

Progress of the North/West Passage Operations and Travel Information Integration Sharing (OTIIS) Project

National Rural ITS Conference

August 26, 2014



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Overview

- Background
- System Development
- Deployment Plan
- Website Demo and Mobile App Status

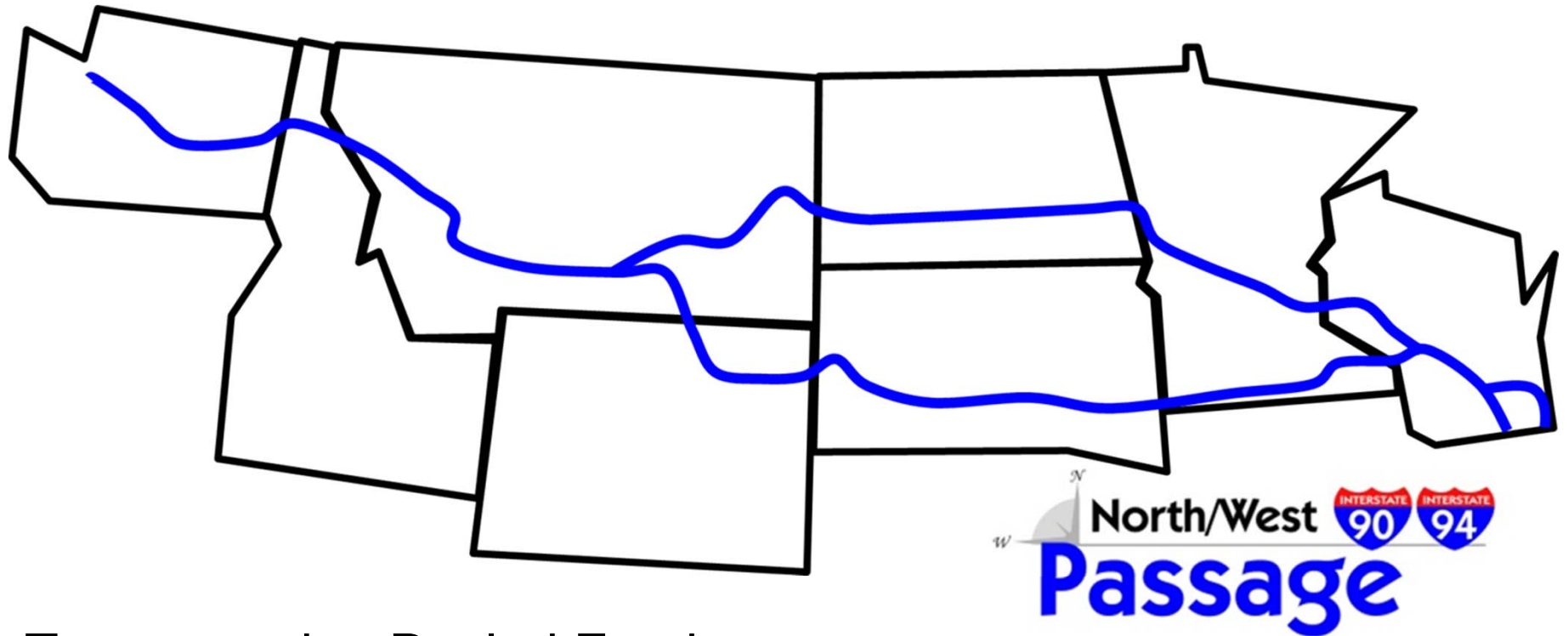


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The North/West Passage



Transportation Pooled Fund

I-90 & I-94

8 states

~3200 miles of interstate

Major east-west corridor for commercial and recreational travel

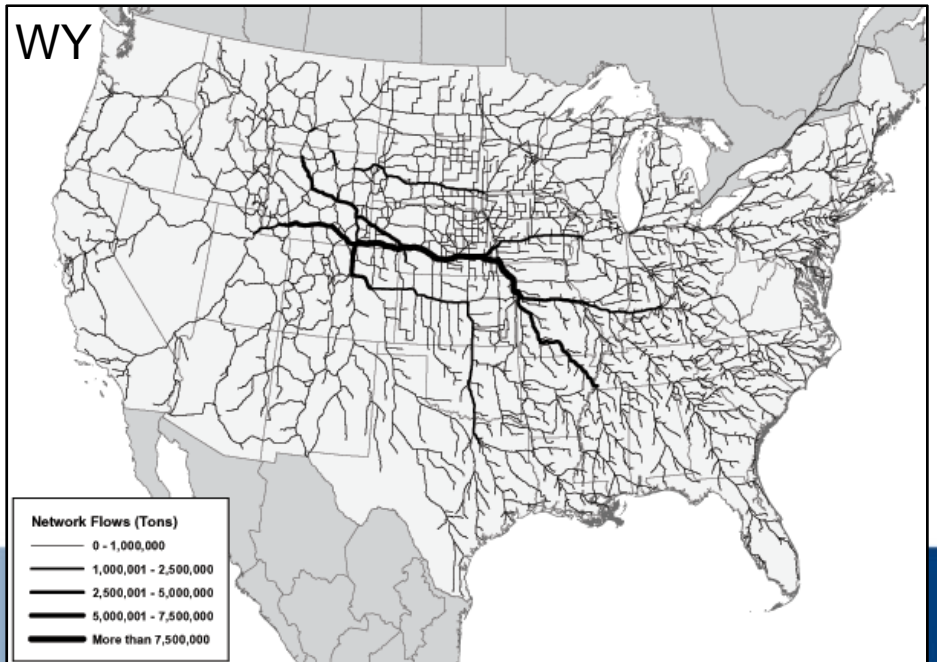
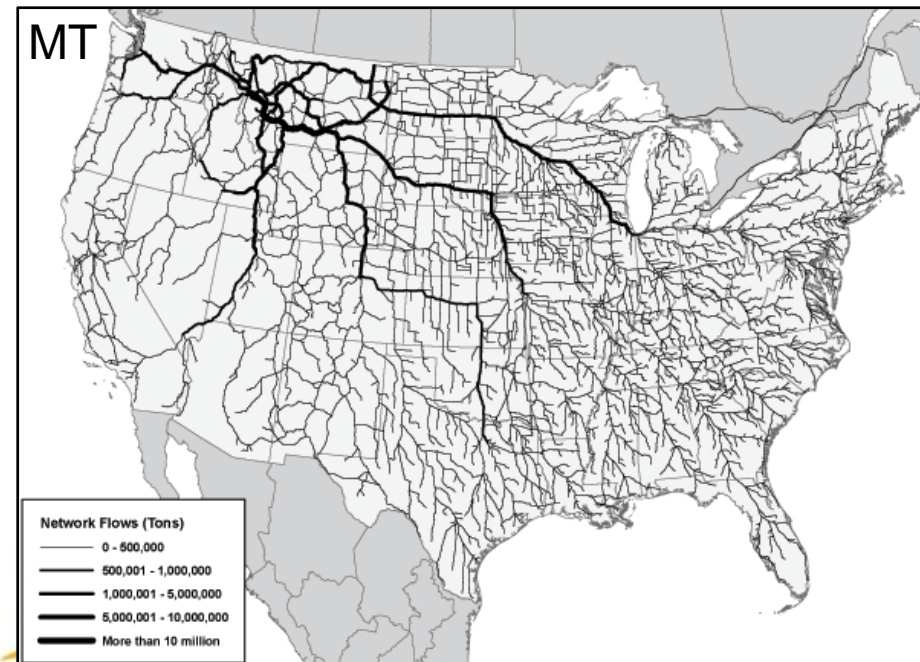
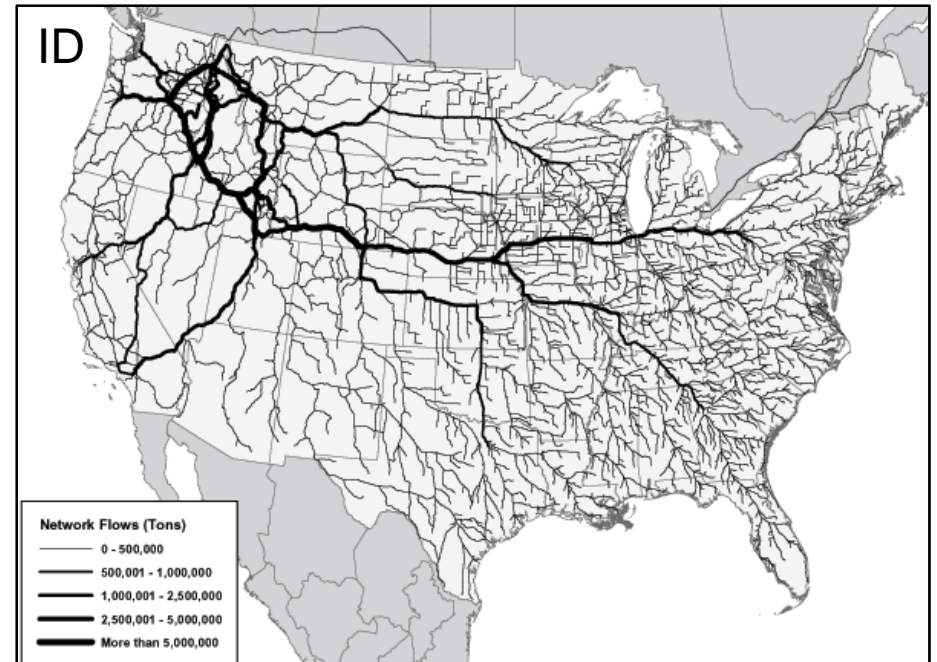
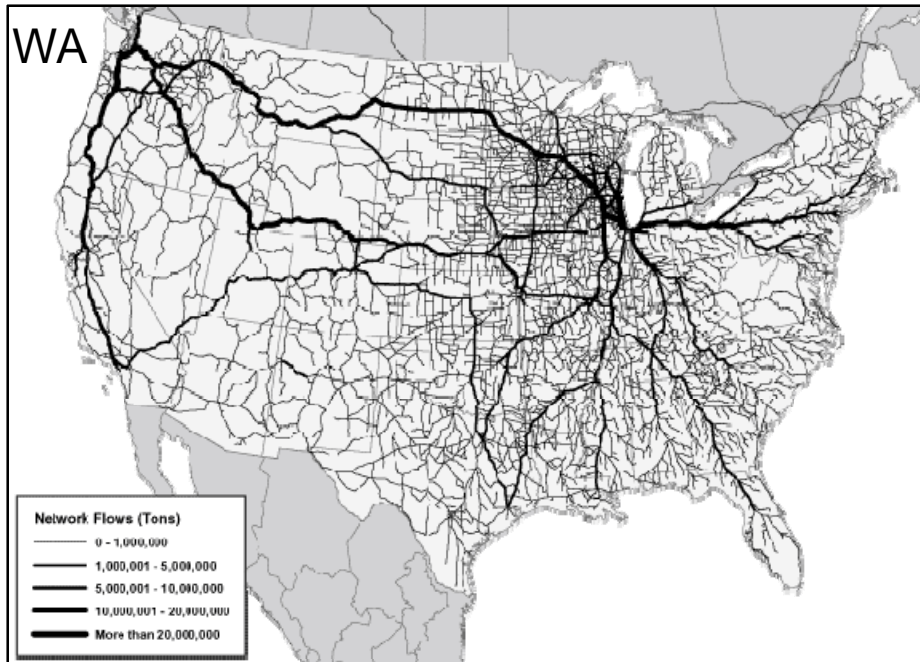


