

A Guide to Social and Behavioural  
Research for Innovative SMEs



Department  
for Transport

# PEOPLE FOCUSED INNOVATION



**CATAPULT**  
Transport Systems

# INTRODUCTION

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No matter how unique or technologically advanced, an innovation's success is ultimately determined by the users<sup>1</sup>. It is this often-diverse group of people who will judge whether an innovation meets a need.

Fail to impress, and it is unlikely that the innovative service, product or system will make it very far on the market.

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**The key to a successful innovation is to devote some time and effort into understanding users.**

Doing so will make it easier to avoid some common pitfalls in the innovation process – from making incorrect assumptions about what users really want and are prepared to pay for, to launching a product, service or system that users do not understand how to use.



On top of reducing the risk of making costly mistakes, engaging with users in this way can also help promote the innovation, get investors and stakeholders on board, and build relationships with customers.

With this best practice guidance on social and behavioural research (SBR) for innovators, the Transport Systems Catapult together with the Department for Transport hope to inspire you to seek out more insight about the people that will use and be affected by your innovation.

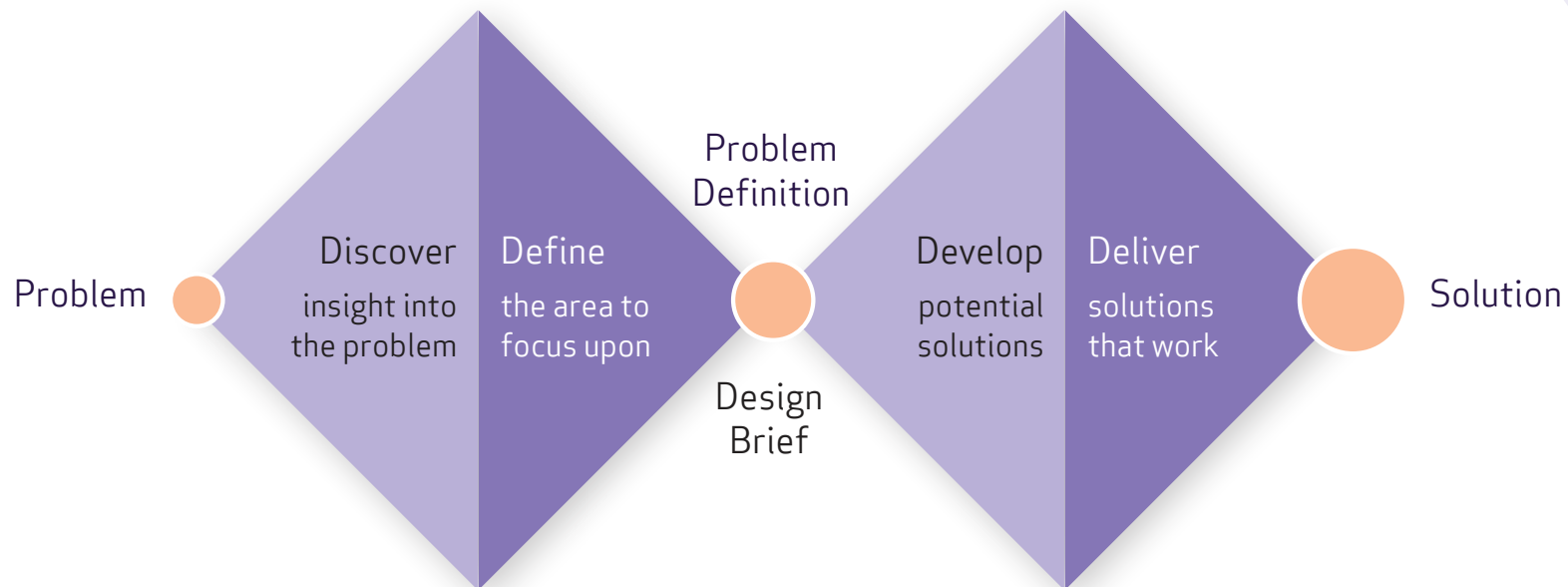
If you have little or no experience of deploying the techniques described, we believe that the guidance will give you a better understanding of what type of insight is most useful in the different phases of the innovation process, as well as some ideas of easy-to-use techniques to help you gather that insight. If you already have research experience, we hope that the guidance can point you to new or less well-known techniques.

