormwater Charges X % Allocation to Passenger Terminal Apron = Net Operating Expenses + Equipment & Capital Outlays + GO Bond Debt Service + Other Debt Service + Amortization of Capital Improvements = Total Passenger Terminal Apron Area Cost - 50% Ground Handling Fees = Net Passenger Terminal Apron Area Cost / Landed Weight = Basic Rate per 1,000 lb X Signatory Passenger Airline Landed Weight = Signatory Passenger Apron Fees The Passenger Terminal Apron Area Requirement for Airline shall then be calculated by a formula that (i) prorates ninety percent (90%) of the cost of that proportionate amount that Airline's (and its Affiliated Airline Companies) Total Landed Weight bears to the Total Landed Weight of all Air Transportation Companies (including their Affiliated Airline Companies) providing Scheduled Service, then (ii) ten percent (10%) of the cost based on that proportion which the Airline's number of assigned aircraft parking position(s) bears to the total number of assigned aircraft parking positions of all Air Transportation Companies providing Scheduled Service.
Airport 4	RA = (20% x RJ / N) + (80% x RJ x PA / PT) RA is the Airline's monthly rent payable for the Joint Use Area in the Relevant Terminal Unit. RJ is the total monthly rent payable for the Joint Use Area in the Relevant Terminal Unit for the Month, and the calculation of which is as follows: RJ = RM x S / 12 RM is the annual rental rate per square foot for participating airlines in the Relevant Terminal Unit. S is the number of square feet in the Joint Use Area in the Relevant Terminal Unit. N is the number of participating Airlines in the Relevant Terminal Unit required to participate in sharing the costs of the Joint Use Area. PA is the number of total passengers enplaned and deplaned by Airline through the Relevant Terminal Unit during the calculation period. PT is the number of total passengers enplaned and deplaned by all participating Airlines through the Relevant Terminal Unit during the calculation period.	

Table B7-7. Shared use systems equipment in terminal.

	Use Rate	Charge Model
Airport 1	All airlines using CUTE system. Assume full utilization of equipment. Based on landed weight per 1,000 lb unit	All costs associated with the installation and maintenance of common use terminal equipment including debt service, allocated operations, maintenance and indirect costs / aggregated gate utilization. Gate Utilization = estimated number of turns x average plane landed weight per gate configuration
Airport 2	Per loading bridge - charged to each airline preferentially assigned to the holdroom where City-owned bridges are located	Passenger Loading Bridge Area Fee = estimated Passenger Loading Bridge Cost Center Requirement divided by the total number of City-owned loading bridges Passenger Loading Bridge Cost Center Requirement = total of estimated direct and indirect Operating Expenses allocable to loading bridge repair and maintenance + Equipment and Capital Outlays allocable to the passenger loading bridges + pro rata portion of Annual General Obligation Bond Debt Service allocable to the Passenger Loading Bridge Cost Center + pro rata portion of Annual Airport Revenue Bond Debt Service allocable to the Passenger Loading Bridge Cost Center + pro rata portion of any required deposits to the reserve accounts established pursuant to the Bond Resolution(s) allocable to the Passenger Loading Bridge Cost Center + annual amortization of the cost of those Capital Improvements that has been or is substantially completed before July 1 of any year and that are allocable to the Airfield Area.
Airport 3	Per Loading Bridge associated with Gates assigned to an Airline on a Preferential Use basis	Loading Bridge Fee = Loading Bridge Requirement / total number of loading bridges Loading Bridge Requirement: The Total Direct and Indirect estimated Operating Expenses allocable to the Loading Bridges; The total of Capital Outlays allocable to the Loading Bridges; An amount equal to 1.25 times the Annual Accrued debt Service on Senior Bonds allocable to the Loading Bridges or such other amount as may be required by a Bond Indenture; An amount equal to 1.10 times the Annual Accrued Debt Service on Subordinate Bonds allocable to the Loading Bridges or such other amount as may be required by a Bond Indenture; The Annual Accrued Debt Service on Junior Subordinate Bonds allocable to the Loading Bridges or such other amount as may be required by a Bond Indenture; The annual amortization of Capital Improvements financed by the county from its own resources and operating expenses that the County has chosen to amortize allocable to the Loading Bridges, based on the economic life for each Capital Improvement and calculated using an Interest rate set to equal the average all-In cost of bonds sold by the county during the fiscal year when such Improvement is put in service or, if no bonds were sold, set to equal comparable published average borrowing costs. In performing the calculations under this section, no amortization charge shall be Included for the portion of capital expenditures that have been funded with the proceeds of County Airport System Revenue Bonds or any other obligations for which debt service is recovered through rents, fees or other charges; approved Passenger facility Charges; or grants-in-aid; The amount of any deposit to the Operating Reserve Account allocable to the Loading Bridges required by a Bond Indenture; The amount of any deposit to the Reserve and contingency Fund allocable to the Loading Bridges required by a Bond Indenture; The estimated amount of any assessment, judgment or charge (net of insurance proceeds) to become payable by the County relating directly to the Airport System, or its operation, allocable to the Loading Bridges; The amount required to replenish the Senior Debt Service Reserve Requirement, Subordinate Debt Service Reserve Requirement, and Junior Subordinate Debt Service Reserve Requirement allocable to the Loading Bridges.

Table B7-7. (Continued).

	Use Rate	Charge Model
Airport 4	$LB_A = (20\% \times LB_J / N) + (80\% \times LB_J \times P_A / P_T)$ LB_A is the Airline's monthly rent payable for the Loading Bridge(s) in the Relevant Terminal Unit. LB_J is the total monthly rent payable for the Loading Bridge(s) in the Relevant Terminal Unit for the Month, but is zero if Airline does not use any of the Loading Bridge(s) in the Relevant Terminal Unit, and the calculation of which is as follows: $LB_J = R_{LB} / LB_T \times LB_R / 12$ R_{LB} is the total estimated annual expense to the Authority for all Loading Bridges located at Airport. LB_T is the total number of Loading Bridges located at Airport. LB_R is the number of Loading Bridges in the Relevant Terminal Unit. N is the number of participating Airlines in the Relevant Terminal Unit required to participate in sharing the costs of the Loading Bridge(s) as defined in LB_J. P_A is the number of total passengers enplaned and deplaned by Airline through the Relevant Terminal Unit during the calculation period. P_T is the number of total passengers enplaned and deplaned by all participating Airlines through the Relevant Terminal Unit during the calculation period.	

Table B7-8. Overnight parking.

	Use Rate	Charge Model
Airport 1	Charge a fee / night	Monthly Aircraft Position Fee / 4 / 30 The Aircraft Parking Position Fee shall be calculated by dividing the Aircraft Parking Position Requirement by the total number of aircraft parking positions in the Apron Area, provided, however, that in making this calculation the number of Remote Overnight parking positions shall first be divided by four (4). Aircraft Parking Position Requirement: The Total Direct and Indirect estimated Operating Expenses allocable to the Apron Area; The total of Capital Outlays allocable to the Apron Area; An amount equal to 1.25 times the Annual Accrued debt Service on Senior Bonds allocable to the Apron Area or such other amount as may be required by a Bond Indenture; An amount equal to 1.10 limes the Annual Accrued Debt Service on Subordinate Bonds allocable to the Apron Area or such other amount as may be required by a Bond Indenture; The Annual Accrued Debt Service on Junior Subordinate Bonds allocable to the Apron Area or such other amount as may be required by a Bond Indenture; The annual amortization of Capital Improvements financed by the county from its own resources and operating expenses that the County has chosen to amortize allocable to the Apron Area, based on the economic life for each Capital Improvement and calculated using an Interest rate set to equal the average all-In cost of bonds sold by the county during the fiscal year when such Improvement is put in service or, if no bonds were sold, set to equal comparable published average borrowing costs. In performing the calculations under this section, no amortization charge shall be Included for the portion of capital expenditures that have been funded with the proceeds of County Airport System Revenue Bonds or any other obligations for which debt service is recovered through rents, fees or other charges; approved Passenger facility Charges; or grants-in-aid; The amount of any deposit to the Operating Reserve Account allocable to the Apron Area required by a Bond Indenture; The amount of any deposit to the Reserve and contingency Fund allocable to the Apron Area required by a Bond Indenture; The estimated amount of any assessment, judgment or charge (net of insurance proceeds) to become payable by the County relating directly to the Airport System, or its operation, allocable to the Apron Area; The amount required to replenish the Senior Debt Service Reserve Requirement, Subordinate Debt Service Reserve Requirement, and Junior Subordinate Debt Service Reserve Requirement allocable to the Apron Area.

Table B7-9. Example 1 - Airport fee structure.

Fee	Use Rate	Charge Model
Landing Fee	Per 1,000 lbs of gross allowable landing weight of all aircraft	Airport System Landing Fee Requirement divided by the composite estimate of the Total Landed Weight of all Signatory Airline Aircraft Arrivals at the Airport for the succeeding Fiscal Year Airport System Landing Fee Requirement = total of direct and allocated indirect estimated Operation and Maintenance Expenses of the Airport System; 1.25 times Airport System Annual Bond Debt Service; estimated amount of the annual requirement, including coverage, of any subordinate security or other loans pertaining to the Airport System; estimated amount, if any, for other deposits required by the Bond Ordinance or this Agreement; total amount or the pro-rata portion of the annual amortization allocation to the Terminal Building, Airfield Area and Apron Area of any Capital Improvements; total amount or the pro-rata portion of the annual amortization allocation to the Terminal Building, Airfield Area, Apron Area, Terminal Area, Other Buildings, and Reliever Airports of any Capital Improvements, including Land, placed in service; estimated amount of any assessment, judgment, or charge (net of insurance proceeds); variance of budget vs. actual expenses for operation of the Airport System - *less the total of the following credits* revenue derived from Airport System concessions, rentals and fees from nonsignatory Air Transportation Companies, other tenants, and service fees; unrestricted investment income earned; total of all Terminal Building rentals, Aircraft Gate Use Fees, and Aircraft Gate Use Fee, and Per-Turn charges from owned gates paid by the Signatory Airlines during the Fiscal Year; credit equal to the balance available in the Prepaid Airline Revenue Account
Terminal Rental Space	Per square foot of rented space per annum	Terminal Building Requirement divided by total Rentable Space on an exclusive, preferential, or joint use basis. Terminal Building Requirement: total of direct and allocated indirect estimated Airport System Operation and Maintenance Expenses allocated to the Terminal Building; 1.25 times the pro-rata portion of Airport System Annual Bond Debt Service, if any, allocated to the Terminal Building; The pro-rata portion of any subordinate security or other loans allocated to the Terminal Building; The total amount or the pro-rata portion of the annual amortization allocated to the Terminal Building, of Capital Improvements; The estimated amount of any assessment, judgment, or charge and allocated to the Terminal Building; Any estimated variance of budgeted vs. actual expenses for the operation of the Terminal Building
Common Use Gates	Per Turn by Aircraft Class; Classes of aircraft: narrow body aircraft operations; wide body aircraft operations	Apron Area Requirement divided by the total number of Aircraft Gates Apron Area Requirement: The total of direct and allocated indirect estimated Airport System Operation and Maintenance Expenses allocated to the Apron Area; An amount 1.25 times the pro-rata portion of Airport System Annual Bond Debt Service, if any, allocated to the Apron Area; The pro-rata portion of any subordinate security or other loans allocated to the Apron Area; The total amount or the pro-rata portion of the annual amortization allocated to the Apron Area, of Capital Improvements; The estimated amount of any assessment, judgment, or charge and allocated to the Apron Area; Any estimated variance of budgeted vs. actual expenses for the operation of the Apron Area.
Fee	**Use Rate**	**Charge Model**
Common Use Ticket Counters	Per enplaned passenger or per position per hour for each ticket counter position.	Per enplaned passenger: Terminal Building Rent X Square footage of queuing, ticketing, baggage make-up, tunnel, and skycap podiums per Airline / annual enplaned passengers. Per Position Per Hour: Terminal Building Rent X Average Square footage of queuing, ticketing, baggage make-up, tunnel, and skycap podiums per Airline / Total Operating Hours (20 hours per day) / Total Ticket Counter Positions.
Joint Use Space Charges	square foot per annum for space jointly used	Ninety percent (90%) of the charge for joint use space will be prorated according to the ratio of (i) the number of each air transportation company's or airline servicing company's enplaning passengers at the Airport during the most recent month for which such information is available to (ii) the total number of enplaning passengers at the Airport during the most recent month for which such information is available of all air transportation companies and airline servicing companies using joint use space. The remaining ten percent (10%) will be prorated in equal shares among all air transportation companies and airline-servicing companies that use the joint use space and operate flight schedules five or more days per week. One equal ten percent (10%) share shall be further divided on a direct proration basis among the Permitted carriers.

Table B7-10. Example 2 - Airport fee structure.

Fee	Use Rate	Charge Model
Landing Fee	Per 1,000 lbs of gross allowable landing weight of all aircraft	Landing Fee = Airfield Revenue Requirement / projected landed weight Airfield Revenue Requirement = 1.0 times the sum of the annual debt service allocable to bondfunded Airfield capital projects and the share of annual debt service allocable to bond-funded Airport roadway projects or other bond-funded Airport infrastructure or system wide projects that is allocable to the Airfield + annual amortization allocable to equity-funded Airfield capital projects and other equity-funded projects allocable to the Airfield + annual operating and maintenance expenses allocable to the Airfield + annual interest charges used to provide interim financing for Airfield capital improvements + allocated share of annual debt service + deposits needed to replenish debt service reserve funds allocable to the Airfield to required levels + allocated share of annual capital costs, amortization and operating costs attributable to Port-occupied space in the Terminal used in connection with the management, administration or operation of the Airfield - Landing Fee premiums paid by Non-Signatory Airlines – annual aircraft parking land rental charges +/- amounts allocable to the Airfield required to maintain a Security Deposit Fund.
Fee	**Use Rate**	**Charge Model**
Terminal Rental Space	Per square foot Per Class of Space	Terminal Revenue Requirement is distributed into four cost assignment groups: Group A (consisting of Gates, Ticket Counters and Business/Service Counters); Group B (consisting of offices and VIP lounges); Group C (consisting of Baggage Areas and the FIS); and Group D (consisting of closed storage space). The costs assigned to the rented space within each of these four groups shall bear the following relativities to each other on a square foot basis: Group A: 2.50 Group B: 1.50 Group C: 1.00 Group D: 0.50 Costs per square foot of rented space in each group is normalized to equal the Terminal Revenue Requirement. Terminal Revenue Requirement = annual debt service + the annual amortization + annual interest charges+ annual operating and maintenance expenses + deposits needed to replenish debt service reserve funds - revenues received from separately established tariffs - annual capital costs, amortization and operating costs attributable to Terminal systems dedicated to use by Air Carriers - allocated share of the remaining annual capital costs, amortization and operating costs attributable to space in the Terminal reserved for nonaeronautical facilities or activities - allocated share of the remaining annual capital costs, amortization and operating costs attributable to Port-occupied space in the Terminal used in connection with the management, administration or operation of the Airfield Area or of nonaeronautical facilities or activities at the Airport - Port's pro rata share of the remaining annual capital costs, amortization and operating costs attributable to Public Areas +/- amounts allocable to the Terminal required to maintain a Security Deposit Fund - terminal revenues derived from premiums paid by Non-Signatory Airlines.
Common Use Gates	Per Turn by Aircraft Class; not exceed total charges under a preferential use gate.	Square footage of all Common Use Gates multiplied by Cost Pool consisting of all Gates, Ticket Counters and Business/Service Counters / total number of turns made in each class of aircraft. The charges for use of Common Use Gates by aircraft within each of these classes shall bear the following relativities to each other: Wide body: 1.80 Narrow body: 1.00 Regional: 0.70 Commuter 0.40 For rate-setting purposes, the charges per turn for each of these four classes of aircraft will be normalized so that expected aggregate Common Use Gate charges equal the Common Use Gate revenue requirement. Classes of aircraft: (i) wide body (with capacity for 200 or more passengers); (ii) narrow body (100-199 passengers); (iii) regional (50-99 passengers); and (iv) commuter (less than 50 passengers), to be levied on the basis of the total number of turns made in each class of aircraft. Weighted by: Wide body: 1.80; Narrow body: 1.00; Regional: 0.70; Commuter 0.40

Table B7-10. (Continued).