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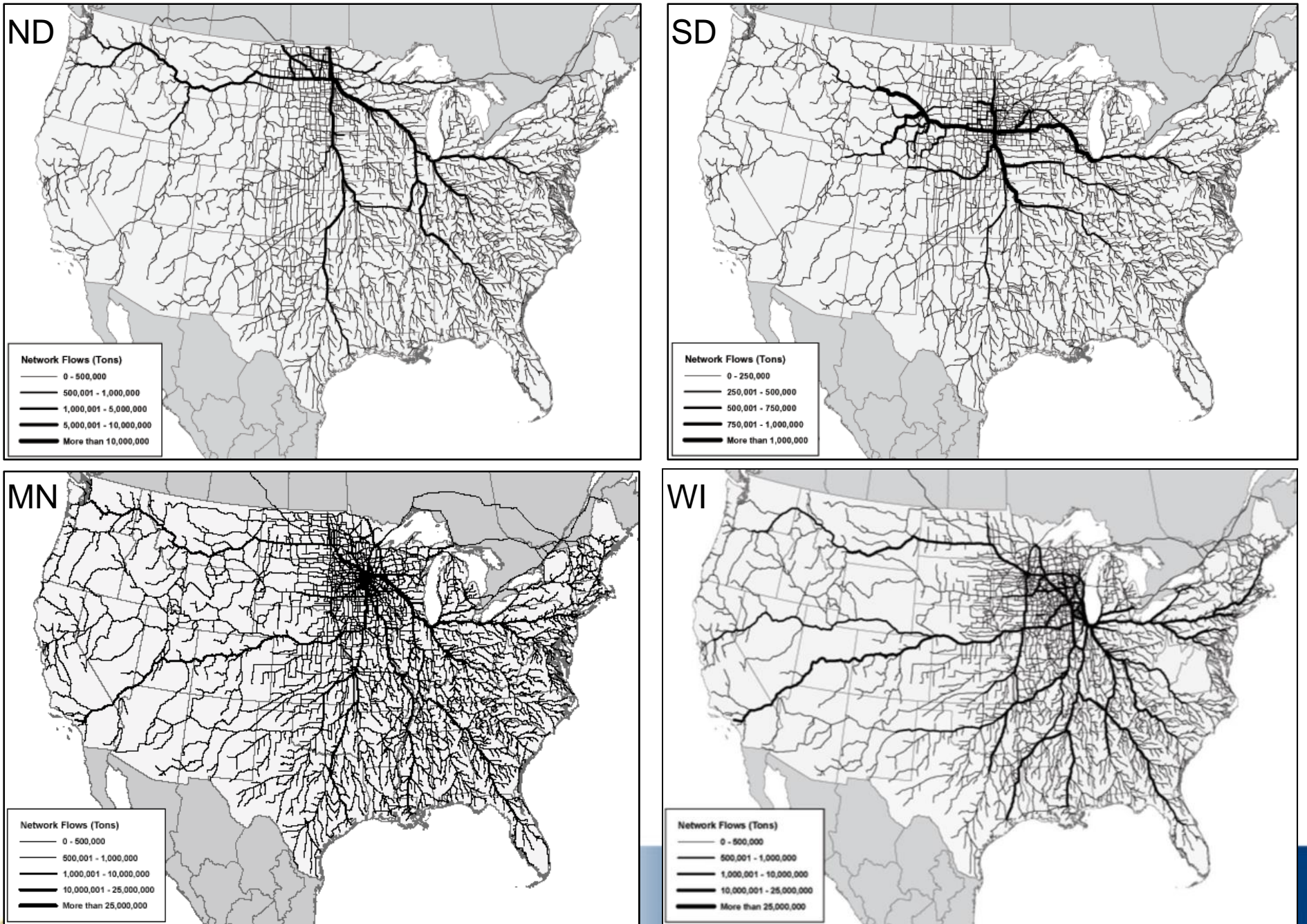
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Network Truck Flows

