The CITI Project

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CITI funding model

- CITI is funded by three organisations
  - Transport for NSW
    - Road Safety Technology Program
  - Federal Government
    - Heavy Vehicle Safety & Productivity Program
  - National ICT Australia
    - Infrastructure, Transport and Logistics Research
Cooperative Intelligent Transport Systems

- Intelligent Transport Systems (ITS) - the use of information and communication technology within the transport sector to improve transport outcomes (NTC 2012)

- Cooperative ITS - a form of ITS in which information is shared amongst vehicles or between vehicles and roadside infrastructure
CITS increases the “time horizon”

- Sophisticated CITS applications have been developed that increase the "time horizon" as well as the quality and reliability of information available to the drivers about their immediate environment, other vehicles and road users.
A number of communication platforms such as the mobile phone network can be used to carry communications, and specific dedicated short range radio channels in the 5.9 GHz area of the radio spectrum is planned to be used by most major jurisdictions overseas.
Benefits of Cooperative ITS

- Road safety
- Network efficiency
- Environmental
Benefits of Cooperative ITS

• Road safety
  – Could address 82% of all crashes by unimpaired drivers (US DOT)
  – Reduce the number of serious casualties between 25 – 35 % (Austroads)

• Network efficiency
  – Autonomous vehicles with sensors could increase network capacity by 43% but if you add CITS this jumps to 273% (Tientrakool 2011)

• Environmental
  – Signal phase & timing information sent to vehicles could yield 15% fuel savings plus associated greenhouse gas reductions (NTC 2012)
International Cooperative ITS Projects

• Currently underway
  – United States, Europe, Korea and Japan

• Largest projects
  – SIM TD – Frankfurt, Germany.
  – Safety Pilot – Ann Arbor, Michigan USA
The Cooperative Intelligent Transport Initiative (CITI)

- **Location**
  - SW Sydney to Port Kembla

- **Roads**
  - B88 (Picton Rd)
  - M1 (Princes Motorway)
  - B65 (Springhill Rd)

- **Distance**
  - 42 km

- **Vehicles involved**
  - Stage 1 – 30 Heavy Vehicles
  - Stage 2 – 200 Heavy Vehicles
The Cooperative Intelligent Transport Initiative (CITI)

- Crash statistics
  - Heavy vehicles involved in 69% of fatal crashes
  - 13 people killed in three years
  - $45.5 million in crash costs

- Travel statistics
  - 43,000 AADT (Mt Ousley)
  - 11.8% Heavy Vehicles

- Port statistics
  - 33 million cargo tonnes
  - 53 ha development
  - 3 new berths
  - largest vehicle import hub in Australia
Progress on CITI

• Procurement
  – Technical specifications nearing completion
  – Possible suppliers identified
  – Design commenced on portable roadside units
  – Freight companies approached

• Radio spectrum
  – CSIRO completed radio survey of route
  – ACMA approached to lift embargo on 5.9 GHz for CITI
  – Route will require geo-fencing

• Demonstration site
  – On road demonstration site established
  – Demonstrations in place for Australian ITS Summit
CITS Use Cases

• Austroads report
  – 18 vehicle to infrastructure applications
  – 14 vehicle to vehicle applications
  – Most effective applications
    • Intersection collision warning (V2I application)
    • Left/Right turn assistance (V2I application)
    • Cooperative collision avoidance warning (V2V application)
    • Cooperative forward collision avoidance warning (V2V application)
    • Pre-crash sensing (V2V application)
Initial Use Cases for CITI

- Electronic brake light
- Contextual speed limit information
- Adverse weather alerts
- Signal phase and timing
Conclusion

- Australia’s first semi-permanent CITS facility
- Six year project (subject to funding)
- Available to researchers, developers & manufacturers
- Reduces the cost of CITS research
- Improves road safety for heavy vehicles
A taste of the future
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