Identification and Monitoring of Radiation (in commerce) Shipments (IMR*ic*S) Module of the Integrated Safety and Security Enforcement and Interdiction System (ISSEIS)

for
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Transportation Secure Information Technology (TranSITS) Program

Data Exchange Information Infrastructure From Intelligent Transportation Systems

Sensor Based Information Infrastructure and Secure Information Fusion

- Information Exchange Standards
- Information Control
- Information Assurance
- Network Services

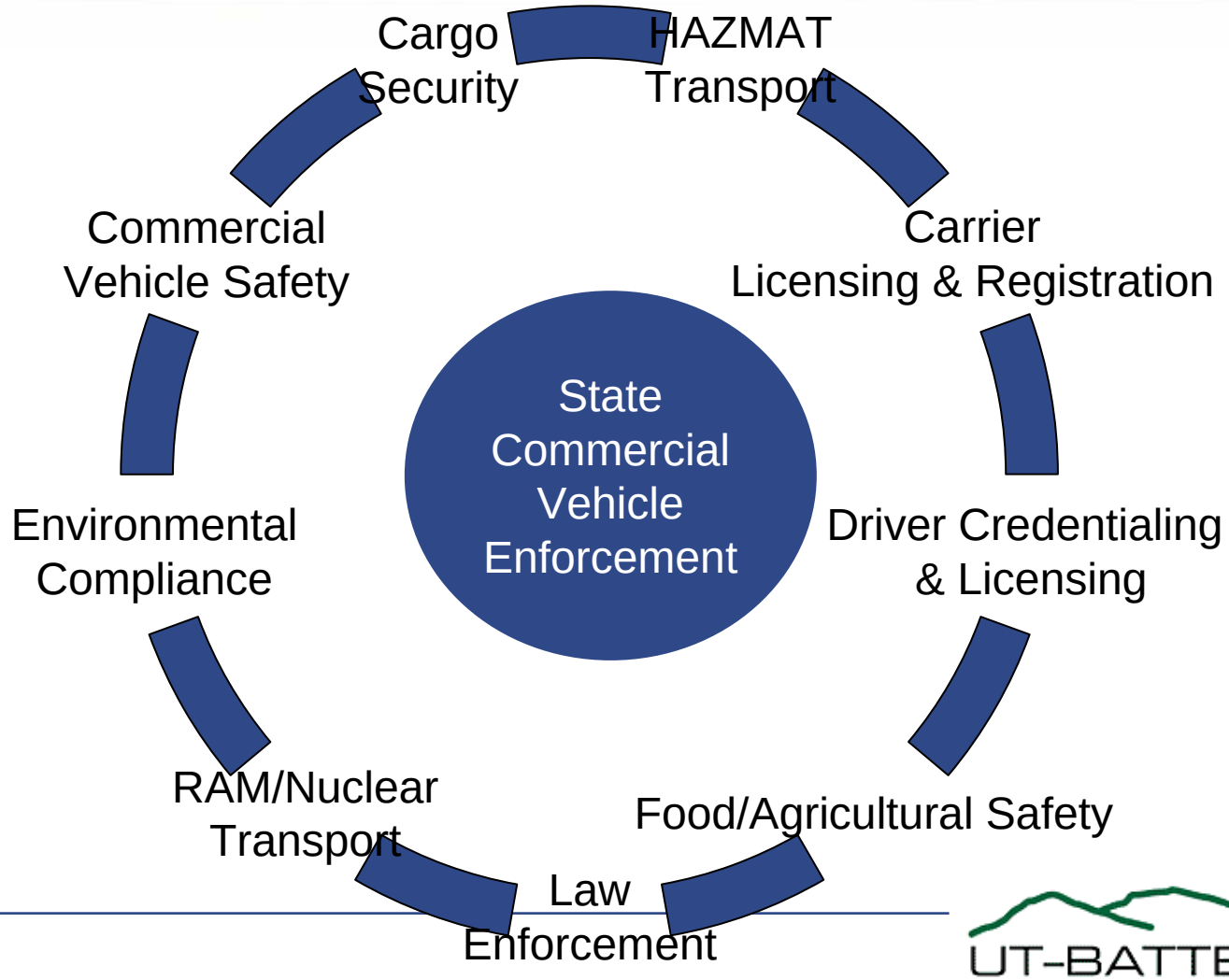
- IMR*ic*S - HAZMAT Detection
- Driver/Carrier/Vehicle Verification & Validation
- High Visibility Cargo Security & Tracking
- Agricultural Embargos
- Commercial Vehicle Safety Enforcement
- Illicit Cargo Interdiction

