Session 3

National ITS/CVO Program: Status and Policy Issues

Presentation Outline

- Vision, goals, and objectives
- Program areas
  - Safety assurance
  - Credentials administration
  - Electronic screening
  - Carrier operations
  - CVISN
  - Mainstreaming

Vision and Mission

- **ITS/CVO vision statement**
  - **Assisted by technology, trucks and buses will move safely and freely throughout North America**
- **ITS/CVO mission statement**
  - **To achieve the vision by using cost-effective methods and technologies to streamline state regulatory, enforcement, and motor carrier practices, while increasing levels of safety and productivity for both states and carriers, thus improving highway safety for all**

ITS/CVO Goals and Objectives

- **Improve highway safety**
- **Streamline credentials and tax administration**
- **Reduce congestion costs for motor carriers**
- **Ensure regulatory compliance and equitable treatment**

National ITS/CVO Program Framework

Program Areas

Safety Assurance	Credentials Administration	Electronic Screening	Carrier Operations
• Access to driver, vehicle, and carrier safety information • Automated inspections and reviews • Onboard safety monitoring	• Electronic credentialling • Electronic one-stop shopping • Interagency data exchange • Interstate data exchange	• Automated weight and credentials screening (fixed site) • International border clearance	• Fleet and vehicle management • Traveler information systems • Hazardous materials incident response

CVISN Architecture (Technical Infrastructure)

Mainstreaming (Organizational Infrastructure)

Representative ITS/CVO Activities

Automation

- Computers for administrative and enforcement personnel
- Software for credentials and inspections
- Weigh-in-motion systems
- Onboard safety monitoring

Networking

- Electronic data interchange
- Electronic funds transfer
- Information "brokers"

Process Change

- Transparent borders
- One-stop shopping or electronic non-stop shopping
- Performance-based safety management
- Credentials reengineering

Safety Assurance

Program Areas

Safety Assurance	Credentials Administration	Electronic Screening	Carrier Operations
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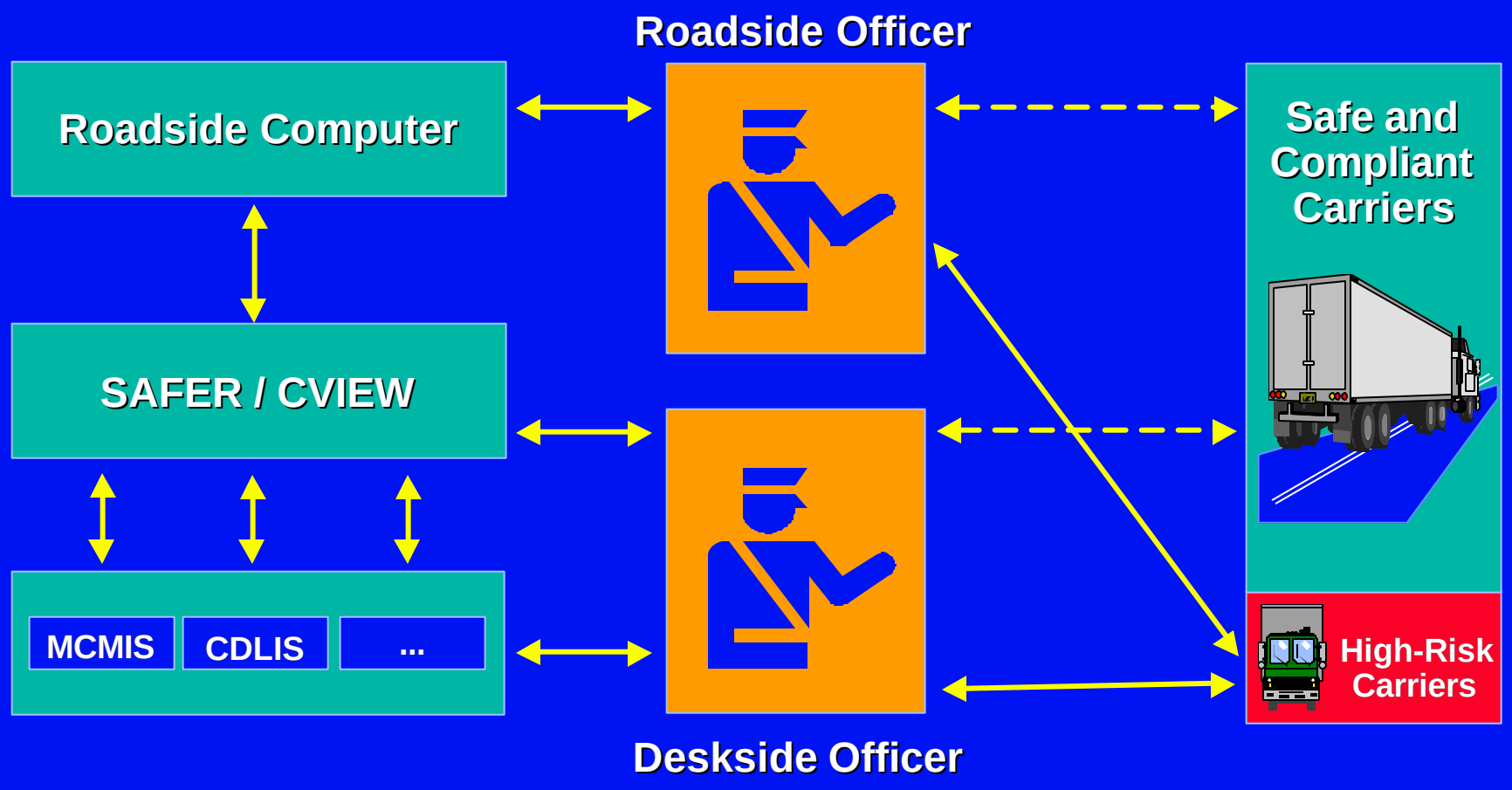
CVISN Architecture (Technical Infrastructure)

Mainstreaming (Organizational Infrastructure)

ITS/CVO Safety Assurance Program Area

- **Objective**
  - **Improve highway safety by focusing enforcement resources on high-risk carriers, drivers, and vehicles**
    - Improve deskside and roadside access to safety information
    - Improve safety inspection and review processes
    - Enhance ability to monitor the enroute safety status of the vehicle and driver
- **Expected benefits**
  - **Reduced frequency and severity of accidents**
  - **Reduced compliance costs for safe and legal carriers**
  - **More efficient enforcement operations**

Safety Assurance Operational Concept



Safety Assurance Project Areas

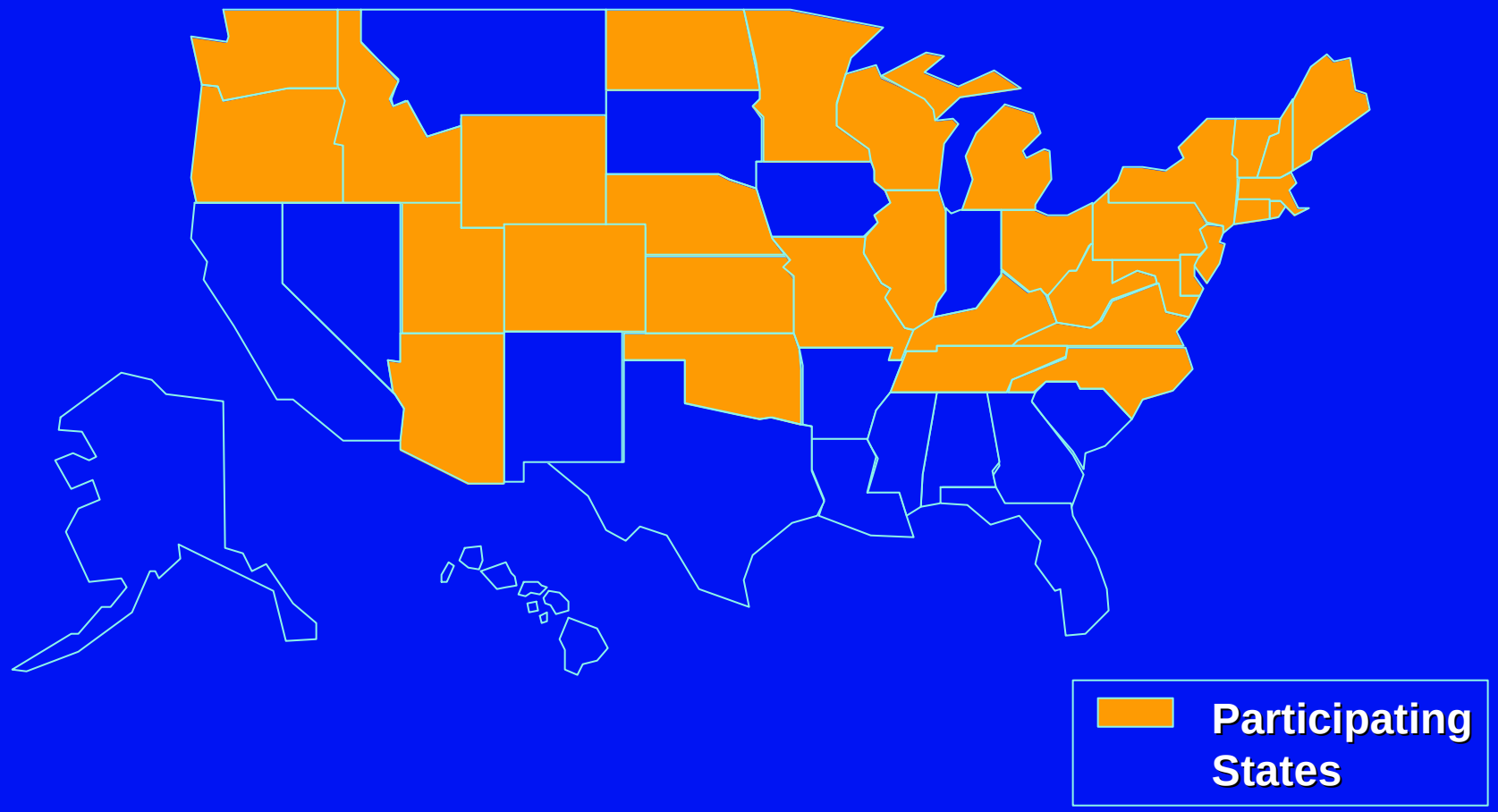
- **Motor carrier safety fitness determination**
- **Automated inspections and reviews**
- **Safety information exchange**
- **Onboard safety monitoring**

Motor Carrier Safety Fitness Determination

- **New entrant program**
- **SafeStat**
- **Progressive compliance assurance program**

Safety Assurance Projects

100/200 Motor Carrier Safety Assistance Program Sites



Motor Carrier Safety Performance Information

Motor Carrier SafeStat Score

Accident Safety Evaluation Area

Candidate Data
- Reportable accidents
- Annual recordable/ preventable accidents
- Preventable accidents

Normalizing Data
- Vehicle miles traveled in prior 12 months
- Number of power units owned and term-leased
- Miles traveled (IRP and IFTA reporting and audits)

Driver Safety Evaluation Area

Candidate Data
- Driver rating
- Operational rating
- Driver OOS violations
- Jumping driver OOS orders
- Jumping vehicle OOS orders
- Driver citations
- Driver violations
- Driver accident history
- CDL status
- Driver convictions

Vehicle Safety Evaluation Area

Candidate Data
- Vehicle OOS violations
- Vehicle rating
- Vehicle violations
- Qualifying terminal audits
- Size and weight violations

Safety Management Safety Evaluation Area

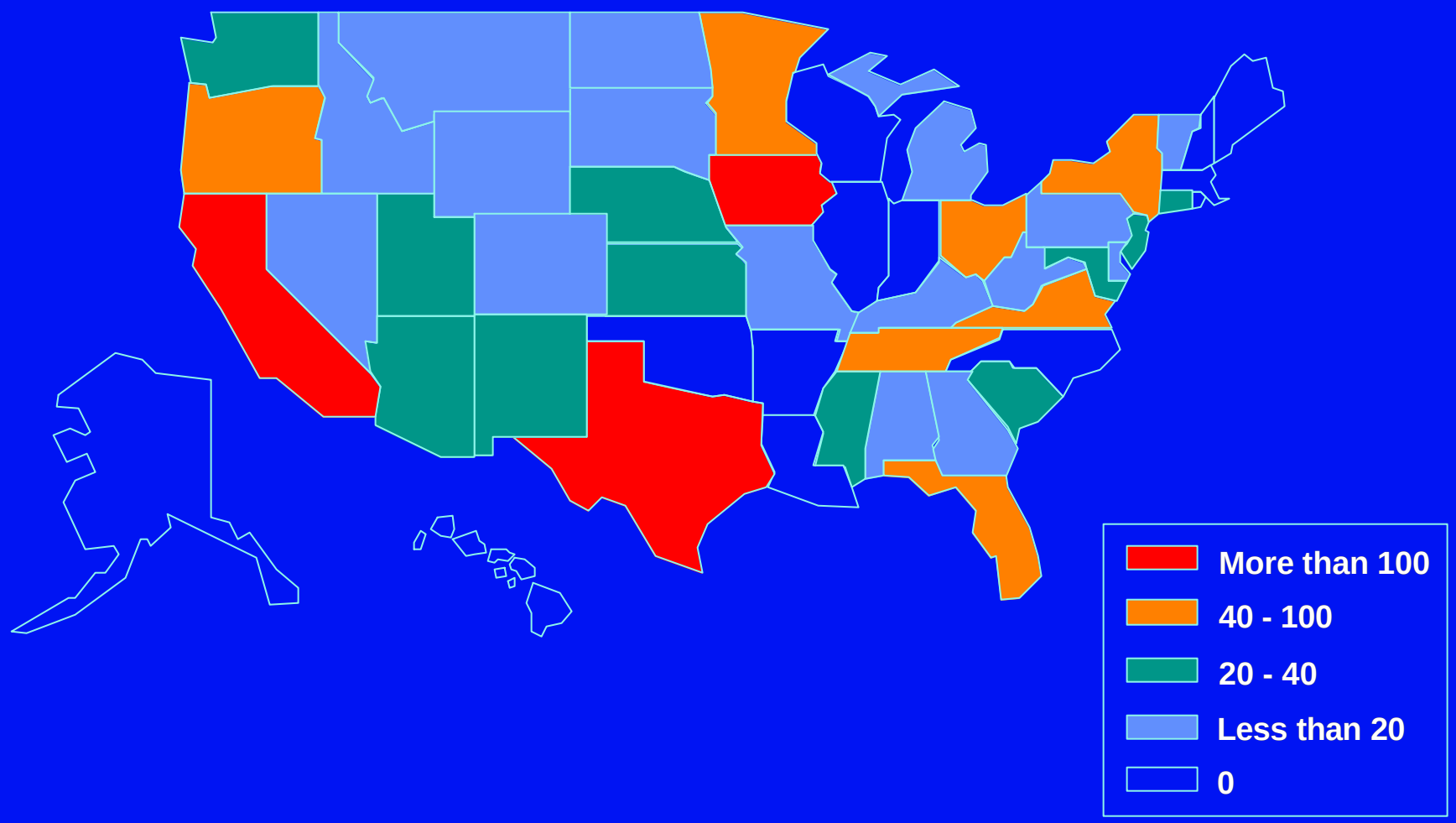
Candidate Data
- General rating
- HazMat rating
- Enforcement history closed cases
- HazMat OOS violations
- Safety management programs

Source: Volpe National Transportation Systems Center

Automated Inspections and Reviews

- **Inspection data collection**
- **Brake testing**
- **Automated Safety Assessment Program**

Number of Inspection Systems in Use, 1997



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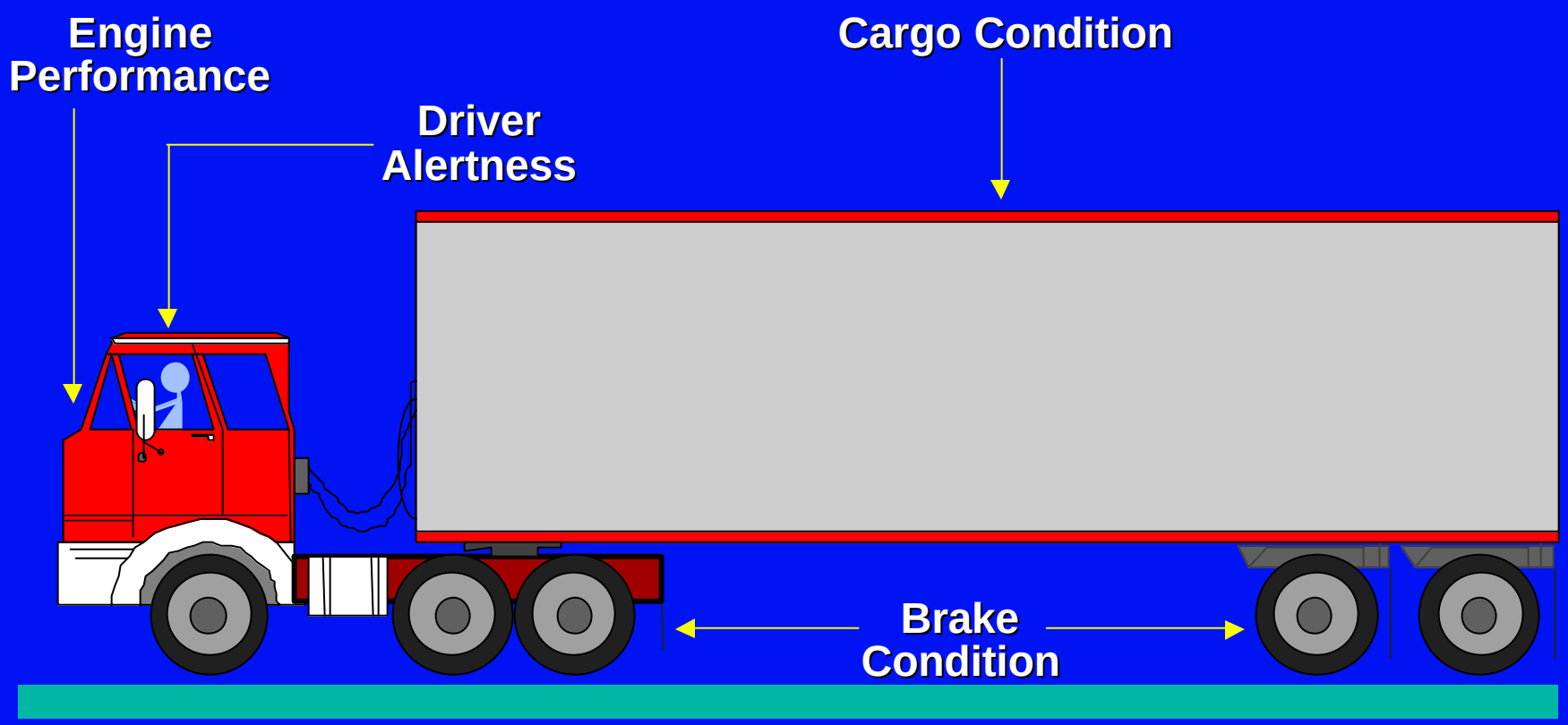
Safety Information Exchange

- Safety and Fitness Electronic Records (SAFER)
- Commercial Vehicle Information Exchange Window (CVIEW)
- Motor Carrier Management Information System (MCMIS) and SAFETYNET
- Commercial Drivers License Information System

