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THE 'ABC' PROJECT. AIRPORTS AND BEHAVIOURAL CHANGE: TOWARDS ENVIRONMENTAL SURFACE ACCESS TRAVEL

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ABC
Airports and Behavioural Change Towards Environmental Surface Access Travel

‘ABC’ project research team

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‘ABC’ project summary

‘ABC’ is an EPSRC 36-month project (October 2009 – September 2012)

The **project aim**, is to “encourage better environmental behaviour of individuals to and from airports”

This can be broken down into **three objectives:**

1. To determine the deeper motivations and attitudes of individuals in terms of environmental behaviour
2. To determine ways to reduce the carbon footprint for journeys to and from the airport, and at the individual level (broken down into population segments)
3. To generate carbon reduction outputs for the intervention measures, such as the emissions impact and values of change.

‘ABC’ project background

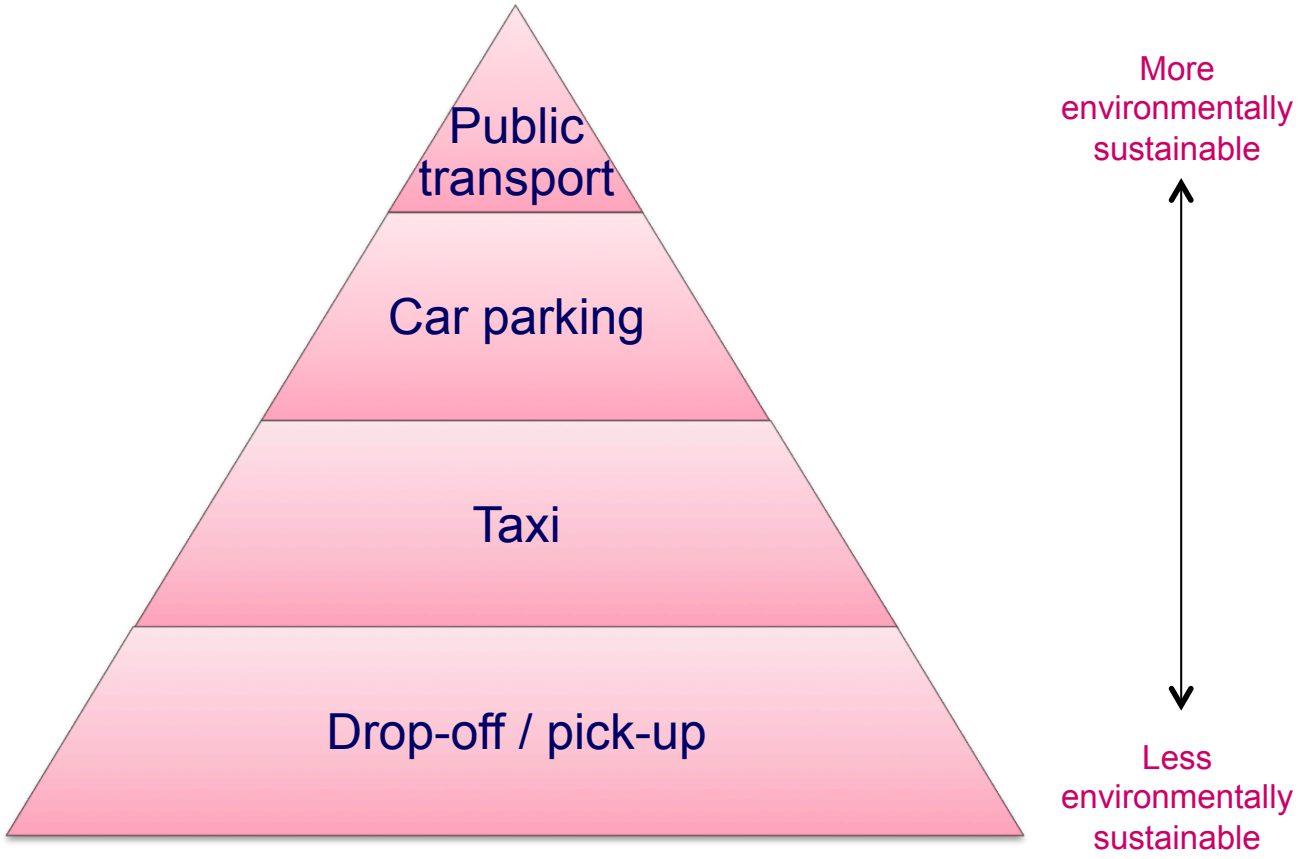
The **types of people** who use airports can be seen primarily as travellers & employees. There is the issue of drop-off / pick-up of air travellers, typically a family member or friend.

