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Advanced Public Transportation Systems Deployment in the United States

Year 2000 Update

Final Report
May 2002

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13. ABSTRACT (Maximum 200 words)

This report documents work performed under the Federal Transit Administration's Advanced Public Transportation Systems (APTS) Program, a program structured to undertake research and development of innovative applications of advanced navigation, information, and communication technologies that most benefit public transportation.

This report is a compilation of existing and planned deployments of APTS technologies and services. The information was collected during the Summer and Fall of 2000 and was obtained through contacts with persons at each transit agency. A total of 576 agencies were surveyed for this study. Only those agencies with existing or planned APTS systems are included in this report.

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Year 2000 Update

May 2002

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1 foot (ft) = 30 centimeters (cm)	1 centimeter (cm) = 0.4 inch (in)
1 yard (yd) = 0.9 meter (m)	1 meter (m) = 3.3 feet (ft)
1 mile (mi) = 1.6 kilometers (km)	1 meter (m) = 1.1 yards (yd)
	1 kilometer (km) = 0.6 mile (mi)
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1 fluid ounce (fl oz) = 30 milliliters (ml)	1 liter (l) = 1.06 quarts (qt)
1 cup (c) = 0.24 liter (l)	1 liter (l) = 0.26 gallon (gal)
1 pint (pt) = 0.47 liter (l)	
1 quart (qt) = 0.96 liter (l)	
1 gallon (gal) = 3.8 liters (l)	
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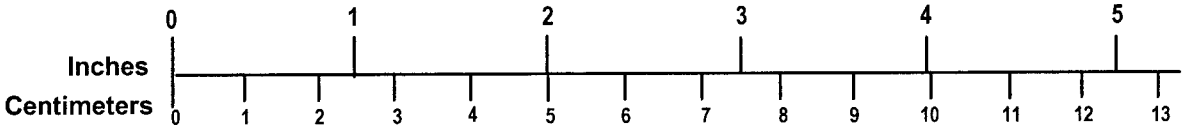

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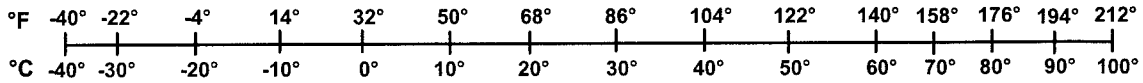

PREFACE

This research was conducted by the Office of System and Economic Assessment at the Volpe National Transportation Systems Center, Research and Special Programs Administration, U.S. Department of Transportation under the sponsorship of the Office of Mobility Innovation, Federal Transit Administration, U.S. Department of Transportation and funded by the Intelligent Transportation Systems Joint Program Office, Federal Highway Administration, U.S. Department of Transportation. This report is the third of a series of biennial reports tracking the existing and planned deployments of Advanced Public Transportation Systems (APTS) technologies and services in the United States.

The information contained in this report was collected by personnel at the Volpe National Transportation Systems Center (Volpe Center) and the Oak Ridge National Laboratory and SAIC during the Fall of 2000. The data contained in the report tables are only as accurate as the information provided, either verbally or written, by the agency contacts and have not been verified by the Volpe Center.

The objective was to reach as many transit agencies as could be identified. A total of 572 agencies provided information for this study. Responding agencies with no existing or planned APTS systems are not listed in the report tables.

Appreciation goes to Melissa Laube and Lawrence Labell of the Volpe Center and Ed Newhall, Jim Lannon, John Mermin, and Anna Kravitz of EG&G Services who collected the Volpe information; to Stephen Gordon of Oak Ridge National Laboratory and Juan Noltenius and Andrew Dixson of SAIC for supplying the data for the 78 largest U.S. metropolitan areas; and to Sara Secunda of the Volpe Center who compiled the data and produced the tables. Finally, appreciation goes to all the agencies which supplied information for this report.

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LEGEND

Service Type	
FR	Fixed Route
DR	Demand Response
LR	Light Rail
HR	Heavy Rail
CR	Commuter Rail
FB	Ferry Boat

Advanced Communications	
DIG	Digital Radio
TR	Trunked Radio

Automated Vehicle Location	
GPS	Global Positioning System
DK	Dead Reckoning
LC	Loran C
SO	Signpost/Odometer

Vehicle Probes	
F	On Freeways
A	On Arterials

Automated Transit Information	
P	Pre-Trip
W	Terminal/Wayside
I	In-Vehicle

Automated Fare Payment	
MS	Magnetic Stripe
SC	Smart Card

General	
U or OTR	Unspecified Technology

Status	
Any Letter(s)	Operational
[Any Letter(s)]	Planned

SECTION 1. SUMMARY OF APTS DEPLOYMENTS

Summaries of 17 Advanced Public Transportation System (APTS) element deployments are shown in the tables in this Section. (See Appendix A for definitions of these elements.) The summary tables show the number of responding transit agencies with present and planned *(i.e., expected to be operational by the year 2005)* deployments of APTS elements. The number of service types these agencies operate using APTS systems or technologies are also listed where these data were collected. Table 1-3, for example, reveals that 230 transit agencies operate or are planning to operate 316 service types employing Automatic Vehicle Location. Where applicable (and available), the tables also summarize the deployments by the specific technologies installed. Figures 1-1 through 1-8 show graphically the number of APTS systems deployed or planned to be deployed as revealed in the 1995, 1998, and 2000 surveys. (See Appendix B for the actual number in each of the years.) Other Section 1 tables show the percentage increases between survey periods where these same data were obtained. Only eight APTS elements have data from all three years.

The Section 1 table statistics showing the number of deployments are presented in three columns. The first column contains the Oak Ridge National Laboratory/SAIC (Oak Ridge) collected data on the existing or planned APTS deployments in jurisdictions containing 50,000 persons or more within the 78 largest metropolitan areas of the United States. The second column contains the Volpe National Transportation Systems Center (Volpe) collected data on the existing or planned APTS deployments in the remainder of the United States. The third column contains the sum of the Oak Ridge and Volpe data.

Although 17 APTS elements are covered in this report, totals for the entire U.S. can be presented only for Advanced Communications, Automatic Vehicle Location, Vehicle Probes, Automatic Passenger Counters, Vehicle Component Monitoring, Automated Operations Software, Automated Transit Information, Automated Fare Payment, and Traffic Signal Priority. This is due to the fact that the same data was not ultimately collected by both organizations. Since the initial survey form mailed out by Oak Ridge National Laboratory/SAIC received a low return rate, a second, shorter survey form was sent to the non-responding agencies. While this second effort resulted in virtually a 100 percent response, several questions that would have obtained information on the same APTS elements as in the Volpe survey were not asked. These elements included Multi-Modal Traveler Information, Multi-Carrier Fare Integration, Mobility Manager, Transportation Management Centers, and ITS Integration. The Volpe survey also added Surveillance Camera, Silent Alarm, and Covert Microphone questions after the Oak Ridge survey was finalized. Consequently, deployments of several APTS elements are reported only for areas outside the 78 largest U.S. metropolitan areas.

The operational and planned status numbers in Section 1 tables will sum to the agency total in cases where both operational and planned status information was collected. However, the breakdowns by service type and technology or location usually will not sum to the transit agency total because of the number of agencies with multiple technologies installed (e.g., magnetic stripe *and* smart card fare payment, etc.) or with a technology installed on more than one mode. If an agency is operating an APTS technology but is upgrading to a more advanced technology in the same category (e.g., from signpost to Global Positioning System technology), it is counted as operational only. If an agency is operating a technology in more than one mode, it is counted as one agency, but with multiple service types.

Of the 572 agencies surveyed in 2000, the *most widely deployed* APTS elements for which data were collected for the entire U.S. are Automated Transit Information (291 agencies), Advanced Communications (229 agencies), and Automated Operations Software (177 agencies). The *least widely deployed* APTS elements are Vehicle Component Monitoring (46 agencies), Automatic Passenger Counters (33 agencies), Traffic Signal Priority for transit vehicles (30 agencies), and Vehicle Probes (8 agencies). Automated Fare Payment and Automatic Vehicle Location have been deployed by 98 and 88 agencies respectively. The APTS element with *the greatest number of planned deployments* by 2005 is Automatic Vehicle Location (142 agencies). Summaries by APTS element are as follows.

Advanced Communications

Advanced Communications encompasses digital and trunked radio systems. Table 1-1 shows the Year 2000 deployment survey results.

Table 1-1. Advanced Communications

	78 Largest Metropolitan Areas	Remainder of the United States	United States Total
Transit Agency Status			
Operational Systems	99	130	229
Planned Systems	54	40	94
Agency Totals	153	170	323
Service Types			
FR		152	
DR		129	
LR		1	
HR		1	
CR		0	
FB		4	
Service Type Totals		287	
Technology			
Trunked Only	38	36	74
Digital Only	41	72	113
Trunked and Digital	66	62	128
Other/Unspecified	8	0	8

Figure 1-1 and Table 1-2 show the survey to survey period changes in deployments.

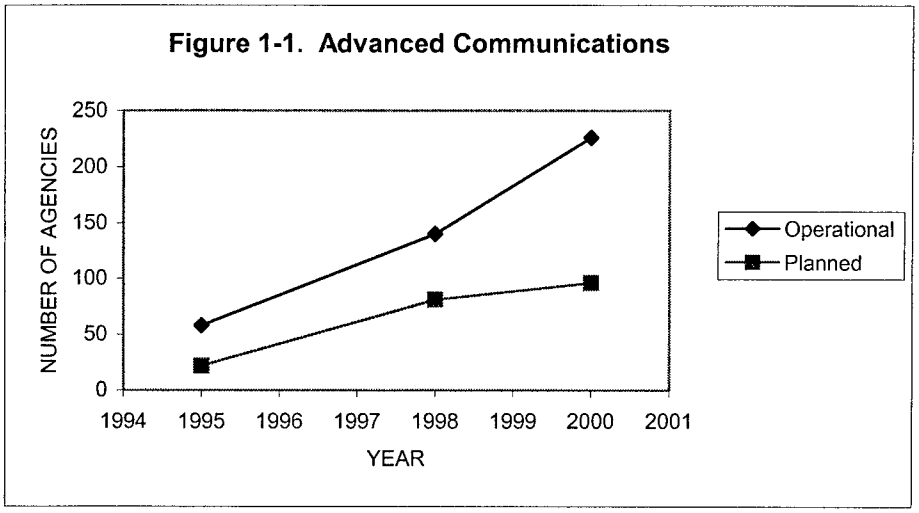

Table 1-2. Percent Change in Advanced Communications			
	1995-1998	1998-2000	1995-2000
Operational	141%	64%	295%
Planned	268%	16%	327%
Total	176%	46%	304%

Advanced Communications ranked 2nd of the 9 APTS elements with available data for the entire U.S. in total number of agencies with operational systems (229) in 2000 and 2nd in the total number of agencies with operational plus planned systems (323) according to responses to the Year 2000 survey. Due to the substantial number of Advanced Communications systems already deployed, the percent increase in agencies with operational systems (64%) and operational plus planned systems (46%) ranked only 5th and 7th, respectively, from 1998 to 2000.

Automatic Vehicle Location

The most common form of Automatic Vehicle Location (AVL) in use by transit agencies is Global Positioning System (GPS) technology, often with differential correction (DGPS). Although there are still a few older systems with signpost, dead reckoning, or Loran-C location technology, most agencies that had installed these technologies have replaced them with GPS technology. Table 1-3 shows the Year 2000 deployment survey results.

Figure 1-2 and Table 1-4 show the survey to survey period changes in deployments.

Table 1-3. Automatic Vehicle Location			
	78 Largest Metropolitan Areas	**Remainder of the United States**	**United States Total**
Transit Agency Status			
Operational Systems	63	25	88
Planned Systems	80	62	142
Agency Totals	143	87	230
Service Types			
FR	122	74	196
DR	70	16	86
LR	12	0	12
HR	8	0	8
CR	8	1	9
FB	2	3	5
Service Type Totals	222	94	316
Technology			
GPS		86	
Sign Post/Odometer		1	
Dead Reckoning		1	
Loran-C		1	
Other/Unknown		5	

Figure 1-2. Automatic Vehicle Location

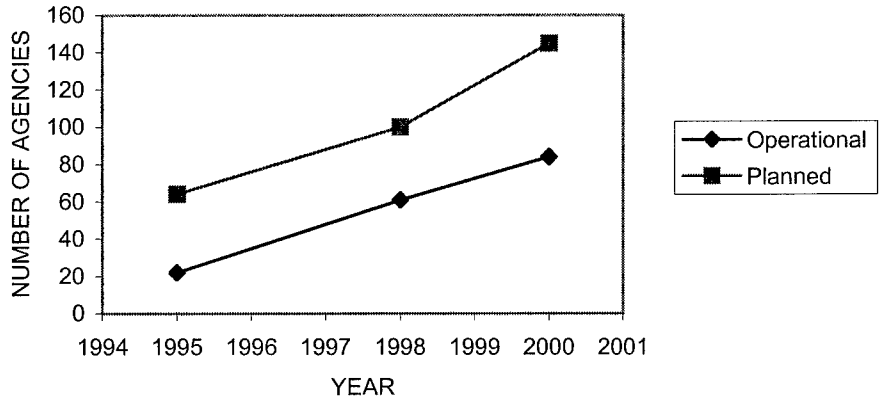

Table 1-4. Percent Change in Automatic Vehicle Location			
	1995-1998	1998-2000	1995-2000
Operational	177%	44%	300%
Planned	56%	42%	122%
Total	87%	43%	167%

AVL ranked 5th of the 9 APTS elements with full U.S. data in total number of agencies with operational systems (88) in 2000 and 4th in the total number of agencies with operational plus planned systems (230) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (44%) and operational plus planned systems (43%) ranked 6th and 8th, respectively, from 1998 to 2000.

