A behavioural approach to defining the End User Requirements for the Live Labs Knowledge Bank

Department for Transport

ADEPT LIVELABS2 Decarbonising Local Roads

amey

Interim Report - February 2024

Thinks Insight & Strategy

Today

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2. **Contextual Landscape**

3. **End User Requirements**
   - Informational Requirements
   - Feature Requirements
   - Operational Requirements
   - Organisational Requirements

4. **Summary & Next Steps**

Objectives & Approach

Objectives

Project Objectives

1. To understand End User needs for a Knowledge Bank through qualitative research
2. To specify Knowledge Bank End User Requirements (EURs), based on research insights and behavioural science best practice
3. To collaborate with platform suppliers in order to determine the format of EURs

This report will:

Overview the research approach to date

Outline the contextual landscape surrounding End Users

Use a behavioural model (ISM) to map how the context influences End Users' behaviour

Outline a longlist of End User Requirements that the Knowledge Bank could include

Suggest next steps for refining and delivering a consolidated list of End User Requirements

Recapping our three stage approach

IDENTIFY
Outline project objectives, scope and define user groups
Review existing systems

1. Project planning and inception
2. Existing materials review
3. Project Vision workshop
4. Supplier consultation – to understand potential functionality*
5. Draft behavioural journey map

EXPLAIN
Identify users' needs, challenges and behaviours
Research best practice

1. User depth interviews – 60 mins x10 users
2. Interview analysis
3. Updated behavioural journey map
4. Lateral category analysis

INFLUENCE
Share key insights, define End User Requirements
Develop wireframes

1. Research insights debrief **TODAY**
2. EUR specification in required format
3. EUR review and refine with stakeholders
4. Wireframe design

**After an initial conversation with one potential supplier, decisions were made to move the rest of the consultations to the end of the project, once greater clarity about the Knowledge Bank's functionality, objectives and the EURs were achieved.*

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Project Journey Map (simplified)

Key opportunity for Knowledge Bank use

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
STAGE	**Setting Budgets**	**Develop capital programme for planned works**	**Design process**	**Develop work package to pass onto contractors**	**Pre-construction meetings > work happens onsite**	**Post-work testing**
DETAIL	Local Authorities assigned maintenance work to assess network quality	Decide scheme locations based on asset info, local knowledge and reactive needs	Including survey of scheme; design work; materials selection	Select contractor and pass on programme of works for the year	Ongoing monitoring	Materials testing; temperature testing

Methodology

The research took place from December 2023 – January 2024.

A total of 10 potential Knowledge Bank End Users were interviewed, from across North Lanarkshire and East and West Midlands Councils.

The interviews were conducted online, via zoom/Teams, and lasted approximately 60 minutes each. A semi-structured discussion guide was used to guide the conversation.

Contextual Landscape

To understand our end users better we look at their individual, social and material context

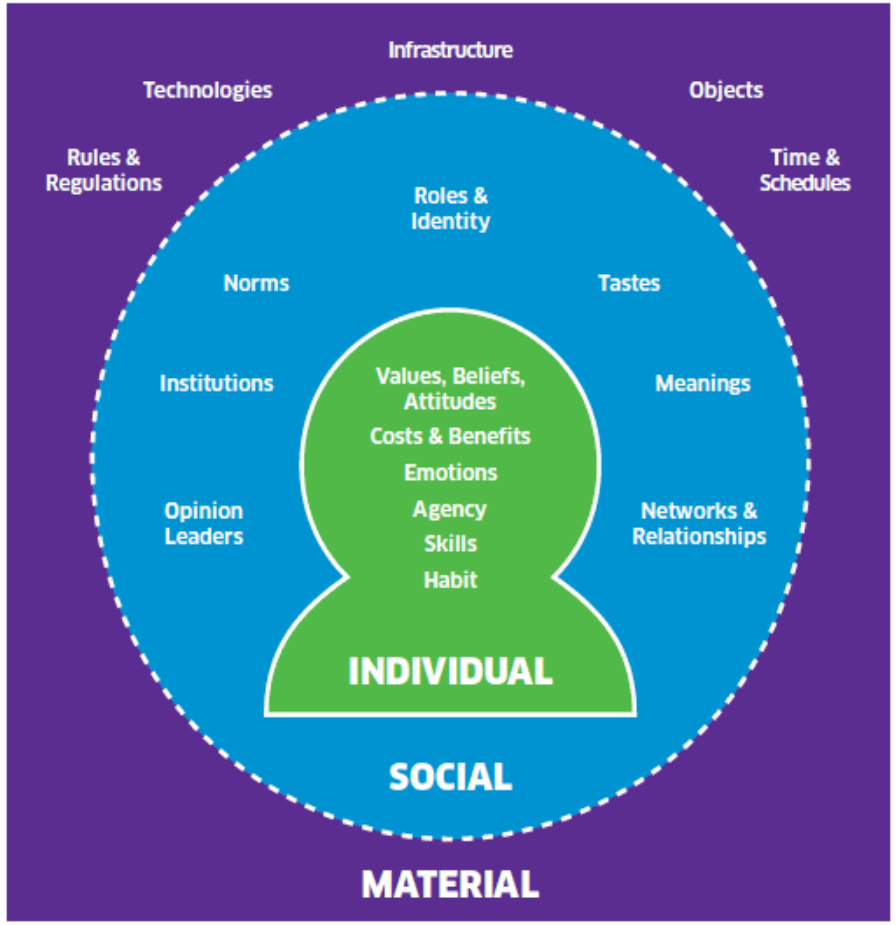
There are many different things influencing End Users' behaviour – all of which will impact their needs.

