Final Report prepared for 'Ideas in Transit' WP34 (GeoVation)

User participation in the design of innovative information services to influence travel behaviour: the 'myPTP' case study

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Introduction

*Lift*share was awarded funding through the GeoVation Challenge in 2011 to develop an innovative web-based tool – 'myPTP'- combining data for public transport, car-sharing, car routes, walking and cycling, to generate personalised travel plans[1]. The initial target market was large organisations wishing to provide their employees with information on alternatives to single-occupancy car-use for their commute to and from work. The idea was innovative because it combined the principles of personalised travel planning (PTP), which has been found to be effective in changing travel behaviour but is resource-intensive, with the time and cost advantages of instant, online trip planning. The planned tool was also innovative by virtue of providing information on all the main transport alternatives from one postcode to another, including car-share offers, in a single step, thereby eliminating the need to draw on multiple information sources.

This report describes the outcomes of the myPTP project and reports on research by UWE into the innovation process, as part of the GeoVation strand of the 'Ideas in Transit' project. It is structured in two parts. Part 1 summarises the development and piloting of myPTP until the end of the project period (March 2012) and reflects on the innovators' accounts of this process by drawing on three interviews with *lift*share: one undertaken early in the project, another at its midpoint, and a final one at its conclusion. Part 2 reports on UWE's wider research, which focussed on the role of user participation and social context in the innovation process, as well as the potential for myPTP to encourage behavioural change in the organisations in which it was piloted.

PART 1 : MyPTP and the innovation process

1.1 Project overview

*Lift*share's vision for myPTP was to build on the successes of 'conventional' (generally face-to-face) PTP whilst: reducing the time required to generate and deliver a travel plan; integrating all modes of transport, including car-share; and allowing a travel coordinator (such as a travel planner) within an organisation to maintain continued communication with the travel plan recipients. The aim of the ongoing contact would be to inform employees of changes in transport services, to update them on local transport news such as fare discounts, and to request follow-up information on their travel behaviour. Travel plans would initially be generated by a travel coordinator on behalf of individuals within their organisation, and delivered automatically by email to these individuals - a process estimated to take under 5 minutes. Follow-up contact would be enabled by the capacity of the myPTP system to save the email addresses of those to whom a travel plan had been sent.

As well as making individuals more aware and better informed of a comprehensive range of transport options available to them for their commute, myPTP could also provide information to travel coordinators about the travel patterns and usual mode choices of employees - information which could help them to improve travel management at the workplace. This is because an employee's home post code, time of arrival at and departure from work, and normal mode of transport, is entered into the system in order to generate the travel plan, and this information can

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[1] Personal Travel Planning (PTP) is defined by Parker et al. (2007) as a "targeted marketing technique providing travel advice based upon personal trip patterns that seeks to induce voluntary travel behaviour changes in favour of more sustainable modes of transport." According to DfT (2008) PTP "encourages people to make more sustainable travel choices. It seeks to overcome the habitual use of the car, enabling more journeys to be made on foot, bike, bus, train or in shared cars. This is achieved through the provision of information, incentives and motivation directly to individuals to help them voluntarily make more informed travel choices."

be saved by the system (with due attention to personal data protection issues). There is a further opportunity for aggregated information about travel demand to be shared with local transport operators, to help them fine-tune services to meet demand more effectively. Thus, an aim of myPTP was to combine some of the benefits of face-to- face personalised travel planning with those of an online data management system such as *lift*share's existing car-share system: liftshare.com.

MyPTP was intended to be delivered in three different formats, with a distinct development phase planned for each. Phase 1, corresponding with the timescale of the GeoVation project, involved the building and piloting in three employer organisations of a '1-2-1' delivery system. This generally means that PTPs are generated by the travel planner in response to individual requests. Phase 1 was completed within the planned time frame. Secondly, a 'bulk upload system' (Phase 2) would be built to allow travel planners to deliver a large number of PTPs to employees 'en masse'. Finally, in Phase 3, a 'widget' would be built to sit on an organisation's website and be available for individuals to use independently whenever they wished. This would be more akin to an online journey-planning service. The tool was initially targeted mainly at two types of employee: new recruits, to ensure that they are furnished with information on all travel options for the journey to work, before they form a habit[2]; and existing employees whose habits the travel planner might wish to change.

Phase 1 was undertaken between October 2011 and March 2012 – also the time period during which the main phase of UWE research was carried out. During this period the 1-2-1 delivery system was built, involving the integration of data from Transport Direct for public transport and cycling; Google for walking and driving; and liftshare.com for car-sharing. Six pilots of the new tool were carried out; a city Council in northern England ('Council A'; 35 PTPs delivered), a University in the Midlands ('University A'; 36 PTPs) and a County Council in eastern England ('Council B'; 48 PTPs). Detailed feedback on the tool, and the PTPs produced, was obtained from the travel coordinator at each pilot site, and from employees receiving a PTP. This process led to a list of 96 action points to improve the tool, which were addressed subsequently by *lift*share*. Lift*share's key performance indicator (KPI) for the pilots was the delivery of approximately 50 PTPs at the three main pilot sites (79% achieved) in order to test the usability of the service and identify areas for improvement. There was also a more tentative aim of encouraging modal shift. A survey of PTP recipients at the main pilot sites, carried out by UWE (response rate: 46%; 55 respondents), found that 22% of this small sample were considering changing their usual transport mode for the commute, following delivery of the PTPs. Finally, an underpinning aim of the pilots was to hone myPTP into a viable product which organisations would be prepared to pay for. This process was still underway at the end of the GeoVation project. Plans for Phases 2 and 3 are outlined in *lift*share's final project report.

UWE conducted semi-structured interviews of approximately 90 minutes each with members of *lift*share in July 2011, November 2011 and March 2012, to explore the innovators'[3] perspective on the progression of the innovation up until the end of Phase 1. The first interview was with the *lift*share director; the second with the director, myPTP project manager and lead user; and the third with the director and project manager. The rest of this section describes these perspectives and reflects on issues raised within these interviews.

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[2] There is an emerging body of research in psychology that a 'life event' or 'change moment' such as moving house, or starting a new job have a significant impact on people's behaviour, especially travel. See for example Stanbridge et al., 2004; Lanzendorf, 2010; Beige and Axhausen, 2012.
[3] In the report, 'the innovator' in the singular refers to the director of *lift*share, whilst the plural 'innovators' refers to views expressed by more than one of the *lift*share interviewees.

1.2 Liftshare, myPTP and 'User Innovation'

The FITS project proposed a definition of user innovation as follows: "*the creation and application of an invention initiated by affected individuals that stems from user need or curiosity to address a problem or challenge within social practice*" (Jain et. al, 2008, p.ii). In this section we consider the extent to which myPTP might be considered a user innovation.

In addition to the specific aims of myPTP, outlined previously, the innovator articulated a more deep-seated ambition underpinning the innovation: to help solve a societal problem of complacency to travel behaviour change, by providing people with information about alternatives to single occupancy car-use and showing how this can benefit them as individuals, as well as society as a whole. This is consistent with *lift*share's expressed mission of encouraging and enabling more efficient use of the car.

> "*We are just about behaviour change, that's what we do. So we make sure we don't have a really powerful IT team to say what should happen". (Interview 1)*

Hence, the innovation is expressed as being driven by the problem, rather than by the technology, and is therefore broadly consistent with a defining characteristic of user Innovation: *"User innovation concerns problems looking for solutions as opposed to solutions looking for problems"* (Jain et al., 2008, p.iii). Although the innovator now conceives the 'problem' as being a wider social and environmental one, the original *lift*share concept (a system to link up potential car-sharers) was born of a very practical need: that of creating a low cost way for the innovator and his friends to travel to and from university. MyPTP was similarly conceived to solve a practical 'problem' which the innovator had identified some years ago:

> "*We had all the PTP projects in the sustainable towns, and a lot of money went into it, and they came back with some very good positive results, but I always felt that PTP was being done in a very expensive labour-intensive way with no real potential for long term engagement with the population." (Interview 1)*

Another aspect of the development of *lift*share and its products (and specifically myPTP) which coincides with the concept of user innovation is the way in which 'solving the problem' is described as more important than financial benefit (as a social enterprise, *lift*share describes itself as *"mission-driven rather than profit-driven"*):

> "*As a social entrepreneur, if the problem is solved by someone else I am very happy. It's not about making money, it's about solving the problem, but you need to make money to solve the problem". (Interview 1)*

The issue of how to 'make money' from myPTP was, however, a concern voiced by the innovator in the early development stage - a matter discussed later in this section.

