Rural Traveler Information Systems: Technology and Business Models

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Traveler Information Needs: Urban vs. Rural

**Urban**
- Traffic speed and incidents
- Coverage
- Low latency
- Accuracy
- Accident detection: cell phone

**Rural**
- Safety
- Local road conditions
- Accident detection: air bag deployment messages

**What is the best method?**
Shared Technology Challenges

Market Needs

- Extending power and communication to the site is not financially feasible
- New poles expensive, possible safety hazard
- Data types vary between Urban and Rural markets

Idea:
- Solve the power and communication problem
- Flexibly choose what types of data to gather
- Deployment plan to vary by market
Solve the Power and Communication Problem

- **Sensor platform**
  - Solar powered
  - Wireless communications
  - Fast installation
  - Lightweight, reliable, and accurate
  - Costs 90% less

- **Server Farm**
  - Manages sensor network
  - Validates and formats data
  - Integrates public data sources

- **Data Client**
  - Streams XML feed to customers
Choose Data Types

Rural vs Urban Market Needs

- Speed
- Count
- Passive IR
- Camera
- Zigbee

Controller

Signal Processor

Power and Communications

Cellular, WiMax

XML over IP

Server

Applications
Gather what data you need, where you need it

**Safety**
- Critical locations only
- Use PIR to:
  - Detect vehicles off the road
  - Activate a camera to verify incidents
  - Warn of icy road conditions

**Congestion**
- Critical locations only
- Supplement incident reports
Technology

What are the best methods for gathering data for traveler information systems?
- Low power, wireless
- Flexible systems that gather different types of data

What is the best way to achieve flexibility and interoperability between systems?
- Zigbee link to remote sensors
- Cellular and WiMax to the server
- XML over IP to the application

Business Models

What new cost-effective business models are out there?
Traditional ITS Business Model:
- Public sector buys equipment
- Public sector maintains equipment
- Public sector provides free data feed

ITS Services Business Model:
- Public sector buys data service
- Private sector supplies and maintains equipment
- Private sector provides service level guarantees
- Licensing terms determine data distribution rights

Rural ITS Issue:
- ITS data can save lives, but does not have much commercial value
Summary

How Can We Make Improvements in Rural ITS Data?

• Cut cost of data collection and analysis
  - Lower cost sensors
  - Lower installation costs
  - Lower communication costs

• Use cost savings to gain broader coverage

• New technology offers promise

• Streamline the approval and procurement process

• Service business models can improve reliability