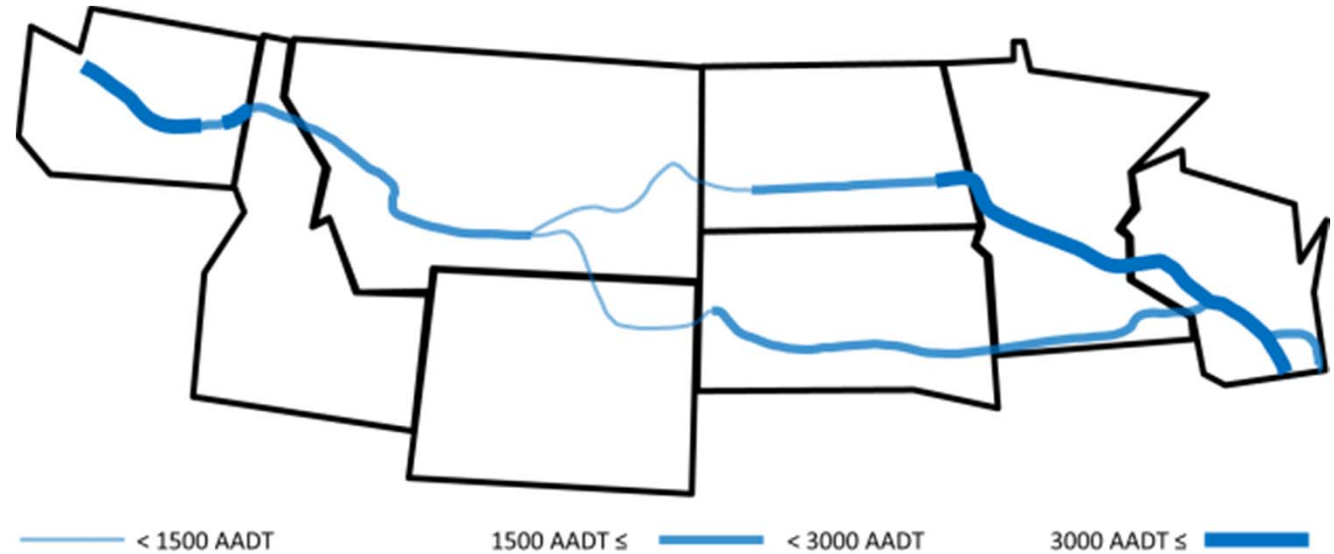


Network Truck Flows

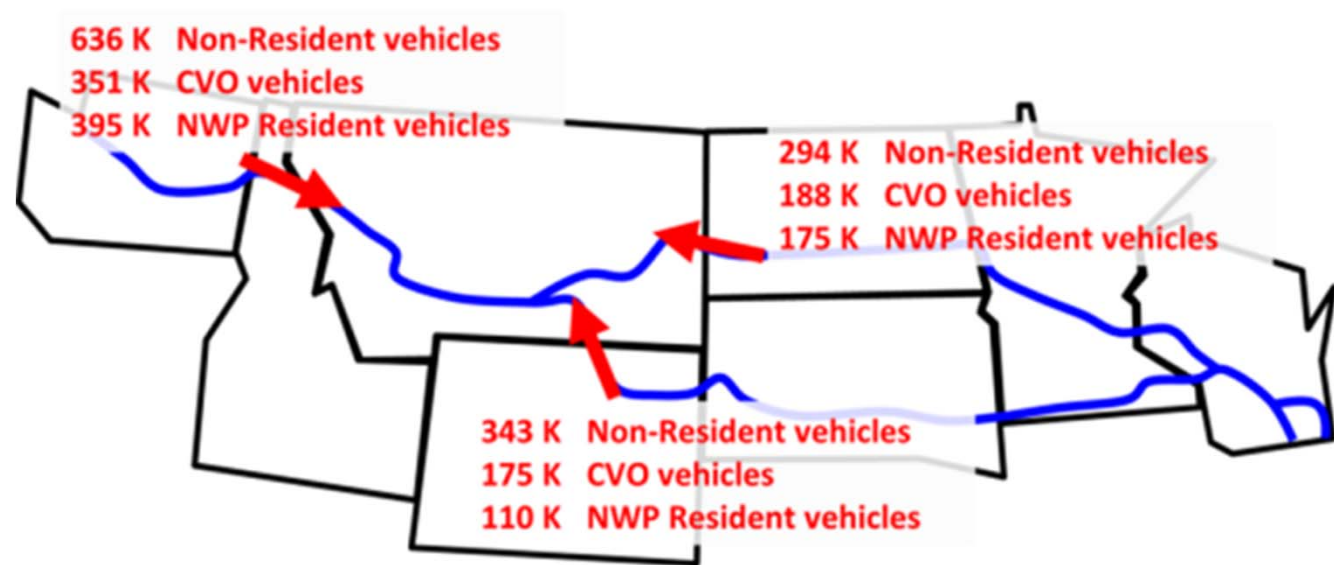


Daily Traffic

CVO AADT:



ITRR annual visitation:



Traffic
Cameras
Mountain Passes
Travel Alerts
Weather

Traffic & Cameras
Bellevue
Canadian Border
Centralia & Chehalis
Ferry Cameras
Road Canal Area
Lanowah & Adco
Moose & Sultan
Mount Vernon & Shumway
Olympia
Seattle Area
Spokane
Tacoma
US 52 Border
Yakima Area
Wenatchee

State Travel Info
Mobile Traffic Site
Cross-State Travel
Routes
Travel Times
Winter Driving Tips

Additional Info
Contact Us

25% OFF AFFINITY TIRES. ENDS 8/31
GET COUPON

Washington State Travel Alerts

IMPACT LEVEL TYPE
HIGHEST
MODERATE
LOW

ACCIDENTALITY
WEATHER
ROAD CLOSURE

Additional alerts: zoom in to view details

Idaho Transportation Department Highway Info Your 511 (sign in)

511 Info | Streamlined Version | Mobile Version | Truckers' Info | Transit Info | Tourist Info | Links

Show List Views >> Select Map >> Go Future Info

MDT Travel Info
Map Layers

- ☒ Road Incident
- ☒ Construction
- ☒ RWIS
- ☒ RWIS w/camera
- ☒ Other Camera

Road Condition
CLOSED FOR SEASON
DRY/MOSTLY DRY
FROST
ICE/BLACK ICE
ROAD CLOSED
SCATTERED SNOW AND ICE
SEVERE DRIVING CONDITION
SLUSH/SCATTERED SLUSH
SNOW AND ICE
SNOW COVER
WET/SCATTERED WET

Traffic Speeds
State
Google

Future Reports
Coming Soon

Other Info
Aids County Traffic

Radar
Map

Base Map
Google Terrain

NDOT Travel Information Map Home | About Us | NDOT

Travel Information | Camera Images | Printable Maps | Text Versions | RSS Feeds | Additional Travel Info | Help

Map Layers
My View

- ☒ Road Closures/Incidents
Updated: 10/10/2014 07:43:17 AM
Closed/Blocked
Overhead
Incident (impacting traffic)
- ☒ Road Conditions
Updated: 10/10/2014 12:10:34 PM
Greater than 8 mi
Less than 8 mi
Inactive
- ☒ Work Zones
Updated: 10/10/2014 07:35:17 AM
Greater than 8 mi
Less than 8 mi
Inactive
- ☒ Warnings/Events
Updated: 10/10/2014 07:35:17 AM
Warning
Water on Road
Event
Information
- ☒ Weight Restrictions
Updated: 10/10/2014 12:30:02 PM
By Legal Weight
By Legal Weight
Interstate System
- ☒ Weather Alerts
Updated: 10/10/2014 07:35:17 AM
Weather Radar

Auto Refresh

Wisconsin Department of Transportation Your 511 (sign in)

511 Info | Winter Driving Info | Truckers' Info | Metro Traffic Map | Links | Streamlined Version | Google Maps | Contact Us

Text Size: A A Text Only Future Info

Menu
All Reports
Cameras
Traffic Speeds

Personalize your 511

Wisconsin Department of Transportation Travel Information Your 511 (sign in)

Travel Information: Call 511 or (800) 511-8472

My 511 (sign in) | Log In | Sign Up | Forgot my password?

ALERTS enforcement reports that all lanes of US 45 are closed at County WG in both directions because of a traffic incident.

TRAFFIC MAP

MAP LEGEND
Winter Road Conditions
Traffic Speeds
Click on freeway for travel times
No Data 0-30 31-49 50+ mph
Cameras
Message Signs
Incidents
Roadwork / Closures
Trucker Information

OTIIS



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Project Goals

Research, develop, and operationally test a technology solution:

- Traveler Information → decision making → safer and more efficient;
- Agency Coordination → response to weather events, serious incidents;
- Influence Positive Driver Behavior Changes → safety, efficiency;
- API Opportunities → Connect Vehicle, sustainable business model;
- Increase Awareness → public education and marketing

Corridor-wide Traveler Info Website
Mobile App with push notifications
API for expansion, integration



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Literature Reviewed

- Trends in Current Traveler Info and Technology
 - Reports, Journal Articles and Conference Proceedings
- 511 Coalition Findings
- Existing Private Sector Systems
- The Future: Connected Vehicles



