

# Travelling in a Changing World

Key findings report from the project 'Ideas in Transit'

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## • Foreword

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The world of Transport is frequently viewed from above, the top-down view from the heights of Government policy or the upper floors of established industry. Ideas in Transit has taken a different perspective, looking up and out through the eyes of transport users, and examining how they take the challenges of travel and turn them into innovations that try to solve their problems.

The results provide a number of insights, some that challenge perceived wisdom, some that show how intractable transport problems can be, but also some that point to opportunities for user-led innovations to become the transport businesses of the future. In the process the team has worked in partnership, building trust and collaboration between very different organisations within the project and beyond.

The project has been part of the landscape of the opening up of transport data and has supported the birth of the GeoVation® initiative at Ordnance Survey. We have seen the growth of a start-up business in Ito! World to become one of the thought leaders in this area in the UK. And a number of exciting innovations have been supported in their development as the seeds of new business opportunities.

The outcomes of the project start to point to how the world of user innovation can connect with and inform the traditional transport community. I recommend this report and the other outputs from the project to you so that you can start to understand the implications of this groundswell of traveller innovation and to explore the opportunities for your organisation to innovate and to engage.

The design, management and use of transport systems are responding to economic uncertainty, climate change challenges, rising energy prices and the information age. Technological innovation is an important part of that response for users, businesses and policy.

Advances in information and communication technologies (ICTs) facilitate tremendous opportunity to create, manage and share information in ways that can support the shaping and use of our transport systems. User generated data, open-access data and social media are all phenomena that are potentially transformative. Particularly important is geo-located data, where information (e.g. photos, complaints, bus stops) can be attached to specific locations.

Ideas in Transit has been a five year project examining what happens when people and the power of the crowd come together with technology to address the transport challenges faced by individuals and society. The ideas from this research and the project's development of the GeoVation competition to identify and support innovators tell the story of how the landscape for innovation in this area is changing and why.

The project has focused on how people confronted by specific transport problems or challenges have responded with creative endeavours to develop solutions. These people were not necessarily experts in transport or technologies, but had an instinctive sense of the problem or challenge that needed resolving. In this respect, we have called these people *user innovators*.

This report shows how the nature of innovation is changing in the context of transport and associated services. Established technology companies or research institutes traditionally have responded with top-down solutions to problems such as driver behaviour, road congestion, or traveller information provision. What is different about user innovators is that their immersion in the problem prompts them to innovate – their motivations and insights are distinctly different.

The first part of the report looks at the how the emergence of technologies and data access have opened opportunities for user innovation, and the social context of problem spaces and innovation. The report then looks at how user innovators get started and who and what they need to aide progression of their ideas and visions. To conclude it considers the impacts of these niche innovations on the future of

transport choices and travel behaviour.

The Ideas in Transit project was a collaboration between two UK universities – the University of the West of England, Bristol (UWE), and Loughborough University, and two geospatial data companies – ITO World Ltd and the Ordnance Survey (OS). The project was funded by the Engineering and Physical Sciences Research Council (EPSRC), the Technology Strategy Board (TSB) and the Department for Transport (DfT).

The project was supported as part of the Future Intelligent Transport Systems initiative which was focused on delivering better passenger and freight transport services to reduce negative environment impacts. It aimed to support the development and exploitation of technology for the UK that would have a global market opportunity and be able to demonstrate impact<sup>1</sup>.

<sup>1</sup><http://www.bis.gov.uk/files/file34263.pdf>





### Introduction

Innovation in the transport sector traditionally has been designed and delivered from the top down, often responding to policy defined problems. For example, a device might be researched, designed, and developed to help drivers drive more safely or efficiently. This is especially so in relation to Intelligent Transport Systems (ITS).

The Ideas in Transit research has taken the alternative path, to look for innovative responses born from real life transport problems or challenges. It is concerned with novel and creative uses of existing information and communication technologies that create new services.

### Power of the crowd

This concept of new types of niche innovation is timely, as ICTs have brought about a step change in the power of society – in particular, individuals acting co-operatively – to creatively tackle the problems they experience. For example, Web 2.0 created a new interactive platform where former consumers could become producers. At the same time many types of official data have become freely available – potentially game changing for small scale

start-up companies or small teams of 'garden shed' innovators. Niche innovation in transport is not new, but ICTs are enabling it to either become more visible or accelerating it.

Image taken from <http://www.parkatmyhouse.com/uk/>

The screenshot displays the ParkatmyHouse website interface. At the top, there is a navigation bar with links for 'Login', 'Register', 'Find parking', and 'Add a space'. Below this, a search bar shows 'Salisbury Parking ...'. The main content area is titled 'Parking in Salisbury' and features a search filter for 'Salisbury' with an 'Advanced' option. Below the search bar, there are three parking listings:

- A Near To Salisbury District Hospital & Bus Stop:** £4.00 per day, 5 stars based on 2 reviews. Description: 'The space is located 5 minutes walk from a bus stop which offers regular buses to the City Centre (approx £1.20 single or £1.70 return) and also Salisbury District Hospital. Walking into the City...'. Features: 'Private Driveway 24/7 Access'.
- B Sheltered Car Bay 5 Mins Walk From City Centre:** £5.00 per day, 5 stars based on 2 reviews. Description: 'The space is a private parking bay literally 5 minutes walk from the market square and city centre. The car bay is both covered and well lit so providing excellent shelter and security for your...'. Features: 'Private Driveway 24/7 Access, Lighted'.
- C 15 Min Walk To Centre Of Salisbury:** £5.00 per day, 5 stars based on 4 reviews. Description: 'This is a private driveway just off the Downton road in Salisbury. Close to a bus stop if you want to catch one on a rainy day, or a 15 minute cathedral walk into the city centre. Approx 15/20 min...'. Features: 'Private Driveway 24/7 Access'.

On the right side, there is a map of Salisbury with several parking locations marked with letters (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R). Below the map, there are links for 'View larger' and 'Share'. At the bottom right, there is a 'Local amenities' section with a link to 'Salisbury'.

## User innovators

Thus, this project set out with the idea that people might be doing something different with tools that had become part of everyday life – mobile phones and the internet to manage or creatively respond to what people themselves had identified as a transport problem.

Our definition of a user innovator for this project was: the creation and application of an invention initiated by affected individuals that stems from a user need or curiosity to address a problem or challenge within social practice.

We assumed that user innovators would have a rich understanding of user needs, but not necessarily have the technical expertise or support that would be found in top-down innovation developers.

Changing travel behaviour does not necessarily have to be a response to, or supported by, grand or top down schemes. User innovations may have niche markets, but the cumulative use of many different niche services may combine to have a larger impact.

## An abundance of innovations

Ideas in Transit has revealed the existence of many transport related innovations that meet the definition of a user innovation set out above, which take advantage of the internet and mobile technologies. The research catalogued, in an 'Innovations Portal' over 200 innovations internationally that had a web presence from 2007 onwards, indicating a potential groundswell of such niche activity – with total number

undoubtedly much greater and continuing to grow. These innovations included services for car sharing, organising parcel deliveries, cycle and walking route planners, and car-free walks, to name but a few. Other innovations were focused on 'activism' – shedding light on problems to be brought to the attention of those in power. For example, mybikelane.com enables cyclists to identifying illegally parked cars impeding the use of cycle lanes. Understanding the innovation process



Image taken from <http://www.mybikelane.com/> (number plate details removed)



It is important to understand more about this type of innovation and how it relates to existing transport suppliers, policy makers, and public investment. It is also essential to understand if this array of user innovations has the potential to influence and support travel choices in different and possibly more effective ways than currently results from 'top-down' services.

In order to foster transport related user innovation more needs to be known about how ideas emerge, and are then developed successfully to a product that people use. Like any other area of innovation, not all ideas make it for all sorts of reasons. Much of this report considers the social and technical context of transport related user innovation, and the different elements that enable the idea to move forward into a service.

The research has involved working with innovators drawn either from the 'Innovations Portal' or those selected through GeoVation, a competition run by the Ordnance Survey as part of the Ideas in Transit project. Some of these innovations are shown as case studies within the report to illustrate the different factors associated with bringing an innovation into the world and creating a community that will use it.

### Context is key to success

As the report will reveal, context matters hugely in determining the uptake of user innovations – just as is the case for any product or service – demand for use derives from a need and motivation on the part of consumers. There is an increasing appreciation of

the factors that can both prompt but also inhibit such need or motivation. Individuals may be entrenched in habitualised travel behaviours which are sufficient to satisfy their needs, even if sub-optimal. This suggests an absence of need or motivation. On the other hand people's circumstances can change as they move through their life course and external



Image taken from <http://www.pickuppal.com/>

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factors such as fuel costs and parking availability can change which can create new challenges or prompts for reviewing behaviour and seeking alternative options or support. In this case a source of demand may exist. While many of the user innovations discussed in this report indicate some success, their scale of future uptake remains uncertain and at the mercy of the context which defines a public need for the innovation as a means to help solve a problem or challenge.

#### Introduction

How people travel and how they organise their travel is evolving in new ways in response to problems such as road congestion and climate change. Some change is brought about by traditional government policies and investment decisions. Other change is the result of new technological opportunities coming together with new ways of thinking and doing by government and people.

This five year project was deliberately designed to accommodate and respond to the changing social, technical and political landscape. The events highlighted in this section show how much has changed during these five years (2007-12). Many of these changes have impact on the opportunities for bottom up innovation, and new ways of communicating with product users (e.g. the App). Each heading considers why the event is important to bottom up innovation and what its impact is.

#### Web 2.0

The term Web 2.0 has been attributed to new collective interaction with the internet which has provided individuals greater opportunity for creative and innovative development from their own desk-

tops. Over the past 12 years since the phenomenon was first recognised, Web 2.0 principles have been used with many collaborative projects of great significance to the transport sector, including social media, open-source software and crowd-sourcing data projects.

#### Smartphones

There are various evolutions of smart phones. The smartphone Blackberry was released in 2003. The Apple iPhone, launched in 2007, was the first touch screen mobile device that leapt into popular use. Smartphones built on Android (open source) platform followed in 2008, and smartphones built on MS Windows in 2010.

Smart-phones, notably the iPhone and Android phones provide a platform for applications (apps) for many purposes, including many for the transport sector. Mobile computing devices of this sort provide a radical new way of supporting people while they are travelling. There is some suggestion that people may now be using smartphones rather than cars as ways to express their identity and/or status.

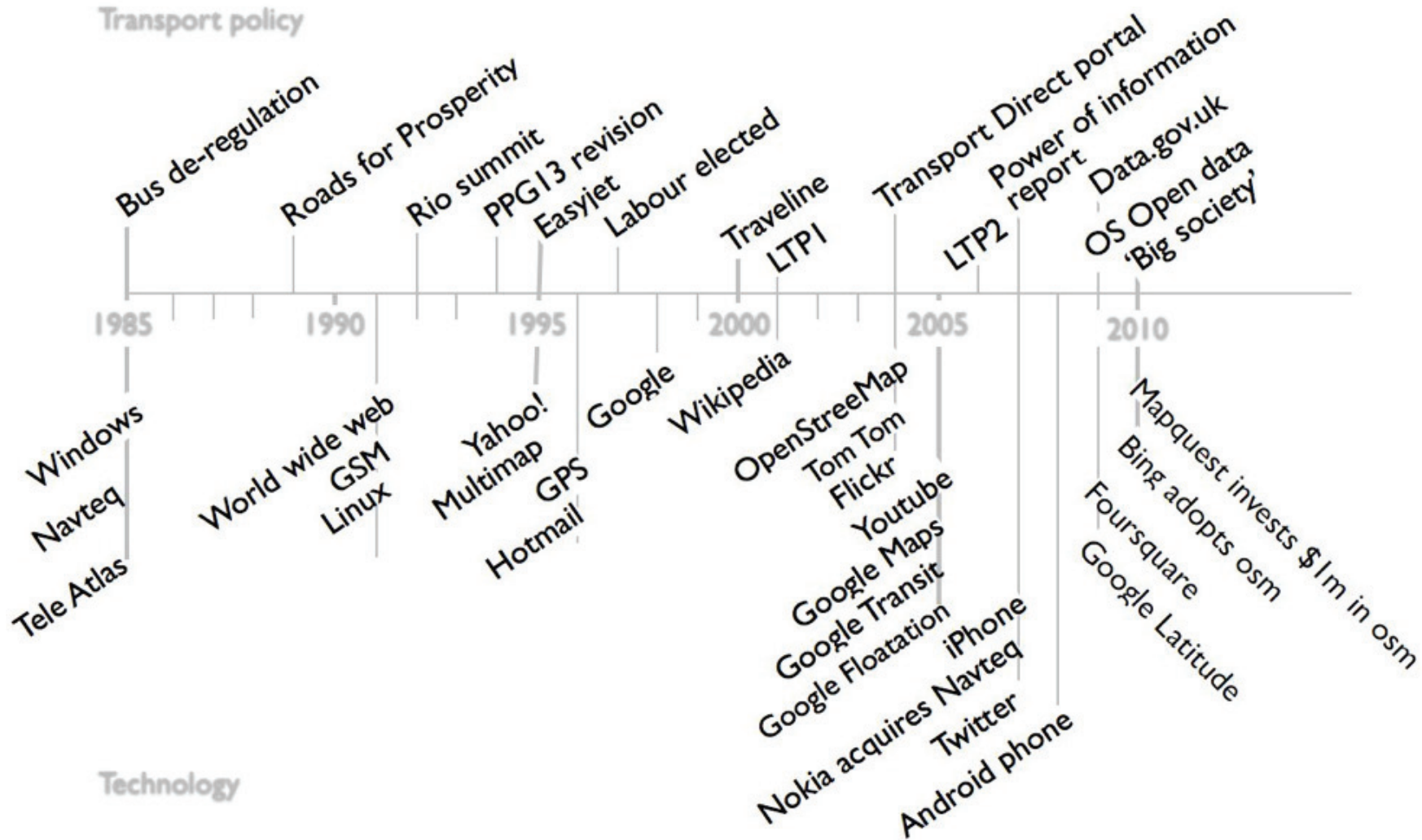
#### Technological advancement

constantly provides new opportunities.

