Ontario – Québec
Smart Corridor | Corridor Intelligent

Concept of Operations
Stakeholder Workshop Series II
October 2011

IBI GROUP ROCHE CAMBRIDGE SYSTEMATICS

Québec Canada

Agenda

Segment	Duration
Arrivals	
Introductions	9:30-9:45
What We have Heard So Far	9:45-10:15
Stakeholder/Inventory Validation	10:15-11:00
Break	**11:00-11:15**
Operational Concepts	11:15-11:30
User Views Breakout	11:30-12:30
User Views Plenary Session	12:30-1:00
Lunch	**1:00-1:45**
Service Views Breakout	1:45-2:30
Service Views Plenary Session	2:30-3:00
Next Steps	3:15-3:30

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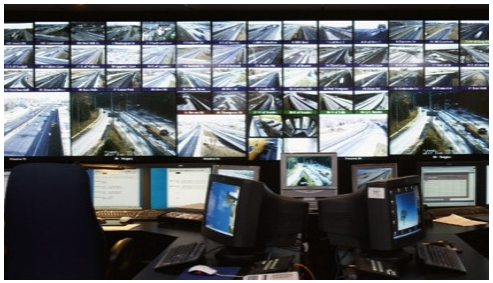
INTRODUCTION

What makes a Corridor "Smart"?

- *Applying new and emerging technologies to improve operational efficiency.*
- *Sharing information among systems to achieve benefits of coordinated operations*

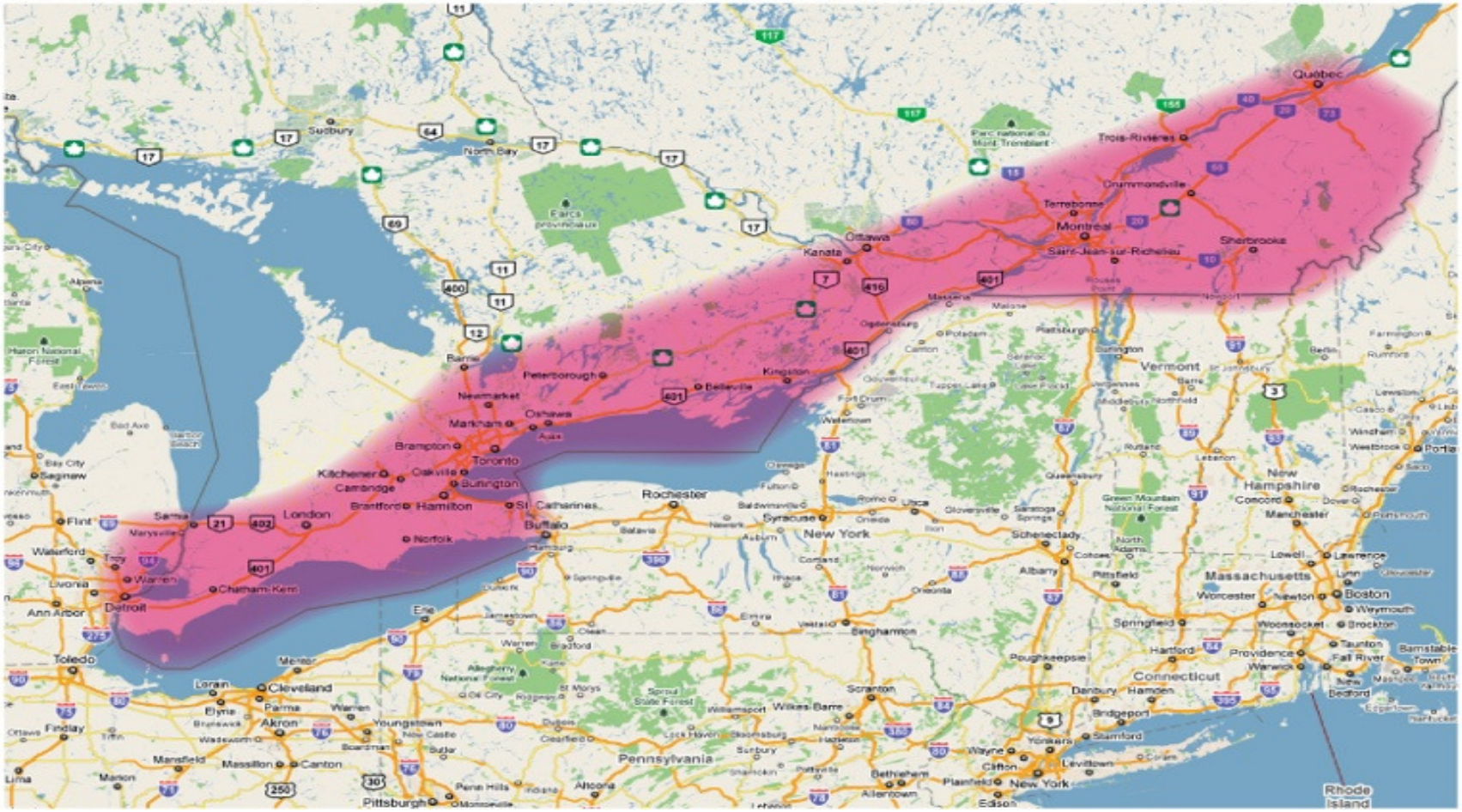
Opportunities

- Electronic filing of credentials/reporting
- Automated means of inspection
- Automated authentication of vehicles, cargo, and personnel
- Seamless electronic transactions/payments
- Terminal reservations
- Dangerous goods tracking
- Readily accessible current/predictive travel conditions information



What is the Ontario-Québec Corridor?

- The corridor covers the region from Windsor to Québec City and south to the Canada/U.S. border



What is the Ontario-Québec Corridor?

Goods movement across all modes




Includes intermodal terminals, highways and border crossings




With the objectives of:

- *Sustainable, secure and efficient multimodal transportation*
- *Competitive, attractive for investment, and essential for trade*

Stakeholder Outreach

- *Concept of Operations and underlying Regional ITS Architecture will be developed through stakeholder consultation to represent a consensus roadmap for how various system elements can work together*

Sectors included in outreach:

- Carriers, shippers, logistics providers, terminal operators
- Public sector transportation authorities
- International border authorities
- Information service providers
- Academia

Why are you here?

What will the Smart Corridor do for me?

- Improve efficiency in terms of:
  - Reduced trip/queue times
  - Less variability in travel time
  - Less paperwork burden

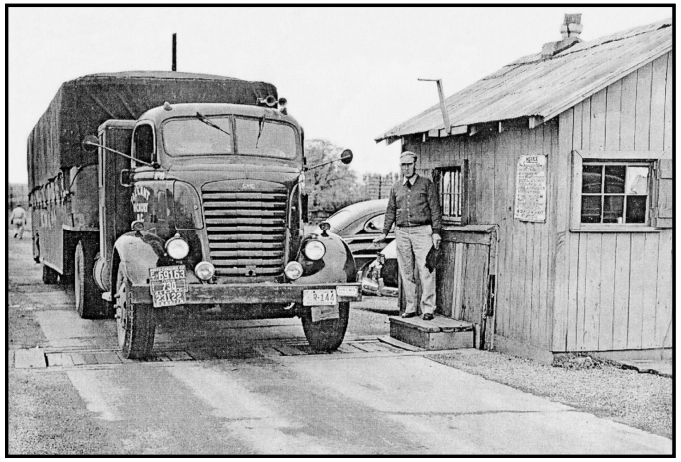
How is this achieved?

- Information you need when you need it
  - e.g. filing credentials; shipment tracking
- Congestion management
  - e.g. demand management; predictive analysis; reservation systems
- Implementation of data standards in a transportation environment
  - Facilitates data exchange

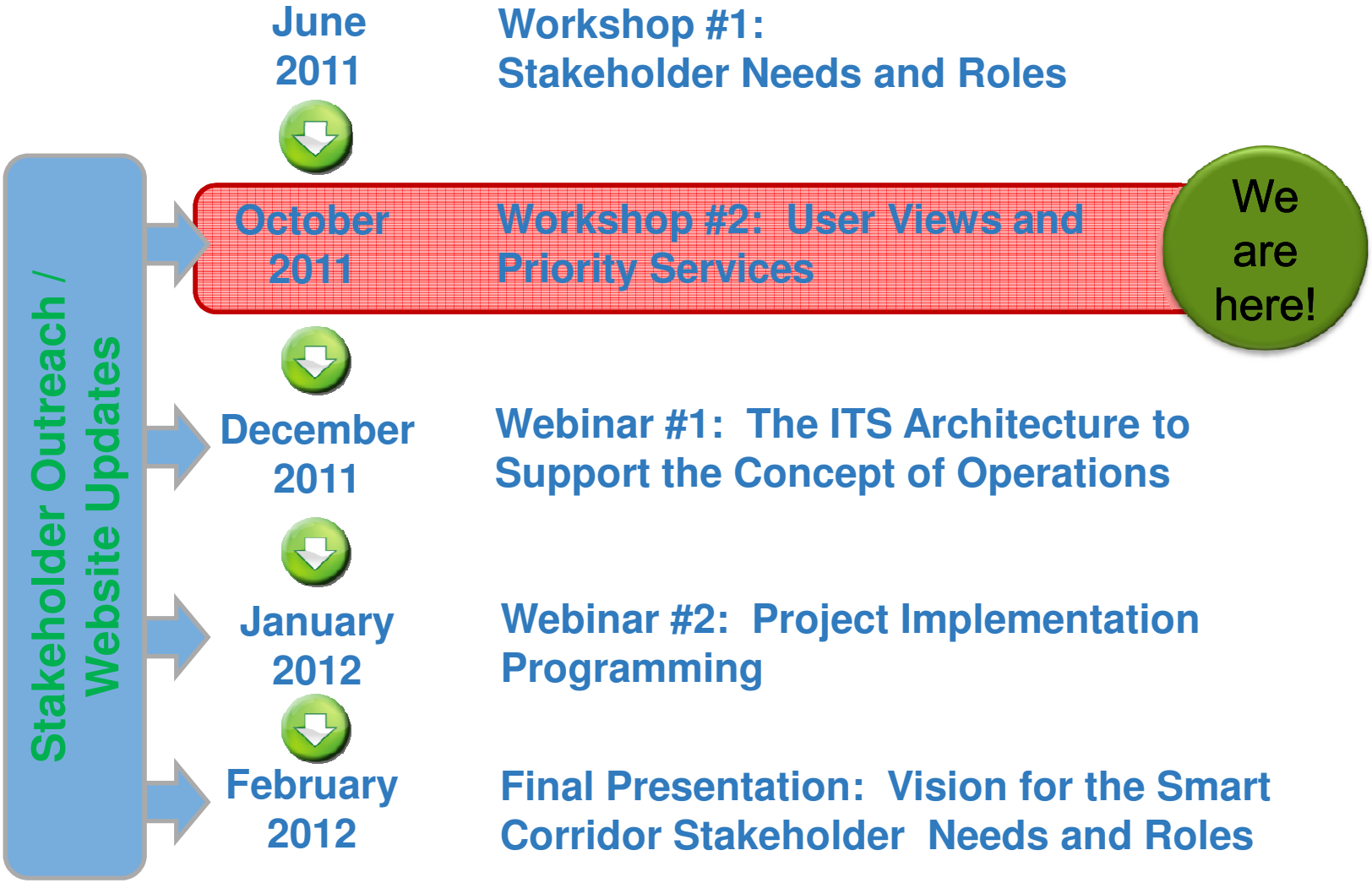
Why are you here?

