Meridian Environmental Technology Inc.
An Iteris Company

Use Case #5: Enhanced Road Weather Content Enabled by *Clarus*

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Clarus Use Case #5 Overview

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Goal:

- Use *Clarus* data to develop enhanced road weather information for travelers.

Methods:

- by leveraging the multi-state nature of *Clarus* to create a multi-state traveler information platform

- by applying *Clarus* data to develop enhanced road / weather forecasts that can alert drivers of conditions before they occur

Use Case #5 Design

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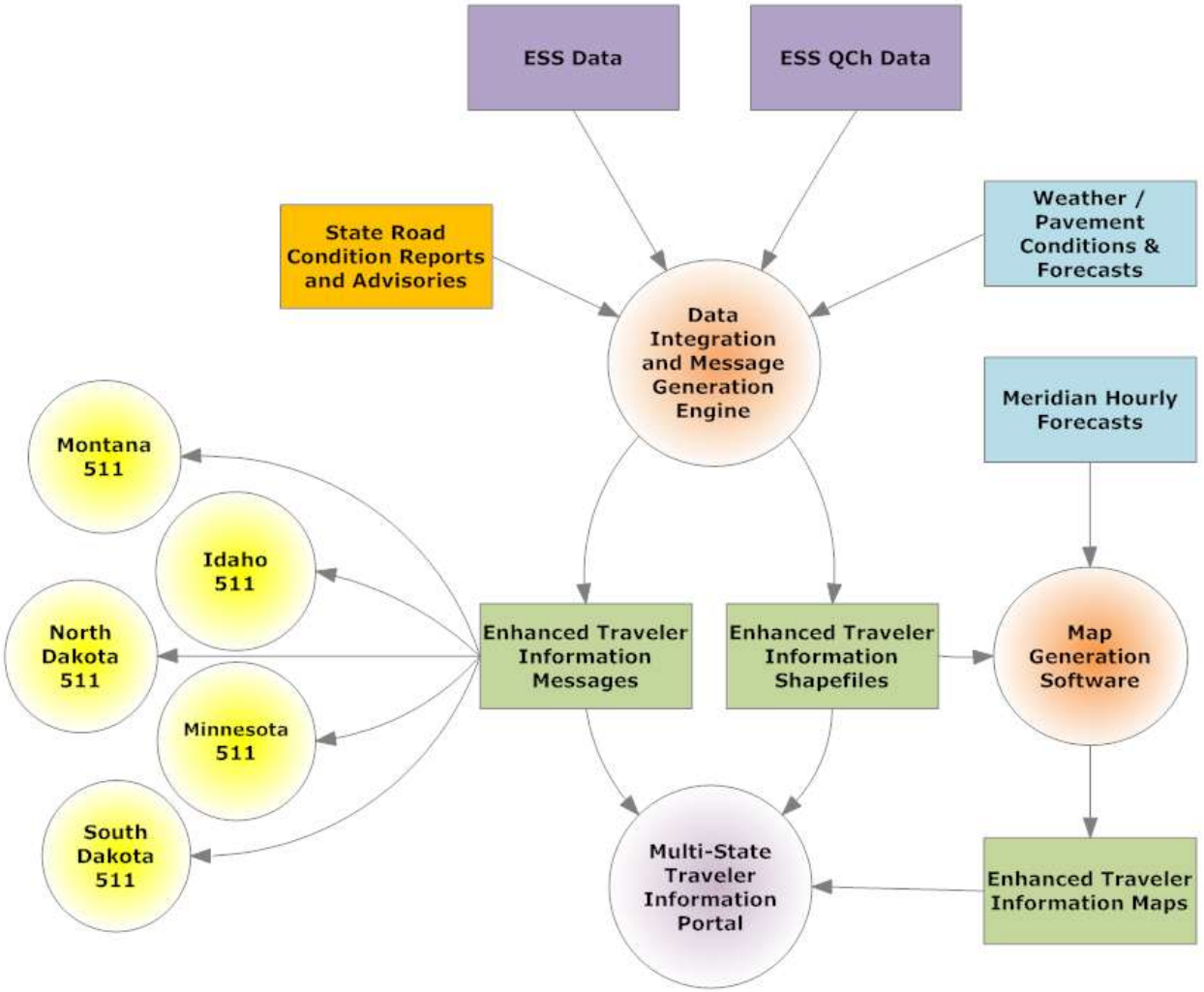

Message Generation Engine

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- System needs to consider potentially conflicting data:
  - DOT road and weather condition reports
  - roadside sensor data from *Clarus*
  - *Clarus* enhanced weather analyses and forecasts
  - *Clarus* enhanced road condition analyses and forecasts
- When integrating this information together, can we:
  - compare data to establish confidence?
  - avoid overstating what we really know about travel conditions?
  - keep the amount of information manageable for the recipient?
  - keep a common presentation across state lines?

