

Virtual Weigh Stations

Technology Best Practices— Roy Czinku, IRD



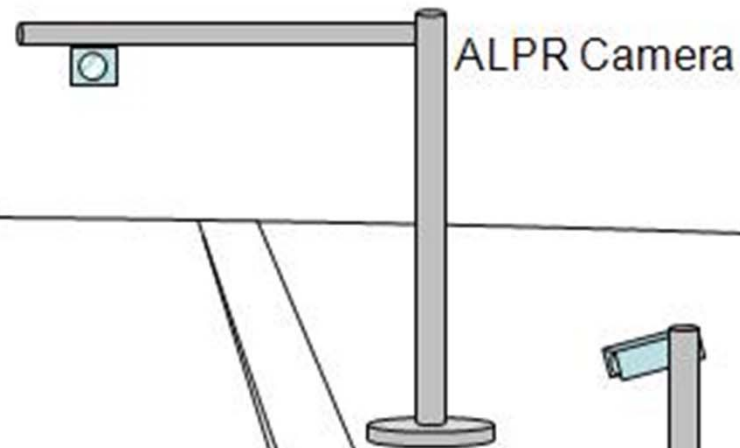
INTERNATIONAL ROAD DYNAMICS INC.

What is a Virtual Weigh Station?



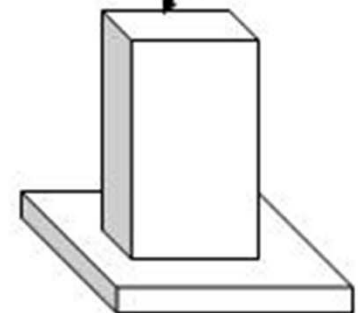
Communication include options: Wi-Fi, Cellular, DSL, T1, Satellite