We use the **ISM framework**[1] to help us categorise the things that influence their behaviour:

- **Individual** includes personal values, attitudes, beliefs, emotions, skills and habits.
- **Social** includes established norms, social networks & relationships, personal roles and identity.
- **Material** includes time and schedules, wider infrastructure, rules and regulations.

Using ISM encourages us to think more broadly about the range of factors that influence behaviour, and therefore the context in which End Users are operating.

This can help us improve our chances of success – as we can better develop interventions that address factors across individual, social and material contexts.



1 https://www.gov.scot/publications/influencing-behaviours-moving-beyond-individual-user-guide-ism-tool/

At an Individual level, End Users have existing knowledge, habits and attitudes that influence their behaviour

Strong habits

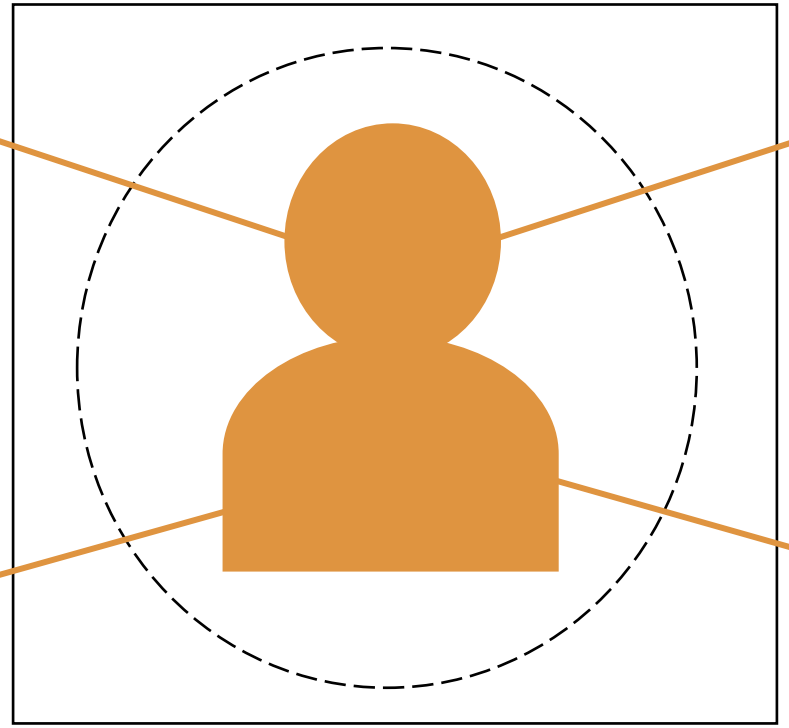
Habits to use familiar, 'safe', materials with known outcomes

"We need to have confidence that different materials have proven their worth and been tested over time in order to justify initial investment. We need to have strong confidence in ROI."
- Participant 3

Established knowledge

Knowledge built up over years means that decision makers often rely on previous experience