The Smart Corridor will help guide a coordinated approach to technology investment in the corridor

- Management of investment risks
- Prioritization of deployment in coordination with public and private sector stakeholders
- Respective of security and commercial interests



Upcoming consultations and final presentation



Introductions

- Project Team

- Participants
  - Who you are?
  - Who do you represent?
  - What do you want to get out of your involvement?

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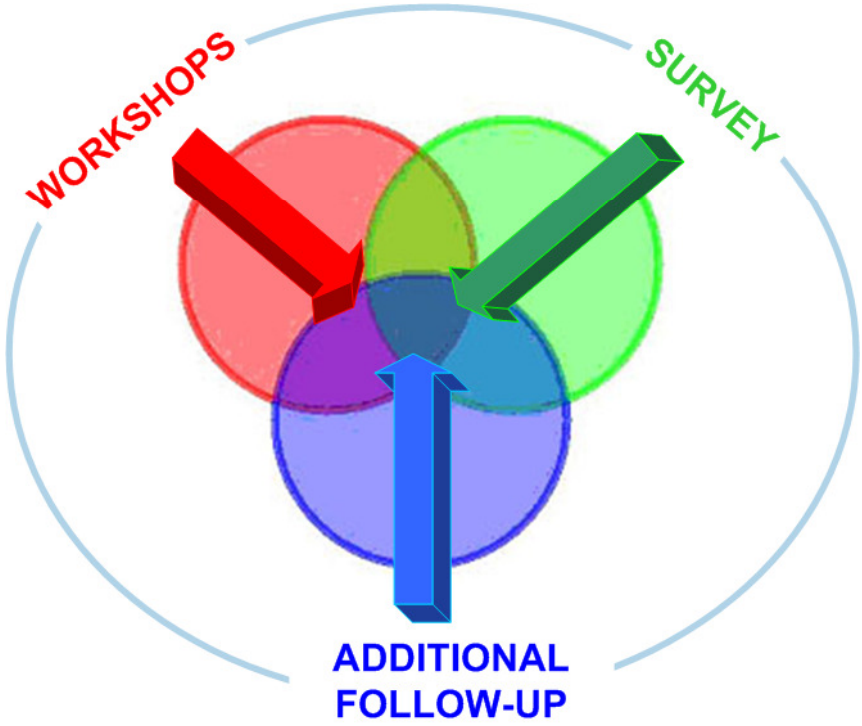
WHAT WE HAVE HEARD SO FAR

Needs Assessment

- Objective: ***"to develop an understanding of the current state of the Corridor transportation system, and then identify, describe and organize the needs into a consistent framework."***

- Feedback obtained from…
  - Workshops
  - Survey
  - Additional Follow-up

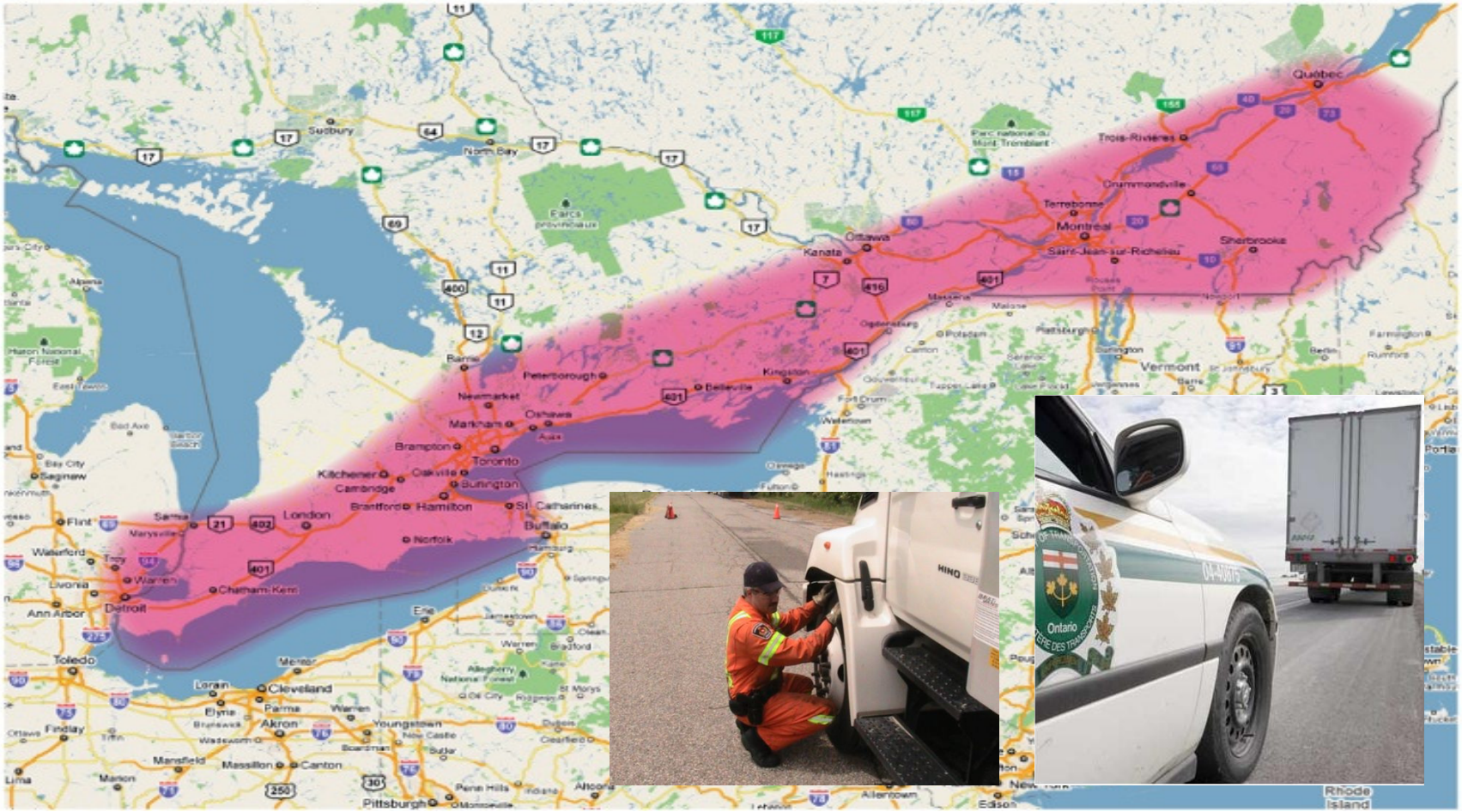
  was brought together to identify the **key** needs



- Introduction to architecture and vision for the Corridor Concept of Operations
- Breakout sessions:
  - **SWOT Analysis**
    - **Strength and Weaknesses** of current Corridor Operations
    - **Opportunities and Threats** of achieving a Smart Corridor
  - **Existing Systems** and **Needs**
    - **Systems and Devices** to support Corridor Operations
    - **Who owns/operates** the equipment
    - **Status** of equipment