Vehicle Probes

A Vehicle Probe is an AVL-equipped vehicle that is used to provide information for the calculation of travel times and speeds on highway facilities. Table 1-5 shows the Year 2000 deployment survey results.

Table 1-5. Vehicle Probes

	78 Largest Metropolitan Areas	Remainder of the United States	United States Total
Transit Agency Status			
Operational	4	4	8
Planned	2	2	4
Agency Totals	6	6	12
Service Types			
FR	6	5	11
DR	1	1	2
Service Type Totals	7	6	13
Location			
Freeway	1	0	1
Arterial	2	0	2
Freeway and Arterial	3	6	9

Very few Vehicle Probe systems have been deployed or are planned. Vehicle Probes ranked last of the 9 APTS elements with available data for the entire U.S. in total number of agencies with operational systems (8) in 2000 and last in the total number of agencies with operational plus planned systems (12) according to responses to the Year 2000 survey. Vehicle Probe data was not collected for the entire U.S. in prior surveys so no comparison is possible.

Automatic Passenger Counters

Automatic Passenger Counters (APC) are devices that count passengers as they enter and exit the transit vehicle or system. The most prevalent counting mechanism is infrared beams, but a few agencies use treadle mats. Table 1-6 shows the Year 2000 deployment survey results.

Figure 1-3 and Table 1-7 show the survey to survey period changes in deployments.

Table 1-6. Automatic Passenger Counters			
	78 Largest Metropolitan Areas	**Remainder of the United States**	**United States Total**
Transit Agency Status			
Operational	23	10	33
Planned	62	12	74
Agency Totals	85	22	107
Service Types			
FR	82	21	103
DR	9	7	16
LR	11	0	11
HR	0	1	1
CR	3	0	3
FB	1	0	1
Service Type Totals	106	29	135

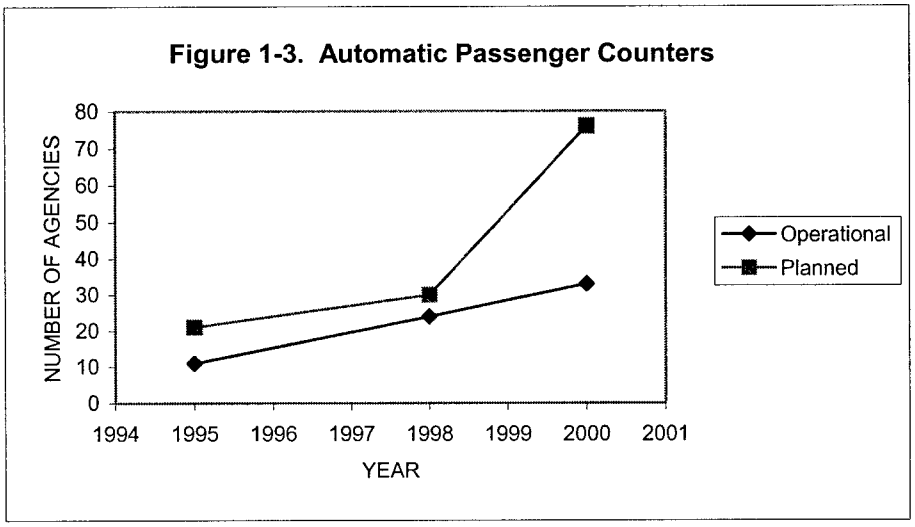

Table 1-7. Percent Change in Automatic Passenger Counters			
	1995-1998	1998-2000	1995-2000
Operational	118%	38%	200%
Planned	43%	147%	252%
Total	69%	98%	234%

APCs ranked 7th of the 9 APTS elements with entire U.S. data in total number of agencies with operational systems (33) in 2000 and 7th in the total number of agencies with operational plus planned systems (107) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (38%) and operational plus planned systems (98%) ranked 8th and 3rd, respectively, from 1998 to 2000.

Vehicle Component Monitoring

Vehicle Component Monitoring is the remote collection, in real time, of vehicle conditions such as engine temperature, oil pressure, tire pressure, etc. Table 1-8 shows the Year 2000 deployment survey results.

Table 1-8. Vehicle Component Monitoring

	78 Largest Metropolitan Areas	Remainder of the United States	United States Total
Transit Agency Status			
Operational Systems	28	18	46
Planned Systems	50	18	68
Agency Totals	78	36	114
Service Types			
FR	66	34	100
DR	37	12	49
LR	2	0	2
HR	4	0	4
CR	5	0	5
FB	2	1	3
Service Type Totals	116	47	163

Figure 1-4 and Table 1-9 show the survey to survey period changes in deployments.

Figure 1-4. Vehicle Component Monitoring

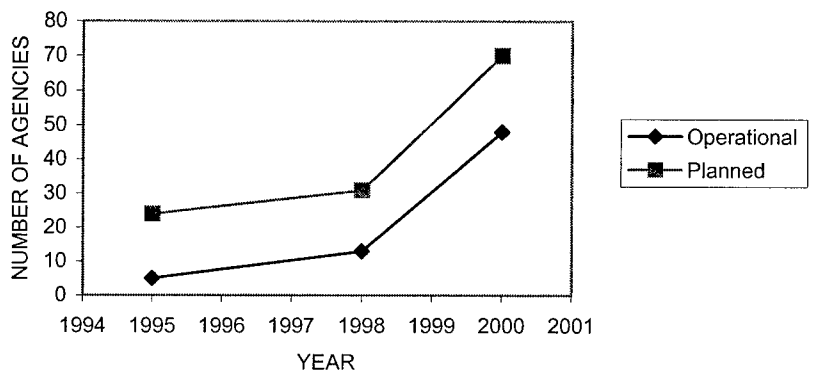

Table 1-9. Percent Change in Vehicle Component Monitoring

	1995-1998	1998-2000	1995-2000
Operational	160%	254%	820%
Planned	29%	119%	183%
Total	52%	159%	293%

Vehicle Component Monitoring ranked 6th of the 9 APTS elements with entire U.S. data in the total number of agencies with operational systems (46) in 2000 and in the total number of agencies with operational plus planned systems (114) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (254%) and operational plus planned systems (159%) ranked 1st in both status categories between 1998 to 2000.

Automated Operations Software

Automated Operations Software encompasses computer programs that collect, process, and/or analyze operational data in ways that will assist transit agencies in providing improved or more efficient service or in reducing service cost. This includes computer assisted scheduling and dispatching of demand responsive service which was reported separately in previous deployment reports. Table 1-10 shows the Year 2000 deployment survey results.

Table 1-10. Automated Operations Software

	78 Largest Metropolitan Areas	Remainder of the United States	United States Total
Transit Agency Status			
Operational Systems	75	102	177
Planned Systems	64	68	132
Agency Totals	139	170	309
Service Types			
FR	107	95	202
DR	85	130	215
LR	11	0	11
HR	7	0	7
CR	4	1	5
FB	2	2	4
Service Type Totals	216	228	444

Figure 1-5 and Table 1-11 show the survey to survey deployment changes.

Figure 1-5. Automated Operations Software

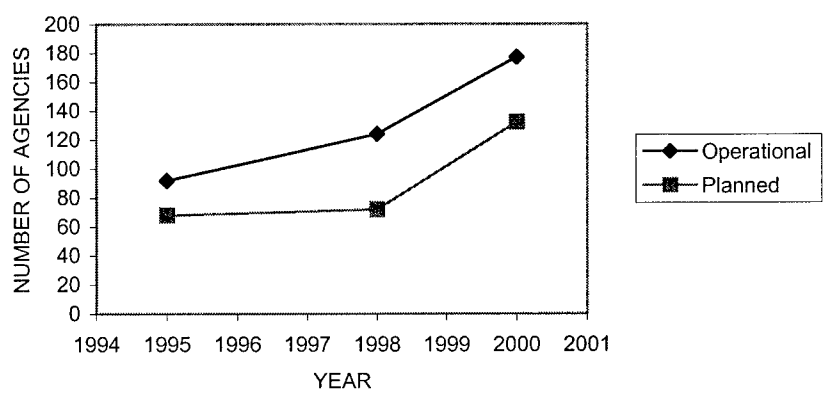

Table 1-11. Percent Change in Automated Operations Software			
	1995-1998	1998-2000	1995-2000
Operational	35%	43%	92%
Planned	6%	83%	94%
Total	23%	58%	93%

The number of transit agencies with operational Automated Operations Software (177) ranked 3rd of the 9 APTS elements with entire U.S. data in 2000 and 3rd in the total number of agencies with operational plus planned systems (309) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (43%) and operational plus planned systems (58%) ranked 7th and 5th, respectively, from 1998 to 2000.

Automated Transit Information

The Year 2000 surveys collected information on Automated Transit Information by 14 distribution methods or media. These have been collapsed into pre-trip, wayside, and in-vehicle systems for presentation purposes. Table 1-12 shows the Year 2000 deployment survey results.

Table 1-12. Automated Transit Information			
	78 Largest Metropolitan Areas	**Remainder of the United States**	**United States Total**
Transit Agency Status			
Operational Systems	173	118	291
Planned Systems	16	32	48
Agency Totals	189	150	339
Service Types			
FR		128	
DR		80	
HR		1	
CR		1	
FB		5	
Service Type Totals		215	
Location			
Pre-Trip	187	147	334
Wayside	117	50	167
In-Vehicle	96	28	124

Figure 1-6 and Table 1-13 show the survey to survey period changes in deployments.

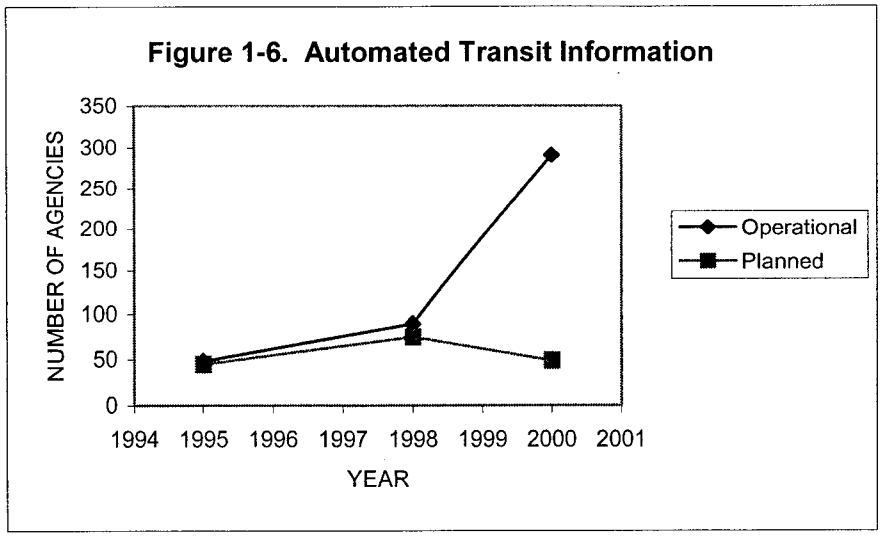

Table 1-13. Percent Change in Automated Transit Information			
	1995-1998	1998-2000	1995-2000
Operational	85%	227%	506%
Planned	67%	-36%	7%
Total	76%	107%	265%

Automated Transit Information ranks 1st of the 9 APTS elements with entire U.S. data in 2000 in terms of the number of agencies with operational systems (291) and in the total number of agencies with operational plus planned systems (339) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (227%) and operational plus planned systems (107%) ranked 2nd in both status categories from 1998 to 2000. The number of agencies planning to deploy Automated Transit Information systems is the lowest (48), except for Vehicle Probes, of any APTS element, presumably because so many agencies already provide it. It is anticipated that further analysis of the survey responses will show that World Wide Web pages account for a large portion of the automated information available.

Multimodal Traveler Information

Multimodal Traveler Information is transit information presented to the public via a distribution medium which also includes information concerning other transit agencies' services or other transportation modes. Table 1-14 shows the Year 2000 deployment survey results.

Table 1-14. Multimodal Traveler Information			
	78 Largest Metropolitan Areas	Remainder of the United States	United States Total
Transit Agency Status			
Operational Systems		16	
Planned Systems		25	
Agency Totals		41	

Only 16 operational and 41 operational plus planned Multimodal Traveler Information systems were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

Automated Fare Payment

Automated Fare Payment is any system other than a registering farebox that automatically accepts a magnetic stripe card or a smart card for payment of the transit fare. Magnetic stripe cards include credit and debit cards. Table 1-15 shows the Year 2000 deployment survey results.

Table 1-15. Automated Fare Payment			
	78 Largest Metropolitan Areas	Remainder of the United States	United States Total
Transit Agency Status			
Operational Systems	69	29	98
Planned Systems	59	18	77
Agency Totals	128	47	175
Service Types			
FR	117	46	163
DR	41	3	44
LR	10	0	10
HR	10	1	11
CR	5	0	5
FB	4	0	4
Service Type Totals	187	50	237
Technology			
Magnetic Stripe	57	31	88
Smart Card	29	10	39
Mag Stripe & Smart Card	42	6	48

Figure 1-7 and Table 1-16 show the survey to survey period changes in deployments.

