Recent developments in telematics-based Demand Responsive Transport

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Structure of the Presentation

- Recent Concept Development
- Installation and Evaluation
- Innovation: Multiple Service Provision
- Conclusions
Background to Demand Responsive Transport

- Intermediate form of public transport
- DRT services …
  - Provide rapid response transport services ‘on demand’ from the passengers
  - Offer greater flexibility in time and location than conventional public transport in meeting individual requests for transport
- Technological development
Schematic Representation of Telematics-based DRT Services

DEMAND RESPONSIVE TRANSPORT (DRT) USER

USER

"SMART" BUS STOP

TRAVEL DISPATCH CENTRE (TDC)

AUTOMATED BOOKING

MANUAL BOOKING

BOOKING, PLANNING AND DISPATCHING SYSTEM

VEHICLE

ON-BOARD UNIT (OBU)

Booking the Journey

Making the Journey
Flexible by Name ...

- **Types of pick up / drop off points**
  - Conventional bus stops
  - Predefined stop points
  - Door-to-door

- **Types of routes**
  - Fixed
  - Semi-fixed
  - Flexible
  - Virtually flexible
DRT Traffic Concepts

Corridor service (example)

Area service (example)

End point
Fixed intermediate point
Non predefined stop point
Predefined stop point
Virtual flexible route: Area service (example)
Installation:
Early European Initiatives

- SAMPO and SAMPLUS
  - EU DG XIII R&D Programme
  - Rural and urban
  - 4 European demonstration sites
  - 2 follower sites

- UK Initiatives
  - DoRiS, West Sussex and Surrey
  - Bus Challenge Programme
  - Scottish Executive
## Characteristics of Five DRT Demonstration Sites

<table>
<thead>
<tr>
<th>Country</th>
<th>Localities</th>
<th>Population Density</th>
<th>Service Type</th>
<th>User Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>Limbourg, W &amp; E Flanders</td>
<td>Moderate</td>
<td>Regional</td>
<td>None</td>
</tr>
<tr>
<td>Finland</td>
<td>Tuusula, Järvenpää &amp; Kerava</td>
<td>Low – Moderate</td>
<td>Regional &amp; Urban</td>
<td>Special transport &amp; None</td>
</tr>
<tr>
<td>Italy</td>
<td>Florence, Porto Romana &amp; Campi</td>
<td>Moderate – High</td>
<td>Regional &amp; Urban</td>
<td>Special transport &amp; None</td>
</tr>
<tr>
<td>Sweden</td>
<td>Gothenburg (Högsbo)</td>
<td>High</td>
<td>Urban</td>
<td>Special transport &amp; None</td>
</tr>
<tr>
<td>Sweden</td>
<td>Stockholm (Märsta)</td>
<td>Low</td>
<td>Rural</td>
<td>None</td>
</tr>
</tbody>
</table>
Evaluation: Economic Viability

- Operating costs
- TDC Cost
- Vehicle usage
- Route directness
- Passenger usage
Evaluation: Service Provision

- Core background information
- Trip purpose
- Operator indices
- Coverage of service
- Service reliability
- Ease of making reservations
- Passenger convenience
Evaluation: Technical Performance

- System performance
- System capacity
- Loss of potential customers
- Service reliability
- Data reliability
What’s in a Name?

- Wiggly Bus, Vale of Pewsey, Wiltshire
- Call Connect, Lincolnshire
- U Call, West Newcastle and Airport, Tyne and Wear
- Phone and Go, Northumberland
- Cango, Andover, Hampshire
- Village Link, Southern Vale of Gloucester
- Local Link, Wythenshawe, Manchester
- Meltham’s Minibus, West Yorkshire
- Hampole and Skelbrooke Taxibus, Doncaster, South Yorkshire
- DoRiS, West Sussex and South Waverley, Surrey
U Call, Nexus, Tyne and Wear
DoRiS, South Waverley, Surrey
Cango, Hampshire
Village Link, Southern Vale of Gloucester
Wiggly Bus, Vale of Pewsey, Wiltshire
Angus Glens, FAMS
Hampole and Skelbrooke Taxi, South Yorkshire
Meltham’s Minibus, West Yorkshire
North Lanark, Strathclyde
Call Connect, Lincolnshire
PersonalBus, Florence
Disabled, Italy
Phone and Go, Northumberland
Belbus, West & East Flanders, Belgium
Flexlijn Gothenburg, Sweden
Flexibility of Booking Method