Fee	Use Rate	Charge Model
Common Use Ticket Counters	Per hours used	Square footage of all Common Use Ticket Counters multiplied by the distributed terminal revenue requirement to a Cost Pool consisting of all Gates, Ticket Counters and Business/Service Counters divided by expected total number of hours of use of all Common Use Ticket Counters during that Fiscal Year.
Common Use Baggage	Per Outbound available Seats; not to exceed total charges under a preferential use Baggage Makeup Area.	Revenue requirement based on multiplying the square footage of the assigned Baggage Makeup Area by the per-square foot cost for Baggage Areas and FIS divided by available seats Available Seats for the months of September through August of the immediately preceding Fiscal Year (the "Cost Per Available Seat" "CPAS"); and (ii) determining the ninetieth (90th) percentile CPAS among all qualifying Signatory Airlines.

APPENDIX B8

Technology

Common Use System Software – Agent Facing

1. *Airline Issues and Opportunities:*

   Many of the airlines, which hold a position of opposition to CUTE, have stated that once CUPPS has proven to meet expectations, these airlines will support CUPPS installations. This statement, of course is predicated on the basis that CUPPS installations take into account airline Business Requirements, costs, and functionality. Along with these core requirements, airlines have noted the following items as important to the success of CUPPS.

   a) Grace Period to move from CUTE Applications. Recognizing that application development takes time and resources, IATA has provided in the CUPPS RP a three-year grace period for airlines to move their current CUTE application to the new CUPPS RP. During this time, airlines expect the CUPPS system providers to support the legacy CUTE applications under the new CUPPS application.

   b) Costs, timing and convenience of the certification and recertification process of CUPPS. Most airlines noted that the current "self certification" process used under CUTE takes too much time, is inconvenient for the airline, and generally costs too much. As with the application itself the certification process varies from system provider to system provider. Airlines did note that some system providers "do it" better than others. Essentially, airlines noted the following:

      - Certification and recertification should be completed in a matter of days, not weeks. With the current process, an airline may have to hold up the deployment of its application update at much as three weeks or more, waiting for completion of the recertification.
      - Some system providers require an airline representative to travel to the recertification site. This takes time and resources.
      - Once certification is complete and the updated software is pushed to airline locations, the airline should receive positive notification.
      - Costs for certification should be managed consistently. Some system providers charge little to nothing, while others charge thousands of dollars per each recertification.

   c) The ability to use airline proprietary systems at common use locations. Airlines noted that it is possible for them to have the need of using common use and proprietary systems at the same gate or check-in counter location. For example, airlines provide web enabled functionality at a gate to provide services beyond passenger processing. This type of application should be able to run at a common use location.

   d) Costs and effort to add an entrant airline to an existing CUPPS Airport site. As with certification, this process should be consistent, cost effective, and convenient.

   e) Airlines have different needs for different types of paper stock. In many instances, airports who provide common use platforms force a standardized paper stock for boarding passes and bag tags. Airlines can vary on the size of the boarding pass, such as Virgin America,

and also on the quality of stock for the boarding pass. At least one airline interviewed stated that the boarding pass stock was one of the differentiators of their airline, and they were not as interested in using lighter paper stock unless they had no other choice.

2. *Airport Performance Issues and Opportunities:*
   a) CUTE to CUPPS Migration / Phasing requirements

      As with airlines, airport operators are anxious and optimistic for the approved release of CUPPS. Several Airports noted the intent to migrate to CUPPS once it is released. At present, at least three U.S. airports are in the process of procuring a common use solution, with the intent of the final solution being CUPPS. Currently with CUPPS proof of concept testing, two U.S. airport locations are running limited, live operations of CUPPS: LAS and MCO.

      Recognizing the near-release of CUPPS, IATA has provided recommended statements to be included in Airport Request for Proposal Packages that will aid toward the migration of a CUTE-to-CUPPS platform. These statements are shown in Table B8-1.

   b) Printers are one of the critical pieces of equipment for an agent facing common use system. It is critical that the airport operator select the proper printers for the quality and durability. Technical support of the printers is also critical, as the printer requires immediate repair. Newer printers entering the market are more maintainable and dependable and will serve well in the common use market.
3. *Physical Considerations:*
   a) Millwork can be impacted by the installation of an agent facing common use system. If the system is going to be installed in existing counters, then the counters may require a retrofit to accommodate the new hardware. One area where millwork can be affected is in the changing of computer monitors, moving from CRT-type monitors to flat panel, LCD-type monitors. Since the form factor is so different between these types of monitors, the millwork may need to be reconfigured to accommodate, especially if there were inserts or recessed panels to accommodate the larger monitors.
   b) The equipment needs to be readily accessible for support and maintenance. One method is to use removable panels in the millwork. Another method is to design all shelves as pull-out shelves so that the technician can access the equipment to replace or maintain it.
   c) In order to support multiple airlines, the amount of equipment installed at the check-in counters, and the gates, may be different than the amount of equipment installed with a proprietary system. This is due to the fact that the common use system must support multiple business models whereas the proprietary system was designed specifically for the airline using it.
4. *Staffing Considerations:*
   a) Staffing issues are discussed in the technology maintenance section later in this chapter.
5. *Accessibility:*
   a) The airport operator needs to consider accessibility issues to support the airline staff that may be using the equipment.

Common Use System Software – Passenger Facing

1. *Airline Issues and Opportunities:*

   Typically, airlines tend to have more objections to CUSS than with CUTE. Issues noted by the airlines include:
   a) Airport operators may install CUSS kiosks in locations where an airline agent is not in visual site of the equipment. For at least one airline, their business practice is to not support check-in kiosks at the airport, unless an agent has visual site and easy access to it.
   b) The costs of CUSS kiosks are expensive, starting a $12,000 per kiosk and going up from there.

Table B8-1. IATA CUPPS RFP guidelines (Sept 17, 2008).

Items to Consider:
Technical Specifications for CUPPS will not be finalized prior to May 2009.
Requirements and draft specifications will likely change based on experience from the CUPPS Pilot Projects. The extent and nature of these changes is difficult to predict.
The CUPPS Recommended Practice (RP) provides a hardware overview. Details are contained in the Requirement Specifications and draft Technical Specifications.
CUPPS will require a robust, standards based data network.
Airlines will be encouraged to transition from their current common use applications to the new CUPPS specifications within three years.
Airlines, following IATA Resolution 792, will be using 2D Bar Codes on boarding passes. Magnetic stripes (ATB2) will not be supported.
The CUPPS label has been applied to various concepts and products in anticipation of the new standard.
Actions Recommended for All Stakeholders:
Get the latest information available about CUPPS from www.iata.org and www.cupps.aero.
Become familiar with the draft CUPPS standards and be prepared to evaluate suppliers' compliance with: IATA - RP1797, ATA - RP30.201, and ACI - RP500A07.
Take advantage of the cost savings offered by using new technologies and not using old technologies.
Focus on the performance and results to be achieved.
Require CUPPS Bidders to:
Include costs to monitor the status of CUPPS and report on impact to the project.
Explain their approach to CUPPS compliance and their transition methodologies to CUPPS from a CUTE environment, and specific plans for supporting airlines during the transition period to CUPPS (e.g. until 2012).
Ensure designs are based on the current published final and draft CUPPS governing documents.
Identify any known deficiencies with bidder's proposed solution and expected CUPPS governing documents.
Identify costs to update the solution to accommodate the final version of the CUPPS governing documents.
Consult with airlines to determine their intended schedule for CUPPS compliance.
Actions Not Recommended:
Do not reference or base RFPs on the technical provisions of IATA RP 1797 published prior to 2008, that were written for CUTE and CUTE CLUBS.
Do not automatically specify workstations and devices that have traditionally been deployed for dedicated or CUTE environments.
Do not focus on the methods a supplier uses to achieve the required results and performance.
Contacts for Further Information:
Samuel Ingalls, Las Vegas McCarran Airport (CUPPS Chair): sami@mccarran.com
Bill Heppner, Alaska Airlines (CUPPS Co-Vice Chair): bill.heppner@alaskaair.com
Thomas Jeske, Lufthansa Airlines (CUPPS Co-Vice Chair): Thomas.jeske@dlh.de

Source: CUPPS 2008. "IATA CUPPS RFP Guidelines", Sept 17 Retrieved May 16 2009 from http://www.cupps.aero/documents.

c) Airlines have developed software work-arounds for the different ways platforms operate. While this makes the software appear to be one application capable of running anywhere, there are many customizations that need to be done to accommodate the kiosk developer's individual approach to the CUSS 1.0 standard. This should be resolved in CUSS 1.2, however there is an open issue of how to migrate the existing base of CUSS kiosks from 1.0 to 1.2, while supporting the existing applications.

2. *Airport Performance Issues and Opportunities:*
   a) As noted above, CUTE and CUSS are not always installed together. In fact, in the U.S. many airport operators are hesitant to install CUSS, primarily for two reasons:
      - The focus for the U.S. airports has been on common use gates. Only recently have the airport operators begun to seriously investigate common use self service.
      - The airlines have installed proprietary kiosks, which has deferred airport attentions.
   b) Airport operators should determine if the airline will be permitted to use its proprietary paper stock, or be required to use the common use paper stock.
   c) As with agent facing common use, paper stock and printers are a key component to a successful CUSS installation. The kiosks tend to need a larger supply of paper stock, as they are more difficult to re-stock than the agent facing common use printers. Because of this reason, the industry is beginning to favor the fan-fold paper stock, because of its higher stock capacity.
   d) Airline connectivity back to the host is required for CUSS kiosks. Airlines vary in the type of connectivity needed. Investigation is usually required to also determine if the existing circuits used to connect the agent facing common use can be reused for the CUSS connectivity.
   e) CUSS kiosks are becoming popular for remote check-in, both on the airport campus, such as rental car centers and parking garages, as well as off the airport campus, such as hotels, convention centers, and cruise ship terminals. Remote check-in presents other issues and risks, especially when baggage check-in is required.
3. *Physical Considerations:*

   Placement of CUSS kiosks is an important consideration. It is important for the airport operator to work with the airlines to make sure that the placement of the kiosks does not prevent the airlines from using them. As stated earlier, some airlines require that the kiosks be within sight of their agents for customer service/satisfaction considerations. Other airlines are fine with the kiosks installed further away to facilitate reducing passenger congestion in and around the check-in counters.
4. *Staffing Considerations:*

   Staffing considerations are addressed in the Technology Maintenance section.
5. *Accessibility:*
   a) Accessibility is a key issue for self-service kiosks. Several states are addressing accessibility, as well as the Federal Americans with Disabilities Act (ADA). According to the U.S. Access Board, a key area of interest for kiosks is that the kiosks be designed to accommodate the ADA requirements for reach ranges, mobility, and accessibility. The state of California has passed the California Civil code 54.9, which addresses the manufacturing of accessible self-service kiosks in airports.
   b) While self-service kiosks can be physically designed to accommodate accessibility issues, such as height, reach range, and other mobility challenges, the software provided by the airlines must also be designed to use any non-standard input devices that are added to the kiosk for better accessibility. This means the airport operator must partner with the airlines to ensure that the applications can use the input devices to complete the check-in process.

Airport Communications Infrastructure

1. *Airline Issues and Opportunities:*
   a) Airlines state that network connectivity into a common use environment is one of the key factors in poor performance of the application, and poor trouble-shooting ability. The airport operator must work with the selected solution providers, and the airline information

technology staff to ensure that the network is configured to support the airline's business processes.

b) When implementing common use in an airport, the airport operator tends to not have an upgrade program in place to ensure that the technology solution remains current. Airlines have stated that many airports are so far behind in technology due to technology refresh rates of 5 years or more, that it forces the airline to keep multiple versions of the software in support due to the varying versions of the same technology solution.

c) Conversely, airport operators need to work with airlines to ensure that a technology refresh in a common use environment does not adversely impact the airlines business. The airport operator needs to work closely with the airline information technology staff to ensure that the airline has software which will work on the planned technology upgrade.

d) Airlines noted that airport operators should work to ensure the common use system has the necessary redundancies to ensure uptime is kept at acceptable standards.

2. *Airport Performance Issues and Opportunities:*

a) Airport operators that provide a common communications infrastructure are able to better manage the pathways, resources, and space within the airport. Communications equipment takes space, which may otherwise be leasable, and adds to the overall costs of the airport. By providing a common infrastructure, the airport reduces the number of rooms required to support equipment, as the equipment can be shared by many tenants.

b) Both passenger and agent facing common use systems have exhibited latency issues when using a wireless connection. This can be anything from slow response, to the system not functioning properly. Any design that includes a wireless component must be tested thoroughly to ensure latency is not an issue.

c) Support of airline connections – system connectivity back to the airline host system is an issue that must be addressed early on. Some airlines allow an IP connection via a secure connection, while others require a dedicated lease line for point-to-point connectivity. Depending on the airline make-up at a particular airport, the common use systems must be able to support multiple connectivity options.

d) Support of connectivity from airline back-offices to airline point of presence locations on airport campus.

e) Network configurations – the actual configuration of the network, and the protocols that an airport operator's network uses, has tremendous impacts on the ability to connect the common use system to the airline host system. The airport operator will need to work closely with the airline corporate information technology representatives to ensure that the network configuration will work with the airline's configuration.