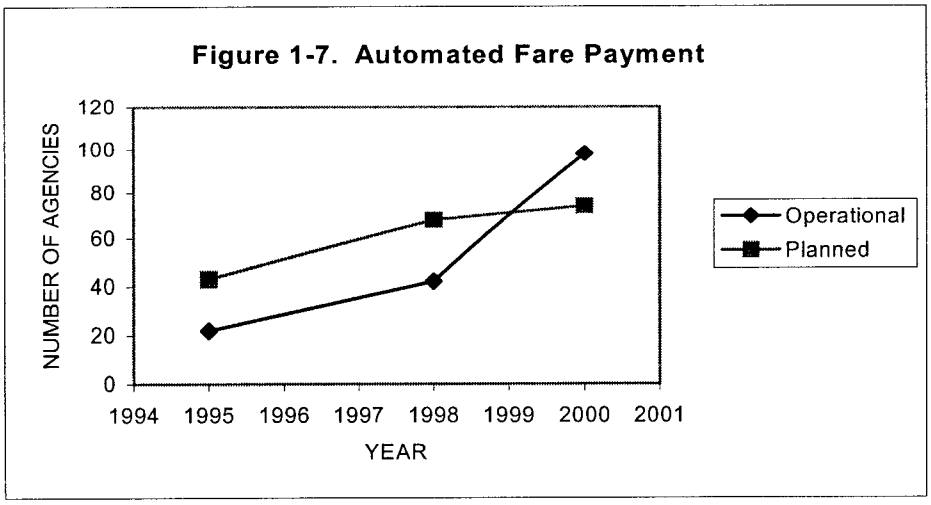

Table 1-16 . Percent Change in Automated Fare Payment			
	1995-1998	1998-2000	1995-2000
Operational	91%	133%	345%
Planned	58%	13%	79%
Total	69%	59%	169%

Automated Fare Payment ranked 4th of the 9 APTS elements with entire U.S. data in total number of agencies with operational systems (98) in 2000 and 5th in the total number of agencies with operational plus planned systems (175) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (133%) and operational plus planned systems (59%) ranked 3rd and 4th, respectively, from 1998 to 2000. Magnetic stripe systems outnumber smart card systems by about three to two.

Multi-Carrier Fare Integration

Multi-Carrier Fare Integration consists of two or more transit agencies on which the same electronic payment media can be used to pay fares. Table 1-17 shows the Year 2000 deployment survey results.

Table 1-17. Multi-Carrier Fare Integration			
	78 Largest Metropolitan Areas	**Remainder of the United States**	**United States Total**
Transit Agency Status			
Operational Systems		21	
Planned Systems		2	
Agency Totals		23	

Only 21 operational and 23 operational plus planned Multi-Carrier Fare Integration systems were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

Mobility Manager

Transit agencies that handle the travel requests or the dispatching of vehicles for multiple agencies (e.g., social service agencies, Health and Human Service agencies, transit agencies, etc.) are considered Mobility Managers. Table 1-18 shows the Year 2000 deployment survey results.

Table 1-18. Mobility Manager			
	78 Largest Metropolitan Areas	**Remainder of the United States**	**United States Total**
Transit Agency Status			
Operational Systems		75	
Planned Systems		13	
Agency Totals		88	
Service Types			
FR		8	
DR		80	
Service Type Totals		88	

Only 75 operational and 88 operational plus planned Mobility Manager systems were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

Transportation Management Centers

A Transportation Management Center is a facility that houses personnel that control both transit vehicles and highway vehicles or equipment (e.g., transit vehicles, incident management vehicles, traffic signals, variable message signs, etc.). Table 1-19 shows the Year 2000 deployment survey results.

Table 1-19. Transportation Management Center			
	78 Largest Metropolitan Areas	**Remainder of the United States**	**United States Total**
Transit Agency Status			
Operational Systems		8	
Planned Systems		3	
Agency Totals		11	
Service Types			
FR		9	
DR		1	
HR		1	
Service Type Totals		11	

Only 8 operational and 11 operational plus planned Transportation Management Centers were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

Traffic Signal Priority

Traffic Signal Priority systems are those that provide an advanced or extended green signal phase for approaching transit vehicles. Table 1-20 shows the Year 2000 deployment survey results.

Table 1-20. Traffic Signal Priority			
	78 Largest Metropolitan Areas	**Remainder of the United States**	**United States Total**
Transit Agency Status			
Operational Systems	18	12	30
Planned Systems	40	18	58
Agency Totals	58	30	88
Service Types			
FR	52	30	82
DR	4	0	4
LR	8	0	8
FB	1	0	1
Service Type Totals	65	30	95

Figure 1-8 and Table 1-21 show the survey to survey period changes in deployments.

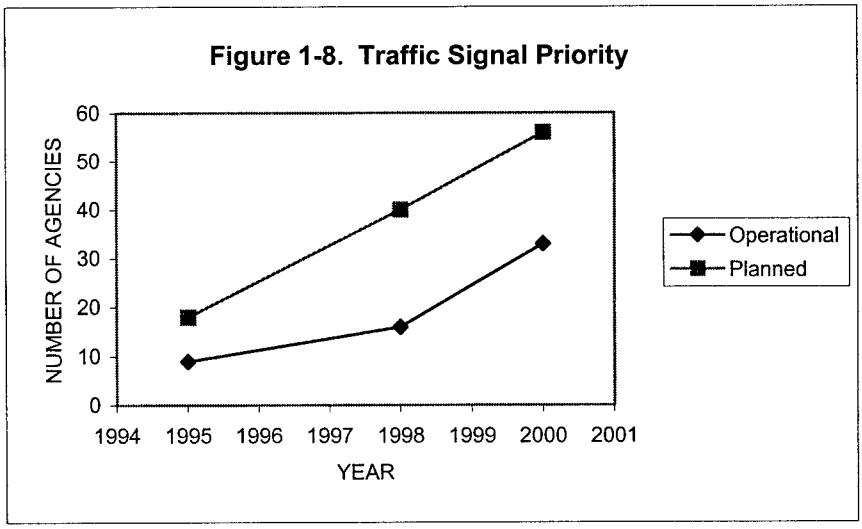

Table 1-21. Percent Change in Traffic Signal Priority			
	1995-1998	1998-2000	1995-2000
Operational	78%	88%	233%
Planned	122%	45%	222%
Total	107%	57%	226%

Traffic Signal Priority ranked 8th of the 9 APTS elements with entire U.S. data in total number of agencies with operational systems (30) in 2000 and 8th in the total number of agencies with operational plus planned systems (88) according to responses to the Year 2000 survey. The percent increase in agencies with operational systems (88%) and operational plus planned systems (57%) ranked 4th and 6th, respectively, from 1998 to 2000.

ITS Integration

ITS Integration is a situation in which agencies share infrastructure (e.g., computer systems, communication lines), coordinate operations (e.g., common control strategy), or share information in real time via electronic means. Table 1-22 shows the Year 2000 deployment survey results.

Table 1-22. ITS Integration

	78 Largest Metropolitan Areas	Remainder of the United States	United States Total
Transit Agency Status			
Operational Systems		59	
Planned Systems		25	
Agency Totals		84	

Fifty-nine operational and 84 operational plus planned deployments of Integrated ITS systems were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

Surveillance Cameras

Surveillance Cameras have been placed on transit vehicles for the recording or real-time observation of on-board activities. Table 1-23 shows the Year 2000 deployment survey results.

Table 1-23. Surveillance Cameras

	78 Largest Metropolitan Areas	Remainder of the United States	United States Total
Transit Agency Status			
Operational Systems		47	
Planned Systems		19	
Agency Totals		66	
Service Types			
FR		45	
DR		22	
Service Type Totals		67	

Forty-seven operational and 66 operational plus planned deployments of Surveillance Cameras on transit vehicles were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

Silent Alarms

A Silent Alarm is a concealed button near the vehicle operator's position that can be pressed to alert the dispatch center that an on-board emergency situation exists which prevents the operator from using the radio. Table 1-24 shows the Year 2000 deployment survey results.

Table 1-24. Silent Alarms

	78 Largest Metropolitan Areas	Remainder of the United States	United States Total
Transit Agency Status			
Operational Systems		41	
Planned Systems		11	
Agency Totals		52	
Service Types			
FR		39	
DR		25	
Service Type Totals		64	

Forty-one operational and 52 operational plus planned deployments of Silent Alarms were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

Covert Microphones

Covert Microphones are microphones that are hidden from public view that allow dispatchers to listen to what is happening on-board a transit vehicle after the vehicle operator has pressed the Silent Alarm. Table 1-25 shows the Year 2000 deployment survey results.

Table 1-25. Covert Microphones

	78 Largest Metropolitan Areas	Remainder of the United States	United States Total
Transit Agency Status			
Operational Systems		8	
Planned Systems		9	
Agency Totals		17	
Service Types			
FR		8	
DR		12	
Service Type Totals		20	

Eight operational and 17 operational plus planned deployments of Covert Microphones were reported in the areas outside of the 78 largest U.S. metropolitan areas in the 2000 survey.

SECTION 2. APTS DEPLOYMENT BY TRANSIT AGENCY IN THE UNITED STATES' 78 LARGEST METROPOLITAN AREAS

Table 2 presents the information collected by Oak Ridge National Laboratory/SAIC for transit agencies residing in jurisdictions of 50,000 persons or more within the 78 largest metropolitan areas in the U.S. A total of 221 transit agencies were surveyed. All of these agencies which have installed, or are planning to install, any of the APTS elements are listed in the Table. As indicated in the Legend, entries enclosed by brackets signify elements either in the implementation or planning stage and are expected to be operational by the year 2005. All other entries indicate operational elements.

The agencies are arranged alphabetically, first by state and then by agency name. Table 2 also lists the number of vehicles operated by each agency (directly or by contract) in each service type. However, the APTS element is not necessarily installed on every vehicle in the service type for which it is operational or planned.

As mentioned in the Introduction, after the long survey form failed to achieve an adequate response, a shorter form was used. This short form eliminated several pieces of information obtained via the long form. Since partial information would not convey the correct level of deployment for all transit agencies in the 78 largest metropolitan areas, the APTS categories for which information was not obtained in *both* the long and short survey forms are not included in Table 2. Further, the short form did not solicit the service type for the APTS elements of Advanced Communications or Advanced Transit Information. In these instances, the APTS deployment status is listed for the agency as a whole and not by service types. Table 2 also covers fewer APTS elements than Table 3 for reasons discussed in the Introduction.

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Birmingham-Jefferson County Transit Authority	Birmingham	AL	FR	68	TR,DIG	[X]		[X]	[X]	[X]		[MS],[SC]	
			DR	18				[X]	[X]	[X]		[MS],[SC]	
Central Arkansas Transit Authority	North Little Rock	AR	FR	69	TR	[X]		[X]		[X]	P,W,[I]	MS,[SC]	
			DR	15								[SC]	
Glendale Urban Shuttle	Glendale	AZ	FR	3	TR,DIG			[X]		[X]	P.W,[I]	MS,[SC]	
Glendale Dial-A-Ride	Glendale	AZ	DR	15	TR,DIG	[X]			X	X	P.W,[I]		
Mesa City	Mesa City	AZ	FR	33	TR	X		[X]		X	P,W	MS,[SC]	
Peoria Transit	Peoria	AZ	DR	9		X			[X]	[X]	P,I		
Phoenix Transit System	Phoenix	AZ	FR	500	[TR]	X		[X]	[X]	X	P,W,[I]	MS,[SC]	[X]
			DR	140		X				X		[MS],[SC]	
Regional Public Transportation Authority	Phoenix	AZ	FR	74	[DIG]	X					P,W	MS	
			DR	49									
Scottsdale City	Scottsdale	AZ	FR	36	TR	[X]			[X]	[X]	P,W	MS,[SC]	
			DR	9		[X]			X	X			
Sun Cities Area Transit System	Sun City	AZ	DR	14	TR,DIG								
Sun Tran	Tucson	AZ	FR	199	DIG	X		X	X	X	P,W	MS	
Surprise Dial-A-Ride	Surprise	AZ	DR	3	TR,DIG								
VanTran	Tucson	AZ	DR	64		X			X	X	P,[W]		
AC Transit	Oakland	CA	FR	708	[X]	[X]		X	[X]	[X]	P,[W],[I]	[MS],[SC]	[X]
			DR	35		[X]			[X]	[X]		[MS],[SC]	
Access Services Incorporated	Los Angeles	CA	DR	326	DIG	[X]				X			
Antelope Valley Transit Authority	Lancaster	CA	FR	35							P,[W]		
Arcadia Transit	Arcadia	CA	DR	18	TR,DIG	X				X	P	[SC]	
Bay Area Rapid Transit District	San Francisco	CA	HR	669	DIG	X				X	P,W,I	MS,[SC]	
CalTrain	San Carlos	CA	CR	107	TR,[DIG]	[X]		[X]		[X]	P,W,I	[MS],[SC]	
Central Contra Costa Transit Authority	Concord	CA	FR	112	TR,DIG	X	F,A				P,[I]	[SC]	
			DR	44									
Commerce City Municipal Bus Lines	Commerce	CA	FR	9							P,W		
			DR	3									

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Corona City Dial-A-Ride	Corona	CA	DR	11				[X]	[X]	[X]	P,[W],[I]	[MS]	
Culver City Municipal Bus Lines	Culver City	CA	FR	42	TR			[X]	[X]				
Fairfield City, Fairfield Transit System	Fairfield City	CA	FR	26	[DIG]	[X]			[X]	[X]	[P],[W],[I]	[X]	
			DR	13		[X]			[X]	[X]			
Fresno Area Express	Fresno	CA	FR	104	TR,DIG	X		X	X	X	P,W,I		
			DR	23		X			X	X			
Gardena Municipal Bus Line	Gardena	CA	FR	48	DIG	X					P,W,[I]	[MS]	
			DR	10									
Golden Empire Transit District	Bakersfield	CA	FR	72	TR,[DIG]	[X]		[X]		[X]	[I]		
			DR	9									
La Mirada City Transit	La Mirada	CA	DR	13							P		
Laguna Beach Municipal Transit Lines	Laguna Beach	CA	FR	10	DIG						P,W		
Livermore/Amador Valley Transit Authority	Livermore	CA	FR	67	TR	[X]		[X]	[X]	[X]	P,[W],[I]	[SC]	[X]
			DR	18		[X]		[X]	[X]	X		[SC]	
Long Beach Public Transportation Company	Long Beach	CA	FR	220	[TR]	[X]		[X]	[X]	[X]	[P],W,[I]	[MS],[SC]	
			DR	26						X			
Los Angeles Department of Transportation	Los Angeles	CA	FR	307	TR,[DIG]	[X]		[X]		[X]	P,[W]		[X]
			DR	100						X			
Montebello Bus Lines	Montebello	CA	FR	65	[DIG]	[X]				[X]	[P],[W],[I]	MS,SC	[X]
			DR	5						[X]			
Monterey-Salinas Transit	Monterey	CA	FR	78	[DIG]	[X]				[X]	P,[W]		
			DR	25									
Napa County Transit	Napa	CA	FR	19		X				X	P	[SC]	X
			DR	15						X			
North San Diego County Transit Development Board	Oceanside	CA	FR	154	[DIG]	[X]				X	P	MS	
			DR	33						X			
			HR	26						[X]			
Norwalk Transit System	Norwalk	CA	FR	27	[DIG]	[X]		[X]	[X]	[X]	P,W,I	MS,[SC]	[X]
			DR	4		[X]		[X]	[X]	[X]		MS,[SC]	