"Information [needed for decision making] largely lives with personnel."
- Participant 3



Perception of a lack of agency

Guidelines being set at a National level mean that appetite for innovation is suppressed (both an individual & material factor)

"The Knowledge Bank sounds helpful, however Scotland would need a direction to consider new materials - everyone needs to be instructed do the same thing."
- Participant 1

Curious attitudes

Sustainable approaches are welcomed in theory, but considered in relation to feasibility and cost

"I sort of expect that new and innovative low-carbon techniques will be more expensive" – Participant 4

At a Social level, across local authorities, there's a culture of risk aversion and a spectrum of innovation appetite

Culture of risk aversion

In general, there does tend to be an aversion to pursuing new approaches that aren't necessarily tried and trusted

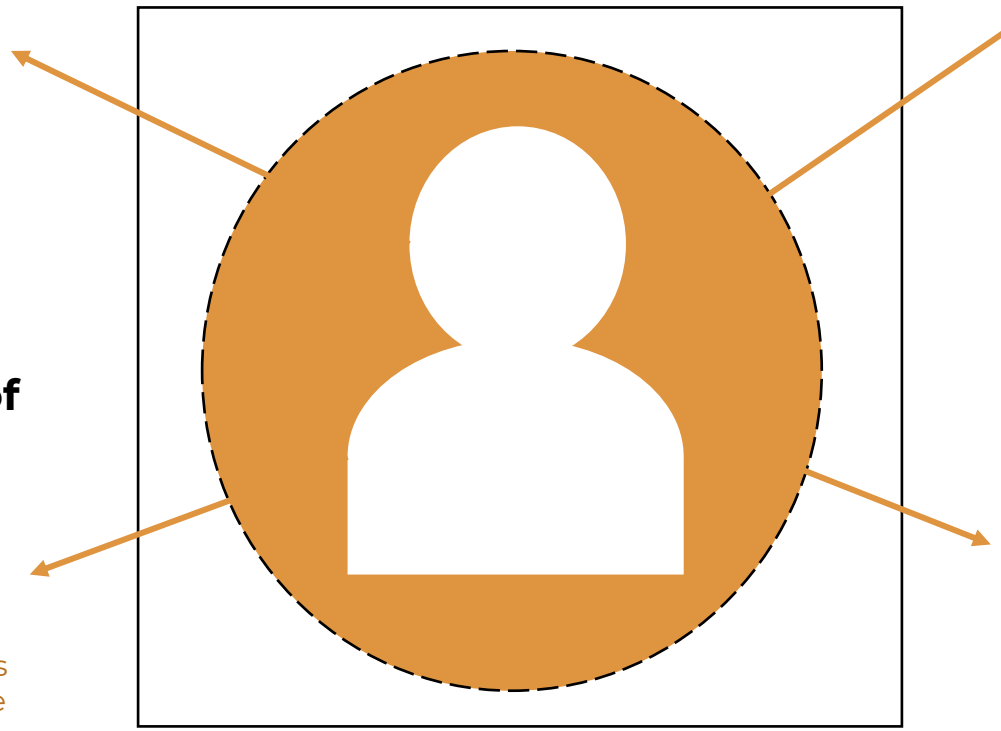
"I imagine everyone would be nervous about going off the norm when budgets are so tight..."

- Participant 3

However, there is a **spectrum of appetite for innovation** – with some far more open to new approaches

"In Lincolnshire we have developed our own in-house materials testing laboratory... Innovation is happening all the time, but a lot of authorities aren't as much in a place to take the risks that we can."

- Participant 5



Competition v collaboration (between local authorities)

History of local authorities acting in isolation, rather than together

"Many councils have historically been extremely closed off with their approaches. There's a culture of competition, possessiveness... driven partly by the industry [contractors]."