Recent developments in technology, open source data, and social practice around the use of technology have undoubtedly served as 'enablers' for the myPTP innovation, both by making it technically feasible and by helping to create a potential demand. The innovator identified the availability of open source data, or inexpensive access to data, as crucial to the development of myPTP. Faster internet technology, particularly wireless communication, and the penetration of mobile devices (e.g. smartphones, tablets) also facilitated its development. Social media developments were believed to be contributing to a culture of greater knowledge-sharing, among both businesses and individuals. However, the innovator's narrative about the history and aims of myPTP provides a convincing argument that these factors were *enablers* rather than *drivers* of the innovation.

This is regarded as a key distinction between bottom-up user innovation, and top-down producer innovation. User innovations tend to be founded on a rich understanding of user needs, whilst producer innovations have a greater basis in the understanding of technological developments. The innovator holds that myPTP is rooted very strongly in the needs of potential users – particularly travel coordinators within employer organisations – and that frequent communication with these users, and responsiveness to their needs, have been vital to its development. The innovators described the process thus:

> "The tool has been skeleton-built as an idea, shaped by user feedback, thoroughly researched, and then developed, as opposed to the other way around, which has ensured the tool is useful and usable." (Interview 3)

The participation of users and the importance of social context in the potential uptake and effectiveness of myPTP were given detailed consideration in the UWE research, and are discussed in Part 2 of this report. In the case of myPTP, the innovator was not developing a tool to meet his own needs in the strict sense of user innovation, although this was true of the original lift-share concept (as mentioned above). Similarly, by the time that myPTP was developed, *lift*share was an enterprise with considerable technological expertise, albeit one in which the IT team was not 'powerful' in determining its direction. Hence, it might be argued that *lift*share was originally created as a user innovation, whereas myPTP maintains the spirit of the user innovation concept whilst being the product of a more mature (social) enterprise.

1.3 Reflections on enablers, barriers and challenges to the progression of the innovation

Enabling factors

In his review of eGovernment concepts, Millard (2009) made an observation *that "an important premise in many, though not all, of these (e-Government) initiatives is that tech communities are better able to make government data useful than the governments themselves."* As part of a new business model for eGovernment services he suggests the re-use of existing public sector information (PSI), some of which is already available but often spread across different authorities and databases (and not in machine-readable format). The development of applications that make use of public data is largely seen by him as a bottom-up, rather ad-hoc process which exploits creative talent, initiative and enthusiasm from outside government. However, Millard argues that governments and the public sector must enable and accept it, rather than attempting to block it, which often happens. The enablers (and barriers) associated with this process were of specific relevance to the myPTP experience.

As outlined previously, the availability of transport data was a key enabler for the development of myPTP, although, ironically, access to data was identified by the innovator in July 2011 as the largest potential barrier to development. At the start of the project, *lift*share had access to enough data to build the myPTP prototype, but there were gaps. The tool was originally planned to provide: information on public transport alternatives, using data from Traveline (the UK national public transport information service), to be obtained separately from each of six Traveline regions; car-share information from the *lift*share database; and car-driving routes from Google. The integration of walking and cycling routes remained an option which could be added later if the requisite data could be obtained. However, a key change occurred in the 'data environment' during the timescale of the myPTP project, which had a considerable influence on its subsequent development.

In July 2011, the Prime Minister wrote to Cabinet Ministers pledging to publish key national data sets, including those on transport. This included a commitment to *"working with the transport industry and data users to make public transport data open and freely available for re-use"* [4]. It made specific reference to Transport Direct, the government-led, national traveller information service, promising that *"All remaining government-owned free datasets from Transport Direct, including cycle route data and the national car park database to be made available for free re-use from October 2011"* (ibid.)*.* This proved highly fortuitous for *lift*share, which entered into a series of negotiations with Transport Direct officials in the summer of 2011, culminating in an offer from Transport Direct in the autumn to supply them with its comprehensive data set for public transport route-planning throughout the UK, thus removing the need to obtain data from the six different Traveline regions. Transport Direct also made its data for cycle route-planning freely available in November 2011, thereby offering the possibility of integrating cycling information into myPTP earlier than planned.

However, having made the offer to *lift*share, Transport Direct took longer than anticipated to deliver the data, which led to delays in the building, testing and piloting of myPTP. In July 2011 it had been anticipated that pilots would be held at six organisations in November. By November, the planned number of pilots had been reduced to four (plus an internal pilot within *lift*share) and postponed until January 2012. In the end, one internal and three external pilots were held in February-March 2012. The tool was subsequently piloted further with other employers and at a number of events.

The final part of the 'data access story' concerns the decision to integrate walking route data into myPTP from www.walkit.com. Although this had always been a possibility, *lift*share decided to push ahead with this in response to a need expressed particularly strongly by one of the pilot organisations. Due to complexity in the functioning of the application programming interface (API) provided by Walk-It, work on this was still on-going at the end of the GeoVation project period. In the interim, myPTP produced walking routes generated by Google.

Other enablers to the development of myPTP were identified by the innovator. Another technology-related enabler is the increasing market penetration of mobile devices and better wireless internet connectivity, which provide an opportunity for travel plans to be created on the move. Furthermore, the innovator considered existing travel information tools to be "outdated, clunky and slow", which creates a market opportunity for a more streamlined service which can provide information on all transport options in a single step. The innovator also referred to successful project management practices within *lift*share, including effective communication both within the team and with potential users, which suggests that this may have been another facilitating factor in the development of the innovation.

Factors enabling the potential *use* of myPTP relate to the funding environment for potential clients in local authorities, and specific 'push' factors for individual organisations. For example, since its introduction in 2011, many local authorities now have an opportunity to develop programmes to promote travel behaviour change through the Local Sustainable Transport Fund [5] (one of the local

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[4] *http://www.number10.gov.uk/news/letter-to-cabinet-ministers-on-transparency-and-open-data/*

Accessed 26/06/12.

[5] The Local Transport White Paper (DfT, 2011) argued that simplification of funding through LSTF and other mechanisms would provide local authorities 'greater flexibility in how they spend their funding, which is crucial if they are to deliver efficient and effective transport for their communities at a time of limited resources' (p. 29–30).

authorities which piloted myPTP had included within its LSTF bid a plan to adopt the tool). One enthusiastic potential client, which also piloted myPTP, had a particular interest because travel plans needed to be provided to all employees to facilitate an office move to a location with much reduced car parking availability. Others were interested in a tool to support corporate CO_2 reduction policies. Factors such as these, which are expanded upon in Part 2, were seen as converging to provide *lift*share with a market opportunity.

Barriers and Challenges

It was noted above that the innovator originally identified access to data as the biggest potential hurdle to the *development* of myPTP. However, it appears that through a combination of fortuitous timing, skilled negotiation with data providers, and ability to change technical direction during the project, *lift*share was able to use changes in the data environment to its advantage.

Potential barriers to the *use* of myPTP were also identified by the innovator, notably a possible lack of interest amongst users in learning about more sustainable transport options, let alone changing their travel behaviour. Having stressed that travel behaviour change is the ultimate goal, the innovator expressed a degree of realism about the limitations of a tool such as myPTP in achieving this on its own:

> *"We are very aware that you can't just provide information and change behaviours. Information can definitely help, but there needs to be a clear reason for it."*   (Interview 1)

Following the three main pilots, when a UWE follow-up survey amongst PTP recipients showed a modest change, or consideration of change, to more sustainable modes for the commute, the innovator expressed a greater optimism, albeit still cautious, about the potential of myPTP to contribute to behaviour change.