- U Call, Nexus, Tyne and Wear
- DoRiS, South Waverley, Surrey
- Cango, Hampshire
- Village Link, Southern Vale of Gloucester
- Wiggly Bus, Vale of Pewsey, Wiltshire
- Angus Glens, FAMS
- Hampole and Skelbrooke
- Taxibus, South Yorkshire
- Meltham’s Minibus, West Yorkshire
- Phone and Go, Northumberland
- Belbus, West & East Flanders, Belgium
- Flexlijn, Gothenburg, Sweden
- North Lanark, Strathclyde
- TDC: Manual
- TDC: Software
- TDC: IVRS
- Internet
- Must book to travel
- Call Connect, Lincolnshire
- PersonalBus, Florence
- Disabled, Italy
Phone and Go, Northumberland

- **Rural Bus Challenge**
  - Lower Coquet Valley
  - Allen Valleys

- **Role of TORG**
  - Project Management
  - Travel Dispatch Centre
  - Research Partner
Value Added

- User Requirements
- Co-operation with Community Transport (ADAPT)
- Education Transport Services
- New User Groups
- Feeder & Interchange
- Mobility Assistants
- Evaluation
Phone & Go / Click & Go Project: The Travel Dispatch Centre (TDC)

- VISUM
- MobiRouter Database (Oracle)
- Automatic Passenger Counting
- panic button
- Automatic Vehicle Location
- Northumberland Journey Planner
  - fixed routes Database (Transmodel)
- Transport Direct Database
- Intelligent Mobility Engine
- ARRIVA
Positive Operational Outcomes

- TDC staffing can be flexible
- Booking times are short
- Service reliability is good
- Passenger acceptance is generally good
- Software on connecting services ➔ confidence
- Innovative solutions improve services, e.g. taxis used to guarantee a connection
- Niche market
  - High quality service
  - Customised to passenger preferences
- Social inclusion
Innovation: Multiple Service Provision FAMS

- Flexible Agencies for Mobile Services
  - Florence, Italy
  - Angus, Scotland

- Virtual agency co-ordinating multiple transport resources

www.famsweb.com
FAMS in Angus: Objectives

- To bring new technologies to the commercial market place
- Creation of virtual agency for co-ordination of multiple transport resources
- Meet the ever changing needs of the individual, statutory bodies, businesses, communities and transport providers
- To measure each action of the agency and report findings
Innovation: Multiple Service Provision: EMIRES

- Economic Growth and Sustainable Mobility supported by IST at the Regional level including SMEs.

- Network of:
  - 4 EU Objective one regions: Finland, Greece, Spain, UK
  - 1 region in accession country: Czech Republic
EMIRES in Highland: Objectives

- Develop a Regional Service Centre (RSC)
  - Remote web based access to book and interrogate services
    - Multiple transport services
    - Non-transport services, e.g. job interview
  - Develop satellite Service Points throughout the site providing local access to book and use these services
- Demonstrate that the EMIRES RSC functions as part of an international network
- Develop a Highland business plan which will contribute to a blueprint for further RSCs
- Contribute to Regional Innovation Programmes for the EMIRES EU Regions
EMIRES in Highland: User Groups

- **Region**
  - Highland Council Passenger Transport
  - Highland Council Planning and Development
  - Highland Council Education and Social Work Services
  - Caithness and Sutherland Community Care Forum
  - Caithness and Sutherland Enterprise
  - Sutherland Partnership
  - Highlands of Scotland Tourist Board

- **SMEs**
  - Public transport providers
  - Scottish Ambulance Service
    - Local businesses

- **Individuals**
  - Local population
  - Job seekers
    - Local labour force
  - Young people
  - Tourists
EMIRES in Highland: Targeted Services

- Combining information on trip purpose with public transport information to provide users with “one stop” solutions
- Personalised information on job vacancies and training courses that can be accessed via public transport
- Core ontology for retrieval and combining of data
- Transfer of data between EMIRES and external sources via web services technology

www.emires.net
Looking Ahead

- Awareness raising is vital
- Institutional, legal and economic barriers to be overcome
- DRT cost savings are relative to conventional public transport and special transport services
- DRT can be relatively simple
  - Manual booking of one public transport service
- .... or more complex
  - Integration of public transport, special transport and non-transport services using software scheduling systems
- CONNECT – Flexible Collective Mobility Services for passengers and small goods
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