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Orange County Transportation Authority	Orange	CA	FR	486	TR,DIG	X		[X]		X	[P],[W],[I]	[MS],[SC]	
			DR	238									
Sacramento Regional Transit District	Sacramento	CA	FR	209	TR	[X]				[X]	P,W		[X]
			LR	36		[X]				[X]			
San Diego Transit Corporation	San Diego	CA	FR	316	TR,DIG	[X]		[X]	[X]		P,[W],[I]	[MS],[SC]	[X]
			DR	16									
San Diego Trolley Incorporated	San Diego	CA	FR	509	TR,[DIG]	[X]				X	P,[W]	[MS],[SC]	[X]
			LR	123		[X]				[X]		[MS],[SC]	
San Francisco Municipal Railway	San Francisco	CA	FR	350		X		[X]	X		P,I	[MS]	X
			LR	176		X			X			MS	X
San Mateo County Transit District	San Carlos	CA	FR	362	[TR],[DIG]	[X]		[X]	[X]	[X]	P,[W]	[SC]	
			DR	60		[X]			[X]	[X]			
Santa Clara Valley Transportation Authority	San Jose	CA	FR	525	[TR]	[X]		[X]		[X]	P,W,I	[SC]	
			LR	50		[X]		[X]		[X]		[SC]	X
Santa Cruz Metropolitan Transit	Santa Cruz	CA	FR	79	DIG						P	MS	
			DR	51									
Santa Monica Municipal Bus Lines	Santa Monica	CA	FR	167		X		[X]	[X]	[X]	P,W,I	MS,[SC]	[X]
Santa Rosa City Bus	Santa Rosa	CA	FR	21	[DIG]							[SC]	[X]
			DR	10									[X]
Simi Valley Transit	Simi Valley	CA	FR	9				[X]			P,I	[SC]	
			DR	4						X			
Sonoma County Transit	Santa Rosa	CA	FR	54		X					P,W		X
			DR	10									
South Coast Area Transit	Oxnard	CA	FR	42				X			P,I	SC	
			DR	5									
Southern California Regional Rail Authority	Los Angeles	CA	CR	152	DIG,[X]	[X]			[X]		P,W		
Torrance City Transit System	Torrance	CA	FR	46	DIG	[X]		X		[X]	P,[W],[I]	[SC]	
			DR	6		[X]							

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Vallejo Transit & San Francisco Ferry	Vallejo	CA	FR	54							P	[MS]	
			DR	10									
			FB	3								[MS]	[X]
Victor Valley Transit Authority	Victor Valley	CA	FR	21							P	[MS],[SC]	
			DR	26						X			
Visalia City Coach	Fresno	CA	FR	25	[DIG]	[X]					P,[W],I	MS	
			DR	6		[X]							
Western Contra Costa Transit Authority	Pinole	CA	FR	33	DIG	[X]					P	[SC]	[X]
			DR	12		[X]				[X]		[SC]	
City of Greeley	Greeley	CO	FR	13	[TR],[DIG]						P		
			DR	6									
Regional Transportation District	Denver	CO	FR	1076		X		[X]		X	P,W,I		
			DR	183		[X]							
			LR	31		X		[X]					
Connecticut Department of Transportation	Newington	CT	FR	432	[X]						P,W	MS	
			CR	255									
Connecticut Transit	Hartford	CT	FR	233								MS	
Connecticut Transit-New Haven	New Haven	CT	FR	113	TR							MS,SC	
Connecticut Transit-Stamford	Stamford	CT	FR	46	TR							MS	
Greater Hartford Transit District	Hartford	CT	DR	133						X	P		
Greater New Haven Transit District	New Haven	CT	DR	42		X				X	P,[W],[I]	[SC]	
Middletown Transit District	Middletown	CT	FR	9		[X]					P,I	[MS]	
			DR	20						X			
Norwalk Transit District/Westport Transit Lines	Norwalk	CT	FR	33	TR,DIG						P,I	[SC]	
			DR	27		[X]				X			
Stamford Dial-A-Ride	Stamford	CT	DR	9	TR								
Washington Metropolitan Area Transit Authority	Washington	DC	FR	1413	[X]	[X]		[X]	[X]	[X]	P,[W],[I]	[MS],[SC]	[X]
			DR	108		[X]						[MS],[SC]	
			HR	788		X				X		MS,SC	

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Broward County Mass Transit	Pompano Beach	FL	FR	232	[X]	X		[X]	X	X	P		
			DR	480									
Hillsborough Area Regional Transit Authority	Tampa	FL	FR	210	DIG	X				X	P,W,I	MS	
			DR	25		X				X			
Jacksonville Transportation Authority	Jacksonville	FL	FR	179	TR,[DIG]		F,A	X			P,W,I	MS	
			DR	46					[X]	[X]			
Central Florida Regional Transit Authority	Orlando	FL	FR	227	[TR],[DIG]	[X]		X			P,W	MS,[SC]	
			DR	193									
Miami-Dade Transit Authority	Miami	FL	FR	585	TR,[DIG]	X	F,A	X	X	X	P,[W],I	MS	[X]
			LR	29		X				X		MS	
			HR	136		X			X	X			
Pasco County Public Transportation	Port Richey	FL	FR	8	TR,DIG						P,W	[MS]	
			DR	45						[X]		[MS]	
Pinellas Suncoast Transit Authority	Clearwater	FL	FR	148	TR	[X]		[X]	[X]	[X]	P,[W],[I]	MS	
			DR	150									
Sarasota County Transportation Agency	Sarasota	FL	FR	39	TR,DIG	[X]			[X]	[X]	P,[W],[I]	[MS],[SC]	[X]
			DR									[MS],[SC]	
Tri-County Commuter Rail Authority	Fort Lauderdale	FL	CR	20		X					P,W		
Douglas County Rideshare	Atlanta	GA	DR	23							P,W		
Metropolitan Atlanta Rapid Transit Authority	Atlanta	GA	FR	703	[TR],[DIG]	X		X	X	X	P,W,I	MS,[SC]	X
			HR	238								MS,[SC]	
Oahu Transit Services	Honolulu	HI	FR	525	[DIG]	[X]		[X]		[X[	P		[X]
			DR	114		X				X			
Chicago Transit Authority	Chicago	IL	FR	1872	[TR],[DIG]	X		X	[X]	[X]	P,I	MS,SC	X
			HR	1100		[X]			X	X		MS,SC	
Northeast Illinois Regional Commuter RR Corporation	Chicago	IL	CR	942		X					P,W,I	MS	
Cook-DuPage Transportation Company, Inc.	Chicago	IL	DR	140	DIG	X				X			
PACE Suburban Bus	Arlington Heights	IL	FR	650	TR,[DIG]	[X]		X		[X]	P,[W],I	MS,SC	X
			DR	340								[MS],[SC]	

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
East Chicago Transit	East Chicago	IN	FR	5	[TR],[DIG]	X					W,I		
			DR	2		[X]							
Hammond Transit System	Hammond	IN	FR	12		[X]			[X]	[X]	P,[W]		X
			DR	32					[X]	[X]			
Indianapolis Public Transportation	Indianapolis	IN	FR	149	TR,[DIG]	[X]		X	X		P	MS	
			DR	49				X	[X]				
LCEOC, Inc.	Lake County	IN	DR	46	[DIG]	[X]		[X]	[X]	[X]	[P],[W]	[MS],[SC]	
Northern Indiana Commuter	Chesterton	IN	CR	56		[X]					P		
Opportunity Enterprise Inc.	Valparaiso	IN	DR	22	DIG								
Wichita Metropolitan Transit Authority	Wichita	KS	FR	53	TR,[DIG]	[X]		[X]	[X]	[X]	P,[I]		[X]
			DR	17		[X]			[X]	[X]			
River City Transit Authority	Louisville	KY	FR	301	DIG	X		X			P		X
			DR	78						X			
Capital Transportation Corporation	Baton Rouge	LA	FR	52				[X]			P,W,I		[X]
			DR	6				[X]					[X]
Louisiana Department of Transportation	Metairie	LA	FB	5	TR								
Louisiana Transit Company, Incorporated	Harahan	LA	FR	28	DIG	[X]		[X]	[X]	[X]	P,[I]	[MS]	
Regional Transit Authority	New Orleans	LA	FR	371	TR,DIG	[X]				[X]	P		
			DR	24									
			LR	42									
St. Bernard Parish Government	Chalmette	LA	FR	5		[X]					P,[W],[I]		
			DR	1		[X]							
Westside Transit Lines	New Orleans	LA	FR	28	TR,DIG	[X]							
Greater Attleboro-Taunton Regional Transit Authority	Attleboro	MA	FR	24	[DIG]	[X]				[X]	P	[MS],[SC]	
			DR	55		[X]				X		[MS],[SC]	

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Massachusetts Bay Transportation Authority	Boston	MA	FR	1033	[TR],[DIG]	[X]		[X]	[X]	[X]	P,[W],I	MS	[X]
			DR	409									
			LR	207		X				X		MS	
			HR	408		X				X		MS	
			CR	363									
			FB	12									
Merrimack Valley Regional Transit	Haverhill	MA	FR	45	[DIG]	[X]				[X]	P,I	[SC]	
			DR	35		[X]				[X]			
Pioneer Valley Transit Authority	Springfield	MA	FR	200	[DIG]						P,[W],[I]	MS,[SC]	
			DR										
Frederick County Transit	Frederick	MD	FR	11	TR					[X]	[P]		
			DR	22						[X]			
Harford County Transportation	Baltimore	MD	FR	12							P		
			DR	16									
Howard Area Transit Service	Baltimore	MD	FR		TR,DIG						P		
Mass Transit Administration	Baltimore	MD	FR	880	TR	X		X		X	P,W		
			DR	20						X			
			LR	53									X
			HR	100		X							
Montgomery County Transit	Rockville	MD	FR	276		X		[X]		X	P,W	[SC]	[X]
Ann Arbor Transportation Authority	Ann Arbor	MI	FR	84		X		X	X	X	P,W,I	[SC]	
			DR	9		X				X		[SC]	
Grand Rapids Area Transit Authority	Grand Rapids	MI	FR	81	TR						P,W		X
			DR	56									
Suburban Mobility Authority for Regional Transportation	Detroit	MI	FR	300	TR	X	[A]	[X]	X	X	[P],[I]	MS,[SC]	
			DR	100		X	[A]		X	X		[SC]	
Metro Transit	Minneapolis	MN	FR	938	[TR],[DIG]	X		X	X	X	P,[W]	MS	[X]
			LR			[X]		[X]		[X]		[X]	

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Bi-State Development Agency	St. Louis	MO	FR	588				X		X	P,[W]	MS,[SC]	
			DR	61									
			LR	41				[X]				[MS],[SC]	
Kansas City Area Transit Authority	Kansas City	MO	FR	229	[X]	X		[X]	X	X	P,W	MS	
Capital Area Transit	Raleigh	NC	FR	53							P,W	MS	
			DR	10								MS	
Chapel Hill Transit	Chapel Hill	NC	FR	56	[TR],[DIG]	[X]					P	MS	
			DR	7		[X]				[X]			
Charlotte Area Transit System	Charlotte	NC	FR	200	TR,DIG	[X]		[X]	[X]	[X]	P,W,I	MS	
			DR	70		[X]				X			
Durham Area Transit	Durham	NC	FR	40	DIG	[X]		[X]	[X]	[X]		[MS],[SC]	[X]
Greensboro Transit Authority	Greensboro	NC	FR	23	[DIG]						P	MS,SC	
			DR	18						X			
High Point Transit	High Point	NC	FR	16	TR,DIG	[X]		[X]	[X]	[X]	[P],[W],[I]		[X]
			DR	6									
Triangle Transit Authority	Research Triangle Park	NC	FR	27	TR	X				X	P,W,[I]	[MS]	
			DR	5		X				X		[MS]	
Winston-Salem Transit Authority	Winston-Salem	NC	FR	58	TR	[X]				X	P,W,I	[SC]	[X]
			DR	22		[X]				X		[SC]	
Omaha Transit Authority	Omaha	NE	FR	131	DIG	[X]			[X]	[X]	P		
			DR	17		[X]				[X]			
Academy Lines Incorporated	Newark	NJ	FR	215	[TR],[DIG]	X		[X]	X	[X]	P,[W],[I]	[MS]	
Hudson Transit Lines	Mahwah	NJ									P		
New Jersey Transit Corporation	Newark	NJ	FR	2100	TR,[DIG]	X		[X]	[X]	X	P,[W],[I]		
			DR	85									
			LR	40				[X]		[X]			
			CR	745				[X]	[X]	X			
Port Authority Transit Corporation	Lindenwold	NJ	HR	121	[TR],[DIG]	X					P	MS,[SC]	
Suburban Transit Corporation	Dunellen	NJ	FR	245	TR,DIG	[X]					P		

