

Increasing Freight Efficiency in the Transportation System

Faster Freight – Cleaner Air
May 2007

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Freight (In)efficiencies

- Focus on trucks and technology solutions
- Roadway bottlenecks
 - Recurring delays
 - Non-recurring delays
- Process bottlenecks
 - At weigh stations
 - At borders
 - At port gates



Travel Delays – Traveler Information Systems



Traveler Information Systems

- Intended to
 - Manage travel demand
 - Reduce driver frustration
 - Improve driver decision making
 - Reallocates demand
 - Changes trip timing or routing

Data Sources

- WSDOT's extensive roadway loop system
- Vehicle probes
- Arterial signal systems data
- Transponders travel time system

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Have Data - Will Display?

- Once we have data, how do we disseminate it?
 - web site oriented towards truckers
 - variable message signs
 - 511 phone



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Traveler Information?

- Is limited
- Is aimed mostly at passenger cars
- Is spread among several web sites
- Mostly useful if you are in an office
 - Or other web connected place
- Many people still do not know about, or use it

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Cameras


STATEWIDE TRAVELER INFORMATION

TRAFFIC & CAMERAS

- [State View \(home\)](#)
- [Seattle Area](#)
- [Ferry Cameras](#)
- [Tacoma](#)
- [Gig Harbor](#)
- [Olympia](#)
- [Vancouver](#)
- [Mount Vernon](#)
- [Bellingham](#)
- [Canadian Border](#)
- [Spokane](#)
- [Wenatchee](#)

STATE TRAVEL INFO

- [Travel Alerts & Slowdowns](#)
- [Mountain Passes](#)
- [Weather](#)
- [Construction](#)
- [Cross-state Travel Routes](#)
- [Winter Driving Tips](#)
- [Safety Rest Areas](#)
- [State Highway Map](#)
- [Interstate Exits](#)
- [Featured Services](#)



[Click on a camera icon on the map at left or select a route number from the list below.](#)

[Check the Weather](#)
[Check for Travel Alerts & Slowdowns \(road conditions\)](#)
[Check the Mountain Passes](#)

Good To Go!
Sign up now.

Click on a camera icon on the map at left or select a route number from the list below.

Interstate: [I-5](#) [I-82](#) [I-90](#) [I-205](#) [I-405](#)


US: [US 2](#) [US 12](#) [US 97](#) [US 97A](#) [US 101](#)

Highways: [US 195](#) [US 395](#) [US 2](#)

[SR 3](#) [SR 4](#) [SR 8](#) [SR 9](#) [SR 14](#) [SR 16](#)
[SR 17](#) [SR 18](#) [SR 20](#) [SR 27](#) [SR 28](#)
[SR 31](#) [SR 99](#) [SR 104](#) [SR 109](#) [SR 163](#)
[SR 167](#) [SR 169](#) [SR 172](#) [SR 204](#)
[SR 221](#) [SR 240](#) [SR 285](#) [SR 290](#)
[SR 291](#) [SR 302](#) [SR 410](#) [SR 433](#)
[SR 500](#) [SR 504](#) [SR 512](#) [SR 516](#)
[SR 518](#) [SR 520](#) [SR 522](#) [SR 524](#)
[SR 525](#) [SR 526](#) [SR 527](#) [SR 539](#)

State Highways:

Port Cameras



Harbor Island (West View) © WSDOT

Mon, 07 May 2007 15:58:15 PDT

Cross-State Travel Routes

CROSS-STATE TRAVEL ROUTES



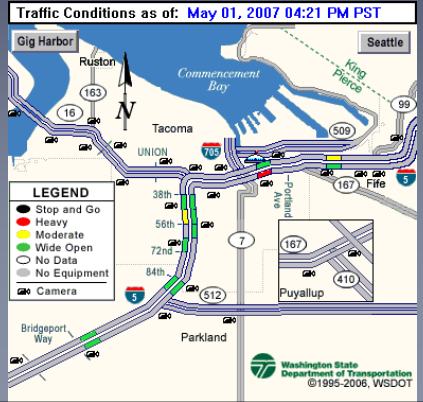
Select a route for more information

- [I-5 South \(Portland to Olympia\)](#)
- [I-5 Central \(Olympia to Arlington\)](#)
- [I-5 North \(Everett to Ferndale\)](#)
- [I-90 \(Seattle to Ellensburg\)](#)
- [US 2 \(Everett to Wenatchee\)](#)
- [US 101 \(Forks to Quilcene\)](#)
- [State Ferries](#)