**New data sources** have provided new opportunities.

**New media** have given a public voice to many people.

**The app revolution** opened new commercial opportunities for innovators.



An illustration of the changing world of transport policy and of technology

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## Mobile Apps

A mobile application, or mobile app, is a software application designed to run on mobile devices such as smartphones, tablets, etc. There was a rapid growth in the design apps, some of which relate to transport needs such as enabling people to access real-time travel information, and use way-finding tools, via their mobile phone as they move around. The ability of smart-phones to host mobile apps has led to an explosion of applications available to smart-phone users. Many of these applications have been created by individuals and young companies and their availability has increased pressure on data owners to release transport data on open licenses.

## Social Media

Social media has radically changed the way people interact on line.

It has benefited the formation of, and interaction within, communities, and the sharing of information across different types of communities. Facebook, which became publically available to anyone over 13 with an email account in 2005, has over 900 million global users in 2012. In 2012 the company was floated on the stock market, but

shares rapidly slumped in value. Facebook has offered a platform for a number of user innovators, especially for car-sharing schemes.

Twitter combines micro blogging with social networking. 'Tweets' are short messages (140 character limit), which can be sent from mobile devices. People posting tweets are followed by others, and while tweeting has flourished amongst activists and protestors, it is widely used in the dissemination of 'official' information as well as opinion (for example London 2012). Twitter membership also has grown rapidly, with over 50 million users tweeting every day.

Specifically relevant to this research are the loosely connected sustainable transport activists who communicate via blogs, twitter, and other social media.

Social media has reduced barriers to information flows. Ideas and information can travel at speed and can be captured by any interested person or group. With any new way of sharing information there are some questions about the process and its reliability. Firstly, will the consequences be polarised views or the spread of the best ideas? Secondly, what of the reliability of information sources, which may assume

an authoritative status even when they may contain incorrect information at times?

## Wikipedia

The arrival of Wikipedia as an open sourced resource is indicative of how information is created and consumed in this new era. It has changed the way people inform themselves across a myriad of topics. However it is important in particular to understand its role in providing knowledge about the transport industry and the mechanisms that surround it. As anyone can contribute, there can be tensions in how and what information is provided in relation to transport issues. Professional communities need to engage with it by contributing information and ensuring that entries are comprehensive, accurate and up-to-date. This has been something the project team has directly pursued and researched.

## UK Government Open Data

January 2010 saw the release of 250,000 data sets from various government departments, which include traffic and other transport data. These contain no identifiable personal data, and can be used by anyone. An aim of the data release is to unleash innovative and enterprising applications which could

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be commercial. It is still subject to Crown Copyright but can be distributed in conjunction with Creative Commons License 3.0. (data.gov.uk).

### Ordnance Survey Open Data

In April 2010 OS Open Data was added to the above initiative. The geospatial (map) data can be linked with other data sets for visualisations, and other service and product developments. Open Data has pushed this traditional mapping agency to consider innovative partnerships and business models to support users, and drive economic benefit from this shift.

### Open Street Map

OpenStreetMap (OSM) was founded in London in 2004 in order to develop geographic data that was available for use by anyone across the globe. What was unique was that anyone could contribute to the data set, rather than only professional cartographers/data generators. The community of registered contributors has grown to over 600,000 in 2012, although only a small proportion are actively contributing at any one time.

The impact of OSM has been to provide free geographic data to entrepreneurs, and applications drawing on OSM are visible in the emergent innovators captured by this project.

### Summary/Conclusion

The challenge for observers of innovation and innovators themselves is that technology is moving very quickly, and that the unexpected can happen. Being able to keep up with what is technologically possible is a challenge for anyone with a problem looking at ways to solve it.

Public policy is relatively slow moving, and generally has a predictable trajectory. However, in the five years of this project the release of public datasets had not been anticipated at the outset, including the advent of OS OpenData.



## Introduction

Top down innovation can be criticised for being focused on technological solutions looking for a problem. Bottom up innovation is different. It is seeking solutions that are rooted in the problem. User innovators are seeking solutions to problems they have experienced.

Transport problems for individuals arise as they try and organise their daily lives, and plan for leisure activities. The problem may be getting the right type of travel information, or it might be a solution to a problem that impacts on travelling, like having to collect a parcel from a warehouse because you were not at home when it was delivered.

The individual context can be very different to those transport problems considered by policy makers and top down innovators. But are user innovators really responding to these experienced problems? This chapter considers the context of everyday travel, how people view transport problems, and how innovators can be encouraged to focus on the problems rooted in the real world.

People feel **they cannot solve big problems** like road congestion, travel information, service provision and infrastructure needs.

Most people are **finding individual ways** to mitigate immediate problems.

Individual problems are **not always transport problems**, but can impact on their transport choices.

**Successful innovators make the connections** between real problems, available data and solutions.

Innovations producing **travel information services are publically acceptable with recognised user need.**

Innovations requiring people to form **new ways of organising travel like car sharing, or collecting parcels, have a greater challenge** to gain public acceptability and trust.

The need to move from socially co-operative behaviour like sharing collection of school children between parents, to **a technology mediated solution is treated with scepticism.**

**Disruption can be a key catalyst** for co-operative, user-led innovations.

## User Innovation Case Study – AccessAdvisr



Around 20% of the UK population currently experiences some form of mobility impairment. Although the Disability Discrimination Act has improved the accessibility of transport networks, it is often difficult for travellers with mobility limitations to find out about any impediments that they may face when using public transport.

[www.accessadvisr.net](http://www.accessadvisr.net) is a potential solution to this problem. It is a website that collects accessibility data from a variety of sources, and enables travellers to check whether they are likely to encounter any problems when using public transport. It is based on Google Maps, and overlays destinations, parking facilities, tram, bus and coach stops, train stations, and taxi ranks.

A key feature of AccessAdvisr is that it enables individuals to contribute their own information and reviews on the accessibility of places and the transport network, so this can be used by others – for example, issues encountered with steps, steep ramps, awkward gaps or obstacles. This can be done either via the website, or using the Android and iPhone apps created to enable people to access information, and contribute their access-related experiences, on-the-fly.

AccessAdvisr was conceived by Integrated Transport Planning Ltd (ITP), as a result of the company's interest in how online maps and user-contributed data can improve the travelling experience for a wide range of people. Their frustration at the number of disparate information sources, and recognition of the value that people with limited mobility place upon peer recommendations regarding access issues, arose from social research studies that ITP conducted on behalf of local and central government transport authorities to explore the transport needs of disabled and older people.

ITP has now established a stand-alone company, AccessAdvisr Ltd, comprising a small group of socially motivated transport professionals and disabled people to take the concept forward. User evaluation of the concept has shown the value that travellers with limited mobility place on information about the accessibility of transport. The feature that has been seen as particularly useful is the incorporation of photographs of key aspects of transport facilities.

These allow individuals to make their own judgements on whether they personally would have



problems when accessing transport stops, stations and destinations.

The AccessAdvisr website has been launched in Beta, while the Android and iPhone apps can be readily downloaded from Google Play and the App Store. The team are working with a number of UK local authorities and disability groups to help grow the community of website users and plan to continue developing the website and apps to add requested features and improve user-friendliness.

## Social Context of ICTs and Travel

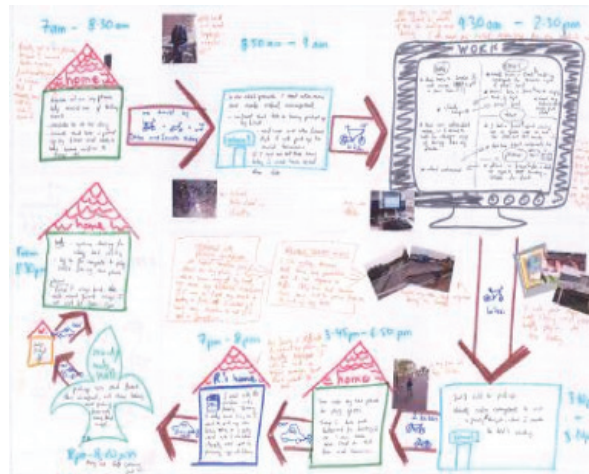
Information and Communication Technologies (ICTs) are embedded in the organisation of many people's lives. These technologies support the travel choices people make by providing access to travel information before and during the journey, and enabling people to make contact with others while they are travelling or facilitate other activities (e.g. preparing a presentation on a laptop while travelling by train).

### The research approach

In 2008 Ideas in Transit scoped three groups of people, who considered themselves as having a high use of ICTs, to investigate how they used different technological tools to address the transport problems they encountered (if any). The participants completed a diary for one day (see illustration) which acted as a prompt to learn about more general experiences during a face-to-face interview.

### Problems and solutions

The interviews revealed time management was a key 'problem'. This was either as a consequence of the time of day when travelling or uncertainty of arrival



Example of a day in the life diary.

time due to delays. Mobile phones were a key for rearranging commitments on the move, from work meetings to childcare.

The interviews demonstrated how smart phones were being readily used for accessing travel information on the move, where participants were afforded an internet connection. The participants accessed real-time information regarding public transport service provision and GPS locative information while on the move to assist way finding when driving.

Technology and smart phone ownership has since moved on. However, those not connecting to the internet often had personalised solutions to their problems. For example, phoning someone with access to the internet (at home or work) to help with a way finding problem. Mobile phones also provided essential 'way finding' connections between groups travelling to the same venue (e.g. sports) in car convoys. Mobile phones were also used to give people a sense of safety while travelling alone. For example, walking and talking, or ready-to-hand in case of breakdown or getting lost.

Specific problems, such having a disabled child, demonstrated some creative thinking around mobility choices and information sourcing from specific communities. Yet other problems such as uncertainty of either a low-level access bus scheduled or the availability of a space for wheelchair or pushchair on a low-level access bus were accepted as part of an external 'system problem' that individuals were unable to address.

### Sometimes creative, rarely innovative

Generally problems encountered when travelling did not prompt creative thinking beyond a response to the immediate situation. The 'power of the crowd' to

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do something different with the technologies to hand obviously requires more than experience of everyday travel problems.

## Understanding the Public Appetite for User Innovations

Further focus group research confirmed that people rarely think about how transport problems could be solved, other than responding to their own personal situation as any problem or challenge arose. However, the need to have solutions rooted in real problems and the understanding of the social context of problems was confirmed.

### The research approach

The research ran a series of focus groups with a cross-section of men and women who lived in Bristol and the surrounding rural counties. The focus group discussion considered the individual experiences of travelling, relevance of official descriptions of transport problems, individual agency to resolve problems, and response to five example 'user innovations'<sup>3</sup>.

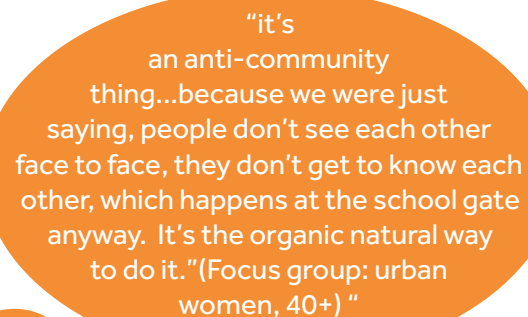
<sup>3</sup>*Parkatmyhouse.com, walkit.com, schoolrun.org, Carbon Hero (carbondeim.com), and parcelpickup.com.*

### Ability to solve problems

Some participants were involved in local campaigning that had a transport element, but generally they felt remote from having any ability to solve the big societal issues such as road congestion, travel information provision, improvements to cycling and walking, even if they felt these were important.