<sup>1</sup>'Users' refer to all stakeholders who can and will be influenced by the innovation. This includes paying customers, affected industries and operators, residents affected by physical interventions, etc.

This guide follows the Double Diamond model developed by the Design Council, and splits the development process into four chronological stages, each of which benefits from different types of questions about the user being asked and answered.

For each stage, we will point you to research techniques that are suitable to gather the relevant insight. We have also included case studies of innovative projects in which SBR made a fundamental contribution to the project's success.

## The Double Diamond Model of Innovation<sup>2</sup>



The Double Diamond is a model used by the Design Council to visually map the creative process underlying good product, service or system development. It is divided into four distinct phases -

**Discover • Define • Develop • Deliver**

The underlying principle is to oscillate between a wider focus (in the **'discover'** and **'develop'** stages) and a narrower focus (in the **'define'** and the **'deliver'** stages), which helps capture insight both about the broader possibilities and challenges, and the more specific needs of users.

<sup>2</sup> <https://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond>

# DISCOVER

## KEY QUESTIONS

- What is the size of my target market?
- Who are potential users of my innovation?
- What unmet needs can I address?
- What solutions can I provide?
- What are the priorities and aims of my key stakeholders?

## OUTPUTS

Insight about a wide range of unmet needs, solutions and potential users.

## AIM

In the discovery phase, the aim is typically to gain a broad understanding of people's problems and come up with as many ideas of how to address them as possible. Here, it is useful to employ techniques that stimulate explorative, broad and diverse thinking around a topic.

**ESSENTIALS:** To begin exploring a problem area, speak to as many people as possible about it. Within your project team, keep an ongoing and open-minded discussion about who potential users might be or the industries where the innovation could be adopted. While your ideas might not be very concrete at this stage, it can still be valuable to start speaking to people in the market about them immediately. Not only does this help uncover new ways of thinking about the topic, but involving people early on can also give you a head start on establishing a positive relationship to your future customer base.

**ADVANCED:** In the discovery phase, it is also relevant to begin exploring how much benefit the innovative idea might bring to a future customer and whether they would pay for it. If you can collect data that confirms that customers will use the product if it is developed, it is likely to improve your interactions with investors and other key stakeholders. Reviewing existing literature and evidence relating to innovations like yours can help strengthen your case.

To still allow for new ideas and discoveries to surface, it is often useful to ask questions in an open-ended way, and to encourage people to share their experiences without giving them too much direction. This can also make it easier to explain and frame the concepts you develop in the later stages of the innovation process.

**EXPERT:** If you have the time and resources, it is worth exploring the problem area in more depth, for example by mixing techniques to understand different aspects of it. A mixed methods approach was used in *Case Study 1*, where focus groups, surveys and workshops were used.

**What to Avoid:** Avoid assuming that your current understanding of the problem and the target audience is complete. Even if you only have the resources to engage with a limited number of individuals in this phase, try to ensure that those interactions are with as diverse a group of people as possible.

## Techniques:

**Brainstorming**<sup>3</sup> – Also called ideation, this is a group discussion technique that can help you come up with new ideas, for example on how to solve a challenging problem. To generate as many new and diverse ideas as possible, it is beneficial to invite participants with different backgrounds and experiences.

**Interviews**<sup>4</sup> – Compared to informal conversations, interviewing is a more structured way of collecting information whilst speaking to a single person. This is a useful technique for gathering in-depth insight about a complex or sensitive topic. It can be a valuable tool when researching stakeholders.

**Focus Groups**<sup>5</sup> – A group discussion technique where participants give their feedback and opinions on a given topic or innovation. This is a more resource efficient alternative to individual interviews, as it captures several people's opinions at once. Group dynamics can help spark participants to collaboratively come up with more creative ideas, but the drive to conform to others can also reduce the total number of ideas generated.

## Quotes:

“ The first thing you have to do is identify an unmet need. Then the challenge is to understand how much benefit that brings the customer and whether they would pay for it. But, too often, I meet these super bright engineers who want to develop something just to push the boundaries of cleverness. What they don't understand is that, if the market doesn't want it, they don't have anything of value.

SME from the Transport sector

“ Handing over the reins can be uncomfortable at times, but let people have their crazy ideas and don't restrict them.