A number of additional challenges to the evolution of myPTP were discussed in the first interview. One issue raised by the innovator was the threat of competition from bigger travel information providers such as Google: *"So the whole business might change overnight. Suddenly the big boy decides they are going to do it".* The innovator was philosophical about this, arguing that the main consideration is that the problem gets solved, not who does it. However, it was also implicit in following interviews that *lift*share, having invested resources in the development of myPTP, wished to protect its competitive position to ensure that the process culminated in a product which it would be able to sell. The issue of how to 'make money' from myPTP was, in fact, a concern from the early development stage, when the innovators anticipated difficulties in determining a pricing model early enough in the process to engage potential client organisations in the piloting of myPTP. Although there would be no charge during the piloting of the tool, employers wished to know how much it would cost them if they were to purchase it afterwards, but for *lift*share this was partly a matter of gauging how much the market would bear. A pricing model which appeared acceptable to the early pilot organisations was, however, in place by the end of the GeoVation period.

As previously noted, user feedback in the pilots revealed a large number of areas where it was thought that the functionality of myPTP could be improved, although most points were relatively minor and did not lessen the generally positive response. *Lift*share was in the process of addressing these functionality issues at the end of the GeoVation project. However, one challenge seemed unlikely to be solved in the near future: the difficulty of obtaining ticket cost information from public transport operators, particularly the bus companies. The PTPs show, where possible, relative costs of the different transport options. This was thought by many to be one of its strengths, which could provide a behavioural 'nudge' to more sustainable travel choices by making the relative costs of motoring visible. It was recognised by both the innovator and the users who had raised this issue

that the integration of comprehensive cost information for local buses was unlikely to be achieved in the short-term.

To summarize, the major enablers and barriers that affected the progression of the myPTP innovation process, as perceived by the innovator, are associated with data accessibility (relevant travel data that is expected to be in the public domain and available for developers); (local) government funding; and project management practices of the innovator. While these do not represent the full range of enablers and barriers, the above are likely to play an important role in any future development and implementation of myPTP in the coming years.

PART 2: UWE Research

2.1 Introduction

Researchers in the Centre for Transport and Society at UWE carried out research on the innovation process in parallel with the Phase 1 development of myPTP. The aims of the research were:

- To explore the extent to which the innovators incorporated user-centred design principles into the development of myPTP, by observing the development process and the piloting of myPTP among potential users in three organisations.
- To explore innovator and user attitudes towards the potential role of myPTP in motivating travel behaviour change.

The project also follows the aims of the research programme 'Ideas in Transit', to promote the understanding, awareness and development of user innovations relevant to transport. In particular, we believe that the myPTP case-study may offer innovators and organisations going through the 'travel plan' process with several good practice points, and highlights the importance of contextual effects in the design and implementation of transport innovations.

In this part of the report we summarise the research questions, methods and main findings.

2.2 Research questions

The following research questions were defined:

1. Who was involved in the development of the innovation, how, why, when, and with what effect on the development of myPTP?

2. How did social and psychological factors influence the design and delivery of myPTP?

3. How was the potential role of myPTP in motivating travel behaviour change perceived by the innovator, the travel planners and the pilot users?

2.3 Methodology

A qualitative methodology (with a quantitative survey element) was used for this study in order to obtain an in-depth and interpreted understanding of the innovation process within its social context. Qualitative interviewing was used as the principle means of generating data through the accounts of different people involved in the process. The following semi-structured interviews were undertaken:

- Three 90-minute interviews with *lift*share ('the innovators') at the beginning, mid-point and end of the GeoVation project. The first interview was with the *lift*share director; the second with the director, myPTP project manager and lead user; and the third with the director and project manager. Interviews 1 and 2 were face-to-face, and interview 3 was by telephone.

- Six interviews of 30-45 minutes with travel plan coordinators in three organisations where myPTP was piloted (i.e. one pre-pilot interview and one post-pilot interview with the travel planner in each organisation). Two interviews were conducted face-to-face and four by telephone.

- Interviews with 2 to 3 'users' at each pilot site (8 people in total). Two were individual interviews conducted face-to-face, three were individual interviews conducted by telephone, and one was a face-to-face group interview with three people.

In addition, an online survey of 'users' at each pilot site was conducted following delivery of travel plans. This was completed by 55 of the 119 people who were provided with a PTP during the pilots (all three sites combined). The survey contained both closed and open questions (see Appendix 1). Finally, *lift*share project reports and email correspondence were used as an additional source of data on the planned and actual timeline of user involvement.

It was recognised that through the interactions with the innovators and pilot participants, the researchers were not acting as impartial observers, but were, to a limited degree, also contributing to the process of user participation in the innovation. A reflexive approach was used to acknowledge the role of the researchers and their contribution to the generation of data. The epistemological approach was interpretative, as the data generated through interview represented interviewees' own interpretation of events. Individuals sometimes produced different narratives of the same occurrence, especially when recalling *when* particular interactions between innovators and users had occurred.

The 12 interviews with travel planners and users were transcribed and subjected to thematic analysis using NVivo software. The three innovator interviews were transcribed and summarised to draw out key themes. Themes were then compared across all the qualitative data sources to identify similarities and differences in perspective. Quantitative survey results were analysed in MS Excel. Specific feedback on myPTP from the qualitative parts of the survey, the travel planner interviews and the user interviews was compiled into a single list and forwarded to *lift*share. *Lift*share then indicated the following against each point: whether or not they had received the same feedback; whether or not they had 'actioned' it; if so, whether or not this was a direct consequence of the feedback; if not, why not (see Table 1).

Table 1 : Example points 'actioned' by *lift*share as a direct result of user feedback			
User suggestions for development of myPTP	'Actioned ' by *lift*share?	If actioned, were you already working on this (or planning to)?	*lift*share comments
	Yes/No	**Yes/No**	
Inclusion of Walk-It data is highly desirable.	Y	N	Working on at the moment.
Car journey times seemed optimistic.	Y	N	Looking to reflect traffic
Would be good to include park and ride in the future.	Y	N	Looking at API from Transport Direct
Rail route plan did not show which station to alight at.	Y	N	Now complete
The journey plans did not take 'trip-chaining' into account – especially the commute of those needing to drop children off at school.	Y	N	In future plans
myPTP would work better if accompanied by more personalised advice from someone who understands an individual's needs	Y	N	Suggested a travel clinic is offered to support users of myPTP
Walking routes were sometimes provided when the distance was unrealistically long (e.g. for an 11 mile trip).	Y	N	5 miles
Cycle routes were also sometimes "longer than most people might wish to cycle".	Y	N	20 miles
Could cycling be included as the option for some legs of a PT journey (i.e. bike-rail integration?).	Y	N	Looking at via points for journey legs
Cycle routes did not reflect local knowledge – the best routes on the ground along public rights of way.	Y	N	Future plan

2.4 Findings

2.4.1 The involvement of users throughout the development of the innovation

User involvement was a core part of the development of myPTP. The innovator's assessment at the end of the GeoVation project was that, overall, 50% of the development of myPTP had been user-led. The UWE researchers explored the process of user involvement throughout the project by incorporating relevant questions into all the interviews and the post-pilot survey. The aim was to understand who (among the potential users) was contributing ideas and feedback on myPTP, how they were doing so, when this occurred, and what the main content of user feedback was. The interviews with the three travel planners and the users also explored their reasons for contributing to the process. The innovator interviews sought to assess the degree to which specific items of feedback had been incorporated into myPTP.

Who, when and how
The innovator described a process of 'sounding out' the idea of myPTP with travel planners in organisations with whom *lift*share already had a relationship (i.e. subscribers to liftshare.com), before the idea crystalised and was submitted for GeoVation funding. Particular interest was expressed by the travel planner at Council A, reflecting a need for a tool such as myPTP in preparation for a major office relocation in summer 2012. The combination of need and deadline meant that this travel planner was the most engaged of all *lift*share's contacts, and made Council A an obvious candidate for piloting the tool. By July 2011, *lift*share had a list of 12 possible pilot sites, from which they planned to select six and run the pilots in November. As outlined in Part 1, changes in the data environment led to delays in the completion of the myPTP prototype, which meant that the pilots were postponed to February 2012. The final number of pilots held within the timescale of the GeoVation project was three, preceded by an internal pilot within *lift*share.