3. *Physical Considerations:*

a) IT infrastructure is supported and routed through telecommunication closets, main distribution rooms, and core network rooms. With regard to common use, the airport operator should consider the following:

- Will the closets and rooms require shared access by both the airport operator and airline? If so, the airport operator should work with the airlines to establish proper access procedures.
- Security access control on all rooms. Will the airline tenants use the airport security access control system?

b) Effective design of room spacing. To properly support a TCP/IP network, a communications closet should be constructed within 300 feet of any point in the terminal where computer equipment will be installed. This is a standard in-building design criteria, due to the technical limitations of the cabling used. Communications closets can be connected using fiber, which allows for greater distances for TCP/IP networks. Equipment at the end devices usually requires copper cabling, and therefore is restricted to the 300-ft rule.

Common Use Supporting Systems and Software

1. *Airline Issues and Opportunities:*
   a) Most U.S. based airlines do not have a need for a local departure control system. This makes the business case for purchasing such a system very difficult. Many times, the LDCS is included as a part of the common use platform. Airport operators that install an LDCS do so for airport-specific customer service initiatives, to support charter airlines, or because it came as a part of the common use system.
   b) Airlines tend not to use airport operator supplied baggage reconciliation systems. In most cases, domestic flights do not use these services because they are not required to provide positive bag matching on domestic flights. For international flights, most airlines use a proprietary bag reconciliation system.
   c) Airlines provide many applications to their agents for the conducting of business processes. If these applications are not also written for common use by the airlines, the airline loses functionality at the counter to support their business process.
   d) Airlines today have to create data feeds for each airport specific to flight information. This creates large amounts of work and support as a new airport operator chooses to install dynamic displays for passenger information. The new AIDX standard will address this issue, and reduce overall costs and complexity for these data feeds for airlines.
   e) Airlines generally are concerned with problem reporting and resolution.
2. *Airport Performance Issues and Opportunities:*
   a) *Local Departure Control Systems.* Local departure control systems are implemented in common use environments to support airlines that may not have their own departure control system to assign seats, and manage the boarding process. A charter airline is a typical example of an airline that does not normally have this capability. This is a customer service opportunity for the airport operator, but is not usually a required element of common use. Other uses for an LDCS include use by an airline if the local station loses connectivity to their host system.
   b) *Gate and Resource Management Systems.* Airport operators may choose to implement a resource management system if the amount of resources that they are managing is large, or complex. Resources that could be managed by an RMS include gates, check-in counters, baggage claims, baggage make-up, hard stands, RONs, and other common use areas. RMS tends to be very complex, and can be difficult to use. The more sophisticated an operation is, managing ramp control tower, for example, will tend to use an RMS more often. Based on the particular need at the airport, a less complicated gate management system may be acceptable.
   c) *Baggage Reconciliation System.* Airport operators who install common use in their international gates may consider installing a baggage reconciliation system to assist with positive bag match requirements for international flights. For domestic flights, positive bag match is not a requirement, and therefore most airport operators do not choose to install a BRS. A key concern for airport operators is how to manage the reconciliation, and if there is a need to use a local database or a global message clearing house.
   d) *FIDS / BIDS Information Displays.* These displays are a common building block system which airport operators install to improve customer service. Airport operators must work with airlines to ensure that the data feeds from the airline host systems are accurate, and that they provide the right updates at the right time. The industry is now working on a new data exchange standard, Airport Information Data Exchange (AIDX), which will standardize the data format so that airlines only have to create one data output, and airport operators can accept all data feeds from all airlines.
   e) *GIDS Gate Information Displays.* These displays are another form of information displays that provide specific flight related data at the gate, for the passenger. These systems

generally are airline proprietary, and most airlines have not migrated their GIDs applications to common use. Because of this, there currently does not exist a solution to support proprietary GIDS on common use hardware. Airport operators need to decide if they are going to allow the airline to access their proprietary GIDs on the common use displays, or if the airport operator is going to provide a more generic common use GIDs.

f) *RIDS.* These systems are used to provide flight information to ramp-side personnel. This information is used by those who are servicing the plane, as well as can be used by the ramp tower to help with visual verification of flight to gate status. With common use, it is critical that this flight information be driven from the operational database and the resource management system, if one is installed, so that all personnel know where the aircraft is to be parked, off-loaded, and reloaded.

g) *Operational Database.* Operational databases are another building block that airport operators install to support a migration of common use implementations. An OPDB is the underpinnings of the operational airport data that is used to operate systems such as the information displays, as well as resource management systems and other systems. Airport operators should consider installing an AODB as a key building block when moving to a common use environment. As shown in Figure B8-1 the AODB can facilitate data sharing, reduce data entry, and ensure that the data integrity throughout the airport operator's systems is more maintainable.

h) *Dynamic Signage – Airline Information, Wayfinding.* Dynamic signage is a category of technologies that includes any type of informational signage that can be updated via a computer. Included in dynamic signage are the flight based signage previously presented (FIDS, BIDS, GIDS, and RIDS). Other forms of dynamic signage include displays used above check-in counter to announce airline counter information, wayfinding, and visual paging displays. Dynamic signs have the ability to be used for any type of data content, but the actual use is dependent on the airport operator's business model and business decisions made by the airport operator and the airlines.

i) *Telephony.* Telecommunications backbone, VoIP – In a common use environment, telephony services are an important element. These services are provided to the airlines, either using analog or digital telephone switches, or via a VoIP system. When a VoIP system is used, it is possible to re-program the local handset to act as if it were on the airline's corporate-owned telephone switch, which reduces overall telephone charges by possibly removing long-distance charges from the service.

j) *Wireless.* Wireless is generally provided to the travelling public by the airport operator as a customer service item. It may be free service, or paid service. Many airport operators are now considering installing wireless data services for business applications. This installation includes support for operational use of airlines and other airport tenants.

3. *Accessibility*

According to the U.S. Access Board, dynamic displays are a key item to support accessibility.

Emerging Systems / Software and IT Issues

- Electronic Boarding Pass Scanners are now being installed in several airports to support the bar coded boarding pass initiative by IATA. This initiative allows the support of the boarding pass on handheld devices, such as cell phones. Several U.S. airlines have begun pilot trials at a limited number of airports, and are working closely with the TSA to complete the projects. The pilots allow passengers to use their cell phone or other handheld electronic device to act as a boarding pass, and the TSA has readers installed at the security check point for verification and authorization of the boarding pass and the passenger. The passenger approaches the dais, places their electronic bar coded boarding pass over the reader at the dais, and the reader

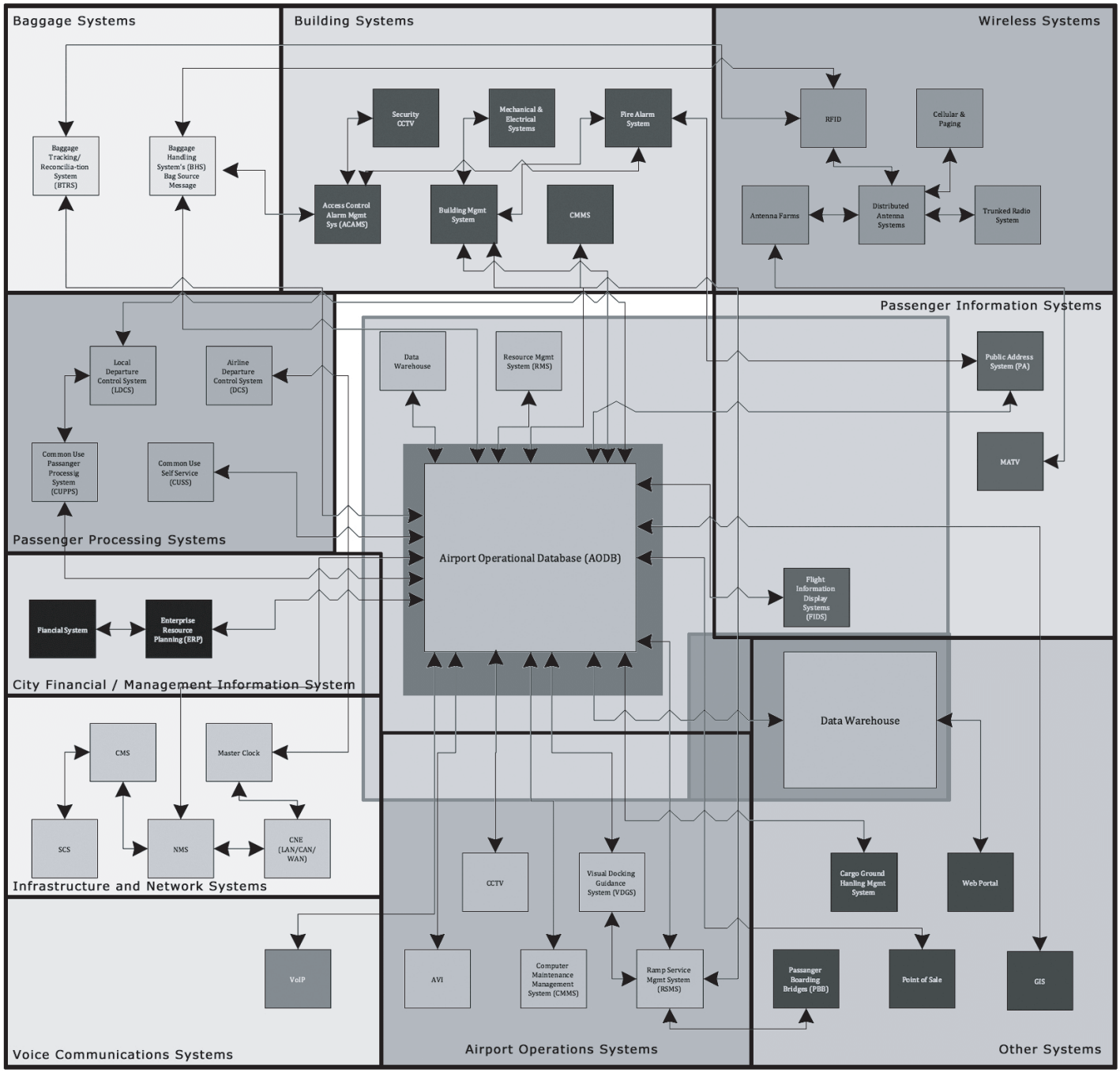


Figure B8-1. Air operations database (AODB).

decodes the security features, and validates that the bar code is in fact a valid boarding pass. The TSA representative then performs an identification check, and the passenger proceeds through security if everything is checked as valid. One planning point for this technology is the communications infrastructure required at checkpoint areas.

- Common Bag Drop—IATA and ACI both have created working groups to look into a common bag drop solution. Although U.S. airport interest is growing, this emerging solution has not yet been piloted in the United States. Implementations have been done outside of the United States, and there is another ACRP report, Project 10-07, which will research common bag drop and self tagging.

- Self Tagging is another emerging technology that is currently in limited use outside of the United States. One of the most prominent implementations is in Montreal, Canada, where passengers are placing their own baggage tags on their luggage and then handing them to handling agents for induction into the baggage sortation system. Some of the issues to be resolved with self-tagging are the use of inactive/active tags, acceptance by the TSA, and quality control with passenger's placing bag tags on the luggage.
- AIDX – a subset of CUPPS, is a new data exchange standard that aims to simplify the exchange of flight data from airlines to airport operators. It is currently a subset of the CUPPS standard, and is a recommended practice from IATA, ATA and ACI. There are currently pilot implementations occurring in Denver, Seattle, San Francisco, and Las Vegas.

Business Continuity, PCI-DSS and Environmental Concerns

- Business continuity is the process of ensuring that the business can operate should a disaster occur which affects information technology systems. This is especially important for common use implementations, as the airport operator now owns information technology systems that are key to the airlines business operation. In order to meet service level expectations, the airport operator should consider a business continuity plan that provides for redundant systems, data back up and retrieval, and even off-site duplication. It is paramount that the airport operator conducts a business assessment to determine the types of risks that exist, if any of those risks are likely to occur, and the mitigation necessary to avoid critical down-time due to the occurrence of those risks.
- Sustainability is a key component in today's aviation environment. Sustainability can be as little as turning off monitors and computers when not in use, to full integration of building management systems to reduce power consumption at low use times. Sustainability is also key in the design and construction process. ACI has created a working group under the BIT which is addressing the sustainability issues for IT.
- The payment card industry (PCI) security standards council, an assembly of major credit card companies (Visa, MasterCard, American Express, etc.), was formed to manage the ongoing evolution of the PCI Data Security Standard (DSS). The PCI DSS is a standard that was developed to safeguard customer information and prevent credit card fraud. PCI DSS compliance is required in order to process credit cards. PCI compliance is required for those who (Security Standard Council, 2009):
  - Collect
  - Process
  - Store or
  - Transmit, Cardholder Data

  The standard has 12 requirements for compliance, which are:

  - Build and Maintain a Secure Network
    - Install and maintain a firewall configuration to protect cardholder data.
    - Do not use vendor-supplied defaults for system passwords and other security parameters
  - Protect Cardholder Data
    - Protect stored cardholder data
    - Encrypt transmission of cardholder data across open, public networks
  - Maintain a Vulnerability Management Program
    - Use and regularly update anti-virus software
    - Develop and maintain secure systems and applications

- Implement Strong Access Control measures.
  - Restrict access to cardholder data by business need-to-know
  - Assign a unique ID to each person with computer access
  - Restrict physical access to cardholder data
- Regularly Monitor and Test Networks
  - Track and monitor all access to network resources and cardholder data
  - Regularly test security systems and processes
- Maintain an Information Security Policy
  - Maintain a policy that addresses information security

PCI DSS becomes important to an airport operator as they begin allowing systems that process credit cards to use airport operator owned equipment. Key systems for airport operators include parking, point of sales, and operations fee collections. As an airport moves into common use, the airport also needs to keep in mind that they will need to become certified to some level for PCI-DSS.

All common use systems installed in airports which process credit card data, usually limited to customer self service (CUSS), and agent-facing common use (CUPPS), must be PCI DSS compliant. This will affect the network, the core infrastructure design, and the security of the telecommunications rooms, to name a few.

Information Technology Maintenance

1. *Airline Issues and Opportunities:*
   a) The airline's primary concern is that the maintenance service is provided in a manner that meets the airline's business requirements.
   b) The airline's preference as to who provides the service varies depending upon the specific airline business model. Some airlines voiced strong opinions that they prefer maintenance support through the airport operator. For airlines that take this position, they believe that the airport operator is in the best position to sustain the management of the common use system while providing their tenants a high level of service, operational availability, consistency and coordination with all other operational entities at their airport.