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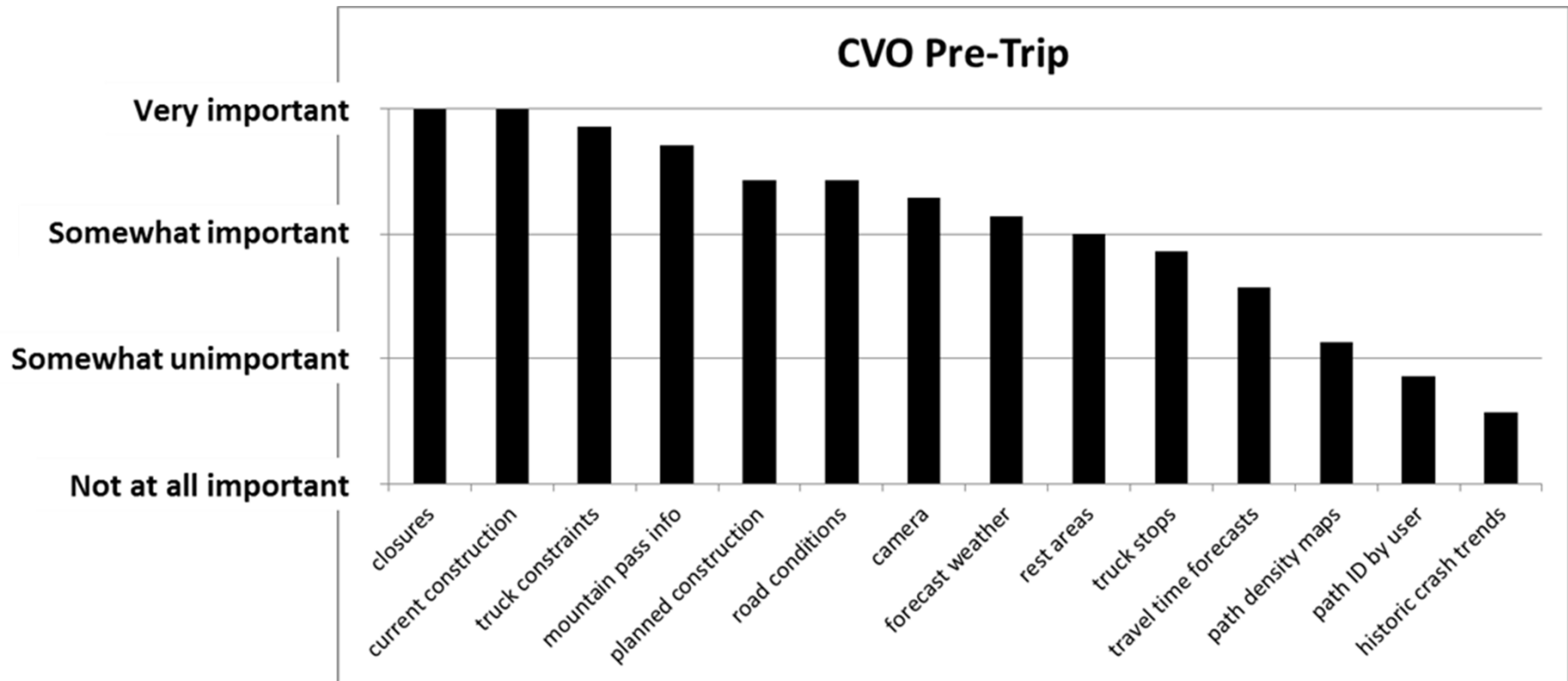
From the Literature

- Corridor-wide traveler information that extends beyond an individual state is desired
- Personalized information preferred
- Push type notifications gaining in popularity
- Mobile devices favored
- Social media tools are increasingly used for information dissemination
- Tourism Destination Anchors are important marketing focal points



Survey of Steering Committee Members

- Rank the importance of various aspects of traveler info
 - CVOs and Recreational Travelers (Pre-trip and En-route)



Mockups, ConOps, Prototypes

Used to gather feedback from:

- Steering Committee and other DOT Stakeholders,
- ATA and State Trucking Associations,
- Usability Testing Participants
 - NWP corridor *truck drivers*
 - NWP corridor *general travelers*