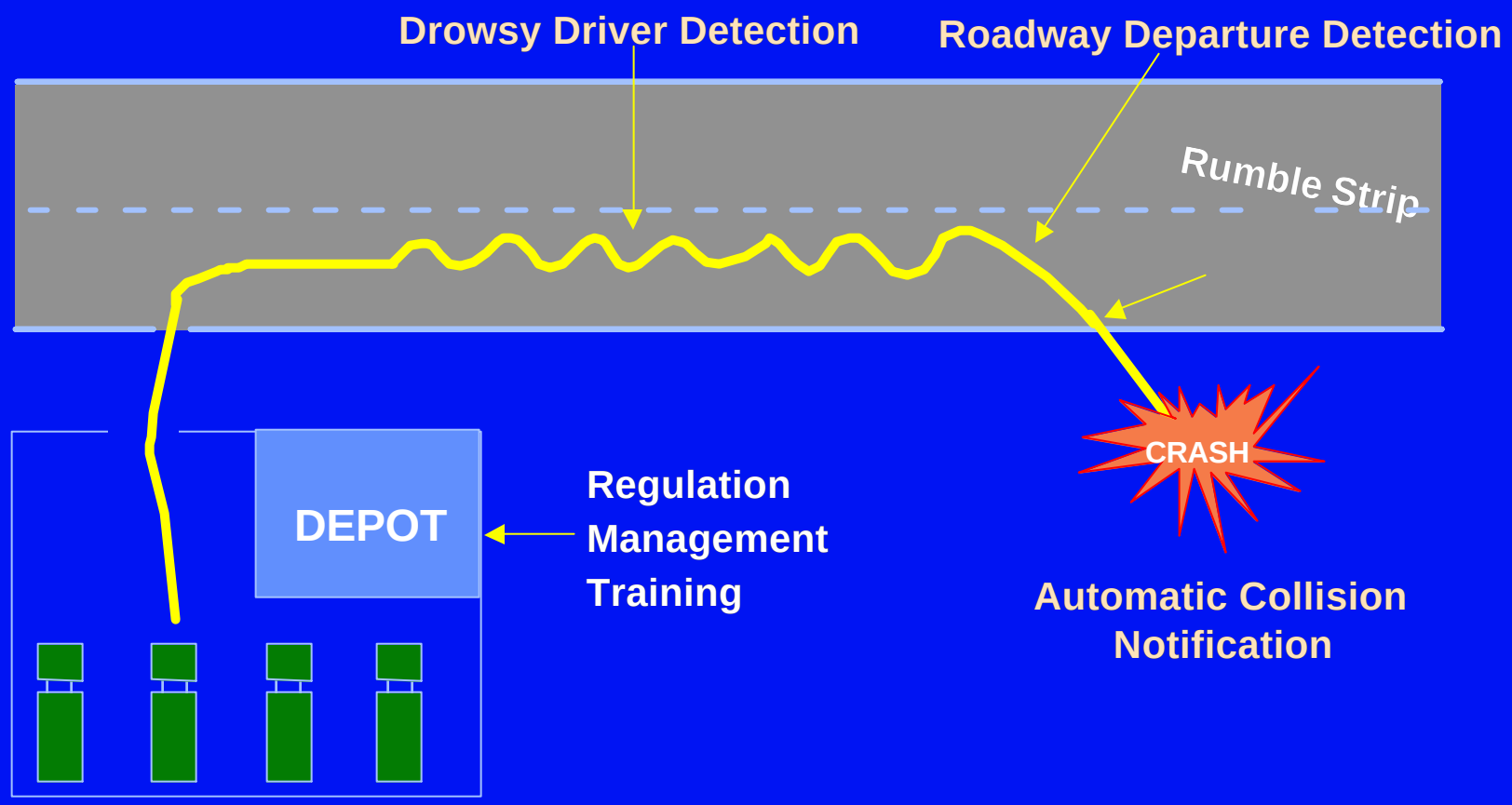
Onboard Safety Monitoring

- **Improved braking systems and brake monitoring systems**
- **Vehicle incident recorder and automated collision notification**
- **“Smart Cards”**
- **Driver monitoring**

Onboard Safety Monitoring



Crash Reduction Intervention Points



OCAR Program
Other Programs (e.g. States, FHWA)

Safety Assurance Outlook

- **Markets**
  - **States will augment fixed sites with mobile safet screening operations (i.e., "plug 'n play") and link roadside and deskside enforcement (CVIS model)**
- **Expected benefits**
  - **State police/state patrol agencies will continue as leads**

Safety Assurance Outlook (continued)

- **Technology**
  - **SafeStat and SAFER will be critical elecments; machine-vision video will emerge as important screening tool to "level the playing field"**

- **Expected benefits**
  - **Federal government will expand funding for capital and "level the playing field"**

Safety Assurance Critical Success Factors

- Adoption of uniform criteria for identifying high-risk carriers, vehicles, and drivers (e.g., SafeStat, OOS citations

- Adoption of unique carrier/vehicle identifier for interstate and intrastate motor carriers (e.g., extended USDOT number)

- Training for state enforcement officials, motor carrier safety managers, and drivers

- Funding for equipment, operations, and maintenance

- Measurable benefits for safe and legal carriers

Credentials Administration

Program Areas

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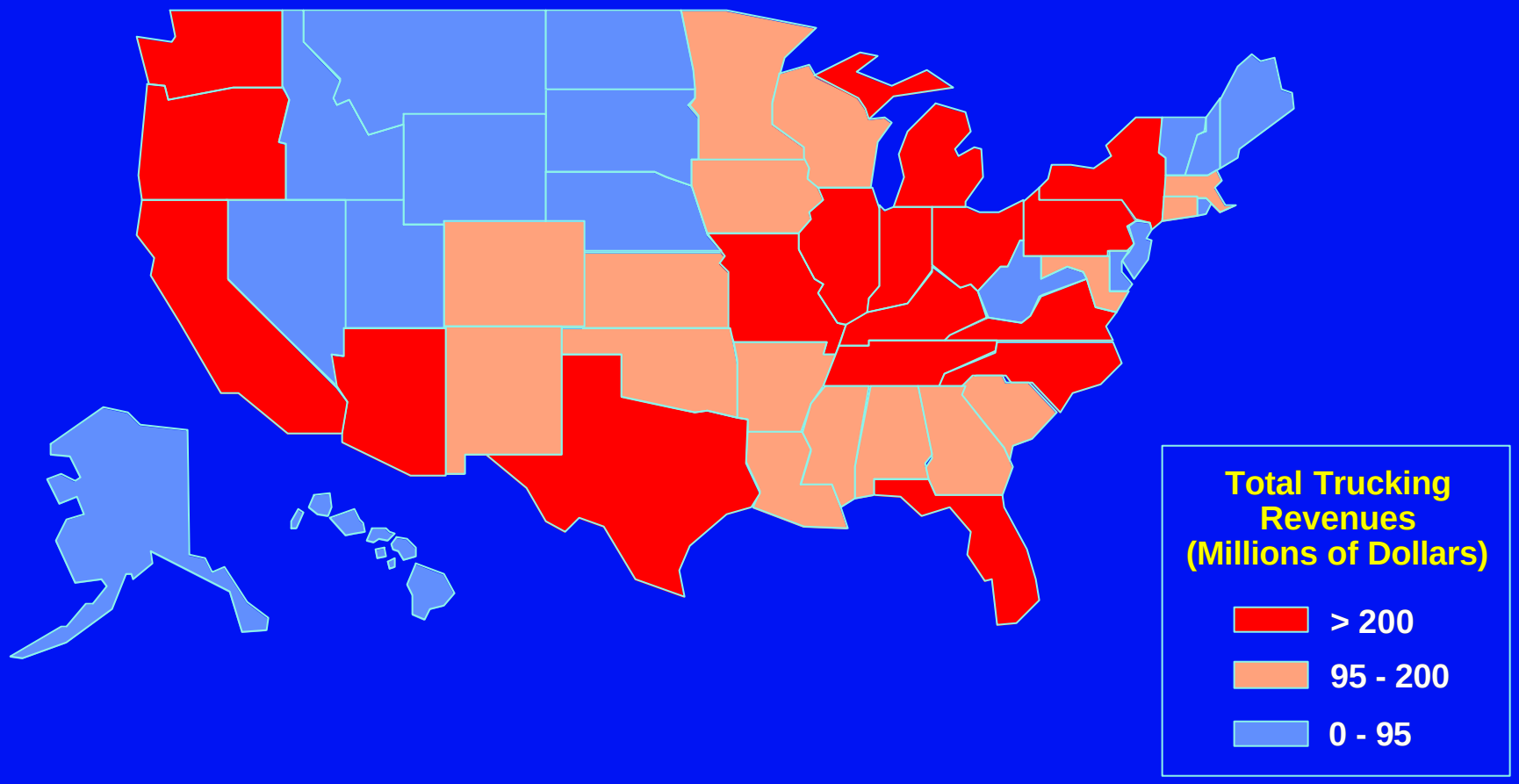
CVISN Architecture (Technical Infrastructure)

Mainstreaming (Organizational Infrastructure)

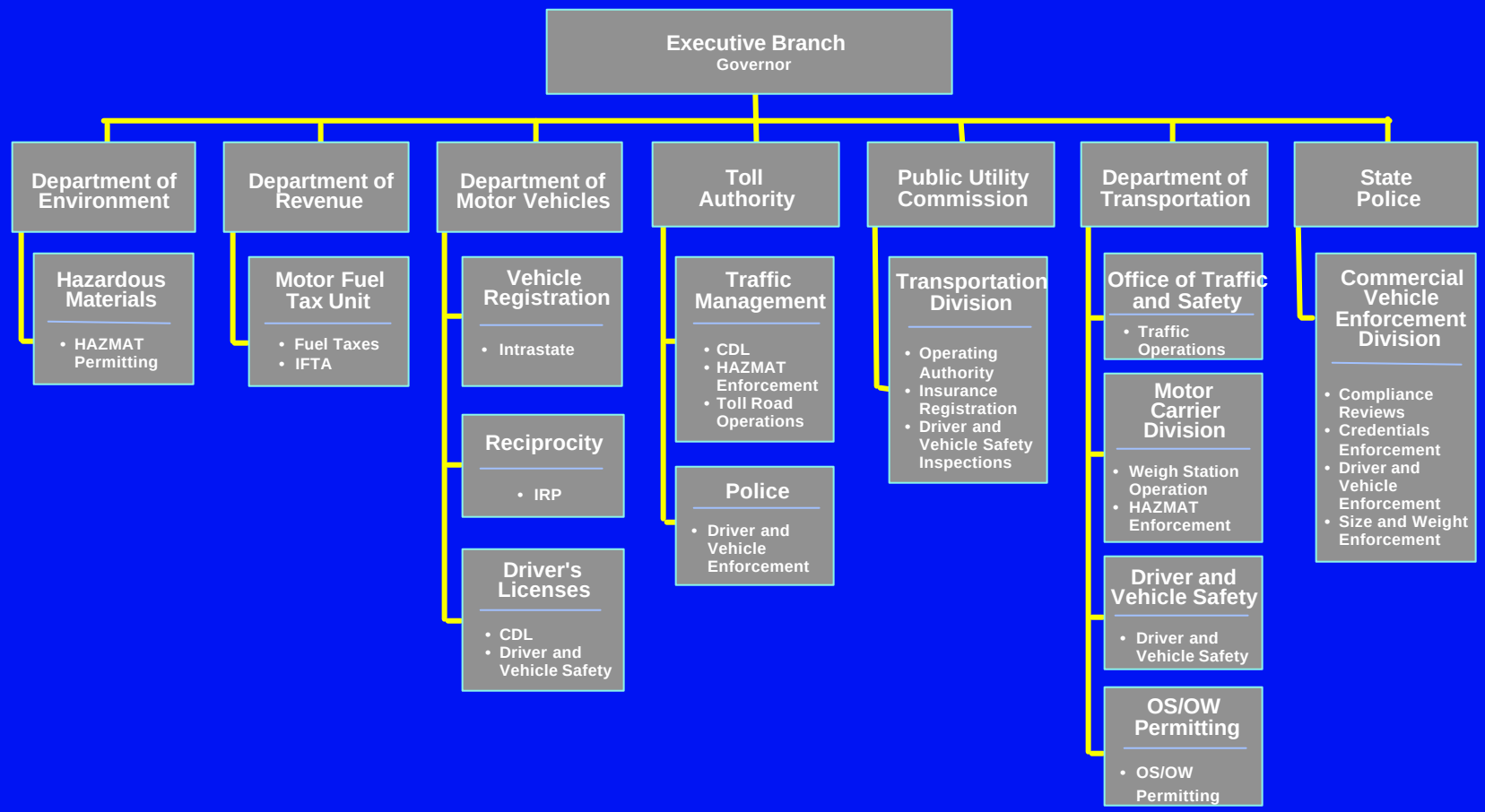
ITS/CVO Credentials Administration Program Area

- **Objective**
  - **Streamline credentials and tax administration**
    - Enable electronic credentialing and tax filing
    - Enhance interagency and interstate data and funds exchange
    - Provide credentials information to authorized officials
- **Expected benefits**
  - **Reduced cost and red tape for agencies and carriers**
  - **Improved regulatory compliance**

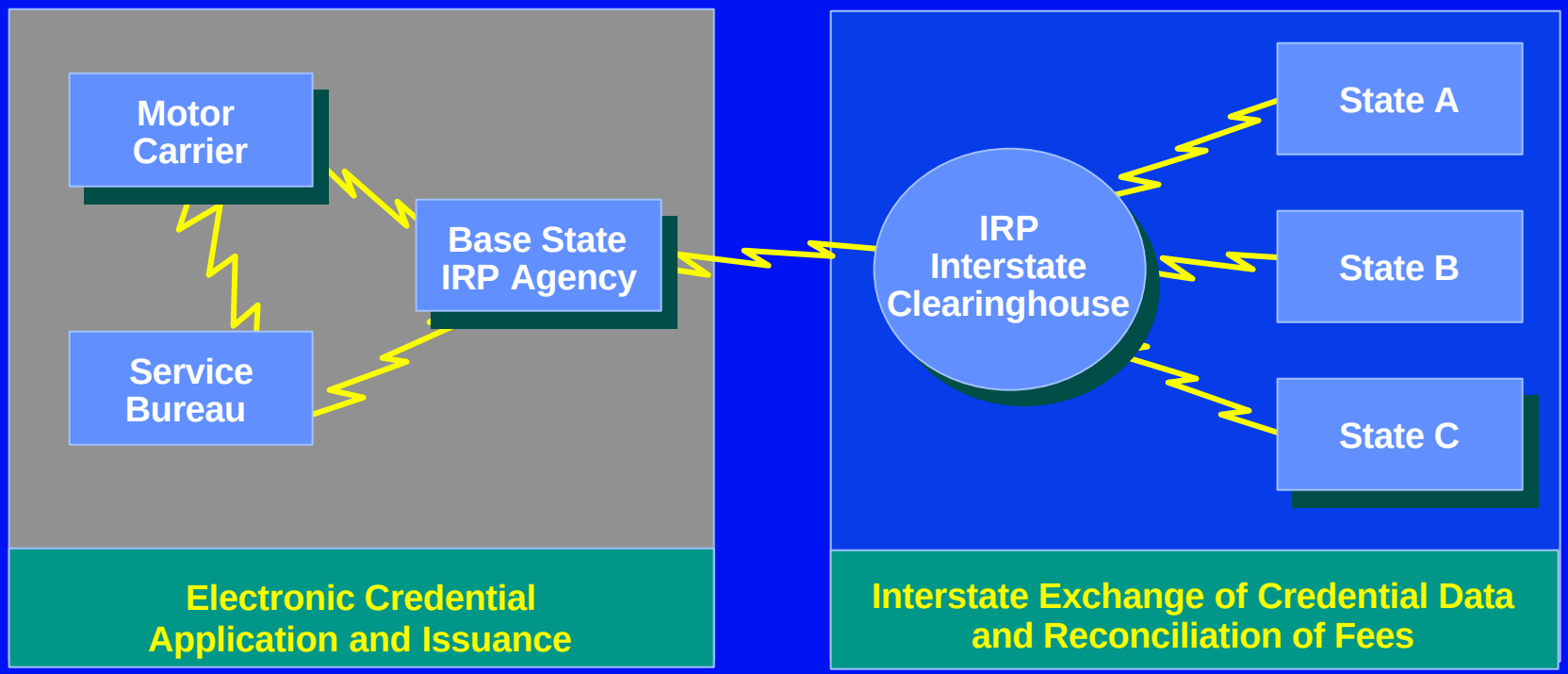
Highway User Taxes Paid by Medium and Large Trucks, 1992



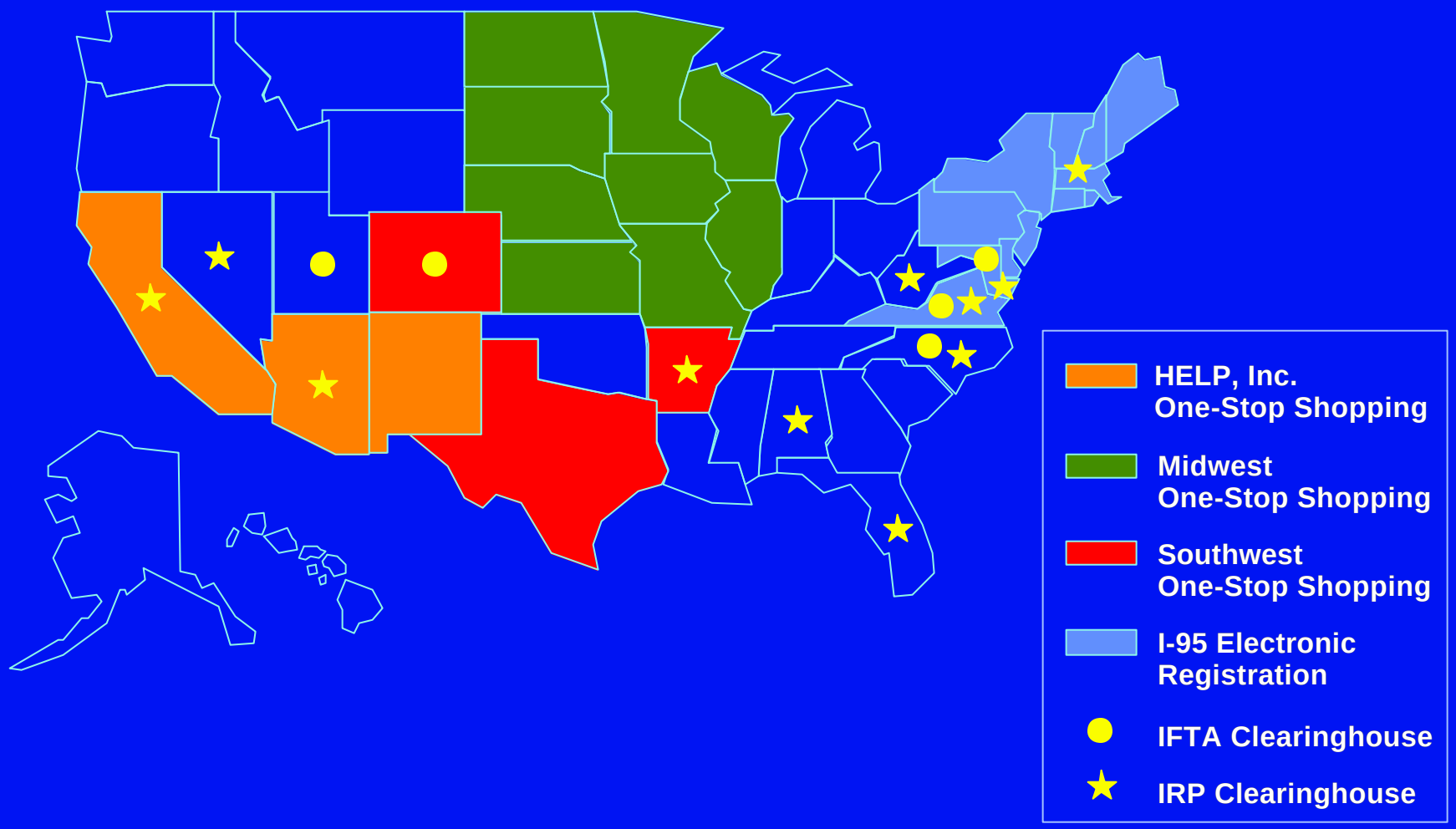
State Organization of Motor Carrier Regulatory Responsibilities (Example)