Evaluation at Operating User Facilities

State and Local Teaming Approach

- Focus on State "In Commerce" Enforcement Issues
  - State (Homeland) Security (e.g., Illegal Transport of Radioactive Materials)
  - Highway Safety (e.g., ID of unsafe RAM carriers)
  - HAZMAT Safety (e.g., ID of unsafe Shipments)
  - Law Enforcement Interdiction
  - Food Safety
  - Agricultural Embargos
  - Environmental Crimes

Focus – State Enforcement "In Commerce" Issues



Current Study Plan Activities

- Evaluate the sensitivity and selectivity of bulk monitoring technology including both fixed and mobile sensors.
- Develop signatures for commonly shipped isotopes and radiological materials:
  - Identification of naturally occurring radioactive materials
  - Identification of technically enhanced radioactive materials
  - Define confidence levels for instrument readings correlated with specific cargo types
- Develop a compliance management strategy for commercial vehicle enforcement using bulk monitoring technology.

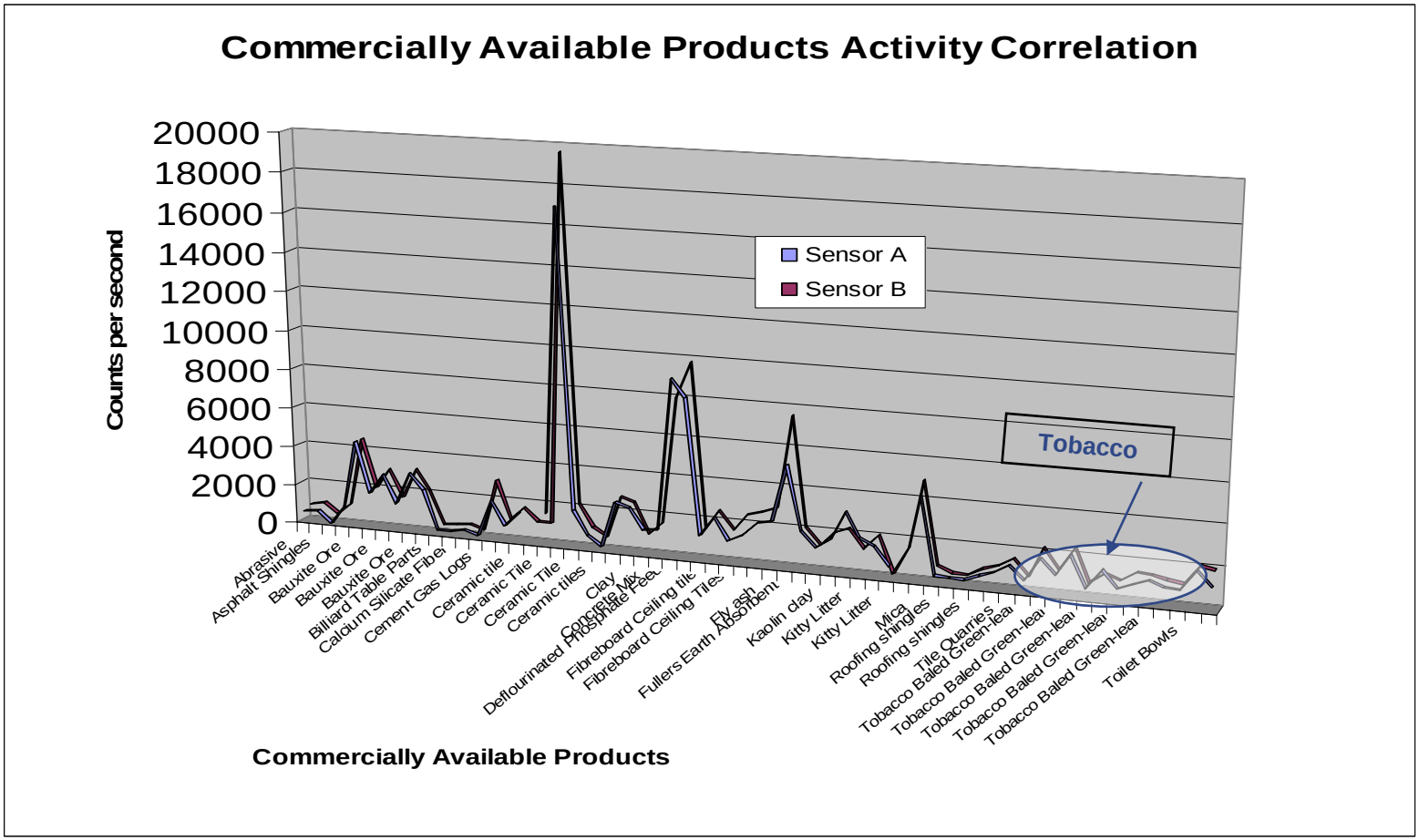
Interagency Teaming and Private Industry/Government Teaming Approach