A number of factors influenced the choice of pilot sites. Most important was the presence of a travel planner who was engaged, enthusiastic and had a good working relationship with *lift*share. Secondly, each organisation needed to be large enough to have the potential for a full-scale roll-out of the tool after the pilots, but not so large that it had a complex bureaucracy and requirements which might be atypical of *lift*share's client base.   The aim at this stage was to keep the tool simple enough to be suitable for as many clients as possible – hence each pilot site was selected as a representative case study from which findings might be generalised to other similar organisations. Finally, a mix of different types of organisation was originally sought, although in the end the three main sites were all in the public sector: two local authorities and a university.

Feedback from travel planners was considered essential by *lift*share, in order to create a product for which there was demand at the level of the organisation, but the views of the 'end users' (people who would be provided with a PTP) was also highly valued. *Lift*share was keen to receive feedback from users directly by going to the pilot sites and generating the PTPs face-to-face, rather than via a third party such as the travel planner. The vast majority of feedback from users was thus obtained during these face-to-face interactions on the day, although some people provided further comments later, mainly by emailing them to the travel planner, who forwarded them to *lift*share. One hundred and nineteen PTPs were provided to users across the three pilots, from which *lift*share generated a list of 96 action points for further development or refinement of the tool. Among the 55 survey respondents, 44% said they had provided comments about their PTPs to *lift*share. Not all participants had shared their views with *lift*share, however, as 60% said that they thought there were aspects of myPTP which could be improved.

The timeline of participation in the development of myPTP by the three travel planners and the users at the pilot sites is represented in Figure 1.

Figure 1 – Timeline of user participation (pilot sites)
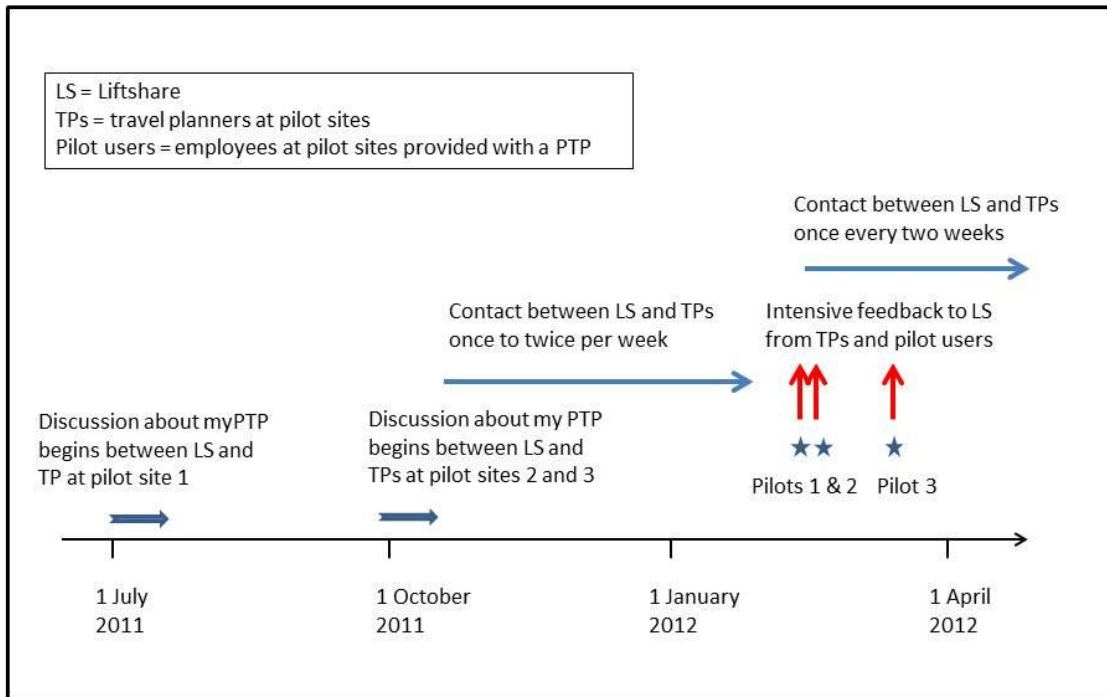
In the Figure, TP1 is the Council A travel planner, TP2 the University A travel planner, and TP3 the Council B travel planner. The innovators reported frequent communication with these individuals (once to twice per week) between November 2011 and February 2012, which fell to approximately once every two weeks after the pilots. Communication involved occasional face-to-face meetings, but usually occurred via telephone and email. Users at the pilot sites were requested by *lift*share to fill in a feedback form on the day. It should also be noted that those who completed the UWE survey tended to assume that they were providing responses directly to *lift*share, despite an accompanying email explaining that the UWE research was independent.

Users' reasons for participating
The interviews with the PTP recipients (users) included a question about their reasons for taking part in the pilot and for providing feedback to *lift*share. Travel planners were also asked why they thought employees had volunteered to take part. The interviewees mentioned a number of factors, both 'individual' and 'social', and usually in combination.

Individual utility maximisation constituted the first reason for users' interest in myPTP – that is, they thought the information might be of practical use in helping them to reduce the costs and time of their commute. Anticipated health benefits of more active travel (e.g. walking and cycling) formed another 'pro-self' reason for seeking information about these options in particular. These reasons are linked to the value of 'Self-direction', which involves independent thought and action-choosing (Schwartz, 1992, 1994). Individual-centred motives were often combined, however, with 'pro-social' motives, reflecting values of 'benevolence' (preservation and enhancement of the welfare of people with whom one is in frequent personal contact) and 'universalism' (understanding and concern for the welfare of all people and for nature; Schwartz, 1992, 1994).

Benevolence values were expressed through a wish to assist colleagues at a number of levels. Some, for example, whose jobs had a bearing on travel planning, wanted to be helpful to the travel planner. Others wished to be helpful to other employees who were being pushed towards changing mode by circumstances such an office move (Council A) or rising parking charges (University A). For example:

> *"I've got a background in transport planning, so I'm interested in the process and obviously being able to provide that pool of useful information for the workforce so people can make their own properly informed decisions." (myPTP user, female, post-pilot group interview)*

> *"Lots of my time in my role at the moment is taken up with our low carbon project so I'm kind of keen to see what the PTP has to offer, and with the plan of thinking ahead of promoting it to staff really and helping them save money as well as cutting carbon". (myPTP user, female, post-pilot interview)*

The self-perception of some participants as 'information diffusers' is discussed further in this section.   Universalism values were often expressed in the form of pro-environmental motives for exploring non-car alternatives, or simply through a general sense of wanting to be helpful; for example: *"I just like to help where I can" (myPTP user, female, post-pilot interview).*

Content and effect of user feedback

Feedback from travel planners and users concerned both the delivery and content of PTPs, and in some cases had a major impact on the development of myPTP. The largest single change to the planned delivery mechanism as a result of early discussion with travel planners was the decision to build a 'bulk upload' feature, which allows PTPs to be emailed in batches to employees based on their home postcodes ('batch processing'). This idea was developed in response to the stated requirements of Council A's travel planner, who wished to email a travel plan to each of 1,800 employers prior to an office relocation. This was made a priority for Phase 2 of myPTP, following the completion of the '1-2-1' delivery mechanism in Phase 1 (see 1.1, project overview). In terms of content of the PTPs, the same travel planner pressed strongly for the inclusion of walking routes generated by walkit.com, which encouraged *lift*share to begin this process. Similarly, the same person was particularly concerned about the inaccuracy of some of the cycle routes generated by the myPTP prototype (based on Google walking routes), which may have speeded up *lift*share's decision to start integrating cycling data from Transport Direct when it became available in late 2011.

Feedback on the content of the PTPs and general functionality issues from travel planners and users covered a wide range of areas, leading to *lift*share's 96-point action plan after the pilots. Anonymous feedback on myPTP from the UWE survey and interviews was also shared with *lift*share to ensure that no points had been missed. Many of these issues had already been identified by *lift*share , but the feedback helped to shape priorities for the continued refinement of the tool. *Lift*share decided to 'action' a number of points which had not been in their plans prior to the pilots –that is, make specific changes in direct response to user feedback. Examples of such points are shown in Table 1.