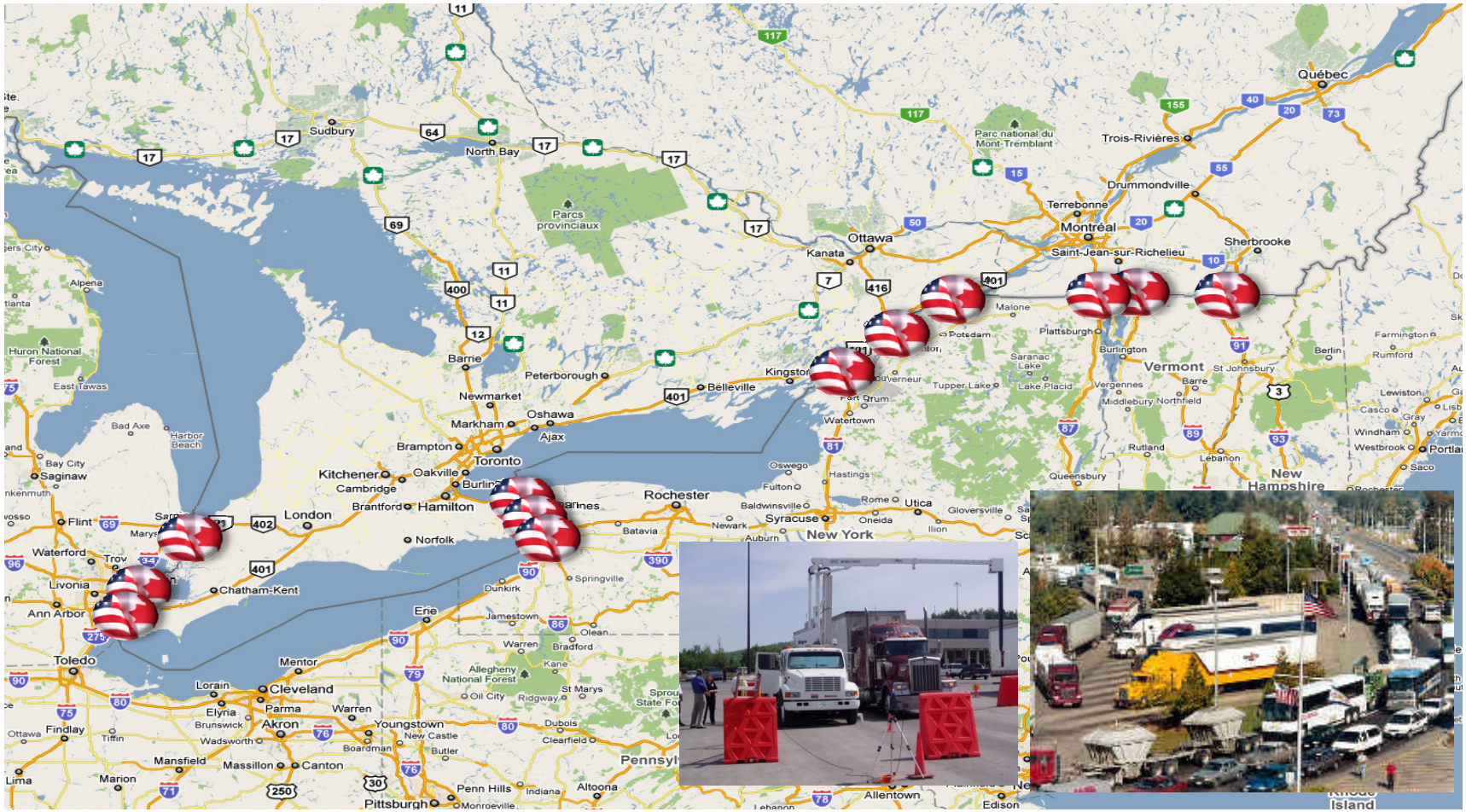
Key Needs

- Improve the efficiency of roadside safety inspections



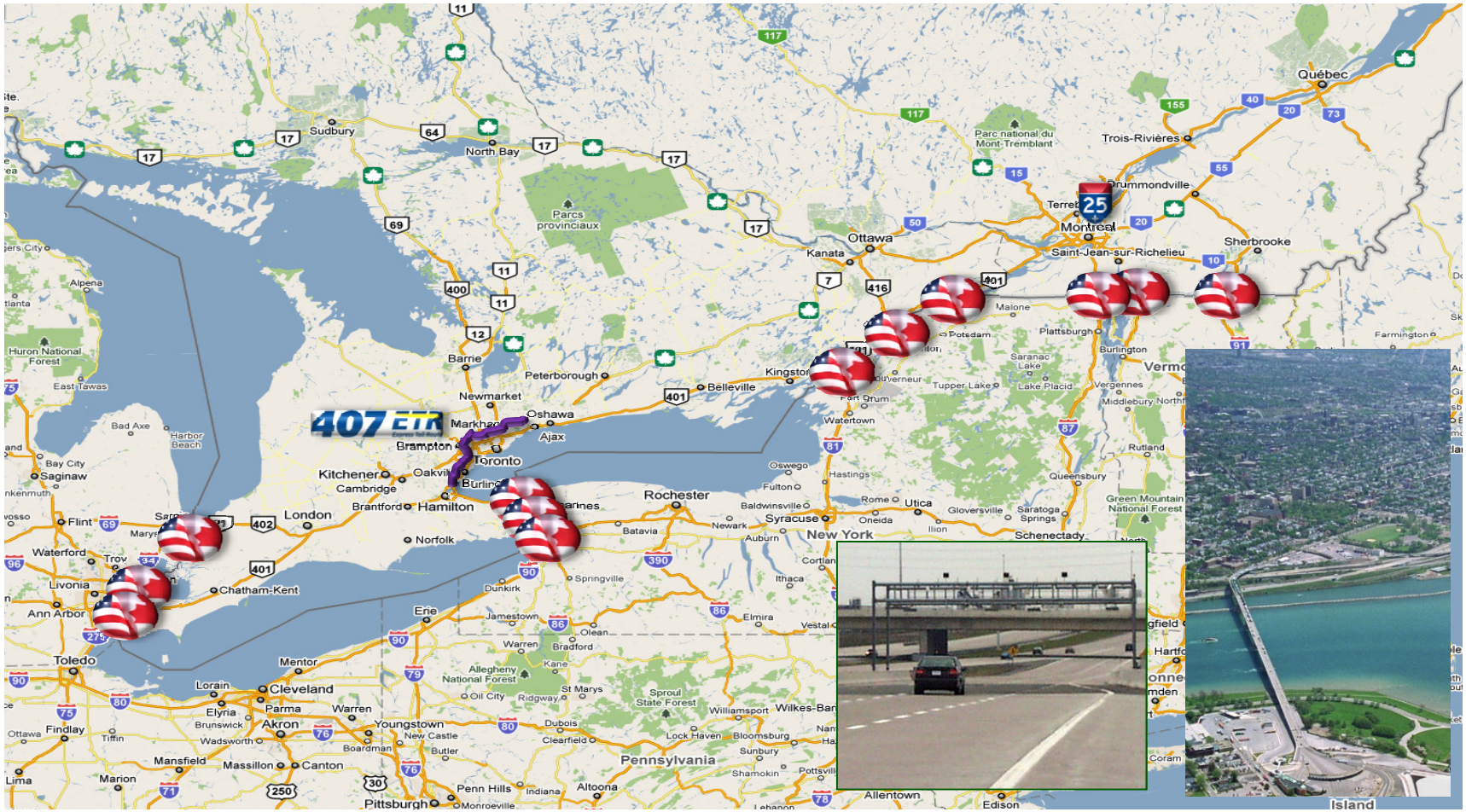
Key Needs

- Improve the efficiency of border customs inspections



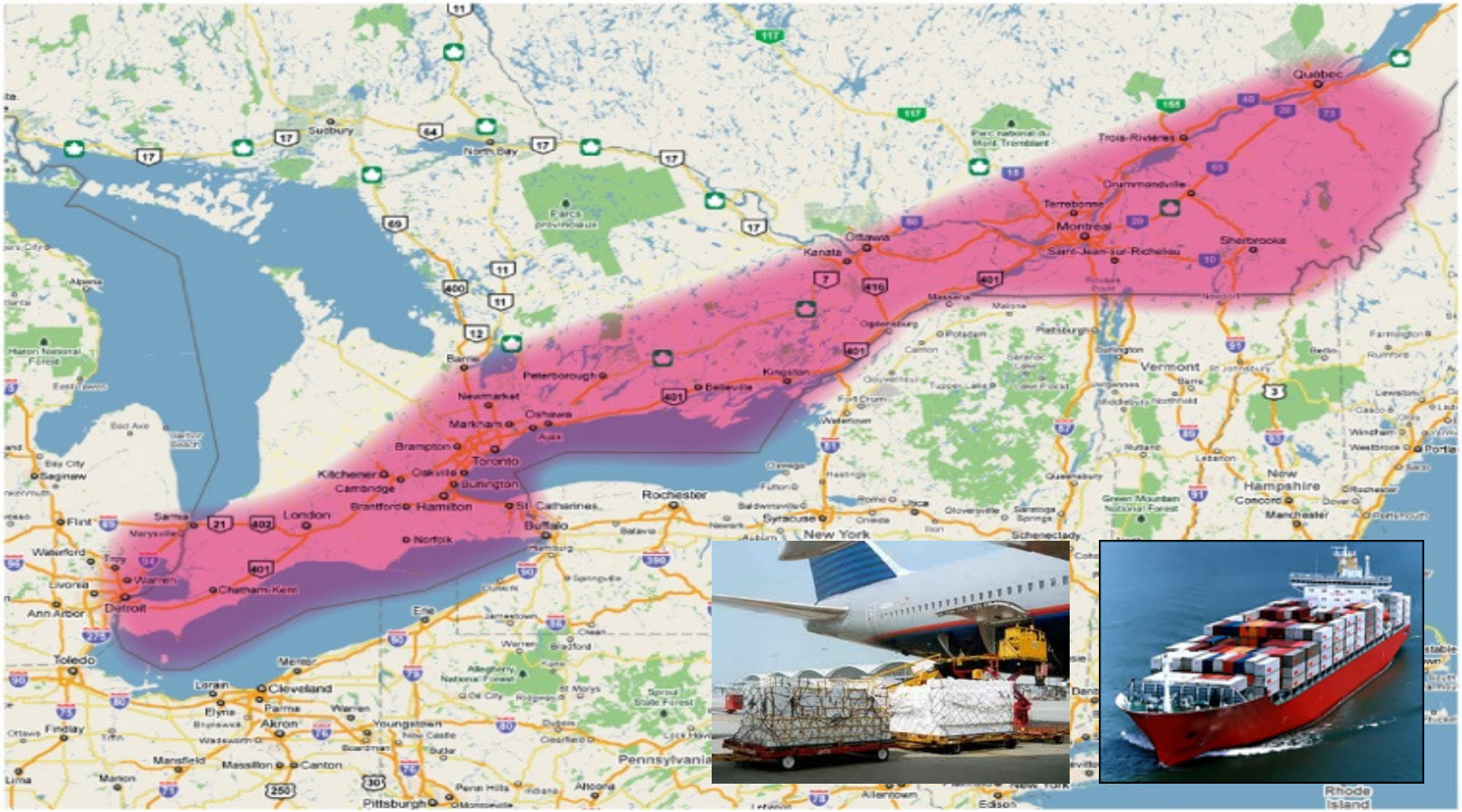
Key Needs

- Improve the efficiency of international crossings and other tolled facilities



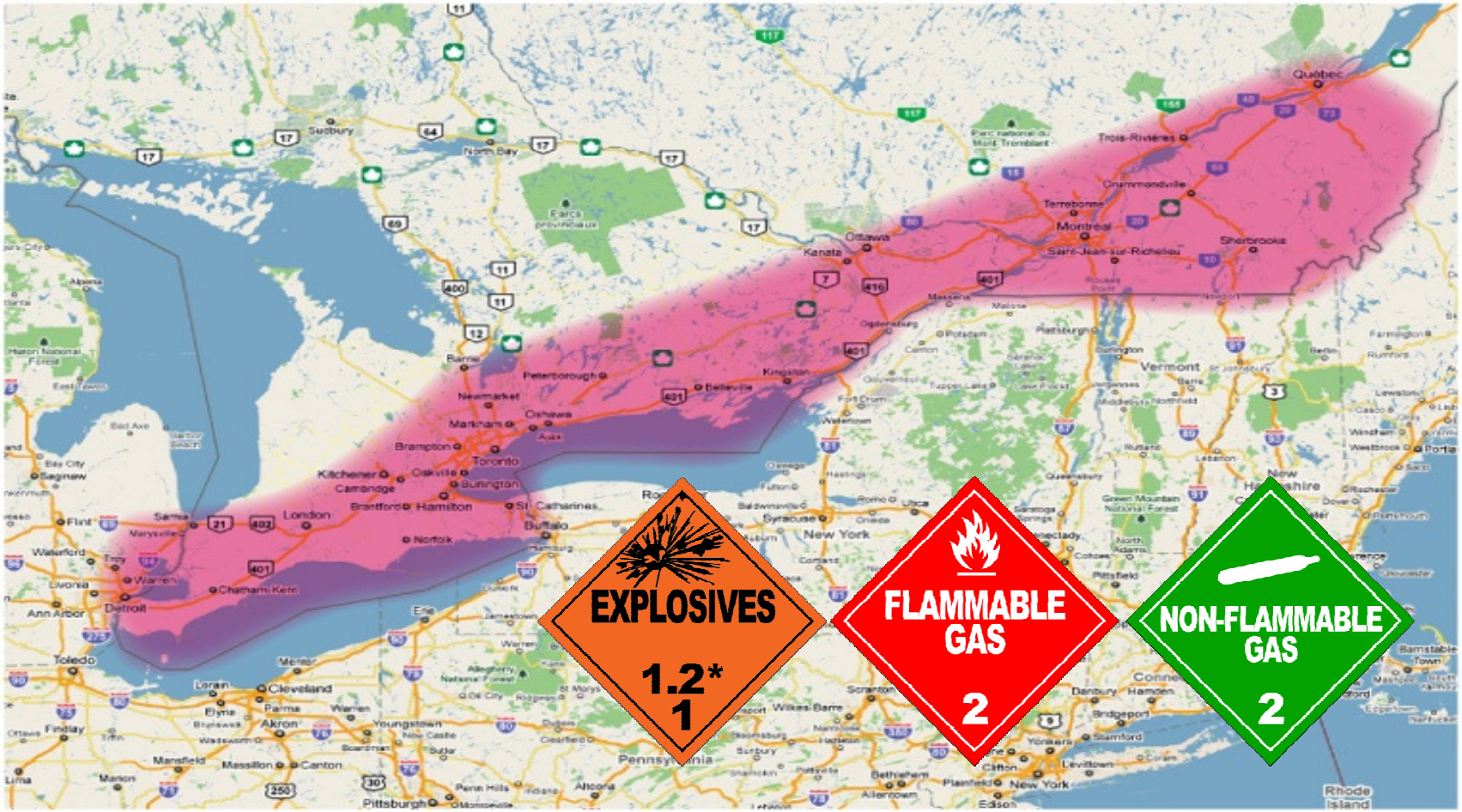
Key Needs

- Improve tracking of shipments



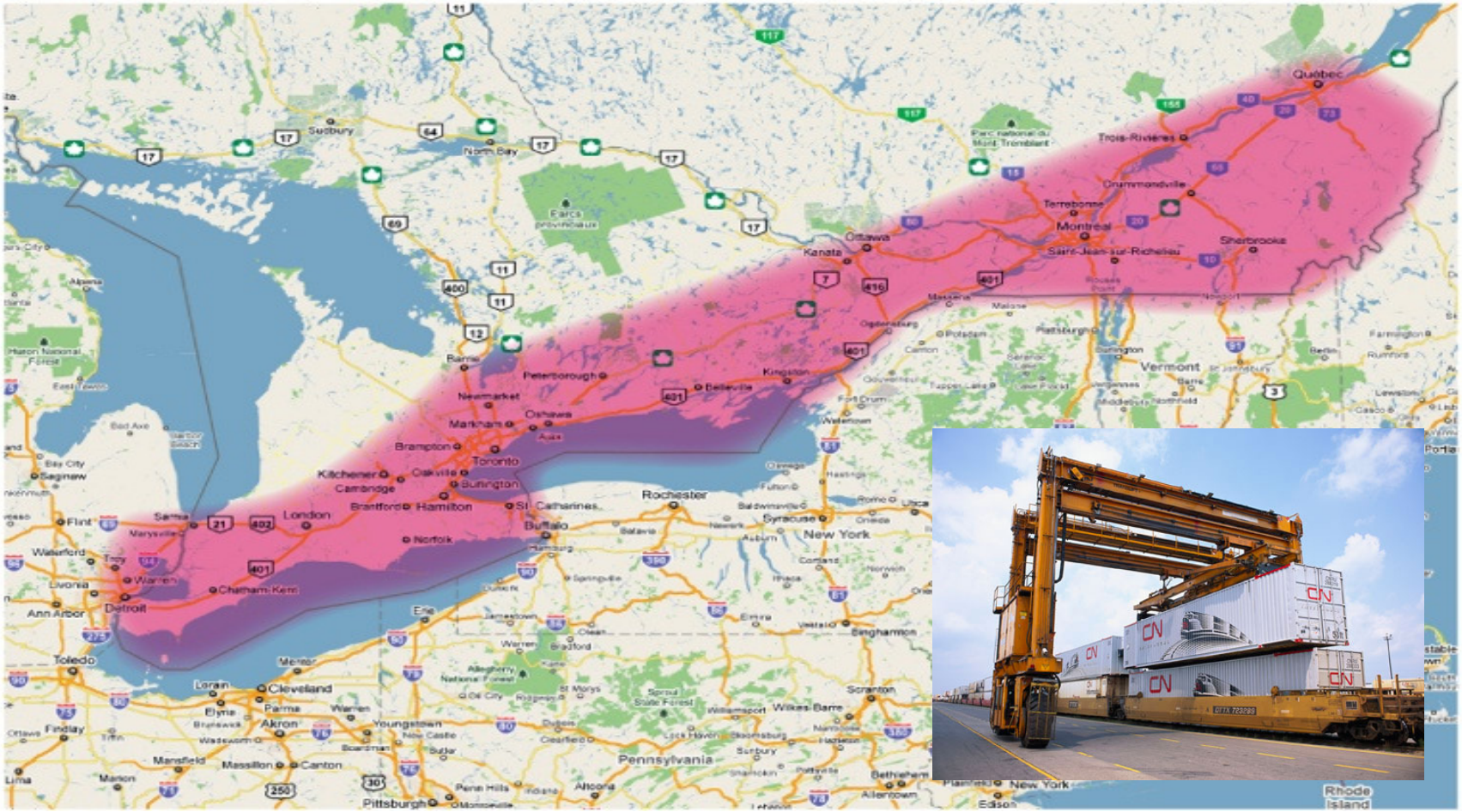
Key Needs

- Improve management of dangerous goods movements



Key Needs

- Improve the efficiency of intermodal transfer points



Key Needs

- Improve traffic management including incident management and inter-jurisdictional coordination

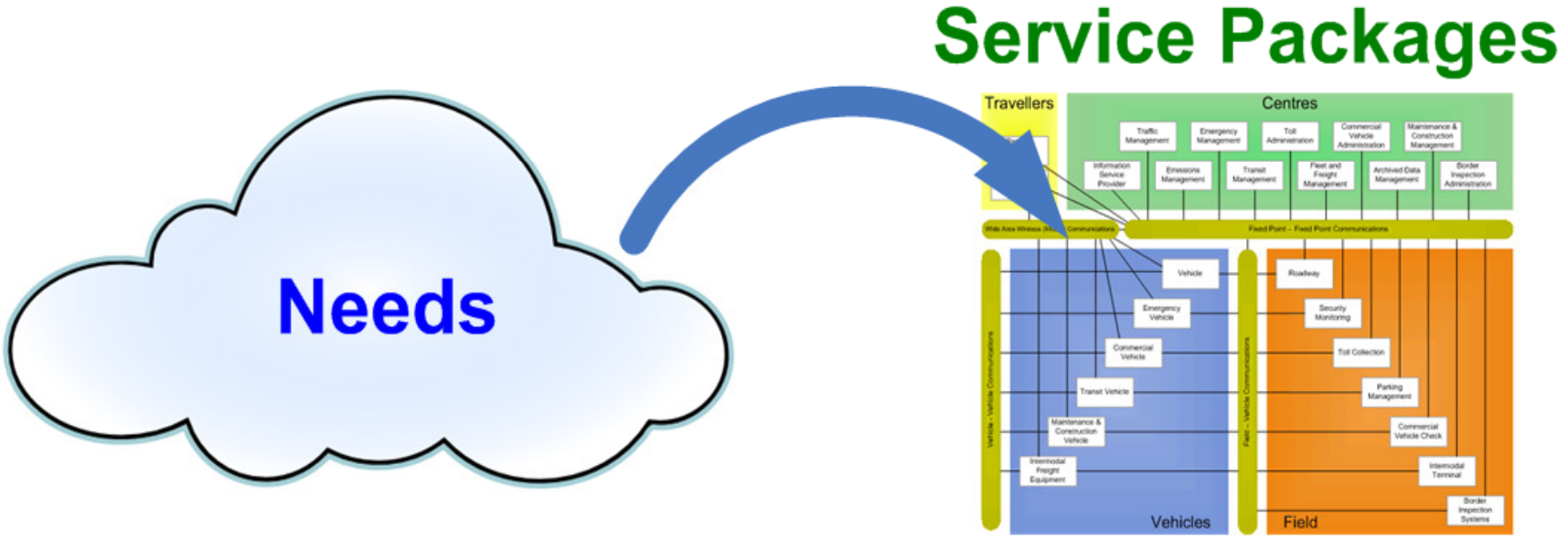