- Participant 5

Justifying to others

Due to limited budgets, decisions need to be cleared with multiple stakeholders

"You need system to justify your decision-making, because of budgets. We can't do everything, so need to be able to explain why we make one choice and not another." We use a scoring system, so that we don't get pushback from politicians"

- Participant 10

At a Material level, guidelines often dictate End User decisions, and budget is the biggest constraint

Budget cuts

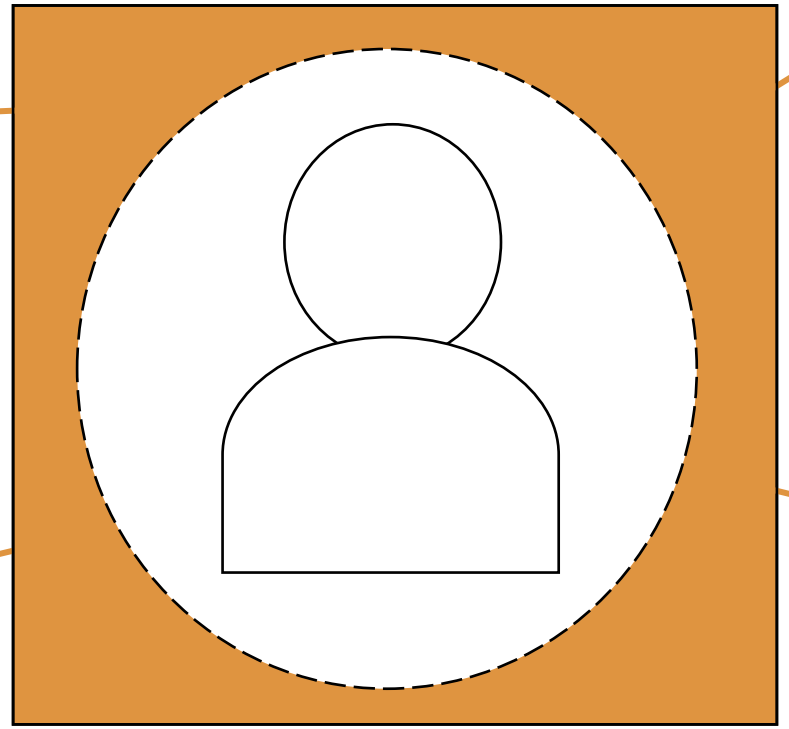
Huge financial pressures on local authorities are a significant concern

"The central issue is with finances, there's the perception that new things (materials, approaches, equipment, systems, etc.) are typically expensive and cost-prohibitive. Our budgets are extremely tight and don't allow for investing in innovations."
- Participant 3

Guidelines

Existence of long-established materials guidelines that councils have to follow

"HRA is the go-to for everyone… this comes from Road works commissioner's office."
- Participant 5



Time pressures

Staff leaving (and not being replaced), means there's not enough capacity for proactive innovation efforts

"In Scotland, the local authorities are small, and don't have the manpower to dedicate staff to [the climate emergency]. People are busy - it's an extra thing, that won't happen unless people are told what to do. "
- Participant 1

Data needs

Technical information (e.g. about materials/carbon) is needed to aid decision making

"Skill comes from picking the right intervention at the right time, and that's where the additional data really comes into play and provides so much added value."
- Participant 1

This suggests that the Knowledge Bank needs to shift people from a prevention to a promotion mindset

Prevention Mindset

Playing not to lose
A mindset geared toward avoiding losses and mistakes, and fulfilling obligations

Promotion Mindset

Playing to win
A mindset geared toward innovation, progress, achievement, and pursuing opportunities

Higgins, E. T. (1998). Promotion and Prevention: Regulatory Focus as a Motivational Principle. Advances in Experimental Social Psychology, 30, 1-46.

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End User Requirements

End User Requirements Overview

An ***End User Requirement*** can be defined as a specification outlining the features, functionalities, and characteristics that the final digital product must possess to meet the expectations and needs of its intended users.[1]

Within the context of tight budgets, strong existing habits and a culture of risk aversion, for local authorities to consider more sustainable approaches, they need a Knowledge Bank that instils trust, caters to specificity, creates consistency, and allows for flexibility.

"We don't have a problem with taking risk, but it's calculated risk."
- Participant 4

There are specific requirements that must be met in order for the Knowledge Bank to be successful. We've heard these priorities manifest across four categories:

1. **Informational requirements**
   Information / content that needs to be included for each case study / material
2. **Feature requirements**
   Tools that the Knowledge Bank needs to provide functionality for
3. **Operational requirements**
   Systems / operational realities that need to be in place to ensure success
4. **Organisational requirements**
   Mindset shifts that need to happen at a business level to set the conditions

1. Komodo Digital. (n.d.). User Personas vs User Requirements. https://www.komododigital.co.uk/insights/user-personas-vs-user-requirements/

End User Requirements

1. **Informational Requirements**
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Confidence requires specificity

Insight

To create reassurance and allow authorities to feel confident in trialling a new material or approach, users need to know as many specific details as possible.