The current design of myPTP is based on the assumption that most people commute directly from A to B; user feedback raised awareness among the innovators that many people have daily routines which require more complex journeys - routines which may have become established in the first place because of the availability of a car, and may not be manageable by any other means. This highlights the limitations of a technology such as myPTP to address some car-centric issues which have become embedded in social practice.

2.4.2 Delivering the PTPs: The importance of the social and organisational context

Transport issues at the pilot sites

The way in which myPTP was received by the travel champions, and by users at the three main pilot sites, was strongly influenced by different contextual, transport-related factors in the three organisations. Understanding of these factors by the innovators had some impact on the development of myPTP. The single most important contextual influence was the desire within Council A to furnish 1,800 employees with a PTP in time for its major office move to a city-centre location, planned for summer 2012. The impending loss of the free parking to which employees were accustomed was a cause of some discontentment, and the travel planner was keen to ensure that all were informed about alternative modes for their journey to work. As previously discussed, the time pressure expressed by the travel planner appeared to provide *lift*share with a particularly strong impetus for pressing on with the early development of myPTP, and led to a greater emphasis than originally planned on the 'batch processing' delivery mechanism (Phase 2 of myPTP), which would meet the travel planner's aim of sending out a PTP to every member of staff, using a bulk upload system based on residential postcodes.

The major contextual factor at University A was a planned increase in parking charges, aimed at reducing single occupancy car-use as part of its corporate strategy to reduce CO_2 emissions - an issue which was proving to be contentious among employees. MyPTP could be seen as one of the 'carrots' which might be offered to employees to balance the 'stick' of higher parking charges. The preferred delivery mechanism here was '1-2-1' (Phase 1 of myPTP); that is, employees would be given the opportunity to request a PTP from the travel planner, rather than receiving it unsolicited through the sending of bulk emails.

Figure 2 – Parking at University A

At Council B there appeared to be no dominant transport issue motivating the provision of PTPs to employees at this particular time; rather, it was regarded as part of the Council's overall CO_2 reduction strategy. Hence, myPTP was seen by the travel planner as one of a suite of information tools which employees would ultimately be able to access for themselves on the web, as they would with a journey-planning website. This corresponds with *lift*share's Phase 3 development plans to

produce a 'widget' to sit on an organisation's intranet. Therefore, the three pilot organisations each had a particular interest in one of the three planned delivery mechanisms, although this appeared not to have been a deliberate strategy in the selection of the pilot sites.

Workplace travel cultures

In all three organisations, norms of travel behaviour were strongly influenced by 'hard' factors encouraging car-use, such as geographical location and related parking issues, and established practices for business travel. Free or low-cost parking at all three sites had been conducive to car-use, and traffic congestion was a potential deterrent only at University A (although this might change in Council A with the move to a city centre location). Many employees, especially at the two councils, travelled frequently in the local area as part of their job. The norm was to use their own car for this, making it difficult for them to travel to and from work by any other means (although both councils were aiming to encourage use of pool cars - and in Council B, also pool bicycles - for business travel). Changes were underway at two of the sites in the form of 'hard measures' to discourage car use - principally the increased parking charges. A variety of other hard measures were being employed by the three organisations to encourage alternative modes, such as: public transport discounts; participation in the 'Bike2Work' bicycle purchase scheme; and improvements to cycling infrastructure. However, two of the organisations were also overtly engaged in 'soft' behaviour change measures to try to build a work-place culture of environmental sustainability, of which transport was seen as a key part (for example, Council B had an internal campaign to staff called 'Switch to a Low Carb Diet'). Travel planners at Council B and University A saw myPTP as a tool to use within this context of promoting behaviour change, although at Council A the main concern was ostensibly a more practical one of solving immediate transport problems created by the office move.

Unsurprisingly, perceptions of the 'travel culture' at their workplace differed among the myPTP users. One interviewee who worked in marketing believed there to be strong culture of environmental sustainability, which incorporated transport, whilst another, who worked in transport planning within the same organisation, believed the organisation to have a car-dominated culture. Participants in the user group interview at Council A agreed that the Council is too disparate an organisation to have a single 'workplace culture' with regard to sustainability:

> "People tend to sort of have priorities that relate to their own roles, so we tend to have sort of highways-related ones, environmental ones, whereas if you go and talk to a group of people who work for education or social services, you get a completely different set of cultural values as a result of what they do. So, really, the council is a fusion of all of these sorts of different cultural priorities in terms of people's personal values at work." (myPTP user, female, post-pilot group interview).

Influence of workplace context on user attitudes to myPTP

Contextual factors such as those described above inevitably affected attitudes to myPTP among those who were provided with a PTP during the pilots. Those who agreed to be interviewed expressed positive attitudes to myPTP, generally seeing it as a useful tool to help employees make better informed travel choices in the light of unavoidable pressures on single occupancy car-use. However, the anonymous questionnaire responses revealed that for some, myPTP was deeply enmeshed in wider transport concerns. This was particularly the case at University A, where the pilot unleashed strong sentiments which had little to do with the tool itself:

> "This whole process has left me feeling very angry. I feel that I contribute to the success of the University but am completely disregarded when they have compiled the new car park

charges. My experience of the PTP has just confirmed and compounded these feelings".
(myPTP user, female, survey)

There was a belief among some respondents that the proposed parking charges threatened to penalise lower-paid and part-time staff, particularly those with young children. The PTPs served to confirm that, for some of this group, there was no viable alternative to commuting by car if work and child care were to be combined:

> *"The PTP which was sent to me took no account of my needs other than getting from A to B. There are many people who work in the Uni who have more complicated needs than this. I have a child who needs to get to school and another who needs to get to nursery, my PTP paid no attention to this so was completely useless other than proving I have very little choice as most of the other part time working Mums in the Uni, other than coming by car and being penalised by the new car park charges." (myPTP user, female, survey)*

*Lift*share had received feedback from users on the problem of journeys involving 'trip-chaining' (see previous section), and was consequently considering, in its future development plans, enabling users to generate point-to-point trip plans on the map: i.e. from A to C, via B. However, in the case of the respondents quoted above, the underlying issue was, arguably, not one which a tool such as myPTP could solve.

Paradoxically, awareness of negative attitudes to wider transport issues (and sometimes, by association, to myPTP) was one of the reasons why some of the pilot participants in managerial positions were positive about myPTP. For example, at Council A, one interviewee said she wished to promote it among her staff because:

> *"...there's a little bit of negativity with staff moving out to the new building, because they're so used to being able to drive to work, park up, and it's a matter of price. (My aim is) letting them know that there are other options." (myPTP user, female, post-pilot group interview)*

Social diffusion of myPTP within the workplace

Innovations require 'diffusion' in order to be to permeate into social practice. Diffusion can be defined as a process in which an innovation is communicated through certain channels over time among members of a social system (Rogers, 2003). Interestingly, many of the myPTP users who were interviewed saw themselves as having a role in the diffusion process within their organisation. Often this related to their professional roles: for example, as managers, transport/highways specialists or, in one case, a trades union representative. Reflecting on his interest in raising awareness of different travel alternatives through myPTP, one interviewee commented:

> *"It probably comes relatively naturally to me, anyway, as a former lecturer, that you want to instruct, facilitate, and discuss issues (..).My own sense of what a university is, is that it's a community in which people exchange ideas and interact with each other. You're not meant to be working or studying or living in a silo. It's meant to be a kind of cross fertilisation and the sharing of this sort of information and these possibilities, and just getting people conscious of them." (myPTP user, male, post-pilot interview)*

Diffusion of myPTP was not an end in itself, but part of a process of diffusing information about alternatives to single-occupancy car travel, to encourage behaviour change wherever this was seen as beneficial to both individuals and the organisation. In Rogers' (2003) terminology, these people represent 'early adopters' of the innovation, although this term might be better applied to the institutional travel planner, or the organisation as a whole. The innovators used the term 'early

adopters' to describe those organisations which might buy the myPTP service early, and might therefore be granted an 'early adopter discount'.

Some of the interviewees with managerial roles believed that they should not only be promoting the use of myPTP among staff, but also "leading by example" - showing that they were considering their own travel options and travelling sustainably where possible.

