

Technical and Bureaucratic Challenges to National Data Warehouses

Summary of the U.S. – Canada Border Data Warehouse Project



whatcom council of governments

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U.S. border-wide archive

of **common** border wait time denominators

**Cascade Gateway
Portal**
CascadeGatewayData.com

**U.S.A. / Canada
Portal**
BorderDataWarehouse.com

**Niagara Region
Portal**
URL TBD

Wait times
Volume
Trucks, cars, NEXUS
Departure rate
WIM data
BTS data
Booth status data?

Wait times
Volume?
Booth status data?

Border Data Warehouse
(cloud server)



An aerial photograph of a highway interchange with multiple lanes and a bridge. A yellow oval highlights a parking lot area at the top, and another yellow oval highlights a construction or event area at the bottom. Yellow arrows point from text boxes to specific lanes: one from 'Southbound (to USA)' to a left lane, and another from 'Northbound (to Canada)' to a right lane. Text boxes for 'WSDOT data' and 'BCMOT data' are also present.

Two countries.

One database.

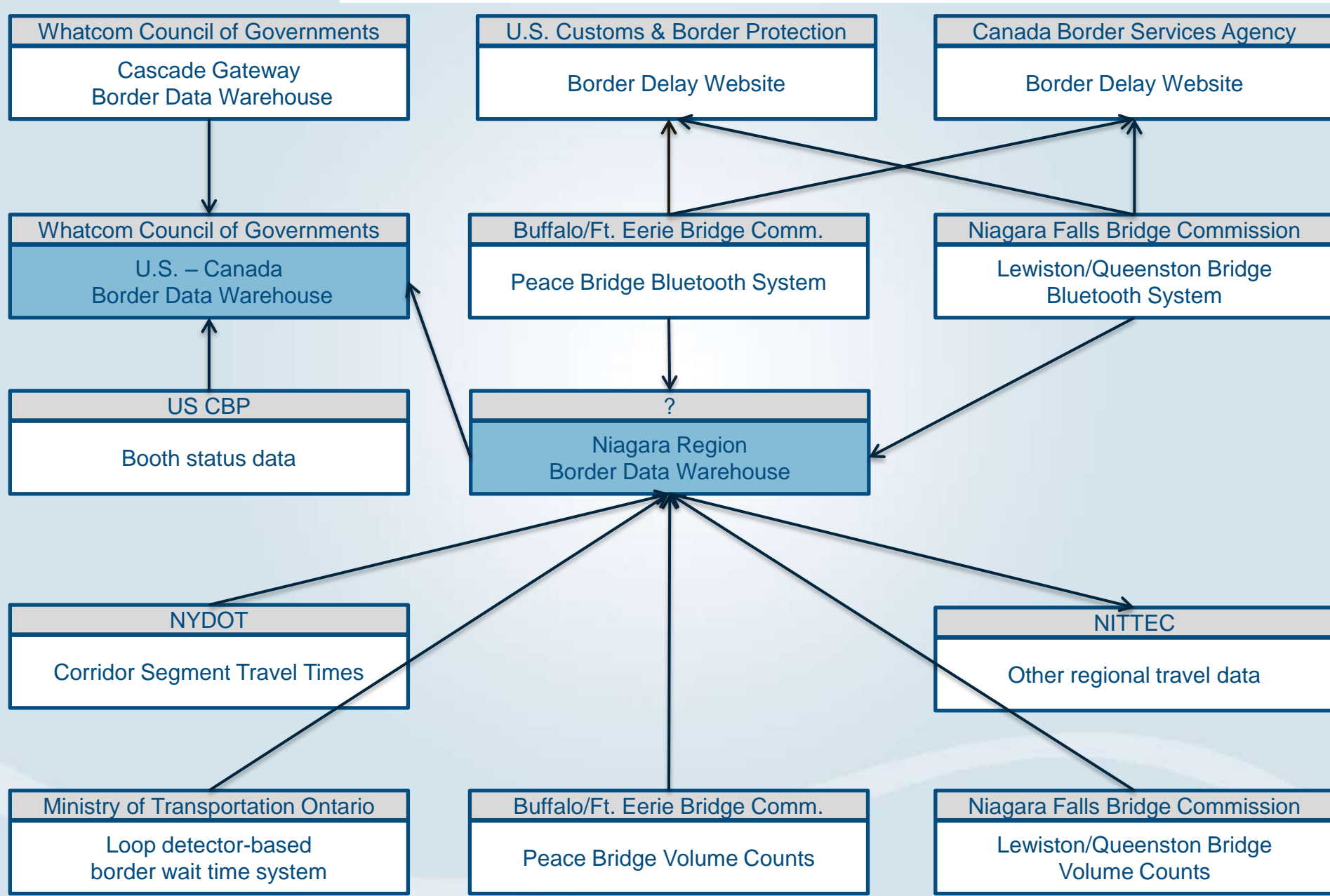
Southbound
(to USA)

