CIVITAS PLUS

Feasibility Study into Potential transport applications of the Galileo satellite system in the historic city of Bath

Dr Robert Shepherd

Perugia, 10th September 2010

RENAISSANCE Consortium
Overview

Real-time Passenger Information Systems have been shown to result in increased patronage where they have been introduced.

Current systems are limited by poor GPS performance in urban areas.

Improvements to positional accuracy offer the opportunity for improved and innovative services, including ITS.

ACIS has developed a Galileo capable platform for on-vehicle use.

Trials using GPS/EGNOS show improvements over older GPS only based receiver systems.
Background to the Project

Objective was to demonstrate the application of Galileo global satellite navigation system services to public real-time passenger information systems in the historical city of Bath

- Initial phase was to research which Galileo receiver to use and to develop an on-vehicle computer for deployment in Bath to perform comparative trials with GPS
- Delays to the availability of Galileo services has resulted in the project being stopped at the end of year 2
  - The on-vehicle computer exists today at the end of the research and development phase
  - The comparative trials with Galileo have not been started and will now not be undertaken
ACIS

UK based, formed 1995
Acquired by Vix Technology 2010
Leading supplier of Real-time passenger information systems
Over 40 operational bus schemes in the UK - tracking over 9,000 vehicles & 55,000 information points
Over 60 operational bus station and interchange schemes
Active International systems in Europe, Scandinavia, Middle East, North America and Australasia
Real-Time Passenger Information

Where real-time passenger information systems have been deployed as part of a coherent set of measures to address passengers’ concerns about bus travel, there has been an increase in patronage

- London reported a 1.5% increase in revenue attributable to Countdown (1)
- Liverpool reported a 5% increase in patronage on routes where RTPI had been deployed

Other areas of concern that require addressing are:

- Travel time
- Personal security at stops and on buses
Real-Time Passenger Information

Data Collected on server for operator reporting and analysis

GPS location of bus reported to radio base station

Predicted departure time at passenger stop is calculated and displayed.

Web access to real-time and historical data
Situation pre-Civitas

Urban Canyons

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Situation pre-Civitas

Urban Canyons
Improved positional accuracy enables new applications

Traffic Signal Priority can be made intelligent within the network

- Current solutions rely on a request being made from the bus
  - Predicated by the bus knowing more accurately its position than the network
  - Bus has no knowledge of the state of the road network
- With increased positional accuracy the network can make the request on behalf of the bus
Improved positional accuracy enables new applications

Dynamic allocation of bus bays can increase utilisation of bus stations in town and city centres

- Static allocation has to allow for the variations in running times
- Dynamic allocation uses the real-time information to predict when a bus is due at the bus station, to allocate a bay and display the departure bay to waiting passengers
- Accurate positioning allows the bus to be detected as being at a specific bay
  - This currently requires additional equipment
Improved positional accuracy enables new applications

Bus real-time tracking can be used as sensors to monitor the state of the road network

• Urban Traffic Management and Control (UTMC) systems are adopting new sources of monitoring

• The usage of bus information is provided at marginal cost
  – Significantly cheaper than fixed sensors

• Data fusion techniques to maximise the use of the different sensor data

• Better monitoring of the road network allows more proactive management of the road network
  – UTMC becomes a platform for ITS
The DT330 On-vehicle computer meets the requirements of the RTIG architecture
Comparative plots 1

Key
- DT330
- Old GPS1
- Wh old GPS2

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Comparative plots 2

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Summary

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Current systems are limited by poor GPS performance in urban areas.

Improvements to positional accuracy offer the opportunity for improved and innovative services, including ITS.

ACIS has developed a Galileo capable platform for on-vehicle use.

Trials using GPS/EGNOS show improvements over older GPS only based receiver systems.

EGNOS does not show measurable improvements in positional accuracy in the urban environment.
Questions?

Thank-you

Robert.Shepherd@acis.uk.com