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Sun Tran	Albuquerque	NM	FR	141	TR,[DIG]	[X]		[X]	[X]	[X]	P	[SC]	
			DR	40		X			X	X		[SC]	
Regional Transportation Commission/Citizens Area Transit	Las Vegas	NV	FR	297	[TR],[DIG]	[X]		[X]	[X]	[X]	[P],[W]		[X]
			DR	120		[X]			[X]	[X]			
Blue Bird Coach Lines/Niagara Scenic Bus Lines	No. Tonawanda	NY	FR	1									
Capital District Transit Authority	Albany	NY	FR	235	[X]	[X]		[X]	[X]	[X]	P,[W],[I]	MS	[X]
			DR	25		[X]			[X]	[X]		MS	
Central New York Regional Transit Authority	Syracuse	NY	FR	182		[X]		[X]	[X]	[X]	P,[W]	MS	
			DR	22		[X]			[X]	[X]		MS	
Clarkstown Mini-Trans	Clarkstown	NY	FR	10	TR						P,W		
GTJC	Jamaica	NY	FR	724	TR,DIG	[X]		[X]	[X]	[X]	P	MS	
Huntington Area Rapid Transit	Huntington Station	NY	FR	12		[X]					P		
			DR	7						[X]			
Liberty Lines Express, Incorporated	Yonkers	NY	FR	86	TR,DIG	[X]					P,[I]	MS	
Long Beach City	Long Beach City	NY	FR	12							[P]		
			DR	2									
Long Island Bus	Garden City	NY	FR	324	TR,DIG	[X]		[X]	X	X	P,[W],I	MS	
			DR	60		X				X			
Metro-North Railroad MTA	New York	NY	CR	900		[X]			X	X	P,W,[I]	[MS]	
Monsey New Square Trails Corporation	Spring Valley	NY	FR	42	TR						P		
New York Bus Service	Bronx	NY	FR	137	TR,DIG						[P],[I]	MS	
New York City DOT	New York	NY	FR	1288	TR,DIG	[X]				X	P	MS	[X]
			FB	7									
New York City Transit Authority	New York	NY	FR	4172	TR	[X]				[X]	P,W	MS	
			DR	175									
			HR	5774								MS	
Niagara Frontier Transportation Authority	Buffalo	NY	FR	322	TR	X			X	X	P		
			DR	18		X				X			
			LR	27									

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Putnam County Transit	Carmel	NY	FR	8							P		
			DR	2									
Queens Surface Corporation	Flushing	NY	FR	337	TR						P	MS	
Regional Transit Service Incorporated & Lift Line Incorporated	Rochester	NY	FR	244	[X]	[X]			[X]	[X]	P	MS	[X]
			DR	36		[X]			[X]	[X]			
Rockland Coaches Incorporated	Pomona	NY	FR	135	TR						P		
Suffolk County Department of Public Works	Yaphank	NY	FR	143	[DIG]	[X]			[X]		P	[MS]	
			DR	28		[X]			[X]	[X]		[MS]	
Village of Spring Valley Bus	Spring Valley	NY	FR	4				[X]		[X]	P,W,[I]	[MS]	
Westchester County Department of Transportation	White Plains	NY	FR	354	[TR],[DIG]	[X]		[X]	[X]	[X]	P,W,I		
			DR	56		[X]		[X]	[X]				
Campus Bus Service	Kent	OH	FR	16							P,W,I		
			DR	6									
Central Ohio Transit Authority	Columbus	OH	FR	348	TR	X		X	[X]	X	P,[W],[I]	MS,[SC]	[X]
			DR	45		[X]			[X]	X		[SC]	
Greater Cleveland Regional Transit Authority	Cleveland	OH	FR	768	[TR]	[X]		[X]	X	[X]	P,W,[I]	MS,[SC]	[X]
			DR	107		[X]			[X]	[X]		[MS],[SC]	
			LR	48		[X]			[X]	[X]		MS,[SC]	[X]
			HR	60		[X]			[X]	[X]		MS,[SC]	
Laketran	Grand River	OH	FR	30		[X]				[X]	P		
			DR	65		[X]			[X]	[X]			
Lorain County Transit	Lorain	OH	FR	17							P,W	[MS],[SC]	
			DR	16								[MS],[SC]	
Metro Regional Transit Authority	Akron	OH	FR	152		[X]		[X]	[X]	[X]	P,[W],[I]	MS	
			DR	145		X		[X]	[X]	X		MS	
Miami Valley Regional Transit Authority	Dayton	OH	FR	238		X		[X]	X	X	P,[W]	MS	
			DR	60		X			X	X			
Southwest Ohio Regional Transit Authority	Cincinnati	OH	FR	433	TR,[DIG]	X	F		X	X	P,[W],[I]	MS	
			DR	51		X			X	X			

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Toledo Area Regional Transit Authority	Toledo	OH	FR	167	DIG						P,[W],[I]		
			DR	17									
Western Reserve Transit Authority	Youngstown	OH	FR	44	[TR],[DIG]	X				X			
			DR	5		X				X			
Central Oklahoma Transit	Oklahoma City	OK	FR	90	[TR]	[X]				[X]	P,[W],[I]	MS	
			DR	16						X		[MS]	
Metropolitan Tulsa Transit Authority	Tulsa	OK	FR	100	TR,DIG						P		
			DR	30									
Tri-County Metropolitan Transportation District of Oregon	Portland	OR	FR	681	TR	X		X		X	P,W,[I]		X
			DR	176		X				X		MS	
			LR	72		X		[X]		X			X
Access Transportation Systems Incorporated	Pittsburgh	PA	DR	467		X				X	[P]		
Beaver County Transit Authority	Rochester	PA	FR	14		X		[X]	[X]	[X]	P,[W],[I]	MS,[SC]	
			DR	25		[X]							
Cumberland-Dauphin-Harrisburg	Harrisburg, Lebanon, Carlisle	PA	FR	69							P,W,[I]		
			DR	5									
G G & C Bus Company Incorporated	Washington	PA	FR	4						[X]	[P],[I]		
			DR	19						[X]			
Lackawanna County Transit System	Scranton	PA	FR	29		X				X	P,W		
			DR	4									
Lehigh and Northampton	Allentown	PA	FR	75		[X]					P,I	MS	
			DR	98		[X]						[MS]	
Port Authority of Allegheny County	Pittsburgh	PA	FR	940						[X]	P,W,I		[X]
			DR	170									
			LR	59									
Southeastern Pennsylvania Transportation Authority	Philadelphia	PA	FR	1250	[TR]	[X]		[X]	X	X	P,W,I	MS	
			LR	224								MS	X
			HR	379								MS	
			CR	349									

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Puerto Rico Highway and Transportation Authority	San Juan	PR	FR	30	DIG	X				[X]	[P],[W],[I]	[MS]	
			HR						[X]			[MS]	
Rhode Island Public Transit Authority	Providence	RI	FR	236	[TR],[DIG]	[X]		X	[X]	[X]	P,[W],[I]	[SC]	[X]
			DR	104		[X]		[X]	[X]	[X]		[SC]	
			FB	1		[X]		[X]	[X]	[X]		[SC]	
Charleston Transit Administration	Charleston	SC	FR	59	TR,[DIG]				X		P,W,I	MS,[SC]	
			DR	17					X			[MS],[SC]	
Greenville Transit Authority	Greenville	SC	FR	11	[DIG]						P,W,[I]		
Spartanburg Area Regional Transit Agency	Spartanburg	SC	FR	9	DIG						P		
Knoxville Transportation Authority	Knoxville	TN	FR	88	TR,DIG			[X]	[X]	[X]	P,[W],[I]	MS,[SC]	
			DR	12					[X]	[X]		MS	
Memphis Area Transit Authority	Memphis	TN	FR	234		[X]		[X]	[X]		P	[SC]	
			DR	60		[X]		[X]	[X]				
			LR	20									X
Metropolitan Transit Authority	Nashville	TN	FR	141	[DIG]					X		[MS]	
			DR	35								[MS]	
Capital Metropolitan Transportation Authority	Austin	TX	FR	389	[TR],[DIG]	[X]		[X]	[X]	[X]	P,I	[MS]	
			DR									[MS]	
Dallas Area Rapid Transit	Dallas	TX	FR	862	TR	X		[X]		[X]	P,I	[SC]	
			DR	190		X				X			
			LR	54		X		[X]		X		[SC]	
			CR	27								[SC]	
Denton City Manager	Denton	TX	FR	4	TR,[DIG]						P		
			DR	5									
Fort Worth Transportation Authority	Fort Worth	TX	FR	80	[TR],[DIG]	[X]		[X]	[X]	[X]	P,[W],[I]	[SC]	[X]
			DR	100		[X]		[X]	[X]	[X]		[SC]	[X]
			CR	14		[X]		[X]	[X]	[X]		[SC]	
Grand Prairie City	Grand Prairie	TX	DR		TR,DIG								
Lewisville Dial-A-Ride	Lewisville	TX	DR	5	TR,DIG					X			

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Metro Transit Authority	Houston	TX	FR	1336	TR,DIG	[X]		[X]	X	X	P	MS	[X]
			DR	118		X				X			
Sun Metro	El Paso	TX	FR	159	TR,[DIG]	[X]		[X]	[X]	[X]	[P],[W],[I]	[SC]	
			DR	54		[X]				[X]		[SC]	
VIA Metropolitan Transit	San Antonio	TX	FR	529	TR,[DIG]	X		[X]	[X]	[X]	P,W,I	[MS]	
			DR	231		X			[X]	[X]			
Utah Transit Authority	Salt Lake City	UT	FR	530	[X]	[X]		X		X	P,W,[I]		X
			DR	90		[X]				X			
			LR	23		[X]		[X]		X			X
Fairfax Connector Bus System	Fairfax	VA	FR	153	TR						P,W	[SC]	[X]
			DR	13						X			
Greater Richmond Transit Company	Richmond	VA	FR	181							[P],[W]	MS	
			DR	72									
Hampton Roads Transit	Norfolk	VA	FR	378	[DIG]	[X]		[X]	[X]	[X]	P,[W],[I]	MS	
			DR	96		[X]				[X]			
			FB	3									
Northern Virginia Transportation Commission	Arlington	VA	CR	80		X			X		P,[I]		
Petersburg Area Transit	Petersburg	VA	FR	9	[DIG]							[SC]	
			DR	2								[SC]	
Potomac and Rappahannock Transportation Commission	Woodbridge	VA	FR	73	TR,DIG	X				[X]	P	[SC]	
Clark County Public Transportation Benefit Area Authority	Vancouver	WA	FR	109	TR,DIG	[X]		[X]	[X]	[X]	P		[X]
			DR	53		[X]				[X]			
Everett Transit	Everett	WA	FR	41	TR						P,W,[I]	[MS],[SC]	
			DR	15						X			
King County Metro	Seattle	WA	FR	1213	[TR]	X		X	[X]	X	P,W	MS,[SC]	X
Kitsap Transit	Bremerton	WA	FR	95	TR,[DIG]	X					P,[W],[I]	[SC]	X
			DR	46						X			
			FB	3								[SC]	
Pierce County Ferry Operations	Tacoma	WA	FB	2							P		

Table 2. APTS Deployment by Transit Agency In the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Automated Fare Payment	Traffic Signal Priority
Pierce Transit	Tacoma	WA	FR	230	[DIG]	[X]		[X]		X	P,[W],[I]	[SC]	[X]
			DR	106		[X]							
Seattle Monorail Transit	Seattle	WA	CR	8	[DIG]						P		
Snohomish County Public Transportation	Everett	WA	FR	291	DIG	[X]				[X]	P,W,[I]	MS,[SC]	[X]
			DR	51		[X]				[X]			
Snohomish County Senior Services	Mukilteo	WA	DR	52	TR	[X]				X	P,W		X
Washington State Ferries	Seattle	WA	FB	29		X			X	X	P	[SC]	
Belle Urban System	Racine	WI	FR	42	DIG	[X]				[X]	P		
			DR	17									
Kenosha Transit	Kenosha	WI	FR	51		[X]				[X]	P		
			DR	3									
Milwaukee County Transit System	Milwaukee	WI	FR	555	TR	X	[A]	X		X	P,[W],[I]		[X]
			DR	476		[X]							
Waukesha City Metro Transit	Waukesha	WI	FR	23	[TR]	[X]				[X]	P,[W]	MS	
			DR	3						[X]		[MS]	

SECTION 3. APTS DEPLOYMENT BY TRANSIT AGENCY OUTSIDE OF THE 78 LARGEST METROPOLITAN AREAS IN THE UNITED STATES

Table 3 presents the information collected by the Volpe National Transportation Systems Center for all known transit agencies not covered by the Oak Ridge National Laboratory/SAIC survey effort. A total of 351 transit agencies were surveyed by the Volpe Center. All of these agencies which have installed, or are planning to install, any of the APTS elements are listed in the Table. As indicated in the Legend, entries enclosed by brackets signify elements either in the implementation or planning stage and are expected to be operational by the year 2005. All other entries indicate operational elements.

The agencies are arranged alphabetically, first by state and then by agency name. Table 3 also lists the number of vehicles operated by each agency (directly or by contract) in each service type. However, the APTS element is not necessarily installed on every vehicle in the service type for which it is operational or planned.

Table 3 includes APTS elements that are not covered in Table 2 for reasons previously mentioned.