### Mitigating not innovating

A key finding was that participants described many ways in which they actively mitigated transport problems, such as road congestion or risk, by seeking individual alternative solutions. These included very practical understood responses like travelling at different times of day, not travelling by a specific mode, or making different house location choices. However, the use of ICTs in mitigating problems,



“it’s an anti-community thing...because we were just saying, people don’t see each other face to face, they don’t get to know each other, which happens at the school gate anyway. It’s the organic natural way to do it.” (Focus group: urban women, 40+) “

such as response to transport delays was wide spread (e.g. making re-arrangements to childcare, micro-scheduling appointments, checking travel information on the move, etc), in ways that appeared very ordinary to participants.

### Appetite for information solutions

People who seek travel information prior to departure often use online travel information sources. Therefore, new user innovation in the field of travel information conforms to social expectations and trust of online information. For example, [www.walkit.com](http://www.walkit.com) was already used by the some of the focus group participants, and most saw this type of service as useful.

### Online versus real communities

Other innovations that require new ways of organising travel, particularly around car or taxi sharing, are asking people to do something quite different. People are expected to have trust in relationships formed online, rather than through existing face-to-face relationships. Changes in values, trust and perception are core elements in the wider acceptability of such innovations.

The focus groups considered that social arrangements, such as getting someone to collect your child from school or hold a parcel delivery for you, should come from the existing community rather than being facilitated by an intermediary.

The research highlights a need to understand more about the formation of different types of on-line communities, where transport or freight logistic problems connect with social organisation and practices.

## Response to disruption

Everyday lives face perturbations which people accommodate. However, larger scale disruptions can overshadow the ordinary and invoke greater need for innovation.

When journeys are disrupted travellers seek alternative solutions (e.g. different route, somewhere to stay, remote working). The Ideas in Transit wiki captured innovative responses to an extreme event – the disruption of air space in 2010 by the eruption of the Eyjafjallajökull volcano<sup>4</sup>.

<sup>4</sup>[http://www.ideasintransit.org/wiki/Innovative\\_response\\_to\\_the\\_closing\\_of\\_European\\_airspace#Twitter](http://www.ideasintransit.org/wiki/Innovative_response_to_the_closing_of_European_airspace#Twitter)

Individuals found accessing information from official sources challenging. Social media (Twitter and Facebook) were used to disseminate information about disruptions to flights by organizations and individuals.

The need to find alternative ways home promoted opportunities for collaborative travel within Europe amongst the temporary community of the stranded. Existing car sharing sites saw an increase in use. Facebook provided a mechanism for arranging car-pooling and temporary accommodation. A couple of websites were initiated for sharing information e.g. volcanohelp.eu, although these have not all been maintained beyond an initial period.

Collating this information demonstrated the importance of social media for informal and formal information flows and creating resolutions to a serious transport problem.

There are opportunities for utilizing such approaches to promote innovative responses to managing local or national disruption, whether ensuring network for information feeds and quick response alternatives (e.g. taxi/car shares).

## Summary/conclusion

Travelling and using ICTs are very normal experiences, which most people do not really think about that much until something happens. Small disruptions like leaving the phone at home, or being delayed due to an accident, might temporarily raise an individual's awareness of his or her reliance on a system. Larger scale disruptions appear to prompt creative behaviours in seeking alternative ways of travelling. However, these changes do not necessarily lead on to the development of a longer lasting.

Generally, people are aware of the bigger transport problems, but only concerned with mitigating situations as they arise.

Solutions to problems are acceptable where they fit into existing social practices, like searching on line for travel information. Whether the innovation is created from top down or bottom up is often immaterial to users.

The following chapters, however, demonstrate a different story in how ideas do spring from personal experience, and how information provided by similar user groups can be considered attractive and trustworthy sources.



# User Innovation Case Study – Man in Seat 61

'The Man in Seat Sixty-One' was begun by rail enthusiast Mark Smith. Mark had travelled extensively across Europe and beyond by train. He knew from experience how difficult it was to find information on how to travel by rail and book tickets.

In 2001 in order to pass time on his daily commute to London from Buckinghamshire, Mark bought a book on how to build a website. He chose to practice his skills by creating a site that described how to make train journeys from the UK to Italy, Spain and France. He quickly found that he had tapped into an unmet need and unexpectedly found that his site was featured as the 'website of the week' by The Guardian newspaper's travel section.

What began as a hobby has since grown into a successful fulltime business. Through income from affiliate schemes and Google ads, Mark was able to work full-time on the site from 2007. Seat61.com has gone on to win many travel and tourism awards including, in 2011, runner up to Tripadvisor.com in the Daily Telegraph readers' travel awards 'Favourite Travel Website' category.



Image taken from <http://www.seat61.com/>



## Introduction

Ideas in Transit has focused on innovations that have arisen from people's experiences of particular problems or challenges with using transport or travel information flows.

The project wanted to discover what types of people were thinking creatively about transport and why. Also, what were the processes that emergent and established user innovations went through in order to the move from an idea into a product or service.

This chapter explores the catalysts and processes around transport-focused user innovation.

**Experience of problems** is the first step towards innovation.

Successful transport innovators often have an **existing interest in transport**.

Ability to **link up skill sets** is essential for success.

Ways of **bringing together transport knowledge or interest and other skills** will benefit.

Motivation **to help others** is key.

In **extreme circumstances** people seek new transport solutions.

## User Innovation Case Study – Loco2



Loco2 aims to make train travel, particularly in Europe, as simple and convenient as possible. In 2007, Loco2 initially set out to be a low carbon travel company. The original aim of the innovators Jamie and Kate Andrews was to make low carbon travel as fun, accessible and ultimately as cheap as possible.

The idea for the service was first conceived by Kate who wanted to spend her gap year undertaking environmental volunteering but was struck by the hypocrisy of flying long distances to carry out environmental work. When trying to search alternative low carbon means of travel she found that there was no easy way to do this. The idea for a low carbon journey planner was born. Loco2 has since focused its business on European train travel. In 2012 Loco2 entered into partnership with 'The Man in Seat Sixty-one' and also successfully integrated their service with RailEurope's booking system.



## Innovator Identity

The research demonstrates there is no identifiable single type of innovator, but there are communities that may be a rich source of innovation, even if they do not have a direct relationship with transport in the first instance.

For innovation specifically for transport, successful innovators are more likely to have connected:

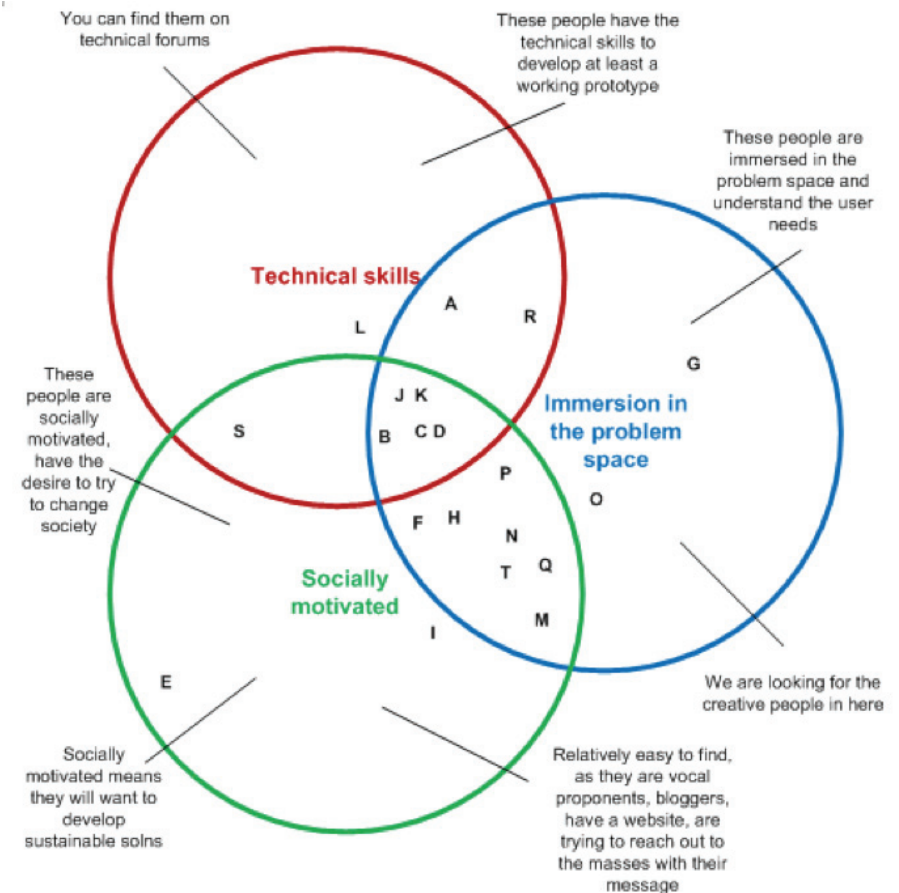
1. an existing interest in transport, logistics, or sustainable travel choices, tied to the desire to create 'social value' through sustainable travel solutions;

with

2. developing applications and services employing state-of-the-art digital technologies and networks, e.g. 'Web 2.0' and smart phone applications

Innovators may move in either direction from technical knowledge to transport problem, or transport problem seeking technical solution.

In order to foster and encourage grassroots innovation relating to sustainable transport, initiatives are needed that encourage collaboration between these two groups.



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## Knowing the problem

Immersion in the problem space is recognised as a prompt for grass roots innovation. Most people use transport in one way or another, therefore have experience of transport problems (though noting that many may not consider such experiences 'problems' sufficient to motivate innovation). Out of the millions of transport users only a few people will take a creative idea forward into an innovation.

This intimate user experience has been an important factor in the innovation, and demonstrates that seeking to innovation in the transport field does not need specialist knowledge, other than being a user and recognising an opportunity to develop a solution.

Toby Lewis developed <http://bristolstreets.co.uk/> because he encountered a lack of easily understandable bus information. He found when using other sources of bus information that he needed to have some knowledge about that journey such as a bus route number. His website assumes users have no existing knowledge about the journey.

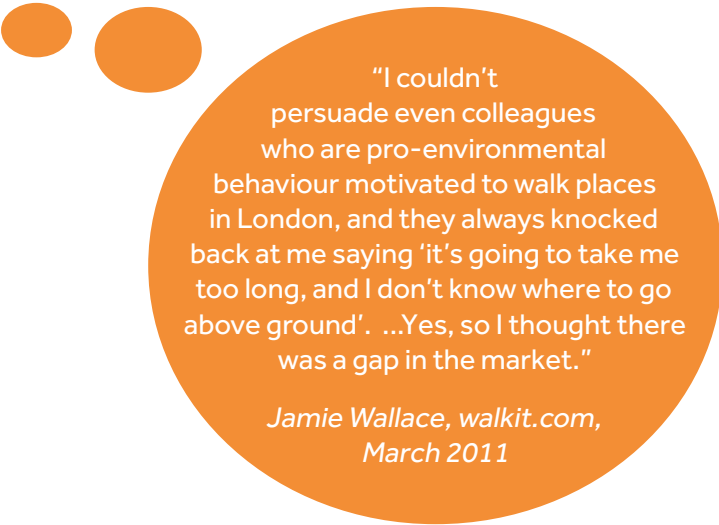
Personal experience of car sharing as a student in Germany prompted Ali Clabburn to develop [liftshare.com](http://liftshare.com) when he discovered that such a scheme was not

already available at his UK University on his returned home.

Jamie Wallace, who developed [walkit.com](http://walkit.com), was already interested in sustainable transport. It was seeing a need for walking information amongst friends and colleagues that pushed him into action.

Having professional knowledge of transport can shape creative thinking to find a solution too. This was the case for Simon Nuttall. While working for Cambridge City Council it was proposed that he developed a journey planner, but the project never came to fruition. Subsequently, Simon Nuttall took forward the idea with Martin Lucas-Smith as part of a voluntary organisation, and together developed <http://www.cyclestreets.net/>. The site stemmed from their belief that information about cycle routes could be more effectively presented on the internet and, in doing so, they could make it easier for people to cycle.

Being able to identify the problem is the first step. Important for this project, is that these people have identified a transport related problem that matters to them and their vision of a way forward.



"I couldn't persuade even colleagues who are pro-environmental behaviour motivated to walk places in London, and they always knocked back at me saying 'it's going to take me too long, and I don't know where to go above ground'. ...Yes, so I thought there was a gap in the market."

*Jamie Wallace, walkit.com,  
March 2011*

## Knowing the problem

Recognising there is a problem to be solved is the first step towards innovating, but not the only one. Through interviewing different grass roots transport related innovators, the research has identified six key catalysts that motivate to shift from idea into developing an innovation.