Message Generation Engine

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For a given information ‘segment’:

Identify which data are available

- DOT, Clarus ESS, road/weather analyses/forecasts

Separately analyze data streams to determine if a problematic condition is indicated

Progress through appropriate path in a decision tree

- Based on data availability and consistency (or lack thereof)

Generate a message and GIS attributes appropriate for the ending point in the decision tree

Multi-State Web Portal

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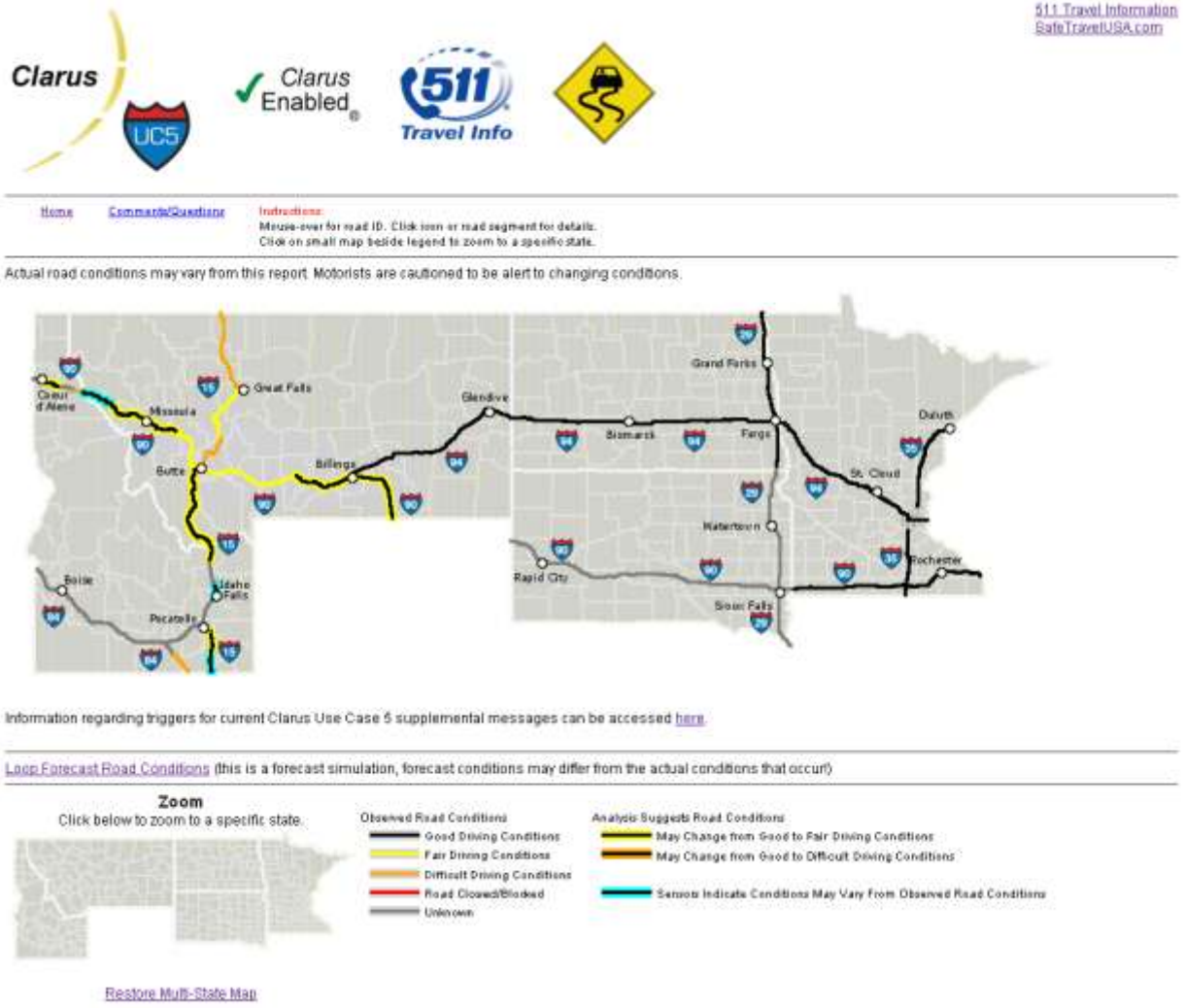