Site can also
include AVI
Readers for
E-Screening

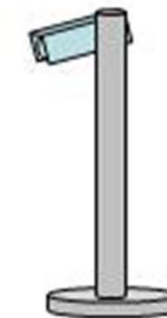


ALPR Camera

Network
Connection

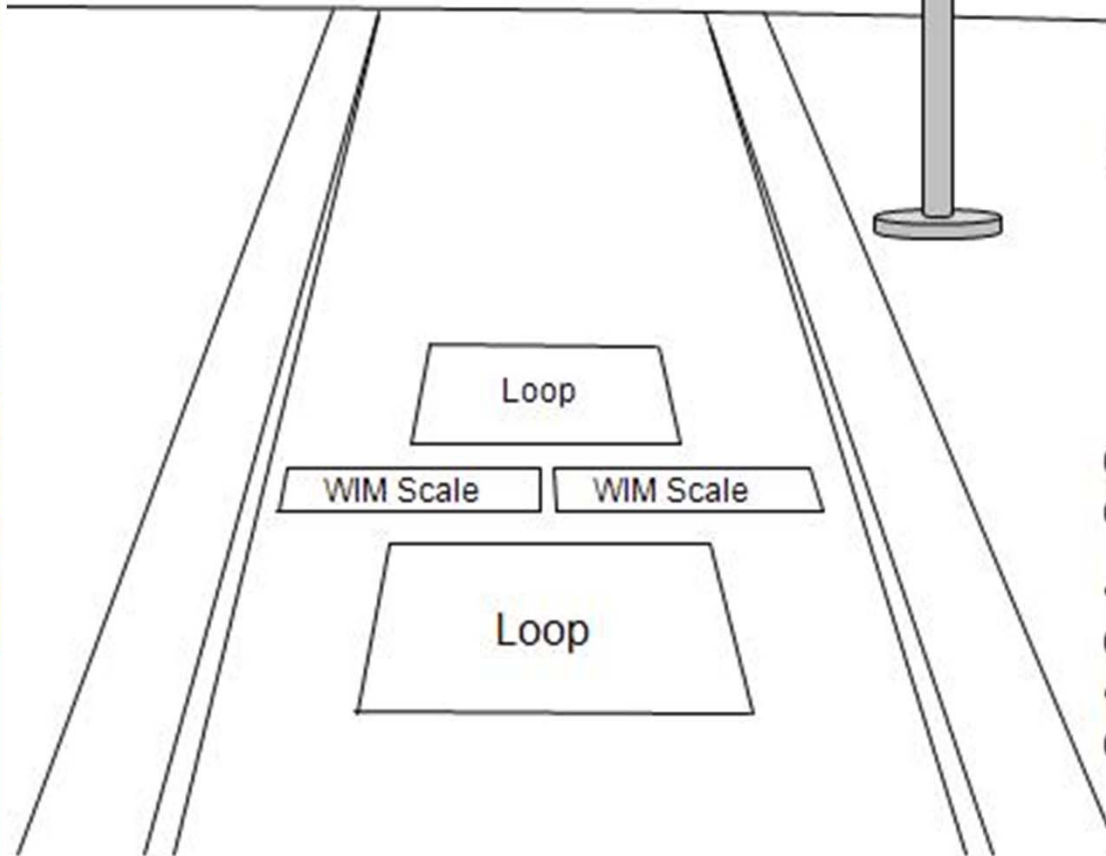


Electronics
Cabinet



Camera
Options:

- Side View
Camera,
- USDOT
Camera



Not to scale



Virtual Weigh Station WIM Site



VWS Real-time in Station



VWS Real-time Remote App



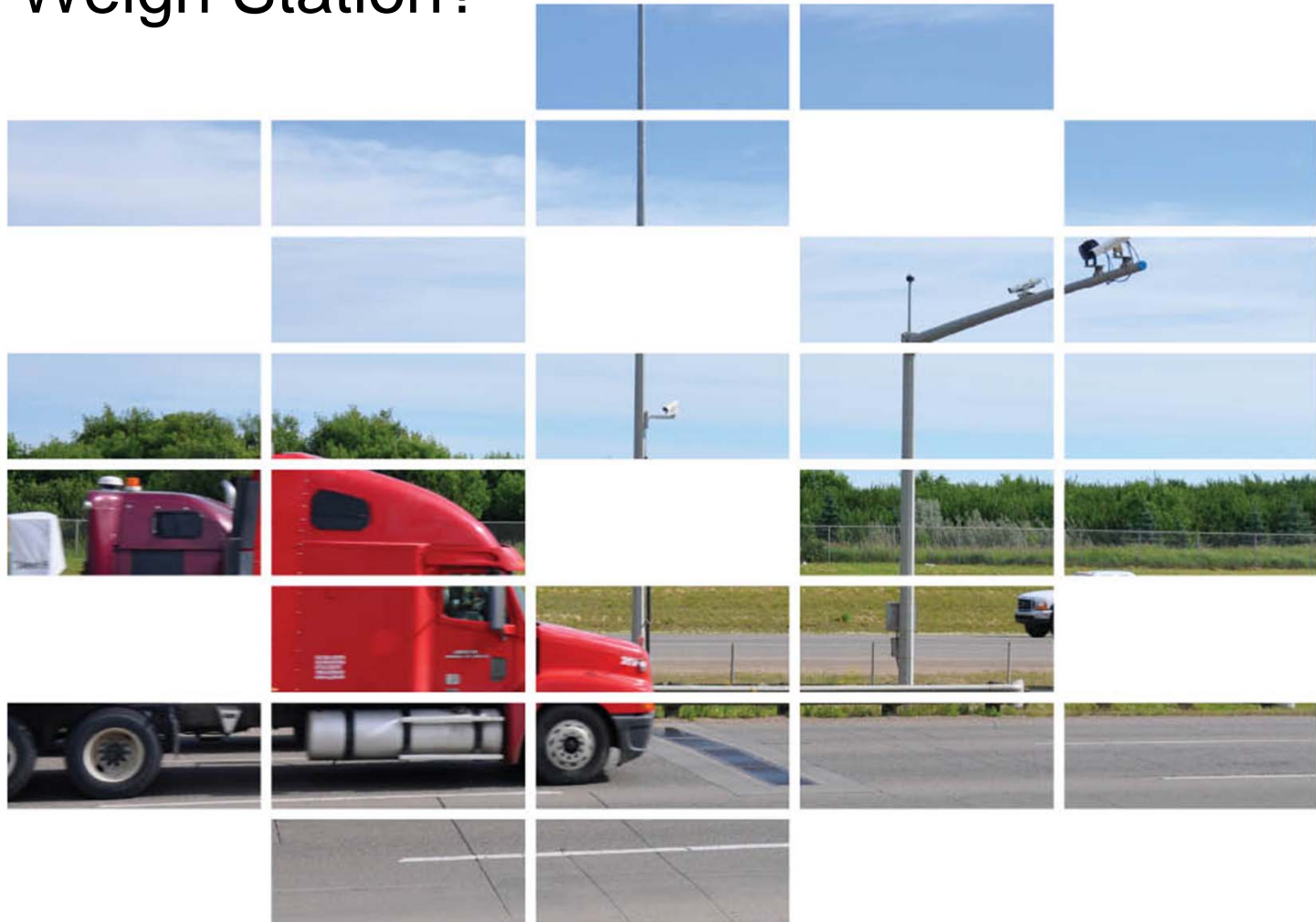
Mobile enforcement requirements



VWS Considerations



- What are the Building Blocks of a Virtual Weigh Station?