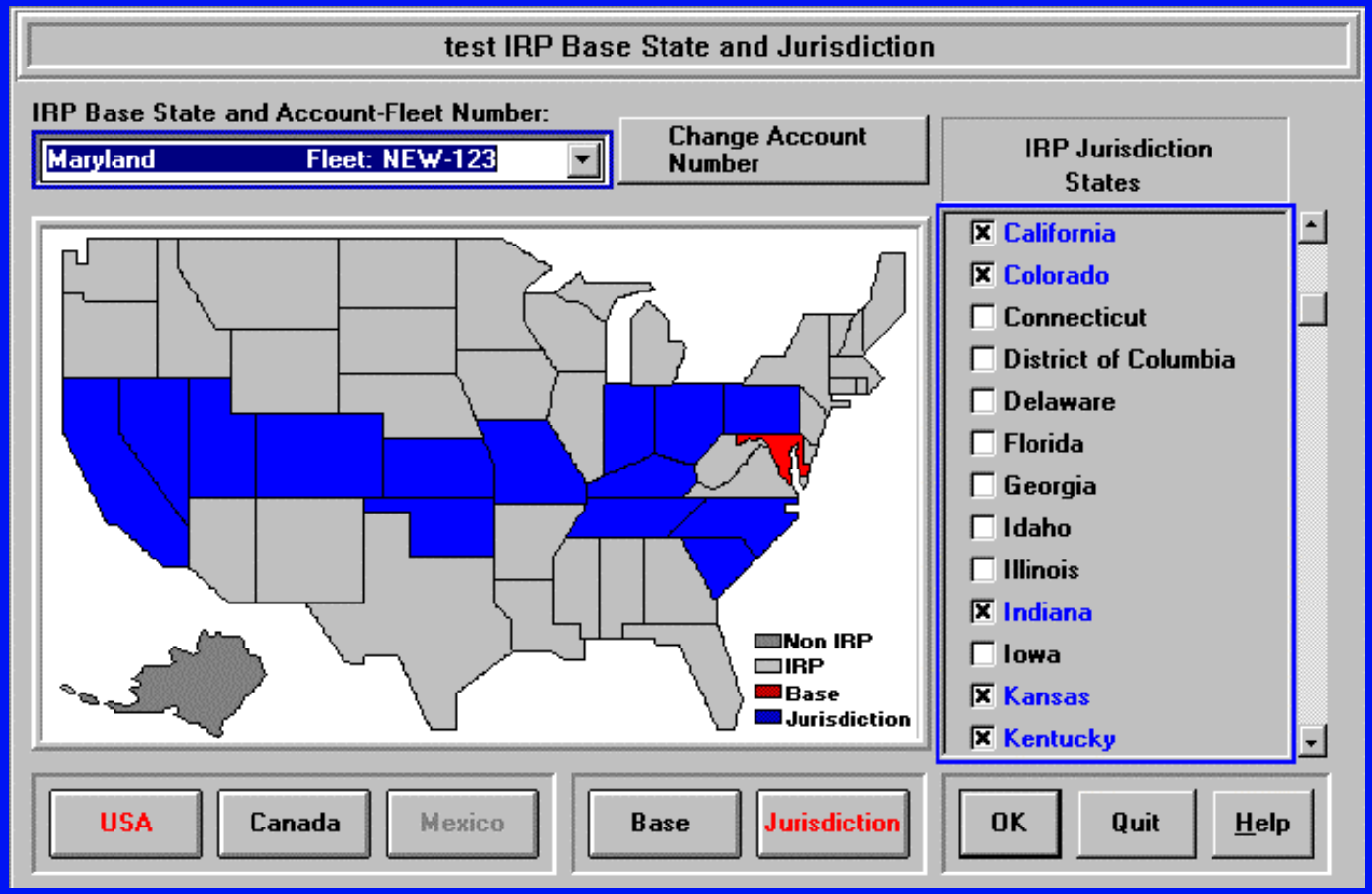
Electronic Registration Operational Concept



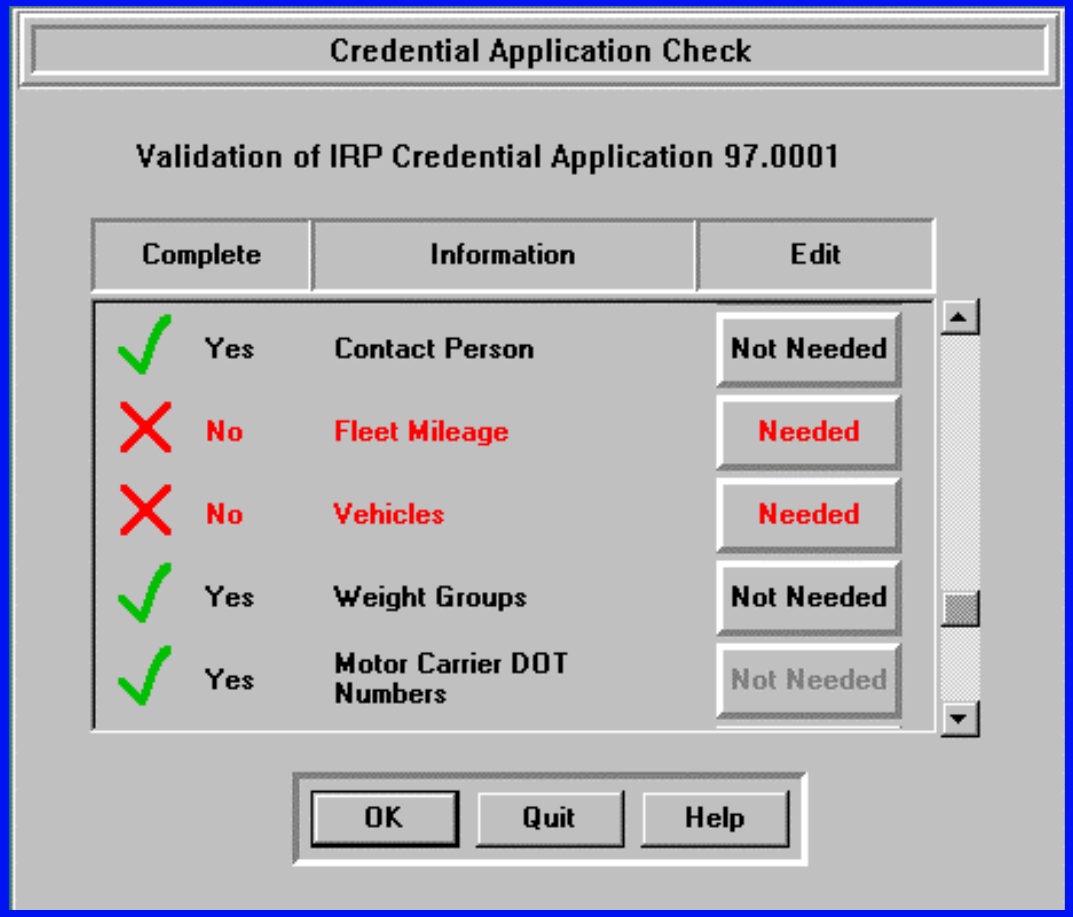
Credentials Administration Projects



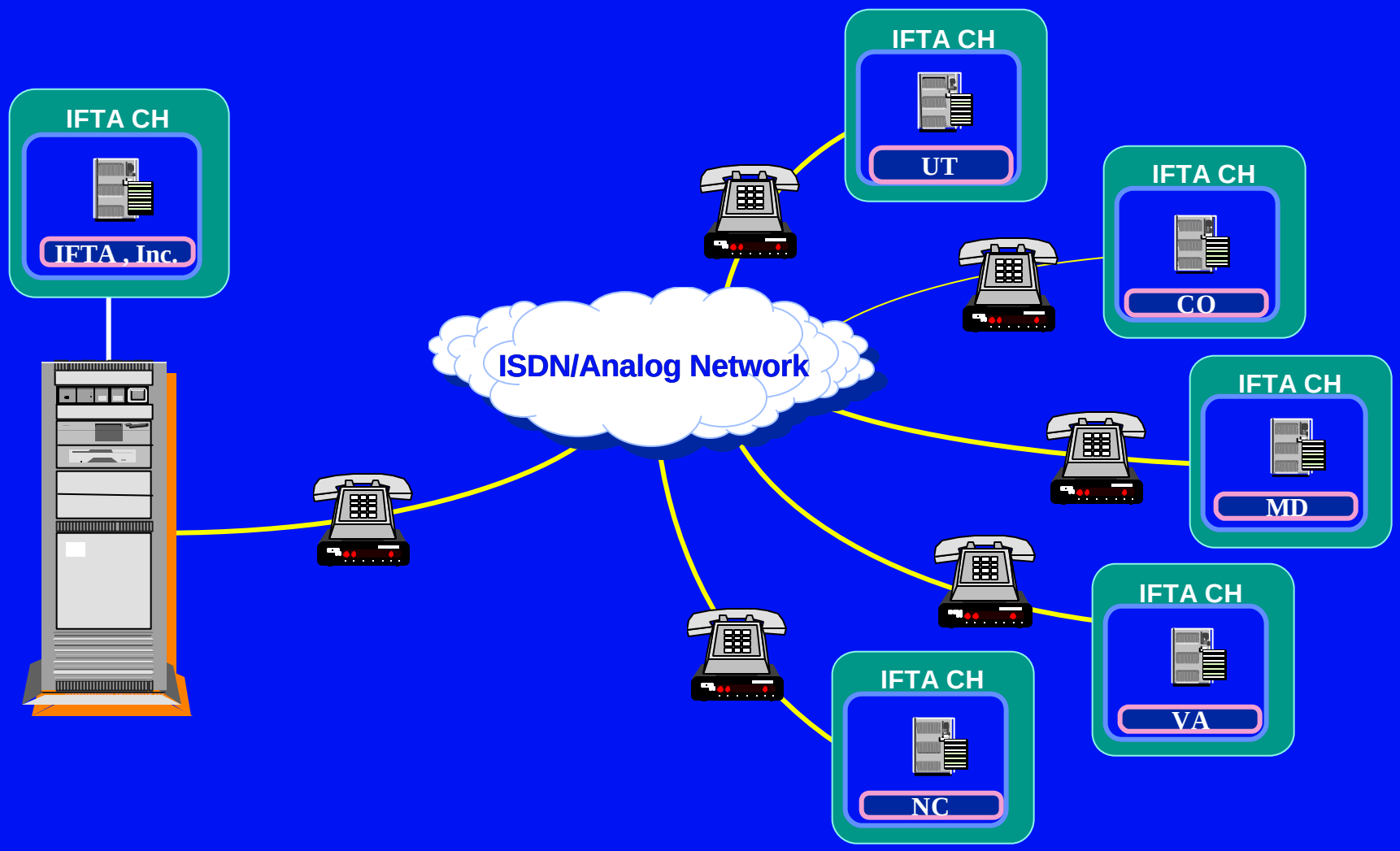
Credentials Application



Application Check List



IFTA Clearinghouse



IRP Clearinghouse
Funds Transfer Process

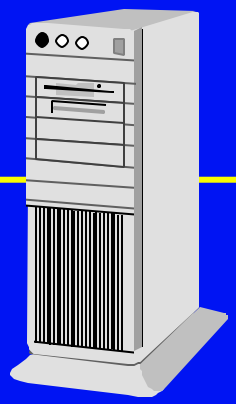
Jurisdiction End-User

Deposits Funds to IRP Bank

IRP Help Desk

Helps Jurisdiction

Sends Post-Netting Notice



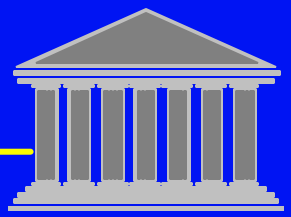
Central Information Site

Verifies Deposits to IRP Bank

Authorizes Bank Payments/ Reverse Deposits

Updates Bank Database

Provides Post-Netting Report to Jurisdiction



IRP Bank

Transmits Funds to Jurisdiction

Credentials Administration

- **Markets**
  - **State and Carrier Markets will expand rapidly as software including WWW applications, become available**
- **Expected benefits**
  - **DMV will assume leadership in most states**

Credentials Administration Outlook (continued)

- **Technology**
  - **EDI standards and clearinghouses will be the critical Federal contribution; third parties will integrate software into motor carrier MIS products**
- **Financing**
  - **O&M will be funded by state DMV budgets because costs are moderate and potential B/C ratios are high**

Credentials Administration Critical Success Factors

- **Adoption of EDI standards by states and motor carrier industry**
- **Marketing of services and availability of software from states and third-party service providers**
- **State participation in clearinghouse**
- **Acceptance of electronic credentials by states and motor carriers**
- **Measurable benefits for large and small carriers**

Electronic Screening

Program Areas

Safety Assurance	Credentials Administration	Electronic Screening	Carrier Operations
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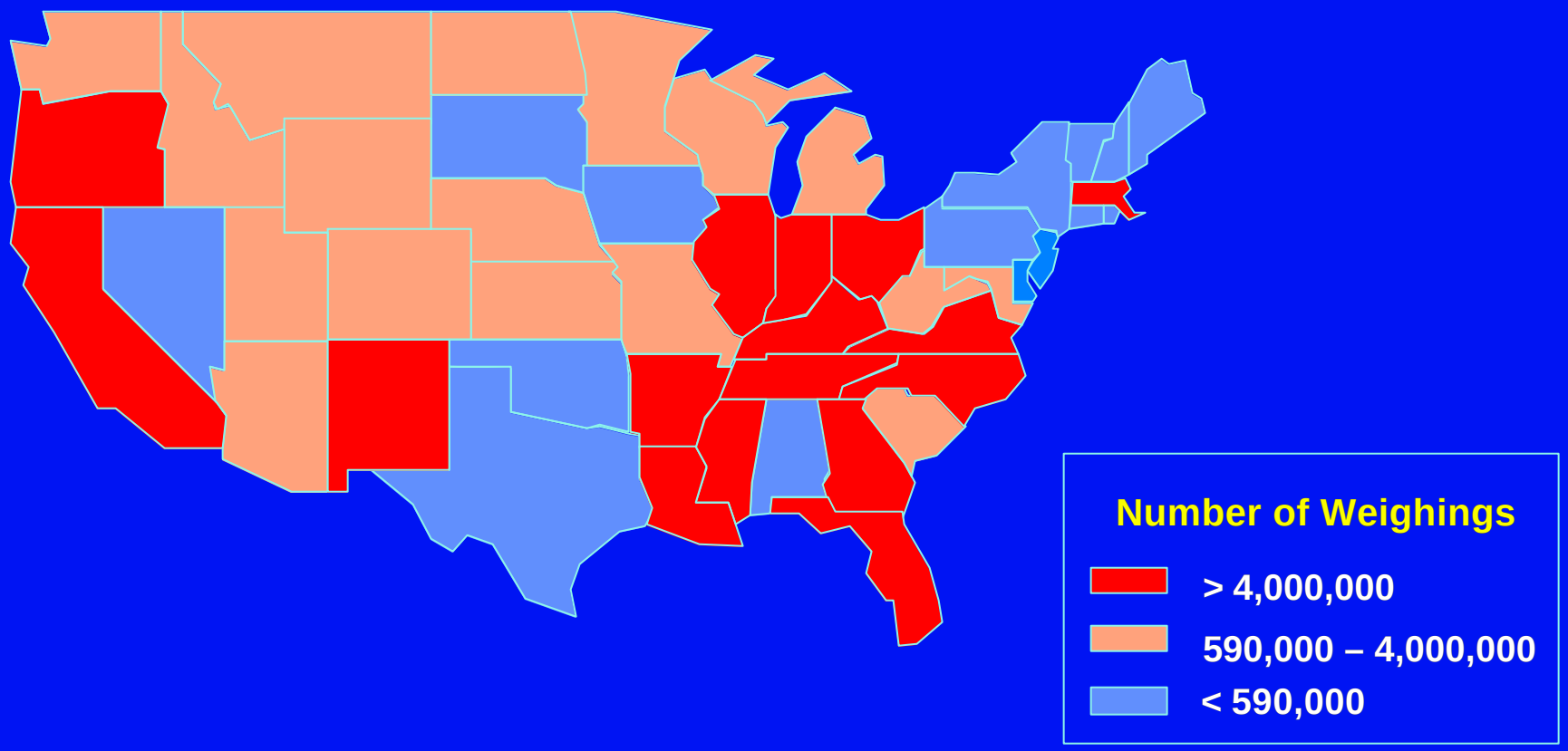
CVISN Architecture (Technical Infrastructure)

Mainstreaming (Organizational Infrastructure)

ITS/CVO Electronic Screening

- **Objective**
  - **Improve the screening of vehicles by roadside enforcement operations**
    - Identify carriers, drivers, and vehicles operating unsafely or illegally
    - Reduce the frequency and duration of stops for safe and legal carriers
    - Increase reliance on mobile enforcement
- **Expected benefits**
  - **Reduced delays for compliant carriers**
  - **Decreased risk of accidents resulting from traffic queues at inspection sites**
  - **Improved freight mobility**