1. Responding to an unmet need
2. Frustration with current products and services
3. Seeking to create social value
4. A passion for a cause or interest
5. Financial gain
6. Enjoyment (e.g. problem-solving, fun)

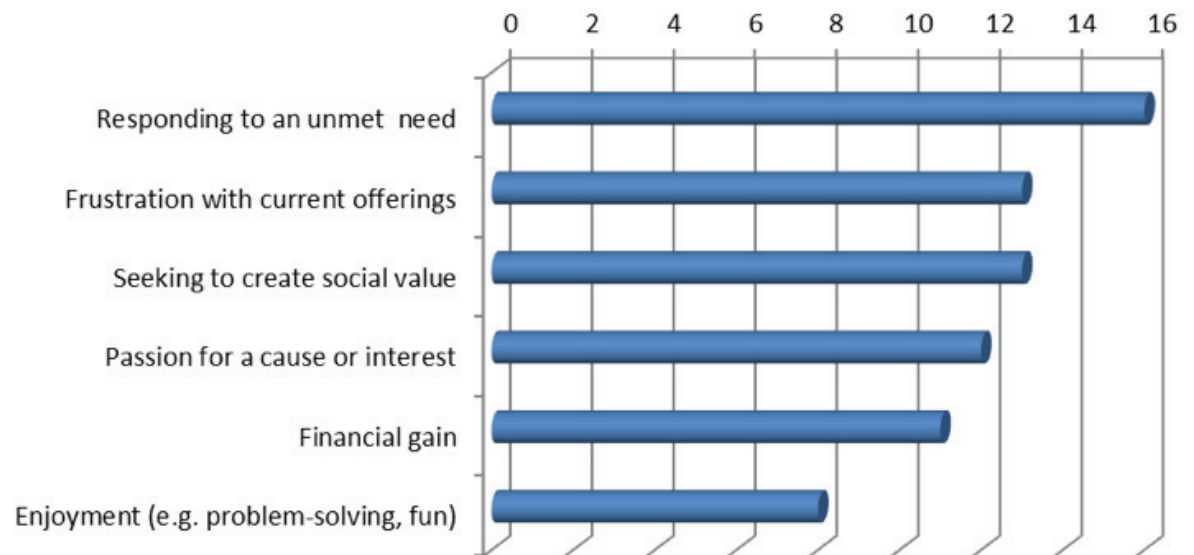
Financial gain is an important motivator but often follows on after the drivers 1-4 listed above, and emerges as a necessity to sustain the progression of the innovation.

The enjoyment of the process (e.g. problem solving) is also important to sustaining the innovation process. Learning a new skill or 'playing' with the technology maintained their motivation - this explained why so many of them were happy to spend their own time developing the innovation with no immediate financial reward.

Our expectation was that the innovators might fit the 'user innovation' phenomenon which is already well-documented (i.e. someone who is totally immersed in the 'problem space', spotting a need not yet satisfied by the market and developing something that will provide them with direct benefit). The interviewees in this study did, indeed, fit the first two characteristics but, they were primarily motivated, in line with 'social

entrepreneurship', to provide value for others rather than particular benefit for themselves, hence they were a combination of the two and we defined them as an alternate phenomenon - 'grassroots innovators'—present in transport because to create a sustainable system requires not just a solution that benefits an individual but one that benefits the masses.


**Number of innovators stating each aspect as a catalyst or motivation for the innovation (n=16)**



## Pro-social motivations

Many of the innovations in this research have social impact. They are inherently encouraging new ways of living and sharing with others for the wider good of society and the environment either through collective transport, sharing of personal space (drives and cars), prompting better services, or encouraging sustainable transport use.

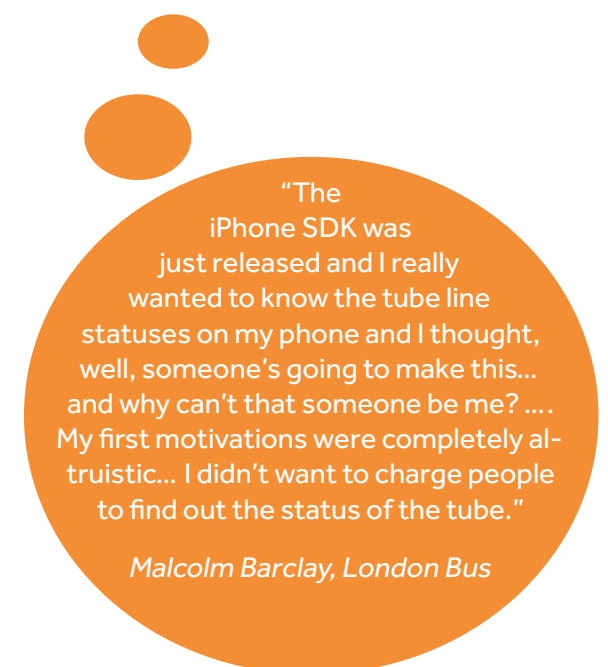
The Ideas in Transit research with new and more established user innovations indicated that these innovations often emerge because the innovator was motivated by pro-social ideals combined with the vision to see an alternative answer to a problem.



"...  
the more  
I did, the more it  
became about socially  
helping people"

*Ali Clabburn, liftshare.  
com, March 2011*

Further, Martin Lucas-Smith ([www.cyclestreets.net](http://www.cyclestreets.net)) was interested in promoting the collection and use of user-generated information in relation to cycling, and the general movement to encourage government to release transport data which can be used by innovators to create new products quickly (rather than government paying for the creation of a closed system). In this sense, he was also motivated by the opportunity to share the ideas behind CycleStreets with other people and 'gain social capital' through the sharing of user generated data.



"The  
iPhone SDK was  
just released and I really  
wanted to know the tube line  
statuses on my phone and I thought,  
well, someone's going to make this...  
and why can't that someone be me? ....  
My first motivations were completely al-  
truistic... I didn't want to charge people  
to find out the status of the tube."

*Malcolm Barclay, London Bus*

## Enthusiasts

Innovations can come about because the tools enable hobbyists and 'data geeks' to play and create. This is indicative of web 2.0 innovations and the opportunity for on line communities.

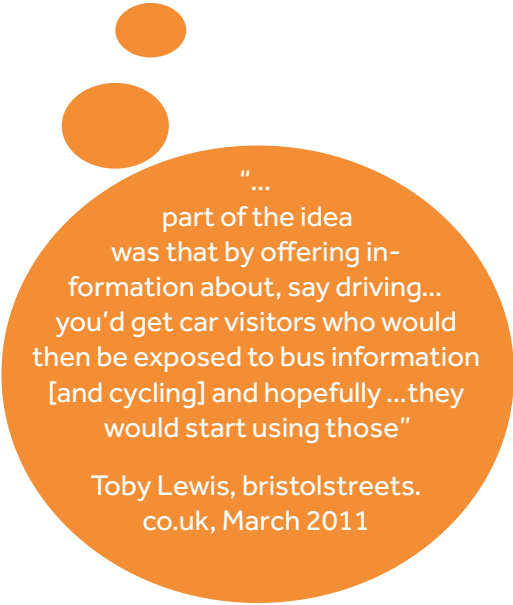
A strong theme emerging from the analysis of motivations of the 16 innovators the project engaged with was passion for a cause or interest. Seven innovators reported that their concern for the environment had encouraged them to pursue their innovation. Three others were motivated by their passion for a hobby. The two innovators from the civic-focused software companies were, not surprisingly, strongly motivated by their desire to create a fairer, more open society.

All of the innovators reported having to spend long hours developing and promoting their innovations, often in their own free time outside of their regular employment. However, having fun problem solving, learning new skills or exploring the potential of technology was cited in 8 of the 16 cases as a motivating factor. In three cases the innovators were already expert programmers who were, through the innovation process, exploring the potential of new software tools. In one case, the innovator wanted



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to create an application in order to learn how to program for the Apple iPhone. He chose to develop an application that provided live status updates for the London Underground in response to his frequent commuting problems. In another, the innovator was similarly seeking to practice a new skill, in this case creating a website for the first time. He was a passionate train traveller and this led him to create a site showing how to travel within Europe by rail.



"...  
part of the idea  
was that by offering in-  
formation about, say driving...  
you'd get car visitors who would  
then be exposed to bus information  
[and cycling] and hopefully ...they  
would start using those"

Toby Lewis, [bristolstreets.co.uk](http://bristolstreets.co.uk),  
March 2011



"I  
don't really care  
why people are walking  
as long as they are, and I don't  
care what motivates them to walk.  
I just think if there's a site and more  
people are walking its good for them  
individually, and it's good for soci-  
ety."

*Jamie Wallace, [walkit.com](http://walkit.com),  
March 2011*

## User Innovation Case Study – Mission:Explore



Digital games are being harnessed to promote sustainable behaviour. Mission Explore exploits existing technology use for a dual purpose. It aims to encourage adults and children to travel sustainably, and become more involved with understanding their local environment. The 'mission' developed for Geovation encourages use of the National Cycle Network (NCN).

Mission Explore connects the virtual to the real world through location based games. These games are designed encourage families to go outside and explore places and collect information or images which are then uploaded by participants the website to gain rewards.

The innovation was driven by a pro-social motivation to get more people engaging with 'geography' in its widest sense. The social diffusion of Mission Explore is based around developing a user community of participants.

The key research message is that playing games together was always seen as an enjoyable part of

family life because they are fun and encourage spending time together. Families do find time for being together can be constrained by numerous other activities and schedules.

Mission Explore is still challenged by broader barriers to cycling. The key barriers to greater use of the National Cycle Network identified were:

- A lack of confidence on bikes (amongst adults, which could be passed to the children);
- Concerns for safety linked to the fragmented nature of the network, and the need to cycle for a distance on-road to access car-free portions of the NCN (related to the previous point);
- A lack of knowledge about how and where to cycle in the local area.

It is unlikely that providing challenges alone will encourage families that do not cycle much (or at all) to get out there and use the NCN, as such an approach does not address these deeper-seated barriers to cycling. However, the participant families suggested that gaining cycling skills could be integrated into the missions (e.g. using gears) that would help develop confidence in using a bicycle.



For families who are already experienced and confident in cycling together, it was seen as a welcome addition to their more routine experiences of the NCN routes in the area. All parents who were interviewed were enthusiastic about any efforts made to provide activities for them to do with their children.

In particular activities along the cycle route gave the journey a new purpose, shifting the idea that an activity is only at the end destination, for example cycling to the park. While adults are more likely to go for a ride for the pleasure of it, children are less likely, therefore the activities along the route could be seen as useful motivator.



### Introduction

Many creative ideas can be generated, but what do they need to develop from an idea into an end product or service? Some of these issues have been hinted at in chapter 4, where we looked at some of the innovators' skills and their ability to connect with other people.

This chapter takes a closer look at the practical elements that any new start up company might face – in particular access to finance and access to data. It considers some of the unique changes that have been enablers for transport related user innovations. Notably, as transport is about moving between places, geographic data is particularly important. Many transport innovations need access to maps and opportunity to link other information to a specific location on a map. Opportunities enabled by free data – open source or user generated have been key enablers.

User innovations are **small scale to start with** and then expand.

Internal resources of small scale operators may be **stretched or limited**.

Collaboration with **others with skills or information** can benefit the innovation process.

**Access to government**, policy makers or other key organisations is often essential for concept or product development.

**Small scale competitions** and funding opportunities can be a major benefit to early stage user innovators.

**The arrival of OS OpenData** sources enabled some innovators to move the innovation forward.

**Access to user generated maps** and other information are often valuable resources.

**Partnerships between established organisations and innovators** have generated new ways of thinking on both sides.

## User Innovation Case Study – London Cycle Map



Cycle maps are tools that can fulfil many different purposes; to prompt deliberation, enable journey planning and assist navigation while travelling. Cycle route maps can enable new cyclists, or new to the area cyclists, to evaluate what routes might be feasible as an alternative to either using the car, or over-crowded public transport systems.

London presents a particular challenge, with a tangle of potential cycle routes stretching across many London boroughs. The proposed London Cycle Map aimed to represent simple colour coded cycle routes across the city using a schematic 'tube style' map. Such a map could enable potential cyclists to see that cycling is feasible through a very simple format.

This case study demonstrates the need for contextual understanding and the ability to enrol multiple stakeholders in developing the solution to

a problem. It also considers issues of usability. Developing a useful cycling map has been a challenge for many UK local authorities and other stakeholders. Currently, cycle maps are designed in many different ways, with many different journey purposes and cycling skills in mind. However, there is some question about whether new cyclists are considered or consulted in cycle map design.

The other variable feature of the cycling experience is the actual design of cycling infrastructures, which can vary between neighbouring local government areas.