[Check the Weather](#)
[Check for Travel Alerts & Slowdowns \(road conditions\)](#)
[Check the Mountain Passes](#)



Urban Congestion



Border Information



I-5 at Peace Arch Park © WSDOT



Tue, 01 May 2007 16:19:23 PDT

Both WSDOT and British Columbia are tracking and reporting delays at the border

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Recurring Delay

Recurring Delay

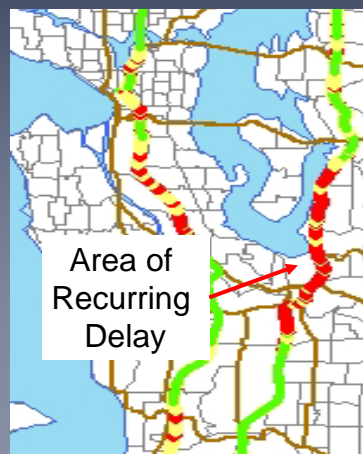
- Identify roadway bottlenecks
 - Local / professional knowledge
 - Truckers' focus groups
 - GPS devices in trucks
- Then construct infrastructure solutions
- Example: FMSIB and FAST projects



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Trucks as Probes to ID Bottlenecks

In-trucks GPS data collection device



Non-recurring Delay



Non-recurring Delay

- Typically incidents
- Often impacts freight reliability
- Solution is incident management:
 - Identify and remove incidents
 - Speed removal by sending the correct equipment as quickly as possible



Incident Detection and Verification

- Detection primarily by cellular phone
 - Overwhelming 911 call centers
 - E-911 (location information)
- Verification usually requires visual confirmation
 - Traffic surveillance systems
 - Personal visit

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Need Proper Type of Response



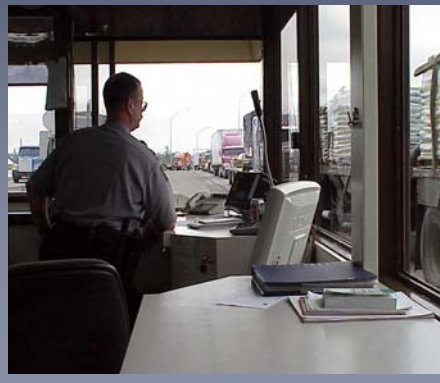
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Scene Management

- Communications are key to management between agencies (police, fire, DOTs, EMTs, etc)
- Turf wars used to be a big issues
- Technology provides new communication options

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Process Delays – at Weigh Stations



Many Truck Regulations

- Vehicle size and weight limits
 - Fuel tax
 - Vehicle registration/permits
 - Weight distance taxes
 - Operating authority
 - Equipment safety requirements
-
- For trucks state borders are a similar to national borders for people

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Trucks Weight and Safety Inspections

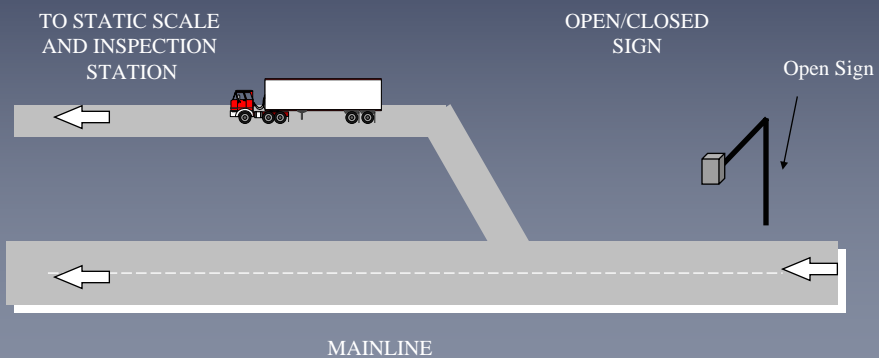
- Have to stop at ports of entry, weigh stations, and at roadside for inspections
- Inspection process can result in delays and long queues



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Traditional Commercial Vehicle Enforcement Sites (Weigh Station)



