Recent developments in telematics-based Demand Responsive Transport

John D Nelson

Transport Operations Research Group

University of Newcastle upon Tyne, UK

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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

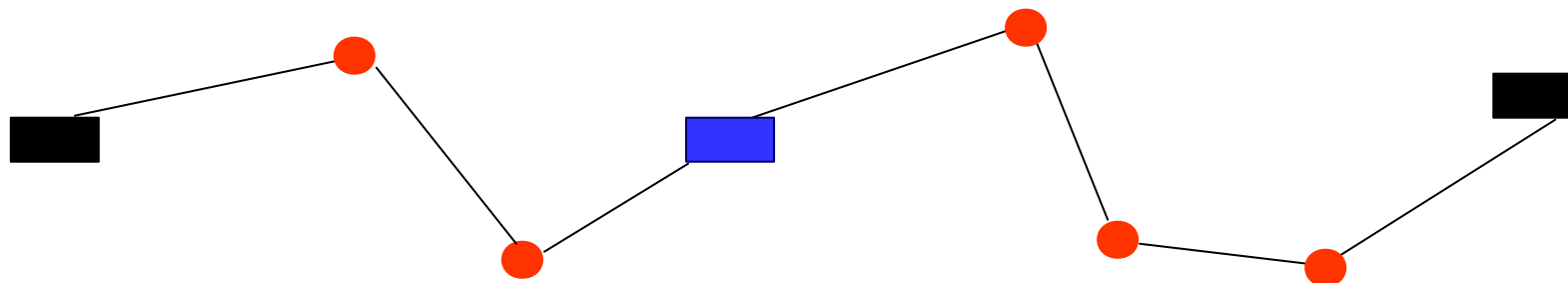# Schematic Representation of Telematics-based DRT Services
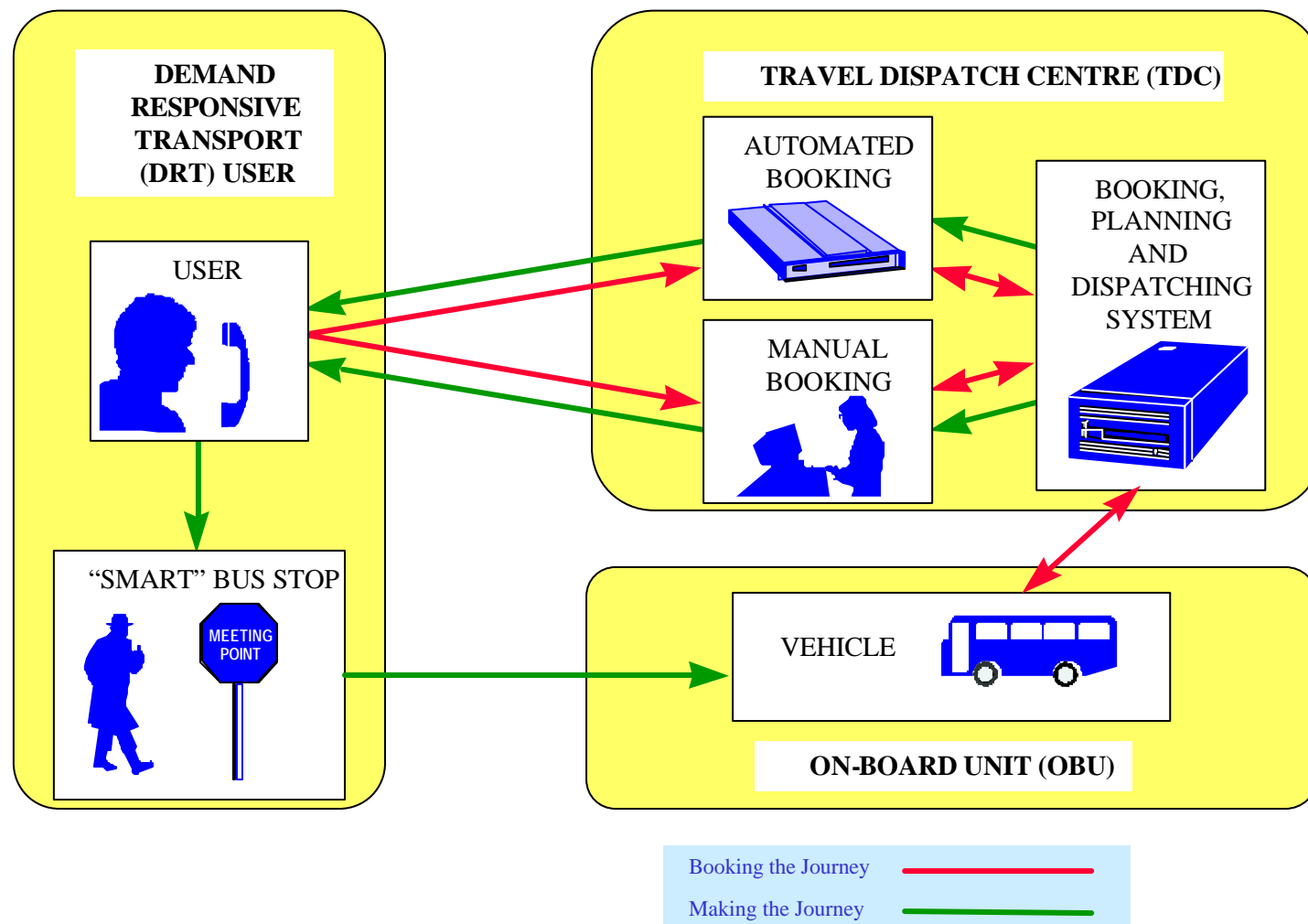
Flexible by Name …