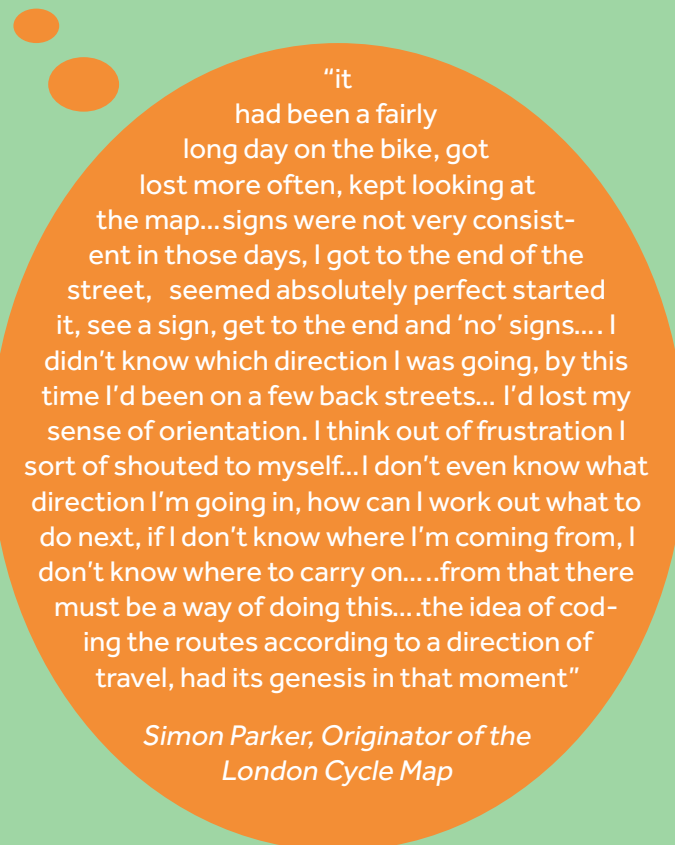
The relationship between information represented on the map, and what people encounter while cycling is important. If there is a difference between expectation and the real experience users will lose trust in the map's value.

Enabling a uniform approach in mapping and infrastructure requires multiple agencies to be involved to develop agreed design principles for the mapping and infrastructure standards. Getting everyone on board in the development stage and for longer term investment is a major challenge for any mapping innovator.

Paper maps still hold a niche value alongside the increase development and use of electronic maps.

However, electronic maps have greater flexibility in providing information for different cycling needs (e.g. quiet routes versus quick routes).

The idea of the London Cycle Map innovation came from user experience, directly experiencing the problem space and coming up with an idea that would benefit himself and others.



"it had been a fairly long day on the bike, got lost more often, kept looking at the map... signs were not very consistent in those days, I got to the end of the street, seemed absolutely perfect started it, see a sign, get to the end and 'no' signs.... I didn't know which direction I was going, by this time I'd been on a few back streets... I'd lost my sense of orientation. I think out of frustration I sort of shouted to myself... I don't even know what direction I'm going in, how can I work out what to do next, if I don't know where I'm coming from, I don't know where to carry on.... from that there must be a way of doing this.... the idea of coding the routes according to a direction of travel, had its genesis in that moment"

*Simon Parker, Originator of the London Cycle Map*

## Small scale innovations

Successful grassroots innovations often start small and then scale up (this seems particularly important given the complexity /size of the transport system). The internet as a virtually free resource had been vital to many of the innovators. Some innovations have been developed at almost zero cost, especially where the individual has sufficient technical experience to utilise software tools freely available via the Internet. Software provided by Google including Google Analytics (that provides information on website traffic) and Google maps had been particularly influential.

Even those with little software development experience had managed to exploit these resources to support their innovations:

"It is basically because of Google maps. Google maps has been the enabling technology. If Google maps didn't exist, we couldn't do it."

*Simon Nuttall, Cambridge Cycle Map*

"... moving home and having my office in my sister's bedroom, [parents] cooking for me, housing me, giving me any advice when they could...I spent that whole winter sitting in my sister's bedroom, trying to find a way of making this work, doing more research seeing if anything like this has been done before. Nothing like this had been done online before."

*Ali Clabburn, Liftshare*

*"So I went and had a look at Google Analytics, you cut and paste a piece of code onto each of your pages, and Google Analytics then tells you how many visitors you get, how many repeat visitors, where in the world..." Mark Smith, Man in Seat 61*

For some innovators, low living costs were crucial to progress the innovation. Here, support of family and friends was often vital.

Being able to start small, prove out a concept and then scale up, was one of the factors that differentiated between innovators who had been successful, and those who had a bright idea, but had not managed to move past this point. In the context of transport, 'starting small' may mean running a localised pilot, and showing that the idea works, before tackling the challenge of a wider scale implementation.

## Skills, knowledge and time

These three factors contribute to the innovation's development. Innovators may have some skills or knowledge but not all those that would be required to developing the innovation further. The two areas of skills noted were technical skills and business skills. Having sufficient time to devote to the innovation development was also either an enabler or barrier. A key barrier, that was noted with several innovators to successful innovation was lack of specific technical skills. Transport-related innovation typically involves interfacing with disparate data sources. Even if an innovator has a clear understanding of the user need for a service, they may underestimate the technological challenges involved in creating even a concept or pilot.

## Stakeholder networks

Grassroot innovation success is likely to involve engagement from multiple stakeholders. Gaining access, dialogue and support with stakeholders can be a barrier to grassroot innovators. Knowing who to contact can be difficult for people outside of the sector looking in on complex organisational structures. Where relationships have to be developed and sustained over time, change in personnel (e.g. civil servants, local authority employees, etc) can make be challenging.

## Investment and marketing

Interviews with innovators indicated that timely investment, regardless of the amount, was a key enabler to developing an innovation. In many cases, a timely investment of a few thousand pounds was sufficient to give a good idea the leg up it needed in order to progress.

Winning competitions and awards were also enablers, because they brought publicity, a stamp of approval, networking opportunities, technical or marketing guidance and, often, funding.

Free publicity seemed to be more forthcoming because of the altruistic nature of many of the innovations - i.e. they were targeted at the social problem of climate change at a time when sustainability was a prominent issue in the media.

## OS OpenData resources

Data is a resource that many user innovators in the transport context need to secure in order to develop their idea. The OS OpenData initiatives have focused on understanding how, when, and what data to release, and this organisation sees this process as a dialogue with end users.

Through seminars, workshops and innovation camps, it has developed a framework for the dos and don'ts of opening up of data (see box) that promotes proactive engagement in shaping opportunities and new ways of thinking and doing. The shift is from technology driven ideas to focus on new business models that benefit society and the economy.

In order to generate new thinking and new communities, OpenData Master Classes have been aimed at end users of data across all sectors of the economy rather than to geographic information professionals.

Likewise the OS has launched events such as Geovation and Terrafuture, which have directly connected to the topic of this research – user innovation for sustainable transport.

The partnership relationships developed by such events are part of the dialogue between supplier (how to use the data) and with the innovators/user communities (what is required). Such two way relationships enable effective communication about the geospatial products available, but also provided a space for user innovators to explore the broader context of the innovation beyond the data and how to use it.

## Key lessons from the OS:

- Create value – social or commercial
- Create communities and a desire to contribute
- Ensure data quality and innovate with government datasets
- Timely release of data is essential
- Communicate effectively with the public
- Help and guide communities with data use
- Promote innovative thinking and doing
- Give incentives to innovators and leverage to the power of the crowd
- Give small funds for big ideas to grow
- Share learning insights across sectors
- Broker relationships between policy officials and developers
- Focus on problems needing solutions not solutions looking for problems
- See the big picture



## User Innovation Case Study – Carbon Diem



The CarbonDiem (<http://www.carbondiem.com/>) smartphone application detects transportation mode, in real-time, by studying the speed, position and pattern of your movement. Each travel mode has its own emissions multiplier, which combined with the distance travelled, gives the carbon footprint for that journey. It was driven by the belief that charges based on vehicle type alone (such as

road tax or congestion charges) were inherently unfair or inaccurate and not based on actual use.

It can be used by individuals to make them 'carbon literate and numerate' and understand that they are participating in a larger process. It can also be used by corporates to overcome disparate management information systems so that they can understand their travel footprint across different geographies, for different groups of people, and make simpler and more immediate the way they collect the information.

CarbonDiem was created by Andreas Zachariah and is a clear example of the importance of competitions and of the right funding at the right time. Andreas graduated in 2007 from the RCA in Industrial Design Engineering. Carbon Diem began life as part of his final year project, and during that period Carbon Diem won £1000 as a runner up in the BSi Sustainability Award based purely on the principle of the idea. Andreas said "this is something I am absolutely passionate about, small amounts of money make a huge amount of difference. When I got that £1000 from the BSI, and I was in college, had been out of work for two years, and funding everything. A thousand pounds went a long way!". This was followed by a 2007

award from Galileo Masters (the 1st app to get one). This led to a position in the European Space Agency's incubator in Noordwijk, Netherlands, and in late 2009 the team formed a consortium with 3 other organisations to run a 28mth £830k Informed Personal Travel project for the Technology Strategy Board. This facilitated in building the service to commercial readiness and critically working with an enterprise organisation to test and evolve the service. Creating a B2B service is markedly different to a B2C as they are risk adverse and any less than perfect performance is not tolerated.

Finally in 2012 CarbonDiem was launched at the Mobile World Congress in Barcelona and by the summer was able to count the BBC and BT as clients.



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## New geographic data sources

There is often a need for geographic data (maps) to support transport related innovations. Official geographic data (e.g. from the Ordnance Survey) has been expensive to buy. Alternative free geographical data sources have emerged for use by innovators and user groups as a cost effective resource that has equal authority.

For example, Open Street Map (OSM) - <http://www.openstreetmap.org/> - is a new source of map information that is open source. It is created by interested amateurs, and is available for anyone to use. The level of data content, accuracy, and quality has been improving and can be on a par with that produced by professional mapping organisations. More recently commercial companies (e.g. Navteq, TeleAtlas and OS ITN) have been using OSM as a source and have contributed information. The commercial use of OSM is likely to drive up the quality of the data, and incorporate new data sets in the foreseeable future.

Other specialist interest groups also put together user volunteered data from multiple sources (mashups) which provide specific information for the interest group (e.g. Kayaking). These mashups

are highly specialised, and as they are user-group focused and generated; they are frequently up-dated in response to fast changes in the environment. They often are focused on specific geographic locations, enriching small areas with high levels of detail. Careful addition of volunteered geographic information (VGI) to professional geographic information (PGI) can enhance the perceived data quality by users, by giving it greater authority and by being more up-to-date.

However, to create high quality volunteered data, getting enough people to contribute data is essential for data coverage, quality and timeliness. Data communities underpin this process.

## Summary/conclusion

User innovators in the transport arena face similar challenges as other start up companies around managing personal resources and securing external resources.

Access to geographic data, such as maps or transport or other information with a location marker has been crucial to many of the innovators associated with this project. Notably, having access

to data for free is an enabler for small scale innovators working within a tight budget.

It is important that all data is high quality so that users of the innovation or information trust the information.

Much of the new data has come from new groups or communities. The following chapter takes up the concept of communities.

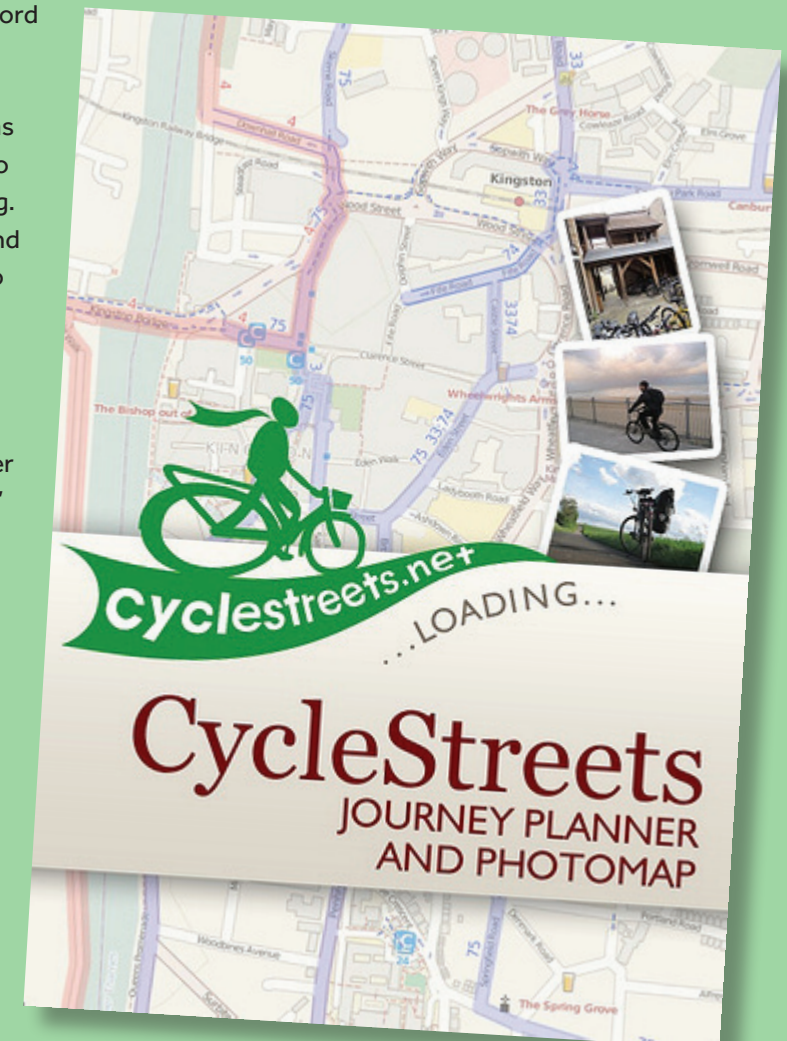
CycleStreets is a UK-wide cycle journey planner system, which lets you plan routes from A to B by bike ([www.cyclestreets.net](http://www.cyclestreets.net)). It is designed by cyclists, for cyclists, and caters for the needs of both confident and less confident cyclists. The system was created by Simon Nuttall (lead developer) and Martin Lucas-Smith. Both are regular cyclists based in Cambridge, who have been involved with Cambridge Cycling Campaign for many years. CycleStreets is run as a company (on a not-for-profit basis) to manage incoming funds.