SME from the Transport sector

<sup>3</sup> <https://www.mindtools.com/brainstm.html>

<sup>4</sup> <https://www.interaction-design.org/literature/article/how-to-conduct-user-interviews>

<sup>5</sup> <https://www.thebalance.com/what-is-a-market-research-focus-group-2296907>



## CASE STUDY 1 - NAVIGOGO

Navigogo is an app that combines multiple mobility options in one interface. Its purpose is to help young people in Scotland make smarter journeys.

As is essential in the discovery phase, people-centred research was built into the development process from the start. Initially, desk research was carried out to understand what young people, particularly in Scotland, think of transport. To explore travel experiences further, a group of young co-designers, called the National Youth Group, were recruited. Over the course of four months, several meetings were held with the group, during which different co-design techniques (such as drawing stakeholder maps) were used to guide the process. In addition to the co-design work, young people's experiences were explored in interviews and through a survey. Partnering with the charity 'Young Scot' made it easier for the development team to engage with their target group and recruit participants to the studies.

At the end of the four months, the insight resulting from the co-design meetings, the interviews, and the survey was used to brainstorm tools and concepts. A key question in the discovery phase is what unmet needs there are, and it was clear from the engagement with young

***At the time of publication, Navigogo is currently in beta trial (or in the Develop stage, as described in the following) and has been well received in industry.***

The project secured funding from a Small Business Research Initiative (SBRI) competition run in partnership with Innovate UK.

people that cost is a major concern to them. Therefore, several of the features and functionalities of the app were co-designed to help users manage cost. For example, the journey planning tool makes it easier to understand the price of each individual aspect of the journey, whereas features such as the splitter tool helps users split taxi journey cost with other passengers. Through engaging young people in the development process, the team not only discovered unmet needs but it also helped them tackle the question 'What solutions can I provide?'



## KEY QUESTIONS

- Who within my target market are most likely to use the innovation?
- What are the most pressing unmet needs?
- What are the most feasible and high-impact solutions?
- How will my innovation benefit key stakeholders?

## OUTPUTS

A better understanding of priority problems, solutions and target audiences and a concrete plan for developing the innovation.

## AIM

In the defining phase of the innovation process, it is relevant to collect information that helps prioritise and feasibility-check problems and ideas explored in the discovery phase, narrow the scope, and identify the most suitable way to proceed.

**ESSENTIALS:** At this point, you will probably already have a rough idea of who your target audience is. To deepen that understanding, it is useful to identify different types of user within the larger target audience. By grouping users into different categories, and then considering each category's specific goals and what they need to achieve those goals (their "user needs"), it is usually easier to determine which user needs are important to address, and which are less relevant. In *Case Study 2*, the persona technique was used to explore user needs in more depth.

Since there is often a discrepancy between what people say they do, and what they actually do, it is helpful to spend some time in the environment where you think your innovation will be deployed, observing the activities of potential users. In *Case Study 2*, observing users undertaking a journey helped uncover needs that they were not themselves aware of having.

**ADVANCED:** If you already have a fairly clear picture of your different users, it is valuable to dig deeper into questions around where, when, and how they might engage with the innovation. If your product, service, or system is particularly innovative, target users might struggle to articulate their views around it (as it can be hard for them to envision how they would interact with or use the innovation, when they can't relate to previous, similar experiences). If you encouraged people to share their experiences as part of the discovery phase, it is a good idea to see whether you can turn those stories into use cases or pen portraits that allow you to present your innovation to users in a relatable way.

**EXPERT:** Ethnographic research<sup>6</sup> techniques (such as observations and interviews) are ideal to reach a truly in-depth understanding of users, but it is worth keeping in mind that they can also be time and resource consuming.

A method that many innovators find particularly useful is to invite people from the intended target group to "co-design" the innovation with them. As demonstrated by *Case Study 2*, co-design techniques are typically employed throughout all phases of the innovation process, and the earlier you involve your customers in it, the more likely it is that they remain involved in the process and grow a sense of ownership of the innovation.

<sup>6</sup> <http://www.emeraldgroupublishing.com/research/guides/methods/ethnographic.htm?part=1>

# DEFINE

## Techniques:

**Segmentation**<sup>7</sup> – The process of defining and subdividing a large user population into clearly identifiable segments with similar needs, wants, or lifestyle demands. This helps with tailoring innovations and communications campaigns to particular sub-groups.