> *"I think you've got to. You've got to be a cultural architect. You've got to be a champion of things, and if your staff sees you doing it, there's a chance that more of them will think, yes, we might have a go". (myPTP user, male, post-pilot group interview)*

At the same time, word-of-mouth diffusion about myPTP appeared to be happening in a less directed and more conversational way among colleagues. Seventy nine percent of respondents to the survey said that they agreed or agreed strongly with the statement: "I have discussed myPTP with colleagues". Interviewees said that they had mostly discussed their PTPs with other people who had participated in the pilot. For example, an interviewee at Council A said he thought that people were particularly receptive to receiving travel information now because conversations about travel options were occurring naturally in the light of the office move. In other words, travel information about different alternatives for the commute was extremely salient.

> *"But last night I was down at the depot.....and I was talking to project engineers about the travel plan, the moving to the new building, and that was interesting because people are ripe for the picking now, to be honest. You know? They've got to a stage where they now understand they're going to have to change and they just say, you know, what are the options? And I was chatting to them last night about bicycles, a bicycle scheme. You know? The metro card, and everything else down at the depot." (myPTP user, male, post-pilot group interview)*

The innovators were clear from the beginning about the importance of 'champions' in promoting myPTP within organisations, if the service was to be a taken up. The presence of a travel coordinator who was enthusiastic about the idea had been essential to the selection of the pilot sites, as previous experience with another product had shown that pilots could not be undertaken successfully without strong internal support in the organisation. The innovators believed that the future 'success' of myPTP, once it has been rolled out commercially, is partly dependent on there being a "supportive, involved, engaged, enthusiastic, collaborative and positive person" on site to champion it. This is slightly different, however, from attributing importance to diffusion via a wider network within an organisation, such as the people who were interviewed as pilot users. The innovator did, however, refer to the diffusion of myPTP which was reportedly occurring *between* organisations; he believed that the travel champions at the pilot sites had played a key role in spreading the word among other travel planners. He attributed to word-of-mouth diffusion the fact that *lift*share now had a list of 150 people interested in myPTP, as no direct marketing of the service had yet been undertaken.

Social aspects of the design and delivery of myPTP

An important feature of 'conventional' personalised travel planning is that it generally incorporates a degree of one-to-one interaction between information provider and recipient, which is thought to increase its impact on travel behaviour. As previously noted, the reasoning behind myPTP included the notion that the one-to-one conversations involved in generating standard PTPs contribute to the time required to deliver them, and hence to their cost. Considerable time and money can be saved if travel plans can simply be emailed to employees based on knowledge of their home post code. The travel plans generated by myPTP will still be 'personalised' in the sense that the travel information

relates to the time and geography of an individual's commute. However, it was accepted by the innovators that some of the personal aspects of the personalised travel planning process will inevitably be lost, particularly if the travel plans are emailed to employees 'en masse', without them having requested one, using the bulk upload function. There is a danger, therefore, that the PTP process might lose some of its effectiveness with regard to encouraging behaviour change. To mitigate this risk, the innovator believed that a degree of personalisation could be achieved through both the content of the PTPs and accompanying emails ('*the message*'), and through the manner in which PTPs are invited, provided, and followed up with staff by the travel champion *('the messenger'*).

Although it is unlikely, due to the scale of delivery, that every PTP could contain an individual message to each recipient, there is scope for each organisation to add its own 'personal stamp' to all the PTPs it provides – thus, PTPs can be customised at the level of the organisation, if not personalised for the individual. Customised features are likely to include the contact details of the travel planner and an invitation to contact them for further information, as well as transport-related information specific to the organisation, such as: discounts from local bus operators, cycling events and incentives; and links to the organisation's travel plan and other related policies. The travel planners at two of the pilot sites had already given thought to the type of customised information which they might include. At the user group interview it was suggested that the travel plans be headed by a photograph of the Council's new building, and be given a name more specific to Council A (rather than 'myPTP'). This could build on the sense of group identification among Council employees, and is similar to the 'white labelling' approach which many organisations use to 'badge', on their websites, trip planning information provided by Transport Direct.

The opportunity for those who need further advice to contact the travel planner renders the system, in the innovator's words: "personal on demand". There was agreement in the user group interview that this option was essential, particular where journeys were more complex:

> *"I think that sort of scenario probably lends itself better to more than there being a sort of self-service thing, you know (….), it lends itself more to it being talked through with someone like a travel planning coordinator – somebody who will find out that, you know, those are your personal circumstances- that you need to factor in the journey to school…." (myPTP user, female, post-pilot group interview)*

> *"To tease out what Susan[6] said, that's crucial, isn't it? To personalise these plans". (myPTP user, male, post-pilot group interview)*

Various possibilities for "putting a face to the name" of the person providing the PTPs were suggested by the innovator, the travel champions and the users, to increase the personal aspects of information delivery. For example, rather than simply inviting staff to request a travel plan by sending out bulk emails, the travel planner could visit employees in their offices with a mobile device such as a tablet, and offer to provide PTPs on the spot, or could offer the opportunity to discuss travel plans which had been emailed previously. Workshops could be offered with groups of staff, and the travel planner could attend staff induction sessions, as suggested by one of the user interviewees:

> *"People get an email but it just becomes overload, whereas it's the personal that will work. If there's a personal connection, if you can put a face to an email address, people are probably more likely to take it up and that's why I'm suggesting the induction of new members of staff….." (myPTP user, male, post-pilot interview)*

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[6] Name changed.

The innovator believed that the effectiveness of different approaches would vary depending on the size and nature of the organisation: it would be a case of "know your audience", but recognised that the 'messenger' was important, and not just the 'message' contained in the PTP:

> *"So you've got the information and you've got someone there who can talk to you about why you should or shouldn't change (your travel behaviour), as long as they do it in an enthusiastic manner, or there is some incentive, or they give you chocolate, then you might change behaviour."(Innovator interview 1)*

Both message and messenger were likely to have affected attitudes to myPTP during the pilots, and may also have contributed to any impact which the information might have had on participants' travel behaviour afterwards. The innovator recognised that the social interactions involved in generating PTPs in a face-to-face manner could have influenced the outcome of the pilots. The pilots were carried out by two members of *lift*share: the myPTP project manager and senior user, who spent a day generating travel plans for employees at each of the three locations. The creation of each PTP involved a face-to-face conversation, after which the travel plan was emailed to the recipient's account. At Council B, employees had been invited beforehand to book an appointment to obtain a travel plan from *lift*share. This took place at a stand in County Hall, as part of the Council's Climate Week events. *Lift*share reported that this scenario led to the most open response from participants (all had volunteered for the task). In Council A, employees were visited at their desks without prior arrangement, which meant that some people were not interested.

At University A, the pilot comprised a 'travel clinic' with pre-booked appointments, followed by visiting other people at their desks without prior arrangement. As noticed by the innovators, one unintended consequence of this process, was that two people sitting at opposite desks in a shared office, having reluctantly agreed to have travels plans generated, realised that they lived very close to each other, and later began to car share with each other. The travel planners, and several interviewees and survey respondents, commented on the polite and helpful manner of the *lift*share representatives, which might have meant that the information was given more credence than if it had arrived, for example, unsolicited by email. This demonstrates that physical interactions, affected by the layout design of the work environment, might have an important role in delivery of the innovation and its social diffusion.

2.4.3 The role of myPTP in motivating travel behaviour change

Impact on intentions and behaviour among participants in the pilots

Although behaviour change, or consideration of more sustainable travel options, among those provided with a PTP, had not been an overt objective of the myPTP pilots, it was a matter of interest to the innovators and travel planners at the pilot sites, as this was an underlying, longer term goal. This coincided with a research interest of the UWE researchers. Questions about the impact of the myPTP travel plans on the intentions and behaviours of the pilot users were therefore included in the short online survey conducted by UWE during the week following each pilot (see Appendix 2). The anonymous results were shared with both *lift*share and the travel planners.

At Council A, the survey was completed by 19 of the 35 people who had taken part in the pilot. For this group, the survey asked whether any change had occurred to their intended transport mode for the journey to work *after* the office move. Six people said that, after receiving their PTP, they were now considering other options for their commute after the move. Bus and train were the most frequently considered alternatives, although two people were also considering single-occupancy car

among their options, and one was also contemplating cycling. Before receiving their travel plan, most of this group had previously intended to continue driving to work on their own.