      Other airlines voiced equally strong opinions that maintenance support be provided through third party companies contracted to the airlines through an airline CLUB or consortium arrangement. Through this method, the airlines have decision making power as to how the maintenance is provided on the systems they must rely on for aircraft boarding and passenger processing. Airlines believe issues can be resolved quickly and efficiently when they are in control of the maintenance contracts.
   c) Some airlines stated that they have found airport operators are not always entirely knowledgeable on the systems and therefore, the services provided may not be adequate.
   d) A primary concern voiced by airlines is that the Service Level Agreements are often negotiated between the airport operator and the service provider with little airline input.
   e) Some airlines noted that when implemented properly, airport operators provide a very good maintenance service.
   f) Airlines noted that communication is important. Each airport can have their own policies as to how maintenance is provided, which makes it difficult for the airline to stay current with how and what changes are going to be made.
   g) Along with communication issues, airlines noted a primary complaint is not having good communications with the airport operator regarding problem issues that may be between airline applications and airport provided technology systems and infrastructure.

2. *Airport Performance Issues and Opportunities:*

The following issues and opportunities are presented for consideration by the airport operator, regarding the establishment of a maintenance program.

a) Determine the maintenance model; whether it will be an airport or airline controlled model. Most likely, this decision will be determined based on the business objectives of the specific airport. At present, the airline controlled model is usually found at Large Hub Airports with common use predominately for the International traffic. Most other airports are selecting an airport controlled maintenance model. There are exceptions to this trend. At present, at least one small airport is pursuing an airline controlled maintenance model.

b) Establish the goals of the maintenance program in coordination with the airlines. The items presented below for Service Level Agreements should be used as a starting point in the discussion.

c) Determine responsibilities of support levels, where different support levels indicate a specific extent of technical assistance. A typical breakdown of support levels is as follows:
   - Level 1 – First stop in attempting to answer all trouble calls. Helpdesk functions are typically considered Level 1 support. These questions might include help with simple problems or general "how-to" questions. Most airports maintaining control of the maintenance program either are investigating, or already have moved to providing in-house staff as Level 1 support. Typical reasons given for this included:
     - Providing Level 1 support is an easy addition to the already existing airport helpdesk function
     - Economies of scale are achieved, generally with quicker response times
     - Helps to maintain a level of in-house expertise.
   - Level 2 – Technician level generally handling more complex questions that are passed on from Level 1 support. Typically, an airport operator will outsource this level of support. However, airport operators with an experienced and skilled technician team may choose to handle Level 2 support in-house. It is important to note that Level 2 outsourced support does not necessarily have to be with the system provider. Airport operators have noted very successful relations with vendors experienced with these types of applications.
   - Level 3 – Application support level, which requires knowledge of the software and hardware internals. Level 3 support is generally provided by the system provider.

d) Determine requirements for a Service Level Agreement (SLA). The primary purpose of a SLA is for the airport operator, or airline to define what levels of service are required of the system provider. The SLA should not attempt to define how these requirements are to be satisfied. A separate document, which the supplier prepares, should detail how the SLA is executed. It is important to note that some airports have successfully provided maintenance support, with having a formal SLA in place. At present, 50% of the airports interviewed, did not have an SLA. However, the trend is moving toward using SLAs, especially with the advent of the CUPPS Technical Specifications. In preparing the Technical Specifications, IATA recommends the use of a SLA and provides a template SLA in the Technical Specifications, to be used as a starting point. IATA presents the following reasons for establishing an SLA:
   - To facilitate CUPPS implementations and to streamline the administrative and legal processes required of all CUPPS stakeholders
   - Allows for quick customization by "plugging in" values into the SLA body
   - The template has already been reviewed by airline, airport, and industry bodies, including ACI-NA's legal department, for acceptability and suitability in terms of its business, technical, and legal content
   - The use of a template that is standardized across CUPPS sites provides the opportunity for users, suppliers, and providers to streamline their business and legal processes regarding SLA issues

In preparing the SLA, IATA also recommends the following subject areas be covered:

- Service Levels
  - Hours of Operation
  - Availability
  - System Response Times
  - Repair Levels
- Reporting of Faults
  - Fault Reporting Responsibility
  - Assignment of Security Levels
  - On-Site and Off-Site Support
- Preventative Maintenance
- Environment and Asset Management
  - Local Area Network (LAN)
  - Physical Equipment
  - Workstation Devices
  - OS Patching
  - Virus Protection
  - Responsibilities
- Platform Provider Responsibilities
- Management of this SLA
- Performance Review
- Assumptions
- Resolution of Conflict

Airport operators also noted that it was important to define what was not covered by the Platform Provider (or system provider), since aspects of the common use system, such as the IT infrastructure may already be in place and supported by others.

e) Establish the Change Management Process in support of the SLA. As with the SLA, IATA recommends that the CUPPS SLA processes must be managed by a comprehensive, standards-based change control process. The goal of change management is to ensure that methods and procedures are used to efficiently and expeditiously handle changes to the common use platform and the applications or hardware that resides on the platform. In addition change management is used to minimize the impact of change related incidents or problems upon the various systems and improve day-to-day operations. The airport operator should investigate industry recommendations, such as those produced by the Information Technology Infrastructure Library (ITIL). Appendix A5 has also been included in the Guide for further help and information regarding change management processes and procedures.

f) Implement a continuous improvement program. Through this program, establish a means to track problem calls, so as to resolve issues that continually occur. One airport operator has initiated a program similar to this. Table B8-2 shows the frequency and type of trouble calls. Note the excessive printer issues.

3. *Staffing Considerations:*

The following list of IT Support staff members may be required. The actual number of staff may vary, depending on size and type of installation.

a) Technology Liaison with airlines – responsibilities include coordinating regular airline meetings, including focus meetings on problem resolution and continuous improvement; and project management. This person will help to resolve airline issues as noted in this section.

b) Level 1 Technician Support – Helpdesk Technician

c) Level 2 Technician Support

d) Training – The airport operator will have to provide ongoing training as staff members are migrated in and out of support roles.

Table B8-2. Frequency and types of problem calls.

Common Use System Problem Calls - Issue Classifications (12 month Period)				
Specific Issues	**Admin**	**Data**	**Printer**	**Boarding Pass Printer**
	Application Admin	Corrections	Any issue related to printing	Any issue related to boarding pass printers/printing
	Systems Admin	Updates		
	System Configuration			
	Application Security			
	Physical Security System Config			
	Multiple monitors not displaying			
	Network Admin			
	215	175	402	6
	Equipment	**Kiosk**	**Reader**	**Training**
	Replace/Repair of: Computers	Any issue related to one or more kiosks	Boarding pass readers	Any individual or group training
	Peripherals excludiing readers and printers		Bag Tag readers	
	Installation/Relocation and connection			
	15	2	12	1
	Monitor	**Supplies**	**Security**	
	Single monitor does not display	Card stock for boarding passes	Systems related to physical security	
	Indicates hardware only	Paper	Systems related to physical security	
		Bag tags		
	30	31	0	
	Bag Tag	**Facilities**	**Unkown**	
	Bag Tag printers	Any component related to the housing or support of common use systems or equipment	Could not be determined	
		Signage		
				TOTAL
	44	11	8	**952**

APPENDIX C

Supplemental Information for Chapter 4

Appendix C1 Detailed Cost Breakdown by Area C-2

Appendix C2 Detailed Benefit Breakdown by Business Driver C-19

Appendix C3 Business Feasibility Analysis C-27

Appendix C4 Business Value Analysis Worksheet C-30

APPENDIX C1

Detailed Cost Breakdown by Area

Planning and Design

In support of Chapter 4: Business Value Assessment, the following presents a more detailed listing of cost elements associated with each area of common use.

I. Planning and Design
   A. Services (Consultants and designers)
      - Planning Support
        - Identify potential benefit
        - Develop business model
        - Plan for and facilitating initial discussions with airlines
        - Develop model that accommodates airlines' business models
        - Conduct study for how common use should be implemented
        - Define use criteria
        - Establish control responsibilities
        - Assess IT and facility infrastructure
        - Assess equipment assets to be transferred from airline to airport
        - Prepare RFP for design project
      - Design Support
        - Develop schematic design (possibly in conjunction with other disciplines)
        - Develop functional requirements
        - Develop construction drawings (possibly in conjunction with other disciplines)
        - Develop technical specifications
        - Prepare RFP for construction
   B. Staff
      1. *Executive Level*
         - Planning Direction
           - Meetings to address change in airport and airline culture
           - Meetings to develop initial airport definition of common use business model
           - Meetings to bring in airlines as business partners
           - Meetings to address accommodation of airline business models
           - Meetings to address how common use should be implemented
           - Meetings to define use criteria
           - Meetings to establish control responsibilities
         - Design Oversight
           - Design project sponsorship
      2. *Management Level*
         - Planning Support
           - Meetings to address how common use should be implemented

    - Meetings to define use criteria
    - Meetings to establish control responsibilities
    - Meetings to define it and facility infrastructure requirements
    - Meetings to define requirements for major equipment asset ownership
  - Design Project Management
    - Design coordination
    - Design review meetings
3. *Operational Level*
  - Planning Support
    - Meetings to address how common use should be implemented
    - Meetings to define IT and facility infrastructure requirements
    - Meetings to define requirements for major equipment asset ownership
  - Design Project Support
    - Design review meetings

Terminal Check-in Area

1. *Assets*
  - General IT Infrastructure Upgrades
    - Cabling Infrastructure Enhancements
    - Network Equipment
    - General Utility Servers for Backups, Testing, and Training
    - Tape Library
    - Storage Area Network (SAN)
    - Uninterruptable Power Supplies (UPS)
    - Backup Generators
    - Enterprise Emergency Computer Room
    - Administrative Workstations
  - System Hardware and Software Components
    - Common Use System Software Licenses
    - Common Use System Station Licenses
    - Common Use System Equipment
      - Common Use Application Servers
      - UPS
      - Network Gateways
      - Network Switches
      - Cabling Infrastructure
    - Common Use Check-in Counter Equipment
      - Workstations
        - Computer
        - Monitor
        - Keyboard
        - Barcode Reader
        - Bag Tag Printer
        - 2D Barcode Boarding Pass Printer
        - Dot Matrix Printer
        - UPS
      - Dynamic Signage
        - LCD Monitors
        - Database Servers

        - User Workstation
        - Administrative Workstation
        - UPS
        - Cabling Infrastructure
    - Common Use Self Service Kiosks (CUSS)
        - CUSS Software Licenses
        - Counter-based Kiosks
        - Freestanding Kiosks
        - Cabling Infrastructure
        - Mounting Devices
    - Voice System (VoIP)
        - Call Management System Software Licenses
        - Voicemail System Licenses
        - Emergency Responder System Licenses
        - Individual Handset Licenses
        - Call Management Servers
        - PBX Switches
        - Voicemail Servers
        - Emergency Responder Servers
        - Voice Gateways
        - Telephone Handsets
        - Network Switches
        - Cabling Infrastructure
- Millwork
    - Check-in Counters
    - Display Backwalls
    - Dynamic Signage Cabinets
    - Common Use Self Service Kiosks
- Other equipment
    - Bag Scales
    - Baggage Conveyers

2. *Facility Modifications*
    - Modifications due to new passenger processing practices
        - Security checkpoints
        - Hold rooms
        - Check-in areas
        - Bag screening
        - Baggage make up
    - Modification due to new systems
        - Telecommunication rooms
        - Infrastructure pathways
3. *Services*
    a) Consultants and designers
        - Assist in identifying maximum counter availability during peak-hour operations, compared to gate capacity
        - Assist in addressing passenger processing challenges
        - System Design and Implementation
            - System Design
            - System Installation Oversight / Project Management
            - System Configuration

    - Integration with a VoIP System
    - Integration with Each Airline's System
    - Airline Data Feed / Software Certification
    - Individual Station Installation
    - Millwork Design / Construction / Installation
    - System Testing
    - System Training
    - Software Support
    - Hardware Support
    - System Upgrades
  - Counter configuration and signage design
  - Assessment of modifications needed
    - Check-in counter to gate accessibility
    - Baggage handling systems to check-in counter accessibility
    - Check-in counters to airline ticketing office accessibility
    - Wayfinding / roadway signage
    - Queuing space
    - ADA Compliance
  - Design and construction of modifications

b) Contracts
  - Common use systems warranty and maintenance
  - Janitorial services
  - Skycap services
  - Wheelchair services

c) Certifications
  - Common Use Passenger Processing Certification
  - Common Use Self Service Certification

4. *Staff*

a) Executive Level
  - Design and Implementation Project Sponsorship

b) Management Level
  - Terminal Operations FTE
    - Oversight of new service development
    - Policy and Procedures development and enforcement
    - Design and Implementation Project Management
  - Airline Affairs FTE
    - Work with airlines to accommodate business processes and understand passenger flow methodologies
    - Contract Negotiations and Management
  - Financial Support
    - Defining Rates and Charges

c) Operational Level
  - Participate in design reviews
  - Daily operations of new services
    - Management of Check-in Counter Assignments
    - Monitoring of Check-in Counter Usage
  - Maintenance of new assets
    - Bag scales and bag belts behind counters
    - Power and mechanical
    - Agent Facing Peripherals

    - Self service kiosks
    - Change out of ticket stock
    - Paper jams
    - General cleaning
  - Help Desk – level 1 / level 2 support
  - Staff Training
  - Design and Installation Project Support
  - Legal
    - Liability for Safety
    - Liability for Airline Operations/Performance
  - Customer Service
  - Marketing
  - Environmental
  - Financial
    - Billing
  - Technology Support
    - Infrastructure
    - Common Use Passenger Processing
    - Common Use Self Service Check-in
    - Dynamic Signage
    - Resource Management
    - Telephony
5. *Intangibles*

   Implementing common use in the Terminal Check-in Areas has intangible costs as well. Among these are:
   - Minimization of the unique branding capability of airlines
   - Increased operational risk to the airlines due to a loss of control over system performance and functionality
   - Increased risk to the airport
     - Financial uncertainty during low-utilization periods
     - Liability for impact on airline operations
     - Liability for safety

Curbside Check-in Area

1. *Assets*
   - General IT Infrastructure Upgrades
     - Cabling Infrastructure Enhancements
     - Network Equipment
     - General Utility Servers for Backups, Testing, and Training
     - Tape Library
     - Storage Area Network (SAN)
     - Uninterruptable Power Supplies (UPS)
     - Backup Generators
     - Enterprise Emergency Computer Room
     - Administrative Workstations
   - System Hardware and Software Components
     - Common Use System Software Licenses
     - Common Use System Station Licenses
     - Common Use System Equipment