**Persona Development**<sup>8</sup> – A ‘persona’ is a fictional representation of an actual user that makes it easier to understand different types of user, and facilitates discussion around their differing goals and capabilities. It can also help describe a complex innovation to others in a relatable way.

**Surveys**<sup>9</sup> – A data collection tool used to gather self-reported information from individuals. Surveys are useful for quantifying how many people hold a particular need, attitude or behaviour, but typically require larger samples than other techniques (such as focus groups) do.

This technique is usually most efficient when you have a clearer idea of precisely what information you would like to capture. Compared to interviewing or focus groups, it leaves less room for discovering and capturing entirely new ideas or areas of insight.

**User Shadowing**<sup>10</sup> – The researcher accompanies the user and observes how they use the innovation within their natural environment. This technique is useful when you want to capture what users do (as opposed to what they say they do).

**Customer Journey Mapping**<sup>11</sup> – A diagram/diagrams that depict the stages users go through when interacting with an innovation. Often, this captures how the user feels at each stage of the journey and can therefore be useful for identifying pain points and elements of the innovation that can be improved.

## Quotes:

“What we didn’t anticipate was that, when we launched the tool, no business would use it. When we asked them why, they said they didn’t have time to, and so on. Our error was that we failed to read between the lines and were too trusting; took people for what they said, rather than getting hands on and observing what they did.”

SME from the Non-Transport sector

<sup>7</sup> <http://www.activemarketing.com/news/strategy/market-segmentation-youre-doing-it-wrong/>

<sup>8</sup> <http://www.uxbooth.com/articles/creating-personas/>

<sup>9</sup> <https://uxmastery.com/better-user-research-through-surveys/>

<sup>10</sup> <https://www.interaction-design.org/literature/article/shadowing-in-user-research-do-you-see-what-they-see>

<sup>11</sup> <https://conversionxl.com/blog/customer-journey-mapping-examples/>





## CASE STUDY 2 - MAYNARD

In 2016, the UK Rail Safety and Standards Board challenged industry to come up with innovations that would get people more quickly through gate lines in rail stations, without reducing the quality of experience.

To begin developing their solution, the team set out to define user needs and better understand how users experienced the current service. As well as surveying passengers and staff, the team used evidence-based service design tools and techniques (such as persona development, user journey mapping and ethnographic research) to explore these questions. Maynard also employed a 'user shadowing' technique to better understand how users carried out their journeys through a rail station.

Taken together, the different techniques helped the team define who and what to focus on and to explore the question '**What are the most pressing unmet needs?**' Two of the key findings were that a 'ticket less' system would reduce dwell time at the gate line, and that the system needed to effortlessly integrate with users' existing habits. Maynard placed customer experience at the forefront of their response, and proposed a facial recognition solution that allows passengers to walk through the gate without breaking stride.

*A concept demonstrator was designed to be used as a working prototype. This formed part of a recent exhibit at the London Transport Museum, and generated much positive feedback.*



# DEVELOP

## KEY QUESTIONS

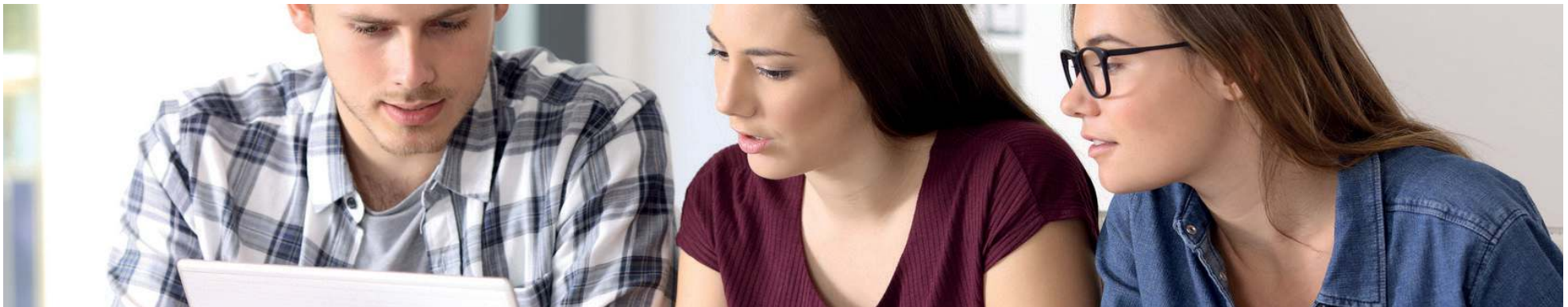
- What feedback are people giving on the prototype?
- What are the key observations about users testing the innovation?