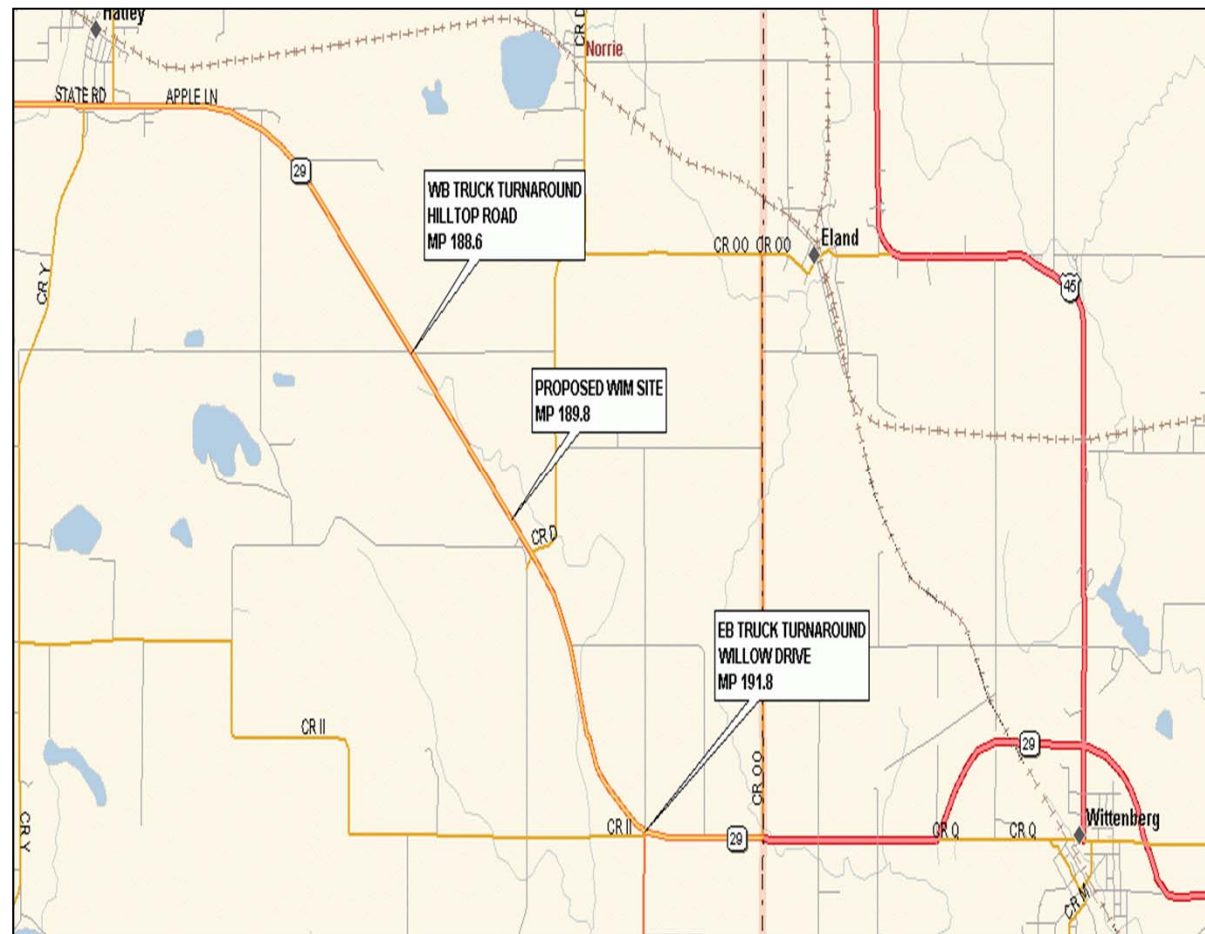




1. Location



- Determine the best location for the system



2. Communications



Communications options:

- Phone line modem
- Cellular modem
- IP address cellular
- Network connection
- USB & serial ports



3. Power



- Keep your power options open!