Including:

- Time markers
  Trial dates, material approvals
- Longevity
  Material lifespan, performance over time
- Geography
  Trial location, material suitability
- Suited usage
  Road type, seasonality, limitations

"The main thing would be if the evidence was there to support that the materials and products were going to last." - Participant 2

"Can the material be used, or the process be used, during all seasons / weather?" - Participant 10

"For certain parts of the world, this would be brilliant. For my part of the world, and you have this geology, not right." - Participant 5

"Not every road is suitable for every process." - Participant 3

Note – in conversations with suppliers, we learnt we need to be conscious of protecting their IP. Therefore information in the Knowledge Bank must be mindful of this, and focus on the **how** rather than the **what** involved in materials trials.

Materials are only as good as their execution

Insight

The innovative technical nature or reduced carbon footprint of a material won't matter if it's not successfully delivered and properly applied.

Including:

- Delivery Specifications
- Equipment requirements
- Space requirements
- Traffic management
- Commercial availability
- Supplier(s) availability
- Application guidelines
- Efficiency
- Reinstating guidelines

"If it's not laid correctly, it's not going to last, just the same as everything...if it's not being put down at the correct spec, it's a waste of time." - Participant 9

"Is special training required or are specialist contractors or plant required for that process?...To apply that treatment or process, what would be the level of traffic disruption to the public compared to traditional methods?" - Participant 10

Money matters most

Insight

Local authorities must painstakingly navigate extremely limited budgets, and any decision—especially one that breaks with tradition—must be justified from a standpoint of cost efficiency.

Financials including:

- Costs of material
- Cost of equipment
- Value of repairs
- Short-term investment required
- Long-term gains/savings

"Unfortunately, a lot of the new processes tend to be expensive, and I think this goes back to the whole problem that probably most local authorities are facing is finance, because budgets are that stretched at the moment to the point of breaking. To try and finance a new process and new technique requires investment...while we'd consider new materials, it's very difficult for us to take them on." - Participant 3

"Everyone would probably be nervous of going off the norm when budgets are so tight, trialling something." - Participant 3

Carbon savings must be salient

Insight

If local authorities are going to consider carbon reduction as a priority in decision making, rigorous measurement is necessary to report and evidence the carbon impacts.

For example:

- NET carbon footprint
- NET carbon savings - comparison of new materials to standard/traditional approaches (e.g. carbon calculator)

"With all the different products and processes involved, I'm wondering if it's possible to have some sort of simple and easy-to-use calculators...to see what carbon savings can be achieved between different types of construction and material processes?" - Participant 10

"I've saved 240 tons of carbon on this job. How? What? Where? Why? Is it because of the material, is it because you're doing this, is it because you're developing xyz?" - Participant 5

Quantitative data requires qualitative context

Insight

Trust in information comes not just from robust quantitative data but also from personal experience and interpersonal relationships.

Social validation – for example:

- Peer reviews
  Pros and cons of different materials/approaches, ability to publicly rate and review materials
- Contact information
  Ability to contact those with experience of the material

"You would also want to have some anecdotal, qualitative information to back that up as well. You may talk to other people you know who have familiarity with that material, etc. in addition to what you're reading on the platform." - Participant 9

"Why? What has gone wrong? Why has it gone wrong? Whoever is driving this thing, it's almost like asking for both qualitative and quantitative information... Can we have some qualitative information as to why?... It's the detail has to be in there of the pros and cons, especially the negatives." - Participant 5

End User Requirements

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Users need to trust the data

Insight

To solve for uncertainty and overcome aversion to risk, the Knowledge Bank would benefit from various features designed to instill trust.

Trust indicators – for example:

- Reliable, transparent quality assurance
  Approval processes prior to publishing new information
- Verification system
  Criteria to verify suppliers/materials
- 'Approved' list(s)
- Visual aides
  e.g. badges/flag indicators

"There's reluctance to try something new because their hands were burnt the last time and it cost them a lot of money to redo it." - Participant 2

"Just the confidence it's been proven to work elsewhere and proven to last." - Participant 2

"Having a link to google maps so people can view the location, and see before and after and maybe in years to come. That accessibility via google would be useful." - Participant 10

Users need help making decisions

Insight

Individuals working in local authorities have limited time and more information available than they can effectively navigate when making important decisions.