Permanent Weighings Stations by State, 1993



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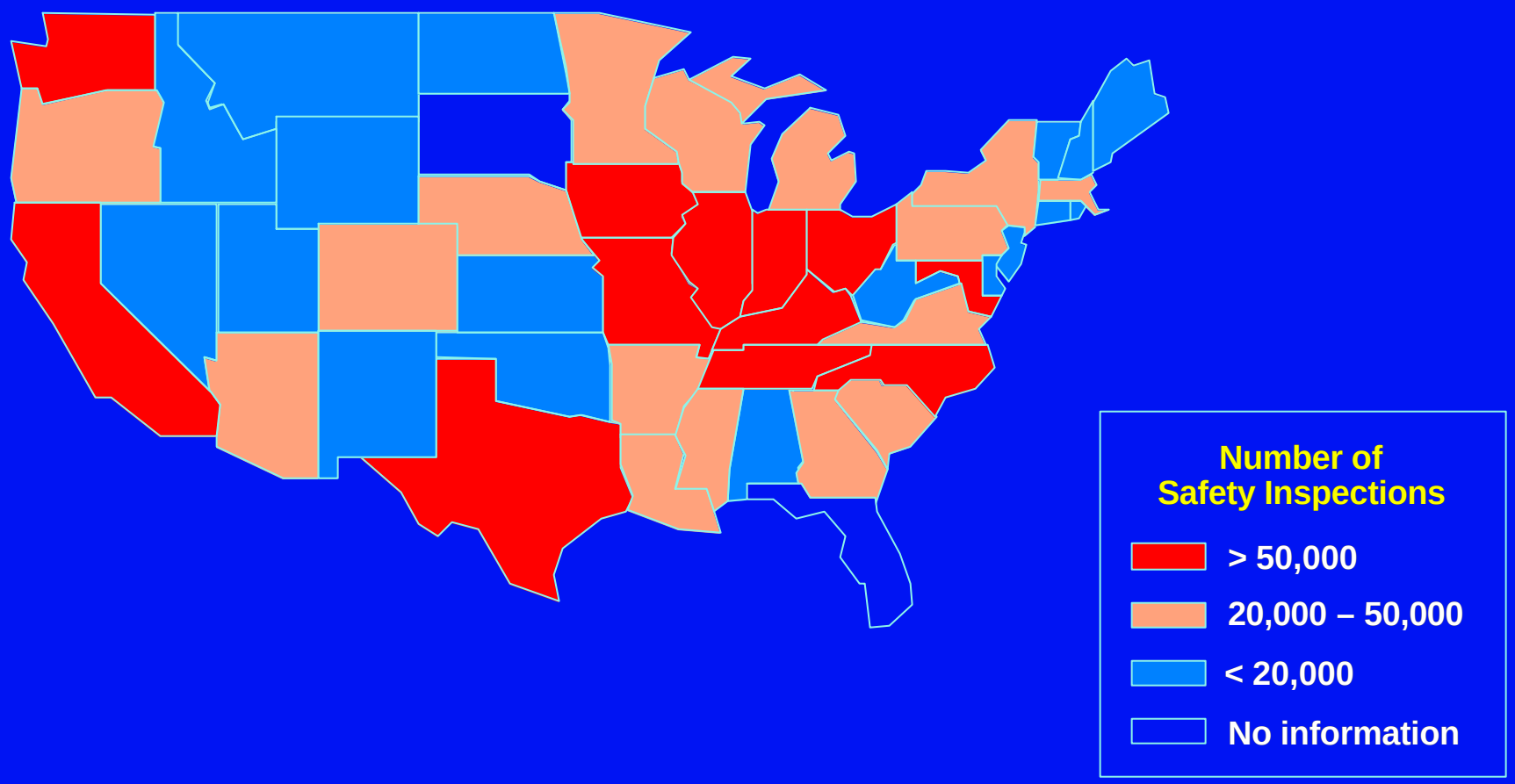
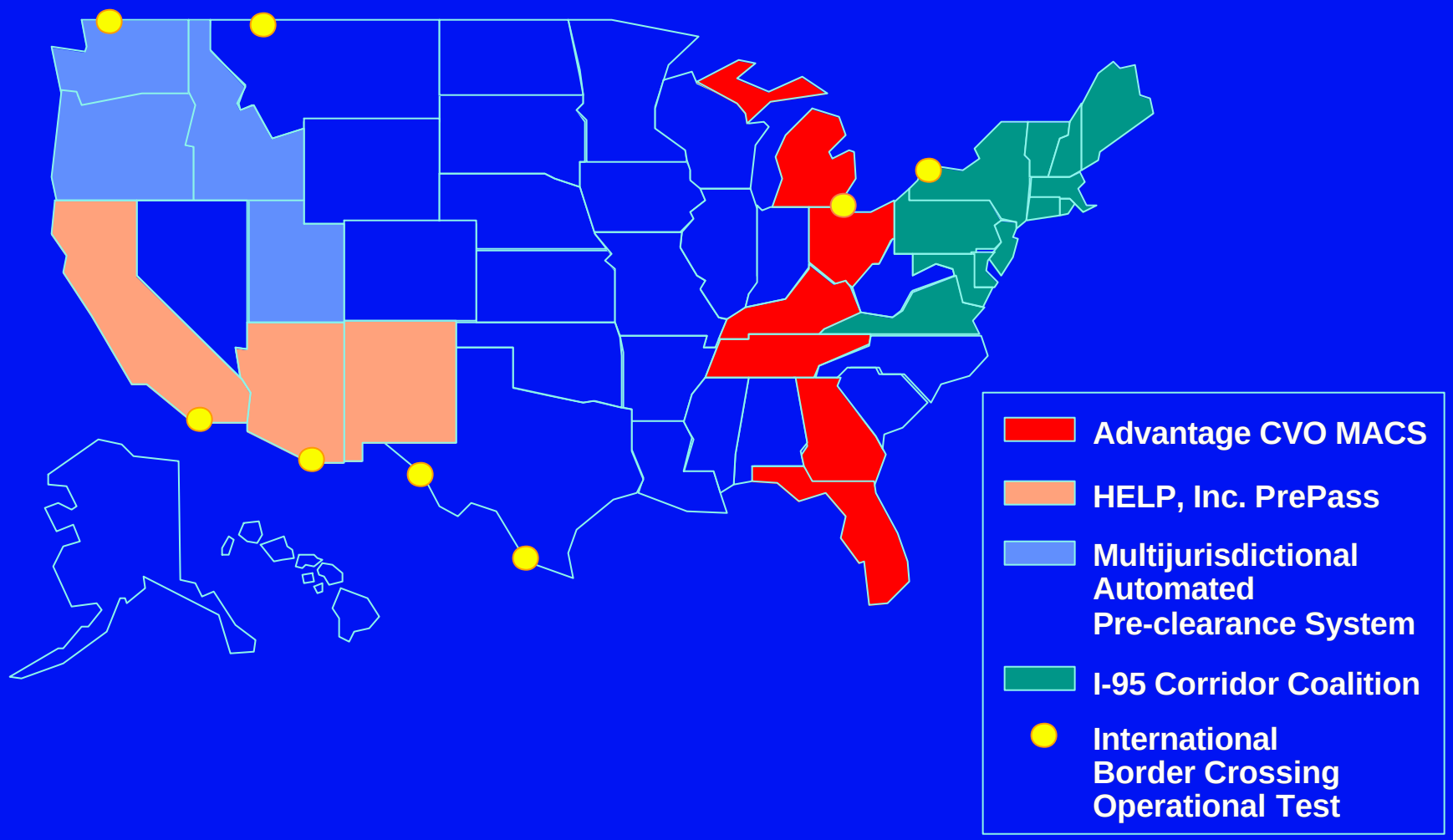
Motor Carrier Safety Inspections by State, 1993



Electronic Screening Projects



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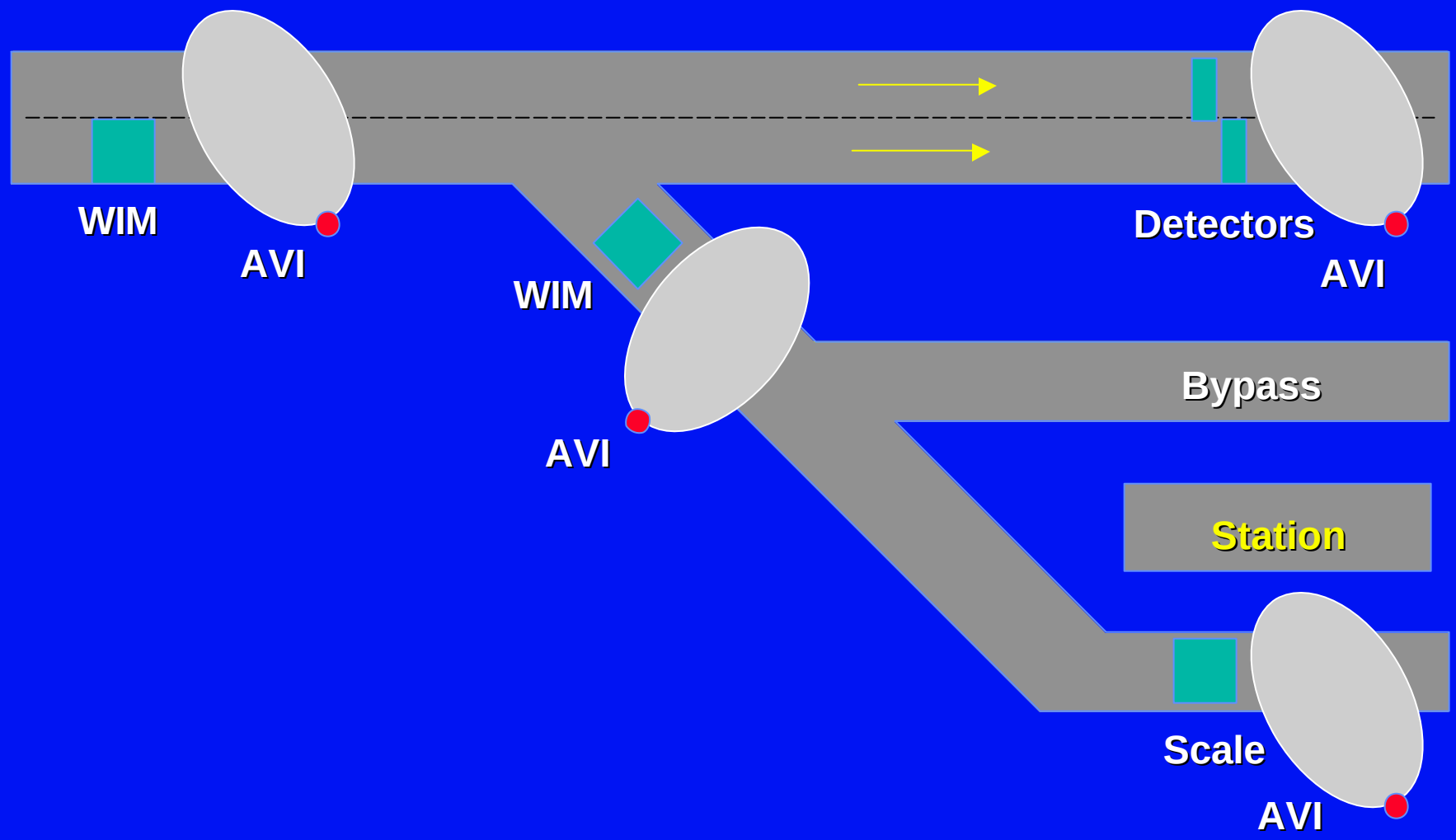
Electronic Screening Operational Concept
Fixed Station



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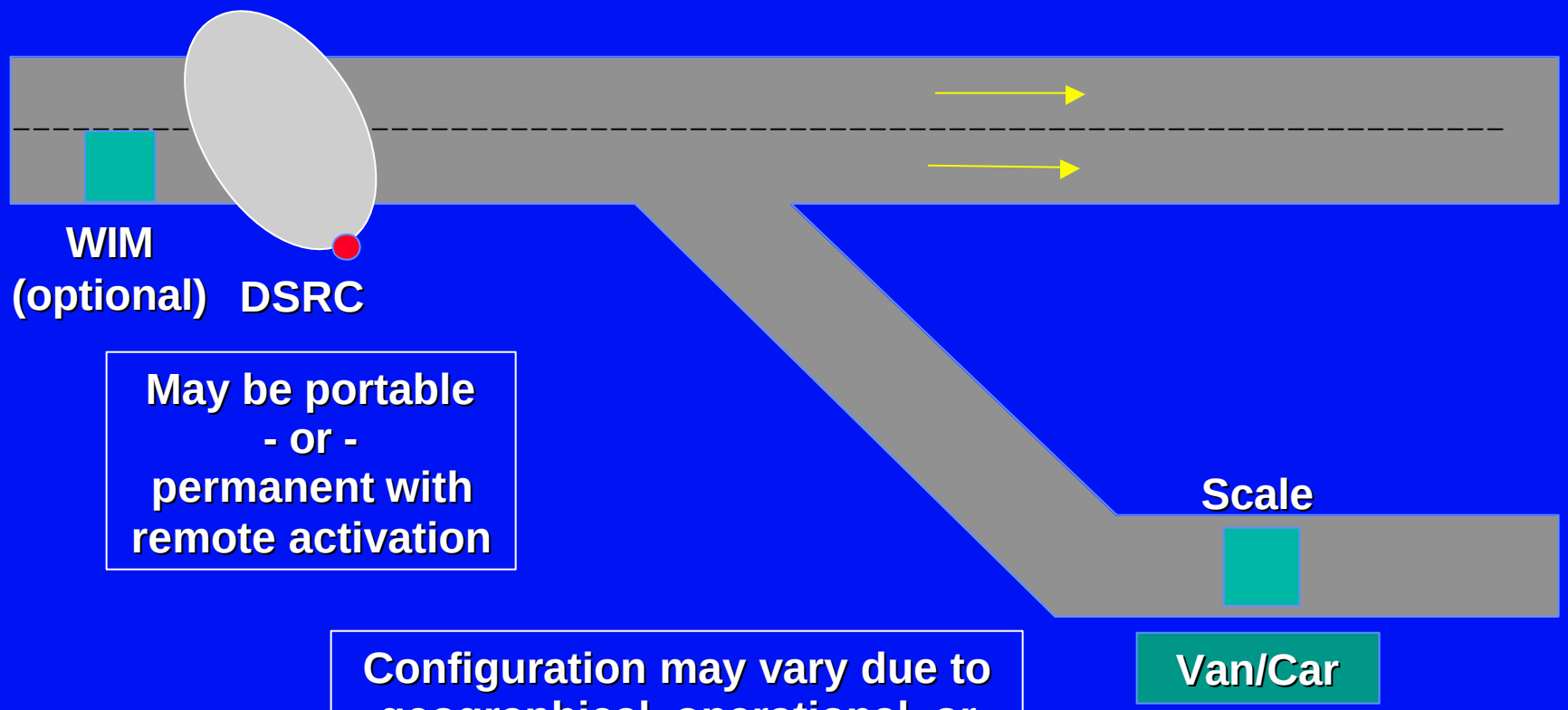
Electronic Screening Operational Concept
Mobile or Remote Site

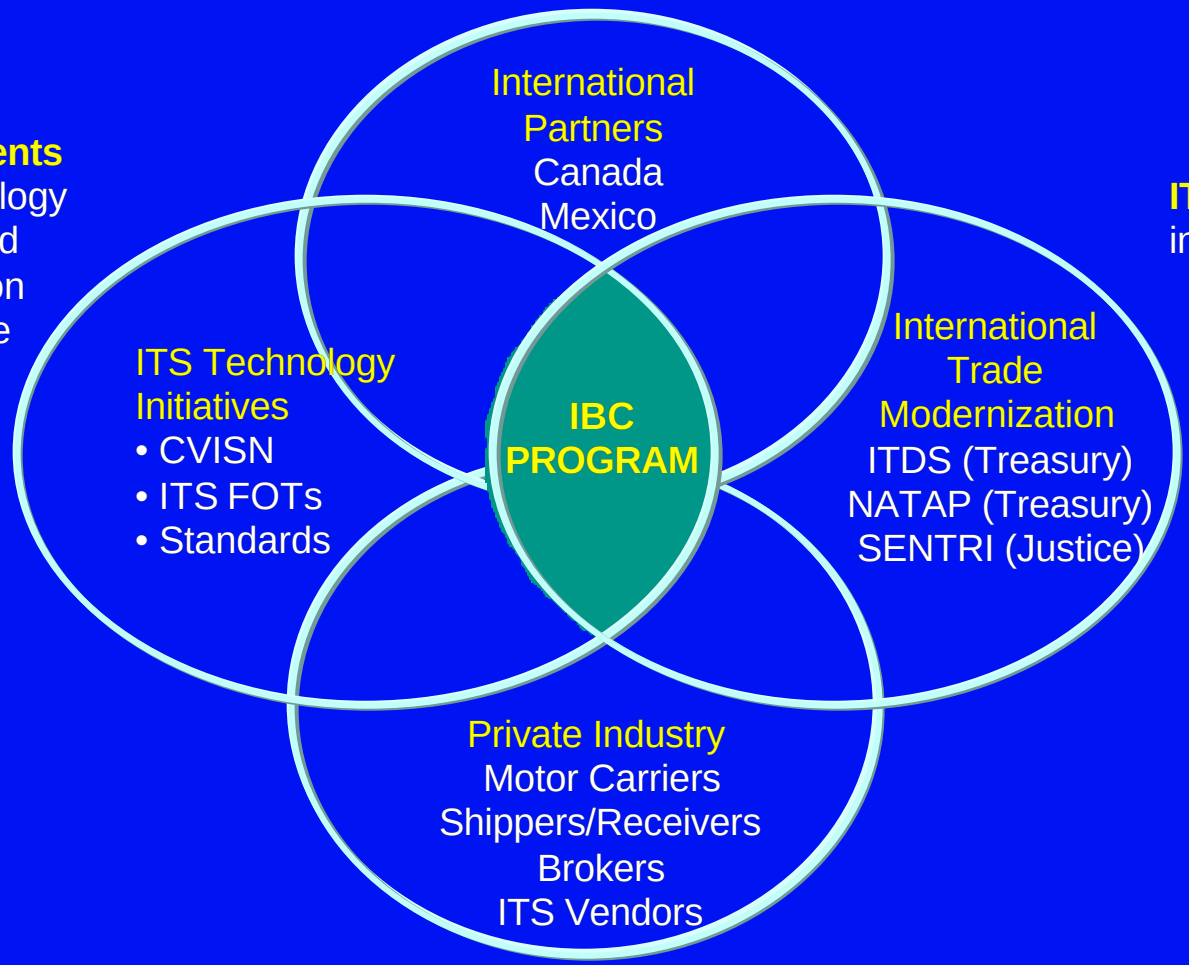


May be portable
- or -
permanent with
remote activation

Configuration may vary due to geographical, operational, or regulatory differences

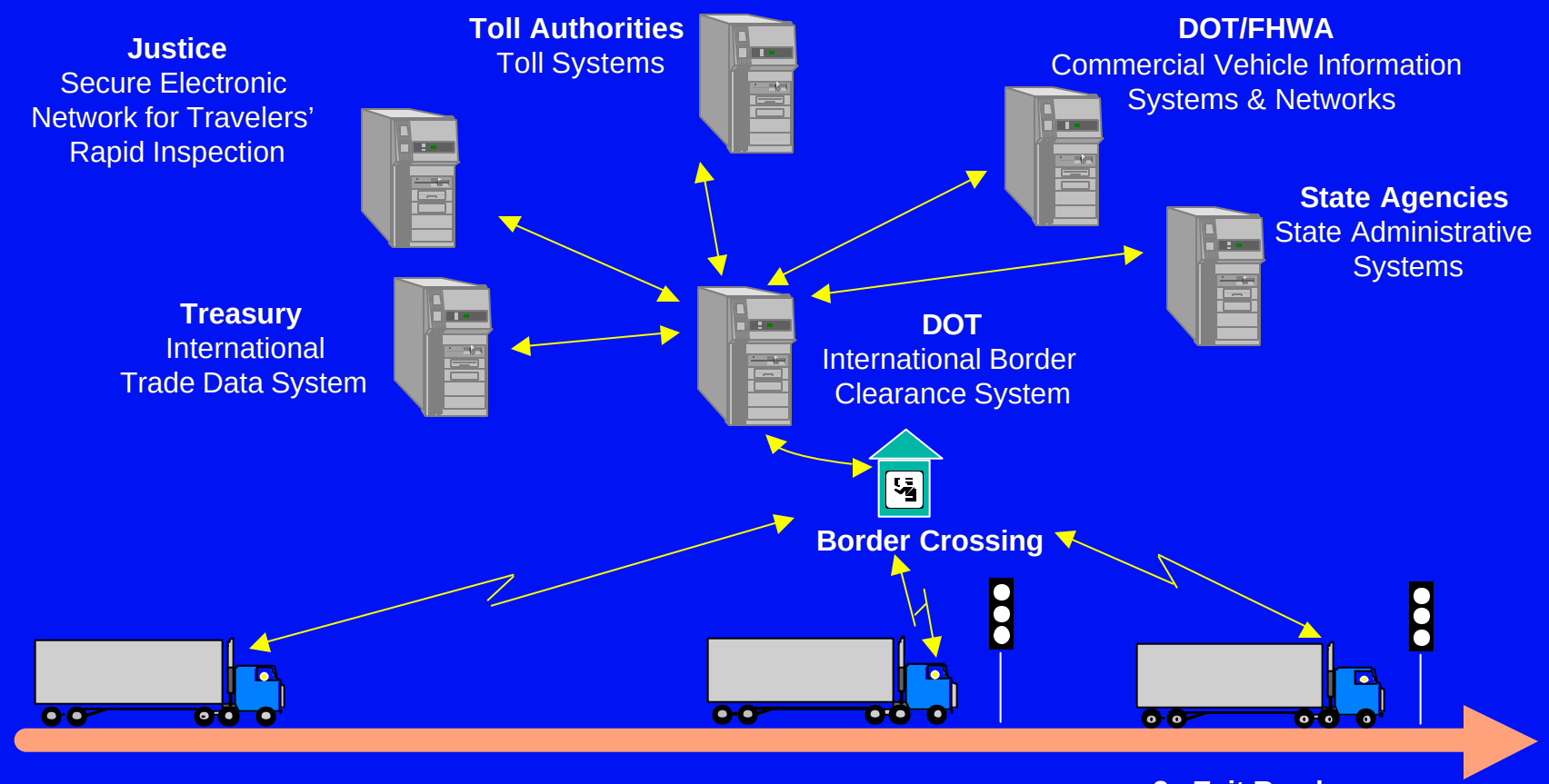
IBC Program Balances DOT Safety Mission and Facilitating International Trade