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Center	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
Anchorage Public Transportation	Anchorage	AK	FR	54		[GPS]			X	[X]	P,W						[X]	X			
			DR	50							P										
MACS and VANTRAN	Fairbanks	AK	FR	10							P							[X]			
			DR	9						X	P				[X]						
Capital Area Transit	Montgomery	AL	FR	6	TR,DIG																
			DR	18	TR,DIG					X											
City of Huntsville Department of Transportation	Huntsville	AL	FR	11	TR,DIG						P										
			DR	12	TR,DIG					X	P										
Gadsden Transportation Services	Gadsden	AL	FR	3	TR,DIG																
			DR	9	TR,DIG					X											X
Metro Transit	Mobile	AL	FR	31	TR,DIG						P,I										
			DR	4	TR,DIG					X	P										
Northwest Alabama Council of Local Governments	Muscle Shoals	AL	DR	58							P										
Tuscaloosa County Parking and Transit	Tuscaloosa	AL	FR	15	TR,DIG																
			DR	7	TR,DIG					[X]					[X]						
Wiregrass Transit Authority	Dothan	AL	DR	20						[X]											
Fort Smith Public Transit	Fort Smith	AR	FR	5		OTR				X											X
			DR	5						X											
Intra City Transit	Hot Springs	AR	FR	11														X			X
			DR	6						X											
Pine Bluff Transit	Pine Bluff	AR	FR	13	TR,DIG														[X]		
			DR	2	TR,DIG																
Maricopa County Human Services Department	Phoenix	AZ	DR	70	TR,DIG					[X]	[P]										
Benicia Transit	Martinez	CA	FR	7																	
			DR	3						X											
Camarillo Area Transit	Camarillo	CA	FR	2	TR,DIG	GPS		X		X	P	X	SC	X		X		X			
			DR	2	TR,DIG			X		X	P				[X]						
Chico Area Transit System	Chico	CA	FR	15															[X]		
			DR	8																	

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
City of Glendale	Glendale	CA	FR	35		GPS				X			[MS],[SC]	X			[X]	X			
			DR	4						X											
City of Riverside Special Transportation	Riverside	CA	DR	22	TR,[DIG]	GPS				[X]											
City of Roseville Transit	Roseville	CA	FR	12	TR,DIG																
			DR	10	TR,DIG																
Eastern Contra Costa Transit Authority	Antioch	CA	FR	46	DIG	[GPS]				[X]	P	[X]				[X]			X	X	
			DR	16	DIG					X											
Emery-Go-Round	Oakland	CA	FR	6		GPS				X											
Foothill Transit	West Covina	CA	FR	306	[TR],[DIG]	[GPS]				[X]	P,W,I	X	MS					X			
			DR	9	[TR],[DIG]						P										
Golden Gate Bridge, Highway and Transportation District	San Francisco	CA	FR	280	DIG	GPS				[X]	P			X					X		
			FB	5	DIG																
Healdsburg Municipal Transit	Healdsburg	CA	FR	1																	
			DR	1											X						
Intelitran	Oakland	CA	DR	170	DIG					[X]					X			X			
Laidlaw Transit Services	El Monte	CA	FR	130															X		
Lompoc Transit	Lompoc	CA	FR	7														X			
			DR	1																	
Los Angeles County Metropolitan Transp. Auth.	Los Angeles	CA	FR	2400		GPS	A,F	[X]	X	X		[X]	[MS],[SC]		[X]		X	[X]		X	
Mendocino Transit Authority	Ukiah	CA	FR	92					X		P							X	[X]	X	
			DR	17							P				X						
Modesto Area Express	Modesto	CA	FR	40		[GPS]				[X]	P,W,I							X	X		
			DR	10							P				X						
Omnitrans	San Bernardino	CA	FR	141	[DIG]	[GPS]		X		[X]	P	X							X		
			DR	72	[DIG]					X	P										
Outreach and Escort Inc.	San Jose	CA	DR	250		GPS	A,F		[X]	X	[P]	[X]						[X]			
Petaluma Transit	Petaluma	CA	DR	5							P							X			
Redding Area Bus Authority	Redding	CA	FR	18	TR,DIG						P,W										
			DR	20	TR,DIG					X											
Riverside Transit Agency	Riverside	CA	FR	120	TR					X	P,W	X		X				X		X	
			DR	80	TR					X	P										

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
San Joaquin Regional Transit District	Stockton	CA	FR	98	DIG	GPS		X	X	X	P,I		MS							X	X
			DR	41	DIG				X	X	P				X					X	X
San Luis Obispo Regional Transit Authority	San Luis Obispo	CA	FR	20														X		X	
			DR	9						X											
Santa Barbara Metropolitan Transit District	Santa Barbara	CA	FR	82	TR					X	P,W,I		MS				[X]				
The Bus-Merced Country Transit	Merced	CA	FR	18	TR	[GPS]				[X]	[P],[W]	[X]						X			
			DR	28	TR					[X]	[P]				X				[X]		
Thousand Oaks Transit	Thousand Oaks	CA	FR	5	TR,DIG	GPS		X	[X]	X	P	X	SC	X		X		X			
			DR	3	TR,DIG			X			P				[X]						
Unitrans	Davis	CA	FR	41							P	X						X			
			DR	3							P										
Ventura Intercity Service Transit	Ventura	CA	FR	15	TR,DIG	GPS		X		X	P,W	X	SC	X		X		X	X		
			DR	9	TR,DIG			X		[X]	P				[X]						
Yolo County Transportation District	Woodland	CA	FR	22	TR	[GPS]				[X]	P,W	[X]	MS	X			[X]				
			DR	10	TR					[X]	P				[X]				[X]		
Yuba-Sutter Transit Authority	Marysville	CA	FR	13	TR							X									
			DR	14	TR																
Avon/Beaver Creek Transit	Avon	CO	FR	52	[TR],[DIG]										X				X		
Eagle County Regional Transportation Authority	Avon	CO	FR	28	[TR]																
			DR	2	[TR]																
Mesa County	Grand Junction	CO	FR	27	TR,DIG	[GPS]				[X]	[P]		[MS]								
			DR	4	TR,DIG					[X]											
Pueblo Transit	Pueblo	CO	FR	16																	
			DR	6						X											
Springs Transit	Colorado Springs	CO	FR	50	TR,DIG	[GPS]	[A],[F]		[X]	[X]	P										
Transfort	Fort Collins	CO	FR	24	TR,DIG	[GPS]				[X]	P,W,I	[X]					[X]				
			DR	16	TR,DIG					X											
Connecticut Limousine	Milford	CT	DR	150	[TR],[DIG]	[GPS]				[X]	P										
Cross Sound Ferry Services Inc.	New London	CT	FB	8	TR,DIG	GPS			X	X	P										

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
Dattco, Inc.	New Britain	CT	FR	6																	
			DR	40											X						
Greater Bridgeport Transit District	Bridgeport	CT	FR	52																	
			DR	22						X										X	
Milford Transit District	Milford	CT	FR	8	DIG						P							X			
			DR	16	DIG					[X]	P										
Northeast Transportation Company	Waterbury	CT	FR	41									MS	X				X		X	
			DR	6																	
South East Area Transit District	Norwich	CT	FR	25	TR,DIG	[GPS]				[X]			MS	X						X	
			DR	6	TR,DIG																
The New Britain Transportation Company	Berlin	CT	FR	15									MS	X						X	
Valley Transit District	Derby	CT	DR	18		[GPS]				[X]					X						
DART First State, Delaware Transit Core	Dover	DE	FR	210	TR,DIG	[GPS]			[X]	[X]						[X]		X		[X]	[X]
			DR	145	TR,DIG	[GPS]			[X]	X										[X]	[X]
Bay County Council	Panama City	FL	FR	5							P,W							X			
			DR	40											X						
City of Tallahassee TALTRAN	Tallahassee	FL	FR	56	TR,DIG						P,W,I								[X]		
			DR	17	TR,DIG					X	P				X						
Council on Aging of Martin County	Stuart	FL	DR	28	DIG					[X]	P										
Escambia County Area Transit	Pensacola	FL	FR	32							P										
			DR	8							P										
Gainesville Regional Transit System	Gainesville	FL	FR	68	[DIG]	[GPS]		[X]		[X]	P,W										
			DR	20						X											
Indian River County Council on Aging	Vero Beach	FL	FR	8	TR,DIG						P,W	[X]						X			
			DR	23	TR,DIG					X					X						
Manatee County Transit	Bradenton	FL	FR	16	TR,DIG													X			
			DR	19	TR,DIG					X	P										
Miami Beach Transport Management Association	Miami Beach	FL	FR	11							P,W		SC								
Okaloosa County Coordinated Transportation Inc.	Ft. Walton Beach	FL	DR	44						X											

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
Ride Solution, Inc.	Palatka	FL	FR	18		GPS			[X]	X			MS					X		[X]	
			DR	13						X			MS		X			X			
Space Coast Area Transit	Cocoa	FL	FR	40	[DIG]	[GPS]				[X]	P,I							X			
			DR	114						[X]	P								[X]		
St. Lucie County Council on Aging	Port St. Lucie	FL	DR	43	DIG	[OTR]				X											
Volusia Transportation Authority	South Daytona	FL	FR	65	TR,[DIG]						P,I							X	X	X	
			DR	41	TR,[DIG]					X	P									X	
Albany Transit System	Albany	GA	FR	16	DIG						P										
			DR	6	DIG						P										
Athens Transit System	Athens	GA	FR	21	TR,DIG						P,W	X									
			DR	4	TR,DIG						P										
Augusta Public Transit	Augusta	GA	FR	36									[SC]	X							
			DR	4						X					X						
Chatham Area Transit Authority	Savannah	GA	FR	61	TR						P,W,I							[X]			
			DR	16							P										
City of Rome Transit Department	Rome	GA	FR	6																	
			DR	2															X		
Cobb County Transit	Marietta	GA	FR	53	TR	[OTR]				[X]											
			DR	15	TR					X					[X]						
Department of Transportation	Columbus	GA	FR	27	TR,[DIG]																
			DR	7	TR,[DIG]																
University of Georgia Campus Transit System	Athens	GA	FR	41	TR			X							X						
			DR	3	TR																
Bettendorf Transit System	Bettendorf	IA	FR	7													X	X	X		
City of Davenport	Davenport	IA	FR	19		[U]				[X]								[X]			
City of Dubuque-Keyline Transit	Dubuque	IA	FR	17	[TR],[DIG]			[X]					[SC]	X				[X]			
			DR	6	[TR],[DIG]			[X]		[X]					[X]						
Coralville Transit	Coralville	IA	FR	9	DIG																
Des Moines Metropolitan Transit Authority	Des Moines	IA	FR	98	TR					X	P		[MS],[SC]			[X]	[X]	[X]			
			DR	26	TR	GPS				X					X						

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
Iowa City Transit	Iowa City	IA	FR	21	TR	GPS					P,W										
			DR	10																	
Metropolitan Transit Authority of Black Hawk County	Waterloo	IA	FR	17	TR,DIG	[GPS]				[X]										X	
			DR	14	TR,DIG					X	[P]										
Sioux City Transit System	Sioux City	IA	FR	26	TR,DIG	GPS				[X]	P,W	X					[X]	[X]			
			DR	14	TR,DIG										[X]						
Siouxland Regional Transit System	Sioux City	IA	DR	63	[TR],[DIG]					X					X			X	[X]		
University of Iowa, CAMBUS	Iowa City	IA	FR	22	TR,[DIG]							X						X			
			DR	6	TR,[DIG]					[X]	P										
Boise Urban Stages	Boise	ID	FR	38	TR						P									X	
			DR	8	TR															X	
Pocatello Regional Transit	Pocatello	ID	FR	12	TR,DIG						P										
			DR	17	TR,DIG					[X]											
Bloomington Normal Public Transit System	Bloomington	IL	FR	20	DIG																
			DR	5	DIG																
Pekin Municipal Bus Service	Pekin	IL	FR	2	DIG																
			DR	1	DIG																
River Valley Metro Mass Transit District	Kankakee	IL	FR	10	[TR],[DIG]																
			DR	2	[TR],[DIG]																
Rock Island County Mass Transit	Rock Island	IL	FR	57	DIG	[GPS]	[A],[F]	[X]		[X]	[P],[W]	[X]						X			
			DR	11	DIG					[X]	[P]				X				[X]	[X]	[X]
Rockford Mass Transit District	Rockford	IL	FR	37							P,W		[MS]								
			DR	24						X											
Springfield Mass Transit and District	Springfield	IL	FR	46														X			
			DR	15															X		
Urbana Champaign Mass Transit District	Urbana	IL	FR	74		[GPS]		[X]	[X]	[X]	P,W,I										
			DR	4				[X]	[X]	[X]	P								[X]	[X]	[X]
ACE Cab	Elkhart	IN	DR	49						X										X	
Bloomington Public Transportation Corporation	Bloomington	IN	FR	34	TR,DIG												[X]	X		X	
			DR	6	TR,DIG																
City of Kokomo	Kokomo	IN	DR	12							[P]							[X]			

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Centre	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
Fort Wayne Public Transportation Corporation	Fort Wayne	IN	FR	40	[DIG]	[GPS]				[X]	P		MS					X			
			DR	10	[DIG]					X	P										
Gary Public Transportation Corporation	Gary	IN	FR	39	DIG	[GPS]			X	[X]	P,W,I	[X]					[X]	X		X	
			DR	5	DIG					[X]	P										
Greater Lafayette Public Transportation	Lafayette	IN	FR	56	TR,DIG	[GPS]				[X]	P,W,I						X	X			
			DR	8	TR,DIG					X	P										
Heart City / Goshen Transit	South Bend	IN	FR	4							P										
			DR	31						X	P										
Metropolitan Evansville Transit	Evansville	IN	FR	24	DIG	[GPS]			[X]	[X]	P,W,I								X		
			DR	14	DIG						P										
Muncie Indiana Transit System	Muncie	IN	FR	30		[GPS]				[X]	P,W		MS								
			DR	17						X	P									[X]	
South Bend Public Transportation	South Bend	IN	FR	56	[DIG]						[P]		[MS],[SC]					[X]		X	
			DR	8	[DIG]						[P]								X		
Terre Haute Transit Utility	Terre Haute	IN	FR	10																	
			DR	1											X						
Tradewinds Rehabilitation Center	Gary	IN	FR	8	DIG																
City of Olathe	Olathe	KS	DR	8												X					
Topeka Transit	Topeka	KS	FR	29					X									X			
			DR	15					X	X					X						
City of Ashland Bus System	Ashland	KY	FR	4							P										
			DR	1																	
HART-Henderson Area Rapid Transit	Henderson	KY	FR	6	DIG																
			DR	3	DIG										X						
LEXTRAN	Lexington	KY	FR	48	TR,DIG	[GPS]				[X]	P										
			DR	14	TR,DIG																
Owensboro Transit System	Owensboro	KY	FR	8							P										
			DR	3																	
Transit Authority of Northern Kentucky	Fort Wright	KY	FR	117	[TR]						P	[X]	MS	X				[X]	[X]	[X]	[X]
			DR	12							P										