The success of CycleStreets is dependent on an enthusiastic community that contributes. CycleStreets uses map data from ground-surveys conducted by volunteers, who add their data to OpenStreetMap (OSM). OpenStreetMap is like a 'Wikipedia of maps'. Although not all areas of the UK have full coverage yet, areas are being completed rapidly. Southern areas of the country, as well as larger cities and towns, currently have the best coverage. Areas like London, Cambridge, Edinburgh and many more have incredibly detailed coverage, rivaling other sources of map data.

Anyone can contribute by adding map data to OpenStreetMap, at a variety of levels. Most easily, you can go to the OSM website and (after

registering, free) click to add points of interest (e.g. a bike shop). At a more advanced level, if contributors have a GPS device, they can record road and cycle route data from their riding and, on return home, upload this to the OSM website, adding collected information such as road name and type. The community can also contribute by fixing any errors in the data (e.g. a one-way-street marked the wrong way), and CycleStreets have a group of volunteers who handle route problems and correct map data where necessary.

The people behind CycleStreets are now taking community engagement a step further in their new campaigning portal 'CycleScope' – see elsewhere in this report.





### Introduction

Community is central to bottom up innovation. Communities are enablers to the emergence, development and diffusions of innovative ideas. Identifying how different communities surrounding bottom up innovation in the transport context are part of the innovation process is essential for future innovators and those shaping resources to help an enterprise culture.

Participation in any community demands a relationship of giving, as well as taking, for the good of the community, thus such community groups associated with innovation may be indicative of the emergence of a new 'value ecology'.

The challenge for transport related innovations appears to be engaging travellers into new community-orientated practices and interactions mediated through ICTs, where there are fewer existing social ties. However, there are also many opportunities through enthusiast and interest groups for developing new collaborative practices that develop creative ideas into user or grass roots innovation.

**Communities define the innovation:** they may support the groups' interest or hobby, or engage collective activism to challenge the establishment.

**Open source user generated data** can support innovation.

Data contributors are **driven by altruism** rather than commercial gain.

Some innovations are **reliant on communities** to support good reliable information.

User generated data **has community value and is trusted.**

Other innovations are **reliant on engaging a group of users** for the success of the service or product.

The diffusion of user innovations is equally **reliant on users promoting** the service or product as any other innovation.



## User Innovation Case Study – FixMyTransport

[www.fixmytransport.com](http://www.fixmytransport.com) demonstrates the willingness of individuals to contribute data and engage in community campaigns in order to improve a public service. FixMyTransport is, as its name suggests, all about fixing problems with public transport. It is a website (also compatible with smaller mobile devices), that enables members of the travelling public to report irritations with public transport. Problems that are logged via the website are automatically routed through to the problem owners – for example the local council for vandalised bus stops, or the regional train operator for issues to do with train services. Other individuals are able to join the original campaign, and the problem owners can then respond via the website.

FixMyTransport is developed and run by mySociety, who are a UK charity. FixMyTransport was initially launched early 2011, and then re-launched as a fully mobile responsive website in August 2011. During the first year, over 2,000 communications have been sent to transport operators. The popularity of mobile access is clear - within the first 3 months over 65,000 people had accessed the site using the mobile interface, and the proportion of mobile users continues to grow – up to 450,000 accesses by October 2012.

FixMyTransport is much more than just a reporting tool – it is seen by mySociety as one of a number of initiatives to help empower the citizen within a democratic society. The power of geo-locating individuals together in a common local cause has also been demonstrated. In the week after a feature was added that enabled individuals to browse nearby problems, 74 people joined existing campaigns, versus 39 who created new ones. This was in direct contrast to how people had behaved before effective geolocation was added.

FixMyTransport is aimed particularly at the individual who is not currently actively engaged in community campaigning. It is about giving a voice to the 'little person' and enabling them to feel that they can play an active role in improving services run for the public.





## Data generating communities

Volunteered geographic information is reliant on communities who will collect, up-load and edit data. Some of these communities will be virtual, as with Open Street Map (OSM), where there is an online collective goal. Others may link face-to-face group participation with virtual communities. Either way, local information is brought into a global arena, which can be shared and used with anyone with access to the internet.

The aspiration of OSM has changed over time. Initially it set out to map roads, railways, rivers and parks. OS Open data and detailed Bing aerial imagery have provided resources to take this initial aspiration further and provide an equivalent to OS MasterMap. However, to achieve this level of detail requires a continued community of volunteer mappers, who are willing to give their time and skills for the common good.

Shaping communities of volunteer data generators based around an innovative idea may not always be straight forward. The research demonstrates that:

- individuals may not fully grasp what the innovation requires in terms of data contributions

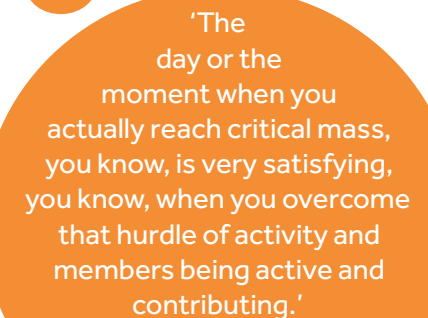
- the technological interface may not be user friendly therefore creates a barrier to contributions
- individuals feel less inclined to volunteer data for commercial gain.

Yet the sense of community, altruism, and personalised acknowledgement demonstrating value of contributions, all contribute to shaping data generating communities. Building a good relationship between the innovation and the community of participants and users is essential in reducing barriers.

Activist and interest communities may have more of an understood stake in the goal of the innovation. User generated data can be central to the development of an innovation. In particular there needs to be a critical mass of data to support the innovation's development to market. This is demonstrated by transport-focused volunteered information website WheelMap (<http://wheelmap.org/>) which only became possible as a viable and powerful access information tool once the open source/ volunteer produced map upon which it is based reached a level which described the geography of the given region to a relatively high precision. Importantly, such volunteered information portals

are only now reaching the maturity and critical mass required for such projects, opening great potential for future lead users and entrepreneurs to exploit in new and exciting ways.

There are two types of relationship between data producers and innovators. The first is where communities have a vested interest in the success of the innovation, and will support and encourage their members to do so. The other is for the innovation to reward the individuals contributing data, and that may be delivered as having fun, financial gain, or experiencing improved travel services.



'The day or the moment when you actually reach critical mass, you know, is very satisfying, you know, when you overcome that hurdle of activity and members being active and contributing.'

*Lyall Cresswell, Courier Exchange*

*'...  
once a system  
like this is available  
which is actually using the  
data, it creates the incentive  
for people generating the data to  
improve the quality of that data,  
so there is feedback, there is a  
loop...'*

*Lyall Cresswell, Courier  
Exchange*

*Yes,  
yes, as more  
data goes in, it  
gets more popular.'*

*Andy Allan,  
OpenCyclemap*

## Monitoring OSM

ItoWorld produced a tool called OSM Mapper which is able to monitor the daily nature and extend of changes to OSM over time.

ItoWorld has produced a series of visualisations based on this tool which are available at <http://www.flickr.com/photos/itoworld/>

*'It  
is basically  
people who are  
willing to contribute  
their ideas to a project  
if they think it is in the  
community's interest'*

*Matt Lerner,  
WalkScore*

*'There  
is one guy who  
has basically added the  
whole of Wolverhampton  
by sitting there and patiently  
drawing the map. He told me it  
was addictive...''*

*Simon Nuttall, Cambridge  
Cycle Map*

*'we  
had one guy  
down in Kent who  
had done several hundred  
kilometres of National Cycle  
Route and had diligently put all  
of that on to OpenStreetMap  
without having any feedback  
loop from it.'*

*Andy Allan, Open  
Cycle Map*



Cyclescape ([www.cyclescape.org](http://www.cyclescape.org)) is an online campaigning toolkit created by the people behind CycleStreets, the UK cycle journey planner.

Cyclescape provides highly tailored support for campaign groups and their members. It enables cyclists to share information, discuss proposals and appreciate the implications of infrastructural changes on their own cycling activities. The tool combines a familiar individual 'issue and discussion thread' mechanism with a sophisticated user profile setting tool that allows users to define their own cycling activities (places and routes) and then see proposed changes (e.g. new planning proposals and junction changes) on a map.

The users of traditional internet-based discussion forums based on email distribution lists frequently find they receive too many postings that are not relevant to their interests. The developers of Cyclescape hope to overcome this problem by enabling the geographical filters to ensure that members only receive postings relevant to their cycling activities and interests. It is hoped that this innovation will enhance the user experience and result in more active involvement and more productive interactions. In principle, the interaction

could also involve the providers of cycling facilities (e.g. local authority officers) which might accelerate the campaigning process. However, this would involve a significant change in communication policy for some authorities.

In addition to tagging postings with location attributes, Cyclescape also supports multimedia attachments so that contributors can attach images and contextual documents. The underlying objective is to reduce barriers to information

exchange so that cyclists can detect a problem while undertaking a cycling trip, record it on their smartphone and then post it for others to view it with minimal delay. Cyclescape will also make use of data 'mashups' to provide enhanced information for campaigners. A current feature is the population of the map with locations of accidents involving cyclists. New planning application data is being added to the map automatically.

<http://www.slideshare.net/cyclestreets/cyclescape>



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## Interest communities

Interest communities, such as sports, are often a community in which user innovation occurs. The interest group no longer has to be coming together in the same space, but can be a global group facilitated by Web 2.0 technology, where ideas are shared for the benefit of the community.

The development of the mountain bike community is a good example, where participants share ideas of designs for bike parts and associated equipment through on-line communities. Such communities have given rise to the concept of 'Wikinomics'. Innovation in the transport context also incorporates innovation from 'interest communities'. In some cases there is overlap between 'interest' and 'activism' (e.g. cycling related groups). However, rather than only being a virtual group, the online presence may support existing interest groups, as with Cambridge Cycling Campaign, or support groups who use common spaces, as with the Kayaking community. Both these examples are interested in how users can support each other in using particular spaces (rivers, roads, etc) for the activity.

Often these communities use open source data like OpenStreetMap as a way of geo-locating the data generated by their own interest group.

## User produced information is trusted

Research with the Kayaking community for this project demonstrates that niche groups, like this one, favour products or information that incorporate volunteered geographic information from people who take part in the activity.

Here people producing data connect closely with the potential users of the data. They described the volunteered information as having equal footing with professional information. The reason for this was that volunteered information provides information on areas and topics not covered by traditional professional sources. An additional benefit of volunteered data to the end use was how it was able to describe the fine detail rather than (only) the big picture.

## Activist communities

Some communities emerge because they want to change the way something is done (e.g. using consumer power to influence travel providers), or change the way society behaves (e.g. changing travel behaviour away from the car).

There are a number of examples of activist groups generating an innovative product to support either lobbying or encouraging use of alternatives to the car.

## Activism prompts innovation

A clear example of this concerns the two members of the Cambridge Cycling Campaign who went on to develop CycleStreets, an online UK-wide cycling planner which also incorporates photos of things that need to be improved on the cycling network. This, in turn, prompted the Cyclescape tool; developed as a toolkit for local campaign groups to bring together all the resources needed to push for change (e.g. photos, cyclists' views, and local planning information). Both CycleStreets and Cyclescape are included earlier in this report as case study innovations.

MySociety is another activist community that has embraced the 'power of the crowd' to push action from transport suppliers and local authorities – see case study profile earlier in this report.

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## Generating communities of users

The success of innovation is its diffusion into society. Champions of innovations are often lead users, but with transport related innovations these may be people with a specific stake in creating change. Harnessing the right people to champion the user innovation in its local or niche context can impact on the diffusion of the innovation.

In the example of myPTP by Liftshare.com the research demonstrated that key organisational personnel assumed the mantle of the innovation diffusion across the workplace.

Social networks are important to the diffusion process. In particular, where an innovation is built around collaborative social practices then a community of engaged users is necessary to ensure the success of the innovation. For example, for the telephone to be a social success, it required increasing numbers of people to be joined up to the telephone network.

The types of transport related innovation that are dependent on user communities include any form of lift sharing or car clubs. There needs to be enough lift sharers in a given area to successfully find a match.

The use of collaborative gaming to encourage travel behaviour change also needs enough participants to make the game more interesting or worthwhile. Mission Explore is an example of using the idea of a gaming community to encourage greater use of cycling.