- Interagency Support
  - DOE – Sensitivity/Selectivity
  - DOT – Transportation Safety (HAZMAT)
  - DHS – Operational Evaluation of Secure Transportation WMD Data
  - TSA – Transportation Security
  - EPA – Radiological Sources Tracking
  - TDOS/SCSTP – Vehicle Safety/Enforcement
  - TDOT/SCDOT – Highway Infrastructure
- Private Industry/Government Teaming
  - Use Existing Transportation Communications Infrastructure –
    - Data Exchange Information Infrastructure From Intelligent Transportation Systems, e.g. CVISN
  - Manifest/Vehicle Information - PrePass and/or NorPass
  - Sensors – Various Commercial Vendors
  - Data/Systems Integration – ORNL SensorNet
  - Data Processing/Sensor Integration – ORNL SensorNet
  - Industry Outreach – ATA, Commercial Carriers, and Commercial Vehicle Manufacturers
  - Implementation – State and Local Law Enforcement

Commercial Vehicle Radiological System Module - Current Concept of Operations

- Commercial Vehicles pass through radiological sensors prior to stopping on Static Scale
- Radiological Sensors are monitored as each commercial vehicle approaches Static Scale
- If Alarm is detected, Commercial Vehicle is subjected to further inspection:
  - At a minimum, cargo type is identified and documented.
  - Routinely, shipping papers are obtained and driver is interviewed by State Police Officer.

Representative Data Acquired to Date: Commercially Available Products Containing NORM and TENORM