Two UK airport case studies:

- Manchester International Airport (MAN)
- Robin Hood Airport Doncaster Sheffield (RHDSA)

This research could have a large impact on **unlocking behaviour**, particularly as travel to/from airports is arguably the largest cause of carbon emissions for an airport.

Hierarchy of preferred surface access modes



Hierarchy of preferred modes
(adapted from Manchester Airport Surface Access Strategy)

Work Package 1: Cranfield

Determine the deeper motivations and attitudes of individual environmental behaviour for surface access:

1. State-of-the-art review
2. Qualitative interviews with staff & passengers at RHDSA & MAN
3. Analyse available airport secondary transport & environmental data (MAN CAA data & employee survey)
4. Develop individual carbon footprints

Example from Cranfield University interviews at DSA

- What purpose do you think this couple is travelling for?
- Holiday

- How do you think they got to the airport?
- Probably Car or Taxi

- Why?
- Luggage/easier than Public Transport

Main factors from qualitative interviews

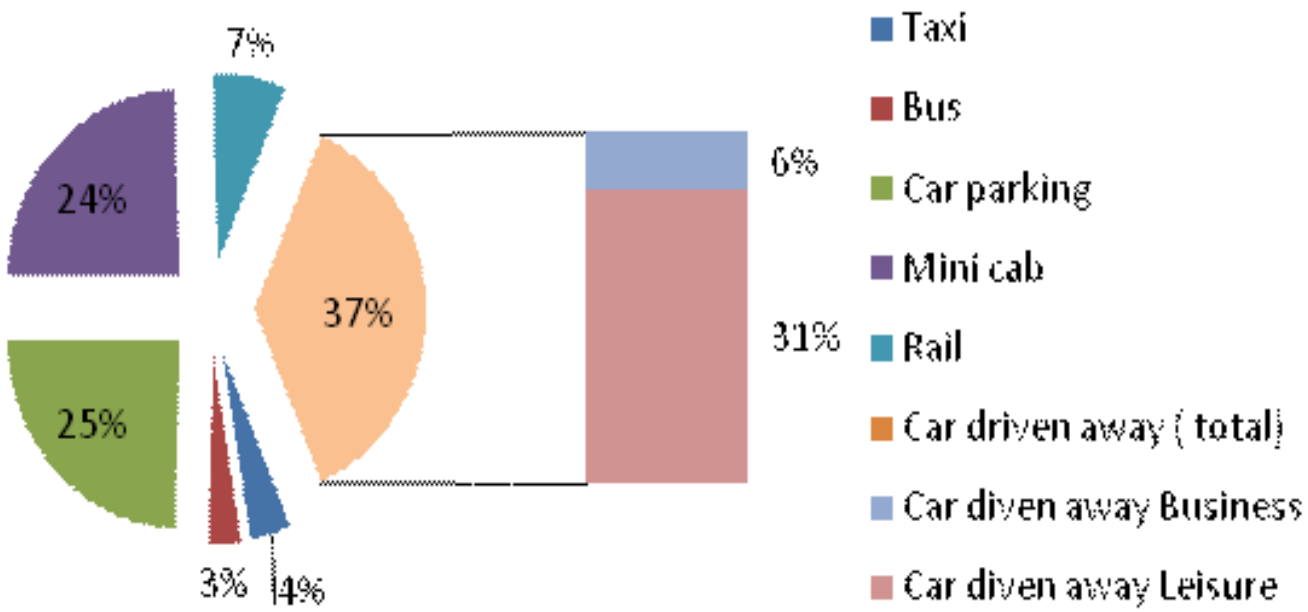
When accessing airports the main factors seem to be cost & convenience.