Even if the grassroots innovation is less dependent on collaborative behaviours, as with the above examples, engagement with the user community to develop and market their product is essential. Creating a community of users around the innovation was identified by Ideas in Transit as one of the most important factors in the success of a grassroots innovation. Grassroots innovators need to consider how they will engage with their user communities when developing their business plan.

The emergence of a community of users was a key enabler relating to both the creating and sustaining of an innovation. Some innovations were essentially exchange services where resources (e.g. lifts, parking spaces, van space) were offered by users to other users via the innovator's website. These services naturally relied on the existence of users with resources to share or trade in order to function. For other innovations, the contributions of users enhanced the data provided by the innovator(s) by

providing additional data (e.g. photos or map data) or highlighting inaccuracies within existing data (e.g. timetable changes). Although not always anticipated by the innovator, these contributions from users were an invaluable resource, particularly for sole innovators who singlehandedly would struggle to keep their products up to date or expand their scope without these contributions.

It was important that users felt that their contributions provided value for others rather than purely financial gain for the innovator. This was highlighted as a key advantage for innovators developing products outside of commercially-driven organisations. Conversely, it was a barrier for innovators who had initially developed a product or service for altruistic reasons, then sought to commercialise their product in order to provide an income stream to sustain the innovation

## User Innovation Case Study – Liftshare

Liftshare illustrates an established user innovated service that prompts a change in travel behaviour that impacts on carbon reduction, and reduces road and parking space requirements. It supports infrastructure management initiatives such as 2+ lanes and car share spaces in car parks. Its success comes through the social diffusion of the idea to sufficient numbers of people so that successful liftshare matches can be made. The power of the crowd is demonstrated here by consistently increasing numbers joining and creating a substantive change to travel behaviour. [www.liftshare.com](http://www.liftshare.com) was launched in 1998 by Ali Claburn and has since grown into a small company. Liftshare provides an online service that facilitates journey sharing between individual users, as well as providing separate services for businesses, organisations and events.

The public liftshare scheme has over half a million registered users, with registered journeys having, on average, over 30 matches. Alongside this, there are also 1,327 privately run liftshare schemes for a number of businesses for their employees. Liftshare users can sign up to both the public and a private scheme or just one depending on their needs. Individual users first enter their details about the journey they want to share and then wait to be

contacted by other users or they are notified of potential matches which they are able to contact themselves. They can then search for further matches or other journeys that they could share. Consequently, the more users there are, and the more geographically spread they are, the more likely it is that each new member will find a partner to share lifts. It illustrates the need for some form of collective community in order for the lift sharing to work, but it is different to the type of shared community around a hobby, sport or campaign. It is about brokering shared needs.

Ali Claburn stated that he does not expect people to keep coming back to the site as hopefully it fulfils the solution to their problem: finding one or two people to share for a regular journey over a sustained period of time. It is intended that behaviours will change as people realise the social, environmental and financial benefits that individuals receive. Currently an average member will save £987 and 1 tonne of CO<sub>2</sub> each year through the scheme.





#### Introduction

The report started of talking about the wider social context of transport and ICT use, and changing travel behaviour.

Even though user innovators have come to their idea through experiencing a particular problem, they still need to engage with the users of the product or service under development.

In this chapter the role of the user is considered further.

User innovators **design for themselves** based on their experiences.

Funding processes like Geovation can assist innovators **thinking more about real problems and the user**.

Niche markets where **the user is the designer** work well.

It is sometimes **difficult to establish who users are**.

**User generated data is trusted** in specific communities because it answers detailed user needs.

## User Innovation Case Study – MyPTP

Workplaces are facing the challenge of sustainable auditing and reducing areas of land dedicated to car parking. Providing a bespoke travel information service enables employees to evaluate the full range of alternatives to the car for accessing the workplace.

MyPTP is a web-based tool developed by Liftshare, which combines data for public transport, car-sharing, walking, cycling and car routes, to generate personalised travel plans (PTPs). It is rooted in a real world problem that serves the interests of the organisation and the individual. It is an excellent example of where ICTs can shape decision-making about travel, and has been able to take advantage of new open data sources.

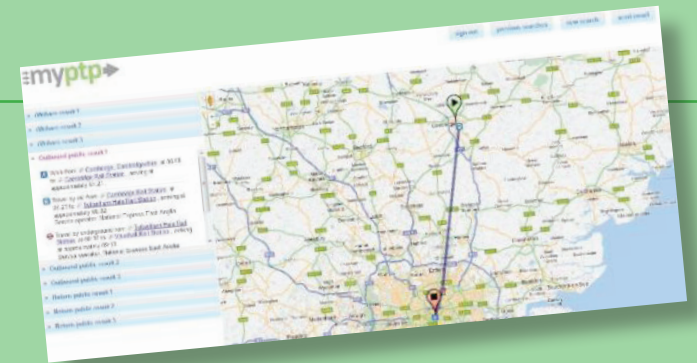
Research conducted with users during the piloting of myPTP in three organisations highlighted challenges for the developers regarding the social context of journeys. In particular, myPTP offers A-B information which is best suited for those people who do not need to complete other activities between work and home, or those with constraints on travel time.

In addition, staff who are involved in change management, such as when an organisation moves

location, saw myPTP as an effective tool for helping employees, often championing its diffusion into workplace practice.

MyPTP stimulated the highest degree of consideration of non-car travel options among travel plan recipients in a pilot organisation which was about to move office location. This serves to highlight that travel information is most effective in encouraging behaviour change when deliberation is already being prompted by external factors, rendering the information particularly salient.

The ways in which different elements of the information are presented within a travel plan can create different degrees of salience for different people, depending on congruence with individual concerns and personal values. Although both health and environmental concerns were raised by interviewees as salient factors in decisions about modal choice, the factor considered to be most relevant for most people was the relative cost of travel by different modes. There was broad consensus that anticipated financial benefit to the individual was the factor most likely to encourage modal shift, and this information should be given greatest prominence in the travel plans.



The pilots demonstrated that innovators need to have an understanding of the specific context of the problems that shape user needs, in taking an interactive approach to the innovation design. In addition the research adds to the evidence that information can play an important role in encouraging people to reduce their single occupancy car use, but only in confluence with other supporting (contextual) factors.

Finally, the 'opening up' of Transport Direct data by DfT became a key enabler for this innovation, providing an example of policy facilitating the creative use of data by an innovator to build a tool in response to a defined user need.



## Problems seeking solutions versus solutions seeking problems

GeoVation® emerged as an opportunity for the Ideas in Transit partner organisation, the Ordnance Survey, to support an innovation competition that would bring geo-spatial data to aid responses to transport problems.

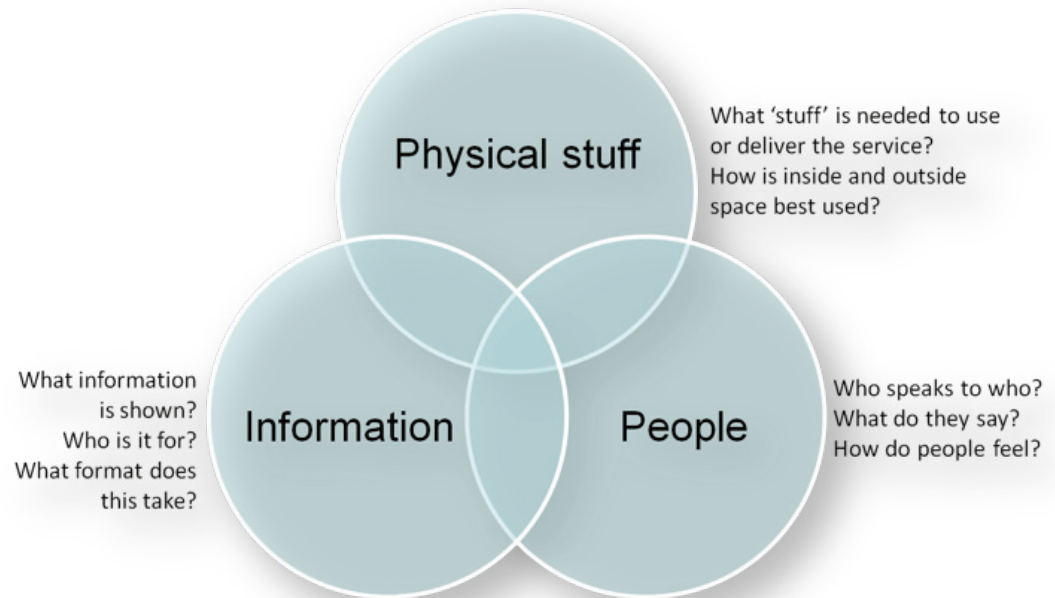
Insights from Geovation demonstrated that having geo-spatial data and an idea of how to use it does not necessarily produce innovations responding to real world problems. Instead solutions are lead by the data.

The GeoVation process pushed innovators to reflect on the 'innovation formula'. This formula argues that innovation has to bring together problems and solutions in the service or product design.

The diagram opposite was used to help the innovators develop their ideas for prototyping. The question prompts innovators to reflect on key questions that ensure there is a social relevance, and users are engaged in the product or service development.

## INNOVATION = PROBLEM X SOLUTION X EXECUTION

The Geovation winners are showcased in this report, but not all have progressed all the way from the competition idea to a commercially successful product. They are still in the process of being developed.



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## Understanding users needs

Defining and framing of the problem space is a key aspect of creativity - the more time a designer spends defining and understanding the problem, the more likely they are to achieve a creative result. All of the innovators interviewed by the project showed detailed understanding of their chosen problem space, in the main, because of their own personal experience, but often because of dogged determination to find a solution to a problem fuelled by passion for a cause or interest. Personal immersion in the problem space was also, in most cases, accompanied by a real desire to provide value to others:

*"I have been travelling by train since university days, going on Inter-rail every summer, tootling around, it was just like falling off a log... it is something I know how to do... So, starting with this gap between what I knew how to do and how difficult it was for other people to do it... I have really set out to talk people through it step-by-step in simple, logical steps saying this is how you get there, this is how you get back, this is roughly how much it will cost, and this is how you get the tickets, and this is what it is like"*

Mark Smith, *Man in Seat 61*

*"It has come about as a consequence of me being an end user. It is the classic open source 'scratch and itch'. I wanted the map personally, and I knew what I wanted the map to show"*

Andy Allan, *OpenCycleMap*

*"In terms of the user, what they want is basically the fastest or the quietest: this roughly corresponds to confident cyclists who are happy to use fastest routes which tend to be busier and more trafficked, versus less confident cyclists who are much more interested in having a pleasant, quiet route and don't want to deal with traffic. I always think the example is me versus my mum"*

Martin Lucas-Smith, *Cambridge Cycle Map*

*"It is pretty rare that somebody suggests something, a feature that the team hasn't thought of, since you are living and breathing the stuff. But it definitely helps prioritise which features you should do next"*

Matt Lerner, *Walk Score*

Being small can give a software developer an advantage over larger organisations when seeking to respond to user needs as they can receive feedback directly from users rather than filtered through customer service or marketing departments. The Apple iPhone application developer described how he could easily amend his software and re-release in response to user needs:

*"So it [the app store] makes it very, very easy for independent developers and in fact, it really favours them because they can move quicker than larger organisations and be more responsive to users' needs"*

Malcolm Barclay, *London Bus*

## User involvement

Reflecting the nature of user innovation, our research with established innovations determined that the innovators were first and foremost concerned with providing a good service to their users, rather than making a profit, and as part of this they were interested in gaining an in depth understanding of their users. However, their engagement with users was limited by available resources (for Bristolstreets and Cyclestreets in particular). Further, all of the

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innovators talked about their concern at 'hassling' users for feedback. Despite this concern, with the exception of two cyclestreets.net participants, all of the users interviewed indicated that they had received little or no direct communication from the innovators and, with the exception of www.walkit.com users, the majority could see the benefit of more, particularly if it included requests for feedback.

The innovator's fear of alienating the users by providing too much information or asking for feedback too regularly suggests that the innovators were basing development of the sites on user feedback, but also on a 'try it and see' approach. More widely it can be said that this is not unusual in the context of small scale business where there is a lack of resources to carry out the complex research necessary to fully understand user needs, and in the case of these innovations it would appear to have been so far successful. However, such an approach also risks getting it wrong and either leaving users dissatisfied, wasting what resources are available on facilities that no one utilizes, or missing out on developing resources that people want.

In terms of lessons for other user innovators, the majority of issues and plans for development are specific to the context of each innovation, but it can

be highlighted that both Bristolstreets and Liftshare have struggled to gain support from central or local government due to a lack of trust in the innovations. It is therefore suggested here that they, and other user innovators, may benefit from finding (formally or informally) a way to share knowledge and expertise, as well as lobbying for more central and local government support and funding. By combining efforts and experience/skills in improving their sites they could save on resources, as well as reduce the chance of mistakes. Certainly in the interviews with innovators, comments were made to suggest that they are willing (or have already) sought advice from other user innovators and have enjoyed this process.