## OUTPUTS

Identification of any final modifications that need to be made.

## AIM

This is the stage where the preliminary models of the innovation are developed, tested and refined. Insight most often takes the shape of user feedback, and is typically collected as users are being exposed to the model.



**ESSENTIALS:** To gather meaningful feedback from users, it pays to have a prototype of your innovation ready for testing as early as possible – even if it is only a rough and sketch-like one at first. This is usually an iterative process, where prototypes go through many phases of testing and improvements.

**ADVANCED:** A way to increase the quality of the collected feedback is to ensure that the prototype is also tested on users who have little or no pre-existing knowledge of your type of innovation. For example, in *Case Study 3*, an app was given to users who were very unfamiliar with technology. This gave the team a better idea of how to make the app appealing even to users who are not comfortable with technology. In addition, wider stakeholders – such as businesses and local authorities – can give valuable feedback that you wouldn't necessarily get from your target audience.

**EXPERT:** A lot of the time, feedback and information about what users do is collected by asking them direct questions about what they think, feel and do. While such so-called “self-reported” information is valuable, it will sometimes give you an inaccurate picture of what users actually think, feel and do. In these cases, it is useful to employ techniques that allow you to directly study the behaviour of users. For example, you might want to consider carrying out observations, or collecting data through video analytics or wearable technology.

## Techniques:

**A/B testing**<sup>12</sup> – Also known as split testing or bucket testing, this is an online technique where different versions of a product are presented to the users, to see which one they prefer.

## Quotes:

“ Encourage people to complain a lot. For us, if they don't use technology it is actually a good thing because they won't have prejudices. Some of the people we have got the most profound insights from are people who hate technology.

SME from Non-Transport Sector

**Deliberative research**<sup>13</sup> – Often takes the form of an extended workshop. Participants are presented with a range of information and then encouraged to share their points of view and perspectives.

“ Test all the time. It's light and sloppy at the start because you don't have the money and so on. But the day you stop listening to your customer is the day you are on a slippery slope to oblivion.

SME from the Transport sector

“ If you're a small company with limited means, you need to be very focussed about what you want and why you want it. Because it's a bit like boiling the ocean.

SME from the Transport sector

<sup>12</sup> <https://conversionxl.com/blog/how-to-build-a-strong-ab-testing-plan-that-gets-results/>

<sup>13</sup> <https://www.aqr.org.uk/glossary/deliberative-research>



## CASE STUDY 3 - DAMIBU

Damibu's app has been hailed by a dementia champion as an exciting development that will enable thousands to feel confident enough to venture outside their homes by themselves.

Dementia affects an estimated 850,000 people in the UK and the condition significantly impacts an individual's ability to carry out everyday activities, such as making routine journeys. Therefore, the health technology studio Damibu decided to develop an app to help people with dementia cope with the anxiety they often feel when travelling to hospital or clinic appointments.

To develop the app, Damibu took a Double Diamond<sup>14</sup> approach and used co-design techniques to collect insight. In the first phase, six focus groups of people diagnosed with dementia were gathered to explore their experiences and needs, and to collect their feedback on different app ideas. To facilitate discussion, the journey process was split into four chronological stages (these were Planning, First 100 yards, Travelling, and

*At the time of publication, the app development is now in its second phase, during which a fully featured phone and tablet application prototype will be developed for iOS and Android platforms.*

Damibu worked with Betsi Cadwaladr University Health Board, the Welsh Government and the Department for Transport.

Last 100 yards). In addition, the sessions were used to create profiles of types of users and user journeys, which gave the team a better idea of what app features would be most useful.

The process was based on two weeks' sprints, each involving focus group sessions, prototyping and testing. Due to the complexity of the project, up to three focus groups were required to present one idea and get feedback. This helped address one of the key questions of the Develop stage, which is **'What feedback are people giving on the prototype?'** Once a prototype was formed, a brand-new group of potential users were recruited to test the app from a fresh perspective.