4. Controller



The Virtual Weigh Station (VWS) is built around an electronic controller



The controller should offer:

- Flexibility
- Expansion capability



Controller - continued



- Hardened electronics - outdoor durability, wide temperature range
- Resistance to lightning/surges
- Accommodate wide variety of WIM Sensors



5. In Road WIM Sensors



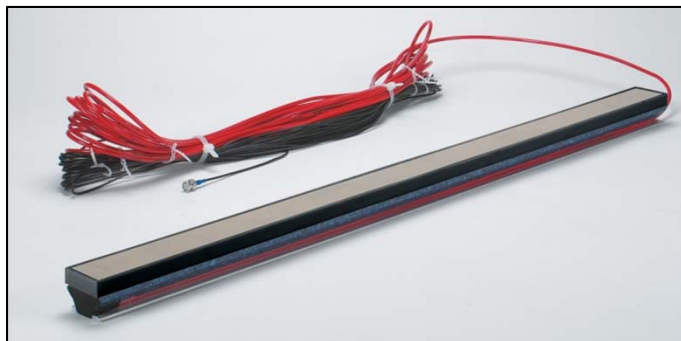
Consider accuracy and service life.



Piezoelectric



Bending Plate



Quartz



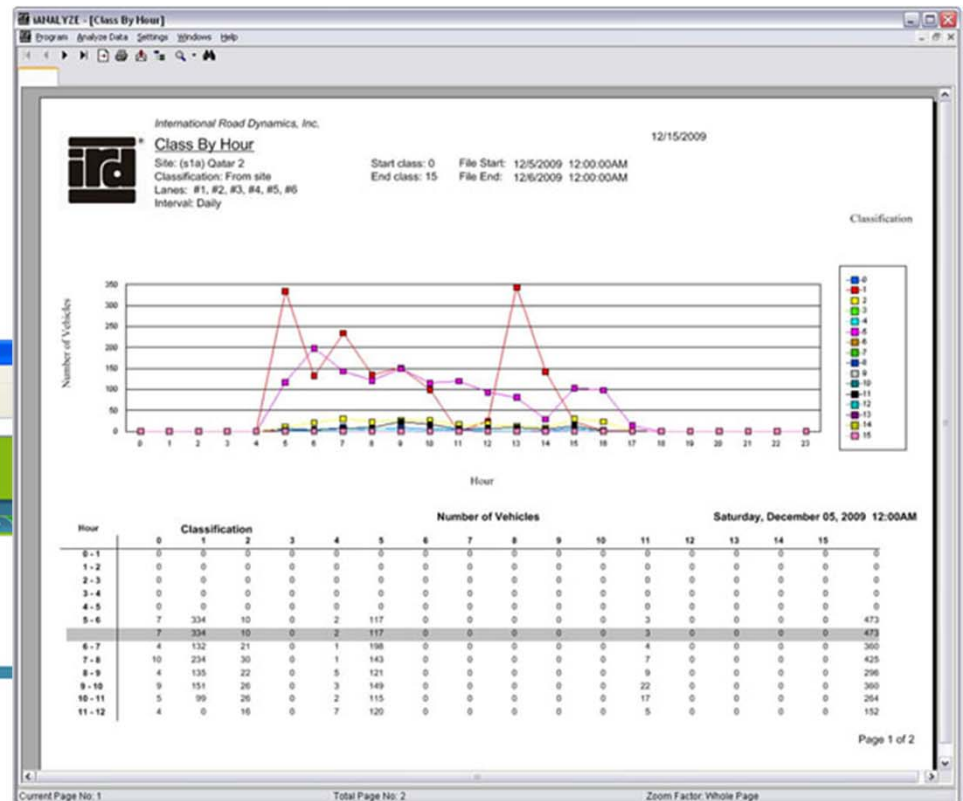
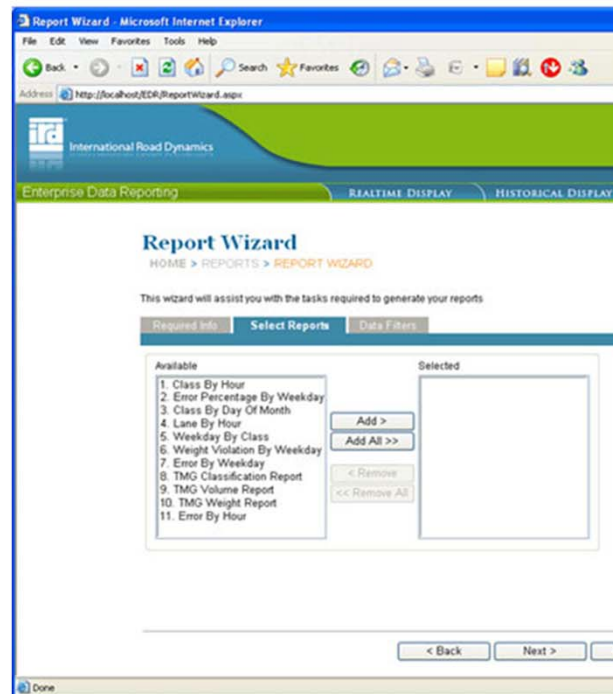
Single Load Cell