Key Needs

- Improve the coordination and dissemination of real-time traveller information

Key Needs

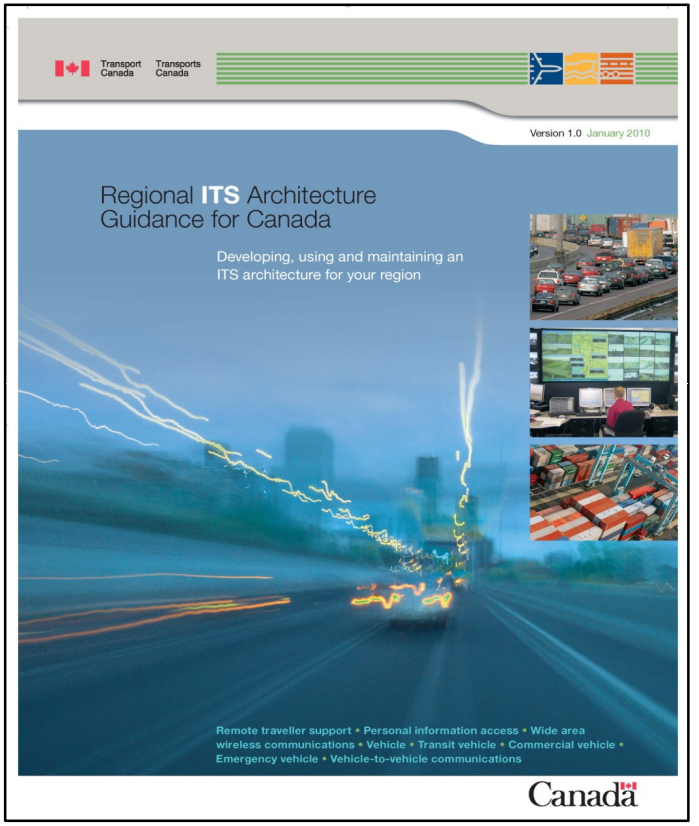
- Improve commercial vehicle on-board systems

- Establish an architectural framework for the needs identified by relating them to Service Packages



- ITS Architectures
  - *A powerful tool for planning the regional development and integration of transportation systems*

- **Architecture helps to define what the elements of the system do and the information that is exchanged between them**
- **Transport Canada has published a guidebook and software tool to assist stakeholders in developing Regional ITS Architectures.**
- **This methodology will be applied to in order to develop the Smart Corridor Concept of Operations**