WSDOT data

BCMOT data

Northbound
(to Canada)

Initial architecture



Successes

U.S. - Canada Border Wait Time Archive

Welcome to the U.S. - Canada Border Data Warehouse, a website

Crossings

Query

Query

Port

Peace Bridge  → 

Metric

CurrentDelay

Calculation

Average

Vehicle Type

Cars

Select Color:



Lewiston-Queenston Bridge  → 

Metric

CurrentDelay

Calculation

Average

Vehicle Type

Cars

Select Color:



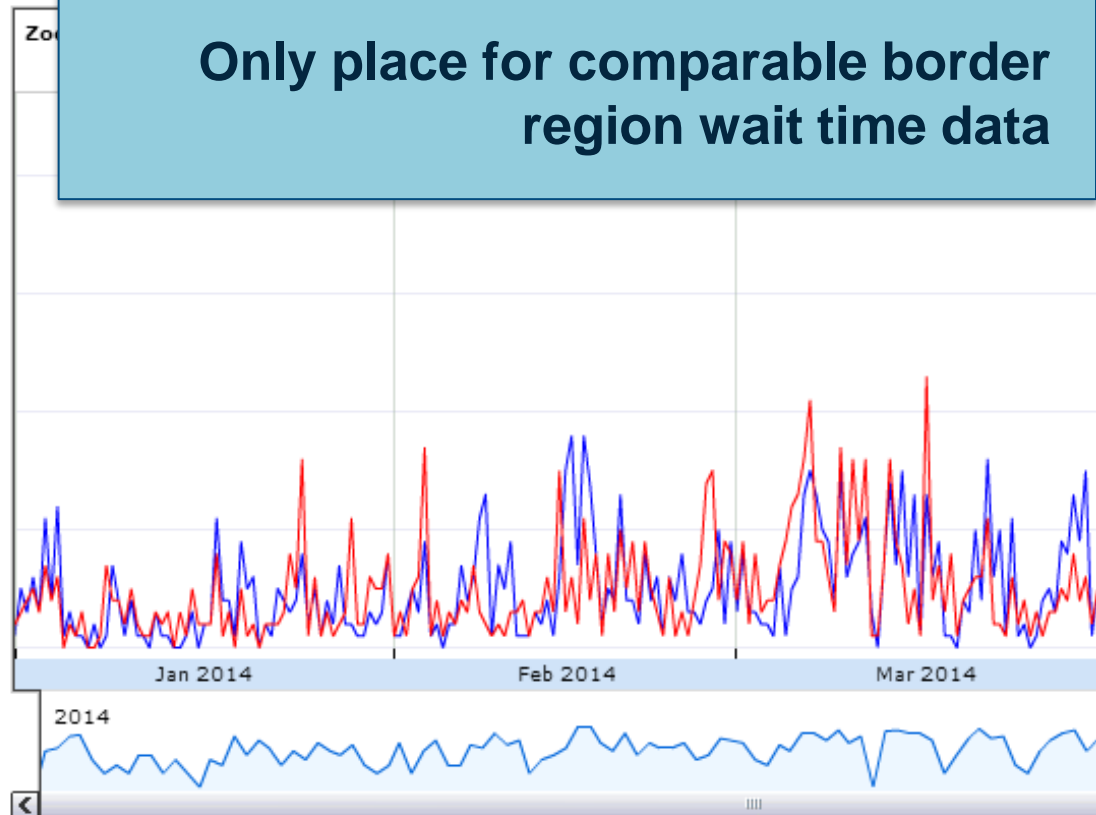