Integrate
IBC Requirements
into ITS Technology
Initiatives and
Transportation
Infrastructure



Integrate
ITS Technology
into International
Trade
Modernization

IBC Program Integrates CV Operations with Future Border Crossing Processes



1. Advance Read
- Border Crossing Request
- CV provides Key Identifier(s)

2. Decision Read
- Border Crossing Request
- CV provides Key Identifier(s)
- Border Crossing writes results

3. Exit Read
- Border Crossing Request
- CV provides Key Identifier(s)
- Border Crossing writes results

Electronic Screening Outlook

- **Markets**
  - **Will narrow to “critical sites” and major border clearance (IBC) sites; deployment will be slow because of high capital costs**
- **Organization**
  - **Mix of regional consortia across trucksheds and state-by-state initiatives**

Electronic Screening Outlook (continued)

- **Technology**
  - **CVO DSRC standards integrated with toll DSRC; license plate readers will supplement DSRC**
- **Financing**
  - **Federal funding will focus on IBC; state DOT funds will be used for "critical" sites**

Domestic Electronic Screening
Critical Success Factors

- **Adoption of multi-purpose DSRC standards (e.g., CVO, toll, intermodal)**
- **Agreement on uniform screening criteria among states**
- **Agreement on uniform data privacy and control policies among regional programs**
- **Coordination of domestic and international border programs**
- **Measurable benefits for participating carriers**

Electronic Screening
Critical Success Factors

- ISTEA reauthorization
- NAFTA expansion
- Transportation, Treasury, and Justice border crossing processes must accommodate ITS technology
- IBC business model supported by all public/private partners
- ITS integration across all transportation modes
- International standards

Carrier Operations

Program Areas

Safety Assurance	Credentials Administration	Electronic Screening	Carrier Operations
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CVISN Architecture (Technical Infrastructure)

Mainstreaming (Organizational Infrastructure)

Carrier Operations

- Objective
  - Reduce congestion costs for motor carriers
- Expected benefits
  - Reduced delay due to congestion, incidents, and other roadway conditions
  - Reduced risk of accidents
  - Improved incident response capability
  - Improved freight mobility
  - Improved carrier productivity

Global Economic and Logistics Trends

Global Economic Change

- Rapid growth in business services and high-tech manufacturing
- Rapid growth in international trade
- Competition on the basis of cost, quality, and time

→

Changing Business Logistics Practices

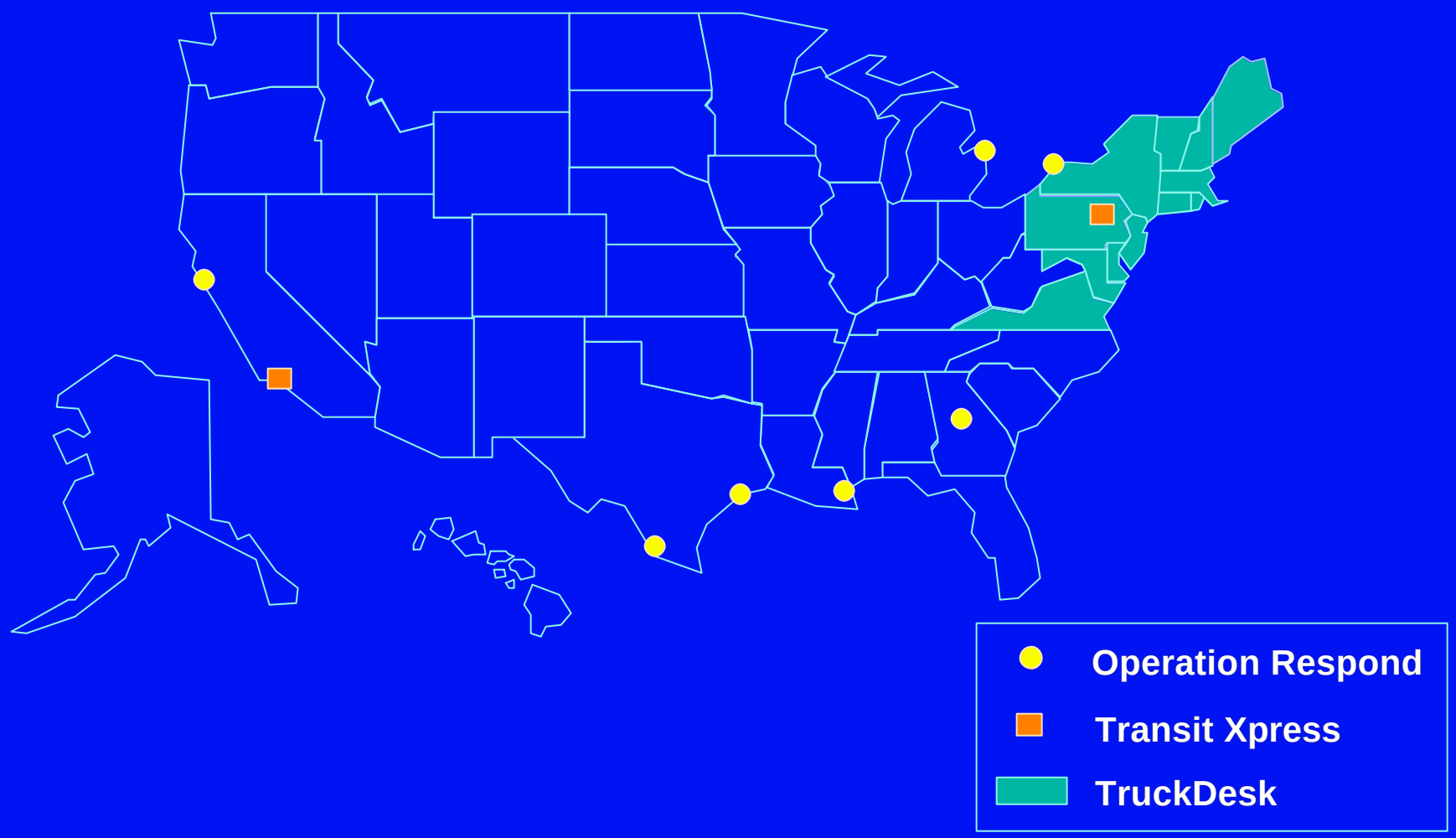
- Outsourcing
- Geographic dispersion of production
- Just-in-time inventory management

→

New Pressures for Motor Carriers

- More frequent, lengthy, and high-value shipments
- Greater sensitivity to travel and delivery times
- Cost competition

Carrier Operations Projects



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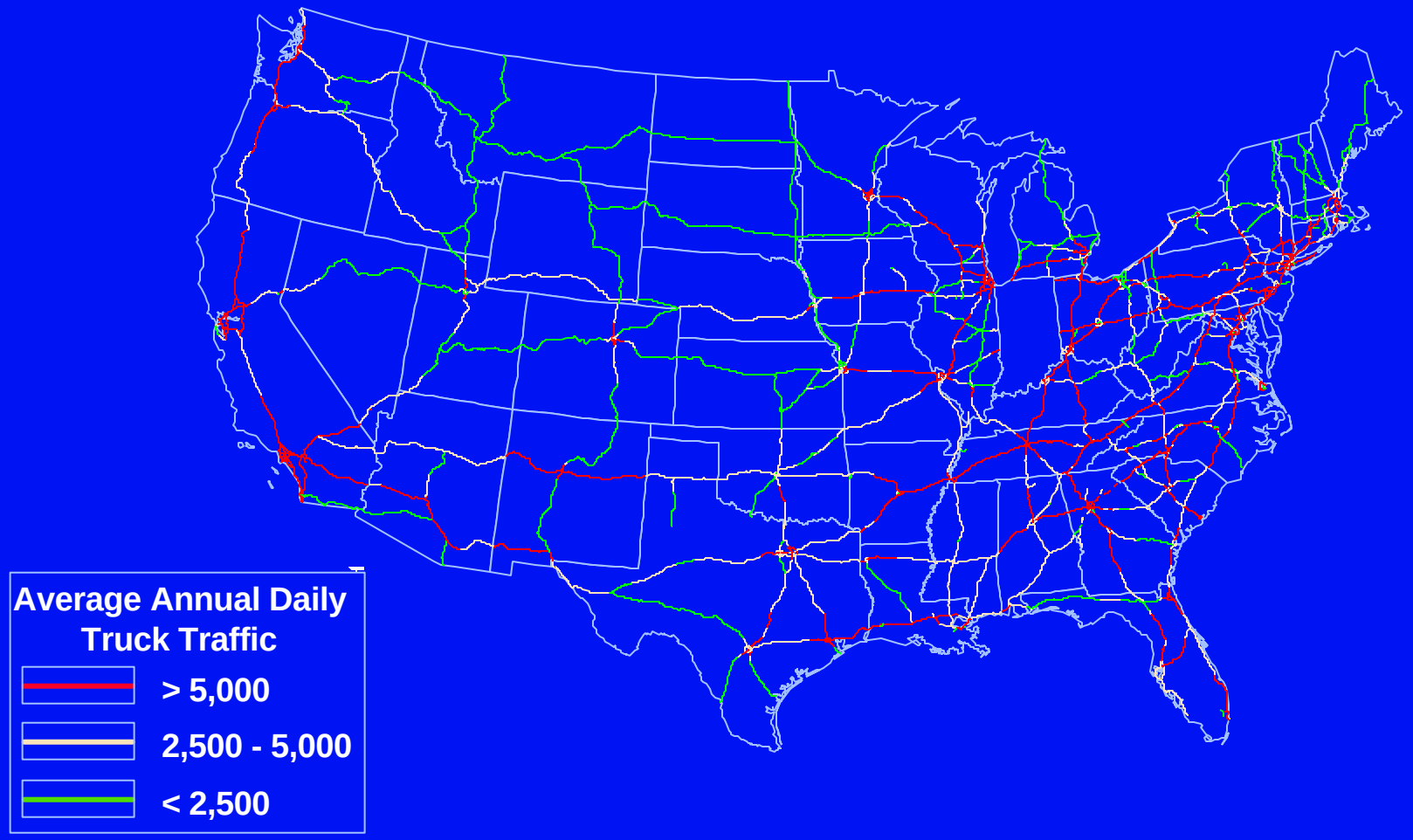
Truck Volumes on Interstate Highways
National Network



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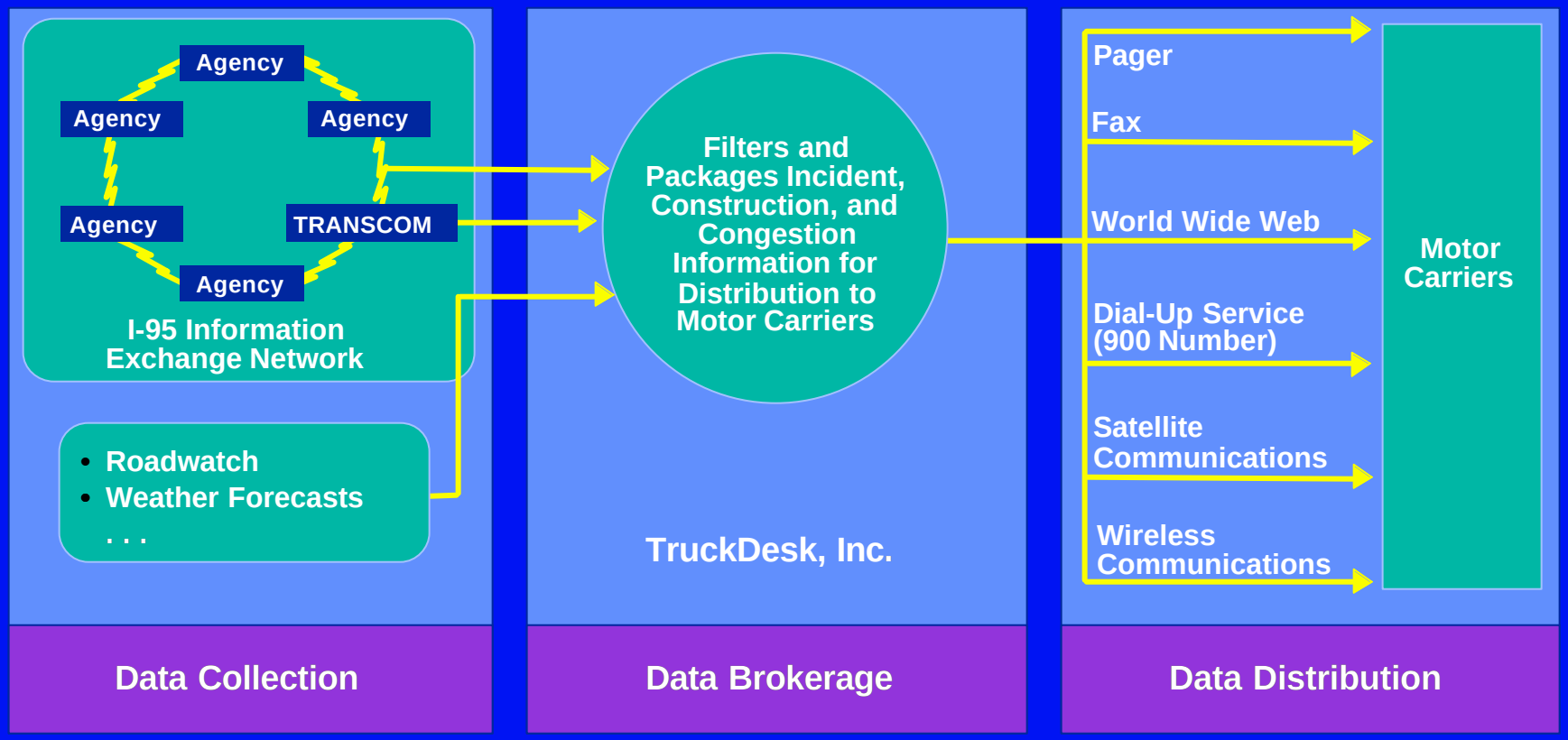
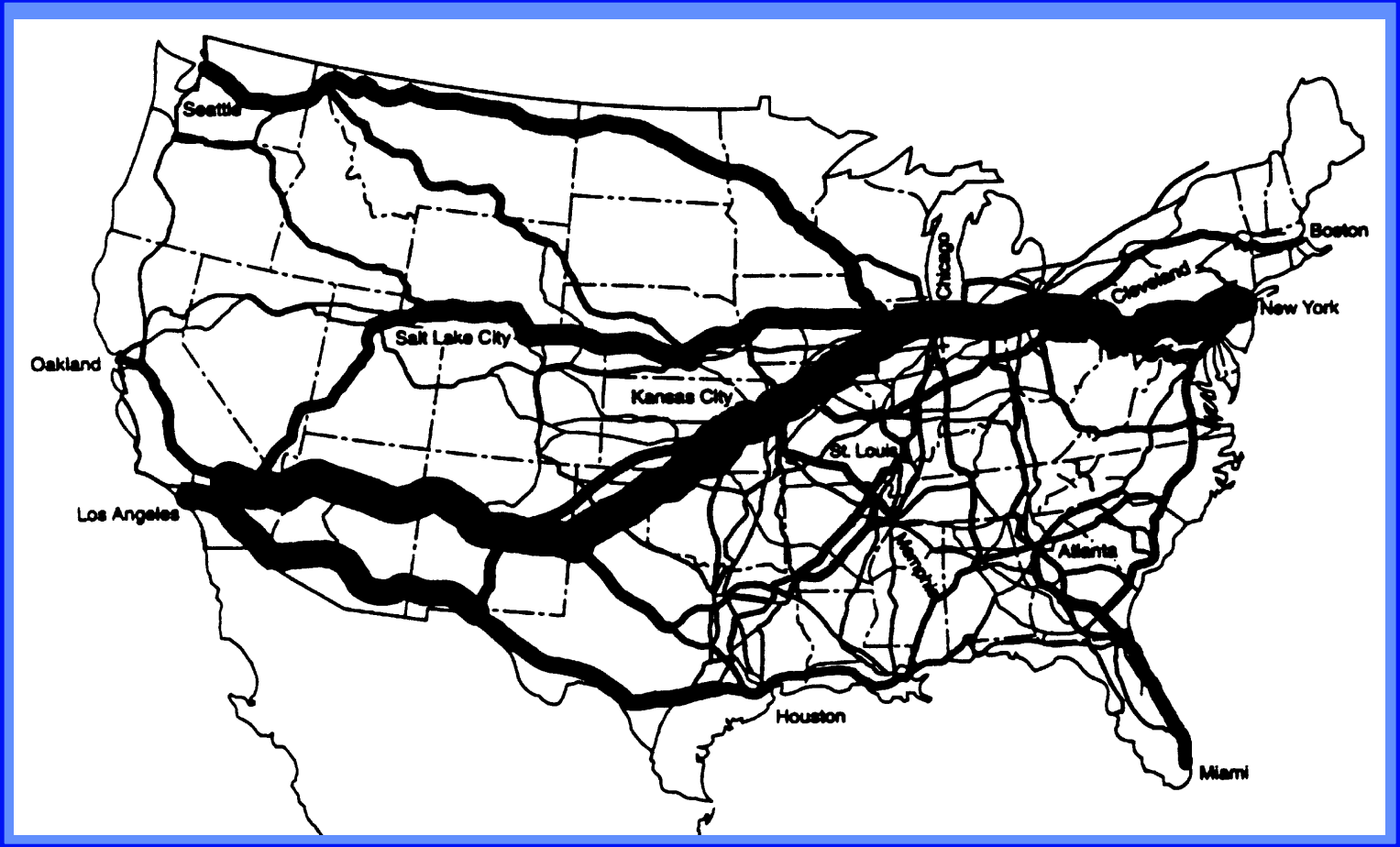
TruckDesk Operational Concept