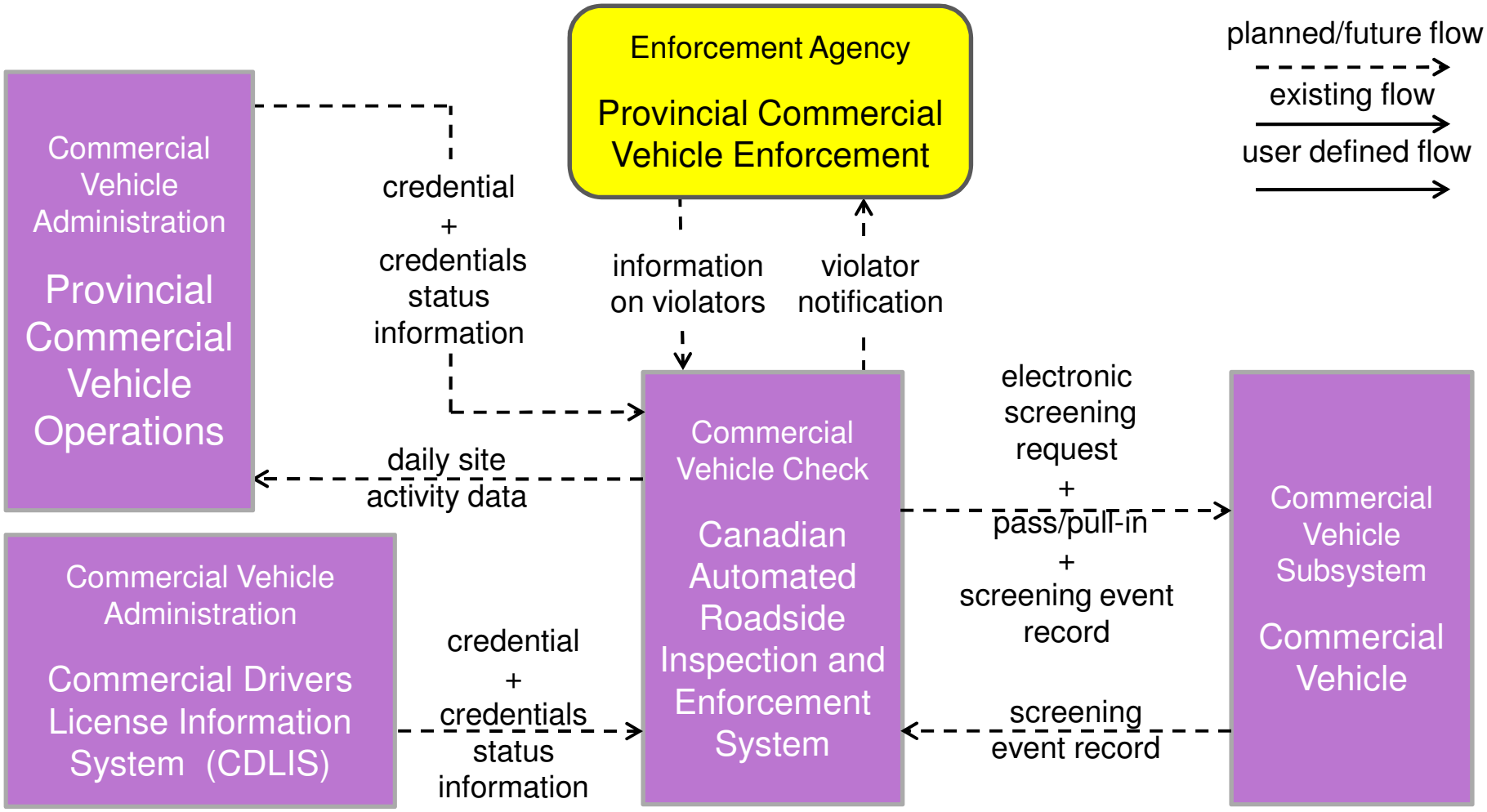


http://www.tc.gc.ca/eng/innovation/its-architecture.htm

Service Packages

- Service packages piece together the building blocks (e.g. inventory elements) and flows of information that are required to implement a particular ITS service
- Provide an accessible, service-oriented perspective to the architecture
- Can be tailored to fit, separately or in combination, real world transportation problems and needs
- Readily recognizable and deployable applications

CVO03 – Electronic Clearance Provincial CVO-Roadside Interfaces



Overall Priority Service Packages

- Fleet and freight management:
  - Fleet Administration
  - Freight Management
  - On-board CVO
  - Dangerous Goods
  - Freight Terminal Management

Overall Priority Service Packages

- Expedited inspection and administration for commercial vehicles and goods:
  - Administration Processes
  - Electronic Clearance
  - Weigh-in-motion
  - International Borders
    - Registration
    - Pre-processing
    - Inspection

Overall Priority Service Packages

- Traffic and incident management:
  - Freeway/Arterial Control
  - Regional Traffic Management
  - Emergency/Disaster Management
  - Winter Maintenance

Overall Priority Service Packages

- Collection and distribution of real-time traveller information:
  - Traffic Information Dissemination
    - Broadcast
    - Interactive
  - Data Sharing
  - Weather Data Collection

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STAKEHOLDER/INVENTORY VALIDATION

Building Blocks of the Architecture

- The first step in the process of developing an architecture frame work is to define the building blocks:

  - ***Stakeholders*** – Actors (owners, operators and maintainers of ITS elements)

  - ***Inventory*** - ITS elements (centres, systems, devices)
    - existing, planned and proposed

- Initial list of Stakeholders and Inventory developed based on:
  - Results from first set of workshops
  - Border Information Flow Architecture (BIFA)
  - Other Regional ITS Architectures
    - MTO (Traveller Information Services)
    - MTQ
    - City of Montreal
    - New Brunswick-Maine (International Border)

Stakeholders and Inventory

Stakeholder	Description	Element	Status
MTO Road User Safety Division	The Road User Safety (RUS) Division is responsible for licensing, inspection and operations related to personal and commercial vehicles. Relevant departments include the Carrier Safety and Enforcement Branch (CSEB) and Regional Operations Branch…	MTO Carrier Enforcement Program Systems	Existing
		MTO CV Enforcement Officers	Existing
		MTO CV Enquiry Systems	Existing
		MTO CV Mobile Inspection Equipment	Existing
		MTO CV Roadside Data Capture Systems	Existing
		MTO CV Roadside Inspection Facilities	Existing
		MTO WIM Equipment	Planned
		MTO Wireless Roadside Inspection Equipment	Planned

Stakeholders and Inventory (continued)

Stakeholder	Description	Element	Status
Québec Roadway Inspection Agency	The Québec Roadway Inspection Agency is an agency that is part of the Société de l'assurance automobile du Québec (SAAQ) and is responsible for safeguarding road users and applying the acts and regulations that affect the passenger and freight transportation industry. The mission of Contrôle routier Québec is to enforce legislation governing Québec's passenger and freight transportation industry through roadside interventions and facility audits. The Québec Roadway Inspection Agency comes under the authority of Québec's Minister for Transport.	SAAQ Roadside Commercial Vehicle Inspection Station Systems	Existing

Stakeholder Aggregation

- Goods Movement Related
  - by function (e.g. shipper, carrier, broker)
  - one organization may be responsible for multiple functions (e.g. Walmart)
- Provincial Ministries of Transportation
  - key departments/offices that relate directly to ITS
- Common Stakeholders
  - e.g. Municipal Transportation Agencies
  - represent common agencies with similar elements and responsibilities
  - minimizes duplication simplifies framework diagrams

Charge to Participants – 45 Minute Agenda

- Review Draft Stakeholders and Inventory
  - Handout of 'straw man' list, organized alphabetically by Stakeholder
  - Provide Comments
    - Names
    - Descriptions
    - Missing Stakeholders/Elements
    - Incorrect status
  - Facilitators will circulate for assistance and to answer questions

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OPERATIONAL CONCEPTS

Operational Concepts

- We have baselined our needs, and priorities to address these needs
- Now, we will take a creative look ahead to envisage the Smart Corridor
  - Long term 'Utopia' scenario
  - Focus on innovation; not barriers
- Need to define what it is that we want to achieve
  - Then in due course establish an approach to take us there

Operational Concepts

- Create a common vision of how the Smart Corridor will function
- Our approach:
  - Create ‘day-in-the-life’ scenarios for various types of stakeholders operating in the Corridor – ‘User Views’
  - Document using a work flow diagram to identify physical movements and associated information flows
- ‘Straw man’ user views for stakeholders to refine

Focus Areas for User Views

- Customer/Shipper
  - Logistics service providers, 3PL's and freight forwarders, factory, DC, consignee
- CVO Operators
  - Trucking companies, corporate fleets, independent owner/operators, truck drivers
- Border/POE Agency
  - Canada Border Services Agency (CBSA), US Customs and Border Protection (CBP), Emergency Measures
- Provincial CV Enforcement
  - Ontario Ministry of Transportation, SAAQ

Examples of Potential Benefits of Applying ITS to the Four Areas

- Customer/Shipper
  - Example: Improved reliability in JIT logistics through real-time tracking
- CVO Operators
  - Example: Congestion avoidance through real-time traveller information dynamic routing
- Border/POE Agency
  - Example: Improved security and shorter crossing times for “trusted shippers” enrolled in ITS system
- Provincial CV Enforcement
  - Example: Conduct wireless roadside inspections

Breakout Groups Process for Developing User Views ConOps Inputs

- Determine key problems that may be addressed via ITS solutions
  - Develop Problem-Solution Pairs
- Analyze the Problem Solution Pairs
  - Based on opinions of benefits, utility and cost
  - Select one or two for further assessment
- Define/document current workflow process
- Define/document workflow process with ITS solutions included
  - Select applicable ITS Service Packages and/or define applicable technology application areas