        - Common Use Application Servers
        - UPS
        - Network Gateways
        - Network Switches
        - Cabling Infrastructure
    - Common Use Check-in Counter Equipment
        - Workstations
            - Computer
            - Monitor
            - Keyboard
            - Barcode Reader
            - Bag Tag Printer
            - 2D Barcode Boarding Pass Printer
            - Dot Matrix Printer
            - UPS
        - Dynamic Signage
            - Flight/Baggage Information Display System Licenses
            - LCD Monitors
            - Database Servers
            - User Workstation
            - Administrative Workstation
            - UPS
            - Cabling Infrastructure
- Millwork
    - Curbside Check-in Counters
    - Dynamic Signage Cabinets

2. *Facility Modifications*
    - Modifications due to new passenger processing practices
        - Bag screening
        - Baggage make up
    - Modification due to new systems
        - Telecommunication Rooms
        - Infrastructure Pathways
3. *Services*
    a) Consultant
        - Assist in addressing passenger processing challenges
        - System Design and Implementation
            - System Design
            - System Installation Oversight / Project Management
            - System Configuration
            - Integration with a VoIP System
            - Integration with Each Airline's System
            - Airline Data Feed / Software Certification
            - Individual Station Installation
            - Millwork Design / Construction / Installation
            - System Testing
            - System Training
            - Software Support
            - Hardware Support
            - System Upgrades
        - Counter configuration and signage design

- Assessment of modifications needed
  - Dedicated bag system(s)
  - Wayfinding / roadway signage
  - Queuing space
  - ADA Compliance
- Design and construction of modifications

b) Contracts
- Common use systems warranty and maintenance
- Janitorial services
- Skycap services
- Wheelchair services

c) Certifications
- Common Use Passenger Processing Certification
- Common Use Self Service Certification

4. *Staff*

a) Executive Level
- Design and Implementation Project Sponsorship

b) Management Level
- Terminal Operations FTE
  - Oversight of new service development
  - Policy and Procedures development and enforcement
  - Design and Implementation Project Management
- Airline Affairs FTE
  - Work with Airlines to Accommodate Business Processes and understand passenger flow methodologies
  - Contract Negotiations and Management
- Financial Support
  - Defining Rates and Charges

c) Operational Level
- Daily operations of new services
  - Management of Check-in Counter Assignments
  - Monitoring of Check-in Counter Usage
- Maintenance of new assets
  - Bag scales and bag belts behind counters
  - Power and mechanical
  - Agent Facing Peripherals
  - Self service kiosks
  - Change out of ticket stock
  - Paper jams
  - General cleaning
- Help Desk – level 1 / level 2 support
- Staff Training
- Design and Installation Project Support
- Legal
  - Liability for Safety
  - Liability for Airline Operations/Performance
- Customer Service
- Marketing
- Environmental
- Financial
  - Billing

- Technology Support
  - Infrastructure
  - Common Use Passenger Processing
  - Dynamic Signage
- Resource Management

5. *Intangibles*
   - Minimization of the unique branding capability of airlines
   - Increased operational risk to the airlines due to a loss of control over system performance and functionality
   - Increased risk to the airport
     - Liability for impact on airline operations
     - Liability for safety
   - Cross-training on all airline applications for curbside operators

Off-site Check-in Operations

1. *Assets*
   - General IT Infrastructure Upgrades
     - Cabling Infrastructure Enhancements
     - Network Equipment
     - General Utility Servers for Backups, Testing, and Training
     - Tape Library
     - Storage Area Network (SAN)
     - Uninterruptable Power Supplies (UPS)
     - Backup Generators
     - Enterprise Emergency Computer Room
     - Administrative Workstations
   - Millwork
     - Offsite Check-in Counters
     - Dynamic Signage Cabinets
     - Common Use Self Service Kiosk
2. *Facility Modifications*
   - Modifications due to new passenger processing practices
     - Bag screening
     - Baggage make up
   - Modification due to new systems
     - Telecommunication Room
3. *Services*
   a) Consultants and designers
      - Assist in addressing passenger processing challenges
      - System Design and Implementation
        - System Design
        - System Installation Oversight / Project Management
        - System Configuration
        - Integration with a VoIP System
        - Integration with Each Airline's System
        - Airline Data Feed / Software Certification
        - Individual Station Installation
        - Millwork Design / Construction / Installation
        - System Testing

        - System Training
        - Software Support
        - Hardware Support
        - System Upgrades
    - Counter configuration and signage design
    - Assessment of modifications needed
        - Baggage delivery system(s)
        - Wayfinding
        - Queuing space
        - ADA Compliance
    - Design and construction of modifications
  b) Contracts
    - Common use systems warranty and maintenance
    - 3rd party provider of off-site check-in operation
  c) Certifications
    - Common Use Passenger Processing Certification
    - Common Use Self Service Certification
4. *Staff*
  a) Executive Level
    - Design and Implementation Project Sponsorship.
  b) Management Level
    - Terminal Operations FTE
        - Oversight of new service development
        - Policy and Procedures development and enforcement
        - Design and Implementation Project Management
    - Airline Affairs FTE
        - Work with Airlines to Accommodate Business Processes and understand passenger flow methodologies
        - Contract Negotiations and Management
    - Financial Support
    - Defining Rates and Charges
  c) Operational Level
    - Daily operations of new services
    - Maintenance of new assets offsite
        - Bag scales and bag belts
        - Power and mechanical
        - Agent Facing Peripherals
        - Self service kiosks
        - Change out of ticket stock
        - Paper jams
        - General cleaning
    - Help Desk – level 1 / level 2 support
    - Staff Training
    - Design and Installation Project Support
    - Legal
        - Liability for Safety
        - Liability for Airline Operations/Performance
    - Customer Service
    - Marketing
    - Environmental
    - Financial
        - Billing

d) Technology Support
   - Infrastructure
   - Common Use Passenger Processing
   - Dynamic Signage
   - Resource Management

Gate Areas

1. *Assets*
   - General IT Infrastructure Upgrades
     - Cabling Infrastructure Enhancements
     - Network Equipment
     - General Utility Servers for Backups, Testing, and Training
     - Tape Library
     - Storage Area Network (SAN)
     - Uninterruptable Power Supplies (UPS)
     - Backup Generators
     - Enterprise Emergency Computer Room
     - Administrative Workstations
   - System Hardware and Software Components
     - Common Use System Software Licenses
     - Common Use System Station Licenses
     - Common Use System Equipment
       - Common Use Application Servers
       - UPS
       - Network Gateways
       - Network Switches
       - Cabling Infrastructure
     - Common Use Gate Equipment
       - Workstations
         - Computer
         - Monitor
         - Keyboard
         - Boarding Gate Reader
         - 2D Barcode Boarding Pass Printer
         - Dot Matrix Printer
         - UPS
       - Dynamic Signage
         - LCD Monitors
         - Database Servers
         - User Workstation
         - Administrative Workstation
         - UPS
         - Cabling Infrastructure
     - Local Departure Control System Software Licenses
     - Gate Management System Software Licenses
     - Voice System (VoIP)
       - Call Management System Software Licenses
       - Voicemail System Licenses
       - Emergency Responder System Licenses

        - Individual Handset Licenses
        - Call Management Servers
        - PBX Switches
        - Voicemail Servers
        - Emergency Responder Servers
        - Voice Gateways
        - Telephone Handsets
        - Network Switches
        - Cabling Infrastructure
    - Millwork
        - Gate Counters
        - Display Backwalls
        - Boarding Podiums
        - Recheck Podiums
        - Dynamic Signage Cabinets
    - Holdroom furnishings
    - Passenger Boarding bridge at each Gate
    - Airport provided utilities for aircraft (PC Air, power, water)
2. *Facility Modifications*
    - Modifications due to new passenger processing practices
        - Security checkpoints
        - Hold rooms
        - Check-in areas
        - Bag screening
        - Baggage make up
    - Modification due to new systems / assets
        - Telecommunication Rooms
        - Infrastructure Pathways
        - Passenger Boarding Bridges
            - Access Control
            - Power
            - Water
            - Preconditioned Air
            - ADA Compliance
3. *Services*
    a) Consultants and designers
        - Assist in identifying maximum gate availability during peak-hour operations
        - Assist in addressing passenger processing challenges
        - System Design and Implementation
            - System Design
            - System Installation Oversight / Project Management
            - System Configuration
            - Integration with a VoIP System
            - Integration with Each Airline's System
            - Airline Data Feed / Software Certification
            - Individual Station Installation
            - Millwork Design / Construction / Installation
            - System Testing
            - System Training
            - Software Support
            - Hardware Support
            - System Upgrades

- Counter configuration and signage design
- Assessment of modifications needed
  - Check-in counter to gate accessibility
  - Wayfinding
  - Access Control System expansion / upgrade
  - ADA Compliance
- Design and construction of modifications

b) Contracts
- Common use systems warranty and maintenance
- Janitorial services for holdrooms, FIS inspection area, jet bridges, ramps and walkways
- Wheelchair services

c) Certifications
- Common Use Passenger Processing Certification

4. *Staff*

a) Executive Level
- Design and Implementation Project Sponsorship

b) Management Level
- Terminal Operations FTE
  - Oversight of new service development
  - Policy and Procedures development and enforcement
  - Design and Implementation Project Management
- Airline Affairs FTE
  - Work with Airlines to Accommodate Business Processes and understand passenger flow methodologies
  - Contract Negotiations and Management
- Financial Support
  - Defining Rates and Charges

c) Operational Level
- Participate in design reviews
- Daily operations of new services
  - Management of Gate Assignments
  - Monitoring of Gate Usage
  - Monitoring and inspection of Passenger Boarding Bridges
  - Maintain Communications on Operational Level with Airport Staff, Airlines and Ground Handlers
- Maintenance of new assets
  - Passenger Boarding Bridges
  - Power and mechanical
  - Agent Facing Peripherals
  - Paper jams
  - General cleaning
- Help Desk – level 1 / level 2 support
- Staff Training
- Design and Installation Project Support
- Legal
  - Liability for Safety
  - Liability for Airline Operations/Performance
- Customer Service
- Marketing

- Environmental
- Financial
  - Billing
- Technology Support
  - Infrastructure
  - Common Use Passenger Processing
  - Gate Management System
  - Local Departure Control System
  - Dynamic Signage
  - Resource Management
  - Telephony
- Security
  - Access Control

5. *Intangibles*
   - Minimization of unique branding capability of airlines
   - Increased operational risk to airlines due to a loss of control over system performance and functionality
   - Increased risk to airport
     - Financial uncertainty during low-utilization periods
     - Liability for impact on airline operations
     - Liability for safety

Flight / Baggage Information Display Systems

1. *Assets*
   - General IT Infrastructure Upgrades
     - Cabling Infrastructure Enhancements
     - Network Equipment
     - General Utility Servers for Backups, Testing, and Training
     - Tape Library
     - Storage Area Network (SAN)
     - Uninterruptable Power Supplies (UPS)
     - Backup Generators
     - Enterprise Emergency Computer Room
     - Administrative Workstations
   - System Hardware and Software Components
     - Flight/Gate Information Display System Licenses
     - LCD Monitors
     - Database Servers
     - User Workstation
     - Administrative Workstation
     - UPS
     - Cabling Infrastructure
   - Millwork
     - Information Display Cabinets
2. *Facility Modifications*
   - Modification due to new systems / assets
     - Telecommunication Rooms
     - Infrastructure Pathways
     - Structural changes to the facility to support large-format displays

3. *Services*
   a) Consultants and designers
      - Assist in conducting study to determine quantity and placement of information displays.
      - System Design and Implementation
        - System Design
        - System Installation Oversight / Project Management
        - System Configuration
        - Integration with Each Airline's System
        - Airline Data Feed / Software Certification
        - Individual Display Installation
        - Millwork Design / Construction / Installation
        - System Testing
        - System Training
        - Software Support
        - Hardware Support
        - System Upgrades
      - Assessment of modifications needed
        - Wayfinding
        - ADA Compliance
      - Design and construction of modifications
   b) Contracts
      - Common use systems warranty and maintenance
      - Display device warranty and maintenance
4. *Staff*
   a) Executive Level
      - Design and Implementation Project Sponsorship
   b) Management Level
      - Terminal Operations
        - Oversight of new service development
        - Policy and Procedures development and enforcement
        - Design and Implementation Project Management
      - Airline Affairs
        - Work with Airlines to Accommodate Business Processes and understand passenger flow methodologies
        - Contract Negotiations and Management
      - Financial Support
        - Defining Rates and Charges
   c) Operational Level
      - Participate in design reviews
      - Daily operations of new services
        - Management of Information Display System
      - Maintenance of new assets
        - Power and mechanical
        - Monitor replacement
        - General cleaning
      - Help Desk – level 1 / level 2 support
      - Staff Training
      - Design and Installation Project Support
      - Customer Service
      - Marketing

- Financial
  - Billing
  - Technology Support
  - Infrastructure
  - Dynamic Signage

5. *Intangibles*
   - Minimization of unique branding capability of airlines
   - Increased operational risk to airlines due to a loss of control over system performance and functionality
   - Increased risk to airport
     - Liability for impact on airline operations

Ramp Control Services

1. *Assets*
   - Ramp control vehicles
   - Gate management system
   - User workstations
   - Cabling infrastructure
   - Backup generator
   - Radio equipment
2. *Facility Modifications*
   - Ramp control tower construction
   - Gate modifications
     - Mechanical and power requirements
     - Spatial configuration
   - Infrastructure pathways
   - Extension of systems from the terminal
     - Access Control System
     - Network Infrastructure/Electronics
     - CCTV System
     - Voice System
     - Radio System
3. *Services*
   a) Consultants and designers
      - Assist in evaluating opportunity to take over ramp control
      - Assist in defining ramp control stakeholder requirements, operating agreements and procedures
      - System design, installation, and configuration
        - Gate Management System
        - User Workstations
        - Cabling Infrastructure
        - Backup Generator
        - Network Electronics
        - Access Control System
        - CCTV System
        - Voice System
        - Radio System
      - Assessment of modifications needed
        - Check-in counter to gate accessibility
        - Wayfinding

    - Access Control System expansion / upgrade
    - ADA Compliance
  - Design and construction of modifications

b) Contracts
  - Ramp Control Operations

4. *Staff*

a) Executive Level
  - Meetings to address assumption of ramp control services
  - Meetings to define ramp control stakeholder requirements, operating agreements and procedures
  - Project Sponsorship

b) Management Level
  - Ramp Tower Manager FTE
    - Ramp Control Management
    - Policy and Procedures development and enforcement
    - Project Management
  - Ramp Controller FTE (3)
    - Coordinate and administer ramp control and gate management
    - Liaison between the airport operations staff, tenants and the Federal Aviation Administration Airport Traffic Control Tower for administering flow management staging of departing aircraft and strategic gate management for arriving aircraft
  - Airline Affairs FTE
    - Work with Airlines
      - Accommodate Business Processes
      - Understand standards for aircraft movement and separation
      - Handle labor contracts

c) Operational Level
  - Ramp Managers FTE (multiple depending on size of operation)
    - Monitor ramp operations
  - Maintenance of gate striping
  - Project Support
  - Staff Training
  - Legal
    - Liability for Safety
    - Liability for Airline Operations/Performance
  - Financial
    - Billing
  - Technology Support
    - Infrastructure
    - Gate Management System
    - Telephony
  - Security
    - CCTV
    - Access Control
  - Maintenance of new assets
    - Power and mechanical
    - General cleaning

5. *Intangibles*
  - Increased operational risk to airlines due to a loss of control over ramp control operations

- Increased risk to airport
  - liability for impact on airline operations
  - liability for safety
- Labor issues between airport operator, airline, and others sharing ramp control facilities and services

Ground Handling / Ramp Services

1. *Services*
   a) Consultant
      - Assist in evaluating opportunity to take over ground handling
      - Assist in defining ground handling stakeholder requirements, operating agreements and procedures

   b) Contracts
      - Outsource Contract:
        - Air starter and ground power units
        - Baggage handling
        - Catering handling
        - Aircraft cleaning
        - Aircraft de-icing
        - Lavatory maintenance
        - Liaison with fuel suppliers
        - Push back & towing
        - Steps and air bridge service
        - Water service
2. *Staff*
   a) Executive Level
      - Meetings to address assumption of ground handling services
      - Meetings to define ground handling stakeholder requirements, operating agreements and procedures

   b) Management Level
      - Ground Handling Manager FTE
        - Ground Handling Contract Management
        - Policy and Procedures development and enforcement
      - Airline Affairs FTE
        - Work with Airlines to accommodate business processes

   c) Operational Level
      - Legal
        - Liability for Safety
        - Liability for Airline Operations/Performance
      - Financial
        - Billing
3. *Intangibles*
   - Increased operational risk to the airlines due to a loss of control over Ground Handling Performance and Functionality
   - Increased risk to the airport
     - Liability for impact on airline operations
     - Liability for safety

APPENDIX C2

Detailed Benefit Breakdown by Business Driver

In support of Chapter 4's Business Value Assessment, the following presents a more detailed listing of potential benefits associated with each specific business driver. Each of these benefits came from statements made by airport and airline staff interviewed during the research of this project.