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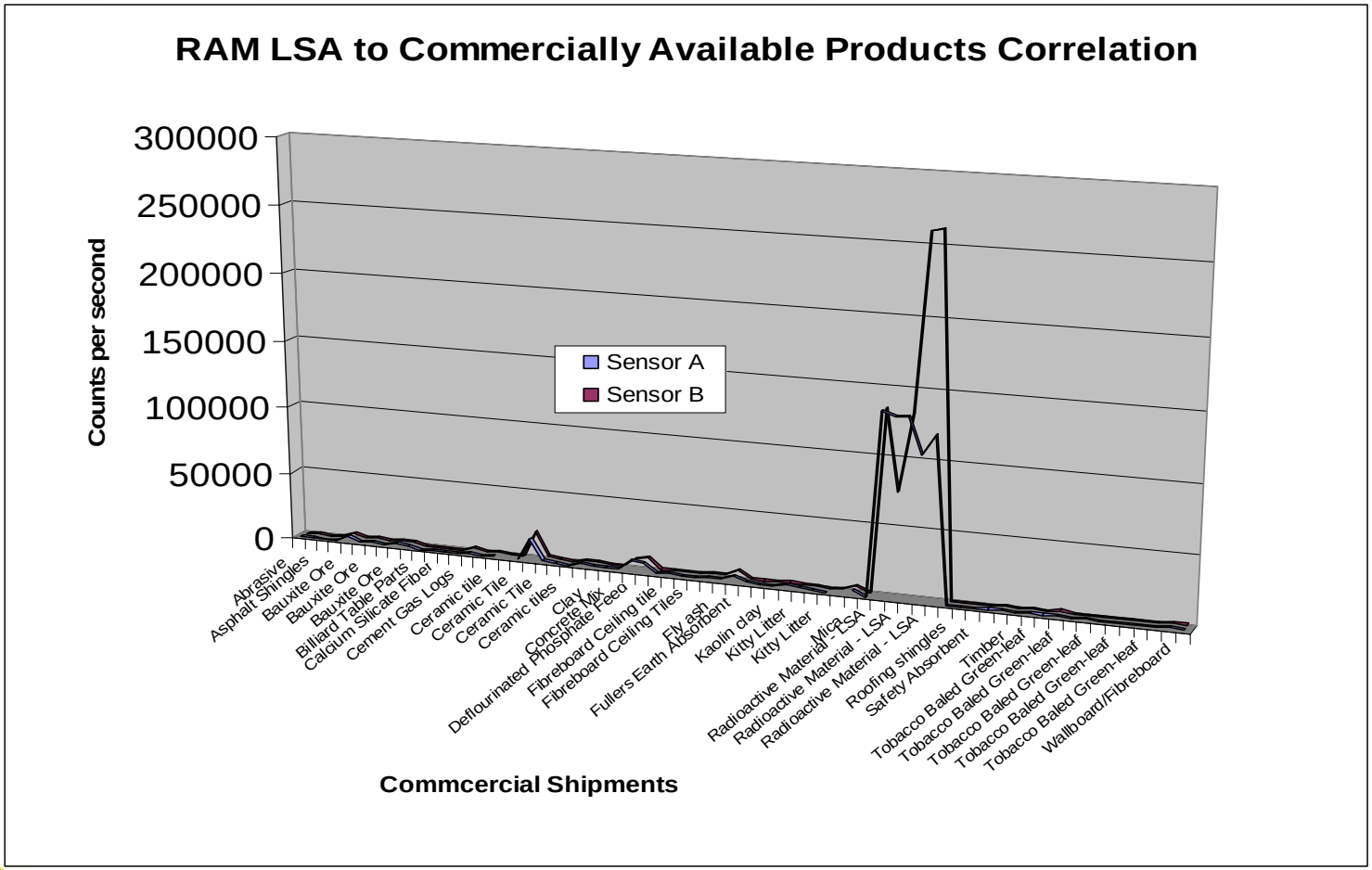