### **Lessons for the user-centred design community**

Investigating the role of end-users in the development of grassroots innovations threw up some interesting findings for the user-centred design (UCD) community. The project discovered that end users contributed to innovative bottom-up development in a variety of ways but that the practices bore little resemblance to the principles and structured methods set out within conventional user-centred design processes. The innovators see

themselves as representative of the users and their immersion in the problem space and their focus is on developing a great idea and then enabling, rather than actively seeking, user feedback. They can quickly, and with limited resources, develop and launch services to a wide audience that are sufficiently usable. These services are then iterated based on user feedback, often from a community that already exists or which forms around the innovation, and these iterations typically enhance, rather than diminish their reputation.

This agile approach to user involvement offers both opportunities and challenges for the domain of user-centred design. Currently grassroots innovators tend to engage with niche markets than can be well understood by the 'user as designer'. This may not be the case where grassroots innovations are targeted at a more heterogeneous community, where a more diverse, less 'self-selecting' community need to input to the development. Nevertheless, user-centred design practitioners might also learn from the more 'agile' approach to user engagement and design iterations exhibited by the innovators and incorporate this in their methods.

## Co-design to spark innovation in travel planning

The importance of public (or 'end user') participation in travel planning in the UK has long been recognised as a result of policy shift as well as in more recent DfT guidance. Published research into the process of public involvement has been limited, but the one study that has been conducted found that traditional modes of information provision and user involvement dominated and that, although some more 'interactive, deliberative' approaches were being experimented with, these were infrequent. This resulted in a lack of user involvement in problem identification or objective setting, a focus on 'special interest' groups to the exclusion of 'ordinary people' and, where users were involved, apathy, poor turn-outs, domination of groups with specific agendas, negativity and entrenched views.

Approaches are therefore needed that not only provoke and encourage innovation but also encourage the wider involvement of users in the development of sustainable transport solutions. Co-design is increasingly viewed by both public service and commercial organisations as a route to achieving both of these goals. It provides opportunities to identify the nature of the problem being addressed and to unveil unexpected issues that a more top-

down approach would be unlikely to anticipate in advance. Users are treated as 'experts of their own experience' (a philosophy which matches the involvement of 'lead users' in user innovation) and play a much larger role in understanding the problem, developing knowledge, idea generation and concept development. However, little empirical research has taken place to assess the impact of such creative processes upon the generation of ideas by 'ordinary', as opposed to 'lead' users.

Using co-design as a method by which to develop effective public service provision is not new but its application to idea-generation in travel planning (particularly sustainable behaviours) is little researched and the benefits rarely quantified. The project conducted a study which attempted a quantitative comparison of ideas generated by a co-design approach compared with those generated by more traditional techniques (questionnaire) in terms of the number, originality, and type of ideas generated by each method.

The outcomes were that the co-design approach generated: (i) a *greater number* of ideas in total, (ii) a *similar level of innovativeness* in terms of interventions previously seen in the UK or abroad; (iii) a *greater level of innovativeness* at the local level (i.e. the particular workplace setting); (iv) *different*

types of ideas, specifically a greater number of ideas relating to interventions that focused on:

1. 'Knowledge and Awareness' (specifically information that was comparative or personalised, experiential promotional/ awareness-raising, real-time or social)
2. Structural Factors (specifically organisational incentives/disincentives, organisational policy or town policy).

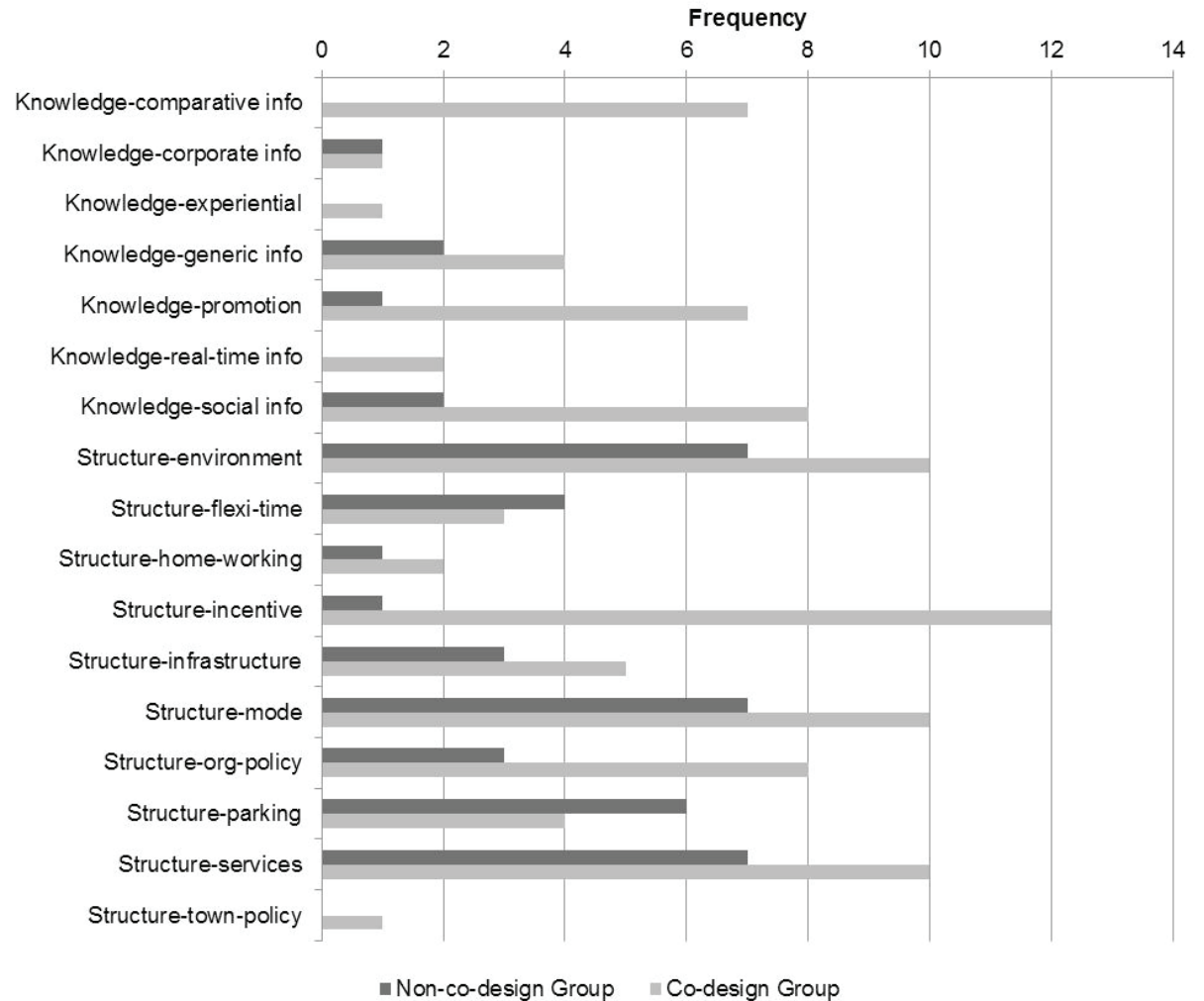


Two of the activities of the co-design group: story-sharing and generation of 'how might we..?' statements that were used within the idea generation stage.



Co-design thus offers a potentially new way of generating ideas to encourage more sustainable modes of travel by encouraging the exploitation of rich user knowledge through the use of collaborative design techniques. This could enhance the 'lead user method', often employed within NPD (new product development), and could be a fruitful first step towards sparking more innovation amongst the 'ordinary' user.

One of the ideas generated through the co-design process in this project was one of providing personal travel behaviour information as well as comparative information across staff members. This idea was taken forward as an innovative design intervention in the project. Initial results indicate that visualising personal data (e.g. numbers of short/long journeys, equivalent time by other modes and equivalent calorie consumptions) can have an influence on attitudes to car use for short journeys (within the staff community engaged in the original co-design, idea generation) therefore 'closing the loop' on the innovation process for idea generation to impact.





The Ideas in Transit project proved to be a unique and fruitful collaboration between four organisations spanning expertise in travel behaviour, user-centred design, entrepreneurship, geographic data, data visualisation and innovation.

We could not have fully anticipated at the outset of our project just how relevant to wider developments our objectives were to be and how much things would advance in terms of technology and data. We were not initially even confident of being able to find user innovations but facilitated by Web 2.0, user-generated data and open-data they appear to exist in abundance.

Going back to 2007 it was not uncommon to hear the sceptical view of the established players in the transport industry that such 'unofficial' data as generated by users and innovations built upon such data would be problematic in terms of quality and insufficient for the needs of their clients. By 2012 the world has changed. There is a need to embrace the reality that user-collaboration and innovation – the power of the crowd – is a force to be reckoned with. The sheer number of prospective user innovators and the potential agility they have in pursuit of advancing their ideas and innovations could suggest that the phenomenon will move from niche development in transport towards being a game changer. For the

immediate future at least it would appear that user innovations and established systems and services are co-existing in something of a complementary fashion. But this may not last.

User innovation and the innovators themselves in some respects possess unique characteristics that distinguish them from established approaches to innovation in the transport sector. However, what has become clear in this project is that whatever the form and source of the innovation, a well-grounded appreciation and understanding of user needs and behavioural responses is essential if innovations are to gain traction and build up a user base for growth. Put simply...

Innovation = Problem x Solution x Execution

It is also apparent that context matters. Demand for new services (from user innovators or others) relates to the familiarity and reliability of the transport system the user experiences. It may well be the case that in the coming years certain parameters of that system will change – affected by levels of investment, challenges in energy supply and environmental concerns. This may create a step-change stimulus for more co-operative behaviour in the use of our transport system – something which aligns very strongly with user innovation.

## • The Research Team

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### University of the West of England, Bristol

**Glenn Lyons** is Professor of Transport and Society at UWE and Associate Dean in the Faculty of Environment and Technology. His research expertise centres upon the role of new technologies in supporting and influencing travel behaviour and on attitudes towards transport.

**Tilly Line** is a Research Fellow at the Centre for Transport & Society, UWE. She is particularly interested in attitude and behaviour theory in the context of sustainable transport, including the ways in which people receive and share information via technology

**Juliet Jain** is a Senior Research Fellow at the Centre for Transport and Society, UWE, with a background in the social sciences. Her research interest is the social context of everyday mobility and technology use, and the organisation of time and space.

*With assistance from Graham Parkhurst, William Clayton, Ben Clark, Caroline Bartle, Henrietta Sherwin, Charles Musselwhite, Erel Avineri, and Steve Melia.*

### Loughborough University

**Tracy Ross** is a Research Fellow at Loughborough Design School. Her expertise is in the user-centred design of technology-supported innovation. Her current research interest is the role of technology in travel behaviours; particularly how grassroots innovation, crowd-sourced data and behaviour visualisation might influence users.

**Andrew May** is a Research Fellow at Loughborough Design School. His over-riding research interests include: user centred design of mobile products and services; user 'value' and its relationship with product/service innovation, user evaluation, context-aware computing, and research methodologies.

**Val Mitchell** is a lecturer in Loughborough Design School. Her domain focus is mobile communication and other interactive products. She is particularly interested in the communication of user needs and requirements to designers.

*With assistance from Christopher Parker, Nirmal Morjaria, Ruth Sims, Edward Elton, and John Richardson.*

### Ito World Ltd

**Peter Miller** is co-founder and CEO of ITO World Ltd a company specialising in the collection, management, analysis and presentation of complex transport data. Previously Peter was CTO at ACIS, a company specialising in real-time public transport information systems.

*With assistance from Eric Matthews.*

### Ordnance Survey

**Chris Parker** co-founded and runs GeoVation, Ordnance Survey's innovation network. Chris is a geographer and land and water resources scientist with over 25 years experience developing innovative uses of geography and geographic information at home and overseas within public, private and community sectors. He is a strong advocate of using open, collaborative and innovative approaches in generating social, economic and environmental value.

*With assistance from David Overton, Ian Holt, Viv Alexander and Luke Hampson.*

This report seeks to reflect the breadth of learning and insight that has been achieved across and throughout the project. It is a synthesis of a much larger body of work. The project team has made available on its website - <http://ideasintransit.org/> - a full directory of the project activities and associated public domain outputs with weblinks and full-text downloads of documents where appropriate.

## • Acknowledgements

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The project team gratefully acknowledges the **Engineering and Physical Sciences Research Council**, the **Department for Transport** and the **Technology Strategy Board** as its sponsors.

The Technology Strategy Board is a business- led executive non-departmental public body, established by the government. Its role is to promote and support research into, and development and exploitation of, technology and innovation for the benefit of UK business, in order to increase economic growth and improve the quality of life. It is sponsored by the Department for Innovation, Universities and Skills (DIUS). For further information please visit [www.innovateuk.org](http://www.innovateuk.org).

The project team also very gratefully acknowledge the enthusiasm and goodwill of the many user innovators it has engaged with in the project's lifetime.

The views expressed in this report are ultimately those of the project team.