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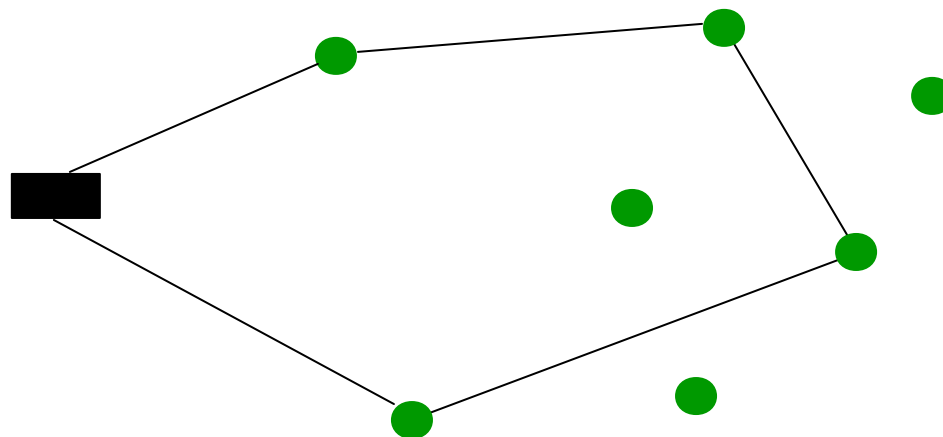- Conventional bus stops
- Predefined stop points
- Door-to-door

➢ Types of routes
- Fixed
- Semi-fixed
- Flexible
- Virtually flexible

DRT Traffic Concepts

Corridor service (example)

Area service (example)

Legend:
- ■ (black) End point
- ■ (blue) Fixed intermediate point
- ● (red) Non predefined stop point
- ● (green) Predefined stop point