Table 2 - myPTP survey: Council A

AFTER receiving travel information through myPTP, did your travel intentions change?		
Answer Options	Response Percent	Response Count
No, my travel intentions have not changed from before	68.4%	13
Yes, I am now considering different travel options	31.6%	6
Yes, I have decided to change the way I travel to work	0.0%	0
answered question		**19**

At University A and Council B, respondents were asked whether they were considering other options for their current journey to work, or whether they had actually changed their commute mode after receiving their travel plan. At University A, 15 of the 36 participants completed the survey, and in Council B there were 21 survey respondents from the 48 participants.

At Council B, the individual who had implemented a change had not actually switched mode, but was using a different cycle route. Those considering changing mode were now thinking about travelling by bus, bicycle or car share, although three of the four were already using a variety of modes, and only one was considering changing from single occupancy car-use alone.

Table 3 - myPTP survey: Council B

Since receiving travel information through myPTP, have you considered changing, or actually changed, the way you commute?		
Answer Options	Response Percent	Response Count
Yes, I am now considering different travel options	19.0%	4
Yes, I have made changes to the way I commute	4.8%	1
No, I am not considering any changes to the way I commute	76.2%	16
answered question		**21**

At University A, two people had made changes to their commute by doing more car-sharing rather than driving on their own. One person was now considering car-sharing rather than driving on their own, and another who car-shared was now thinking about walking.

Table 4 - myPTP survey: University A

Since receiving travel information through myPTP, have you considered changing, or actually changed, the way you commute?		
Answer Options	Response Percent	Response Count
Yes, I am now considering different travel options	13.3%	2
Yes, I have made changes to the way I commute	13.3%	2
No, I am not considering any changes to the way I commute	73.3%	11
answered question		15

Although this survey was very small, and could not reveal whether people actually followed through on their intentions or maintained any changes in the longer term, it does support an intuitive assumption that people are more likely to give serious consideration to information on travel alternatives if there is external pressure on them to do so. This was clearly the situation at Council A because of the office re-location, and it is unsurprising that a higher proportion of respondents were re-considering their modes of travel at Council A than at the other two pilot sites. Similarly, it is unsurprising, given the location of new office in the city centre next to the railway station, that bus and train were the main alternatives now being considered[7].

The wider role of myPTP in behaviour change

The interviews with the travel planners and users of myPTP allowed a further exploration of the anticipated wider role of myPTP, and similar information tools, in encouraging travel behaviour change beyond the immediate context of the pilot. It was reported in Part 1 that the innovator saw this as a fundamental goal ("*We are just about behaviour change. That's what we do*"), although he had admitted to being cautious about the potential of myPTP in this respect due to an awareness of the limitations of information alone in bringing about behaviour change. He and his colleagues were encouraged by the findings from the survey. Similarly, the Council A travel planner expressed satisfaction that around 30% of respondents were considering alternatives to single occupancy car use, which he believed augured well for the achievement of his goal of a 10% reduction in commuter trips by this mode. The 30% figure appeared to have been higher than the expectation he expressed during the post-pilot interview (prior to the survey).

All three travel planners saw myPTP as just one tool within a wider behaviour change process, and believed that myPTP might not, on its own, have direct and measurable outcomes. However, even if it simply served to generate discussion, or to cause people to think twice about their regular travel habits, they saw this as valuable. Many of the pilot users who were interviewed believed that the travel plan had made them re-assess their habits.

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[7] In this context, see the discussion on 'life events' in section 1.1 and footnote 2.

> *"But certainly, having gone through the exercise, it made me double check and think again and has led to some change in my behaviour, though not radical but some, and that in itself has been useful." (myPTP user, male, post-pilot interview)*

This echoed the view of one of the travel planners that it is easier to persuade people to make small adjustments than major changes. He believed that providing practical travel information is a way of drawing people in without being too dogmatic – for example, without being seen as 'pushing a climate agenda'. He referred to a polarisation between 'petrol heads' and 'climate change activists', and saw tools such as myPTP as useful in addressing the middle ground.

It was thought by many interviewees that myPTP had the greatest potential to change the travel behaviour of those who were already contemplating change. For some it confirmed existing intentions:

> *"I would say it really just confirmed that I should be cycling more and I should really try and drive less. I've only started driving in the last couple of years. I always cycled in. It's almost preaching to the converted, but it just reinforces that idea that there is no reason not to cycle, especially living under three miles from work."(myPTP user, female, post-interview)*

The idea that myPTP could be 'preaching to the converted' was seen as problematic by one of the travel planners:

> *"I think we get some staff that are very supportive of the stuff we're doing in terms of carbon reduction and trying to search for the alternatives to the single occupancy vehicle, and those people are usually the ones that are going to be responsive to this kind of thing, but they're probably the people we least need to target."(Travel Planner, male, post-pilot interview)*

Some thought that myPTP might be more likely to influence those who were not already receptive if the information could be presented in a more persuasive way.

> *"I think on its own it wouldn't necessarily pursue much of a mode shift. I think it would have to have all the individual benefits like health benefits, all the other bits and pieces that actually really motivate people.(…). At the moment it just shows the different options but it's not necessarily persuasive enough to get somebody to swap."(myPTP user, female, post-pilot interview)*

This again raises the matter of information salience, which was alluded to in the previous section in relation to social diffusion of myPTP. In the earlier discussion, it was suggested that the travel plans were especially salient at Council A because people were being forced to re-think their travel habits in the light of the office relocation; immediate salience of the information service across the organisation was therefore created by the context of use. This was supported by a finding from the post-pilot survey. Respondents who said they were not considering changing mode in response to myPTP were asked whether they agreed or disagreed with the statement: "my PTP provided me with information which was not relevant to my commute". Fewer respondents at Council A than at the other pilot sites agreed or agreed strongly with this statement (Council A: 23.1%; Council B: 31.3%; University A: 36.4%). The main reason given by this group for not considering any travel changes was that myPTP did not provide them with any new information. The percentage who agreed or agreed strongly with the statement: "myPTP confirmed what I already knew" totalled 90.9% at University A and 93.8% in Council B. In Council A, 53.9% of those not considering any changes agreed or agreed strongly with the statement: "I had already decided how I was going to travel (after the office move) and did not need more information."

The role of information salience

So far we have considered the salience of the travel plans as a whole. However, 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 (for example, Waygood and Avineri, 2012). For example, information about the health benefits of commuting by bicycle or on foot may be particularly salient for some, whilst others might find information on the environmental impact of their trips to be more salient, due to pro-environmental 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 a broad consensus across the travel planners, myPTP users and the innovators themselves that anticipated financial benefit to the individual was the factor most likely to encourage modal shift. The travel plans generated by myPTP therefore show the relative financial cost of the trip to work by different modes, wherever this is possible (as noted in Part 1, bus ticket costs are rarely available from the operators). The travel planners took the view that, in the transport field, progress on carbon reduction and other policy areas could best be achieved by showing people the individual cost-savings possible through the use of non-car modes or car-sharing. Benefits to the individual were regarded as more salient to employees than benefits to the organisation, or wider benefits to society.

> *"If that's people's take on it then we don't mind so much because it's kind of helping us meet our targets and our aims of reducing carbon and single occupancy vehicles…." (Travel Planner, male, post-pilot interview)*

> *"If you do things for the wider benefit, I think that's really good, but not many people do (…) When you talk about the benefits on an individual level, I think they are more sort of relevant to people (…). So for the benefits it gives me rather than the wider good, but that's just the way people think in society at the moment really."(myPTP user, female, post-pilot interview)*

Because myPTP shows an overall cost, not just the fuel costs, of driving a car over a certain distance, it was reported that some PTP recipients had been surprised to see that public transport options could be cheaper, especially where discounts were available (Council A). In the group interview at Council A it was suggested that the cost advantages of using public transport, or cycling and walking, be 'headlined' at the top of each travel plan. However, this would be more problematic in terms of encouraging lower car-use in places where public transport information was not available, and especially if users 'knew' the cost of local bus travel to be higher than driving. For some participants in the pilot, the travel plans merely confirmed their view that travelling by car was the cheapest and quickest option. For one person it confirmed that:

> *"travelling to work by car costs half as much in terms of money, and takes around half as much in terms of time. The only practical way to travel to/from work is to commute by car. The cost and time taken is one of the reasons why I might change job." (myPTP user, female, survey)*

Health benefits to the individual through more 'active travel' were thought to be salient for many, and it was suggested that information on 'calories consumed' using different modes would be a useful addition to the travel plans, which might serve to encourage modal shift among this group.