6. Data Output



- Historical
- Reporting



Data Output – continued



- Real-time Access
- Viewing records in real time requires a server and remote access solution.



7. Cameras – Link Image to Data



- Overview
- Side fire
- LPR
- USDOT

SIDE VIEW
CAMERA

LICENSE
PLATE
CAMERA



8. Vehicle ID options-Data String



Individual vehicle identification may be provided through one or more ID sub-systems:

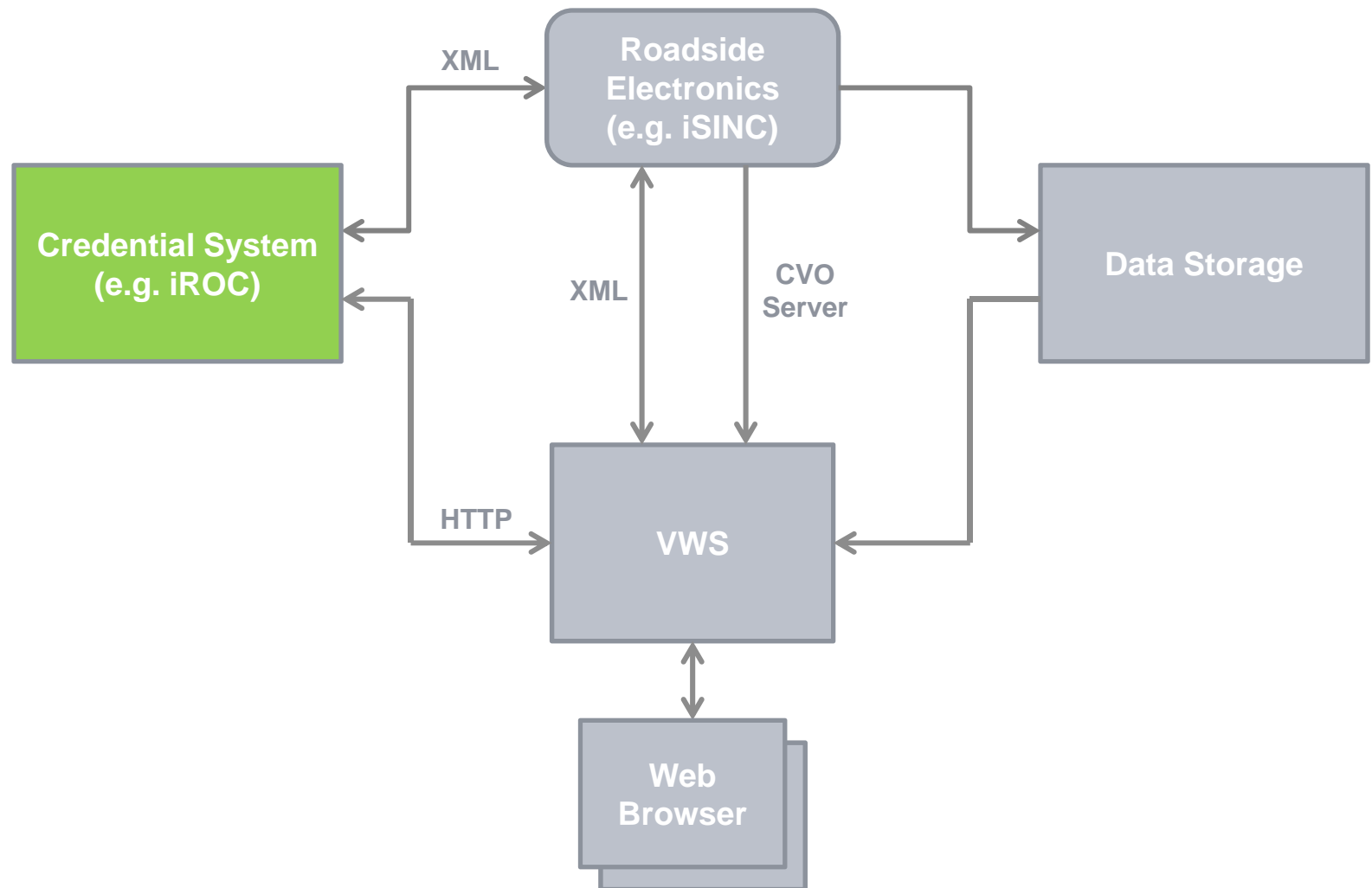
- Vehicle Side View Photos
- License Plate Images
- Optical Character Recognition
- AVI transponders
- USDOT Number Reading