ATIS Web Portal

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ATIS Web Portal Text Content

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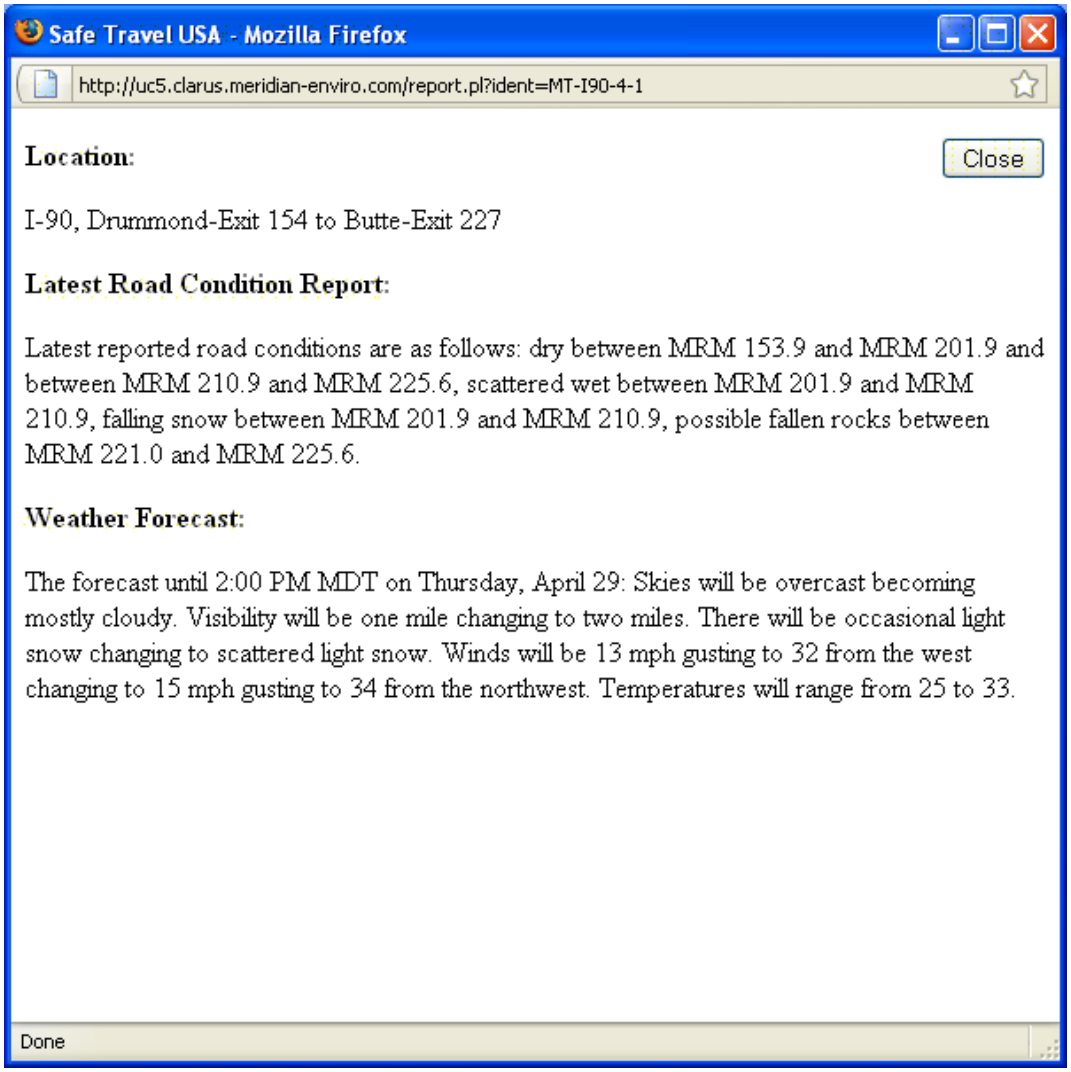

No supplemental info when DOT reports poor conditions:

- limits liability
- time of improvement often depends upon maintenance

ATIS Web Portal Text Content

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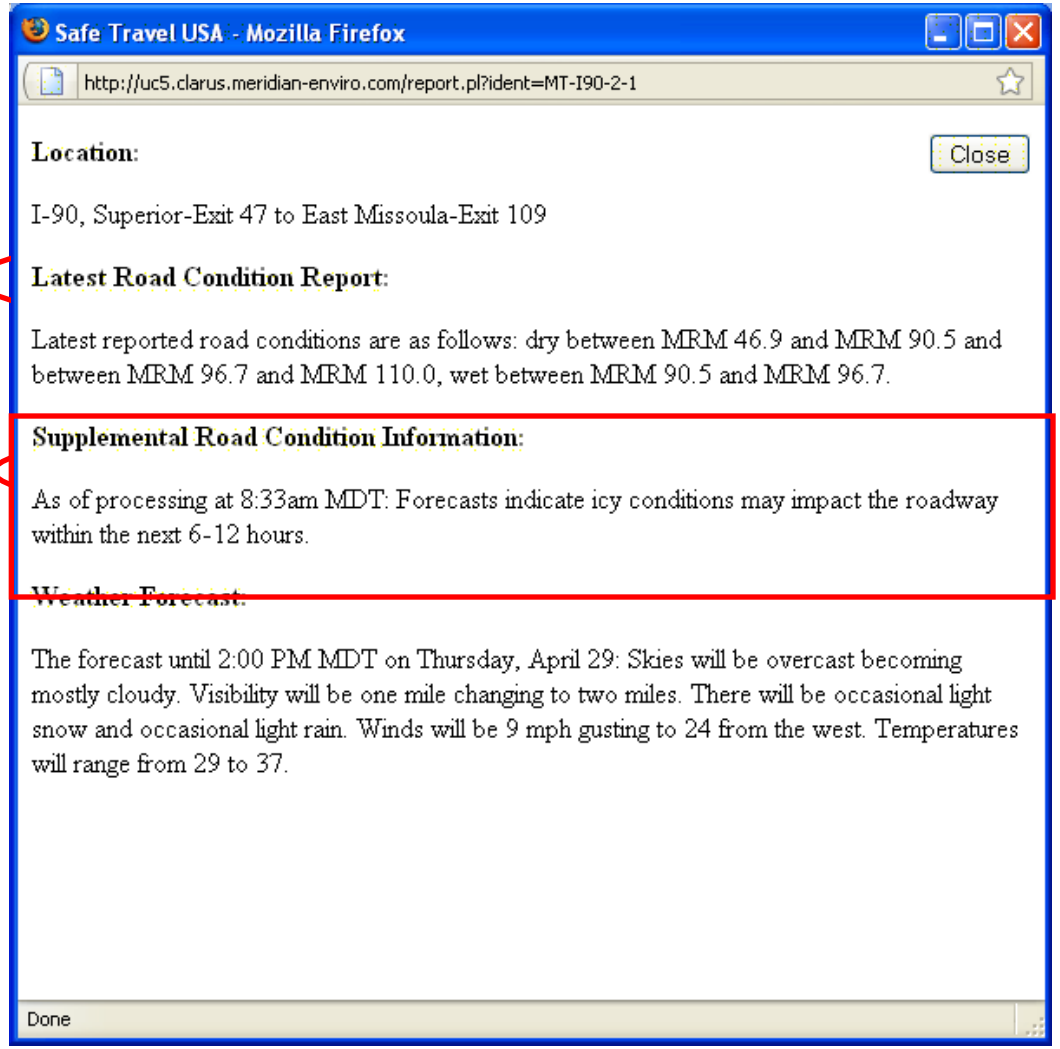

Primary benefits therefore:

- earlier reporting of deteriorated conditions
- advance notice of deteriorating conditions