Those most likely to drop-off / pick-up or drive and park are: holidaymakers, those in groups and/or those with a lot of luggage.

Public transport lacking in an early morning service. Also:

- MAN: Some passengers used the train service
- RHDSA: Some wanted more direct bus services

Travel mode share at Manchester airport in 2009



Private mode share: 80% in 1996, 90% in 2009

Carbon emissions calculation of MAN CAA data

Carbon emission calculations (g / passenger km, 2009 data) by transport mode:

- Highest emissions from car users, particularly 'Drop-off / pick-up' (221 – 57% of total emissions) & 'taxi' (229) passengers
- Emissions per passenger km of 'car and park' (96) & 'minicab' (67) users are lower
- Rail (77) and bus (50) emissions per passenger are the lowest

Figures for leisure passengers lower than business travellers as higher load factors per car mode

Work Package 2: Leeds

Technology evaluation considers the application and potential of innovations to reduce airport access route travel demand

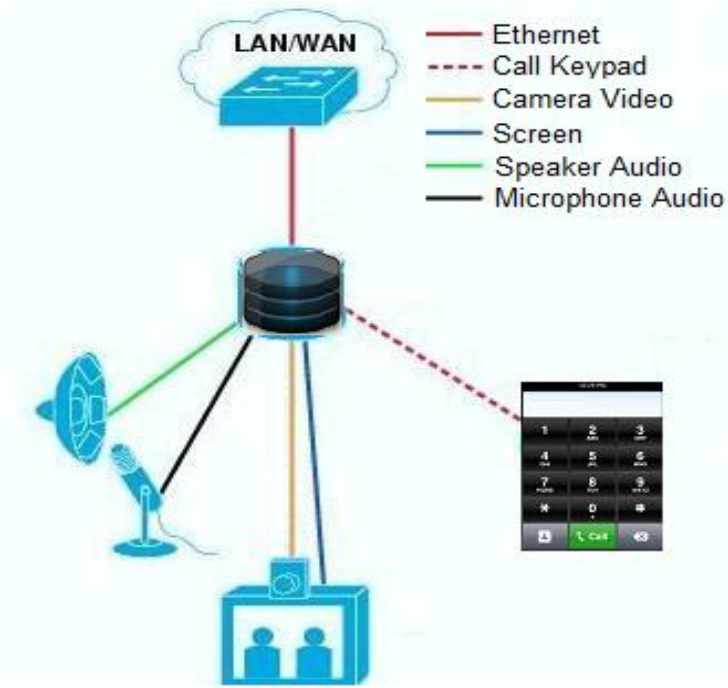
A range of technology options have been evaluated:

1. Technologies to provide home TelePresence (to reduce Kiss & Fly)
2. Technologies to encourage public transport (e.g. using RFID)
3. Technologies to encourage vehicle sharing