9. Credential Database Screening




Credential Systems:




Credential Screening - continued






International Road Dynamics
WEIGH-IN-MOTION • ROAD CONDITION MONITORING • TRUCK SAFETY




VEHICLE RECORD DETAILS



Lane 2 - Vehicle #11152 - Class 10 - 6 Axle

Class: 10	Length: 70 ft	Speed: 62 mph	GVW: 92788 lb	Max GVW: 80000 lb	Date: Fri Aug 2 14:51:25 2010
Sort Decision: Report	Vehicle ID: ABC123	Carrier ID: ABC TRUCKING CO			



CRED EXPIRED, OVER GVW, GRP2 OVRWT, GRP3 OVRWT

WIM RESULTS

IMAGES

VEHICLE INFORMATION

CARRIER INFORMATION

Axle	Separation	Left Weight	Right Weight	Axle Weight	Allowable Axle Wt	Group	Group Weight	Allowable Group Wt
1	0.0 ft	5656 lb	5668 lb	11324 lb	12500 lb	s	11324 lb	12500 lb
2	16.0 ft	9082 lb	9302 lb	18384 lb	17000 lb	d	37082 lb	34000 lb
3	4.4 ft	9338 lb	9360 lb	18698 lb	17000 lb	d		
4	30.8 ft	7384 lb	7420 lb	14804 lb	14000 lb	t	44592 lb	38000 lb
5	4.3 ft	7380 lb	7408 lb	14788 lb	14000 lb	t		
6	4.2 ft	7404 lb	7376 lb	14780 lb	14000 lb	t		

GVW 92788 lb

WIM COMPLIANCE

- GVW Overweight
- Group 2 Overweight
- Group 3 Overweight
- Axle 2 Overweight
- Axle 3 Overweight
- Axle 4 Overweight
- Axle 5 Overweight
- Axle 6 Overweight

CREDENTIALS AND SAFETY ITEMS

Ovrd	Used	Credential or Safety Item	Database Information
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credential Expired	Expiry Date: July 21, 2010


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Credential Screening - continued




**International Road Dynamics**
IMMEDIATE RESPONSE. DATA DRIVEN.




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WIM RESULTS **IMAGES** **VEHICLE INFORMATION** **CARRIER INFORMATION**

Ownership Information

Owner:	John Q Smith
License:	ABC 123
Jurisdiction:	VIRGINIA
VIN:	A1234568CD7890
Unit No:	789
Transponder:	B987654321
Last Update:	23-07-2010 10:39:44

Vehicle Description

Type:	AA
Make:	Freightliner
Model:	B163
Year:	2008
GVW Limit:	72,000
Tare:	19,700
Axes:	6
Fuel:	D

Operating Information for Screening

Operator:	John Q Smith
Carrier:	ABC TRUCKING CO.
USDOT:	7654321
Interstate:	1

Print Preview Print

<< Previous Next >>

Close

Credential Screening - continued



Screening Criteria Settings (DEFAULT)

General

Random Pull-In

Not Identified ☒ 0.00
 Identified ☐ 0.0
 Has HazMat ☐ 0.0
 CVSA Decal ☐ 0.0

Weight Sorting

Vehicles with permits (compared to vehicles with no permit)
 0.50 1.00 1.50 2.00

Check Permits

Type	Use
Overheight	<input type="checkbox"/>
Overlength	<input type="checkbox"/>
Overweight	<input type="checkbox"/>
Overwidth	<input type="checkbox"/>
Overload	<input type="checkbox"/>