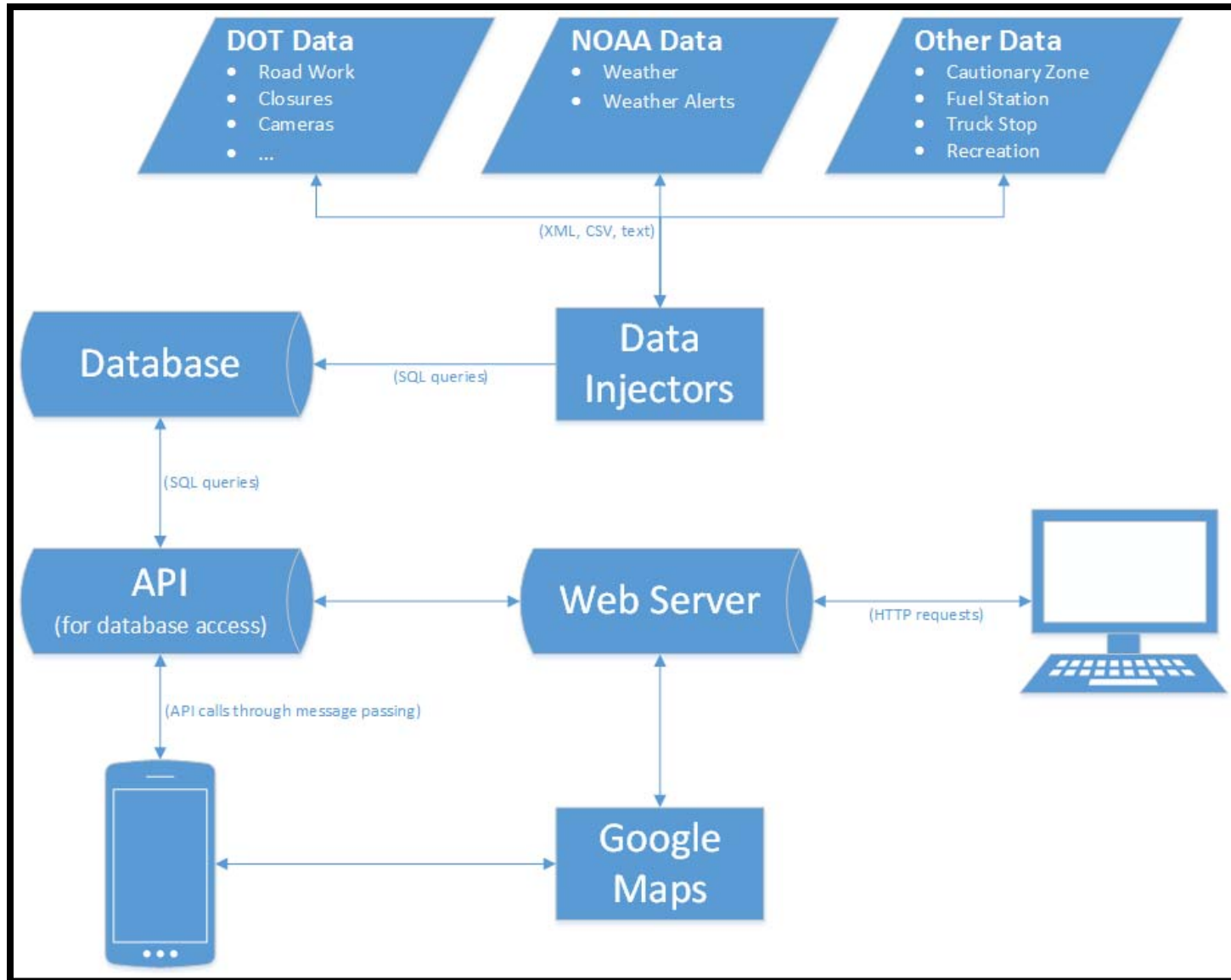


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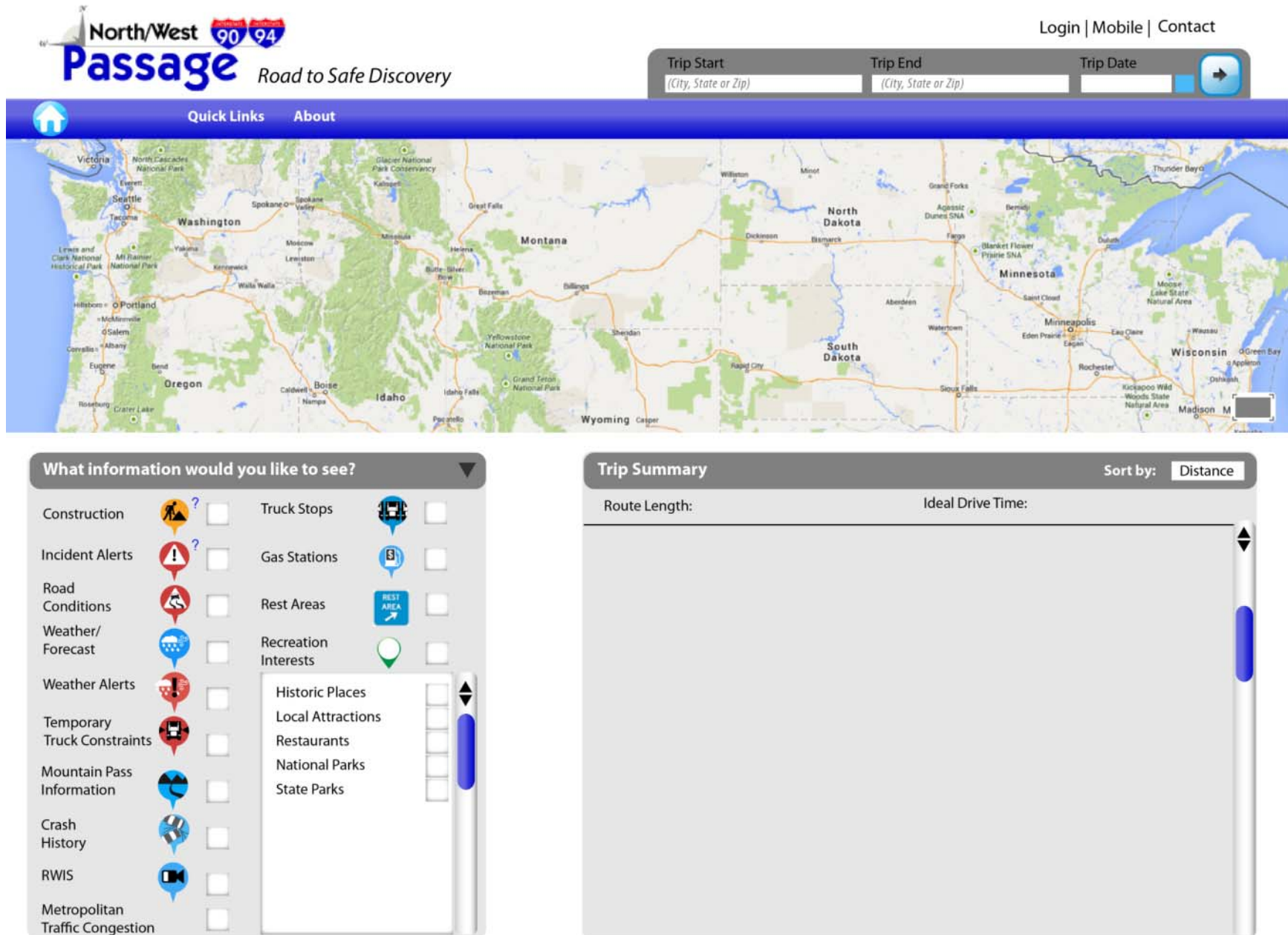
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System Architecture



Mockups, ConOps, Prototypes



Mockups, ConOps, Prototypes

Trip Start
★ Madison, WI

Trip End
+ Gardiner, MT

Travel Date
09/06/2014

Departure Time
7:30am

Reset Page

Mobile App

Resources

Support

About

Contact

North/West
Passage

Road to
Safe Discovery

Sign in

Create Account

STATUS: Active
Begin date:
End date: 9/5/2014
Location: 20 miles E of Rapid City
Mile marker begin:
Mile marker end:
Impact: Low
Restrictions: Speed 60 mph
Notes: Median work, all lanes open

What would you like to see?

☒ Road Work

☒ Weather Alerts

☒ Incident

☐ Traffic Congestion

☐ Road Conditions

☒ Road Closure

☒ Weather

☒ Temporary Truck Restrictions

☐ Mountain Pass

☐ Camera

☐ Cautionary Zones

☐ RWIS

☐ Weigh Station

☐ DMS

☐ Rest Areas

☐ Fuel Stations

☐ Truck Parking

☐ Truck Stops

☐ Scenic Routes

☐ State Parks

☐ National Parks

☐ National Historic Landmarks

☐ National Monuments

Summary 1

Route Length: 1280mi

Ideal Drive Time: 18hr 14min

9/1/2013 9:57am

Two vehicle collision....

Active: 9/21/2013

80 miles west of Fargo...

Active: 10/8/2013

40 miles East of Dickinson...

Status

Trucks under 12' only

High wind warning. Forecast 9/2 AM ...

Summary 2






Route Length: 1314mi

Ideal Drive Time: 18hr 34min

Active: 9/5/2013

20 miles east of Rapid...

Usability Testing Results

 (8)	Fuel/gas (10) Cash only gas station	100% of the participants accurately identified the icon with fuel/gas station.
 (10)	Rest area (11)	100% of the participants accurately related the icon with a rest area.
	Truck parking, rest area (9) Truck idling Semi only parking	About 82% of the participants accurately identified the icon with a stop area or parking for trucks.
 (3)	Not sure Trucks are prevented on this route Truck driving from opposite direction Low visibility ahead Truck stop Trucks merging into traffic Wide load	About 18% of the participants related the icon with its intended meaning of truck restrictions. About 27% reported not knowing or understanding the icon. Most of the participants were able to relate the icon with truck information.
 (2)	Don't know (4) Road is flat ahead Do not enter (2) Road close No Semi's Level surface ahead Caution	About 36% of the participants did not know the meaning. About 27% of the participants accurately related the icon with road closure or do not enter.

Select Usability Results

Comments from the participants:

- “I like the grouping of the icons for the historic places and I like the way the national parks are separate from other parks”
- “I love this website, I would definitely use it”
- “I love the color coding and the grouping of the choices”
- “Finally the DOT cares about providing for truck drivers (I mean to help them plan their trip)”
- “It will be very useful to have a mobile application”



Select Usability Results

- 8 out of 11 participants mentioned that they would like to see information about rest areas, hotels, restaurants, food, services available and speed limits
- 8 out of 11 participants asked, or were concerned with, the frequency with which the information will be updated on the website.
- **All the participants of the study suggested they would use the website if it was in place**



