

Roadnet

Vehicular Ad-Hoc Network System

Outline

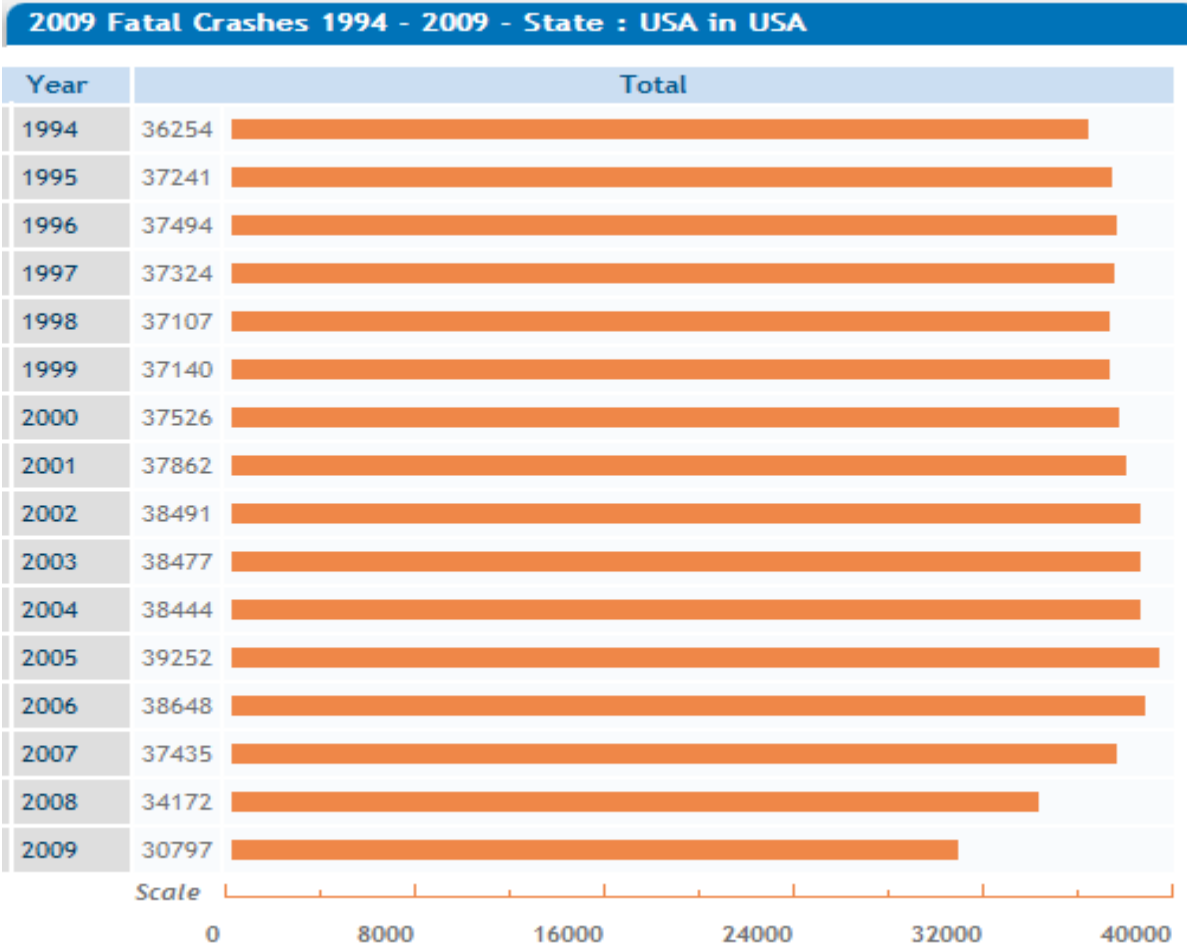
- Traffic Problems
- Data Crash-Course
- Vehicle Safety Solutions
- Target Market
- Existing Project Solutions
- Roadnet Solution
- Prospects and Feasibility
- The Future of Traffic

Traffic Problems

- Millions of drivers
- Communication extremely limited
- Many contributing factors to vehicle crash potential
- Personal injury, fatalities, property damage
- Crashes avoidable or inevitable?