<sup>14</sup> <https://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond>

## KEY QUESTIONS

- What user insights will help us sell/market the innovation?
- What final decisions need to be made?
- What is the post-launch viability of the innovation?
- What wider benefits will my innovation have to people and society?

## OUTPUTS

- User feedback to help advertise the innovation (e.g. user quotes)
- Collection of insight into value to potential future versions of the innovation

## AIM

In this phase, the innovation is finalised and delivered. Insight is typically used to tweak the innovation before or just after it is launched, and to generate new ideas for future innovations.

**ESSENTIALS:** As the innovation gets closer to being ready, the feedback you collect from users might gradually become more reflective of individual preference than of issues that need to be addressed. While this is essentially good news, it can also make it difficult to determine which feedback is relevant to act on.

**ADVANCED:** Decisions based on insight gathered from the target audience are not always popular with stakeholders. In these situations, it can be helpful to remember that your stakeholders are not experts on your users' experiences – your users are.

**EXPERT:** After you have launched your innovation there is good reason to carry out additional research to continue to monitor and assess its viability. These learnings might also provide valuable tips for selling and marketing the innovation.

## Techniques:

**Evaluative research** – All of the techniques mentioned in this guidance can be used to assess the outcome of the innovation and determine the need for any post launch developments. It is good practice to monitor who and how many people are using your innovation and to continue to gather user feedback including on how users are benefitting from the innovation.

**Quotes:** We found that customers would rather want the journey to take 20 minutes every day, than ten minutes one day and 30 minutes the next. If we hadn't done the customer survey, we could have spent a lot of time speeding journeys up when people were more interested in reliability.

It makes it much easier to sell ideas when customers have been involved from the start.



## CASE STUDY 4 - CITIES UNLOCKED

Cities Unlocked was initiated in 2014 to help people with sight loss navigate independently across London.

In collaboration with researchers at the Royal College of Art and University College London, Microsoft shadowed people with sight loss and measured their cognitive and emotional responses (using electroencephalography, or EEG, to monitor brain activity) as they planned and undertook journeys. This helped tease out what the specific needs and frustrations of people with sight loss were, particularly with regards to their pains of navigating and locating themselves in the environment.

Taking a user-centred feedback approach (as is key in the Deliver stage), a demonstrator headset was developed to supply the user with 3D audio. The device complements the user's own hearing and provides information that they wouldn't usually gain from just using a guide dog or long cane. As such, the headset considerably enhances their experience of moving through a city.

A trial was conducted where participants undertook a long, complex and unfamiliar journey using different modes of transport both with and without the technology. Data was collected to assess their well being, as this was an essential factor to measure at the Deliver stage of the innovation.

The results were compelling. Guide Dogs' research found that 10 out of 17 measures of well being were significantly increased when using the technology, with 62% of participants reporting an increase in their perceived safety, confidence and resilience. The technology also made the journey less labour intensive and mentally challenging. The results suggest that the concept demonstrator is an extremely positive complement to traditional mobility aids, which helps answer the question '**What user insights will help us sell/market the innovation?**' Encouragingly, all the participants stated that they would use the technology again, suggesting that the Deliver stage is near completion.

*Cities Unlocked has shown that taking time to understand how people interact with their environment, and putting the user at the heart of both the research and the design process, can deliver high-impact results.*



## CONCLUSION

*This guide has provided information on the following topics:*

- using SBR at each stage of the design process to realise the potential benefits
- what questions to ask to enable a successful product design and deployment
- what methods to apply at each stage including who to carry out SBR with, how to reach these people and the best way to gather their feedback
- how the insight generated from SBR can be best used to benefit innovation design and development.

Always ensure the SBR is focussing on the points of **who** the users are, **what** they need and **what** they desire. The links provided in the document will provide more detail about the various techniques. A key question to be asking throughout the stages is whether the proposed project is more 'technology push' than 'market pull'. **Is user feedback affirming that the innovation will capture the market?**

Further sources of knowledge include the Market Research Society ([www.mrs.org.uk](http://www.mrs.org.uk)); a UK professional body for research, insight and analytics, and the Social Research Association (<http://the-sra.org.uk/>); a membership body for social research. An academic source is the International Journal of Market Research.

For further information on qualitative research, please visit the Association for Qualitative Research at <https://www.aqr.org.uk/>

**Good luck with the innovation, and we hope you enjoy the many benefits that will arise from incorporating social and behavioural research.**

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