Credential Override

Type	Use
Vehicle	<input type="checkbox"/>
Carrier	<input type="checkbox"/>

Hotlists

Type	Use
Vehicle	<input type="checkbox"/>
Carrier	<input type="checkbox"/>

Report Criteria

Use	Credential/Safety Item	Screening Value	Screening Value Description
<input checked="" type="checkbox"/>	Carrier Out-of-Service(OOS)	5	Enter threshold of Percent OOS for Fleet
<input type="checkbox"/>	HazMat Registration Status Invalid	A	Enter the Hazmat Status codes that should cause a check
		B	
		C	
<input checked="" type="checkbox"/>	IFTA License is Expired	7	Number of days grace before vehicle must report
<input checked="" type="checkbox"/>	IFTA Registration Status Invalid	0	IFTA Reg. Status that should NOT cause a report
		1	
		2	
<input checked="" type="checkbox"/>	IRP Registration is Invalid	0	IRP Reg. Status that should NOT cause a report
		100	
<input checked="" type="checkbox"/>	ISS2 Insufficient Info Random Pull	45	Enter Percent Pull-in of Insufficient Info with value of I
<input checked="" type="checkbox"/>	ISS2 Insufficient Information Modif		No value required
<input checked="" type="checkbox"/>	ISS2 Safestat Category	A	Enter Safestat Categories that should cause a report
		B	
		C	
<input checked="" type="checkbox"/>	ISS2 Score Exceeded	75	Maximum score allowed
<input checked="" type="checkbox"/>	Out-of-State and No IFTA Credential	10000	Minimum weight in pounds before making this check
<input checked="" type="checkbox"/>	Out-of-State and No IRP Credential	10000	Minimum weight in pounds before making this check
<input type="checkbox"/>	Traffic weight more than licenced	15	Traffic Weight must not be more than licenced weight
<input checked="" type="checkbox"/>	Vehicle Out-of-Service(OOS)	30	Report if OOS within this number of days