Add

From

Fully functional national data portal

Supported by stakeholders

Only place for comparable border
region wait time data



Funding Challenges

Bluetooth system funded now but add-on systems still pending funding

On-going maintenance funding unavailable

Local Solution: regional archive now critically important to numerous stakeholders, incorporated into program funding



Management Challenges

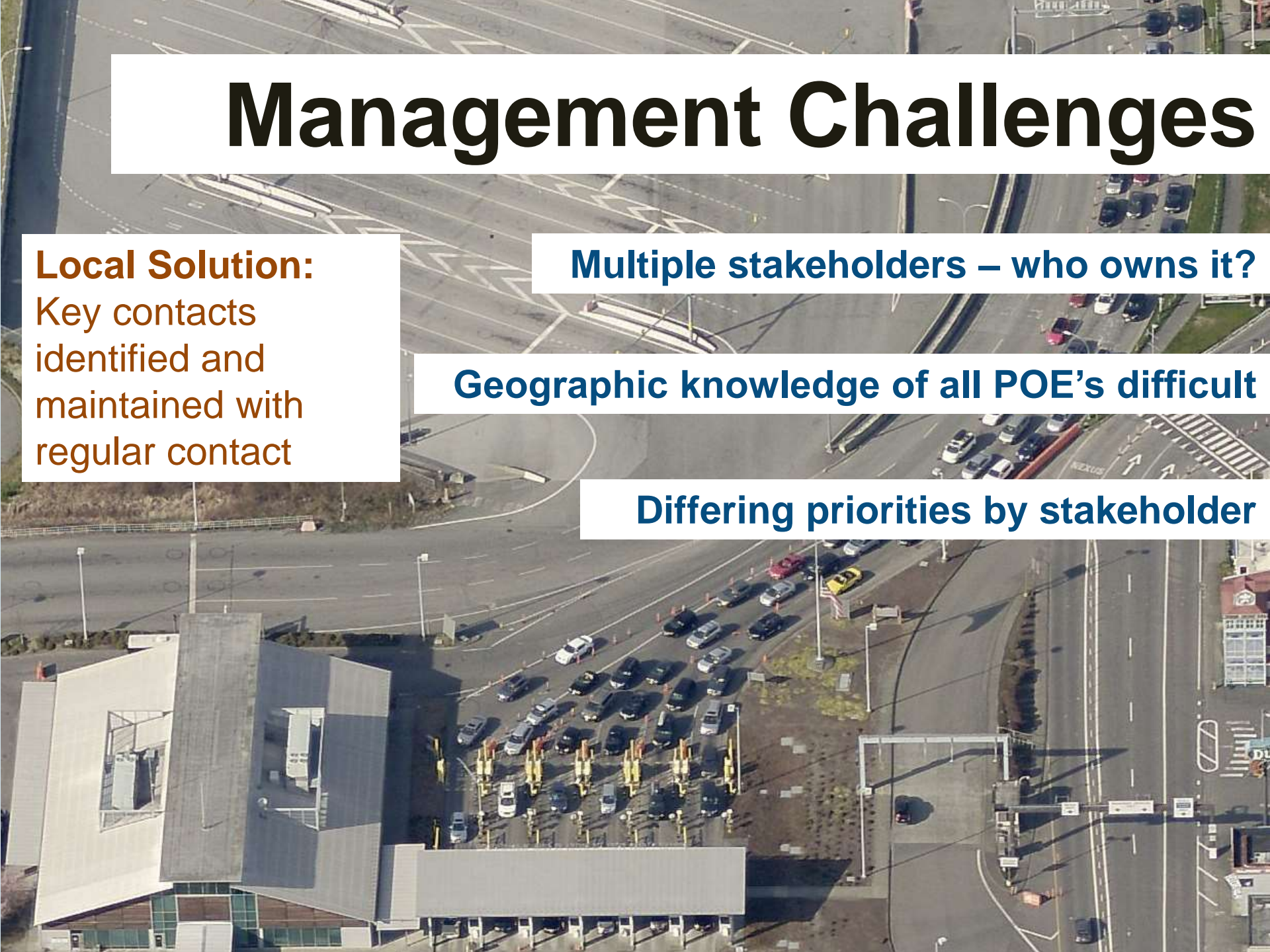
Local Solution:

Key contacts identified and maintained with regular contact

Multiple stakeholders – who owns it?

Geographic knowledge of all POE's difficult

Differing priorities by stakeholder





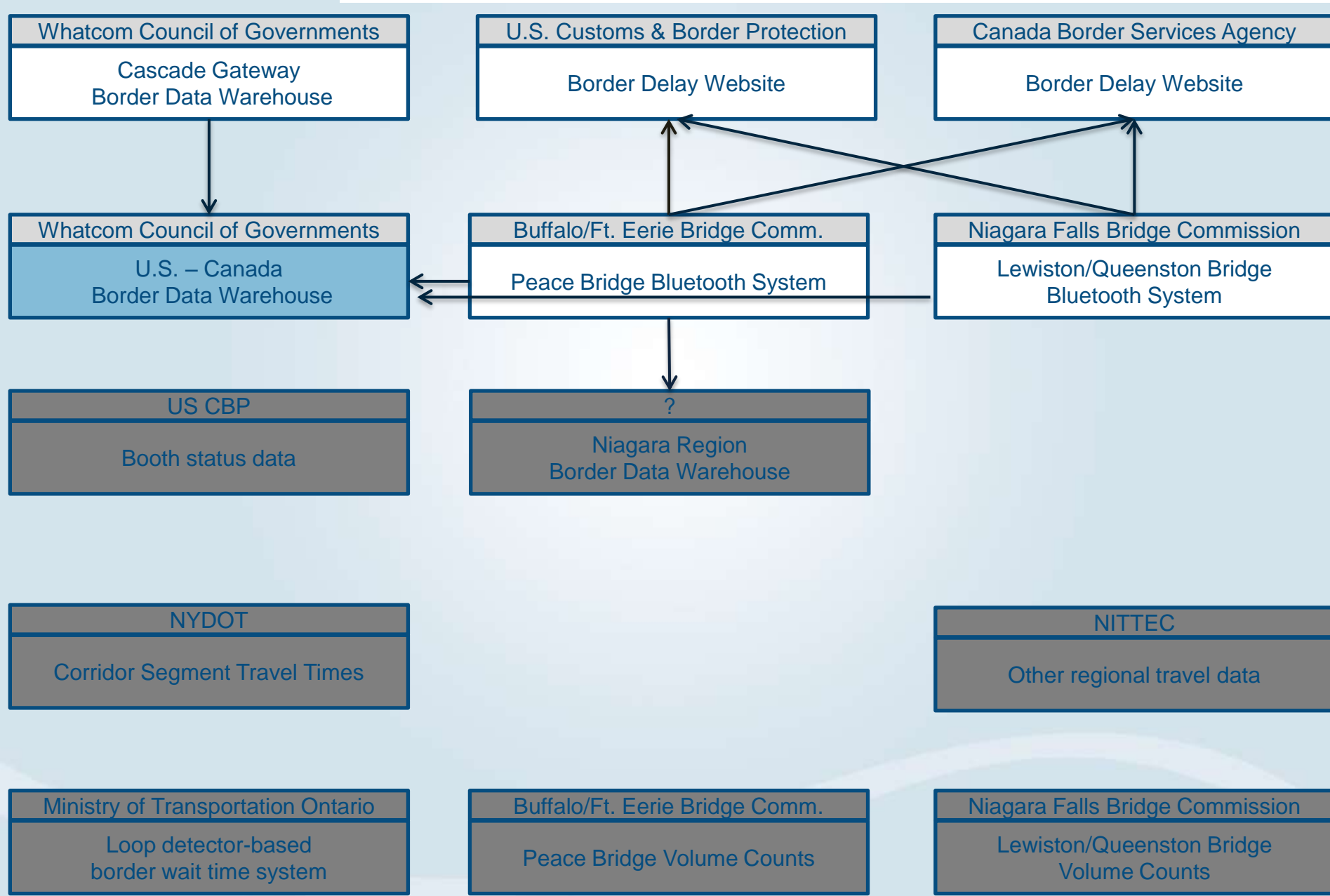
Perception Challenges

Validity questioned

Questions surrounding competitiveness

Local Solution: System validation exercises, evidence of benefits to partner agencies

Final architecture



Next Steps

More local engagement?

National level discussion of importance

Need for maintenance for ongoing projects of this nature

Tie in with Beyond the Border



A map of North America, including parts of Canada and the United States, serves as the background. Three callout boxes with red and yellow circular icons are positioned over the map: one in the northwest (British Columbia), one in the central US (North Dakota), and one in the northeast (Ontario/Toronto area).

System Goals

User friendly reporting interface

Consistent data elements

Complete data set



Technology

Loop & Bluetooth

Varying levels of available data

Frequency of polling

Verification

```

10 <crossing-id>{network-id}crossing{id}</crossing-id>
11 <crossing-status>open</crossing-status>
12 </crossing-status-item>
13 </hwt:crossingStatusMsg>
14
15 <!-- Link statuses -->
16 <hwt:LinkStatus>
17   <Link-status-item>
18     <organization>
19       <organization-information>
20 </organization-information>
21     <Link-List>
22       <Link>
23         <network-id>{network-id}crossing{id}</network-id>