> *"I think it is money and health that get people to travel more sustainably. They don't really care much about the planet because their one car journey to work doesn't make a difference, so people think. It's more about the individual sort of benefits that you gain from doing things differently."(myPTP user, female, post-pilot interview)*

However, others believed that environmental considerations were a motivator for some people:

> *"It was interesting to know what the cost was, and the carbon emissions as well.(…)With the costs and the CO$_2$, it was interesting to see that and some people who are more aware of the need to reduce emissions might change their minds based on that." ."(myPTP user, male, post-pilot interview)*

Linked to information salience is the importance of information accuracy, and whether PTP recipients feel that they can trust it. A small number of interviewees commented that if the travel plan suggested some options which they knew to be unrealistic or simply wrong, people would be less likely to trust the rest of the information. One person commented:

> *"One of the issues I had with the base map, because it was such an obvious thing to me, it did perhaps – it could perhaps sort of undermine confidence in the rest of the information" (myPTP user, female, post-pilot interview)*

However, this did not emerge as a serious critique as it was recognised that the tool was under development and that the identification of areas of inaccuracy was one of the functions of the pilots.

2.5 Discussion and conclusions

MyPTP was designed as a "problem looking for a solution" rather than vice versa: how to deliver personalised travel planning more quickly and more cheaply as one of the ways of encouraging alternatives to single-occupancy car-use. The tool was initially targeted at large employers aiming to encourage the use of more sustainable modes among their employees for commuter trips, but has wider applications. This research provided specific case-study evidence that frequent and detailed communication with potential users during the development process helps to ensure that a technological innovation is closely aligned to the needs of these users. Satisfaction with the tool, subject to refinements, was observed among users who participated in pilots of myPTP in three large organisations (two local authorities, one university) although the final proof of whether the innovation will be taken up can only be judged when it has been sufficiently refined to be launched commercially.

Essential to this process is an understanding by the innovators of the specific needs of potential users and the contextual factors which shape these needs. The most active user-contributor was a travel plan coordinator facing an immediate need to provide employees with travel information in the light of a large-scale office relocation from a site with plentiful free parking to one where parking was limited and costly. This contributor was also the most influential in terms of guiding the content of myPTP and one of its delivery mechanisms. Similarly, it was in this organisation, among the three pilots, where myPTP stimulated the highest degree of consideration of non-car travel options among recipients of the PTPs. 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. This does, however, prompt the question: would modal shift have occurred anyway? Information is likely to be a facilitator, rather than a generator, of a process which is already underway, but does this matter?

The research showed how an information tool can become enmeshed in wider, contextual issues and even a focal point for resentment about matters which have little to do with the information itself. This was the case at the pilot site where some respondents believed that the proposed increases in parking charges threatened to penalise lower-paid and part-time staff, particularly those with young children. The PTPs served to confirm that, for some of this group, there was no viable

alternative to commuting by car if work and child care were to be combined. Feedback from users on the problem of journeys involving 'trip-chaining' was consequently considered by *lift*share in its future development plans for myPTP. However, this was clearly not a problem which could be solved by an information tool in isolation, and highlights the limitations of a technology such as myPTP to address some car-centric issues which have become embedded in social practice.

Finally, the research demonstrated the importance of 'champions' in promoting and diffusing a new technology through organisational structures and social networks within an organisation, but also between organisations. An engaged and enthusiastic champion with a central transport role, such as an institutional travel planner, is essential if a tool such as myPTP is to be taken up within the organisation – the PTPs need to be actively promoted, and follow-up travel advice must be offered as a means of maintaining the 'personal' in 'personalised travel planning' (thus, the innovators described myPTP as "*personal on demand*"). However the research also showed that other 'diffusers' with an interest in travel behaviour change, such as managers wishing to assist and encourage their staff in making changes, could play a supportive role in promoting use of the tool. It was also apparent that interaction between travel planners at the pilot sites and their counterparts in other organisations was leading to a diffusion of knowledge of myPTP to other places.

A natural development of myPTP and similar tools might be towards open innovation which features ability to collaborate with many, or using the "wisdom of crowds" (Surowiecki, 2005). The assumption is that the collective intelligence of a large group of users exceeds that of a few, both in terms of ideas and knowledge, and in a PTP context – the users might provide the content and context of travel information. An open question arising from this kind of trend is how the knowledge and ideas of many can be aggregated and synthesized. In that aspect, the myPTP tool could be seen as an innovation that is already half-way through the delivery of so-called 'mass collaboration' (Elmquist et al., 2009) – although it does not take the form of self-organizing, bottom-up driven movements, some of its users (and 'champions') might be partly seen as co-developers of some of the conceptual and functional design platforms, diffusers of the innovation (and perhaps the behaviour change agenda it is associated with).

Impact on transport and/or society and/or policy

Essential to the innovation process is an understanding by the innovators of the specific needs of potential users and the contextual factors which shape these needs. Disseminated as a 'case study' this work might provide innovators and organisations going through a 'travel plan' process with several good practice points and highlight the importance of contextual effects in the design and implementation stages of the innovation process.

Regarding the role of information in behaviour change, this research added further evidence to the established knowledge that information can play a role in encouraging people to reduce their single occupancy car use, but only in confluence with other supporting (contextual) factors.

Although not a main focus of this work, it is worth mentioning here that *lift*share took advantage of DfT making Transport Direct data available. The 'opening up' of data has been a key enabler for this innovation. This project provided a specific example where this policy directly facilitated the creative use of data by an innovator to build a tool in response to a defined user need.

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Appendix 1 – My PTP Survey Questions (Council B[8])

1. **How do you normally travel to work? Please tick more than one mode of transport if you use them in combination on a normal day.**

   -   Bus
   -   Train
   -   Car - on my own
   -   Car – with another person
   -   Bicycle
   -   Motorcycle
   -   Walk
   -   Other (please specify)

2. **What OTHER modes of transport (if any) do you currently use to travel to work? Please tick any which apply.**

    Same mode options as Q1, plus:

   -   I do not use any other modes

3. **Since receiving travel information through myPTP, have you considered changing, or actually changed, the way you commute?**

   -   Yes, I am now considering different travel options

    Linked questions:

     - 4. **What travel options are you now considering for your journey to work?**
       Same mode options as Q1

   -   Yes, I have made changes to the way I commute

    Linked questions:

     -   **5. How are you now travelling to work since receiving your travel plan**?
       Same mode options as Q1

   -   No, I am not considering any changes to the way I commute

    Linked questions:

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[8] Some survey questions differed slightly between the 3 pilot sites to ensure appropriateness to local conditions.

- **6. Please say how far you agree or disagree with the following statements** (5 point Likert scale):

  - myPTP provided me with information which was not relevant to my commute
  - The travel options provided are not suitable for me
  - myPTP confirmed what I already knew

7. Please say how far you agree or disagree with the following statements (5 point Likert scale):

- I really need a tool like myPTP
- Using myPTP helped me with planning my commute
- Using myPTP fits well with my travel arrangements
- Others at work expect me to use myPTP
- Overall, I believe myPTP is easy to use
- I have discussed myPTP with colleagues

8. Do you think there are any aspects of myPTP which could be improved?

- **-** Yes (please outline your comments)

- - No

9. Did you make any suggestions, when you received your travel plan, or later, about possible improvements to myPTP?
- **-** Yes (please outline your comments)

- - No

10. If you have any further comments about the way you travel to work, or about the myPTP tool, please add them here.

11. Gender

- - M/F

12. Age group

- 18-29

- 30-39

- 40-49

- 50-69

- 60 or above