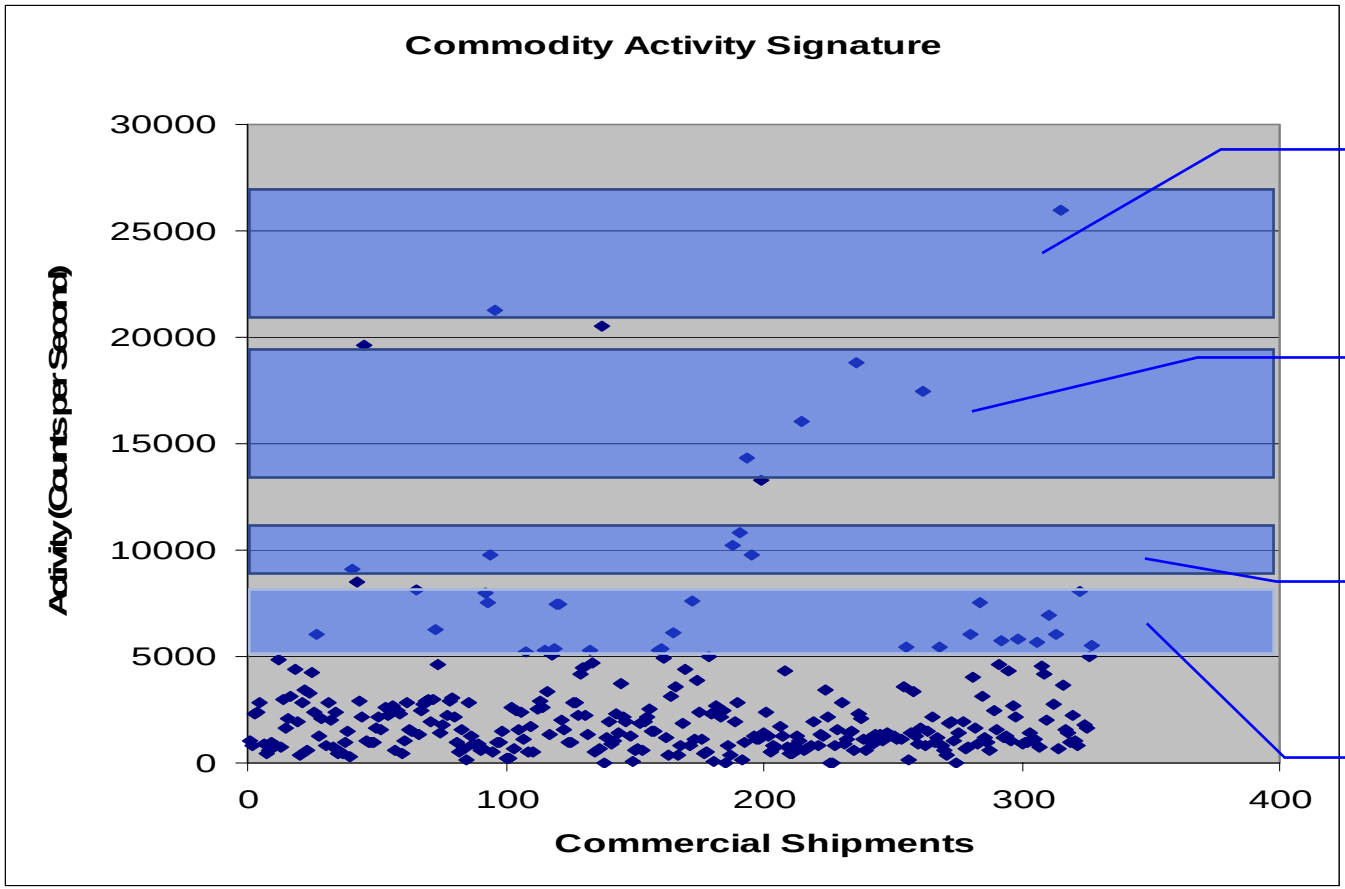
RAM LSA Impact