24         <Link-id>{Link-id}from {source-id} to {destination-id}</Link-id>
25         <Link-status>open</Link-status>
26         <last-update-time>
27           <date>{date}</date>
28           <time>{time}</time>
29           <offset>{offset}</offset>
30 </last-update-time>
31         <hwt:LinkStatusExt>
32           <restriction-vehicle-type>
33             <vehicle-types>{restriction-vehicle-type}</vehicle-types>
34             <vehicle-types>{restriction-vehicle-type}</vehicle-types>
35           </restriction-vehicle-type>
36           <crossing-delay>
37             <current>{current}</current>
38             <actual>{actual}</actual>
39             <predicted>{predicted}</predicted>
40           </crossing-delay>
41           <service-rate>{service-rate}</service-rate>
42         </hwt:LinkStatusExt>
43       </Link>
44     </Link-List>
45   </Link-status-item>

```

Data Format

Proprietary

Standards based



Accessibility

API

FTP

Manual upload

A scenic view of Niagara Falls, showing the powerful waterfall cascading over a rocky ledge. A vibrant rainbow is visible in the mist created by the falling water. In the background, a large stone arch bridge spans the river. To the left, the city skyline is visible, including a prominent tower with a glass-enclosed observation deck. The foreground is a grassy hillside with some trees.

Support

Data validation

Internal outages

External outages



Considerations

Agency coordination

Technology

Standards & Accessibility

Support