DRT Traffic Concepts (continued)
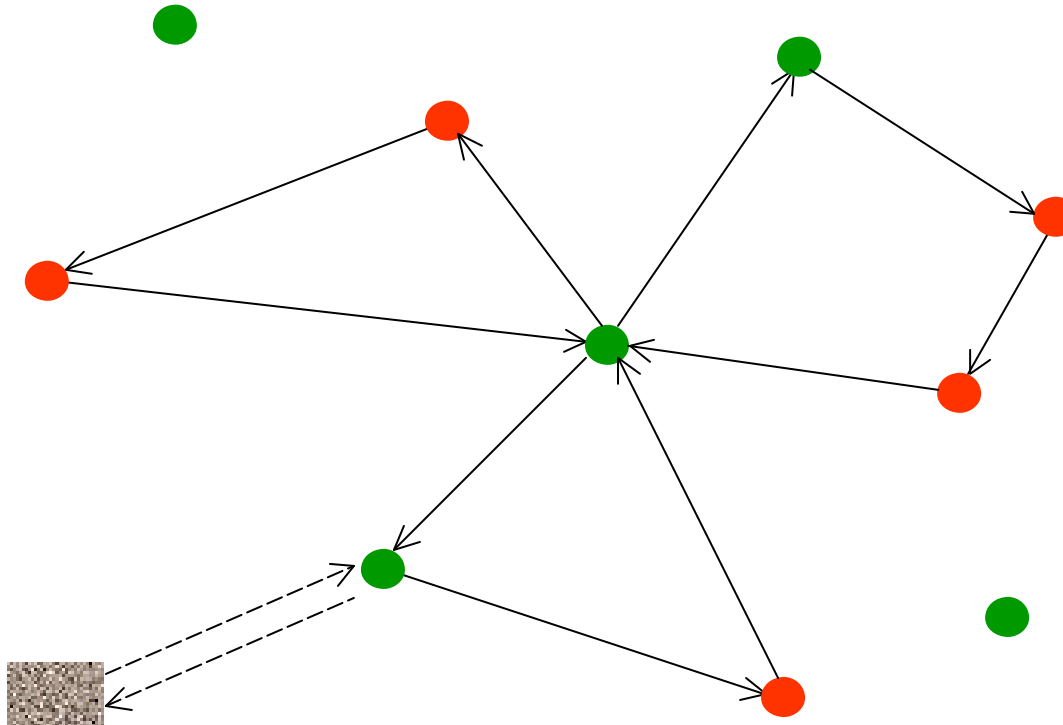
Virtual flexible route: Area service (example)

	Depot
🔴	Non predefined stop point
🟢	Predefined stop point

Installation:
Early European Initiatives

➢ SAMPO and SAMPLUS

- EU DG XIII R&D Programme
- Rural and urban
- 4 European demonstration sites
- 2 follower sites
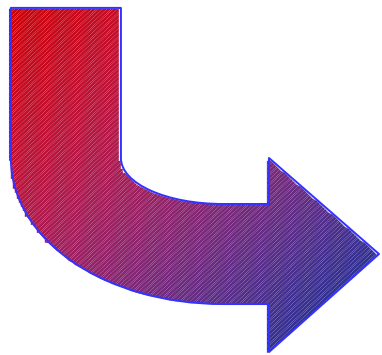
➢ UK Initiatives

- DoRiS, West Sussex and Surrey
- Bus Challenge Programme
- Scottish Executive

Characteristics of Five DRT Demonstration Sites

Country	Localities	Population Density	Service Type	User Restriction
Belgium	Limbourg, W & E Flanders	Moderate	Regional	None
Finland	Tuusula, Järvenpää & Kerava	Low – Moderate	Regional & Urban	Special transport & None
Italy	Florence, Porto Romana & Campi	Moderate – High	Regional & Urban	Special transport & None
Sweden	Gothenburg (Högsbo)	High	Urban	Special transport & None
Sweden	Stockholm (Märsta)	Low	Rural	None