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
City of Lafayette Transit	Lafayette	LA	FR	16		[GPS]				[X]	I		MS						[X]		[X]
			DR	5															[X]		[X]
City of Monroe Transit Service	Monroe	LA	FR	18	TR,[DIG]																
			DR	2	TR,[DIG]																
Lake Charles Transit System	Lake Charles	LA	FR	4	TR														X		
			DR	2	TR																
Shreveport Area Transit System	Shreveport	LA	FR	46																	
			DR	13															X		
Terrebonne Parish Good Earth Transit System	Houma	LA	DR	2	TR,[DIG]													X	X		
Berkshire Regional Transit Authority	Pittsfield	MA	FR	16	[DIG]																
			DR	10	[DIG]																
Brockton Area Transit Authority	Brockton	MA	FR	44	[TR],[DIG]	[GPS]				[X]			MS							X	
			DR	40	[TR],[DIG]					X					X						
Cape Ann Transportation Authority	Gloucester	MA	FR	20																	
			DR	13											X						
Cape Cod Regional Transit Authority	Dennis	MA	FR	18		GPS	A,F		X	X	P		[MS], [SC]	[X]			[X]	X			
			DR	65					X	X	P		[MS], [SC]	[X]	X						
Cape Island Express Lines Inc.	New Bedford	MA	FB	1	DIG	GPS				X	P										
Lowell Regional Transit Authority	Lowell	MA	FR	37	DIG						P,W										
			DR	30	DIG						P										
Montachuset Regional Transit Authority	Fitchburg	MA	FR	22	[DIG]																
			DR	77						[X]											
Pioneer Valley Transit Authority	Springfield	MA	FR	40	TR,[DIG]	[GPS]			X	[X]	P							X	X		
			DR	81	TR,[DIG]					[X]	P				X						
Southeast Regional Transit Authority	New Bedford	MA	FR	65	DIG					X									X		
			DR	25	DIG					X											
Transit Express	Springfield	MA	FR	145	TR,[DIG]	[GPS]			X	[X]	P		SC					X	X		
Worcester Regional Transit Authority	Worcester	MA	FR	54	DIG															X	
			DR	41	DIG																
Allegany County Transit	Cumberland	MD	FR	9						[X]											
			DR	10																	

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Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
Annapolis Department of Transportation	Annapolis	MD	FR	15	DIG																
			DR	3	DIG																
Washington County Transportation Commission	Hagerstown	MD	FR	13	DIG																
			DR	3	DIG																
Biddeford-Saco-OOB Transit	Biddeford	ME	FR	11	[DIG]																
Casco Bay Island Transit District	Portland	ME	FB	5							[P],[W]	[X]						[X]			
Chebeague Transportation Co.	Chebeague Island	ME	FR	3																	
			FB	2		LC															
City of Bangor/ Ther Bus	Bangor	ME	FR	10								[X]									
CYR Bus Line	Old Town	ME	FR	19	DIG						P									X	
			DR	47	DIG						P				X						
Downeast Transportation, Inc.	Ellsworth	ME	FR	27	[DIG]			[X]		[X]	[P],[I]										
Isle Au Haut Stonington	Stonington	ME	FB	2							P										
Kennebec Valley Community Action Program	Waterville	ME	FR	4	DIG																
			DR	22	DIG					X					X						
The Regional Transportation Program	Portland	ME	DR	29						X					X						
Waldo Co. Comm. for Social Action	Belfast	ME	FR	1	DIG																
			DR	12	DIG					X					X						
Western Maine Transportation Services	Auburn	ME	FR	8	DIG																
			DR	28	DIG					X					X						
York County Community Action Corp.	Sanford	ME	FR	1						X								X			
			DR	18											X						
Battle Creek Transit	Battle Creek	MI	FR	20		[GPS]			[X]	[X]										[X]	
			DR	10					[X]	[X]										[X]	
Bay Metro Transportation Authority	Bay City	MI	FR	46	TR,DIG													[X]	X		
			DR	10	TR,DIG					X											
Capital Area Transportation Authority	Lansing	MI	FR	77	TR	GPS	A,F			X	[P],[W],[I]						[X]	X			
			DR	75	TR					X	[P]										
City of Detroit Department of Transportation	Detroit	MI	FR	540	DIG	[GPS]		[X]	[X]	[X]	P,W		MS	X	X						
City of Holland Dial-a-Ride	Holland	MI	DR	10						X					X			X			

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City of Jackson Transportation Authority	Jackson	MI	FR	11		[GPS]				[X]	[P],[W]	[X]	[MS],[SC]	[X]					X		
			DR	40		[GPS]				[X]	[P]		[MS],[SC]	[X]							
Kalamazoo Metro Transit System	Kalamazoo	MI	FR	42																	
			DR	5															X		
Mass Transportation Authority	Flint	MI	FR	221	TR													[X]			
			DR	95	TR					X					X				X		
Muskegon Area Transit System	North Muskegon	MI	FR	11	DIG			X		X											
			DR	3	DIG																
Niles Dial-A-Ride	Niles	MI	DR	8											X			X			
Saginaw Transit System Authority	Saginaw	MI	FR	15	TR														X		
			DR	15	TR																
Twin Cities Area Transportation Authority	Benton Harbor	MI	FR	2	[DIG]	[GPS]				[X]											
			DR	17	[DIG]					[X]									[X]	[X]	[X]
City of Rochester	Rochester	MN	FR	33							[P]	[X]			X		X	X	X		
			DR	4						X	[P]										
Duluth Transit Authority	Duluth	MN	FR	97	[TR],[DIG]	[SO]			[X]	[X]	[P],[W]								X		
Mankato Heartland Express	Mankato	MN	FR	12	TR					[X]	P,W		MS	X			[X]	[X]			
			DR	3	TR						P										
St. Cloud Metropolitan Transit Commission	St. Cloud	MN	FR	28	DIG	GPS				X			MS				[X]	X		X	
			DR	17	DIG					X										X	
City Utilities of Springfield	Springfield	MO	FR	23	[TR]				X				[SC]								
			DR	5	[TR]				X	X											
Columbia Transit System	Columbia	MO	FR	19																	
			DR	9						X											
Jefferson City Transit	Jefferson City	MO	FR	6																	
			DR	18						X									X		
Southwest Missouri State University	Springfield	MO	FR	12													X	X			
St. Joseph Transit	St. Joseph	MO	FR	3	TR,DIG	[GPS]			[X]	[X]	[P],[W]				X						
			DR	21	TR,DIG					X											
Jackson Public Transportation Company	Jackson	MS	FR	36	DIG																
			DR	27	DIG					X											

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Mississippi Coast Transportation Authority	Gulfport	MS	FR	23																	
			DR	21						[X]											
Billings Metropolitan Transit	Billings	MT	FR	23	TR						P										
			DR	15	TR					X	P										
Great Falls Transit District	Great Falls	MT	FR	17							[P]										
MountainLine Missoula Urban Transportation District	Missoula	MT	FR	22	DIG						P									X	
			DR	4	DIG																
Asheville Transit Authority	Asheville	NC	FR	16	DIG						I								X		
Fayettesville Area System of Transit	Fayettesville	NC	FR	22	TR,DIG	[GPS]				[X]			[MS]					X			
			DR	19	TR,DIG					[X]											
Greenville Area Transit	Greenville	NC	FR	7							P,I										
			DR	2																	
Piedmont Wagon	Hickory	NC	FR	5	DIG												X	[X]			
			DR	2	DIG										X						
Rocky Mount Transit	Rocky Mount	NC	FR	6	TR,DIG				X		P									X	
			DR	30	TR,DIG						P				X					X	
Wilmington Transit Authority	Wilmington	NC	FR	16																	
			DR	4															X		
Bis-man Transit Board	Bismarck	ND	DR	26						X	[P]	[X]			X			X			
Grand Forks City Bus	Grand Forks	ND	FR	15	DIG	[DK]				[X]	P,W	[X]					X				
			DR	15	DIG																
StarTran	Lincoln	NE	FR	80				X													
			DR	8																	
Community Transportation Service	Claremont	NH	FR	6																	
			DR	3											X						
Concord Area Transit	Concord	NH	FR	4	[DIG]					[X]											
			DR	4	[DIG]					[X]					X						
Greater Laconia Transit Agency	Gilford	NH	DR	10							P				X						
HCS Community Care Incorporated	Keene	NH	FR	3						[X]	P										
			DR	2																	

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Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
Manchester Transit Authority	Manchester	NH	FR	14							[P]										
			DR	3							[P]										
Nashua Transit System	Nashua	NH	FR	7	TR,DIG	[GPS]			[X]	[X]	P,W	X						X			
			DR	10	TR,DIG																
Coach USA Hudson Transit Lines, Inc.	Mahwah	NJ	FR	140							P										
Community Transit, Inc.	Newark	NJ	FR	54					X										X		
Cumberland County Office on Aging	Bridgeton	NJ	DR	28						X								[X]			
DeCamp Bus Lines	Newark	NJ	FR	78																	
Lafeyette-Greenville IBOA	Newark	NJ	FR	29		[GPS]				[X]										[X]	
Lakeland Bus Lines, Inc.	Newark	NJ	FR	9							P,W								X		
Leisure Line	Newark	NJ	FR	54					X										X		
Olympia Trails Bus Co., Inc.,	Newark	NJ	FR	54					X										X		
Orange-Newark-Elizabeth, Inc.,	Newark	NJ	FR	54					X										X		
PATH	Jersey City	NJ	HR	345	TR,DIG			X			P,W	[X]	MS	X		X		X			
South Orange Avenue IBOA	Newark	NJ	FR	54					X										X		
Trans-Bridge Lines, Inc.	Newark	NJ	FR	38							P,W										
Trans-Hudson Express	Newark	NJ	FR	54					X										X		
City of Santa Fe	Santa Fe	NM	FR	31	TR					[X]	P										
			DR	6	TR					[X]											
Road Runner	Las Cruces	NM	FR	16	TR						P						[X]		[X]		
			DR	16	TR					X	P										
ATC/VanCom	No. Las Vegas	NV	FR	294																	
			DR	124																X	X
Regional Transportation Commission of Washoe County	Reno	NV	FR	65		[GPS]		[X]		[X]	[I]		MS							X	
			DR	39						X										[X]	[X]
Atlantic Paratrans, Inc.	Staten Island	NY	DR	350						X											
Broome County Department of Public Transportation	Vestal	NY	FR	43							P		MS								
			DR	18						X											
Chemung County Transit System	Elmira	NY	FR	25																	
			DR	9											X						

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
City of Rome, VIP Transportation	Rome	NY	FR	5	DIG																
			DR	2	DIG																X
Dutchess County Division of Mass Transport	Poughkeepsie	NY	FR	32	DIG																
			DR	20	DIG					X									[X]		
Newburgh Beacon Bus Corp	Newburgh	NY	FR	2	DIG																
New York Bus Tours, Inc.	Bronx	NY	FR	136																	X
Orange County ADA Paratransit Svc.	Goshen	NY	DR	3											X						
Progressive Transportation	Nichols	NY	FR	8																	
			DR	5											X						
Tompkins Consolidated Area Transit	Ithaca	NY	FR	60		[GPS]				[X]	[P],[W]	[X]	[MS]					[X]	X		
			DR	16		[GPS]				[X]	[P]				X						
Utica Transit Authority	Utica	NY	FR	38						X											
			DR	7											[X]						
Chillicothe Transit System	Chillicothe	OH	FR	8							P										
			DR	3							P										
City of Newark Transit Operations	Newark	OH	FR	3																	
			DR	3											X						
Middletown Transit System	Middletown	OH	FR	6							P										
			DR	1											X					X	
Portage Area Regional Transportation Authority	Kent	OH	FR	5	DIG																
			DR	19	DIG										X						
Richland County Transit	Mansfield	OH	FR	9	DIG																
			DR	4																	
Stark Area Regional Transit Authority	Canton	OH	FR	56																	
			DR	25											X						
Lane Transit District	Eugene	OR	FR	112	[DIG]	[GPS]		[X]	[X]	[X]	[P],[W],[I]	[X]					[X]	[X]	[X]	X	
			DR	24							[P]				[X]						
Rogue Valley Transit District	Medford	OR	FR	12				[X]									[X]	[X]		X	
			DR	34											[X]						
Salem Area Mass Transit District	Salem	OR	FR	69						[X]	P,W,I	X					X	X			