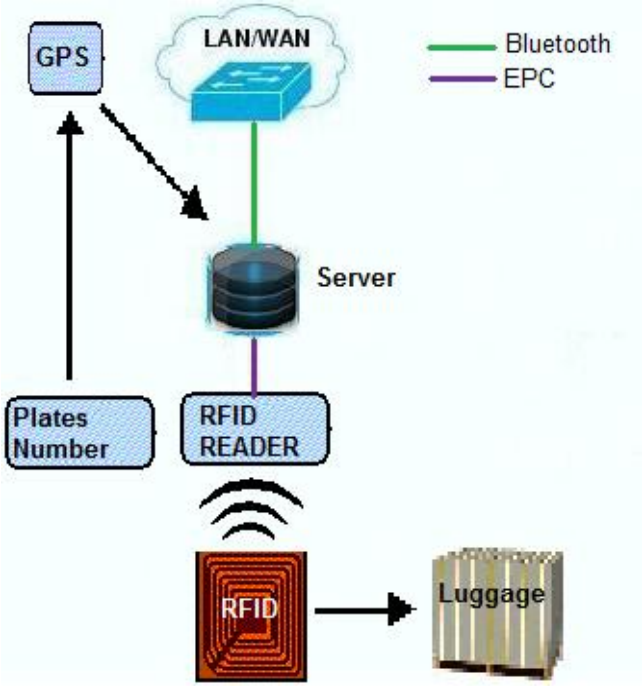
The latter technology is being investigated in terms of a hypothetical network of base stations required within an airport terminal to support this

Technology response will be tested in the survey

Technologies: TelePresence / Public transport

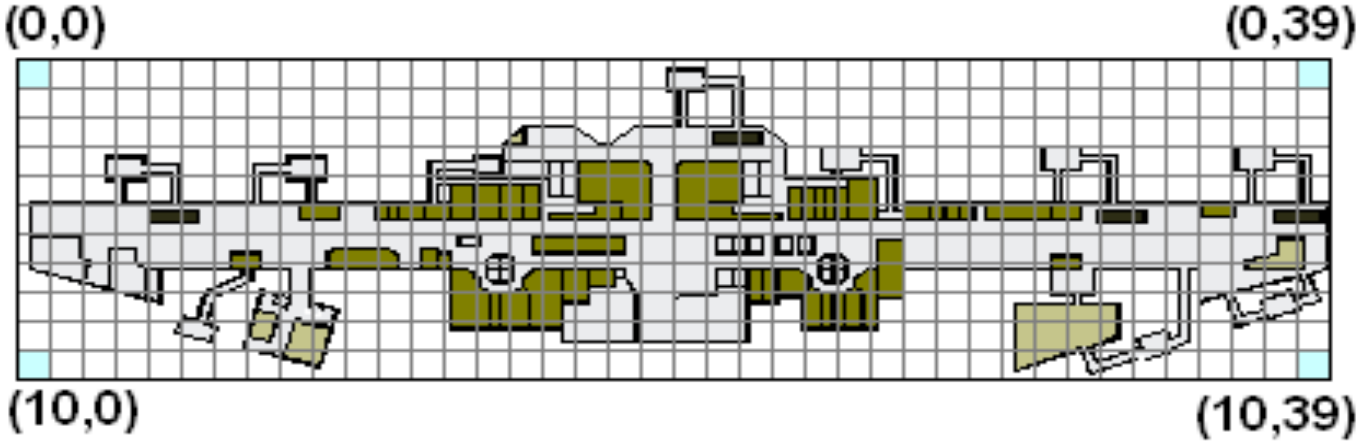


Illustrated Home TelePresence System to be installed in an airport



Illustrated RFID System to be installed in trains/coaches

Base station location optimisation



Full terminal coverage (e.g. In the case of M-PRMA)