Example of Workshop User Views Assessment

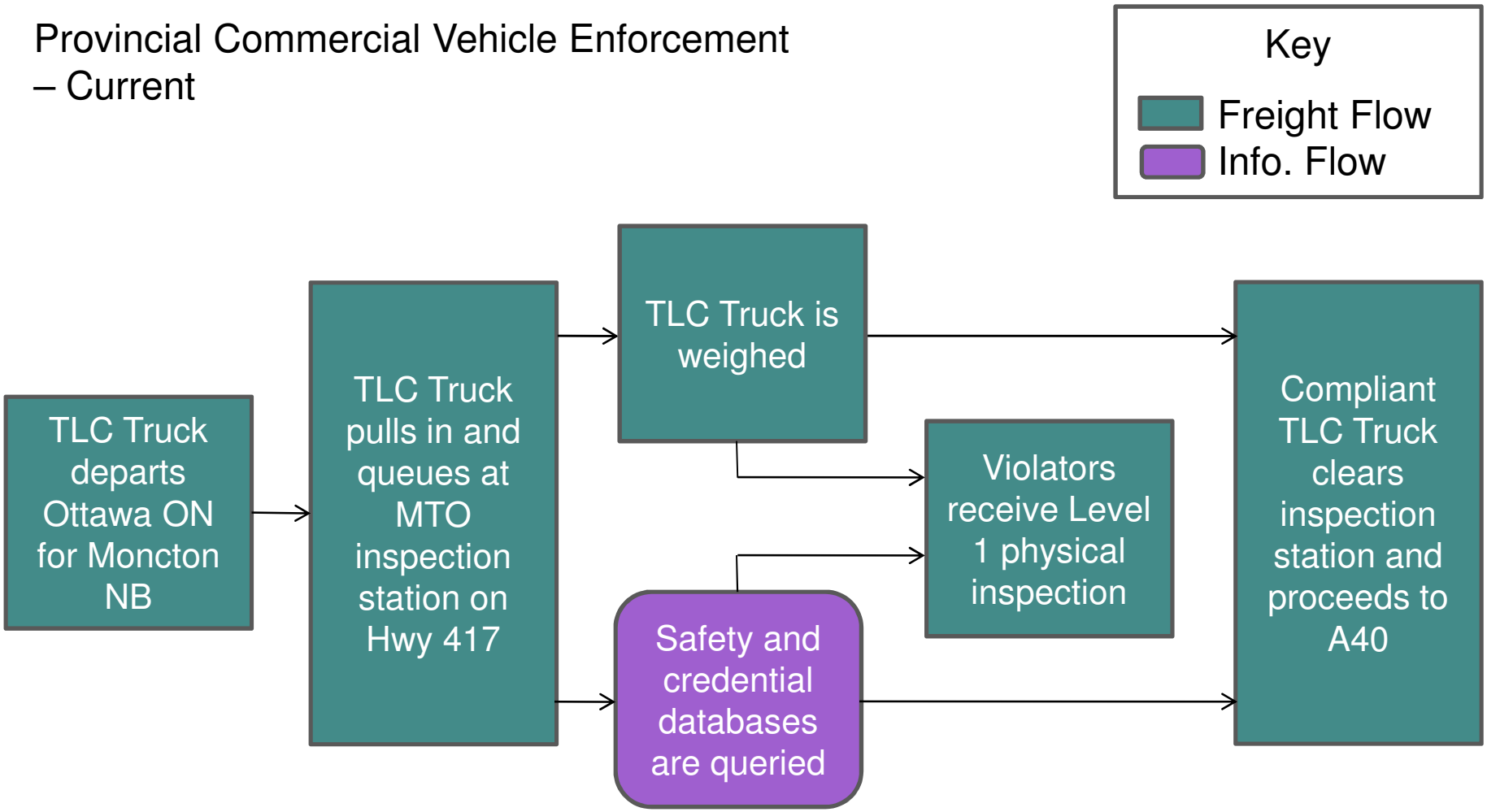
- Provide a walk-through example of a User Views Assessment for the following Problem-Solution Pair:
  - User View: Provincial Commercial Vehicle Enforcement
  - Problem:
    - Ability to detect and process violators while mitigating congestion and delays; optimize available resources to target offenders
  - Solution:
    - Utilize technologies to automatically report load, credentials, and safety status; direct resources to violators

Analyze the Problem Solution Pair (CV Enforcement Example)

- Stakeholder Opinions on Benefits
  - Provide travel time savings for motor carriers at inspection stations
  - Provincial resources focused on likely violators
- Stakeholder Opinions on Utility
  - Deployment would likely consist of wireless communications linked with on-board diagnostics on the truck, mainline WIM and roadside readers, and backoffice system
- Stakeholder Opinions on Cost
  - Capital, operation and maintenance costs should be manageable within the context of current operations

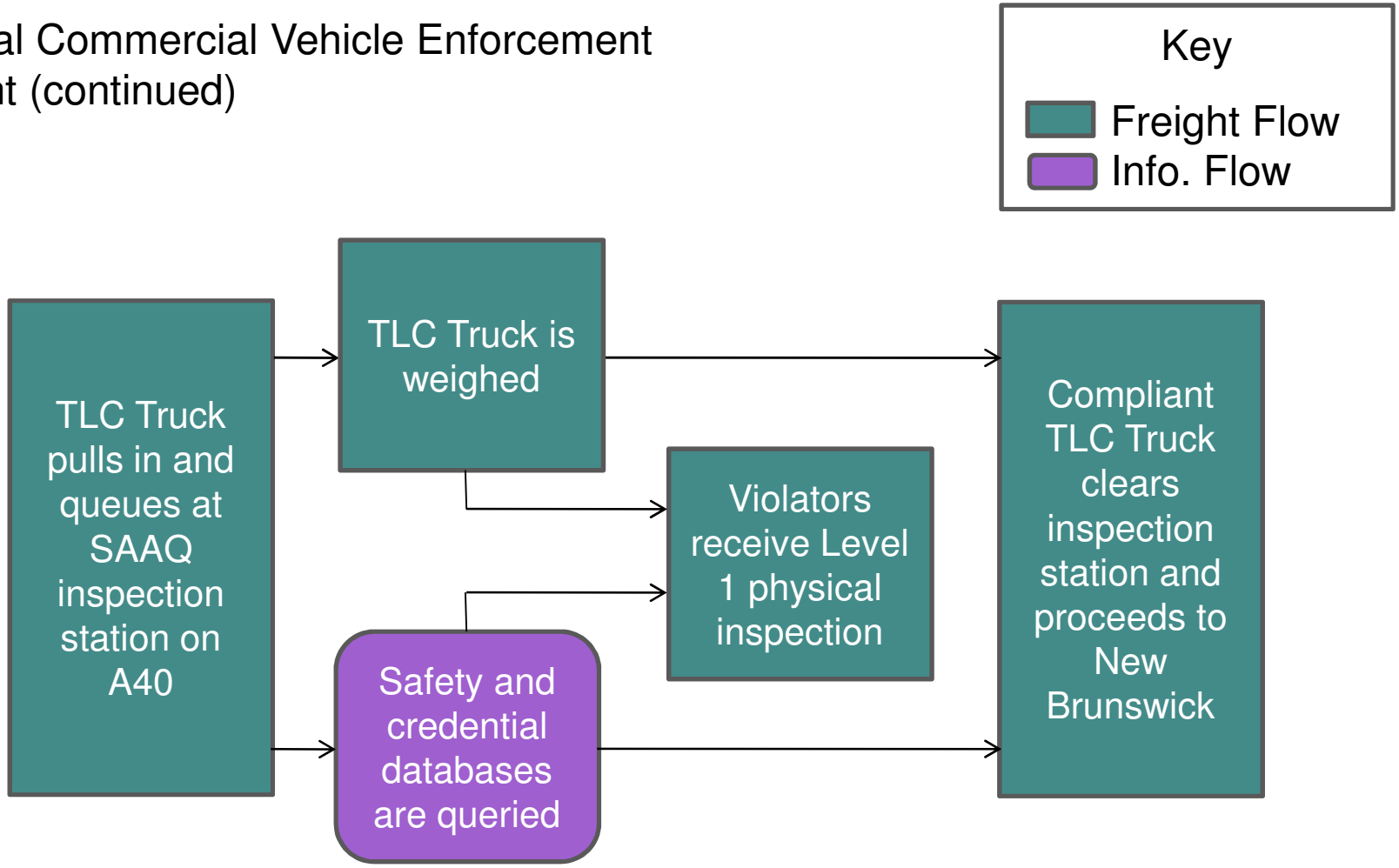
Define/Document Current the Workflow Process (CV Enforcement Example)

Provincial Commercial Vehicle Enforcement – Current



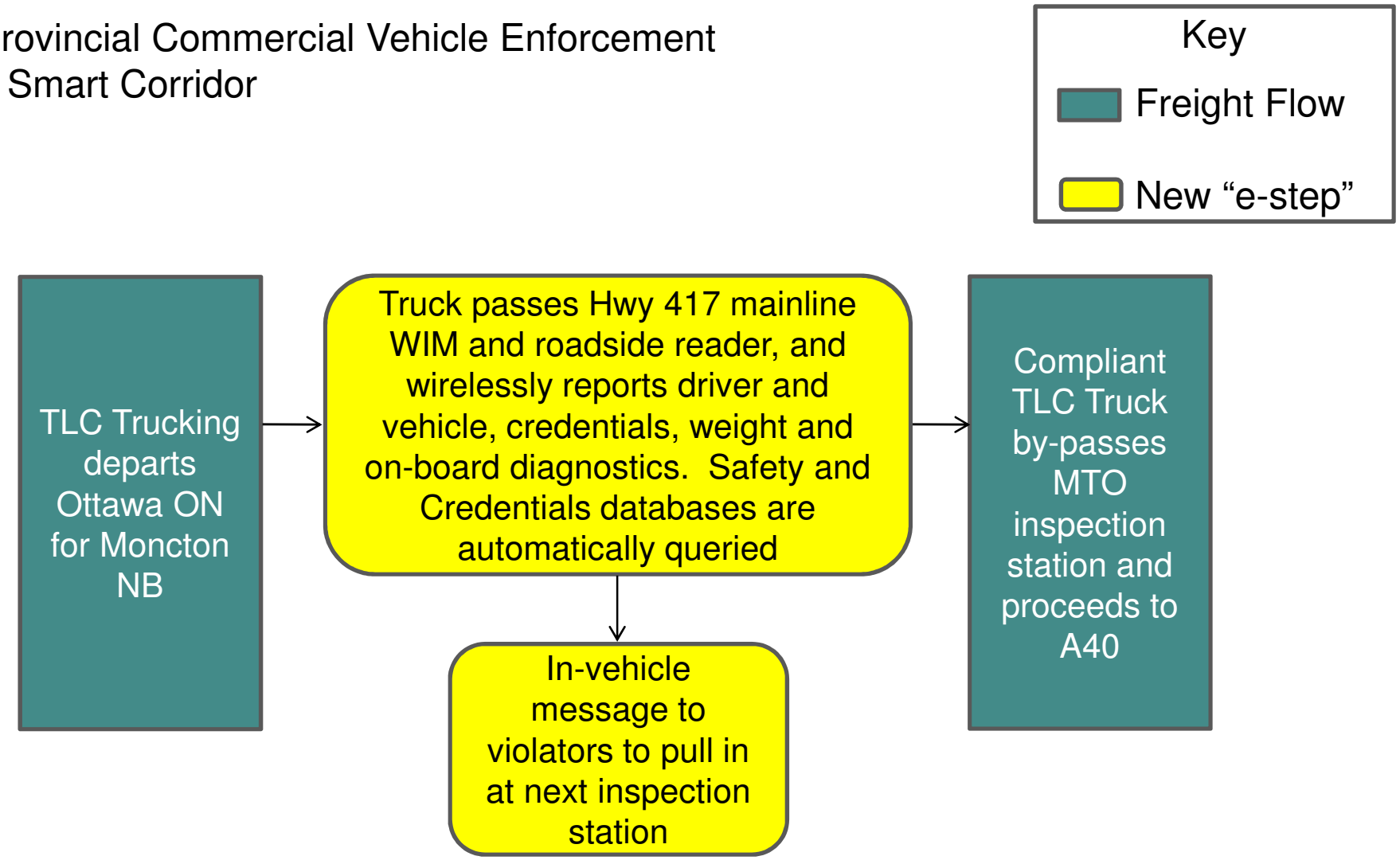
Define/Document Current the Workflow Process (CV Enforcement Example)