Rail Port Intermodal Volumes



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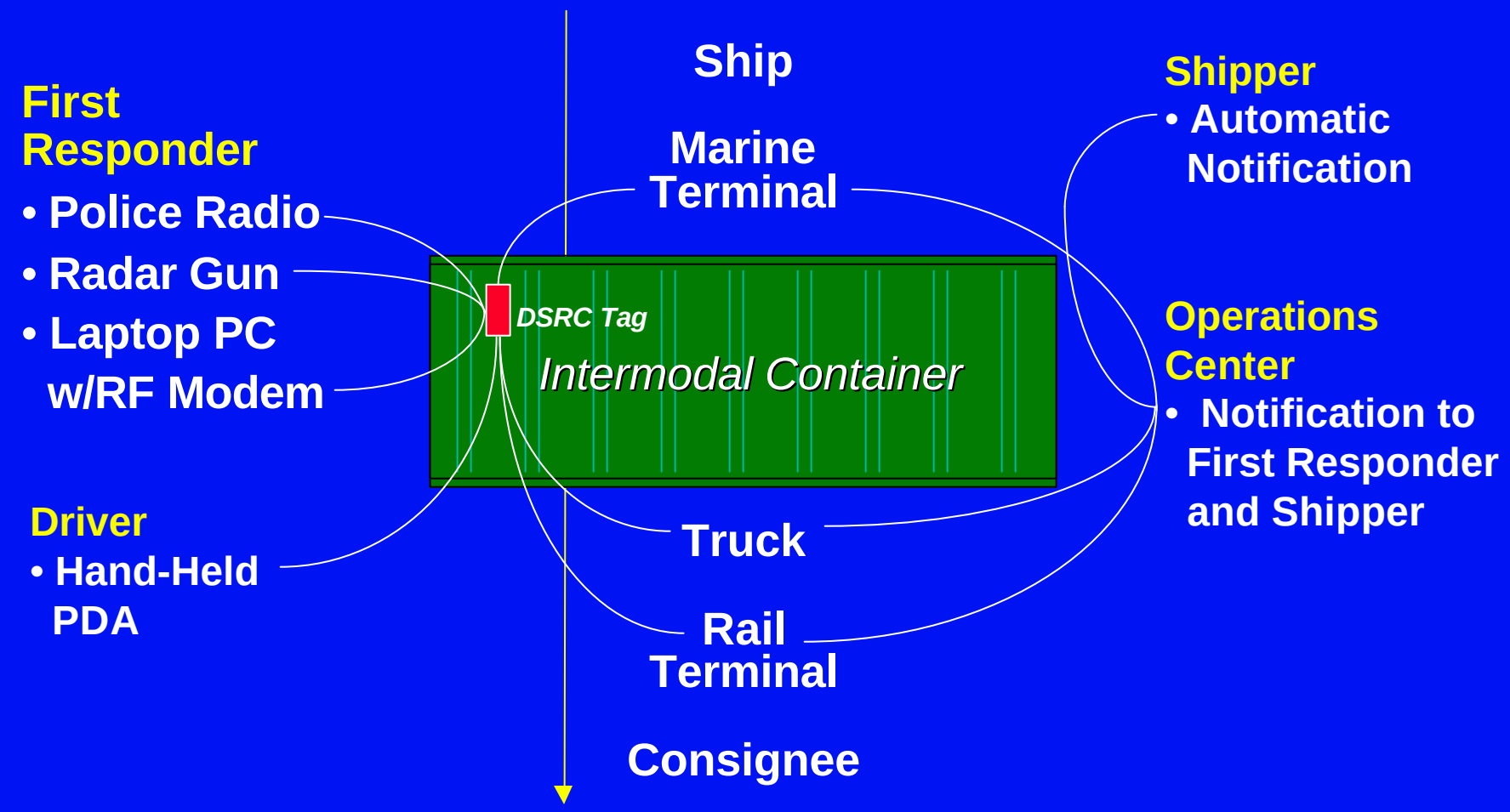
Tranzit Xpress II: Port of Los Angeles

Hazardous Materials Transportation Incident Response



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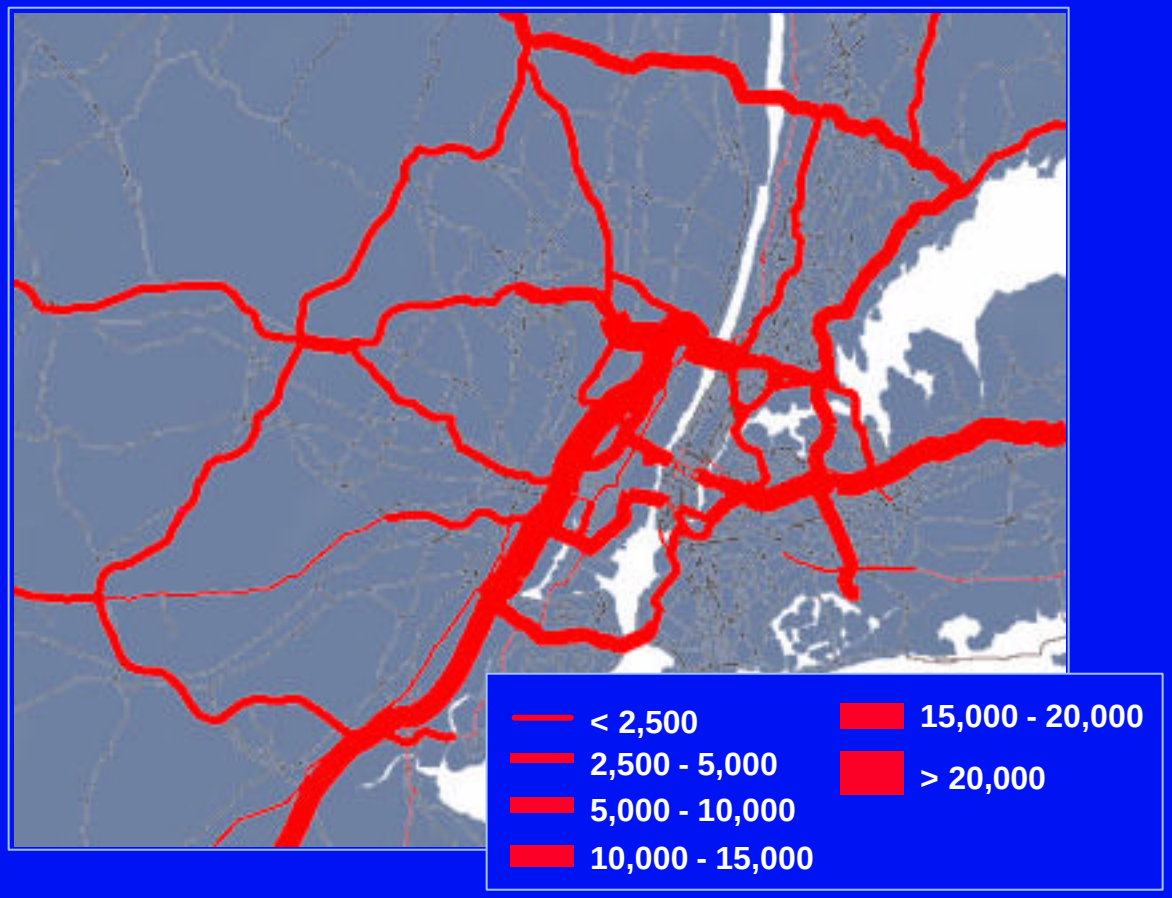
Truck Volumes on Interstate Highways
New York-Northern New Jersey



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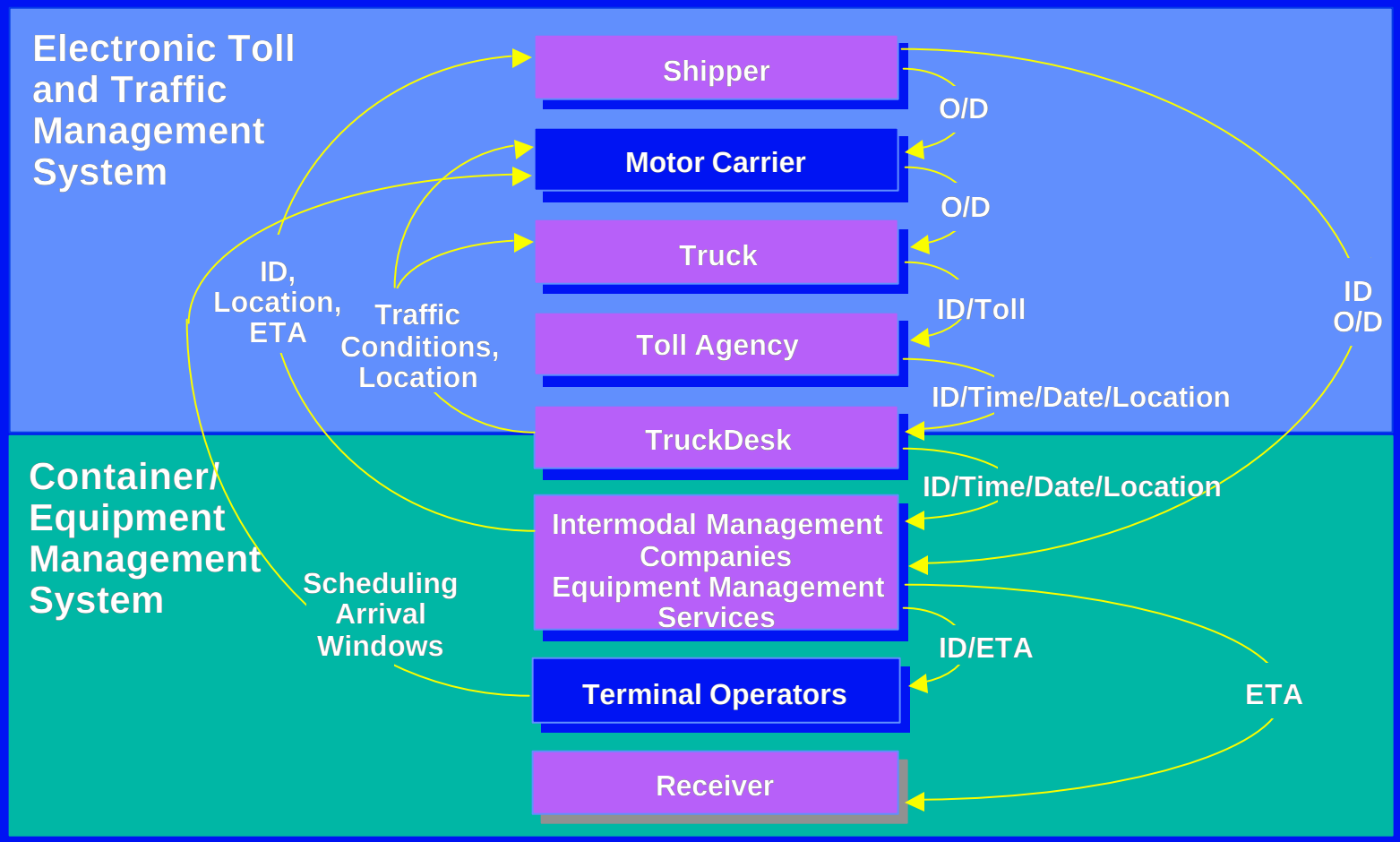
Inbound Intermodal Container Location System



O/D Origin/Destination of Shipment
ID Identification of Truck
ETA Estimated Time of Arrival

Carrier Operations Outlook

- **Markets**
  - **ATIS for CVO (i.e., TruckDesk) will grow apace with or slightly faster than metropolitan ATIS; fleet management applications will grow rapidly; shippers will push intermodal applications**
- **Organization**
  - **ATIS for CVO will depend on public-private partnerships; individual motor carrier firms will make fleet management purchase decision**

Carrier Operations Outlook (continued)

- **Technology**
  - **Software integration, Internet availability, and wireless communication costs will drive market growth**
- **Financing**
  - **Private sector will drive market, except for Federal and state participation in hazmat response application**

Carrier Operations Critical Success Factors

- **Successful proof on concept of ATIS for CVO (e.g., TruckDesk)**
- **Integration of hazmat incident response systems with other**
- **Fleet management and emergency response systems**
- **Measurable benefits for participating carriers**

Commercial Vehicle Information Systems and Networks (CVISN)

Program Areas

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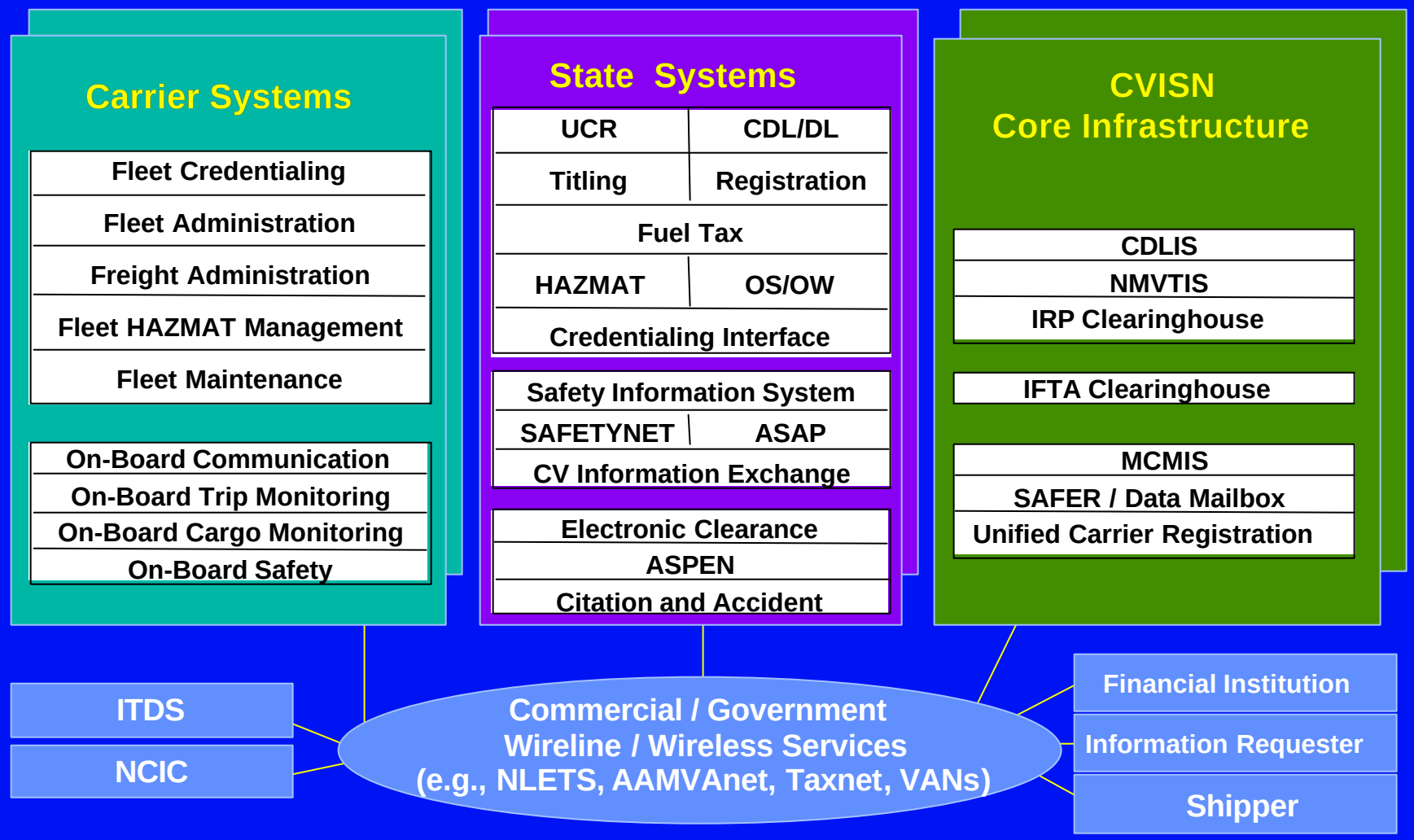
CVISN Architecture (Technical Infrastructure)

Mainstreaming (Organizational Infrastructure)

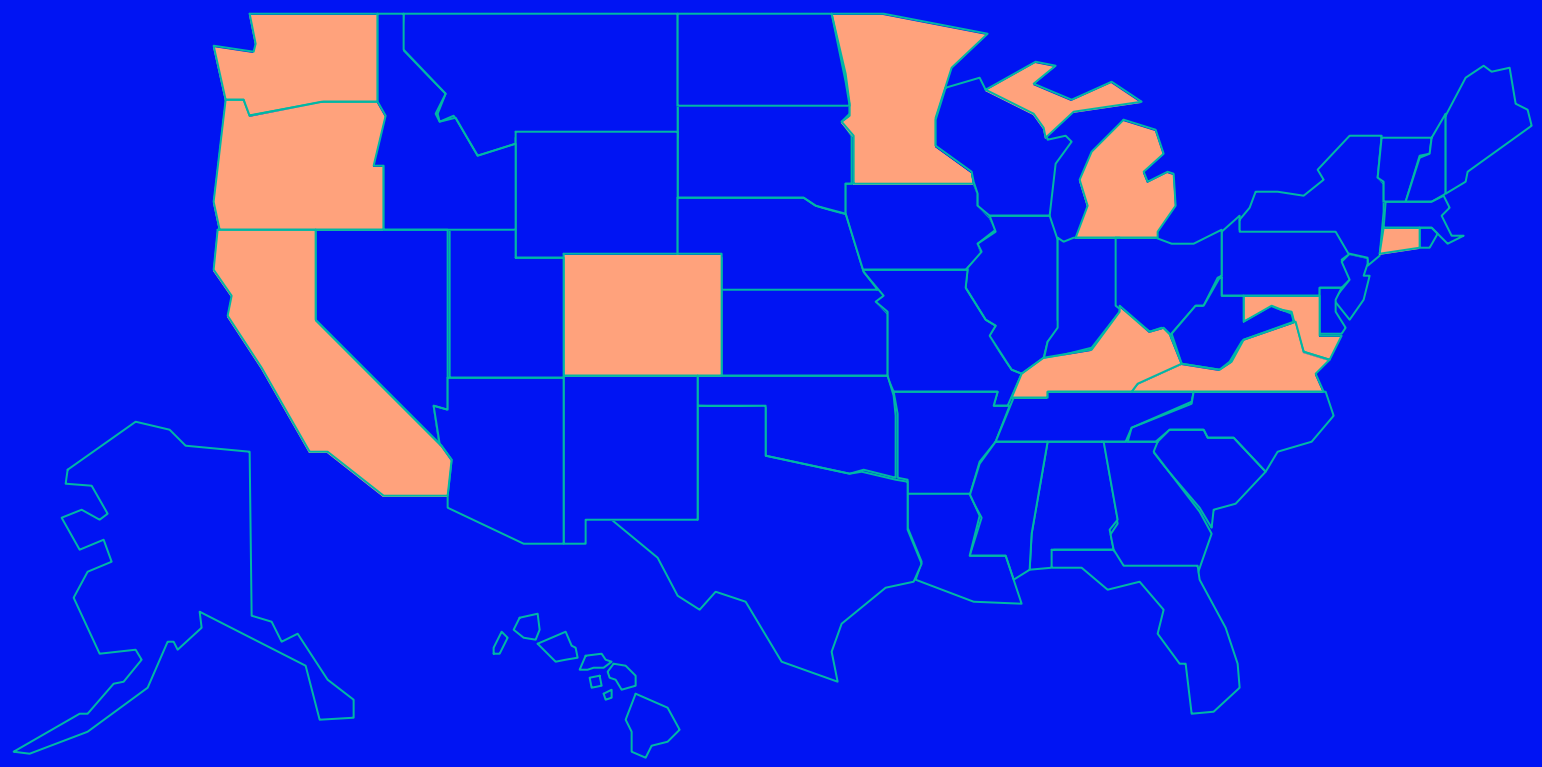
CVISN
Commercial Vehicle Information Systems and Networks

- **Objective**
  - **Develop technical infrastructure to support widespread ITS/CVO deployment**
- **Expected benefits**
  - **More efficient data interchange**
  - **Ability to improve credentials administration, safety assurance, and enforcement procedures**
  - **Reduced administrative burden for regulatory compliance**

CVISN System Design



CVISN Prototype and Pilot States



Why Are New Information Systems Required?

- **Current CVO processes and systems have evolved over decades. The result is a CVO infrastructure that often is not cost effective and is characterized by . . .**
  - **Redundant data entry**
  - **Lack of timely, accurate information**
  - **Complex, labor intensive procedures**
  - **Obsolete (or no) supporting technology**
  - **Costly operations**

Why Is an Architecture Required?