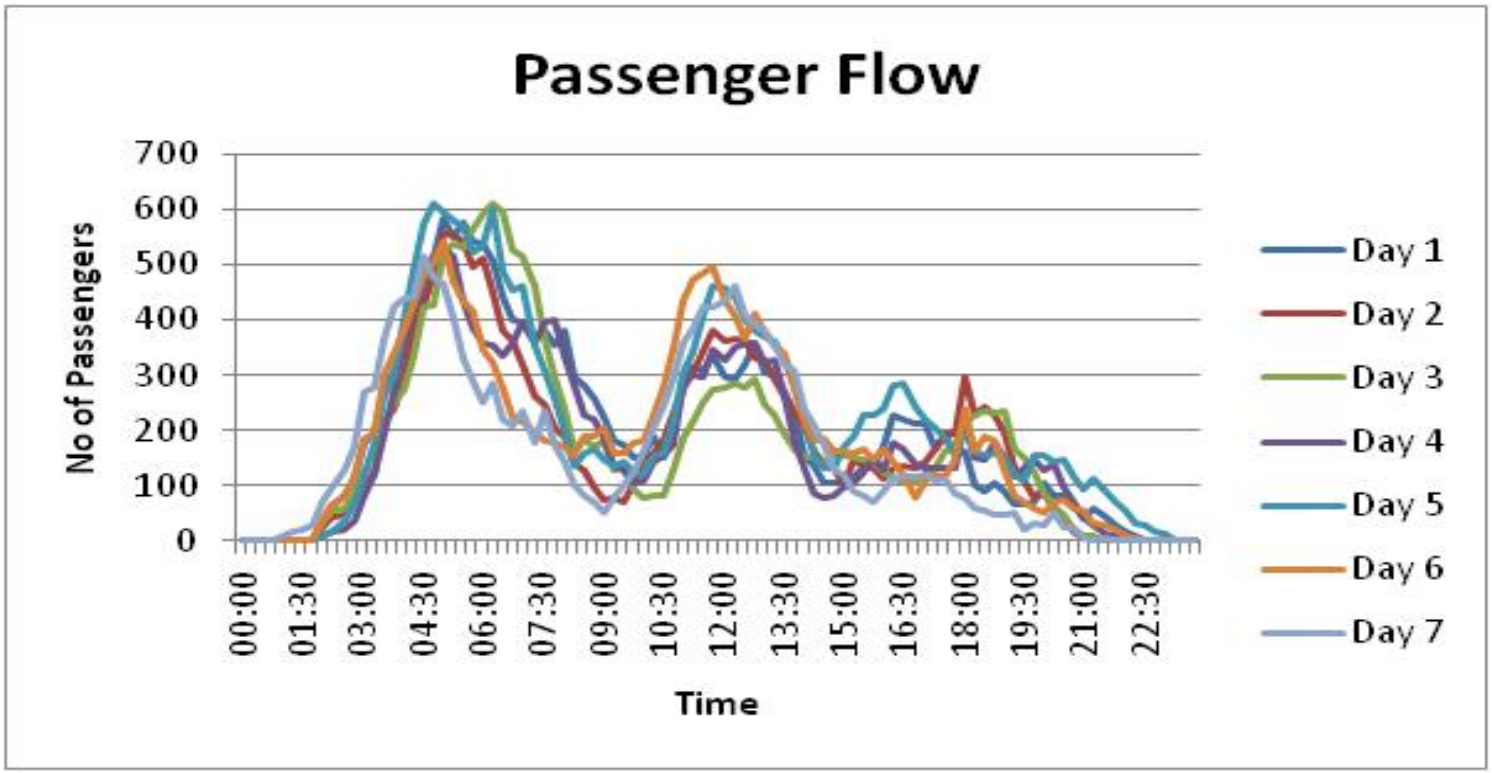
- Improved QoS (Quality of Service)
- Lot of base stations may remain idle for majority of time
- Very expensive (infrastructural and maintenance cost)

What is the optimal number of base stations?

What is the optimised location for each base station?

Passenger flow through Manchester terminal 1

Statistical analysis on Terminal 1 Manchester Airport (Monday, 26/07/2010 till Sunday 01/08/2010)



Work Package 3: Loughborough

Determine individual environmental behaviour for surface access using quantitative based surveys

- Series of travel behaviour surveys, of users, undertaken to understand their response to changes in surface access
- The surveys will involve at least 2,000 individuals

Also conducted interviews with ten surface access managers across fourteen airports (Tom Budd PhD)

- Showed importance of reducing private car use, particularly for Drop-off / Pick-up trips
- Context of pressure for airports to maximise car parking revenue

Passenger survey at Manchester Airport

Survey of 860 departing passengers at Manchester Airport, June-July 2011.