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Deployment

Sustainable Business Model Investigation



Marketing Plan Investigation



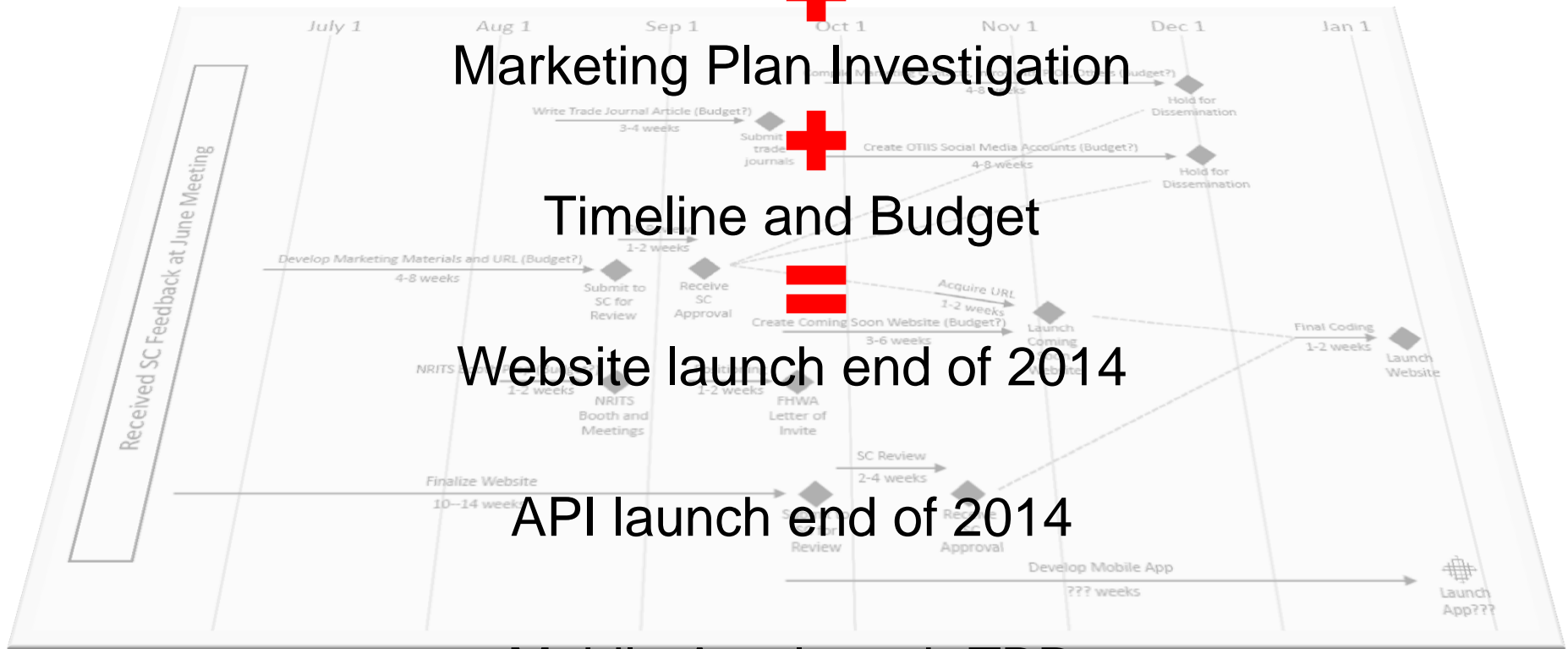
Timeline and Budget



Website launch end of 2014

API launch end of 2014

Mobile App launch TBD



DOT Provided Data Status

	Road Work	Truck Restriction	Crash / Incident	Road Closure	Road Conditions	Traffic Congestion	Camera	RWIS
WA								
ID								
MT								
WY								
ND								
SD								
MN								
WI								

Deployment



Coming Soon Website: Coming Soon



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Next Steps

- **Finish Website for public roll-out**
- **Finish API**
- **Finish Mobile App**
- **Accident prediction and integration with freight scheduling**
 - Proposal with JB Hunt and Watkins & Sheppard
- **Intelligent rerouting**
 - Suggest alternative routes in real-time through notifications
 - Balance traffic based on observed shifts
 - Keep trucks on highway, but route passenger traffic onto local roads



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Trip Start

Waypoint

Trip Destination

Travel Date

Departure Time

Get Directions

RESET PAGE

MOBILE APP

RESOURCES

SUPPORT

ABOUT

CONTACT

Sign In | Create Account



What Would You Like To See?

Road Work

☒

Incident

☒

Road Condition

☐

Weather Alert

☐

Weather

☐

Cautionary Zone

☐

Weigh Station

☐

Rest Area

☐

Truck Parking

☐

Scenic Route

☐

National Park

☐

National Monument

☐

Traffic Congestion

☐

Road Closure

☐

Temporary Truck Restriction

☐

Mountain Pass

☐

Camera

☐

RWIS

☐

Fuel Station

☐

Truck Stop

☐

State Park

☐

National Historic Landmark

☐

Route Summaries

Enter a route search to see routes.

Trip Start: Trip Destination: Travel Date: Departure Time:

[Get Directions](#)

[RESET PAGE](#)
[MOBILE APP](#)
[RESOURCES](#)
[SUPPORT](#)
[ABOUT](#)
[CONTACT](#)
[Sign In | Create Account](#)

What Would You Like To See?

Road Work <input checked="" type="checkbox"/>	Traffic Congestion <input checked="" type="checkbox"/>
Incident <input checked="" type="checkbox"/>	Road Closure <input checked="" type="checkbox"/>
Road Condition <input type="checkbox"/>	Temporary Truck Restriction <input type="checkbox"/>
Weather Alert <input checked="" type="checkbox"/>	
Weather <input type="checkbox"/>	Mountain Pass <input checked="" type="checkbox"/>
Cautionary Zone <input type="checkbox"/>	Camera <input type="checkbox"/>
Weigh Station <input type="checkbox"/>	RWIS <input type="checkbox"/>
Rest Area <input type="checkbox"/>	Fuel Station <input type="checkbox"/>
Truck Parking <input type="checkbox"/>	Truck Stop <input type="checkbox"/>
Scenic Route <input type="checkbox"/>	State Park <input type="checkbox"/>
National Park <input checked="" type="checkbox"/>	National Historic Landmark <input type="checkbox"/>
National Monument <input type="checkbox"/>	

Route Summaries

<p>① Summary Length: 980 Miles Ideal Drive Time: 13 Hours 39 Mins</p> <ul style="list-style-type: none"> Category: met Alert for Big Timber... Category: Met Alert for Stearns (Minneso... Category: Met Alert for Hennepin; Wright... active Tue Apr 15 2014 01:00 MDT BRIDGE, DETOUR, 65 MPH RED... 	<p>② Summary Length: 1031 Miles Ideal Drive Time: 15 Hours 27 Mins</p> <ul style="list-style-type: none"> Category: met Alert for Big Timber... active Tue Apr 15 2014 01:00 MDT BRIDGE, DETOUR, 65 MPH RED... active Mon Mar 11 2013 01:00 MDT BRIDGE, 45 MPH REDUCED SPE... active Tue Jun 03 2014 01:00 MDT STRIPING... 	<p>③ Summary Length: 965 Miles Ideal Drive Time: 15 Hours 33 Mins</p> <ul style="list-style-type: none"> Category: met Alert for Big Timber... Category: Met Alert for Carver (Minnesot... active Tue Apr 15 2014 01:00 MDT BRIDGE, DETOUR, 65 MPH RED... active Mon Mar 11 2013 01:00 MDT BRIDGE, 45 MPH REDUCED SPE...
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Trip Start