Evaluation: Economic Viability

➤ Operating costs

➤ TDC Cost

➤ Vehicle usage

➤ Route directness

➤ Passenger usage

KESKI-UUSIMAA SAMPO
Passengers in a week, years 1997 - 2003
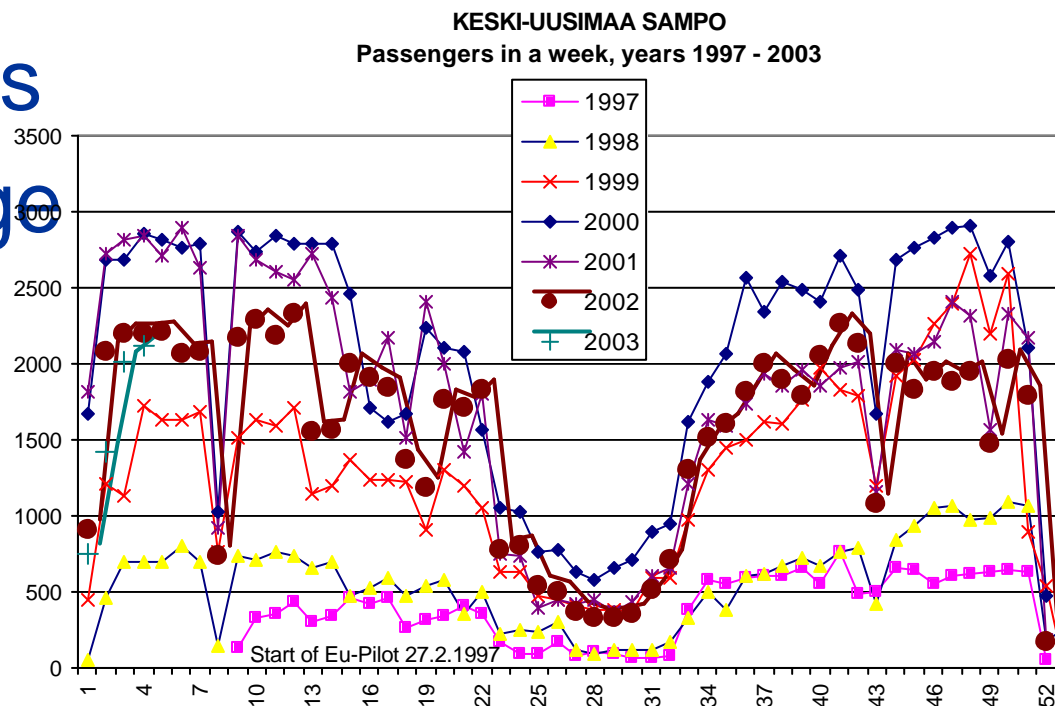
Evaluation: Service Provision

- 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

Route Flexibility

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

Fixed Sections
Semi Fixed
Flexible
Virtual Flexible

Phone and Go, Northumberland

Belbus, West & East Flanders, Belgium

Flexlijn Gothenburg, Sweden

North Lanark, Strathclyde

Call Connect, Lincolnshire

PersonalBus, Florence Disabled, Italy

Flexibility of Booking Method

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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