Multi-State Travel Weather

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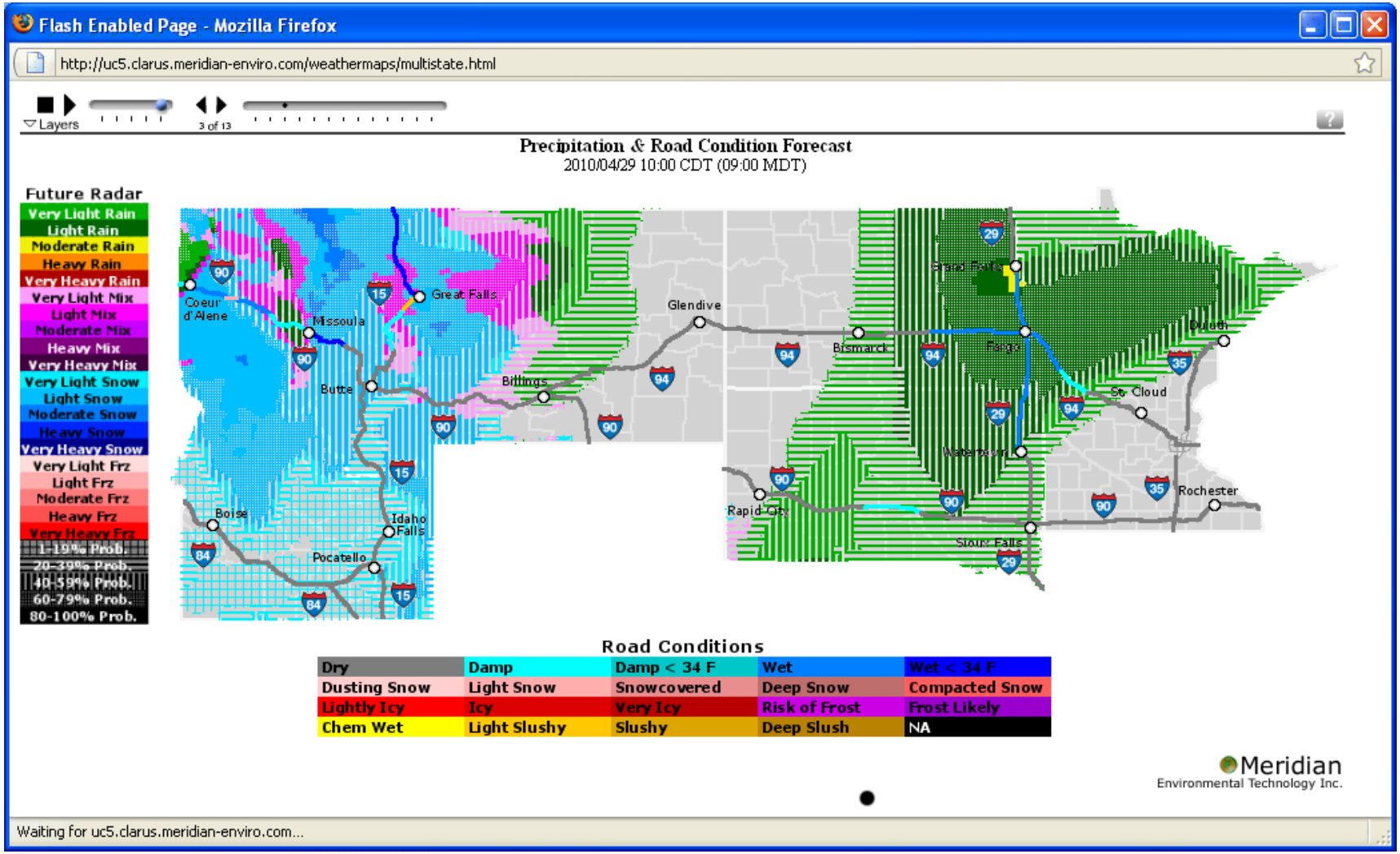

Findings

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- Algorithms for making sense of **incomplete and/or conflicting data** are vital

- Need to provide actionable information without providing too much information
  - **Overstating what is known can lead to distrust in the system and heightened liability concerns.**
  - Conditions vary over both time and space – how do you convey the threat without overwhelming the user?

Findings

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- There may be more value in multi-state and forecast information via a web portal relative to telephony systems
  - “a picture is worth a thousand words”

- With current data availability, the system holds more promise for alerting travelers to imminent travel problems than for predicting the return of good travel conditions
  - Early sensor- or model-based detection
  - Forecast conditions

DOT Perspectives

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- The concepts have been well-received by both the participating DOTs and public evaluators
- Reducing liability, rather than increasing it, is a major consideration in deciding whether or not to implement
- The system would potentially benefit from more detailed agency data (e.g., IT-equipped snowplows)
- Agreement on conditions and color schemes elusive

Research Needs/Gaps

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- There could be considerable benefit to closing more of the 'loops' in the system
  - Assimilate DOT road condition reports into pavement model
  - Track and apply data on maintenance activities

- The concept may be more amenable to smartphone applications than to telephony-based traveler information

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