Waypoint

Trip Destination

Travel Date

Departure Time

seattle, wa

milwaukee, wi

Wednesday Aug 20, 20

01:57 PM

Get Directions

RESET PAGE

MOBILE APP

RESOURCES

SUPPORT

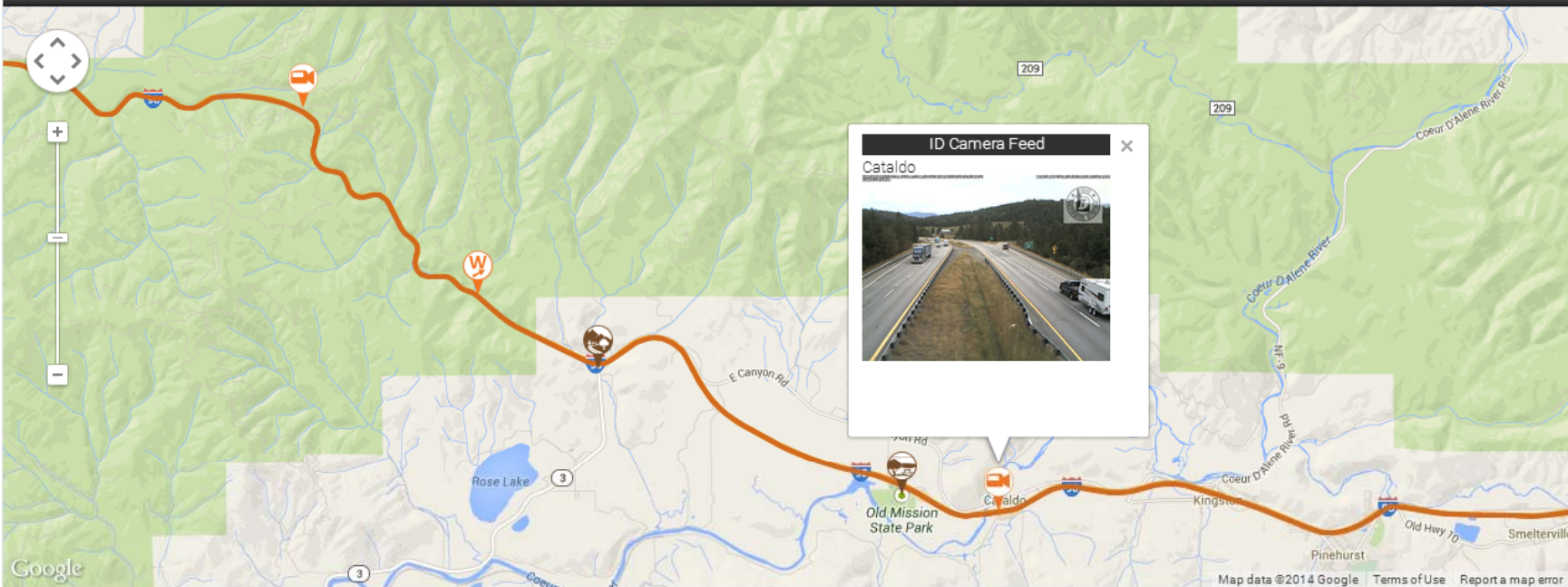
ABOUT

CONTACT

NorthWest

Passage

Sign In | Create Account

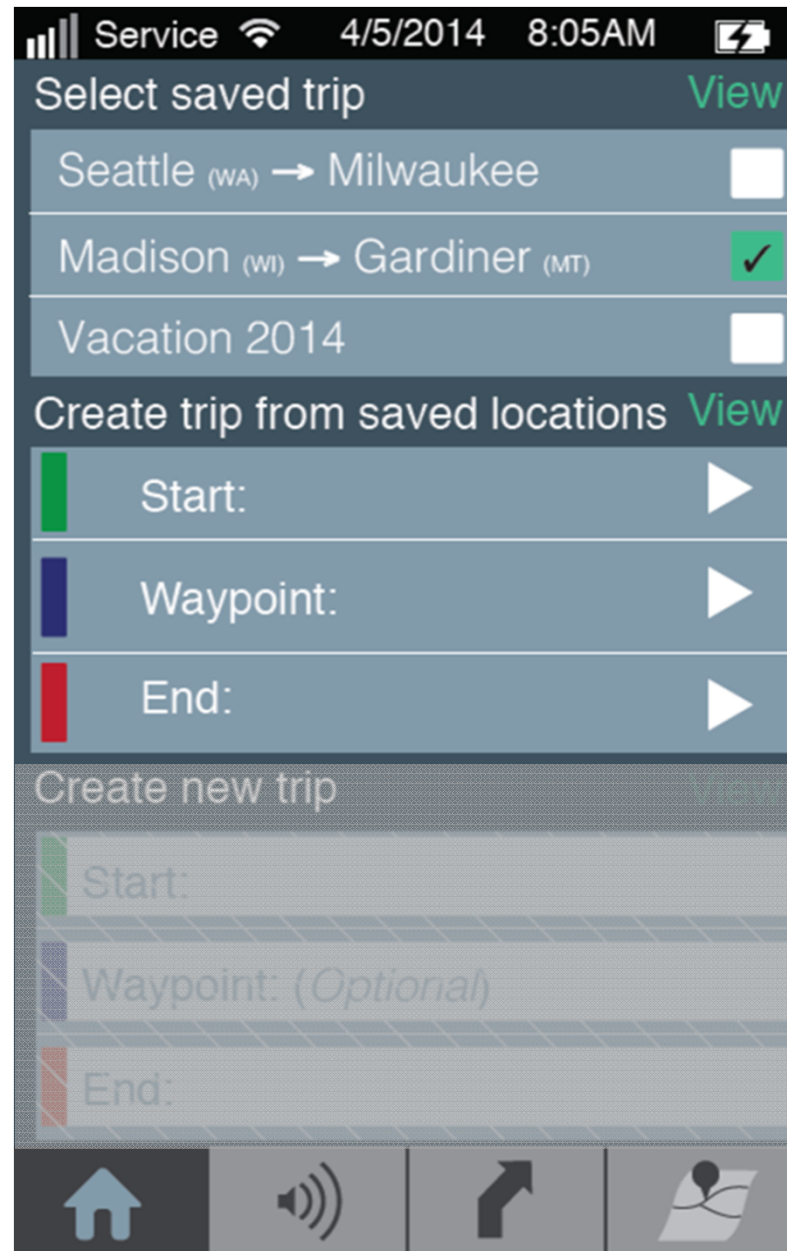


What Would You Like To See?	
<input checked="" type="checkbox"/> Road Work	<input type="checkbox"/> Traffic Congestion
<input checked="" type="checkbox"/> Incident	<input checked="" type="checkbox"/> Road Closure
<input checked="" type="checkbox"/> Road Condition	<input checked="" type="checkbox"/> Temporary Truck Restriction
<input type="checkbox"/> Weather Alert	<input type="checkbox"/> Mountain Pass
<input type="checkbox"/> Weather	<input checked="" type="checkbox"/> Camera
<input type="checkbox"/> Cautionary Zone	<input type="checkbox"/> RWIS
<input checked="" type="checkbox"/> Weigh Station	<input type="checkbox"/> Fuel Station
<input type="checkbox"/> Rest Area	<input type="checkbox"/> Truck Stop
<input checked="" type="checkbox"/> Truck Parking	<input checked="" type="checkbox"/> State Park
<input checked="" type="checkbox"/> Scenic Route	<input type="checkbox"/> National Historic Landmark
<input checked="" type="checkbox"/> National Park	<input type="checkbox"/> National Monument

Feed Status: **GOOD**

Route Summaries	
① Summary	Length: 1992 Miles
	Minimum Drive Time: 1 Day 4 Hours
	Safe Drive Time: 3 Days 2 Hours
	Temporary Truck Restriction
	BridgeRestriction
	Active Tue Apr 15 2014 01:00 MDT
	BRIDGE, DETOUR, 65 MPH RED...
	Active Mon Aug 18 2014 01:00 MDT
	BRIDGE, 35 MPH REDUCED SPE...
	Active Fri Aug 23 2013 01:00 MDT
	BRIDGE, DETOUR, PILOT CARS...
	Active Mon Dec 02 2013 00:00 MST
	RECONSTRUCTION, DETOUR, 45...
	Active Tue Jul 08 2014 01:00 MDT
	PAVING, 35 MPH REDUCED SPE...
	Active Wed May 14 2014 01:00 MDT
	SIGN INSTALLATION
	Active Tue Apr 15 2014 01:00 MDT