- Decision support tool (i.e. filtering and/or search system)
- Interactive map
  Visualising and categorising different roads
- “My innovations”
  Ability to personalise – save materials/trials

“As a user, what I’m thinking I don’t want just a load of data… I need information accessible to me without it being a difficult data tool.” - Participant 8

“What I don’t want is a whole list of case studies and then I have to plough through to try and tell me what [they] mean…” - Participant 8

Users need financial confidence

Insight

Given tight budgets, any strategic decision is assessed on its economic feasibility, and any change in approach needs to be justified financially.

- Price calculator
  Including: upfront costs, long-term savings, material costs, demand/supply, relative costs
- Comparison feature
  Interactive ability to compare new materials to traditional approaches

"Case studies should include things like the relative costs compared to traditional materials and processes and of that reflected maybe as a percentage rather than revealing commercially sensitive information."
- Participant 10

"Whether people want to put a cost benefit to it, that could be an interesting challenge...do we say, oh this will last for ten years and it gives a cost benefit ratio of 1 lb / square meter..."
- Participant 5

Users need help breaking habits

Insight

Users don't know what they don't know — they need help disrupting the status quo, breaking ingrained habits and overcoming a preference for the path of least resistance.

- Notification system
  Emails or platform alerts – showing real time reminders of new information / customised information
- Carbon calculator

"To be honest [decarbonisation] isn't anything I've really thought about." - Participant 2

"The conventional materials are all great, but if we're aware of new materials coming on, then that's a good thing and maybe we'd consider trialling some of these in certain areas ourselves." - Participant 3

"If we don't know about it then we can't use it, we can't promote it, it's not going to get off the ground." - Participant 3

Users need human connection

Insight

While users heavily value data-backed recommendations and evidence-based decisions, they also place great value on firsthand experience and personal recommendations.

- Scoring system
  Determined by standard criteria
- Community review system
  Ability to verify/offer advice, Q&A

"What is trust anyway? It's the development of good experiences, and that's normally based on people." - Participant 8

"You would want people to have accessibility to the live labs team to discuss and explore the trials in more detail..."
- Participant 10

"I might have been working on something over [here]...and someone over in Cornwall, a couple of hundred miles away might have been doing something else, and I wouldn't probably have got to talk to them..."
- Participant 5

End User Requirements

1. **Informational Requirements**
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   Systems / operational realities that need to be in place to ensure success
4. **Organisational Requirements**

Standardisation will be key

Insight

Users report a desire for standardised processes amid concerns over quality assurance and data (in)consistency.

- Submission templates
- Formal submission process / workstream
- Read-only viewing experience

"Mini case studies of each trial, but with those, presented and edited by the same person or group of people so that there's consistency in the approach and presentation." - Participant 10

"Obviously just needs to be read only doesn't it." - Participant 5

Simple and efficient user journeys will be vital

Insight

One of the biggest potential barriers could be user experience—users will only return to a tool that is easy, simple, and intuitive to navigate and complete in a short time.

- User experience needs to be straightforward, clean, and iterative
- Common tasks need clearly signposted time to complete guides
- Feedback system

"Interesting, interactive, easy-to-navigate site, because people get fed up pretty easily. You need to be able to get in there and get out."
- Participant 10

"Easy to use...easy to find information you want...If it's complex or too hard to search or taking up too much of your time it could become a tool you don't use because you know it...would be just too time consuming in your day-to-day job." - Participant 2

End User Requirements

1. **Informational Requirements**
2. **Feature Requirements**
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   Mindsets shifts that need to happen at a business level to set the conditions

Technical change requires cultural change

Insight

The culture of an organisation has profound effects on attitudes towards — and willingness to embrace — innovation.