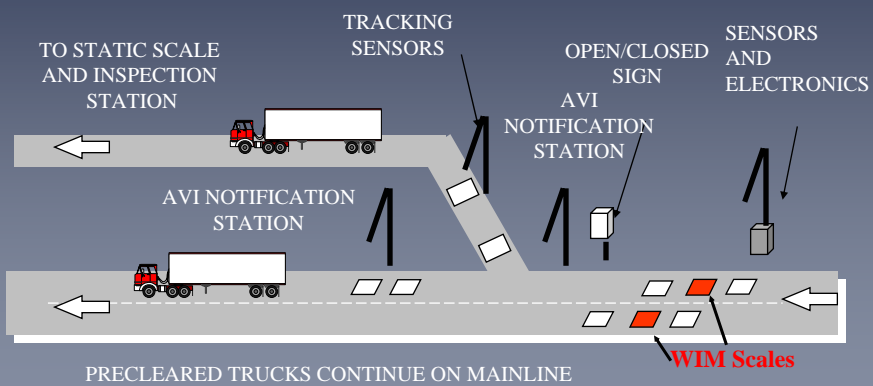
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Weigh-in-Motion System

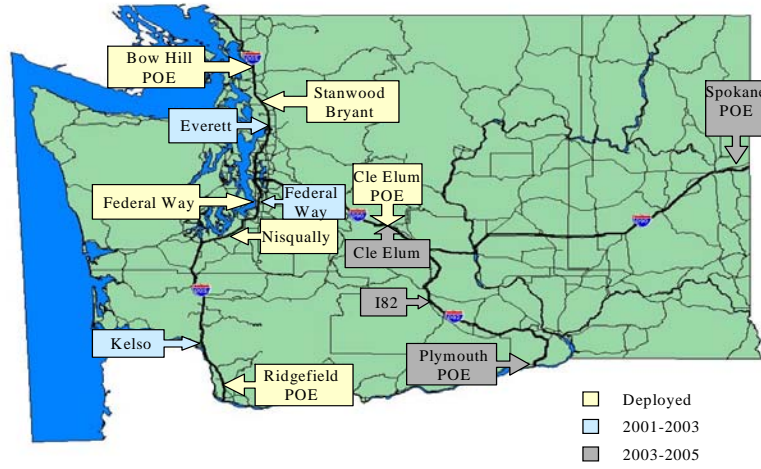
- Freeway speed station by-pass
- 50,000 transponders (and growing) in use in Washington and 800,000 by-passes
- Stations along Interstates in Washington



Weigh-in-Motion Station



WSDOT Weigh-in-motion Stations



Process Delays – at International Borders



Borders are Complex Environments



Trucks at the Border

- Long queues of trucks common
- Solution to improve processing time
 - New inspection technology
 - Make the data exchanges electronic (reduce paper transactions)
 - Identification of lower-risk vehicles and shipments



Driver Inspection Technologies - Biometrics

- Fingerprint, iris scan, facial, hand geometry, etc,
- Expensive and requires large database
- Privacy concerns
- Slows process – false positives
- Best used in indoor, controlled environment



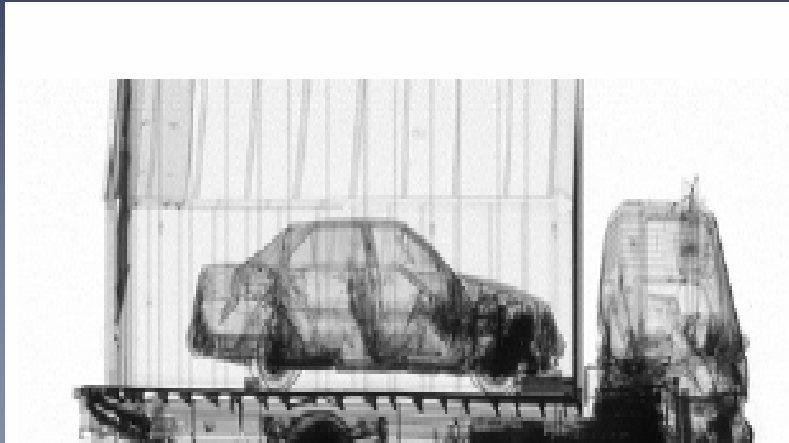
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Cargo Screening Technologies

- gamma-ray imaging (VACIS)
- computer tomography (CAT scan)
- x-ray scanning
- neutron interrogation
- ultrasonic and thermal imaging
- spectral analysis
- others under development



VACIS Image



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Reduce Border Paperwork

- Replace paper forms with electronic filing
- Advanced notification now required by Customs
- Makes pre-screening of cargo possible

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WSDOT's Electronic In-Bond Project