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Area Transportation Authority of North Central Pennsylvania	Johnsonburg	PA	FR	23	TR,[DIG]	[U]			[X]	[X]								X			
			DR	58	TR,[DIG]	[U]			[X]	[X]											
Centre Area Transportation Authority	State College	PA	FR	55							P		[MS]				[X]				
			DR	8																	
Mid Mon Valley Transit Authority	Charleroi	PA	FR	23	[DIG]																
			DR	2																	
Red Rose Transit Authority	Lancaster	PA	FR	46											X			X			
Shenango Valley Shuttle Service	Hermitage	PA	FR	4														X			
			DR	24						X					X						
York County Transportation Authority	York	PA	FR	32	[DIG]	[GPS]			[X]	[X]			[MS]								
			DR	32	[DIG]				[X]	[X]											
City of San Juan	San Juan	PR	FR	18	[DIG]											X		X			
Metropolitan Bus Authority	San Juan	PR	FR	188	[DIG]	[GPS]		[X]	[X]	[X]						X	[X]	[X]			
			DR	23	[DIG]			[X]	[X]	[X]									[X]	[X]	[X]
Aiken County Transit System	Aiken	SC	FR	4																	
			DR	15						X											
Pee Dee Regional Transportation Authority	Florence	SC	FR	20	[TR],DIG	[GPS]				[X]								[X]			
			DR	190	[TR],DIG					[X]					X						
Santee Wateree Regional Transportation Authority	Sumter	SC	FR	20		[GPS]				[X]											
			DR	75						[X]											
Rapid Transit System	Rapid City	SD	FR	7	TR,DIG						[P]	[X]									
			DR	11	TR,DIG					X	[P]				X						
Sioux Falls Transit	Sioux Falls	SD	FR	25						X	P	[X]									
			DR	20						X	P										
Bristol Tennessee Transit System	Bristol	TN	FR	4	[DIG]						P										
			DR	4	[DIG]						P				X						
Chattanooga Area Regional Transportation Authority	Chattanooga	TN	FR	74																	
			DR	14											X						
City of Kingsport	Kingsport	TN	FR	3	DIG					[X]	P								X		
			DR	4						[X]					X						

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
Clarksville Transit System	Clarksville	TN	FR	11	[TR]														X		
			DR	10	[TR]																
Jackson Transit Authority	Jackson	TN	FR	17							[P]										
			DR	5							[P]										
Johnson City Transit System	Johnson City	TN	FR	14	DIG						P										
			DR	6	DIG					[X]					X						
Amarillo Transit System	Amarillo	TX	FR	17							P		MS			X			X		
			DR	5											X						
Arlington Handitran	Arlington	TX	DR	17							P										
Beaumont Municipal Transit System	Beaumont	TX	FR	16																	
			DR	5															X		
Brazos Transit District	Bryan	TX	FR	8	DIG	[GPS]				X	[P]										
			DR	4	DIG	[GPS]				X	[P]										
Citi Bus	Lubbock	TX	FR	30	DIG	[GPS]				[X]			MS							X	
			DR	21	DIG										X					X	
CityLink	Abilene	TX	FR	18	DIG					[X]										X	
			DR	11											X						
City of Brownsville Urban System	Brownsville	TX	FR	17	TR					[X]											
			DR	12	TR					[X]										X	
City of Longview	Killgore	TX	DR	5	TR	[GPS]				[X]					X			X			
City of San Angelo	San Angelo	TX	FR	7	TR						P,W	X									
			DR	7	TR					X	P										
City of Temple	Temple	TX	DR	8	TR,DIG					X									[X]		
Corpus Christi Regional Transportation Authority	Corpus Christi	TX	FR	78	TR,[DIG]	[GPS]		X		X	[P],[W]						X				
			DR	39	TR,[DIG]			X		X	[P]									[X]	
First Transit	Houston	TX	FR	240									MS	X							
Island Transit	Galveston	TX	FR	17	TR,DIG																
			DR	14	TR,DIG																
			LR	4	TR,DIG																

Table 3. APTS Deployment by Transit Agency Outside the United States' 78 Largest Metropolitan Areas

Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
Laredo Municipal Transit System	Laredo	TX	FR	44		[GPS]				[X]	P										
			DR	20		[GPS]				[X]	P										
McKinney Avenue Transit Authority	Dallas	TX	FR	4							P						X				
Port Arthur Transit	Port Arthur	TX	FR	10																X	
			DR	6											X					[X]	
Texoma Council of Governments	Sherman	TX	DR	13											X					X	
The Gulf Coast Center	Galveston	TX	DR	45	TR	[GPS]				X	[P]				X						
Waco Transit System	Waco	TX	FR	14	TR,DIG	[GPS]				[X]	P									X	
			DR	8	TR,DIG	[GPS]				[X]	P				X						
Logan Transit District	Logan	UT	FR	15							P								X		
			DR	5																	
Blacksburg Transit	Blacksburg	VA	FR	31	DIG	[GPS]				[X]	[P],[W],[I]										
			DR	11						X											
Bristol Virginia Transit	Bristol	VA	FR	5							P										
			DR	1																	
Charlottesville Transit Service	Charlottesville	VA	FR	22	[TR]	[GPS]				[X]	P						X				
City of Alexandria	Alexandria	VA	FR	42							P,I										
			DR	15							P										
City of Danville Mass Transit System	Danville	VA	FR	7	TR																
			DR	1	TR																
City of Fairfax CUEBus	Fairfax	VA	FR	12	[TR]	GPS				X	P,I		[SC]	X							
Greater Lynchburg Transit Company	Lynchburg	VA	FR	25																X	
			DR	4																	
Greater Roanoke Transit Company	Roanoke	VA	FR	38	TR															X	
JAUNT	Charlottesville	VA	FR	3		[GPS]				[X]	[P]										
			DR	62						X	[P]										
Loudoun County Commuter Bus Service	Leesburg	VA	FR	11	DIG						P										
Virginia Railway Express	Alexandria	VA	CR	57		GPS				X	P,W,I			X							
Addison County Transit Resources, Inc.	Middlebury	VT	FR	5	[DIG]					X	P	X						[X]			
Advance Transit	Wilder	VT	FR	18							P										
Chittenden County Transportation Authority	Burlington	VT	FR	38							[P]	[X]	[MS]	X	X			[X]			

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Green Mountain Express	Bennington	VT	FR	3																	
			DR	11											X						
Lake Champlain Transport Co.	Burlington	VT	FB	9	[DIG]						P	[X]									
Rural Comm. Transport	St. Johnsbury	VT	FR	5														X			
			DR	17											X						
Shorewell Ferries, Inc.	Shoreham	VT	FB	1							P										
The Brattleboro Bee Line	Brattleboro	VT	FR	1	DIG						P	[X]						X			
			DR	1	DIG						P										
Town and Village Transportation Services	Westminster	VT	FR	9	DIG						P	[X]									
			DR	6	DIG						P										
Ben Franklin Transit	Richland	WA	FR	61							P,W						X				
			DR	56						X	P				X					X	
Community Urban Bus Service	Longview	WA	FR	4	TR																
			DR	6	TR										X						
Intercity Transit	Olympia	WA	FR	42	TR,[DIG]						P,W,I	X	[SC]	X				[X]			
			DR	25	TR,[DIG]																
Pullman Transit	Pullman	WA	FR	4	[TR]																
			DR	4	[TR]																
Spokane Transit Agency	Spokane	WA	FR	129					[X]	X	P		MS							X	
			DR	88		GPS			[X]	X										X	
Valley Transit	Walla Walla	WA	FR	18						[X]								X			
			DR	6	[DIG]										X						
Yakima Transit	Yakima	WA	FR	21	[DIG]						P,W										
			DR	17																	
Chippewa Falls Shared Ride Taxi System	Chippewa Falls	WI	DR	7	TR,[DIG]																
City of Beloit Transit System	Beloit	WI	FR	10							P										
Community Transportation Systems	La Crosse	WI	FR	4	TR																
			DR	6	TR					X											
Green Bay Metro	Green Bay	WI	FR	43	TR,DIG						[P]								X		
			DR	27						X											

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Agency	City	State	Service Type	Vehicles (2000)	Advanced Communications	Automatic Vehicle Location	Vehicle Probes	Automatic Passenger Counters	Vehicle Component Monitoring	Automated Operations Software	Automated Transit Information	Multi-Modal Traveler Information	Automated Fare Payment	Multi-Carrier Fare Integration	Mobility Manager	Transportation Management Cente	Traffic Signal Priority	ITS Integration	Surveillance Cameras	Silent Alarms	Covert Microphones
Janesville Transit System	Janesville	WI	FR	23															[X]		
			DR	1																	
LaCrosse Municipal Transit Utility	LaCrosse	WI	FR	22	TR														X		
Madison Metro Transit	Madison	WI	FR	200	[TR],[DIG]	GPS		[X]	[X]	X	[P],[W],[I]									X	
			DR	20	[TR],[DIG]					X	[P]									[X]	[X]
Onalaska Shared Ride Taxi	Onalaska	WI	DR	3						X											
Oshkosh Transit System	Oshkosh	WI	FR	17	[DIG]																
			DR	27						X											
Sheboygan Transit System	Sheboygan	WI	FR	29	[TR]	[GPS]				[X]									X	X	
			DR	4						X											
Valley Transit	Appleton	WI	FR	30																	
			DR	14						[X]											
Wausau Area Transit System	Wausau	WI	FR	24															X	X	
			DR	11																	
Kanawha Valley Regional Transit Authority	Charleston	WV	FR	55	TR,DIG	[GPS]				[X]	P										X
			DR	13	TR,DIG										X						
Mid-Ohio Valley Transit Authority	Parkersburg	WV	FR	12									MS								
			DR	2															X		
Ohio Valley Regional Transit Authority	Wheeling	WV	FR	22	[DIG]																
			DR	4																	
Tri-State Transit	Huntington	WV	FR	31	DIG					X	P										
			DR	10																	
Weirton Transit Core	Steubenville	WV	FR	2							[P]										
			DR	1							[P]				X						
Cheyenne Transit	Cheyenne	WY	FR	10																	
			DR	12						X											
City of Casper	Casper	WY	DR	9	TR					X	P										

APPENDIX A - DEFINITIONS OF TERMS USED

Advanced Communications - digital radio (sound converted into binary information and transmitted across airwaves) and/or trunked radio (a computer selection of an available frequency, as opposed to manual selection or use of pre-set frequency).

Automated Fare Payment - payment schemes by which riders pay for individual trips by non-paper media (e.g., magnetic stripe card or smart card) purchased in advance or pay for their trips by credit or debit cards.

Automated Operations Software - software that displays automatic vehicle location-equipped vehicle positions, vehicle data, operator data, and communications information on dispatcher monitors; automated control software for light, heavy, or commuter rail systems; automated scheduling software for demand response service. (This category does not include basic run-cutting and scheduling packages for fixed route services which, off-line, develop set schedules for buses and drivers.)

Automated Transit Information - systems that either provide route, schedule, stop, transfer, fare, trip planning, and/or real-time schedule adherence or arrival information to the public directly, without human intervention.

Automatic Passenger Counter - an automated means of counting boarding and alighting passengers (e.g., treadle mats or infrared beams placed by the door).

Automatic Vehicle Location - position determination via an automatic technology or combination of technologies, such as Global Positioning System (triangulation of satellite signals), Signposts (beacons at known locations transmit signals picked up by vehicle), Ground-Based Radio (triangulation of radio tower signals), or Dead-Reckoning (vehicle's odometer and compass used to measure new position from previous known position), and typically includes real-time reporting of that location to a dispatcher.

Covert Microphone - a hidden microphone on the vehicle that can be opened by the dispatcher to listen to what is happening on the vehicle during emergency situations.

ITS Integration - the sharing of information on traffic and incidents, the sharing of infrastructure (buildings, computer systems, communications), or coordinated operations with another agency (TMCs, joint development of common control strategy).

Mobility Manager - coordination of travel requests and vehicle dispatching for multiple agencies (e.g., social service agencies, HHS, transit agencies, etc.) Riders or agencies are billed by the Mobility Manager.

Multi-Modal Traveler Information - information made available to the public from a single source covering multiple modes (i.e., transit and traffic or different transit modes operated by several transit providers).

Multi-Carrier Fare Integration - any fare structure or payment mechanism which covers more than one provider. This includes cards, tokens, transfers, or other payment media (other than cash) that is accepted by at least two providers (including toll agencies).

Silent Alarm - an emergency signal activated by the vehicle operator pushing a concealed button that alerts the dispatch center that an emergency situation exists on-board the vehicle.

Surveillance Camera - video camera located inside the vehicle to record actions taking place on the vehicle.

Traffic Signal Priority - a means of giving transit vehicles priority at traffic signals by advancing the green signal phase or extending the green phase in order to minimize the delay. The priority may be actuated manually (e.g., by the driver pressing a switch on the vehicle) or automatically (e.g., linked to an AVL system).

Transportation Management Center - a facility housing the operations management centers for at least two transportation modes. This might include highway congestion mitigation (e.g., assist in incident management) and transit dispatching.

Vehicle Component Monitoring - continuous automatic remote measurement of vehicle component status (i.e., engine oil pressure, engine temperature, electrical system, tire pressure, etc.).

Vehicle Probe - AVL equipped transit bus data provided to highway agencies for calculation of roadway travel times, travel speeds, and flow conditions.

APPENDIX B - 1995-2000 DEPLOYMENT DATA

Advanced Communications

Survey Year	1995	1998	2000
Operational	58	140	229
Planned	22	81	94
Total	80	221	323

Automatic Vehicle Location

Survey Year	1995	1998	2000
Operational	22	61	88
Planned	64	100	142
Total	86	161	230

Automatic Passenger Counters

Survey Year	1995	1998	2000
Operational	11	24	33
Planned	21	30	74
Total	32	54	107

Vehicle Component Monitoring

Survey Year	1995	1998	2000
Operational	5	13	46
Planned	24	31	68
Total	29	44	114

Automated Operations Software

Survey Year	1995	1998	2000
Operational	92	124	177
Planned	68	72	132
Total	160	196	309

Automated Transit Information

Survey Year	1995	1998	2000
Operational	48	89	291
Planned	45	75	48
Total	93	164	339

Automated Fare Payment

Survey Year	1995	1998	2000
Operational	22	42	98
Planned	43	68	77
Total	65	110	175

Traffic Signal Priority

Survey Year	1995	1998	2000
Operational	9	16	30
Planned	18	40	58
Total	27	56	88