Telephone driver

TDC: Manual

TDC: Software

TDC: IVRS

Internet

Must book to travel

Phone and Go, Northumberland

Belbus, West & East Flanders, Belgium

Flexlijn, Gothenburg, Sweden

North Lanark, Strathclyde

Call Connect, Lincolnshire

PersonalBus, Florence Disabled, Italy

Flexibility of Minimum Pre-Booking Period

U Call, Nexus, Tyne and Wear

DoRiS, South Waverley, Surrey

Cango, Hampshire

Village Link, Southern Vale of Gloucester

Wiggly Bus, Vale of Pewsey, Wiltshire

Phone and Go, Northumberland

Angus Glens, FAMS

Belbus, West & East Flanders, Belgium

Hampole and Skelbrooke Taxibus, South Yorkshire

Flexlijn, Gothenburg, Sweden

Meltham's Minibus, West Yorkshire

North Lanark, Strathclyde

Call Connect, Lincolnshire

PersonalBus, Florence Disabled, Italy

Previous day

2 hours

1 hour

½ hour

Phone and Go, Northumberland

> **Rural Bus Challenge**
> - Lower Coquet Valley
> - Allen Valleys
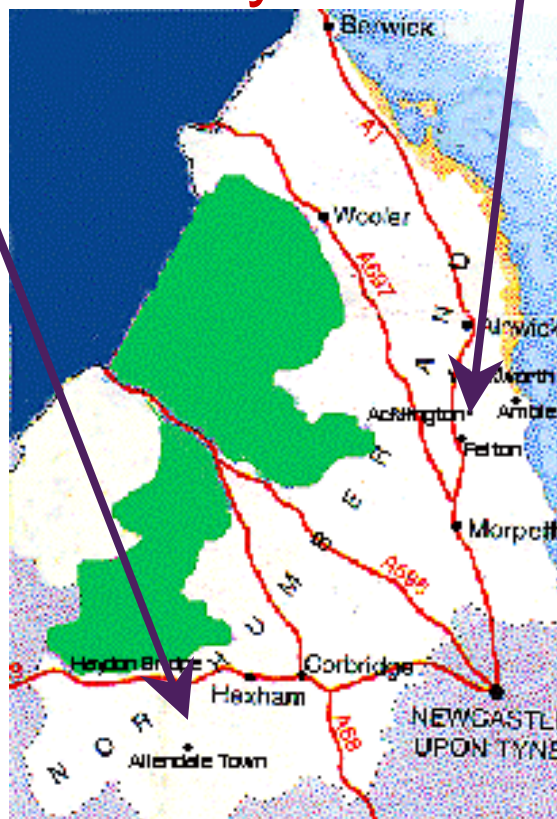
> **Role of TORG**
> - Project Management
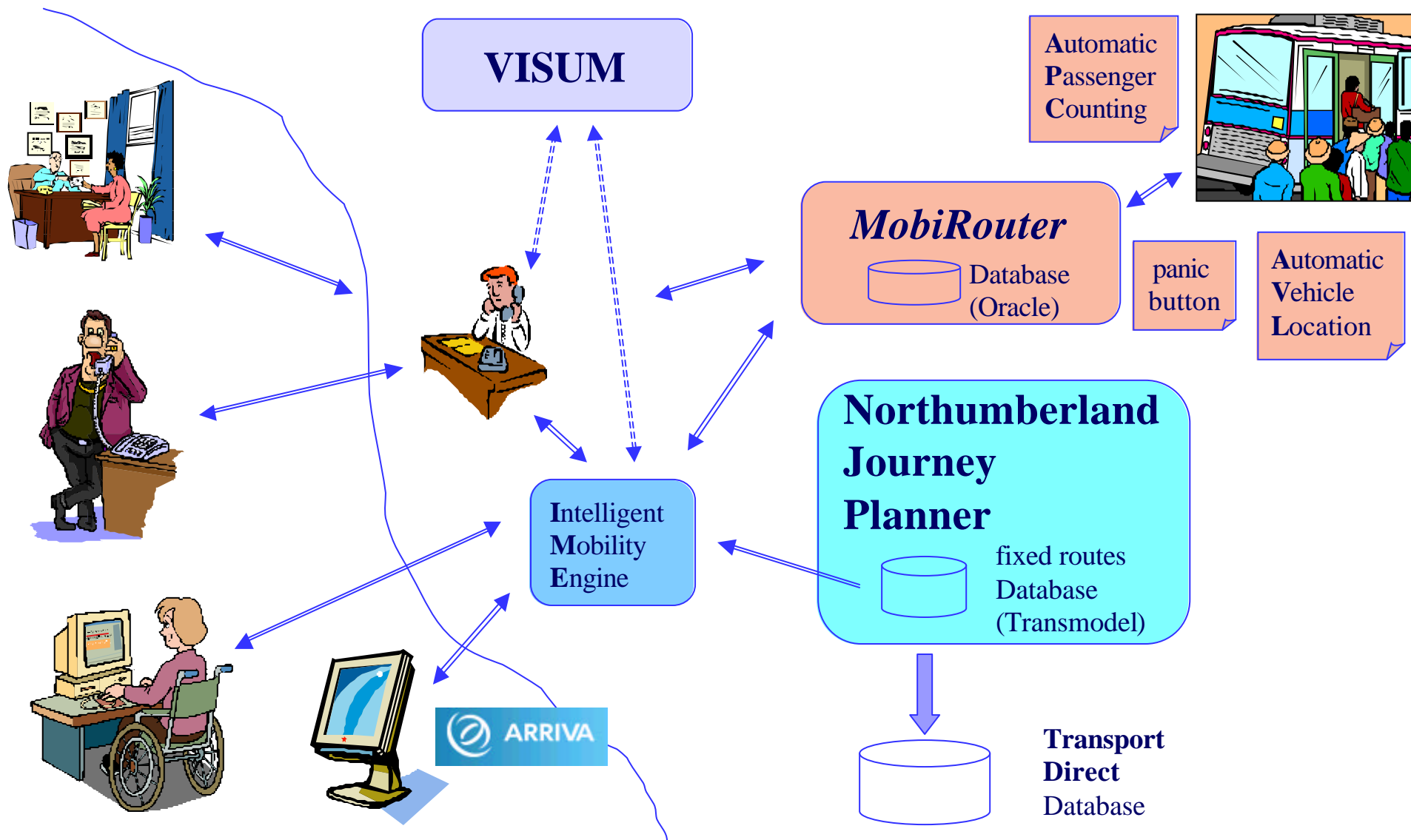> - Travel Dispatch Centre
> - Research Partner