Variables collected:

- Mode choice
- Trip purpose
- Origin (location and type)
- Residence
- Type of flight
- General mode choice
- Number of flight taken in last year
- Duration of trip
- Luggage
- Travelling with young children/elderly
- Reasons for mode choice
- Age/Gender

42 attitude statements pertaining to the main constructs of two established social-psychology theories of attitude-behaviour relations:

- Theory of Planned Behaviour (Ajzen, 1991)
- Norm Activation Model (Schwartz, 1977).

Question example from survey

Q23. To what extent do you agree or disagree with the following statements?

	5	4	3	2	1
ROTATE AND TICK START	*Strongly agree*	*Agree*	*Neither agree nor disagree*	*Disagree*	*Strongly disagree*
a). When I use my car to get to the airport, exhaust gases are emitted which have a negative effect on the global climate system.	5	4	3	2	1
b). I would feel guilty if I always used my car to get to the airport.	5	4	3	2	1
c). Using my car to get to the airport has a negative impact on other people.	5	4	3	2	1
d). Considering the environmental impacts of car use, I would feel guilty about using my car to get to the airport.	5	4	3	2	1

Identifying attitude based segments

Group	Car access	Description	Next best option
1. Devoted drivers (21.2%)	Yes	Strong positive attitude towards the car, feel social pressure to use it & have a negative view of public transport.	Not taxi/ drop-off
2. Remorseless motorists (17.6%)	Yes	Are not aware of, and do not think, that car access to airports is a problem. Do not feel guilty about using their car.	Not taxi/ drop-off
3. Public transport avoiders (12.9%)	Yes	Feel social pressure to use public transport but have a low intention to use it in the future. Think that car/drop-off is easiest option.	Car parking
4. Committed rail users (11.1%)	Yes	Strongly positive attitude and intention towards using public transport, especially train. Perceive few barriers to using it.	Train
5. Drop-off/taxi users (10.9%)	Yes	Put off using public transport as they perceive too many barriers to using it. Strongly favour drop-off and taxi modes.	Car parking Train
6. Conscientious greens (4.6%)	Yes	Keenly aware of the problem of car access to airports, feel guilty about using their car and feel pressure to use public transport.	Train Bus/coach
7. Riders of necessity (16.4%)	No	Not a particularly positive attitude towards public transport, would probably choose to be dropped-off where possible.	Train Bus/coach
8. Car-less crusaders (5.3%)	No	Very positive attitude towards public transport, perceive few barriers to using it and feel that their actions can make a difference.	Train

Initial findings from Manchester airport survey

- Awareness of the problem and the negative environmental impacts of their behaviour is not necessarily linked to mode choice
- The perceived difficulty of using public transport is a significant barrier to increasing ridership
- Perceived social pressure an important factor in mode choice
- Past behaviour linked to future intentions

Work Package 4 - Assess interventions

Table of possible interventions for passengers

What is current behaviour?	***What is desired behaviour?***	***Carbon reduction interventions***
Lots of Drop-off / Pick-up individuals, resulting in increased congestion but also increased revenue for airport	Reduce levels of Drop-off / Pick-up	Off-airport drop point & rapid transit reduces congestion, airport revenues & carbon, but perhaps increased airport space & new revenue opportunities.
Low public transport usage due to luggage transit	Increase public transport	Off airport luggage drop with RFID tags. Off airport check-in already growing; perhaps incorporate a price discount for use of this service.

Interventions will also be considered for employees, such as car sharing schemes, working at home and incentives for using public transport

Next steps

Further survey work, including airport choice SP & technology option (lift-sharing, tele-presence):

- Sheffield (Spring/Summer 2012) ~ 800 respondents, face-to-face / internet
- RHDSA (Summer 2012) ~ 400 respondents

Assess the possible interventions

Dissemination with the two airports and wider stakeholders, through the AETN

Thank you

Any questions?

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