

International Workshop on Vehicle Safety Communications - Session 4 -

Tom Schaffnit
September 4, 2003

Communications for Vehicle Safety

- Intelligent on-board systems for active safety application processing
- Coupled with wireless communications for real time access to relevant off-board data
- Enhancing planned active safety applications
- Enabling new safety applications

General Communications Requirements

- Public safety
 - range requirements up to 1 kilometer
 - may require directional and/or omnidirectional coverage
- Vehicle safety communications
 - range requirements up to 300 meters
 - generally omnidirectional coverage requirements

Latency Requirements

- Vehicle safety application scenarios generally require approximately 100 millisecond latency
- Some scenarios may require lower latencies
- 100 millisecond latency is consistent with automotive safety sensor update rates

Addressing Requirements

- Initially, one-way transmissions to all vehicles and all infrastructure in the immediate area
- Likely, future addressing to all vehicles or infrastructure in front of (or back, left, right of) sender
- Longer term, possibly all vehicles in a geographically or relationally defined group
- A few vehicle safety application scenarios require point-to-point communications

Evaluation of Wireless Technologies

- Digital Cellular/ PCS / 2.5 - 3G – issues with addressing, latency, cost, interoperability
- Bluetooth – issues with range, scalability
- IR – issues with range, interference
- UWB – issues with range, technological maturity
- WiFi + – issues with latency, mobility
- 5.9GHz DSRC – appears to offer the best potential to support vehicle safety applications