Culture change will need:

- Organisational buy-in from senior leadership
- A mindset shift from one of competition to collaboration
- Conducive procurement processes to support it

"The real challenge is going to be…how we can actually get the buy-in from authorities and others to ensure that it is being used in the right way." - Participant 5

"I think the issue is…councils in the past have been so closed it's unbelievable. It's like this is what I'm doing and I'm not telling you." - Participant 5

"I do have contacts within [other authorities] and I'll speak to them when I need to…but it's only to do with works and coordination of works…but it doesn't seem to be the same cross-collaboration in terms of working practices, processes and materials." - Participant 9

It will never work if it creates *more* work

Insight

Another potential barrier to uptake is the concern among users that a highly complicated system with tedious, manual data management processes will merely *add* to their workloads.

To function effectively, the platform needs:

- Dedicated support team and infrastructure in place
- Clear and supported process for updating data
- Technical support on hand

"They will need to do is have the champion(s) who literally are going knocking on the authorities and making that connectivity to say what have you been doing, what have you been working on, can we share it." - Participant 5

"People that are working on it need to be updating it...if it starts falling apart in five years time we need to know that as well. So, as a database I think this could be a really powerful tool, but someone's got to be really on it and really driving it." - Participant 5

Summary & So What...

Summary

1	Informational	Confidence requires specificity	Materials are only as good as their execution	Money matters first	Carbon savings must be salient	Quant data requires qual context
2	Feature	Users need to trust the data	Users need help making decisions	Users need financial confidence	Users need help breaking habits	Users need human connection
3	Operational	Standardisation will be key	Ease of use will be fundamental			
4	Organisational	Technical change requires cultural change	It will never work if it creates more work			

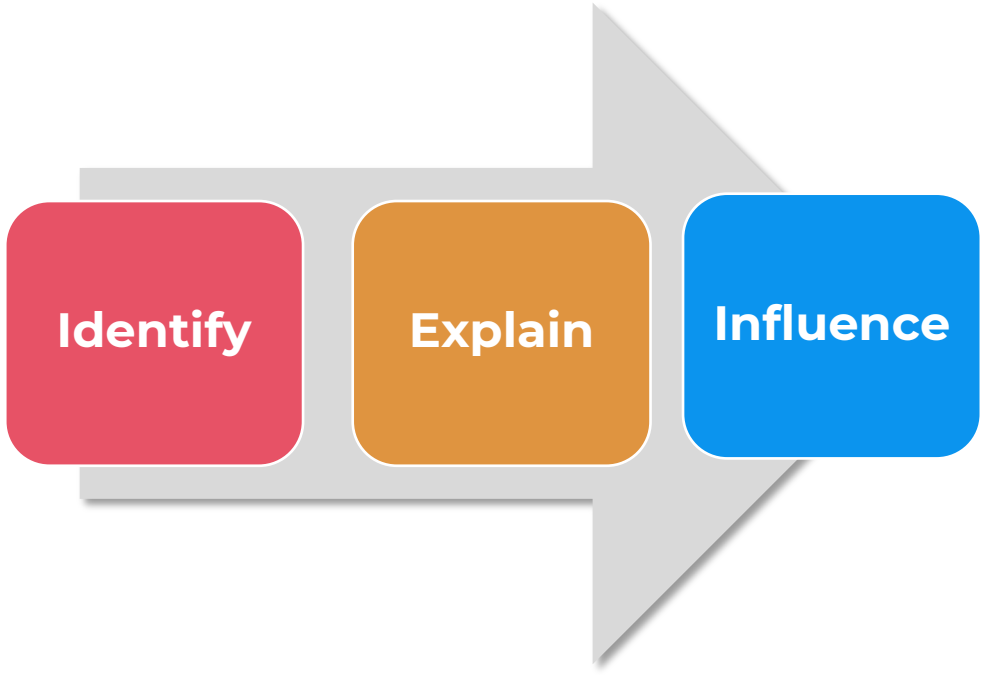
So what...

With our long list of End User Requirements, we need to consider:

- What are the priorities for the Knowledge Bank?
- What is most important for our End Users?
- And so... what is the MVP?

To answer these questions – we need to **revisit our conversations with suppliers**

- To define what is possible
- To consider if the Knowledge Bank can be created from an existing tool or needs something new
- To understand the next steps (i.e. design briefs / wireframe development)



Next Steps

- Thinks to recontact suppliers to discuss design brief / EUR requirements
- EUR specification in required format
- EUR review and refine with stakeholders

QUESTIONS?

Thank you

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