In Commerce Activity Signatures

(from Knox County Weigh and Inspection)



TENORM (electronics)

NORM (earthen materials)

TENORM (ceramics)

NORM (AG products)

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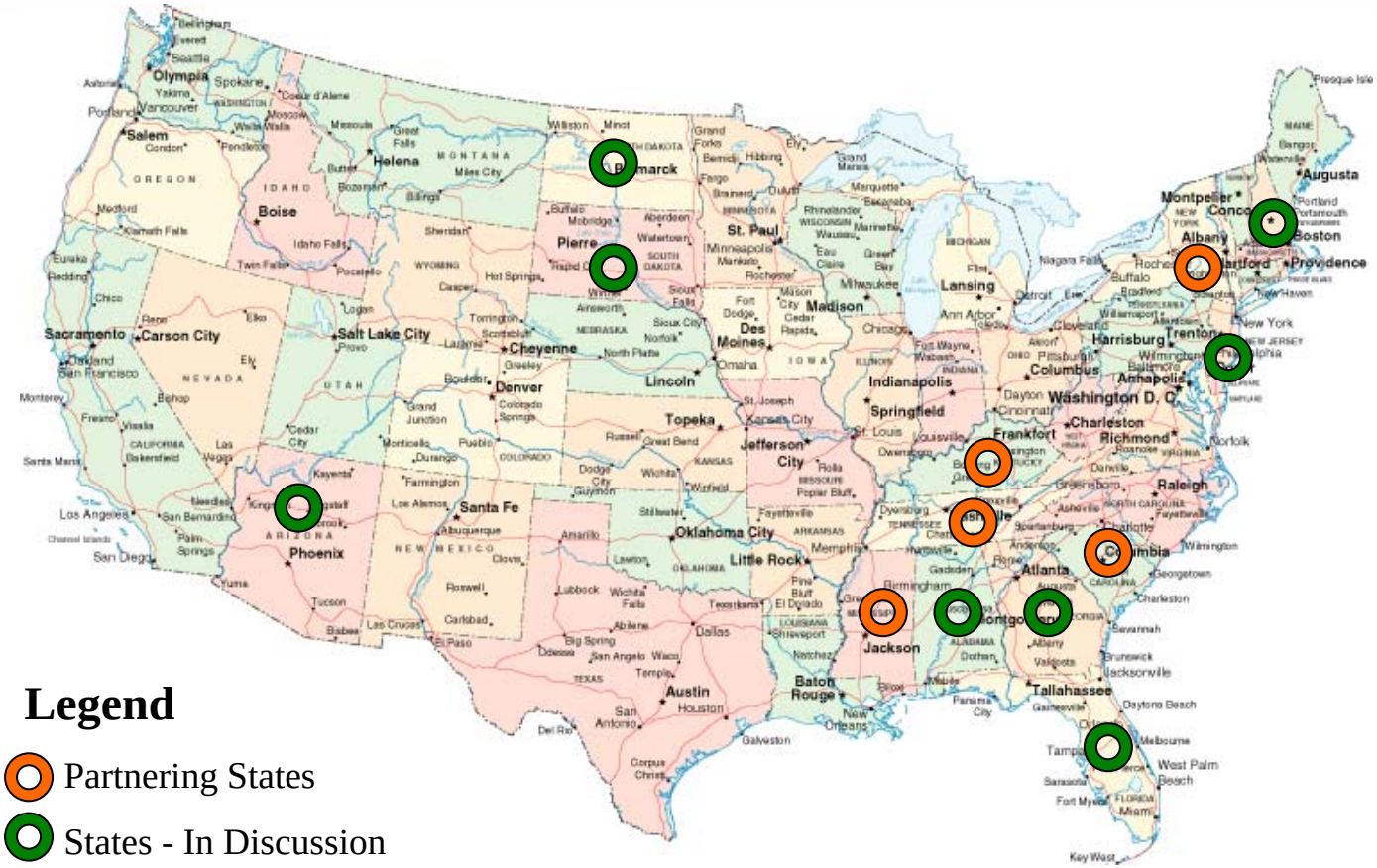
Partnering and In Discussion States



21st Century Commercial Vehicle Inspection System – Carrier Conceptual View

Carrier Information from US DOT #
Name Address Phone Email Tax ID # Safety Rating (Unsat, Conditional, Statisfac) Inspection Selection Score (ISS #) Out of Service (Frequency & Reason) Number of Insepctions (Vehicle & Driver) Number of Miles Driven (Total & by State) Pieces of Equipment (Power Unit, Trailers [Type], Tankers)

- Enablers
  - Databases
    - SAFER, IFTA, IRP
  - Technologies
    - Optical Character Recognition [OCR],
    - Pattern Recognition, and
    - Network Management

21st Century Commercial Vehicle Inspection System – Power Unit and Trailer Conceptual View

Vehicle Informatiion from License Plate #
Vehicle ID # (VIN)
Vehicle Type
Vehicle Model
Vehicle Year of Manufacture
Vehicle Color
Vehicle Owner
Gross Vehicle Weight
Insepction Frequency & Reason
Out of Service Frequency & Reason
Violations Frequency & Reason
Miles Driven by State
License Weight Group by State
Fuel Type

- Enablers
  - Databases
    - SAFER, IFTA, IRP, VIN #, License Plate, Police Stolen Vehicles
  - Technologies
    - Optical Character Recognition [OCR],
    - Pattern Recognition, and
    - Network Management

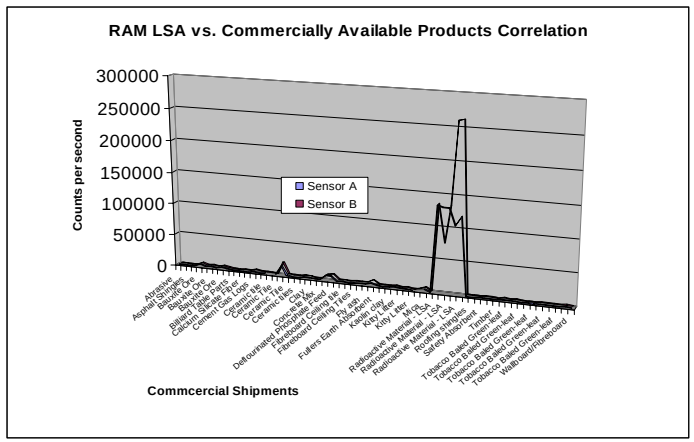
21st Century Commercial Vehicle Inspection System – Driver Conceptual View