Add Value Delete Value

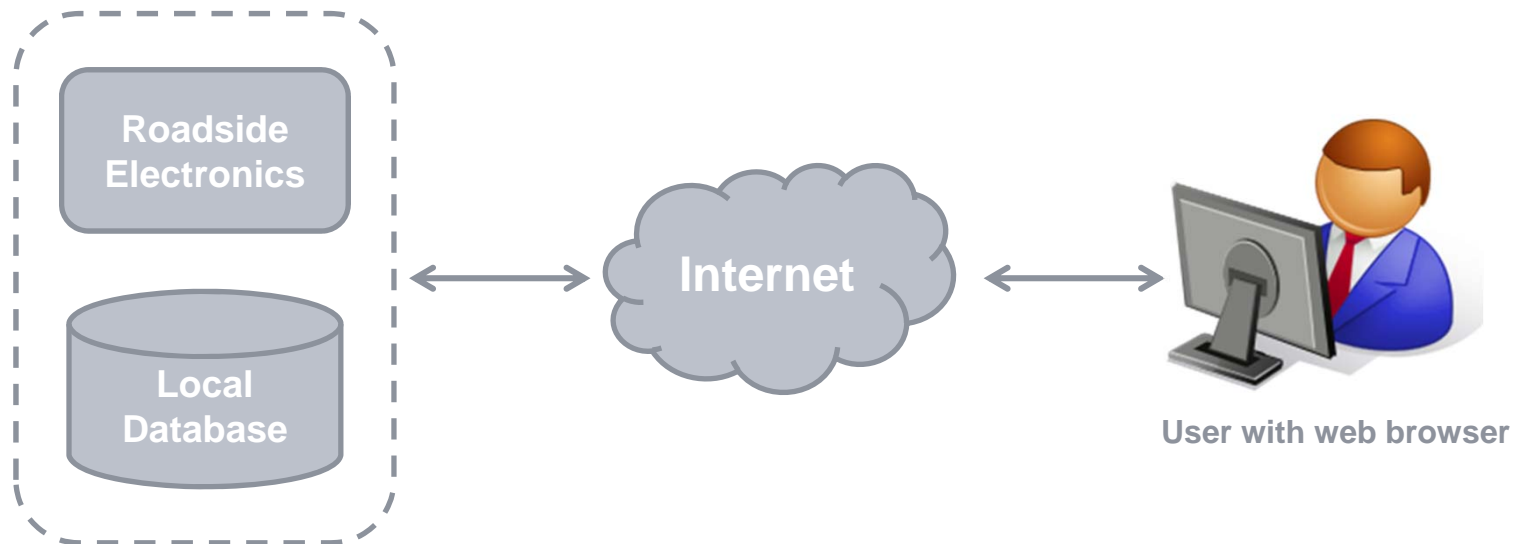
Restore from Default

OK Cancel Print Screen

10. Credential Database Hosting



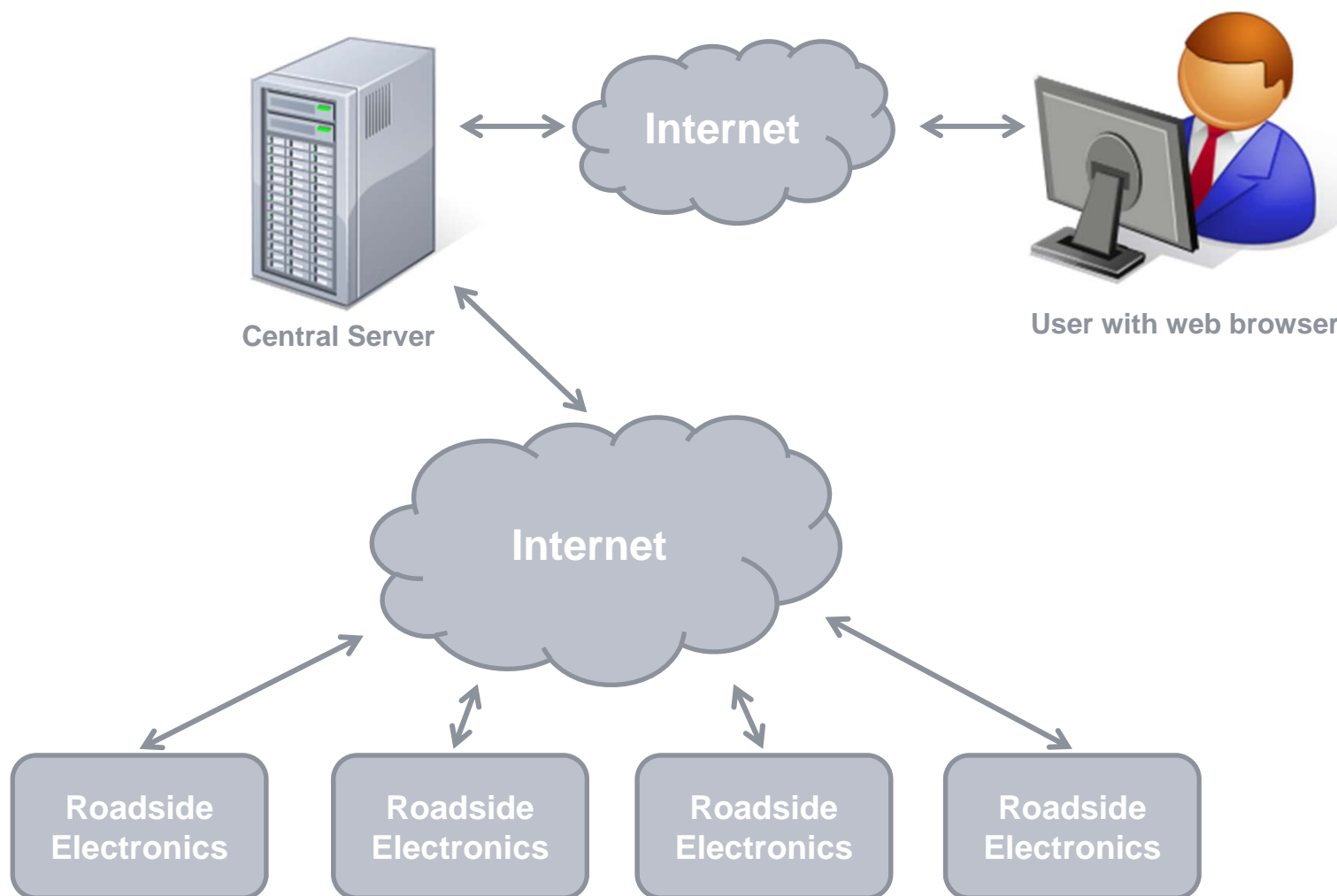
- Local Database Server:



Credential Database Hosting



- Central Database Server:



Conclusion



- A VWS can be a basic “WIM only” system or be “WIM and Credential” based.
- Always consider the Building Blocks when designing your VWS system
- Always plan for growth and for the future
- Buy only what you need today (but confirm that you can easily upgrade tomorrow)





Thank You!

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