- In-Bond Shipments
 - Transit shipments thru the US
 - Shipper posts a bond
- Shipper “losing” in-bond containers
- Project tracked containers from Ports of Seattle and Tacoma to border
- Used transponders on windshield of trucks



Risk Assessment and Reduction

- Identification of lower risk shipments
- A number of programs designed to reduce risk
 - Pre-arrival program for trusted truckers
 - Automated cargo targeting systems
 - Electronic container seals
- Allow Customs to focus on higher-risk traffic

Risk Reduction and Container Seals

Standard "dumb" seal



Transponder door seal



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Dept. of Agriculture eSeal Usage

- In-transit containers of prohibited foods being lost
- Test tracked containers from Port of Tacoma to Canada and from Texas to Canada
- Reader at border indicated when containers have left country



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eSeal being Installed



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eSeal Readers at Border



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eSeal Data on Internet

Address <https://www.transcorridor.com/wsdotmain.asp>

TRANSCORRIDOR 

home wsdot profile partners logout help

- View System Status

Washington

- Blaine Entry
- Blaine Exit
- Blaine Approach
- Bow Hill SB WS
- Bow Hill NB WS
- Stanwood Bryant NB WS
- APL Entry Gates
- APL Exit Gates
- APL Unresolved Gates
- Maersk Exit Gates
- Cle Elum WB WS
- Ft Lewis NB WS
- Ridgefield NB WS

California

- Test Entry Gates
- Test Exit Gates
- Test Guarded Entry
- Test Guarded Exit
- Unknown

Container Data

Container, InBond, Agent	APHU618031-2, , APL
Mechanical Seals	, , ,
Electronic Seal	, Tampered: N
Gross Weight (Lbs)	4064
Location, Lane, Time	Blaine Exit, 3, 9/23/02 7:52:02 AM
Status	Containers: 1, Target: N, Late: N, HazMat: N, Exit: Y

Recent Event History

Location	Vehicle Tag	Container (E-Seal)	Lane	Passing Date Time
Blaine Exit		APHU618031	3	9/23/02 7:52:02 AM
Blaine Approach		APHU618031	1	9/23/02 7:51:09 AM
APL Exit Gates		APHU618031	12	9/17/02 2:46:10 PM
APL Exit Gates		APHU618031	12	9/17/02 2:45:16 PM

eSeals and Freight

- Electronic data reduces border paper work, increases accuracy
- Security – more positive ID of containers
- Track freights in ports and on highways
- Focus enforcement resources
- But no transponder frequency standard
- eSeals expensive (not yet disposable)

Driver and Carrier Risk Assessment - FAST

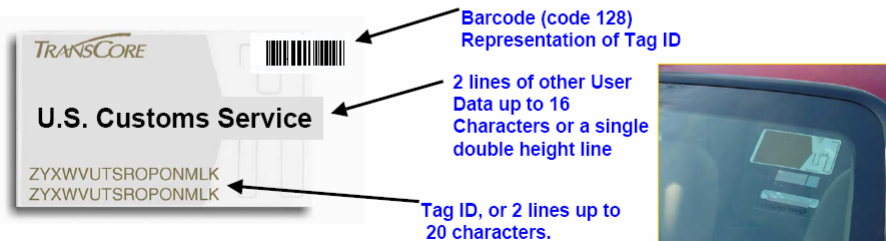
- Free and Secure Trade (FAST) program for trucks
- Pre-screens
 - Commercial drivers
 - Carriers
 - Shippers
- Transponder issued to trucks
- Smart card to drivers
- Requires electronic filing of custom forms
- Provides dedicated lane



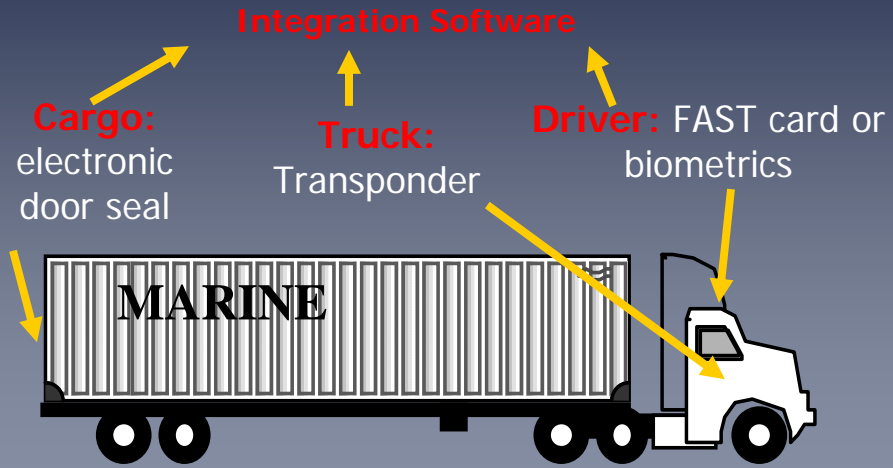
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FAST Proximity Card