Dirver Information from Commercial Driver's License
Name
Address
Physical Condition
Heght
Weight
Eye Color
Hair Color
Age
Picture
Special Endorsements
Restrictions
Violations (Frequency & Reason)
Out of Service (Frequency & Reason)
Police Records

- Enablers
  - Databases
    - CDL, FBI Wanted, NCIC
  - Technologies
    - Radio Frequency Identification and Bar Coding,
    - Biometrics & Pattern Recognition, and
    - Network Management

21st Century Commercial Vehicle Inspection System – Radioactive Cargo Conceptual View

- Enablers
  - Databases
    - Radioisotopes, DOE ICRMS (NORM, TENORM, and RAM)
  - Technologies
    - Radiological Monitoring, Infrared,
    - Video/Optical Identification, and
    - Network Management

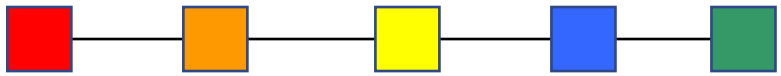


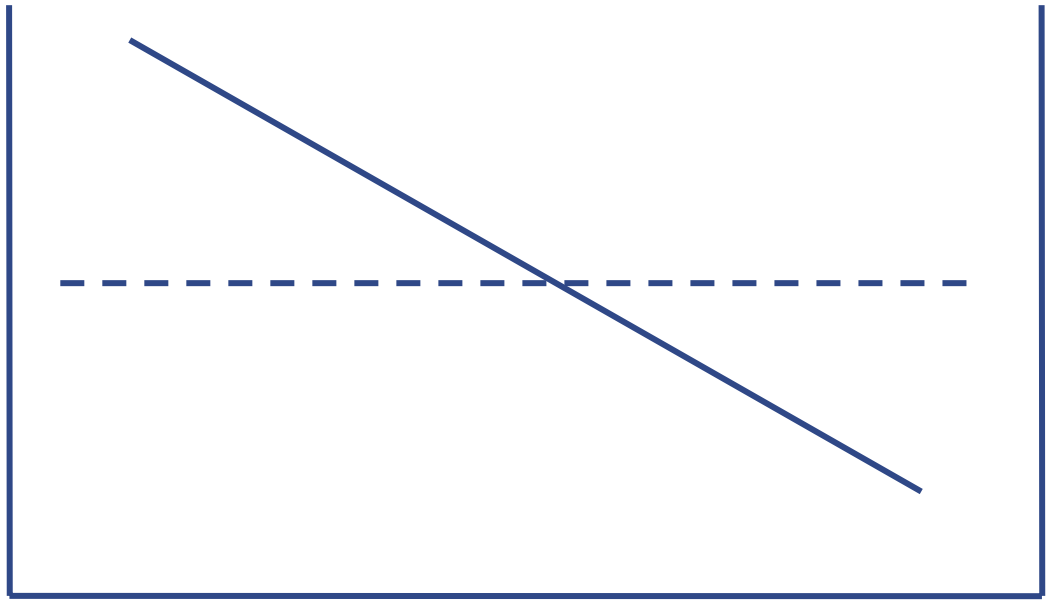
Integration of Homeland Security Operations at Weigh and Inspection Stations

- Current Enforcement Opportunities include:
  - Motor Carrier Safety Regulations
  - Hazardous Materials Regulations
  - Driver/Carrier Credentialing
  - Agricultural Embargoes
  - Illicit Cargo Interdiction
- Future Enforcement Opportunities include:
  - RAM Source Tracking
  - CBRNE Screening of Shipments, Drivers, Carriers In Commerce
  - Intermodal Expansion to Inland and Coastal Waterways
  - Integration of First Responders with Enforcement Activities
  - Infrared Load Configuration Identification

Managing Sensitivity and Selectivity
(Technologies Enhance Objectivity)

Sensitivity (Sliding Scale)





Numbers of Directed Inspections