Traffic Congestion: A Global Economic and Environmental Threat

- Roads are at capacity in most major metropolitan areas
- Traffic growing by 20% per decade
- Build 20% more capacity in the US?
  - Would cost trillions of $
  - Too little too late
- Vehicle emissions account for 37% of greenhouse gases in US
- Increasing congestion is a major contributor to global warming
The Solution: More Efficient Use of Existing Roads

Leverage technology to:
- Improve mobility on freeways
- Optimize performance of traffic signals
- Provide accurate real-time traveler information
- Measure performance to improve planning, and optimize use of limited construction $
- Implement road pricing

Growing demand for accurate and cost-efficient traffic data and vehicle detection
Current Traffic Sensors

Sensys Wireless Vehicle Sensor

- **Sensys Nanopower Protocol (SNP)**
  - TDMA over 802.15.4
  - Low latency and low power at the same time
  - Reliable firmware downloads over an unpredictable wireless channel
  - 10-year battery life

- **Sensor Design**
  - Very low-power 3-axis magnetometer
  - Proprietary low-power circuit design
  - Highly accurate magnetic detector software
  - Robust mechanical design

- **Closely maps to existing loop technology – simplifies adoption**
Sensys WSN for Vehicle Detection and Traffic Data

• Sensys Access Point
  – Processes, stores, and/or relays sensor data
  – Linux OS
  – TCP/IP (fiber or cellular) to central servers

• Sensys Repeater
  – Battery-powered
  – Extends range of access point by 1000 feet

Sensys Access Points & Repeaters
Freeway Traffic Data

Ramp Metering
Traffic Signal Control

A Universal Platform for Vehicle Detection and Traffic Performance Data

- Travel Time
- Vehicle Classification
- Red-light and Speed Enforcement
- Train and Light Rail Detection
- Parking Information Systems
- Parking Enforcement
- Perimeter Protection
- Defense Applications
BEFORE...

... AND AFTER
Towards Managed Roads

Sensys™ Wireless Vehicle Detection System
Accurate, Reliable, Cost-Effective Detection & Traffic Data

Current Applications:
- Freeway Operations
- Arterial Traffic Data
- Urban Travel Time
- Corridor Management
- Traffic Signal Control
- Road Pricing

Future Applications:

slide 14