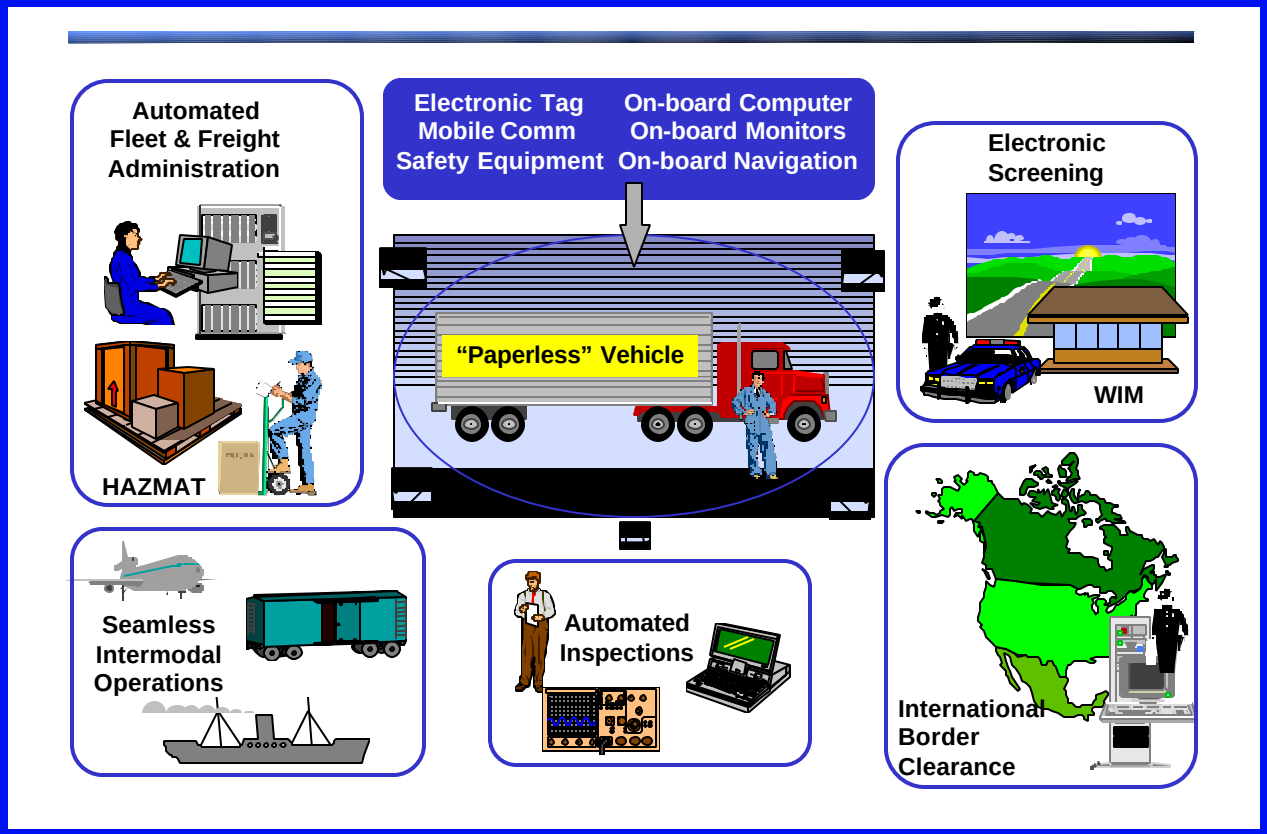
- **Without an architecture, new systems are likely to be characterized by . . .**
  - **Inconsistent concepts, processes, data definitions, and user interfaces**
  - **Inability to share data**
  - **Inability to cooperate in carrying out a process**
  - **Inability to be developed independently**
  - **Overlapping functions and redundant development**
  - **Inability to evolve with changing practices and technology**

CVISN Vision

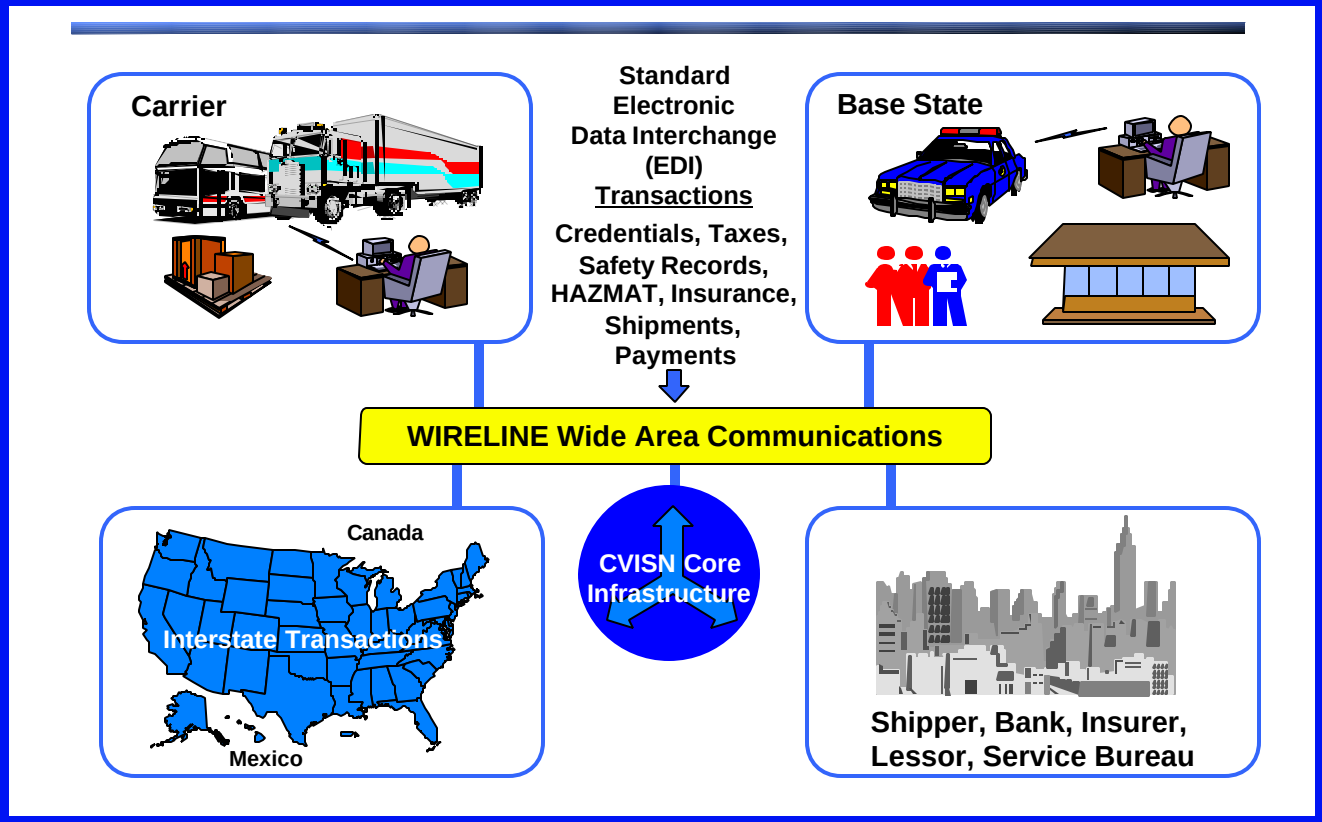
- **A fully integrated set of motor carrier information system supports safe and seamless commercial transportation throughout North America**
- **These systems provide high quality, timely, and easily accessible information to authorized users**

Vision

Safe and Efficient Shipping Operations



Vision
Electronic Business Transactions



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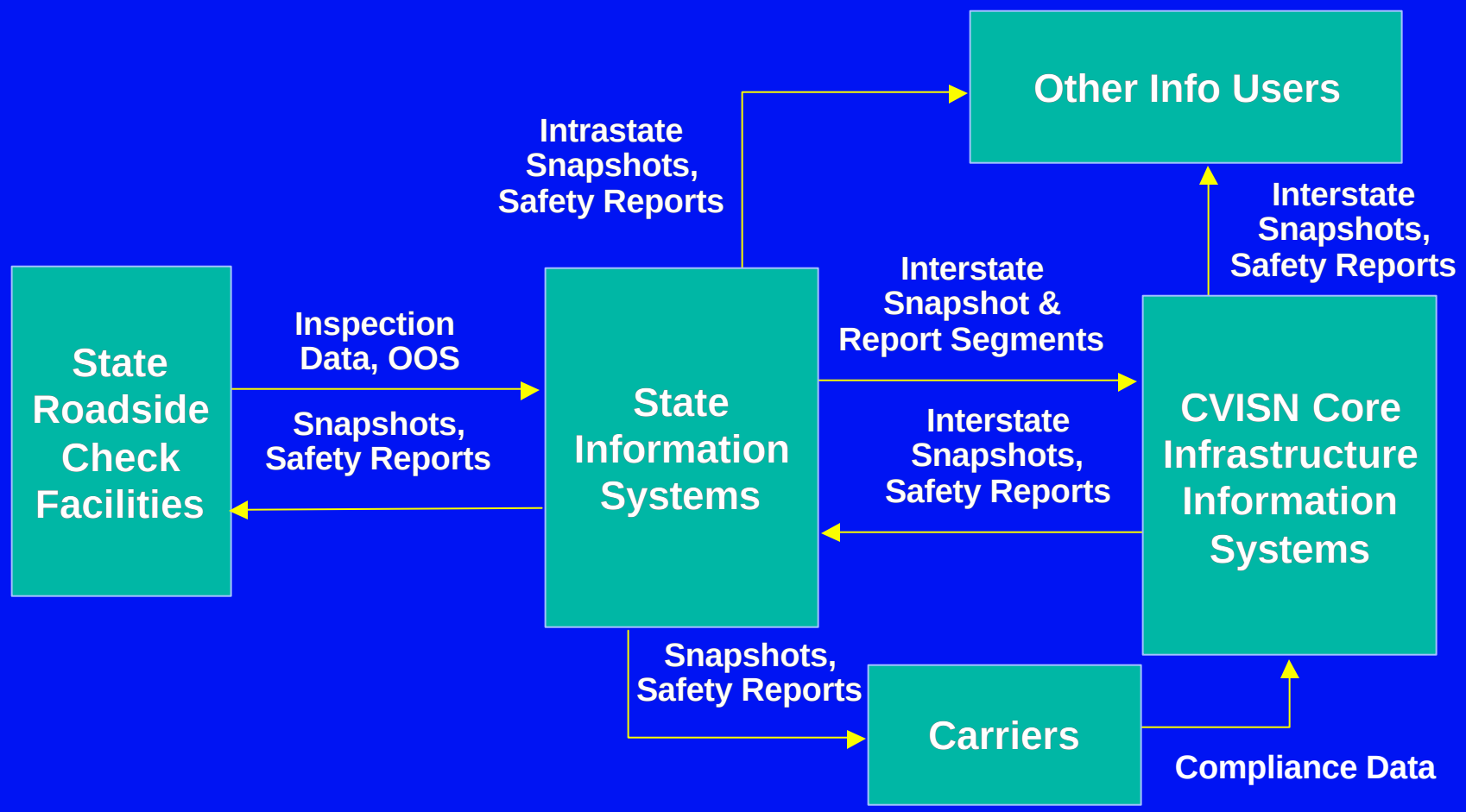
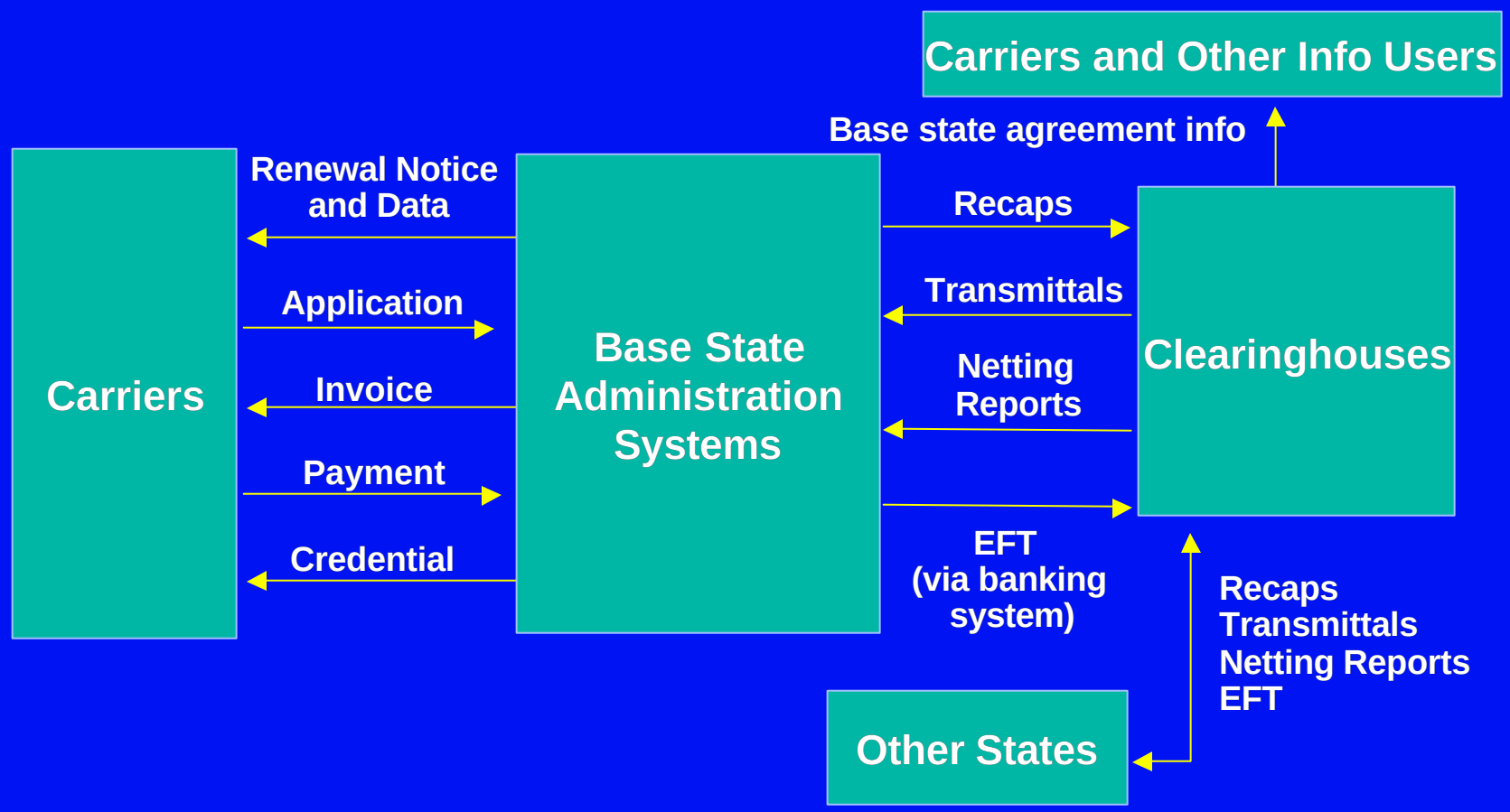
CVISN Guiding Principles

- **Balanced approached … to achieve measurable improvements … technology and process choices will be largely market-driven**
- **Information technology will … improve CVO credentials and tax administration efficiency ...**
- **… focus on eliminating unsafe and illegal carriers, drivers, and vehicles from service ...**
- **CVISN architecture will enable electronic information exchange among authorized stakeholders via open standards**

Safety Information Exchange Is Intended to Improve Safety Performance



Improved Credentials Administration Makes Government and Business More Efficient



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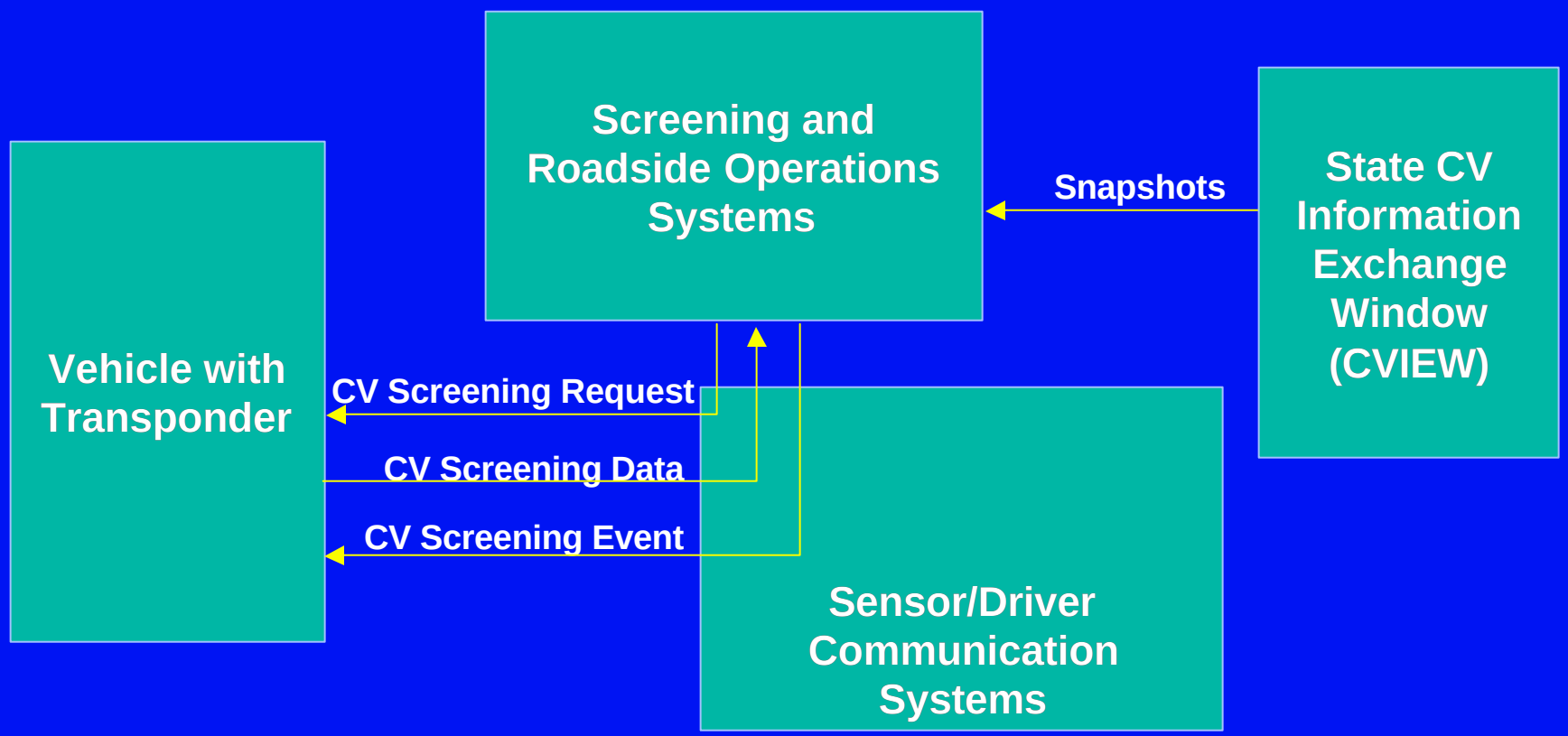
Electronic Screening Focuses on Risky Operators and Improves Freight Mobility

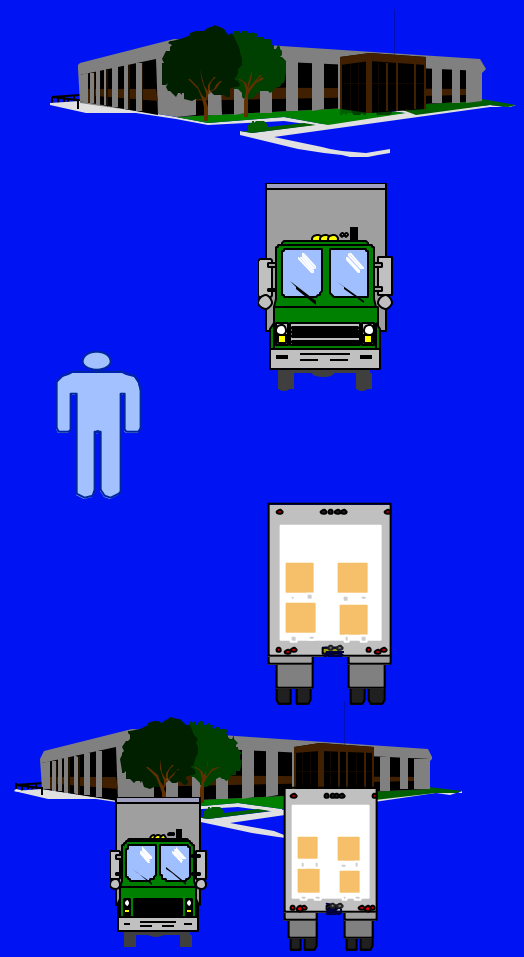


Why Both a Prototype and a Pilot Program?