- ◆ FAST ID card
 - ◆ Truck driver and passenger(s) ID card
- ◆ FAST RFID windshield sticker tag
 - Unique truck identification number



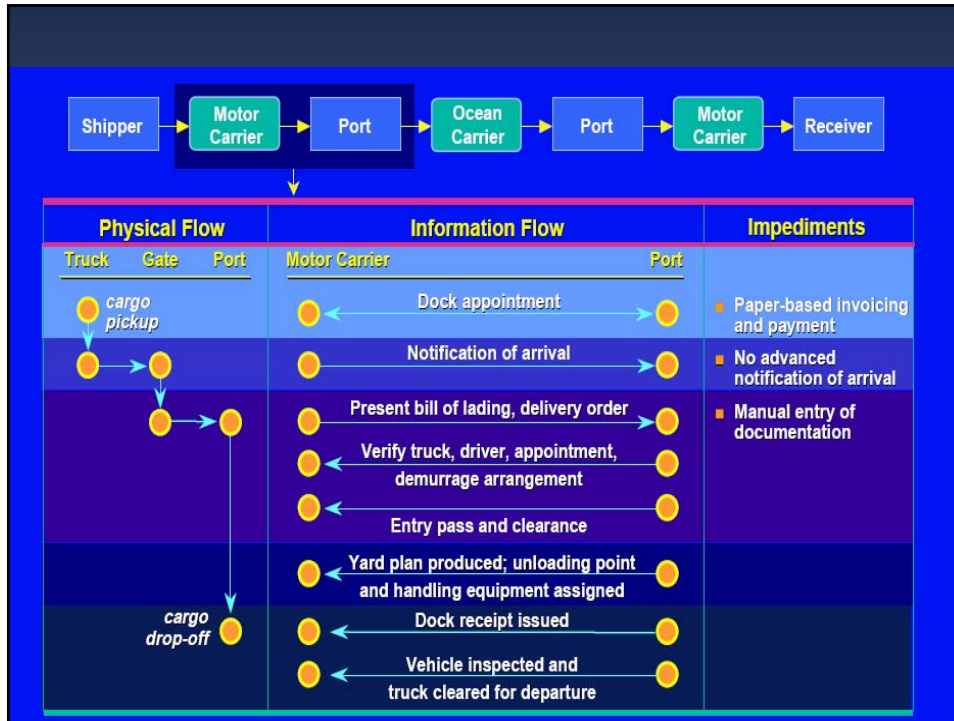
Goal: An Electronic Truck?



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Process Delays – at Ports





Reducing Delays at Ports

- Provide advanced information on port access
 - Delays and queues at gates
 - Routing to and from gates
- Gate appointments used in California
- Faster inspection technologies such as optical character recognition
- Transponders to replace paperwork



Connect Truckers to Containers

- eModal links various databases to provide notification systems when container is available

Screen 1: Folder Item View

Flag indicates new notification

Folder: Default Folder Customize Notifier View All Notifiers Printer Friendly Home

Container: Add Edit List Select All Delete Items Add Note Folder Manager Pay Fees

Sel	Container No.	Available	Customs	Demurrage	Freight	In-Yard	Terminal	Last Free Day	Other	Vessel	Voyage
<input type="checkbox"/>	AKLU2037833	YES	RELEASED	\$ 312	PAID	☺	RLJ	9/5 0:00		DONAU BRIDGE	01A
<input type="checkbox"/>	AKLU2042837	NO	HOLD	\$ 100	DUE	NQ	B12	9/12 2:00		DONAU BRIDGE	01A
<input type="checkbox"/>	AKLU2043938	YES	RELEASED	\$ 910	PAID	☺	AML	8/24 0:00		RHEIN BRIDGE	09A

- Reduce queues and increase trucker's efficiency
- Private fee based system
- Starting to use transponders

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Questions?

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