Data Crash-Course



*Data chart source: National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS) – [available data only up to 2009]

<http://www-fars.nhtsa.dot.gov>

Vehicle Safety Solution

- Better intercommunication between drivers
- Earlier warnings for traffic discrepancies
 - Traffic jams
 - Construction / Closed roads
 - Accidents
- More accurate vehicle status monitoring
- Flagging system for emergency situations

Target Market

- Manufacturers to implement technology into products
- Ideal outcome: majority integration in cars (still millions)
- Safety and convenience as a common focus
- Unification without increased competition

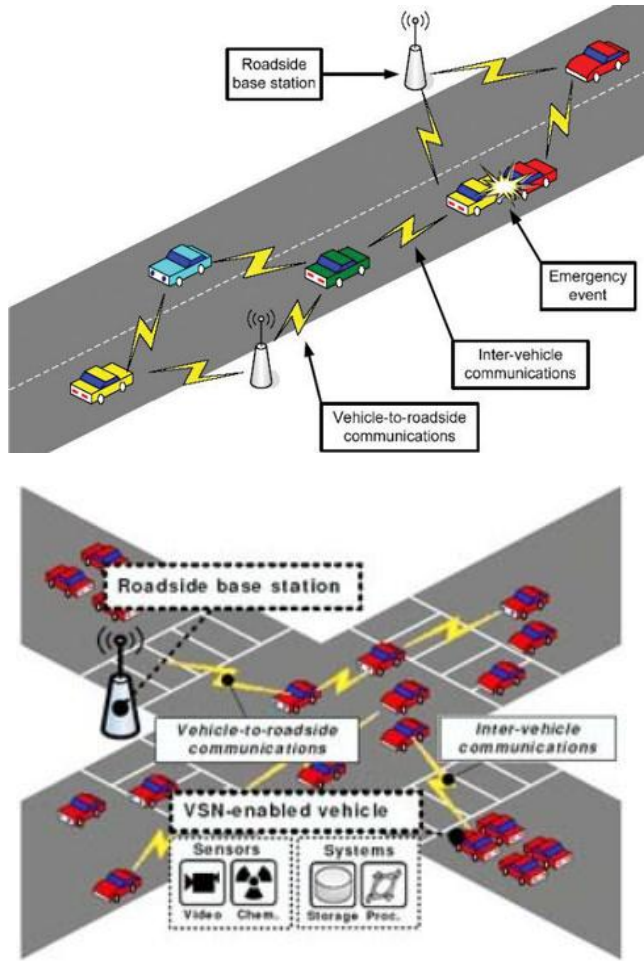


*Picture source: www.pagautoimport.com

Existing Project Solutions

- SeVeCom: vehicle communication security
- NoW (Network on Wheels): new protocols, IEE 802.11
- WILLWARN: hazard detection (environment sensors, GPS)
- CarTalk2000: inter-vehicle communication (self-configuring)
- Safespot: vehicle to road infrastructure (roadside transmission equipment)
- CVIS (Cooperative Vehicle-Infrastructure Systems): improving reliability (2.5G/3G wireless technology)
- Others with similar contributions (vanet.info)

Roadnet Solution



- Combination of existing technologies
- Vehicle-to-vehicle
- Vehicle-to-road
- Roadside services (emergencies, reports, traffic lights)
- Wi-Fi, Bluetooth, and GPS technologies
- Goal: universal compatibility

*Picture sources: www.pcquest.ciol.com , www.wired.com

Prospects and Feasibility

- Overall very large project
- Usefulness dependent on majority integration
- Experimentation and testing
- Existing solution improvements took years
- Manufactured into vehicles
- Separate hub for installation
(support older vehicles)

The Future of Traffic

Positive Impacts

- Universal communication
- Earlier warnings for emergencies
- Automatic driver notifications
- General less road frustration

Negative Impacts

- Expense
- Technology failures (drivers reliant)
- Driver vigilance
- Complexity

References

Pictures:

- pagautoimport.com
- pcquest.ciol.com
- wired.com

Data:

- www-fars.nhtsa.dot.gov
- sevecom.org
- network-on-wheels.de
- prevent-ip.org
- cartalk2000.net
- safespot-eu-org
- cvisproject.org