Mobile App Mockups

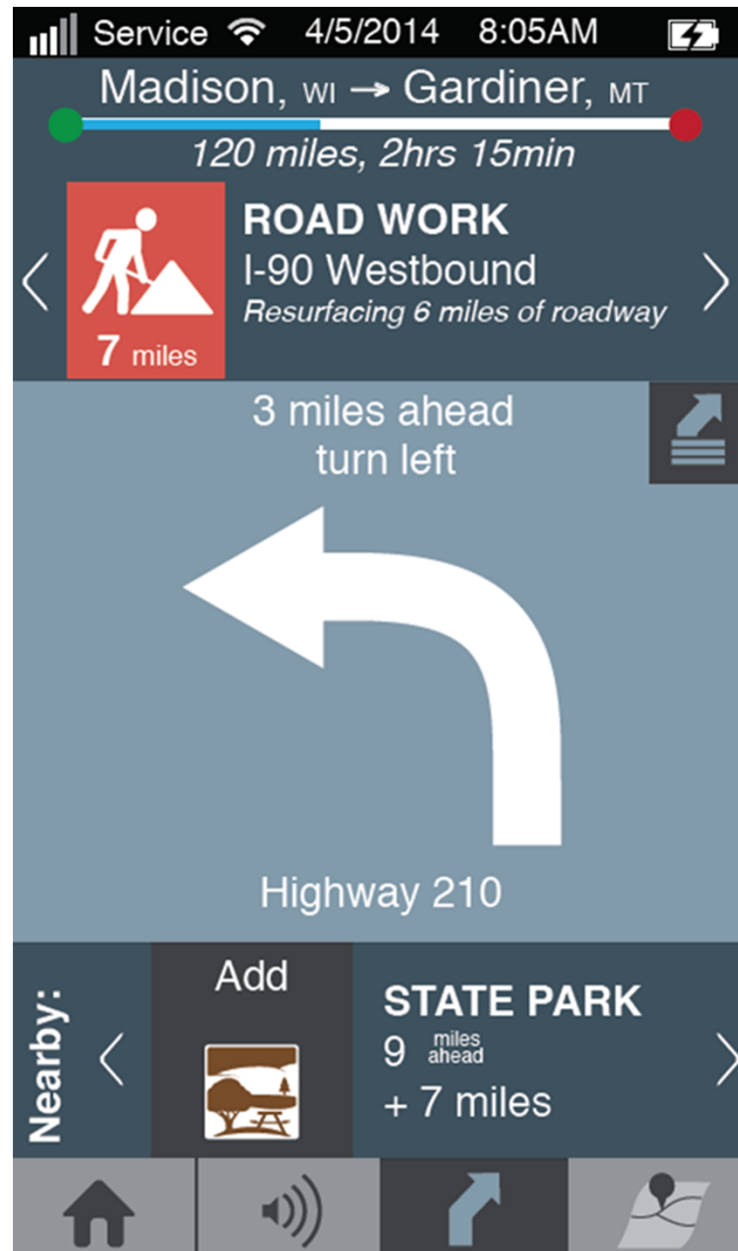


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Mobile App Mockups

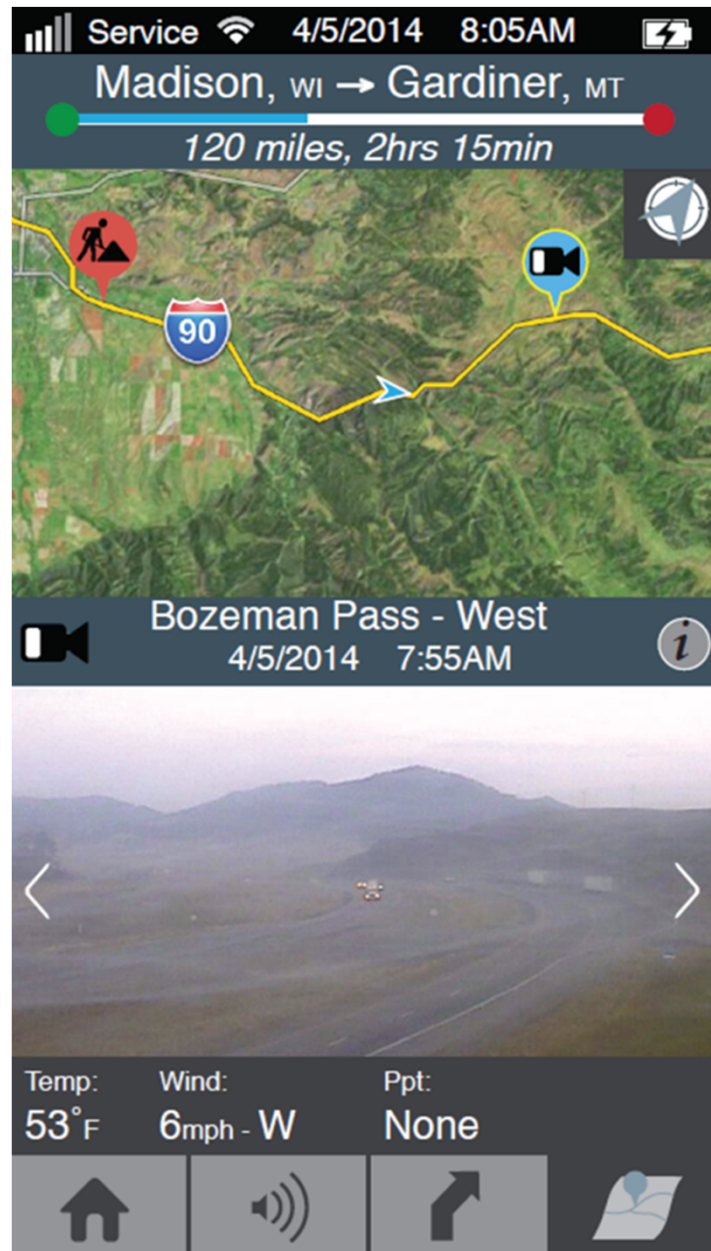


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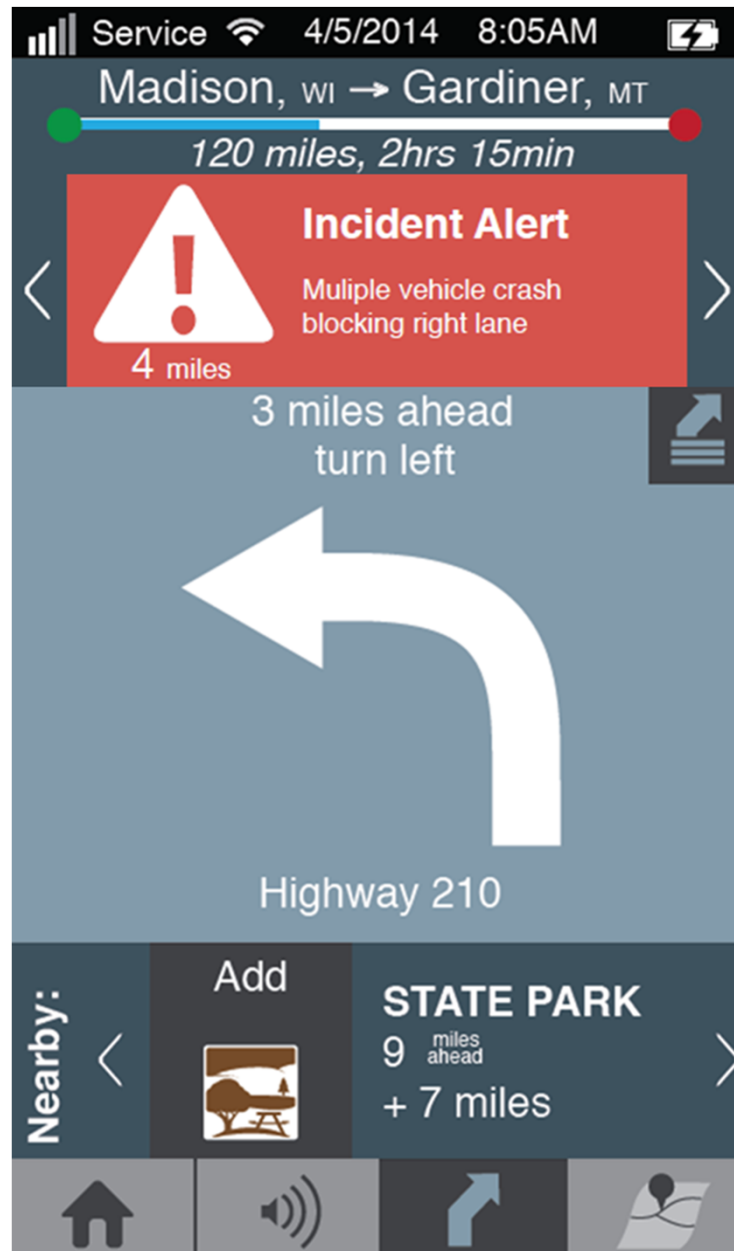
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Mobile App Mockups



Mobile App Mockups



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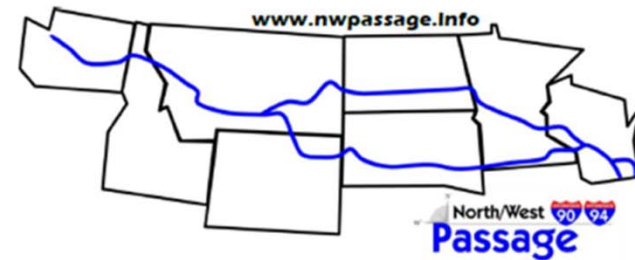
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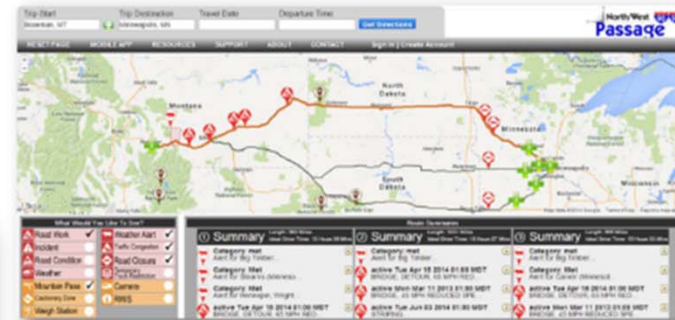
Questions

All the Info

What Would You Like To See?	
Road Work	<input checked="" type="checkbox"/>
Incident	<input checked="" type="checkbox"/>
Road Condition	<input checked="" type="checkbox"/>
Weather	<input checked="" type="checkbox"/>
Mountain Pass	<input checked="" type="checkbox"/>
Cautionary Zone	<input checked="" type="checkbox"/>
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Road Closure	<input checked="" type="checkbox"/>
Temporary Truck Restriction	<input checked="" type="checkbox"/>
Camera	<input checked="" type="checkbox"/>
RWIS	<input checked="" type="checkbox"/>
Fuel Station	<input checked="" type="checkbox"/>
Truck Stop	<input checked="" type="checkbox"/>
State Park	<input checked="" type="checkbox"/>
National Historic Landmark	<input checked="" type="checkbox"/>



Across all Boundaries



with Mobile Alerts



Deploying Soon!

Sustainable Business Model Investigation

Marketing Plan Investigation

Timeline and Budget

Website launch end of 2014

API launch end of 2014

Mobile App launch TBD