I. Maximize Existing Facility Utilization
   1. Competitive Advantage
      - Allows airline growth
      - As a result of airline growth, generates revenue for rental cars, for advertising, for retailers, etc.
   2. Cost Savings / Efficiency
      - Avoid or delay capital expenditures, including construction of new gates
      - Provides cost effective use for overflow flights
      - Helps control airport costs
      - Allows optimization of current gates
      - Efficient for carriers with low number of flights per day
      - Efficient for International flights
      - Reduced costs when exiting a market
      - Reduced costs when entering a market
      - Allows an airline to avoid having to provide infrastructure and support
      - Allows carriers to reduce the number of gates required as operations change
      - Allows airport to save costs during airline mergers
      - Allows airlines to pay for only what they use
      - Accommodates holiday season spikes and scheduled charters
      - Allows standardization of equipment for airports
   3. Customer Service
      - Allows for standardized look and feel of the airport
      - Allows for addition of curbside services
   4. Flexibility / Convenience
      - Provide operational flexibility to airports
      - Allows airlines to move within the airport if desired
      - Allows better handling of seasonal air traffic
      - Allows airport to save effort during airline mergers
      - Makes it easier for an airline to enter a market
      - Helps with irregular operations
      - Allows for easy set up of check-in area
      - Allows new business to be accommodated more easily

5. Resource Maximization
    - Allows constrained airports with low utilization for "spoke" airlines to operate more efficiently
    - Maximizes utilization of current resources
    - Reduces congestion
    - Provides the ability to handle airlines and passengers during future construction work
6. Risk Reduction
    - Reduces requirements on airlines to lock into a long-term agreement
    - Gives the airport more control over its facility

II. Avoid / Defer Construction

1. Cost Savings / Efficiency
    - Avoid or delay capital expenditures, including construction of new gates
    - Helps control airport costs
    - Accommodates holiday season spikes and scheduled charters without bricks and mortar
    - Allows optimization of current gates
    - Efficient for carriers with low number of flights per day
    - Efficient for International flights
    - Provides cost effective use for overflow flights
    - Reduced costs when entering a market
    - Allows an airline to avoid having to provide infrastructure and support
    - Allows carriers to reduce the number of gates required as operations change
    - Allows airlines to pay for only what they use
    - CU gates allow for fewer check-in positions to accommodate
2. Customer Service
    - Curbside services
3. Flexibility / Convenience
    - Provide operational flexibility to airports
    - Makes it easier for an airline to enter a market
    - Helps with irregular operations
    - Curb side common use allows flexibility
    - Allows flexibility, including handling seasonal air traffic
    - Can set up check-in area easily
    - Flexibility using mobile common use
    - Common use makes new business easy to accommodate
4. Resource Maximization
    - Efficient for constrained airports with low utilization for "spoke" airlines
    - Maximizes utilization of current resources
    - Alleviate constrained baggage systems
    - Reduce congestion
    - Ability to handle airlines and passengers during future construction work
5. Risk Reduction
    - Reduces requirements on airlines to lock into a long-term agreement
    - Gives the airport more control over its facility

III. Avoid / Defer Other Capital Costs

1. Competitive Advantage
    - Allows airline growth
    - Allows airline to enter the market more rapidly
    - Common use allows for new entrant airlines to test the market
    - Provides a competitive advantage for small to medium sized airports

- As a result of airline growth, generates revenue for rental cars, for advertising, for retailers, etc.

2. Cost Savings / Efficiency
   - Avoid or delay capital expenditures, including construction of new gates
   - Reduced costs when exiting a market
   - Reduced costs when entering a market
   - Allows an airline to avoid having to provide infrastructure and support
   - Allows airport to save costs during airline mergers
   - Helps control airport costs
   - Accommodates holiday season spikes and scheduled charters without bricks and mortar
   - Allows optimization of current gates
   - Efficient for carriers with low number of flights per day
   - Efficient for International flights
   - Provides cost effective use for overflow flights
   - Allows carriers to reduce the number of gates required as operations change
   - Allows airlines to pay for only what they use
   - Common use gates allow for fewer check-in positions
   - Allows standardization of equipment for airports
3. Customer Service
   - Improved performance in baggage handling
   - Curbside services
4. Flexibility / Convenience
   - Provide operational flexibility to airports
   - Allows flexibility to airlines to move within the airport if desired
   - Allows airport to save effort during airline mergers
   - Makes it easier for an airline to enter a market
   - Helps with irregular operations
   - Curb side common use allows flexibility
   - Allows flexibility, including handling seasonal air traffic
   - Can set up check-in area easily
   - Flexibility using mobile common use
   - Common use makes new business easy to accommodate
5. Resource Maximization
   - Alleviate constrained baggage systems
   - Efficient for constrained airports with low utilization for “spoke” airlines
   - Maximizes utilization of current resources
   - Ability to handle airlines and passengers during future construction work
   - Reduce congestion
6. Risk Reduction
   - Reduces requirements on airlines to lock into a long-term agreement
   - Gives the airport more control over its facility

IV. Maximize Facility Flexibility

1. Competitive Advantage
   - Allows airline to enter the market more rapidly
   - Common use allows for new entrant airlines to test the market
   - Provides a competitive advantage for small to medium sized airports
   - Allows airline growth
   - As a result of airline growth, generates revenue for rental cars, for advertising, for retailers, etc.

2. Cost Savings / Efficiency
   - Avoid or delay capital expenditures, including construction of new gates
   - Efficient for carriers with low number of flights per day
   - Efficient for International flights
   - Provides cost effective use for overflow flights
   - Reduced costs when exiting a market
   - Reduced costs when entering a market
   - Allows an airline to avoid having to provide infrastructure and support
   - Allows carriers to reduce the number of gates required as operations change
   - Allows airport to save costs during airline mergers
   - Helps control airport costs
   - Allows airlines to pay for only what they use
   - Accommodates holiday season spikes and scheduled charters without bricks and mortar
   - Common use gates allow for fewer check-in positions to accommodate
   - Allows optimization of current gates
   - Allows standardization of equipment for airports
3. Customer Service
   - Allows for standardized look and feel of the airport
   - Improved performance in baggage handling
   - Common use GSE would allow airport to control problematic ground operators and keep things organized
   - Providing a better customer service to the airlines
   - Provides for greater ramp control
   - Common use GSE benefits airlines at small airport
   - Better technical support for airlines
   - Curbside services
4. Flexibility / Convenience
   - Provide operational flexibility to airports
   - Helps with irregular operations
   - Allows flexibility, including handling seasonal air traffic
   - Common use makes new business easy to accommodate
   - Makes it easier for an airline to enter a market
   - Allows airport to save effort during airline mergers
   - Allows flexibility to airlines to move within the airport if desired
   - Curb side common use allows flexibility
   - Can set up check-in area easily
   - Flexibility using mobile common use
5. Resource Maximization
   - Alleviate constrained baggage systems
   - Efficient for constrained airports with low utilization for “spoke” airlines
   - Maximizes utilization of current resources
   - Reduce congestion

V. Decrease Airport Cost of Doing Business
1. Competitive Advantage
   - Provides a competitive advantage for small to medium sized airports
2. Cost Savings / Efficiency
   - Avoid or delay capital expenditures, including construction of new gates
   - Allows airport to save costs during airline mergers
   - Helps control airport costs
   - Accommodates holiday season spikes and scheduled charters without bricks and mortar

- Allows optimization of current gates
- Allows standardization of equipment for airports
- Reduced costs when exiting a market
- Reduced costs when entering a market
- Common use gates allow for fewer check-in positions to accommodate

3. Customer Service
   - Provides for greater ramp control
4. Flexibility / Convenience
   - Allows airport to save effort during airline mergers
   - Common use makes new business easy to accommodate
5. Resource Maximization
   - Ability to handle airlines and passengers during future construction work

VI. Decrease Airline Cost of Doing Business

1. Competitive Advantage
   - Allows airline to enter the market more rapidly
   - Common use allows for new entrant airlines to test the market
   - Allows airline growth
2. Cost Savings / Efficiency
   - Avoid or delay capital expenditures, including construction of new gates
   - Efficient for carriers with low number of flights per day
   - Efficient for International flights
   - Provides cost effective use for overflow flights
   - Reduced costs when exiting a market
   - Reduced costs when entering a market
   - Allows an airline to avoid having to provide infrastructure and support
   - Allows carriers to reduce the number of gates required as operations change
   - Allows airlines to pay for only what they use
   - Accommodates holiday season spikes and scheduled charters without bricks and mortar
   - Provides efficiencies when managed by a consortium to maintain or own equipment
   - Allows airport to save costs during airline mergers
   - Consortium allows cost effective fuel
   - Helps control airport costs
3. Customer Service
   - Common use GSE benefits airlines at small airport
4. Flexibility / Convenience
   - Allows flexibility to airlines to move within the airport if desired
   - Allows airport to save effort during airline mergers
   - Makes it easier for an airline to enter a market
   - Can set up check-in area easily
   - Common use makes new business easy to accommodate
5. Resource Maximization
   - Efficient for constrained airports with low utilization for “spoke” airlines
   - Ability to handle airlines and passengers during future construction work
6. Risk Reduction
   - Reduces requirements on airlines to lock into a long-term agreement

VII. Improve Quality of Service to Airlines

1. Competitive Advantage
   - Allows airline to enter the market more rapidly
   - Common use allows for new entrant airlines to test the market
   - Allows airline growth

2. Cost Savings / Efficiency
   - Efficient for carriers with low number of flights per day
   - Efficient for International flights
   - Provides cost effective use for overflow flights
   - Reduced costs when exiting a market
   - Reduced costs when entering a market
   - Allows an airline to avoid having to provide infrastructure and support
   - Allows carriers to reduce the number of gates required as operations change
   - Consortium allows cost effective fuel
   - Allows airlines to pay for only what they use
   - Accommodates holiday season spikes and scheduled charters without bricks and mortar
   - Allows standardization of equipment for airports
3. Customer Service
   - Improved performance in baggage handling
   - Common use GSE would allow airport to control problematic ground operators and keep things organized
   - Providing a better customer service to the airlines
   - Provides for greater ramp control
   - Common use GSE benefits airlines at small airport
   - Better technical support for airlines
   - Curbside services
4. Flexibility / Convenience
   - Allows flexibility to airlines to move within the airport if desired
   - Makes it easier for an airline to enter a market
   - Helps with irregular operations
   - Allows flexibility, including handling seasonal air traffic
   - Can set up check-in area easily
   - Common use makes new business easy to accommodate
   - Allows airport to save effort during airline mergers
   - Curb side common use allows flexibility
   - Flexibility using mobile common use
5. Resource Maximization
   - Ability to handle airlines and passengers during future construction work
   - Alleviate constrained baggage systems
   - Efficient for constrained airports with low utilization for “spoke” airlines
   - Reduce congestion
6. Risk Reduction
   - Reduces requirements on airlines to lock into a long-term agreement

VIII. Improve Quality of Service to Passengers

1. Customer Service
   - Efficient for customers to report lost baggage if common use kiosk is implemented in baggage area
   - Allows for standardized look and feel of the airport
   - Improved performance in baggage handling
   - Common use Skycap will allow better quality
   - Curbside services
2. Flexibility / Convenience
   - Allows airport to save effort during airline mergers
   - Curb side common use allows flexibility
   - Allows flexibility, including handling seasonal air traffic

3. Resource Maximization
   - Reduce congestion
   - Ability to handle airlines and passengers during future construction work
   - Alleviate constrained baggage systems

IX. Increase Opportunities for Airlines to Add or Expand Service

1. Competitive Advantage
   - Allows airline to enter the market more rapidly
   - Common use allows for new entrant airlines to test the market
   - Allows airline growth
2. Cost Savings / Efficiency
   - Efficient for carriers with low number of flights per day
   - Efficient for International flights
   - Provides cost effective use for overflow flights
   - Reduced costs when entering a market
   - Allows an airline to avoid having to provide infrastructure and support
   - Allows airlines to pay for only what they use
   - Accommodates holiday season spikes and scheduled charters without bricks and mortar
3. Customer Service
   - Improved performance in baggage handling
   - Common use GSE would allow airport to control problematic ground operators and keep things organized
   - Providing a better customer service to the airlines
   - Provides for greater ramp control
   - Common use GSE benefits airlines at small airport
   - Better technical support for airlines
4. Flexibility / Convenience
   - Makes it easier for an airline to enter a market
   - Allows flexibility, including handling seasonal air traffic
   - Can set up check-in area easily
   - Common use makes new business easy to accommodate
   - Allows flexibility to airlines to move within the airport if desired
   - Flexibility using mobile common use
5. Resource Maximization
   - Efficient for constrained airports with low utilization for “spoke” airlines
   - Reduce congestion
   - Ability to handle airlines and passengers during future construction work
6. Risk Reduction
   - Reduces requirements on airlines to lock into a long-term agreement