Provincial Commercial Vehicle Enforcement – Current (continued)



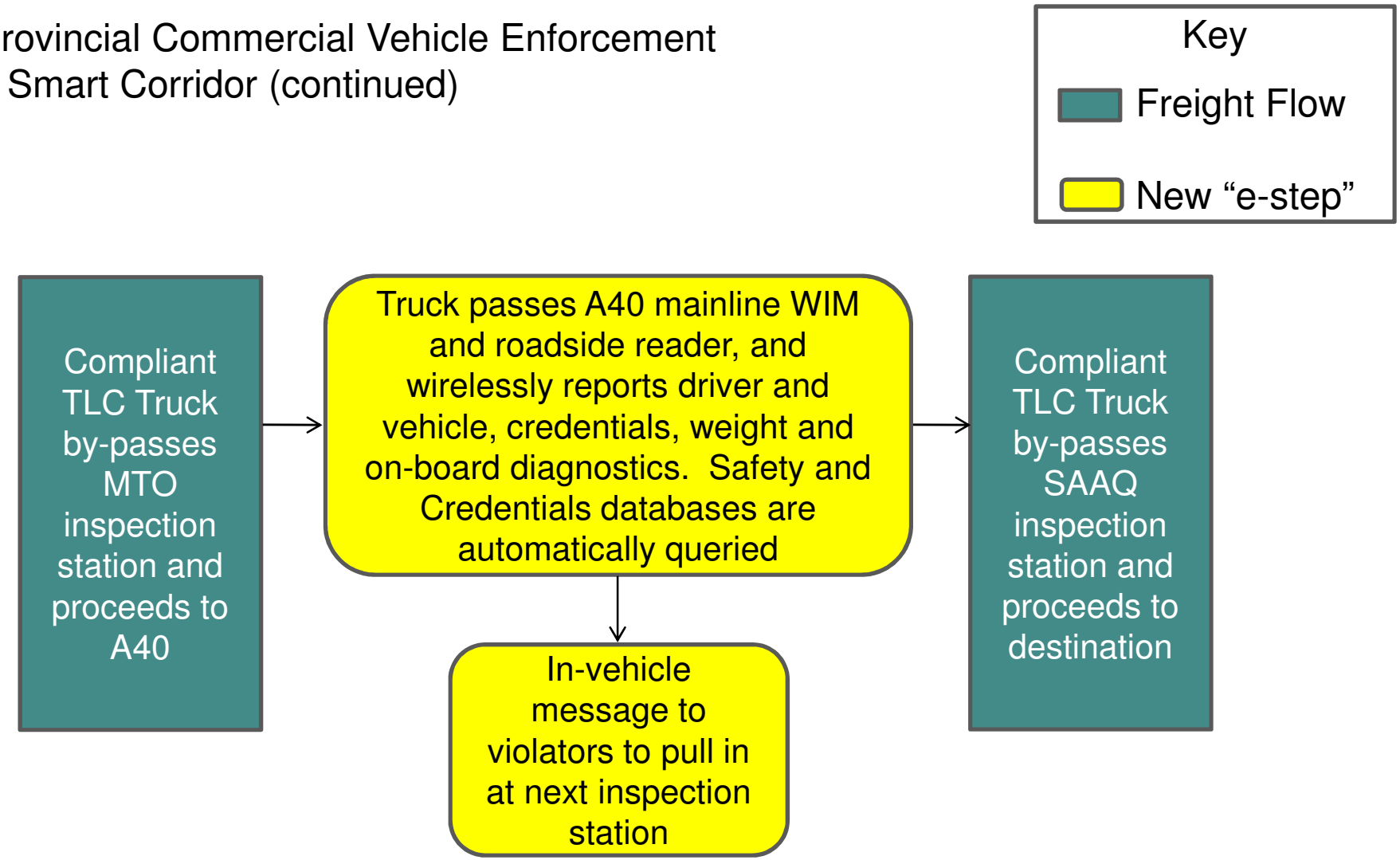
Define/Document Current the Workflow Process (CV Enforcement Example)

Provincial Commercial Vehicle Enforcement – Smart Corridor



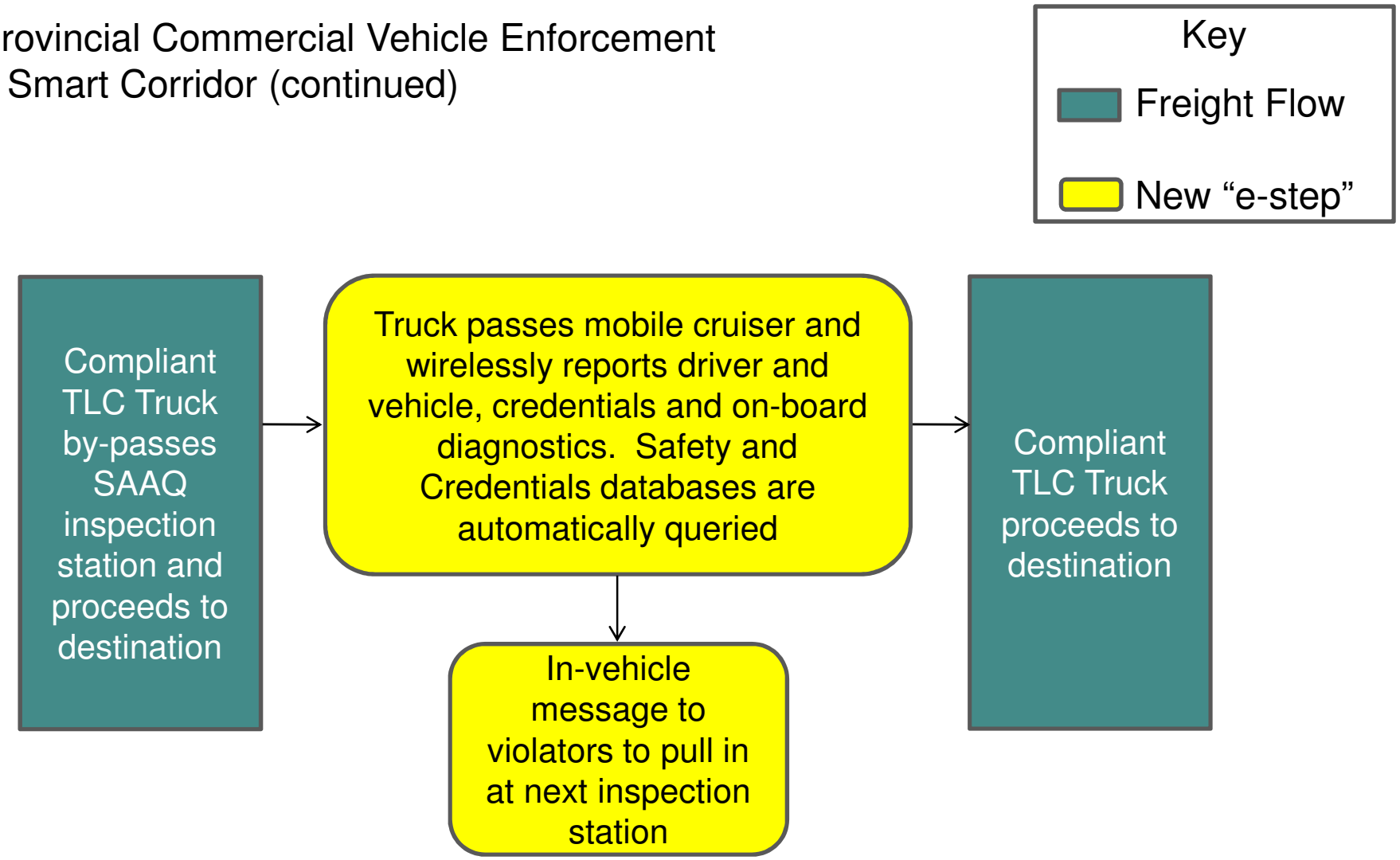
Define/Document Current the Workflow Process (CV Enforcement Example)

Provincial Commercial Vehicle Enforcement – Smart Corridor (continued)



Define/Document Current the Workflow Process (CV Enforcement Example)

Provincial Commercial Vehicle Enforcement – Smart Corridor (continued)



Select Applicable ITS Service Packages and/or Define Applicable Technology Application Areas (CV Enforcement Example)

- ITS Service Packages and Technologies Selected:
  - CVO-03 Electronic Clearance
  - CVO-06 Weigh-in-motion
  - CVO-07 Roadside Commercial Vehicle Operations Safety
  - CVO-08 On-board Commercial Vehicle Operations and Freight Safety & Security
- Key enabling technologies:
  - Weigh-in-motion
  - On-board diagnostics
  - Wireless communications
  - In-vehicle messaging
  - Database integration

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USER VIEWS BREAKOUT

Charge to Breakout Groups – One Hour Agenda

- Develop Problem-Solution Pairs
  - 10 minutes
- Define/document current workflow process
  - 20 minutes
- Define/document workflow process with ITS
  - 20 minutes
- Select applicable ITS Service Packages and/or define applicable technology application areas
  - 10 minutes