Phone and Go, Northumberland

➢ 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 **P**assenger Counting

panic button

Automatic **V**ehicle **L**ocation

Intelligent **M**obility **E**ngine

Northumberland Journey Planner
fixed routes Database (Transmodel)

ARRIVA

Transport Direct Database

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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
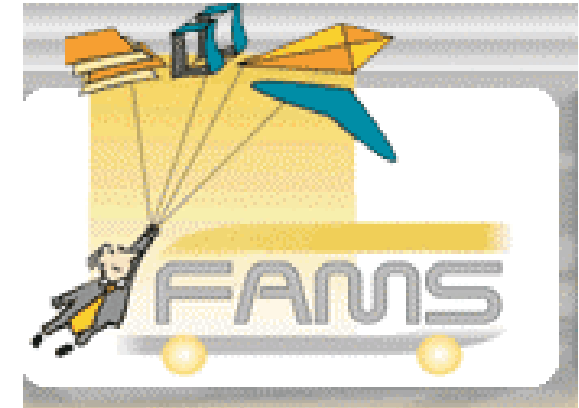
➢ Virtual agency co-ordinating multiple transport resources

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
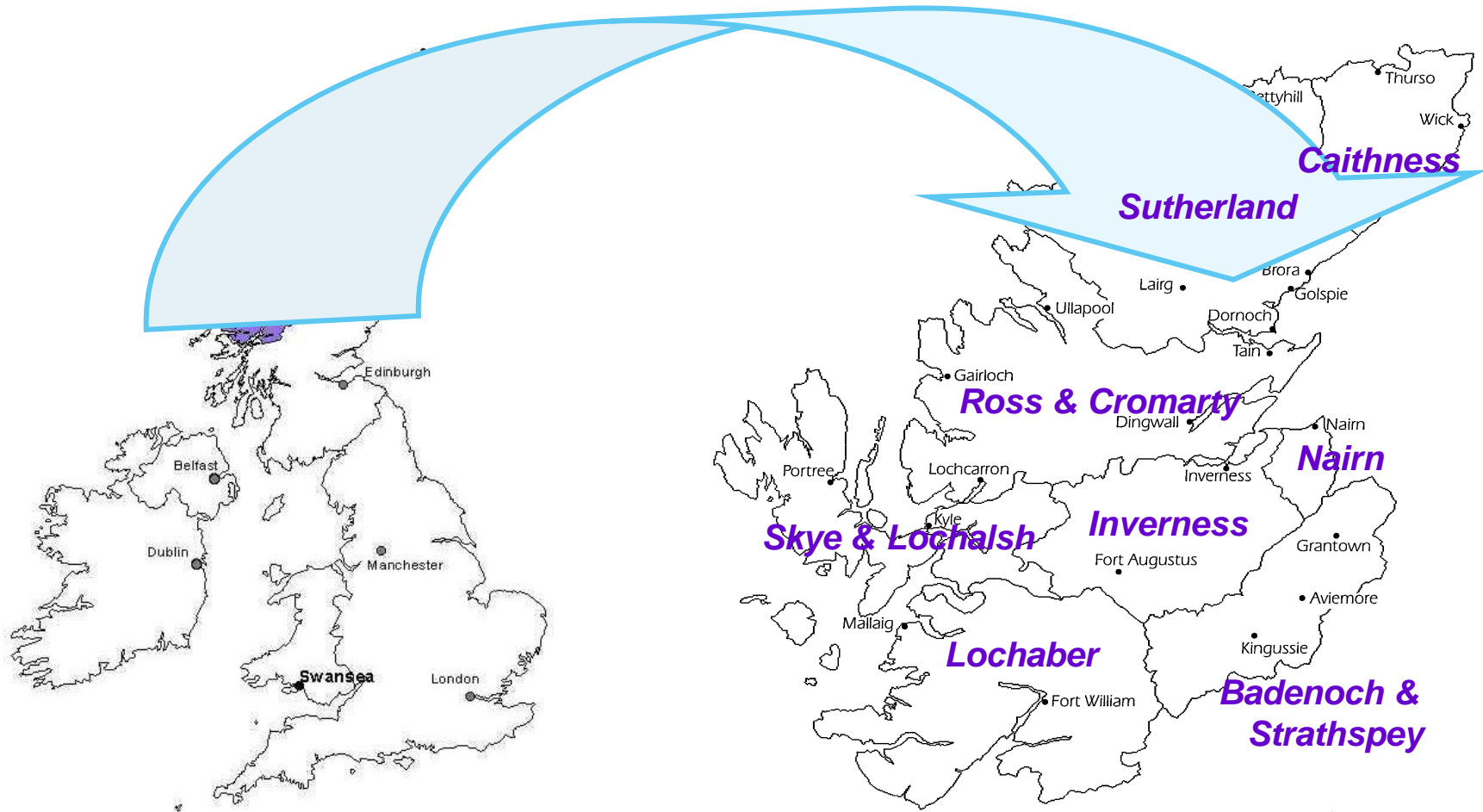
Innovation: Multiple Service Provision: EMIRES

➤ 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
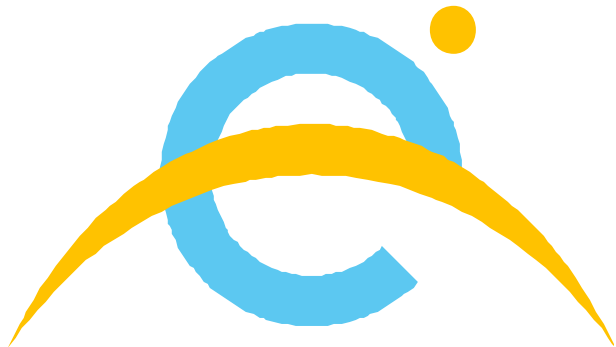
EMIRES in Highland: Objectives

- ➢ 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
- Caithness and
- Sutherland Partnership
- Highlands of Scotland Tourist Board

➢ **SMEs**
- Public transport providers
- Scottish Ambulance Service
- Local business

➢ **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

Contact Details

➢ Dr John Nelson

- Tel: +44 191 222 7936

- Fax: +44 191 222 5322

- j.d.nelson@ncl.ac.uk

➢ Transport Operations Research Group

- torg-drt@ncl.ac.uk