X. Gain a Competitive Advantage over Other Airports

1. Competitive Advantage
   - Allows airline to enter the market more rapidly
   - Common use allows for new entrant airlines to test the market
   - Provides a competitive advantage for small to medium sized airports
   - Allows airline growth
   - As a result of airline growth, generates revenue for rental cars, for advertising, for retailers, etc
2. Cost Savings / Efficiency
   - Efficient for carriers with low number of flights per day
   - Efficient for International flights
   - Provides cost effective use for overflow flights

- Reduced costs when exiting a market
- Reduced costs when entering a market
- Allows an airline to avoid having to provide infrastructure and support
- Allows carriers to reduce the number of gates required as operations change
- Allows airlines to pay for only what they use
- Accommodates holiday season spikes and scheduled charters without bricks and mortar
- Avoid or delay capital expenditures, including construction of new gates
- Allows airport to save costs during airline mergers
- Helps control airport costs
- Common use gates allow for fewer check-in positions
- Allows optimization of current gates
- Allows standardization of equipment for airports

3. Customer Service
   - Improved performance in baggage handling
   - Common use GSE would allow airport to control problematic ground operators and keep things organized
   - Common use Skycap will allow better quality
   - Providing a better customer service to the airlines
   - Common use GSE benefits airlines at small airport
   - Better technical support for airlines
   - Curbside services
   - Efficient for customers to report lost baggage if common use kiosk is implemented in baggage area
   - Allows for standardized look and feel of the airport
   - Provides for greater ramp control
4. Flexibility / Convenience
   - Allows flexibility to airlines to move within the airport if desired
   - Makes it easier for an airline to enter a market
   - Allows flexibility, including handling seasonal air traffic
   - Can set up check-in area easily
   - Common use makes new business easy to accommodate
   - Provide operational flexibility to airports
   - Allows airport to save effort during airline mergers
   - Helps with irregular operations
   - Curb side common use allows flexibility
   - Flexibility using mobile common use
5. Resource Maximization
   - Reduce congestion
   - Efficient for constrained airports with low utilization for “spoke” airlines
   - Maximizes utilization of current resources
   - Ability to handle airlines and passengers during future construction work
6. Risk Reduction
   - Reduces requirements on airlines to lock into a long-term agreement
   - Gives the airport more control over its facility

APPENDIX C3

Business Feasibility Analysis

This analysis is intended to help identify if the subject airport is a candidate for common use. The questions below are intended to draw out issues to be considered by the airport's executive team when investigating the potential application of a common use solution.

Airport Culture

1. Does the airport have experience in offering / managing common use or shared tenant service? _____
2. Does the airport's culture support a progressive use of technology? _____
3. Is the airport's management style considered to be entrepreneurial or traditional? _____
4. Is the airport management actively seeking opportunities to reduce operational costs? _____
5. Is the airport management actively seeking to create a better value proposition for the airlines? _____
6. Is the airport management actively seeking to improve customer service to the traveling public? _____
7. Is the airport management actively seeking to draw airlines and/or passengers away from competing airports? _____

Facility Conditions

8. Is there available space for physical expansion? _____
9. Are there natural barriers to physical expansion? _____
10. Are there political barriers to physical expansion? _____
11. Are there financial barriers to physical expansion? _____
12. Is the facility currently gate constrained or projected to be gate constrained within the next 10 years? _____
13. Is the airport seeking to avoid or delay new terminal construction or gate expansion projects? _____
14. Is the airport expecting major construction that will impact a significant use of existing gates? _____
15. Are gate expansion projects planned over the next 10 years? _____
16. Does the airport own passenger boarding bridges, bag makeup and other major assets used in a shared or common use environment? _____
17. Is the airport currently experiencing a low level of gate utilization? _____
18. Is the airport currently experiencing a low level of check-in counter utilization? _____
19. Are there significant gate availability time slots that could be used, if available to other carriers? _____

20. Are there currently long queues during peak times at the check-in counters? _____
21. Is the airport's current implementation of flight information monitors serving the traveling public as desired? _____
22. Are curbside check-in counters available for all of the carriers that wish to use them? _____
23. Is the airport challenged with meeting the requirements of irregular operations? _____
24. Is it difficult to accommodate new entrant airlines with the current facility? _____
25. Is the airport positioned to meet NextGen requirements as mandated by FAA? _____
26. Does the airport have an airport-wide cabling infrastructure backbone in place? _____
27. Does the airport have telecommunications rooms that are capable of supporting new systems or system expansion? _____
28. Does the airport have adequate retail space to accommodate the needs of the traveling public? _____
29. Does the airport have gate areas that are highly congested during peak times while others are vacant? _____

Market Conditions

30. Is the airport attempting to expand the international carrier base? _____
31. Is the airport using an aggressive marketing approach in seeking lower barriers to the cost of entry for airlines? _____
32. Does your airport service area have seasonal traffic? _____
33. Is the airport developing new or seasonal services? _____
34. Is the business structure of the airport, such that revenue and quality of service are improved through airport provided services? _____
35. Is the airport operating in a growth market? _____
36. Is the market being serviced by the airport expecting a consistent population growth rate over the next several years? _____
37. Is the airport in a market that is competitive with other airports? _____
38. Is the airport in a market that is competitive with other non-airport transportation options? _____
39. Does the airport have a large percentage of lay-over passengers that could benefit from a greater number of retail establishments? _____

Airline Makeup

40. Does the current airline tenant makeup include a single airline that provides more than 50% of the airport's enplanements? _____
41. Is this a hub airport with spoke airlines that are gate constrained? _____
42. Is this a hub airport, where a dominant carrier or others are asking for overflow use of gates? _____
43. Is the airport trending towards an increase in transient air carrier business, such as mergers, seasonal traffic support, etc.? _____
44. Does the airport have domestic air carrier business services by many different airlines? _____
45. Does the airport have one or more domestic air carriers who are geographically split in their use of check-in counters? _____

46. Does the airport have one or more domestic air carriers who are interested in increasing its service but cannot due to facility limitations? _____
47. Does the airport have one or more international air carriers who are interested in increasing its service but cannot due to facility limitations? _____
48. Do the airlines have a consortium of any sort at this airport? _____
49. Does the airport have airlines who are known to be strong opponents of common use initiatives? _____

APPENDIX C4

Business Value Analysis Worksheet

	Expected (y/n)	Expected Value
TOTAL EXPECTED BENEFIT		
I. Maximize Existing Facility Utilization		
Competitive Advantage		
Airline growth		
Revenue generation for rental cars, advertising, retailers, etc., as a result of airline growth		
Cost Savings / Efficiency		
Avoid or delay capital expenditures, including construction of new gates		
Cost effective management of overflow flights		
Airport cost control		
Optimize current gates		
Create efficiency for carriers with low number of flights per day		
Create efficiency for International flights		
Reduce costs when airlines enter a market		
Reduce costs when airlines exit a market		
Eliminate requirement for airlines to provide infrastructure and support		
Create option for carriers to reduce the number of gates required as operations change		
Reduce costs associated with airline mergers		
Create opportunity for airlines to pay for only what they use		
Accommodate holiday season spikes and scheduled charters		
Standardize equipment within the airport		
Customer Service		
Create standardized look and feel within the airport		
Enable addition of curbside services		
Flexibility / Convenience		
Provide operational flexibility		

	Expected (y/n)	Expected Value
Create the opportunity for airlines to move within the airport if desired		
Allow better handling of seasonal air traffic		
Save effort during airline mergers		
Make it easier for an airline to enter a market		
Help with irregular operations		
Allow for easy set up of check-in area		
Create the ability for new business to be accommodated more easily		
Resource Maximization		
Accommodate "spoke" airlines in a constrained airport more efficiently		
Maximize utilization of current resources		
Reduce congestion		
Manage airlines and passengers during future construction work		
Risk Reduction		
Reduce requirements on airlines to lock into a long-term agreement		
Give the airport more control over its facility		
II. Avoid / Defer Construction		
Cost Savings / Efficiency		
Avoid or delay capital expenditures, including construction of new gates		
Airport cost control		
Accommodate holiday season spikes and scheduled charters without bricks and mortar		
Optimize current gates		
Create efficiency for carriers with low number of flights per day		
Create efficiency for International flights		
Cost effective management of overflow flights		
Reduce costs when airlines enter a market		
Eliminate requirement for airlines to provide infrastructure and support		
Create option for carriers to reduce the number of gates required as operations change		
Create opportunity for airlines to pay for only what they use		
Customer Service		
Enable addition of curbside services		

	Expected (y/n)	Expected Value
Flexibility / Convenience		
Provide operational flexibility		
Make it easier for an airline to enter a market		
Help with irregular operations		
Allow better handling of seasonal air traffic		
Allow for easy set up of check-in area		
Create the ability for new business to be accommodated more easily		
Resource Maximization		
Accommodate "spoke" airlines in a constrained airport more efficiently		
Maximize utilization of current resources		
Alleviate constrained baggage systems		
Reduce congestion		
Manage airlines and passengers during future construction work		
Risk Reduction		
Reduce requirements on airlines to lock into a long-term agreement		
Give the airport more control over its facility		
III. Avoid / Defer Other Capital Costs		
Competitive Advantage		
Airline growth		
Create the ability for an airline to enter the market more rapidly		
Create the ability for new entrant airlines to test the market		
Revenue generation for rental cars, advertising, retailers, etc., as a result of airline growth		
Cost Savings / Efficiency		
Avoid or delay capital expenditures, including construction of new gates		
Reduce costs when airlines enter a market		
Reduce costs when airlines exit a market		
Eliminate requirement for airlines to provide infrastructure and support		
Reduce costs associated with airline mergers		
Airport cost control		

	Expected (y/n)	Expected Value
Accommodate holiday season spikes and scheduled charters without bricks and mortar		
Optimize current gates		
Create efficiency for carriers with low number of flights per day		
Create efficiency for International flights		
Cost effective management of overflow flights		
Create option for carriers to reduce the number of gates required as operations change		
Create opportunity for airlines to pay for only what they use		
Standardize equipment within the airport		
Customer Service		
Improve performance in baggage handling		
Enable addition of curbside services		
Flexibility / Convenience		
Provide operational flexibility		
Create the opportunity for airlines to move within the airport if desired		
Save effort during airline mergers		
Make it easier for an airline to enter a market		
Help with irregular operations		
Allow better handling of seasonal air traffic		
Allow for easy set up of check-in area		
Create the ability for new business to be accommodated more easily		
Resource Maximization		
Alleviate constrained baggage systems		
Accommodate "spoke" airlines in a constrained airport more efficiently		
Maximize utilization of current resources		
Manage airlines and passengers during future construction work		
Reduce congestion		
Risk Reduction		
Reduce requirements on airlines to lock into a long-term agreement		
Give the airport more control over its facility		

	Expected (y/n)	Expected Value
IV. Maximize Facility Flexibility		
Competitive Advantage		
Create the ability for an airline to enter the market more rapidly		
Create the ability for new entrant airlines to test the market		
Airline growth		
Revenue generation for rental cars, advertising, retailers, etc., as a result of airline growth		
Cost Savings / Efficiency		
Avoid or delay capital expenditures, including construction of new gates		
Create efficiency for carriers with low number of flights per day		
Create efficiency for International flights		
Cost effective management of overflow flights		
Reduce costs when airlines enter a market		
Reduce costs when airlines exit a market		
Eliminate requirement for airlines to provide infrastructure and support		
Create option for carriers to reduce the number of gates required as operations change		
Reduce costs associated with airline mergers		
Airport cost control		
Create opportunity for airlines to pay for only what they use		
Accommodate holiday season spikes and scheduled charters without bricks and mortar		
Optimize current gates		
Standardize equipment within the airport		
Customer Service		
Create standardized look and feel within the airport		
Improve performance in baggage handling		
Control problematic ground operators and keep things organized		
Provide better customer service to the airlines		
Provide greater ramp control		
Provide better technical support for airlines		
Enable addition of curbside services		

	Expected (y/n)	Expected Value
Flexibility / Convenience		
Provide operational flexibility		
Help with irregular operations		
Allow better handling of seasonal air traffic		
Create the ability for new business to be accommodated more easily		
Make it easier for an airline to enter a market		
Save effort during airline mergers		
Create the opportunity for airlines to move within the airport if desired		
Allow for easy set up of check-in area		
Resource Maximization		
Alleviate constrained baggage systems		
Accommodate "spoke" airlines in a constrained airport more efficiently		
Maximize utilization of current resources		
Reduce congestion		
V. Decrease Airport Cost of Doing Business		
Cost Savings / Efficiency		
Avoid or delay capital expenditures, including construction of new gates		
Reduce costs associated with airline mergers		
Airport cost control		
Accommodate holiday season spikes and scheduled charters without bricks and mortar		
Optimize current gates		
Standardize equipment within the airport		
Reduce costs when airlines enter a market		
Reduce costs when airlines exit a market		
Customer Service		
Provide greater ramp control		
Flexibility / Convenience		
Save effort during airline mergers		
Create the ability for new business to be accommodated more easily		

	Expected (y/n)	Expected Value
Resource Maximization		
Manage airlines and passengers during future construction work		
VI. Decrease Airline Cost of Doing Business		
Competitive Advantage		
Create the ability for an airline to enter the market more rapidly		
Create the ability for new entrant airlines to test the market		
Airline growth		
Cost Savings / Efficiency		
Avoid or delay capital expenditures, including construction of new gates		
Create efficiency for carriers with low number of flights per day		
Create efficiency for International flights		
Cost effective management of overflow flights		
Reduce costs when airlines enter a market		
Reduce costs when airlines exit a market		
Eliminate requirement for airlines to provide infrastructure and support		
Create option for carriers to reduce the number of gates required as operations change		
Create opportunity for airlines to pay for only what they use		
Accommodate holiday season spikes and scheduled charters without bricks and mortar		
Reduce costs associated with airline mergers		
Airport cost control		
Flexibility / Convenience		
Create the opportunity for airlines to move within the airport if desired		
Save effort during airline mergers		
Make it easier for an airline to enter a market		
Allow for easy set up of check-in area		
Create the ability for new business to be accommodated more easily		
Resource Maximization		
Accommodate "spoke" airlines in a constrained airport more efficiently		
Manage airlines and passengers during future construction work		