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USER VIEWS PLENARY SESSION

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SERVICE VIEWS BREAKOUT

Service Packages

- Service packages piece together the building blocks (e.g. inventory elements) and flows of information that are required to implement a particular ITS service
- Provide an accessible, service-oriented perspective to the architecture
- Can be tailored to fit, separately or in combination, real world transportation problems and needs
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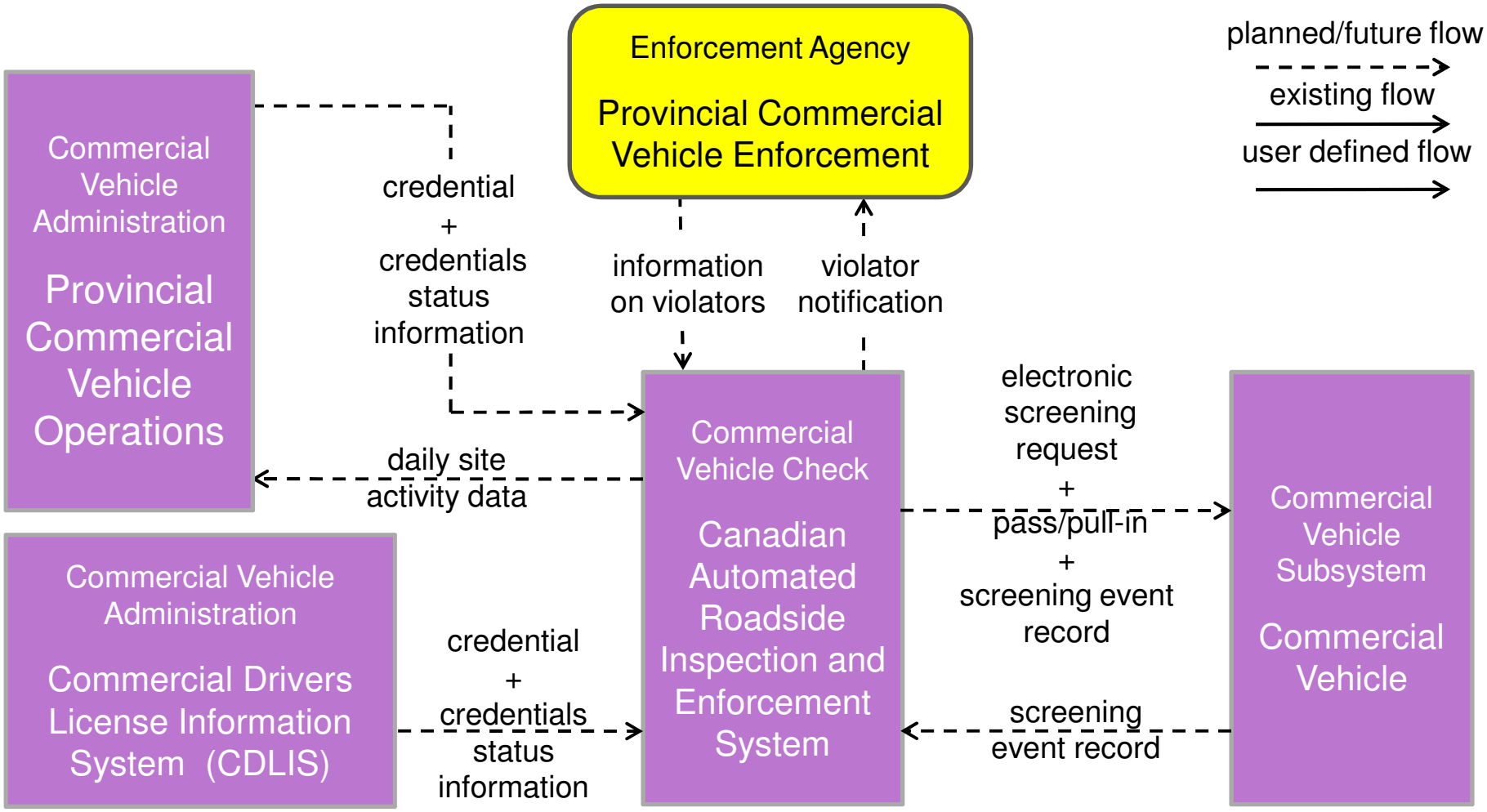
CVO03 – Electronic Clearance Provincial CVO-Roadside Interfaces



- Initial service package diagrams have been drafted:
  - Key ITS Services
  - Using the ‘straw man’ inventory elements as building blocks
  - Drawing on similar effort
    - BIFA
    - Regional ITS Architectures

Overall Priority Service Packages

- The key Service Packages that were identified were as follows:

Service Packages	
Commercial Vehicle Operations	International Border Registration
Fleet Administration	International Border Pre-Processing
Freight Administration	International Border Inspection
Electronic Clearance	**Advanced Traffic Management Systems**
CV Administrative Processes	Network Surveillance
International Border Electronic Clearance	Traffic Probe Surveillance
Weigh-In-Motion	Surface Street Control
Roadside CVO Safety	Freeway Control
On-board CVO and Freight Safety and Security	Traffic Information Dissemination
Hazardous Material Planning and Incident Response	Regional Traffic Management
Roadside Hazardous Material Security Detection and Mitigation	Traffic Incident Management System
Freight Terminal Management	Traffic Forecast and Demand Management

Overall Priority Service Packages

- The key Service Packages that were identified were as follows (continued):

Service Packages	
ATMS (cont')	**Emergency Management**
Electronic Toll Collection	Emergency Call-Taking and Dispatch
Advanced Railroad Grade Crossing	Emergency Routing
Roadway Closure Management	Roadway Service Patrols
Advanced Traveller Information Systems	Disaster Response and Recovery
Broadcast Traveller Information	Disaster Traveller Information
Transportation Operations Data Sharing	**Maintenance**
Interactive Traveller Information	Road Weather Data Collection
VII Traveller Information	Weather Information Processing and Distribution
	Winter Maintenance
	Work Zone Management

Charge to Breakout Groups – 45 Minute Agenda

- Breakout by functional area
  - e.g. commercial vehicle inspection / enforcement, traffic management
- As a group review key service package diagrams
  - Does the diagram address the service as intended?
  - Correct stakeholders involved?
  - Correct ITS elements?
  - Correct data flows?
  - Correct flow status?

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SERVICE VIEWS PLENARY SESSION

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NEXT STEPS

Upcoming consultations and final presentation

Ontario – Québec
Smart Corridor | Corridor Intelligent

Concept of Operations
Stakeholder Workshop Series II
October 2011

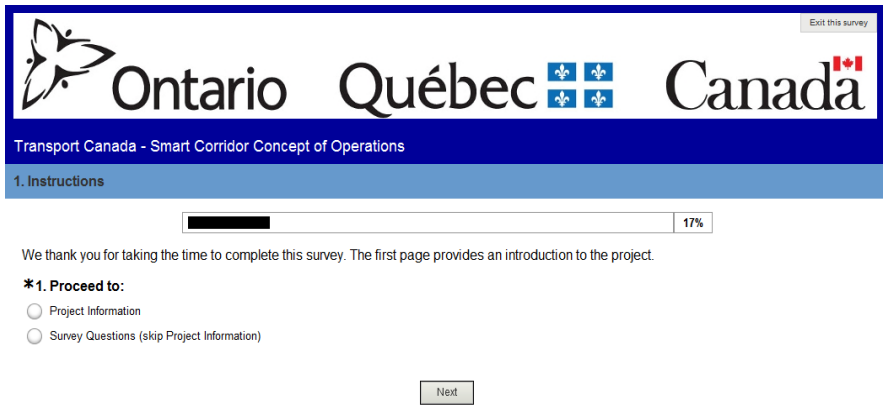
THANK YOU

IBI GROUP ROCHE CAMBRIDGE SYSTEMATICS

Québec Canada

Stakeholder Survey

- Stakeholder survey was developed at outset of project (prior to June 2011 workshops) to collect information on stakeholder ITS services and intentions
- Bilingual – English/French based on stakeholder preference
- General questions for registration and invitation to workshops + Category specific questions
- ***55 responses received !***

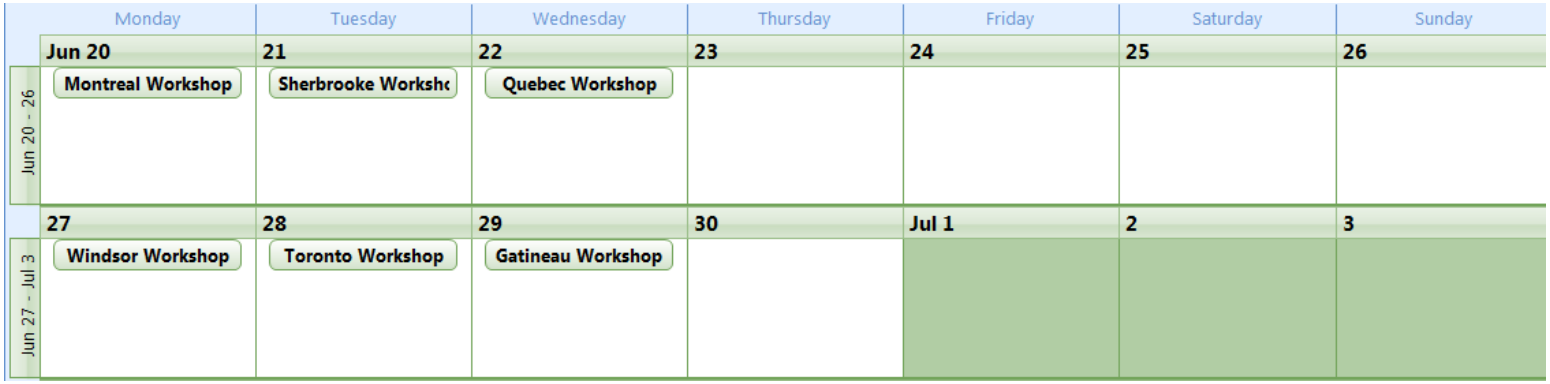


http://www.surveymonkey.com/s/SmartCorridor

http://www.surveymonkey.com/s/CorridorIntelligent

Workshop # 1

- First round of User Needs Stakeholder Workshops were conducted in Quebec and Ontario (Jun 20-29)



	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Jun 20 - 26	Jun 20 Montreal Workshop	21 Sherbrooke Worksh	22 Quebec Workshop	23	24	25	26
Jun 27 - Jul 3	27 Windsor Workshop	28 Toronto Workshop	29 Gatineau Workshop	30	Jul 1	2	3

- Covered full length of the Corridor, major metropolitan areas of both provinces and alternate routes to the north and south

Workshop # 1

- Across the 6 workshops, a wide cross-section of stakeholders were represented from government, industry and academia

Category	Attendance
Carriers / Shippers	6
Logistics Providers	2
Ports	3
Airports	2
Rail	3
Border	3
Federal/Provincial	20
Municipal	5
Bridge & Tunnel	3
Emergency Services	3
Service Provider	4
Academic / Special Interest	2
TOTAL	**56**

Key Stakeholder Follow-up

- Key stakeholders who were not reached initially through the survey or workshops received follow-up contact directly
- Follow-up included:
  - Request to participate in the 2nd round of workshops
  - Discuss agency's needs and systems verbally
  - Request to complete the online survey
- Input provided through stakeholder follow-ups was incorporated into the Concept of Operations development process

AMT	City of Windsor	Railway Association of Canada (RAC)
CAA	City of Woodstock	Region of Waterloo
Canadian Courier & Logistics Association (CCLA)	Great Lakes Pilotage Authority (GLPA)	Region of York
Canadian Industrial Transportation Association (CITA)	Hamilton Airport	Supply Chain & Logistics Association Canada (SCL)
Canadian National	Highway 407 ETR Concession Company Limited	Ville de Laval
CBSA	Metrolinx	Ville de Lévis
City of Hamilton	MTQ – CIGC de Montréal	Ville de Longueuil
City of Kingston	Ontario Federation of Agriculture (OFA)	Ville de Montréal
City of Ottawa	Ontario Marine Transportation Forum (OMTF)	Ville de Québec
City of Sarnia	Private Motor Truck Council of Canada (PMTC)	Ville de Sherbrooke
City of Toronto		