Prototype **Blaze the Trail**	**Pilot** **Revise and Improve**
▪ First to try new concepts and systems ▪ Develop planning, workshop, training methods and materials ▪ Showcase sites near Washington, D.C.	▪ Managed expansion to more states ▪ Use concepts, systems, methods and materials worked out in prototype ▪ Benefit from lessons learned

Recommended Standard Identifiers

- **Carrier - US24123456A890B9AT01**
- **Vehicle - 1FDKE30F8SHB33184**
- **Driver - US24AB9999-999-9999A**
- **Shipment - 776655443322**
- **Trip/Load - 123456789761231**



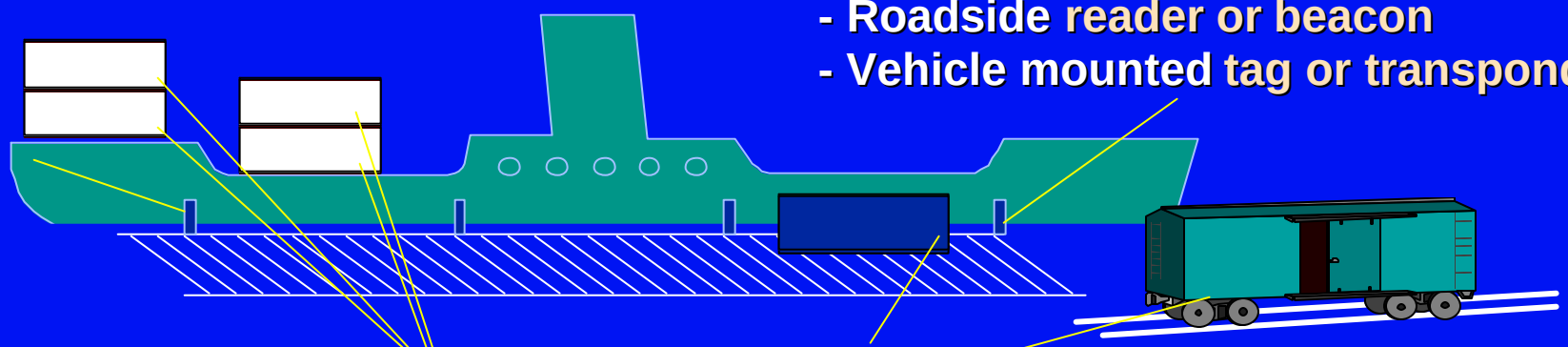
Snapshots Facilitate the Exchange of Safety and Credentials Information among Systems

	Identifier/ Census Data	Safety Information	Credential Information
Carrier			
Vehicle			
Driver			

Snapshot data stored in SAFER (interstate) and CVIEW (intrastate)

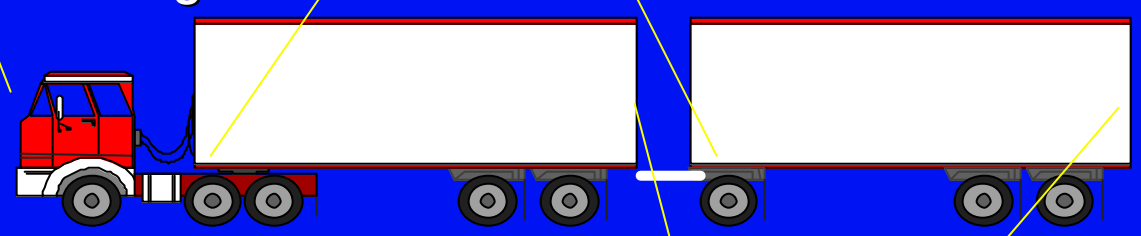
Dedicated Short Range Communications (DSRC) for Vehicle-to-Roadside Exchanges

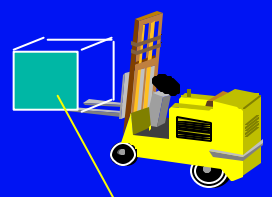
DSRC link is composed of:
- Roadside reader or beacon
- Vehicle mounted tag or transponder



Automatic Equipment Identification (AEI) Tag

Power Unit Tag

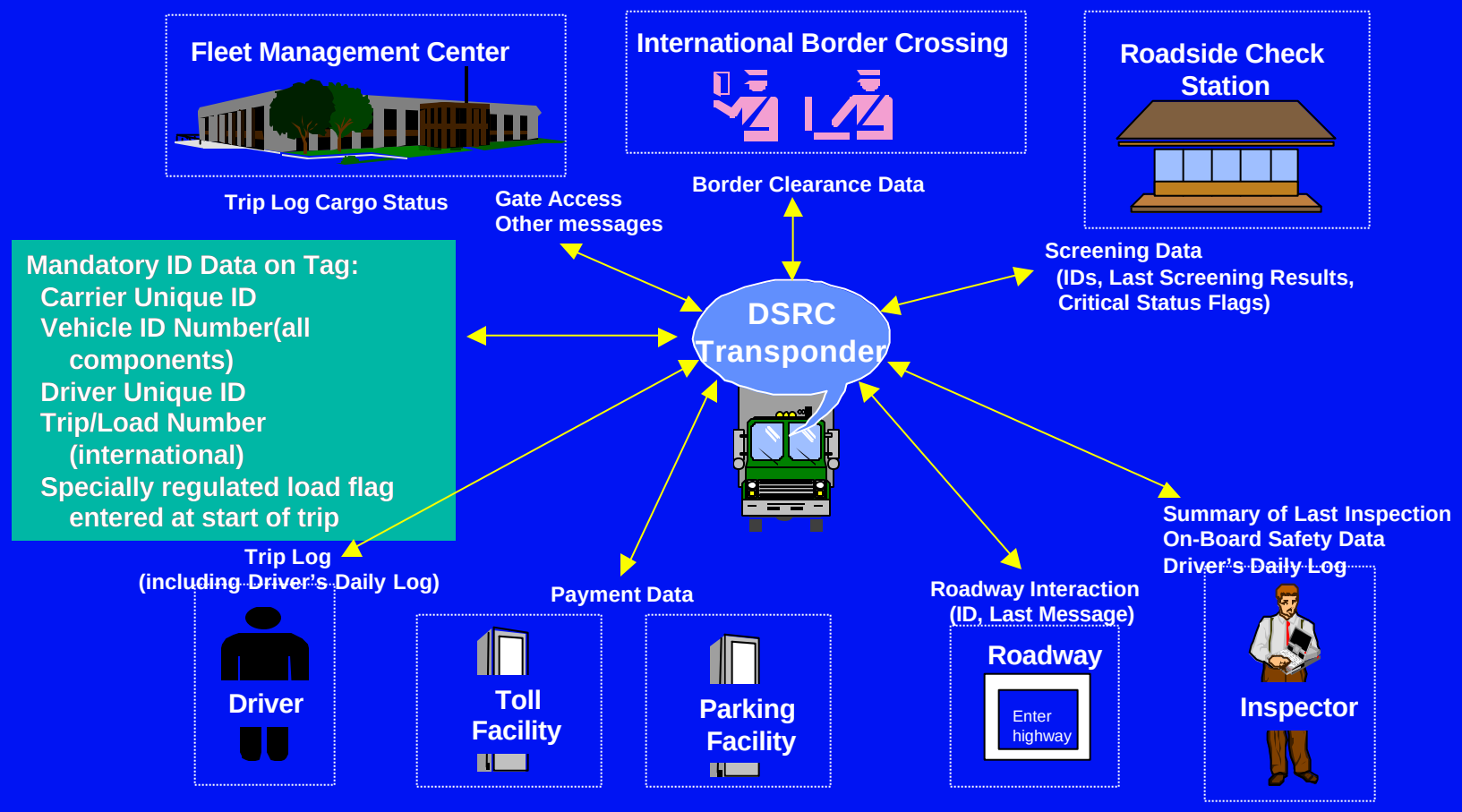




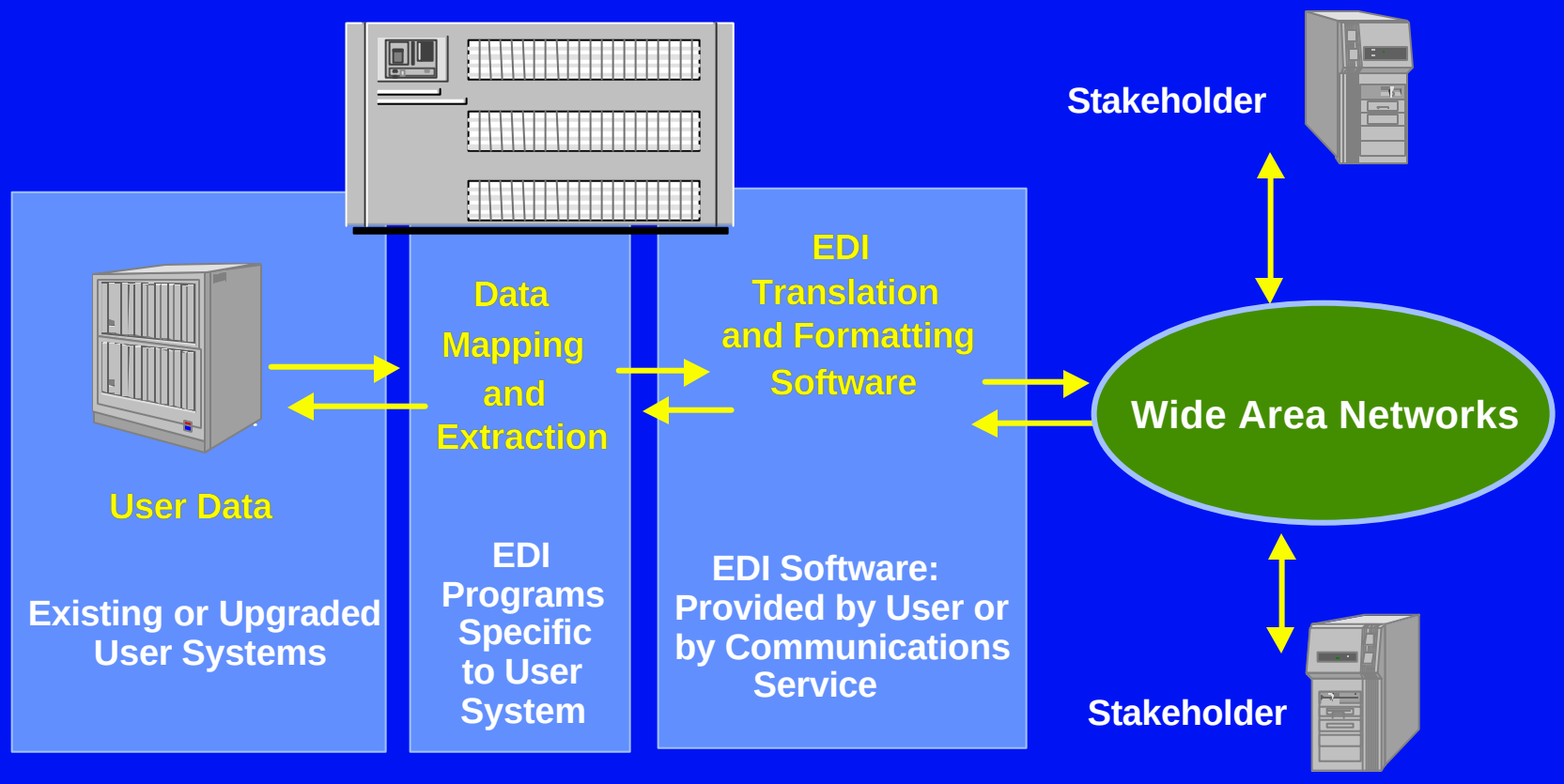
Cargo Tag

Electronic Lock Tag

DSRC Used to Read Information from Transponder While Vehicle is Moving

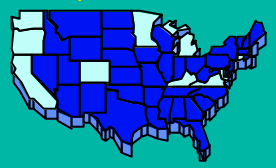
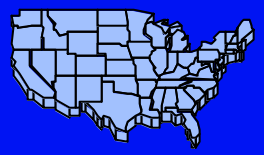
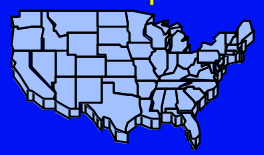


Electronic Data Interchange (EDI) for Computer-to-Computer Exchanges



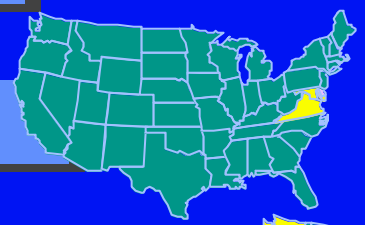
6.6 EDI

Expansion Planned in Several Dimensions

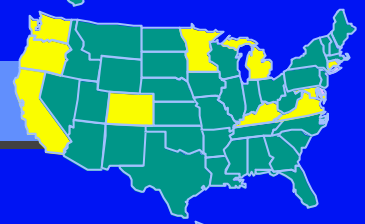
States	Capabilities	Vendors	Carriers
CVISN Prototype and Pilot Phases			
Group 1 	• Safety Information • Credentials Administration • Electronic Screening		Carrier A1 to Carrier A100
Add Group 2 	• International Border Clearance • Fleet & Freight Administration • HazMat Incident Response • Automated Inspection • On-Board Safety		Carrier B1 to Carrier B1000 Carrier C1 to Carrier C5000 . . . Carrier G1 to Carrier G10000
Add Group 7 			

Phased Deployment Strategy

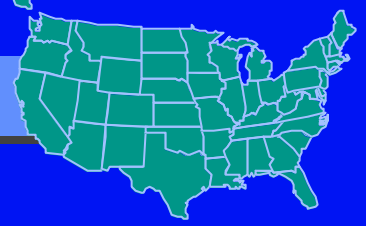
Plan



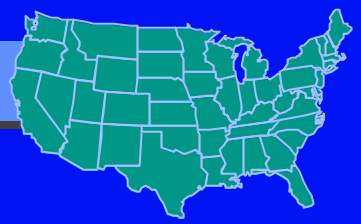
Prototype



Pilot (infrastructure and a few states)



Expansion (a few states per region)



Full Deployment (all interested states)

CVISN
Critical Success Factors

- **Program planning and coordination**
- **Stakeholder supported operational concepts**
- **Multi-state information exchange capability**
- **Standards for Dedicated Short Range Communication (DSRC) and Electronic Data Interchange (EDI)**
- **CVISN prototype project and CVISN pilot program**
- **Accepted measures of effectiveness**

National ITS/CVO Program Summary

- Markets
  - Safety and fleet management will grow rapidly; credentials applications will do well; electronic clearance will focus on critical sites
- Organization
  - Will be centered around individual state agencies, motor carriers, and national associations

National ITS/CVO Program Summary (continued)

- Technology
  - Maintenance of EDI standards and cost-effectiveness of information utilities (i.e., clearinghouses) will be critical; virtual databases will emerge as an important tool
- Financing
  - Federal funding will emphasize safety assurance; responsibility for other areas will devolve toward states and private sector

National ITS/CVO Program Implications

- **Marketing**
  - **Core applications and CVISN infrastructure will be deployed in a majority of states within 8-10 years**
  - **Need to leverage investment by reengineering national approaches to safety and credentials administration**
- **Organization**
  - **Regional CVO programs may be transitional**
  - **State CVO forums and business plans are very important**
  - **National ITS/CVO policy forum is critical**

National ITS/CVO Program Implications (continued)

- Technology
  - Maintenance/enhancement of EDI standards is critical
  - Stability of information utilities (i.e., clearinghouses) is important
- Financing
  - Reposition ITS/CVO program in NEXTEA for deployment support and reengineering

Federal Roles

- **ISTEA I**
  - **Develop and test ITS/CVO concepts**
  - **Provide ITS/CVO education and outreach**
  - **Build technical (CVISN) and organizational (Mainstreaming) infrastructure to support deployment**
- **NEXTEA**
  - **Support cost-effective state deployment**
  - **Lay groundwork of safety and credentials reegineering**

Federal Roles (continued)

- **Another TEA?**
  - **Undertake reengineering of safety and credentials**
  - **Develop and test next generation CVISN**

Issues

- Ensuring ongoing agency and legislative support
- Building motor carrier awareness and support
- Resolving data privacy and control concerns
- Establishing consensus on standards and identifiers
- Completing and evolving the CVISN

Issues

- Developing a new safety management strategy
- Reengineering credentials administration
- Coordinating the CVISN and International border clearance initiatives
- Securing and allocating future federal and state funding
- Building program management and staff capacity

Ensuring Ongoing Agency and Legislative Support

- **Is there a comprehensive and consistent national ITS/CVO program?**
- **What is the program after the CVISN pilots?**
- **How do we reach senior agency management, legislators, and governors?**

Building Motor Carrier Awareness and Support

- **Do we need a new strategy for gaining motor carrier interest and support for the ITS/CVO program, especially among small carriers?**

- **How should the ITS/CVO program address motor carrier concerns that ITS/CVO technologies may be used for increased or unwarranted enforcement or taxation?**

Resolving Data Privacy and Control Concerns

- **Who should have access to data collected by ITS/CVO systems?**
- **Can states or third-party service providers protect sensitive data?**
- **Should data collected by the public sector be used for commercial purposes?**

Establishing Consensus on Standards and Identifiers

- **How do we ensure adherence to DSRC and EDI standards in voluntary program?**
- **To what degree should CVO, toll, and intermodal container transponders be interoperable?**
- **Should there be a unique carrier/vehicle identifier for both interstate and intrastate carriers, such as an extended USDOT number, to support safety screening and other ITS.CVO applications?**

Completing and Evolving the CVISN

- **What is the roll-out for CVISN?**
- **What is the strategy for the next wave of CVISN model deployments?**
- **Can the CVISN program meet growing state expectations?**

Developing a New Safety Management Strategy

- **Is it time for a new Federal and state safety enforcement strategy (e.g., one that shifts from “sites and inspections: to “trips and carrier performance”)?**
- **Should the states adopt nationwide criteria for safety and electronic screening of carriers, vehicles, and drivers (e.g., CVSA model)?**
- **How should onboard safety monitoring be integrated into carrier safety management and government safety enforcement strategies?**

Reengineering Credentials Administration

- **Is it time for a new credentials administration strategy (e.g., one that shifts from automating existing practices to rethinking the way states and carriers do business)?**
- **Should vehicle registration become a "gatekeeper" for other credentials?**
- **What is the role of carrier registration, insurance verification, and operating authority?**

Coordinating the CVISN and International Border Clearance Initiatives

- **What are the DOT, OMC, and state interests in international border clearance (IBC), recognizing that the primary stakeholders are CVISN are the states and the primary stakeholders for IBC are Treasury, Justice, Transportation and their counterparts in Canada and Mexico?**

- **What is the most effective way to influence and participate in the international border clearance initiatives?**

Securing and Allocating Future Federal and State Funding

- **What is the funding strategy to complete the CVISN model deployment initiative and the international border crossing operational tests?**
- **How should ITS/CVO deployment incentive funding be allocated among the states?**
- **Who should cover operations and maintenance costs for the CVISN technical infrastructure - operation of the information utilities (i.e., SAFER; IRP, and ITFTA clearinghouses) and upgrade of software (i.e., CATS, CI, CVIEW, etc)?**

Building Program Management and Staff Capacity

- **What are the appropriate roles for FHWA headquarters, regional, and division offices in managing the ITS/CVO program?**