	Expected (y/n)	Expected Value
Risk Reduction		
Reduce requirements on airlines to lock into a long-term agreement		
VII. Improve Quality of Service to Airlines		
Competitive Advantage		
Create the ability for an airline to enter the market more rapidly		
Create the ability for new entrant airlines to test the market		
Airline growth		
Cost Savings / Efficiency		
Create efficiency for carriers with low number of flights per day		
Create efficiency for International flights		
Cost effective management of overflow flights		
Reduce costs when airlines enter a market		
Reduce costs when airlines exit a market		
Eliminate requirement for airlines to provide infrastructure and support		
Create option for carriers to reduce the number of gates required as operations change		
Create opportunity for airlines to pay for only what they use		
Accommodate holiday season spikes and scheduled charters without bricks and mortar		
Standardize equipment within the airport		
Customer Service		
Improve performance in baggage handling		
Control problematic ground operators and keep things organized		
Provide better customer service to the airlines		
Provide greater ramp control		
Provide better technical support for airlines		
Enable addition of curbside services		
Flexibility / Convenience		
Create the opportunity for airlines to move within the airport if desired		
Make it easier for an airline to enter a market		
Help with irregular operations		

	Expected (y/n)	Expected Value
Allow better handling of seasonal air traffic		
Allow for easy set up of check-in area		
Create the ability for new business to be accommodated more easily		
Save effort during airline mergers		
Resource Maximization		
Manage airlines and passengers during future construction work		
Alleviate constrained baggage systems		
Accommodate "spoke" airlines in a constrained airport more efficiently		
Reduce congestion		
Risk Reduction		
Reduce requirements on airlines to lock into a long-term agreement		
VIII. Improve Quality of Service to Passengers		
Customer Service		
Create standardized look and feel within the airport		
Improve performance in baggage handling		
Improve quality of Skycap services		
Improve quality of curbside services		
Flexibility / Convenience		
Save effort during airline mergers		
Allow better handling of seasonal air traffic		
Resource Maximization		
Reduce congestion		
Manage airlines and passengers during future construction work		
Alleviate constrained baggage systems		
IX. Increase Opportunities for Airlines to Add or Expand Service		
Competitive Advantage		
Create the ability for an airline to enter the market more rapidly		
Create the ability for new entrant airlines to test the market		
Airline growth		

	Expected (y/n)	Expected Value
Cost Savings / Efficiency		
Create efficiency for carriers with low number of flights per day		
Create efficiency for International flights		
Cost effective management of overflow flights		
Reduce costs when airlines exit a market		
Eliminate requirement for airlines to provide infrastructure and support		
Create opportunity for airlines to pay for only what they use		
Accommodate holiday season spikes and scheduled charters without bricks and mortar		
Customer Service		
Improve performance in baggage handling		
Control problematic ground operators and keep things organized		
Provide better customer service to the airlines		
Provide greater ramp control		
Provide better technical support for airlines		
Flexibility / Convenience		
Make it easier for an airline to enter a market		
Allow better handling of seasonal air traffic		
Allow for easy set up of check-in area		
Create the ability for new business to be accommodated more easily		
Create the opportunity for airlines to move within the airport if desired		
Resource Maximization		
Accommodate "spoke" airlines in a constrained airport more efficiently		
Reduce congestion		
Manage airlines and passengers during future construction work		
Risk Reduction		
Reduce requirements on airlines to lock into a long-term agreement		
X. Gain a Competitive Advantage over Other Airports		
Competitive Advantage		
Create the ability for an airline to enter the market more rapidly		

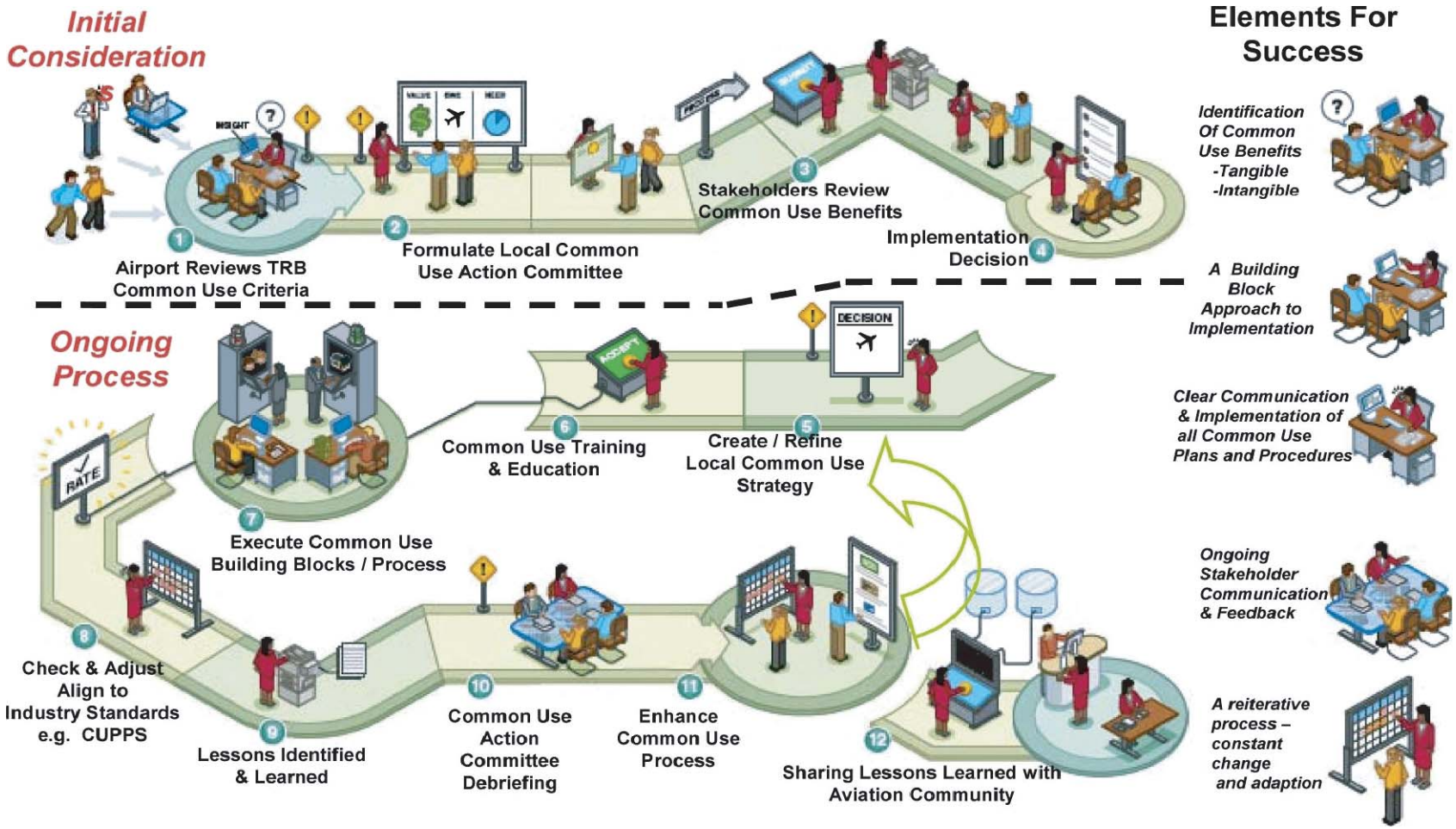
	Expected (y/n)	Expected Value
Create the ability for new entrant airlines to test the market		
Airline growth		
Revenue generation for rental cars, advertising, retailers, etc., as a result of airline growth		
Cost Savings / Efficiency		
Create efficiency for carriers with low number of flights per day		
Create efficiency for International flights		
Cost effective management of overflow flights		
Reduce costs when airlines enter a market		
Reduce costs when airlines exit a market		
Eliminate requirement for airlines to provide infrastructure and support		
Create option for carriers to reduce the number of gates required as operations change		
Create opportunity for airlines to pay for only what they use		
Accommodate holiday season spikes and scheduled charters without bricks and mortar		
Avoid or delay capital expenditures, including construction of new gates		
Reduce costs associated with airline mergers		
Airport cost control		
Optimize current gates		
Standardize equipment within the airport		
Customer Service		
Improve performance in baggage handling		
Control problematic ground operators and keep things organized		
Improve quality of Skycap services		
Provide better customer service to the airlines		
Provide better technical support for airlines		
Enable addition of curbside services		
Create standardized look and feel within the airport		
Provide greater ramp control		
Flexibility / Convenience		
Create the opportunity for airlines to move within the airport if desired		

	Expected (y/n)	**Expected Value**
Make it easier for an airline to enter a market		
Allow better handling of seasonal air traffic		
Allow for easy set up of check-in area		
Create the ability for new business to be accommodated more easily		
Provide operational flexibility		
Save effort during airline mergers		
Help with irregular operations		
Resource Maximization		
Reduce congestion		
Accommodate "spoke" airlines in a constrained airport more efficiently		
Maximize utilization of current resources		
Manage airlines and passengers during future construction work		
Risk Reduction		
Reduce requirements on airlines to lock into a long-term agreement		
Give the airport more control over its facility		

APPENDIX D

Developing a Roadmap for Airport Common Use

Developing a Roadmap for Airport Common Use



APPENDIX E

Glossary

ACRP	Airport Cooperative Research Program
ACI	Airports Council International
ACS	Airport Control System
ADA	Americans with Disabilities Act
AODB	Air Operations Database
ATA	Air Transport Association
ATC	Air Traffic Control
CU	Common-Use
CUPPS	Common-Use Passenger Processing System
CUS	Common-Use System
CUSS	Common-Use Self-Service
CUTE	Common-Use Terminal Equipment
FAA	Federal Aviation Administration
FIS	Federal Inspection Service
FOD	Foreign Object Debris
GIDS	Gate information Displays
GIS	Geographical Information System
GPS	Global Position System
GSE	Ground Handling Service Equipment
IATA	International Air Transport Association
JPSC	Joint Passenger Services Committee
LAN	Local Area Network
MTBF	Mean Time Between Failure
MUFIDS	Multi-User Flight Information Display System
O&D	Origination and Destination
OPDB	Operational Database. See AODB.
PDS	Premise Distribution System
PBB	Passenger Boarding Bridge
RFID	Radio Frequency Identification
RJ	Regional Jet
RON	Remain Over-Night
TRB	Transportation Research Board
TR	Technical Requirements

APPENDIX F

Interview and Survey Contributors

Organization	Contact	Title
Clark County Department of Aviation	Randall Walker	Airport Dir
	Samuel Ingalls, AAE	Airport Information Systems Mgr
	Cecil Johnson	Asst Dir of Aviation, General Aviation
	Bob Kingston	Asst Dir of Aviation, Facilities Div
	Barbara Bolton, AAE	Aviation Business Mgr
	Derrick Russell	Airport Ramp Management Supv
Des Moines International Airport	Craig S. Smith, AAE	Aviation Dir
	Tim R. Stiles, CPA	Dpty Dir, Finance & Admin
	Kevin Foley	Airports Properties Administrator
	Bill Konkol	Chief Aviation Technical Systems Specialist
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	Robert Copeland	Asst Dir, Commercial Properties
	John Newsome	Dir of Information Tech
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	Jerry Schwinghammer	Mgr, Planning Dept
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British Airways	Sandra Matusz	Mgr Customer Svcs, MCO Station
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	Louis Navarro	Mgr Aviation Properties
	Nick Harrison	Sr Mgr Airport Ops
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Delta Airlines	David Hamm	Dir of Corporate Real Estate
Westjet Airlines	Joe Dobson	Finance Mgr
Phoenix Sky Harbor International Airport	Carl D. Newman	Asst Aviation Dir
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	Becky Gawin	Dpty Aviation Dir, Facilities & Svcs Div
	Nancy Kesteloot	Aviation Legal
	John Sawyer	Airside Ops Mgr
	Scott Maxwell	Terminal Ops
	Janice Jacobo	Landside Ops Mgr
	Tamie Fisher	Dpty Aviation Dir, Business & Properties
	Roxann Favors	Airline Affairs—Airline/Air Cargo Proj Mgr
	Bobbie Reid	Aviation Superintendent
	Christine Adrian	Aviation Legal
	Brent Cagle	Dpty Aviation Dir, Aviation Fiscal Mgmt
	Jim Peterson	Business Development Mgr
	Dustin Loftis	Airside Ops
	Dagoberto Hinojos	Airside Ops

Alaska Airlines	Bill Heppner	Dir Technology & Research
	Loesje de Groen	Properties Mgr
	Mukesh (Mookie) Patel	Mgr Airport Affairs Corporate Real Estate
	Kathy Smith	Mgr of Properties
Southwest Airlines	Pete Houghton	Dir of Properties
Denver International Airport	Amy C. Weston	Mgr of Financial Planning & Analysis
	Susan E. Moore	Property Mgr – Airlines & Cargo
	Robert Zamudio	CUTE Systems Manager, IT
	Jim Miller	Mgr Projects and Applications
	Keith Mays	Ramp Control Ops Mgr
Oakland International Airport	Marcel Conrad	Mgr of Properties
	Rob Forrester	Aviation Dir, Airside Operations
	Tony Godkin	Aviation Proj Mgr, Aviation Planning & Development
	Cedric Johnson	Aviation Security Mgr
	Cyndy Johnson	Aviation Marketing/Communications
	Michael Mantino	Airport Facilities
	Kyle Mobley	Technical Support Analyst IV, IT Div
	Jim Rusk	Onsite IT Maintenance, Service Tech
	James Trickel	Airside Ops Supv Mgr on Duty
	Arthur Whitmore	Landside Ops
	Joan Zatopek	Sr Aviation Proj Mgr, Aviation Planning & Development
JFK International Airport	Alain Maca	Pres, International Air Terminal
	Daryl Johnson	IT and Facilities Mgr
	Tony Baymack	Ops Controller
	Shawn Makinen	VP, Aviation Planning & Development
	Mike Sibilia	CFO
Sacramento International Airport	Amanda Thomas	Dpty Dir of Finance
	Frederick Greco	Dpty Dir of Maintenance & Facilities
	Barry Rondinella	Dpty Dir of Ops
	Donna Scranton	Properties Mgr
	Steve Baird	Dpty Dir of IT&T
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	Mark Posner	Dpty Airport Dir, Information Svcs
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	Michael McElvaney	Dpty Airport Dir, Ops
San Francisco International Airport	Gerry Alley	Mgr – Common Use Systems Ops
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	John Payne	CIO
	Jeff Seid	SFOTEC
American Airlines	Tim McGraw	Project Mgr
Continental Airlines	Amy Foltz	Mgr Gate Automation Projects
	Gordon Gray	Sr Mgr
	Kevan Collins, PMP	Dir, Tech-EPO
	Robert Sloan	Sr Mgr
Southwest Airlines	Steve Hubbell	Mgr, Properties
US Airways	John Vosburgh	Sr Mgr
WestJet	Trevor Clark	Sr Business Analyst, Guest Svcs
	Joe Dobson	Mgr, Industry & Monetary Affairs
Air Transport Association	Patty Edwards	Managing Dir, Passenger Svcs

Abbreviations and acronyms used without definitions in TRB publications:

AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	Air Transport Association
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation