

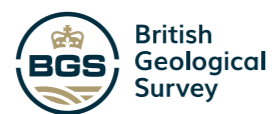
# Devon Design Sprint Report

## June 2023

National Land Data Programme (NLDP)

An overview of the key findings, insights, and recommendations that emerged from the Devon design sprint.

- » Food, Farming and Countryside Commission
- » British Geological Survey
- » Westcountry Rivers Trust



# Content

## Devon Design Sprint Report

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## Devon Design Sprint

# Executive Summary

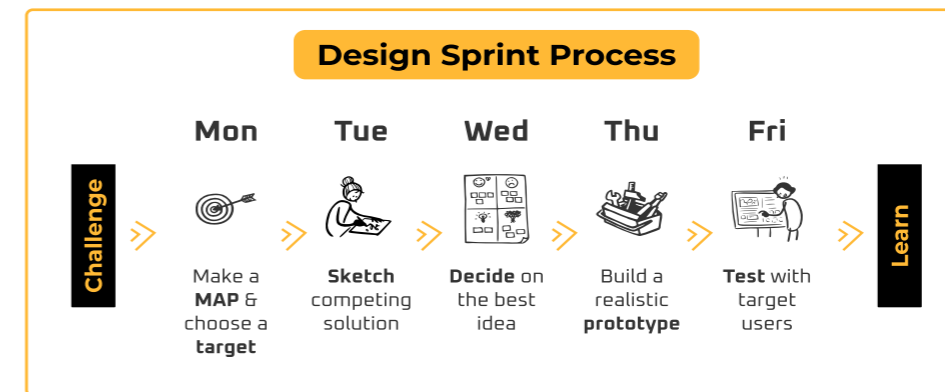


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Over the course of five days, a group of stakeholders involved in the land use decision-making process in Devon worked together as a team to create a prototype decision support tool aimed at facilitating carbon-focused land use decisions in the rural environment. After the prototype was developed, it was tested by a range of intended users to assess its usability and effectiveness. The work presented here was funded by the Geospatial Commission as part of the National Land Data Programme<sup>1</sup> which fed into the Devon Land Use Framework<sup>2</sup>.

Land is a finite resource. In the UK the limited land area and growing population makes managing competing priorities and land use functions particularly complex. Land use is often multifunctional and yet is subject to various trade-offs.

The design sprint focused on long-term carbon sequestration and storage in rural land use decisions, with an understanding that carbon forms a component of a range of ecosystem services.

Spatial data and modelling tools provide an opportunity to support the assessment, planning and management of land use. The design sprint team began by identifying pinch points in the decision-making process where geospatial data and tools might support land managers and their advisors to make and influence land use decisions. The team worked collaboratively on designing a prototype decision support tool that addressed these pinch points.

The key requirements the team agreed to incorporate into the prototype were:

- » Baseline and future land cover options;
- » Clear summary of economic incentives and impact of any land use changes;
- » Simple and easy to use;

The user testing demonstrated the need for **shared digital evidence** upon which to base conversations at both the **strategic and granular/ site scale**. This included using field-scale data wherever possible to facilitate conversations at both on-farm and landscape scales.

Users also said they wanted functionality that could support the creation of a **'community of change'** to help people work together to leverage better **environmental, social and financial outcomes**.

The design sprint and prototype led to an understanding that a suite of spatially explicit data and decision support tools is integral to a land use framework. **Having access to easy-to-use data is a critical part of having informed discussions around land use change.** A shared evidence base is central to ensuring that leaders and local stakeholders are able to **understand and communicate the benefits, trade-offs and shared outcomes** possible from land use decision making.

<sup>1</sup> <https://www.gov.uk/government/news/new-geospatial-data-projects-to-shape-the-future-of-land-use>

<sup>2</sup> <https://ffcc.co.uk/land-use-framework>

## Devon Design Sprint

# Introduction

We set out to investigate how data and digital tools can help **consider and understand the effects** that land use decisions have on **carbon sequestration and storage** in the context of soil, woodland/ forestry and peatlands.

**Date:** February 2023.

**Location:** Exeter Community Centre, Devon.

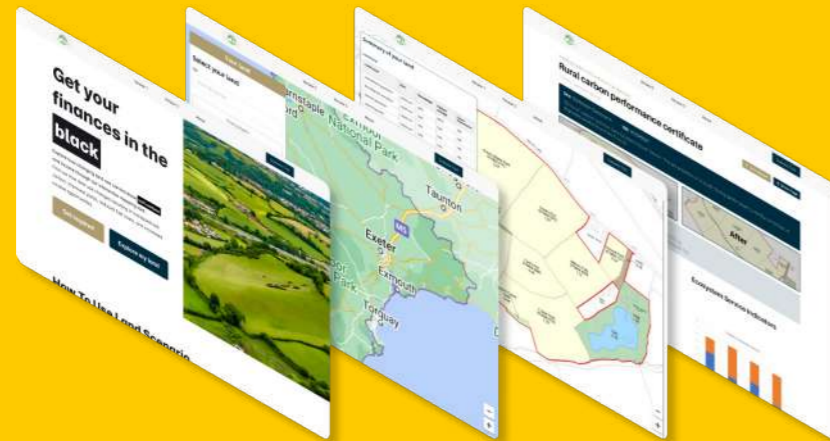
**Facilitators:** British Geological Survey (BGS).

**Supported by:** Food, Farming and Countryside Commission (FFCC), Westcountry Rivers Trust (WRT), and the Geospatial Commission (GC).

**Participants:** Clinton Devon Estates, Clyst Valley Regional Park (as East Devon District Council), and Exmoor National Park.

**Sprint outputs:**

- » A testable digital prototype of a decision support tool that responds to the 'big challenge' identified prior to the sprint;
- » Findings from participants during the week;
- » User testing insights; and
- » Recommendations from the design sprint team.



Screenshots of the prototype that was created during the design sprint.

## Introduction

# Background

Since 2021, the National Land Data Programme (NLDP), headed up by the Geospatial Commission (GC), has been aiming to better understand the challenges around land use decision making and demonstrate how innovative data analysis can help address these.

The GC and the Food, Farming and Countryside Commission (FFCC) both have the goal of better understanding how to enable joined-up land use decisions and FFCC are running a pilot to investigate how a Land Use Framework (LUF) (<https://ffcc.co.uk/land-use-framework>) could facilitate improved decision making. There are two pilots that FFCC are leading, one in Devon and the other in the Cambridgeshire & Peterborough Combined Authority. The LUF pilots are working with land managers and owners, local leaders and communities to test how a LUF could help make better decisions about land use. The premise of the pilots is that significant land use change will be needed in the coming decades to meet the increasing demands being placed on land and difficult decisions will therefore need to be made around land use trade offs and tensions. To tackle this, we need a cross-sector process to understand where the opportunities and challenges lie in achieving multifunctional land use. Through a mix of workshops and one to one conversations with the pilot sites and their stakeholders, the Devon pilot has been learning how the principles and practices contained within a land use framework process can work on the ground. The learning from this pilot can be utilised to inform work underway in other locations and nationally to tackle the challenges around making multifunctional land use decisions.

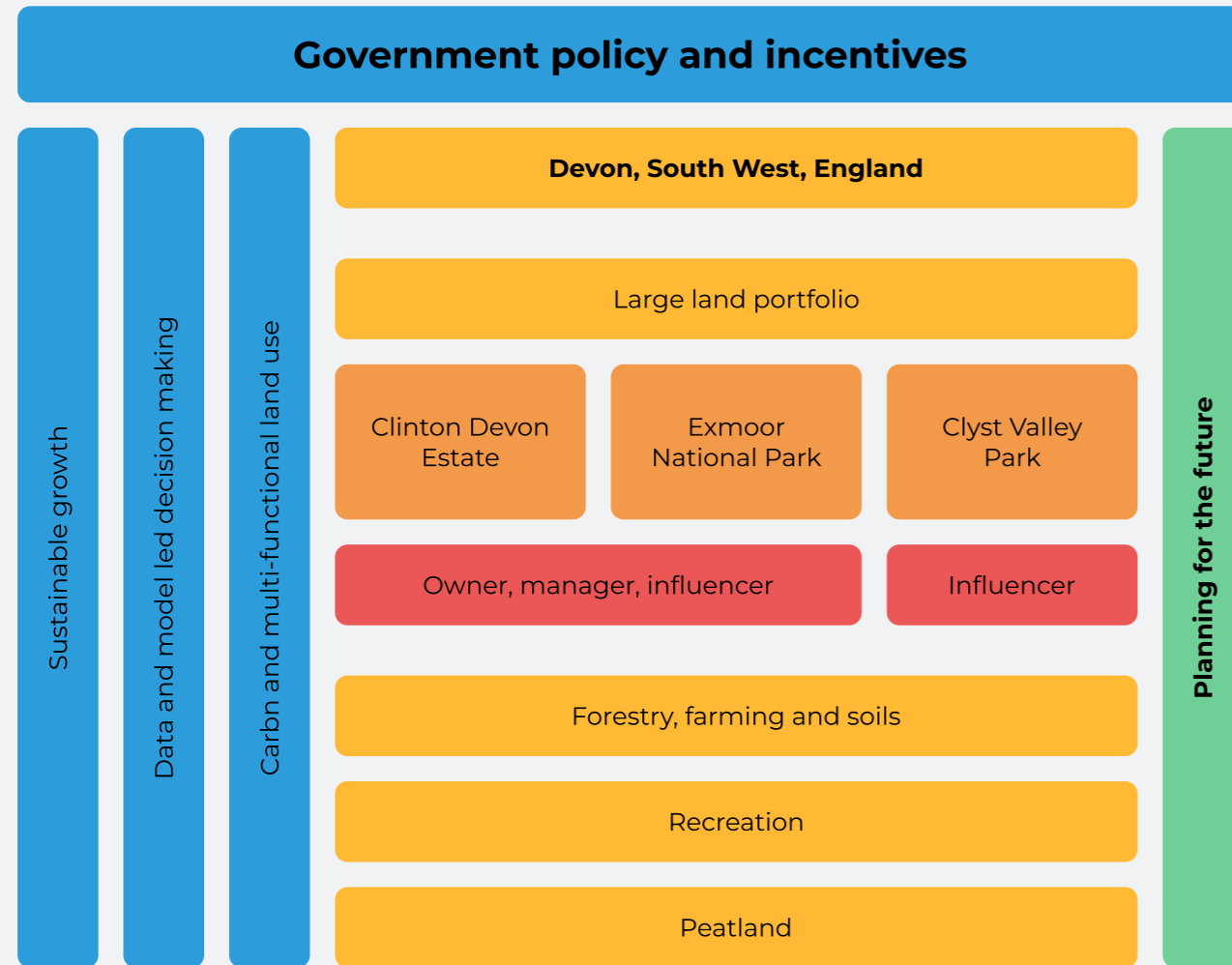
In order to shape the Devon Land Use Framework pilot a range of professionals in the land use sector needed to be engaged simultaneously. This included detailed conversations about the challenges and opportunities around using data in land use decision making. The outcomes of these conversations were documented in our User Requirements Gathering (URG) report (unpublished). Our key findings from this stage of the work were:

- » All data needs to be **QFAIR** (Quality, Findable, Accessible, Interoperable, (Re)usable);
- » Data and models at **useful resolutions** (usually site scale) are missing;
- » **New forms of visualisation** are required to communicate value, benefits and strategies; and
- » **Skills are not widespread enough** to make use of tools that do exist.

To build on these findings, the idea of a design sprint was adopted to co-create a testable digital prototype tool for land use decision making.

# Introduction

## Design Sprint Context



Themes in common between non-DS team participants / land managers / influencers.

# Introduction

## Design Sprint Overview



**This design sprint focused on developing a tool to support decision-making around carbon in the context of a broader land use framework pilot.**

The group identified three key challenges related to incorporating spatial data into decision-making:

1. access to relevant and current policies and constraints
2. usability and understanding of presented information, and
3. the usefulness of information for the target audience

Throughout the week, the group navigated tensions between the specific focus of the sprint and the concept of

multifunctionality that is at the heart of the FFCC land use framework. The democratic process of the design sprint allowed for collective decision-making and to manage these tensions. The facilitators guided the group through the technical specifics of the prototype while keeping in mind the broad challenges that the initial user requirements identified through a series of interviews in 2022. The design sprint process demonstrated the importance of collaboration and co-creation to the development of a local land use framework.

## Introduction

# The Big Challenge

The big challenge sets the scene for the design sprint, enabling participants to focus together on a specific problem space.

**Land is the UK's most valuable asset and is a finite resource.** Land use considerations cut across multiple government policy priorities such as house building, food production, carbon sequestration, biodiversity net gain and energy security. The UK Government has a target to reach net zero by 2050 which will require significant land use change. Given the multitude of land use policy priorities, trade-offs will need to be managed. Data and evidence will be crucial to enabling decision makers such as local authorities, landowners and land managers, to make informed land use decisions which maximise benefits and minimise unintended consequences.

Exmoor National Park, Clinton Devon Estates, and the Clyst Valley Regional Park cover large portfolios of land in Devon. Each is presently **considering how best to integrate organic carbon monitoring and management into decision making** in ways that support land use planning and change, both now and in the future. All recognise that there are economic, environmental and societal factors that underpin the decisions being made to achieve Net Zero.

**Understanding the current and future role of data and land use modelling in decision making in this evolving carbon dialogue will be vital to overcoming challenges**, whether that involves tree planting, restoring peatland or improving soil quality. The grand challenge shared by all is how best to develop strategic plans that align with Government policies and incentives whilst monitoring and managing their impact over the long-term at field and landscape scales. All are looking to find a way to aggregate current and future data – with scope for this being a living evidence base that informs land use modelling. In each case, data and models need to be presented in a way that can facilitate conversations with internal and external stakeholders.

Each organisation **aspires to sustainable growth and acknowledges carbon sequestration**, along with other net zero initiatives, is an intrinsic part of this requirement.

## Focus

Rural carbon sequestration and storage

## Requirements

A key requirement shared by all is how best to **develop strategic business plans for how land is used that are complemented by Government policies and incentives** and support monitoring and management of their impact over time at field and landscape scales.

## Role of Data

Demonstrate the value of **data and land use modelling in decision making** to overcome the big land use challenges around carbon sequestration and storage.

## Introduction

# Design Sprint Roles

There are a number of key roles to be fulfilled in a design sprint. Selected participants had completed initial interviews as part of the early stages of the NLDP and were actively involved in the Devon Land Use Framework pilot.

- **Decider** - The decider role exists within this exercise to make final choices or break ties. This has to be one person, and it's usually the CEO or equivalent.
- **Participant** - Participants are typically a small group of cross-functional team mates or peers that add ideas and participate in each of the exercises.
- **Facilitator** - The facilitator(s) are there to ensure the process stays on track and to help summarise discussions in the group, drawing out better outcomes. They are not required to have any background knowledge in the challenge being addressed.
- **Expert speakers** - Expert speakers are invited to speak on day one of the design sprint. They share their knowledge of the industry, user behavior, and best practices. They help the team by providing new perspectives, offering inspiration, challenging assumptions, and identifying potential risks.
- **Testers** - User testers are recruited from a variety of backgrounds, including potential users of the product, experts in the field, and stakeholders well placed to provide critical feedback. The user testers are given a brief overview of the prototype created during the design sprint and then asked to complete some tasks while verbalising their thought process. The testing process also includes interviews to delve deeper into the feedback and insights gathered.

We'd like to thank our user testers for taking the time to engage with the prototype and provide detailed feedback. Their valuable insights and contributions were instrumental in shaping our findings and recommendations.

Introduction

# Participants

### Sam Grinsted (Sprint Decider)

Food, Farming and Countryside Commission

Devon Land Use Framework Project Manager

Sam is currently leading on the Devon land use framework pilot, with FFCC also running a pilot in Cambridgeshire. FFCC's proposed land use framework continues to be shaped through discussions with stakeholders across multiple sectors. His goals through the sprint were to gain insights into the kinds of tools or data that would better support the framework and its end users in making land use decisions.

### Sam Bridgewater

Clinton Devon Estates

Director of Environment, Strategy and Evidence

Sam oversees the development of the Estate's conservation strategy and Land Use Programme. His remit includes the delivery of catchment-scale wildlife restorations projects and supporting actions to achieve enhanced environmental performance of all Estate landscapes, including farmland. He leads on work related to natural capital and achieving the Estate's net zero carbon ambitions.

### Simon Bates

East Devon District Council, Clyst Valley Regional Park

Green Infrastructure Project Manager

In the process of establishing a new regional park, Simon has a sizable challenge in influencing a wide range of landowners and land managers to consider providing access to their land. Under the Clyst Canopy project they are trying to increase canopy cover in the park area to 30%. Through the design sprint, Simon wanted to understand how he might present data more effectively to his audience to influence land use change decisions.

### Sarah Wigley

Westcountry Rivers Trust

Senior Evidence & Engagement Officer

As a core member of the Devon LUF team, Sarah has been pivotal in conducting the stakeholder engagement and user requirements gathering around data and evidence. WRT has an interest in improved water quality and flood resilience, which are direct outcomes of better land use decisions. Sarah's goals revolve around understanding which spatial datasets and tools have the greatest potential to positively impact land use decisions and support long-term benefits to local communities and the environment.

### Rob Wilson North and Alex Farris

Exmoor National Park

Head of Conservation & Access and Conservation Manager

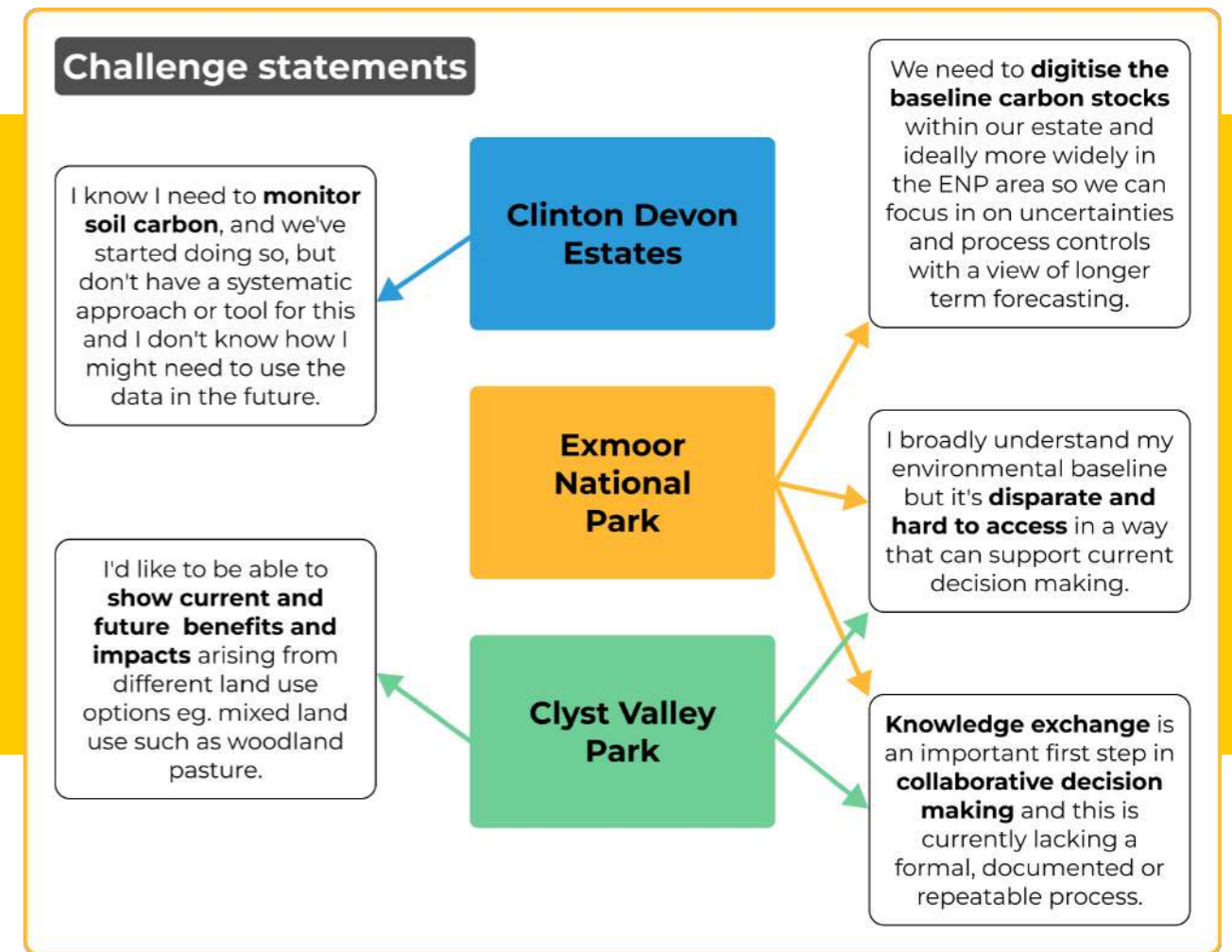
The national park is a landowner, land manager and land use influencer that aims to maintain and enhance the natural beauty of Exmoor whilst also improving the landscape by undertaking projects which will affect many of the national priorities, including carbon net zero. Their aspirations for the sprint were to interrogate the land use decisions they take in light of the legislative and regulatory pressures that cover much of their land, and understand how data can play a part in supporting their decision-making.

### Darren Beriro and Tom Fletcher

British Geological Survey

National Land Data Programme Facilitators

Having spent the duration of the NLDP facilitating discussions between the NLDP pilots and their stakeholders in land use decision making, Darren and Tom have built up a large breadth and depth of knowledge about struggles in this space. Their aim for the sprint was to perform as a proxy for these users and be a voice in the prototype ideation sessions for a solution which would be useful for these users.



### Rebecca Mitchell

Quanterra Systems

CEO

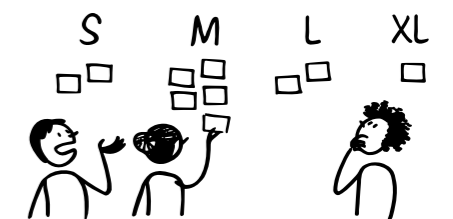
Rebecca came to share with the group [Quanterra's\\* cutting edge work](#) on providing cost effective measurement of the flows of carbon dioxide between the atmosphere and ecosystem, showing whether carbon is being sequestered or emitted. Rebecca's lightning talk gave our participants a unique perspective on the advances being made in measurement – and on differing drivers for change.

### Carl Watson, Paulius Tvaranavičius, Shwetha Raveendran

British Geological Survey

Design Sprint Facilitators

Agnostic of the problem space, Carl, Paulius and Shwetha are experts in prototyping, user experience and business analysis. Their aim for the sprint was to facilitate the best possible prototype solution.



\* Quanterra's system provides carbon flow measurements every 30 minutes covering approximately a 4 to 10 hectare area of land per measuring station. This can help users better identify how land use and management practices are impacting carbon sequestration, which can help drive decision making on land use change. It can also be used to support monitoring and verification for payments for ecosystem services.

## Key Findings

## Stakeholder Needs

**Data and tools facilitate confidence in pursuing shared outcomes on farm and/ or landscape scales.**

When these feature in decision making, broader benefits and more complex solutions can be considered. Multifunctional land use and stacking of ecosystem service value are aspirations which become realistic goals when stakeholders collaborate using a shared digital evidence base.

**Decision makers want to be able to have high resolution data relevant at different scales to facilitate conversations on the ground around land use options.**

Decision makers want data and tools that demonstrate options for a specific site, and to know how any changes to land use on that site might interact with land around it. The drivers behind this depend on the user of the data and the decisions being made and include:

- » Land managers, e.g. land owners, want to know what the priorities are in their immediate area, and if their actions can be combined with those neighbours are taking in order to achieve greater impact (both financial and environmental);
- » Land use influencers, e.g. statutory bodies, want to know how the changes on one farm can feed into the broader objectives across a catchment/area. Building decision making scenarios on high resolution data would help multiple users to interact with digital evidence at a variety of scales.

**The wide range of data and tools can feel overwhelming and difficult to navigate. It is important that users have the best available information and then use it in decision making.**

Creating new digital solutions isn't necessarily the answer, there are many excellent tools and data available. The challenge is making sure the right data and/ or tool is readily available and can be easily understood by different users, clarity of the data and information presented is a key feature of a shared digital evidence base.

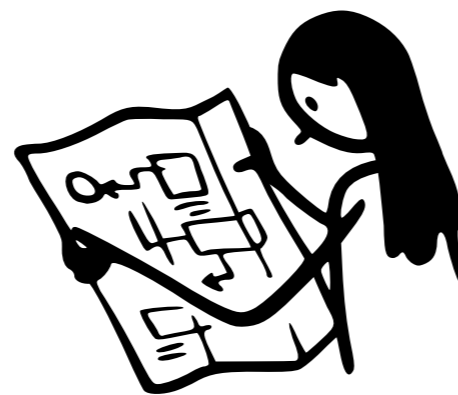


*“The big benefit would be knowing what others are doing with the land around you – how do you stitch all the actions that are happening around you together? In a system where different actions are weighted – you need to understand how that affects decision-making.”*

Tester #5



The goal of the first day was to encourage everyone to share what they already know and **develop a common understanding with the rest of the group**. By starting at the beginning (even if some people are already familiar with the problem), it nudges the group into a beginner's mindset and leads to fresh solutions.



### What is a design sprint?

A design sprint is a week-long facilitated workshop that guides a small group through a creative product co-design process. It starts by defining a shared challenge that needs solving and ends with a testable prototype solution that is trialed with potential end users.

## Devon Sprint Schedule

February 20th - 24th, 2023

	Monday Map	Tuesday Sketch	Wednesday Decide	Thursday Prototype	Friday Test
	We'll kick off our sprint by sharing knowledge, understanding the problem, and choosing a target for the week's efforts.	A day focused on coming up with solutions...lots of them.	We'll have a bunch of ideas in sketch form - it's time to make a decision.	On Thursday, we'll adopt a "fake it" philosophy to turn that storyboard into a prototype.	Friday is the day to finally put our prototype in front of our users.
9:00	Intro / Overview	Lightning Demos	Solution Sketches	Recap	Tester #1
	Big Challenge	Note Taking	Vote On Favourite Concepts	Assign Tasks	Tester #2
	Success metrics	Key Ideas	Sort Winning Solutions	Build The Prototype	Tester #3
	Lightning talks	Crazy 8's	User Flows		Retrospectives / Next Steps / Feedback
12:30	Lunch Break	Lunch Break	Lunch Break	Lunch Break	Finish
	Risks	Solution Sketch	Storyboard	Write Test Script	
	User Journey Map			Trial Test	
16:00	Target for the sprint			Prepare For User Testing	
Goals	<ul style="list-style-type: none"> <li>Shared understanding of the big challenge</li> <li>Long term goal, metrics and risks</li> <li>Key users</li> <li>User journey map</li> <li>Target for the sprint</li> </ul>	<ul style="list-style-type: none"> <li>Review comparable problems</li> <li>Review notes from Monday</li> <li>Generate a lot of ideas in sketching exercises</li> <li>Create a solution sketch</li> </ul>	<ul style="list-style-type: none"> <li>Review solution sketches</li> <li>Pick a favourite concept / combine multiple concepts</li> <li>Pick the User Flow for storyboard</li> <li>Sketch a storyboard</li> </ul>	<ul style="list-style-type: none"> <li>Create a prototype</li> <li>Test the prototype</li> <li>Write user testing script</li> </ul>	<ul style="list-style-type: none"> <li>Observe usability tests</li> <li>Capture notes</li> <li>Review notes</li> <li>Decide on the next steps</li> </ul>



### Goal for our design sprint

The goal for the week is to **produce and test a prototype** solution to the challenges associated to considering carbon when making land use change decisions.



## Day 1 Vision



## Sprint Questions

- 1 Can users access relevant and current policies and constraints from the tool for a land use scenario?
- 2 Can our users use and understand the information being presented?
- 3 Is the scope / resolution of our information useful for our target audience?

### Vision

In order for the group to be aligned throughout the week, the first port of call was to **agree on a shared vision against which success could be measured going forward**. This was an opportunity for the participants to articulate their idea of success for the week.

The group experienced some tension in creating a vision for the week. Participants saw it as a chance to agree on a vision for what a land use framework could be as opposed to creating a vision specifically focused on the prototype. Whilst it was useful to gain this insight into the wider context in which the prototype development was taking place, the vision that the group agreed on (see next page) was not a good yardstick for

the success of the prototype. As the discussions and tasks played out through the week a more applicable vision may have been **"The prototype will call land managers to action by proving the value they can add to their estate through land use change which increases carbon storage"**.



## Vision

**1.** The pilot will demonstrate how leaders and citizens can utilise a land use framework to **bring about consensus** on how to achieve land use targets in the short & long term.

**2.** The pilot will have made the case for a **community of practice** that aims to translate the shared vision (national targets) to local decision making.

# Day 1 Decision Making Process



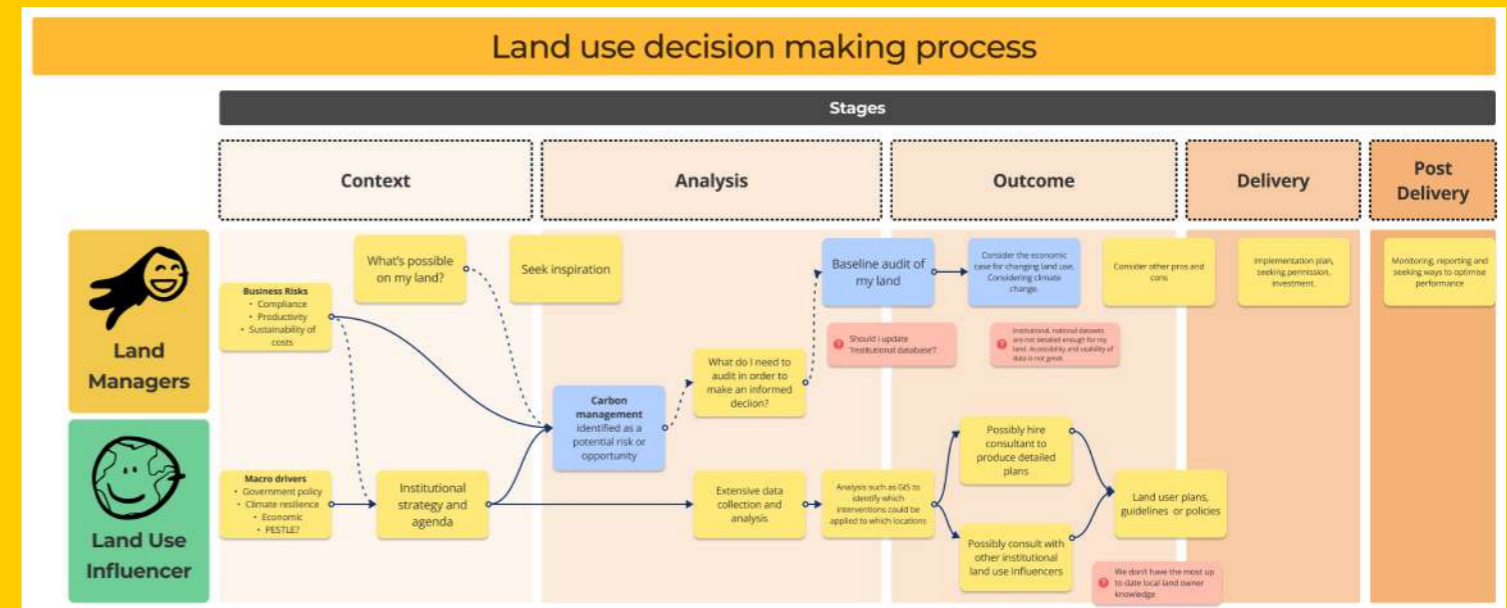
The crucial part of the week was to **identify a generalised journey that the participants go through** when considering land use change e.g. How are they prompted to make an alteration to their land? What factors are included in their decision and how do they rank in priority? How are the effects of their decision communicated? And how is change actually implemented?

Throughout the process of a land use change being put into effect,

**three key points were identified where spatial data around carbon sequestration and storage could be a relevant factor.** These points in the process are where the group discussed there being inefficiencies and thus where a decision support tool might be able to provide benefit (these points are represented as blue boxes on the page 20 infographic).

# Day 1 Key Steps/Pinch Points in User Journey

1. When a land use influencer is **considering the environmental impacts of their strategic plan for an area**, they may consider carbon factors as part of this. For example, when trying to establish a regional park they may look at the current land use in a parcel along with its environmental impact and estimate the potential impact of altering the land use to align with their plan,
2. This **information will then be communicated to the land manager alongside the effects it will have.** This will often happen face-to-face with the land manager, with the land use influencer walking them through their proposal in the most concise way possible.
3. The land manager will attempt to **validate and assess the options as well as analysing the compromises that will be made** if they carried out the proposed changes to their land. Assuming there is an alignment in findings and outcomes, a deliverable business plan will be produced and followed.



Visualising the user journey and mental model of the sprint group's perspective on the land use decision-making process.

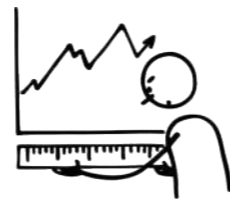
Day 1

# Metrics and Signals

The outcome of this task was to identify what the participants of the workshop would see as **measures of success** for the prototype which would inform the shared vision. The outputs were a series of post-it notes which represented all of these thoughts in one place.

## How Might We (HMW)

A 'how might we' (HMW) exercise was conducted to elicit questions, challenges, and opportunities from the participants. This exercise aimed to address various concerns, such as land managers feeling unable to access specific datasets. For instance, a HMW note could be phrased as "how might we gain access to X dataset." These HMW notes offer valuable insights into the participants' current thoughts regarding the design sprint and the significant challenges at hand.



Day 1

# Risks

The objective of this task was to **identify the top three risks** that could potentially impact the prototype's success by the end of the week, and devise strategies to proactively manage them.



### Process

Voting was performed on the list generated to enable the participants to identify the top three risks they felt were most important to manage.

The decider reviewed the heat map of all the votes and articulated the three key risks. The risk statements were then converted to questions. The top three risk questions which the prototype was to be tested against were identified.

### Top three risks

1. Can users **access** relevant and current policies from the tool for a land use scenario?
2. Is the **scope/resolution** of the information useful for our target audience?
3. Can our users **use and understand** the information being presented?



## Day 1

## Learning

The design sprint was a chance to demonstrate how we might move forward without the pressure of committing to solving all the issues stakeholders have identified over the course of the LUF pilot.

Land managers need to be engaged earlier in a community of practice before influencers begin their translation of national targets to local applications.

It is possible to review the risks and use them as identifiers for why areas experience sub-optimal land use decision making and there is a general slow uptake of land use incentives. Some of the key reasoning was highlighted as:

- » Landowner scepticism of influencers' intentions;
- » Tool fatigue;
- » Policy changes leading to land managers holding off until something better/that has greater clarity arrives; and
- » There are many similar tools and programmes addressing land use issues and this can lead to decision fatigue and eventually no decision being made.

Despite the purpose of the design sprint being to investigate challenges around data and carbon, the group created a vision that spoke to the broad goal(s) of the Devon land use framework pilot. The fact that data and tools didn't show up in the vision demonstrates that it was difficult at the start of the week to separate the task of developing a prototype from the wider outcomes that the land use framework is pursuing around multifunctional land use.

The goal we came together to achieve at the design sprint is inextricably linked to the wider conversation around how a land use framework might support the participants to address the broad land use challenges they have shared with us over the course of the pilot. This tension we experienced on day one, and returned to at different points through the week, is a microcosm of the process of developing a land use framework. Single issue solutions feel inadequate as the interconnectedness of the challenges we face is undeniable.



As the discussions and tasks played out through the week, a more applicable vision may have been **“The prototype will call land managers to action by proving the ecological and economic value they can add through land use change, which increases carbon storage”**.

It is still possible to draw findings from the vision proposed during the week such as:

- » Land use influencers and land managers struggle to reach consensus; and
- » It is difficult to align or to prove the alignment of their short and long term goals

Mapping the decision making process highlighted key insights around how the participant roles interact and come together around the collective big challenge. Generalised insights were as follows (page 25-26):

## Day 1

## Personas

As part of the user journey mapping exercise the group sketched out the personas of two key roles.



## Land Managers

**Are short on time and have to make decisions based on what will affect the bottom line in order to remain profitable and in business, key drivers here are:**

- » Economic sustainability
- » Needs rapid validation of suggestions made by influencers;
- » Relies on trusted friends and advisors to help make decisions; and
- » Is unable to spend long periods in front of a computer, however, they can often make time for meeting advisors on their land or speaking over the phone.



## Influencers

**Dedicate time to:**

- » Explore land use scenarios;
- » Discover new opportunities and processes for enabling land use change; and
- » Research policy and grants and other means of delivering change.

**Have in many cases expert knowledge on:**

- » Policy, incentives and schemes at national and local levels; and
- » The impact different land management strategies have on the environment, society and the economy

**Have access to plenty of data maps and tools. However, because there are so many, it is hard to see the wood for the trees in terms of what is useful and reliable.**

**Focus largely on the drivers for land use change such as:**

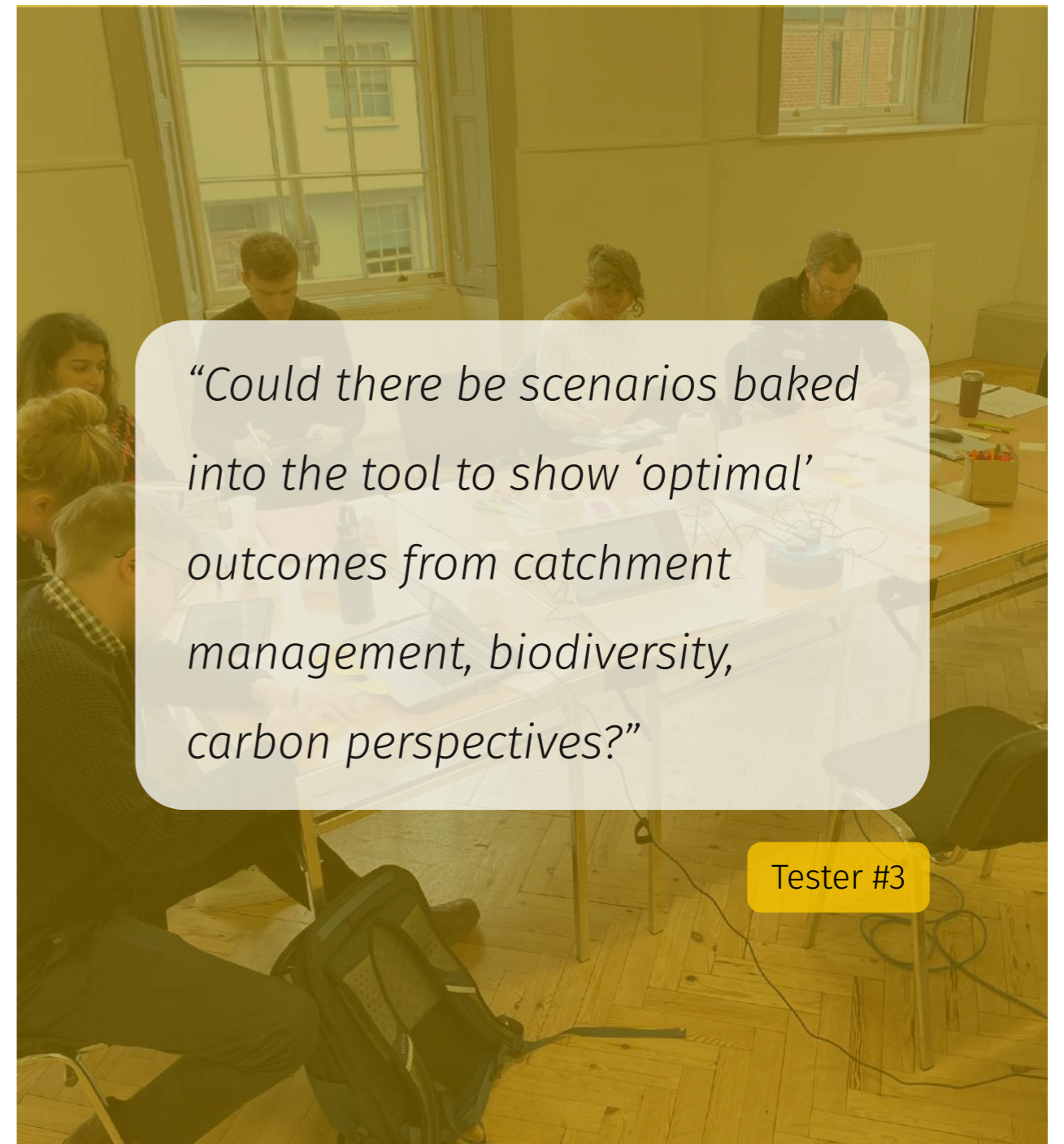
- » Flooding;
- » Food security;
- » Water quality;
- » Net zero (although this is in its infancy);
- » Biodiversity;
- » Public health; and
- » Financial incentives

**May struggle to influence land use decisions because:**

- » They are unable to provide clear evidence to land managers regarding the key drivers for change;
- » In larger schemes over wider catchments it is challenging to find out who manages the land parcels they are trying to influence;
- » They are unsure exactly what the process a land manager will go through to make a land use change; and
- » They struggle to communicate the value of their suggestions



The second day of the design sprint was about **finding inspiration, looking back at the decisions made during Day 1, and starting to assemble possible solutions.** Now that the team has narrowed down a problem space, it is time to start the idea generation process with sketches.



*“Could there be scenarios baked into the tool to show ‘optimal’ outcomes from catchment management, biodiversity, carbon perspectives?”*

Tester #3

# Day 2 Crazy 8's and Solution Sketches



### Crazy 8's

Crazy 8's is a time-constrained exercise in which participants are asked to sketch eight different ideas in eight minutes. It is a crucial step in the design sprint process that helps the team to quickly generate a large number of ideas and solutions to a given design problem.

### Solution sketches

During the solution sketch exercise, participants are given a short period of time to create rough, low-fidelity sketches of potential solutions to the problem at hand. The sketches are then shared with the group and critiqued, allowing the team to select the most promising ideas to move forward with.

# Day 2 Crazy 8's



The intended outcome of this task was to get the participants thinking outside the box for solution ideas and to get creative juices flowing. These ideas would form the basis for the next activities.

Outputs from each participant in this activity was eight small, low-resolution sketches for potential solutions to the identified pinchpoints. The expectation that each is more radical than the last.

Voting was then performed to identify the participants' preferred ideas.

The aim of this task was to agree upon the key features of the prototype solution. Each sketch builds on the ideas voted for in the crazy 8's exercise and suggests a three-step sequence of pages or events a user would see.

The output from each participant was a three-stage sketch showing what the end user may experience as a solution and votes from the group on their preferences.

Voting was performed on the favoured ideas and the decider chose the most suitable. The decider is pivotal, as they will be the advocate for the solution after the sprint. They must be committed to whichever solution is chosen.

# Three Stage Solution Sketches



## Day 2

# Learning

The start of day two began by checking our assumptions and conclusions from day one. This process was critical to achieving the goal of sketching solutions by the end of day two. Clearly defining the target audience, helped when grappling with the challenge of designing a tool for two similar but distinct users (land managers and influencers).

**Process reflections**

The push to harness the group's creativity in sketching solutions meant that at points we veered back into the tensions experienced on day one around limiting the scope of our solutions to the sprint goal, and not the wider land use framework process. The discussions and ideas that surfaced during these activities highlighted the importance of including how the prototype could support achieving multifunctional decision-making in our thinking including but also extending beyond carbon.

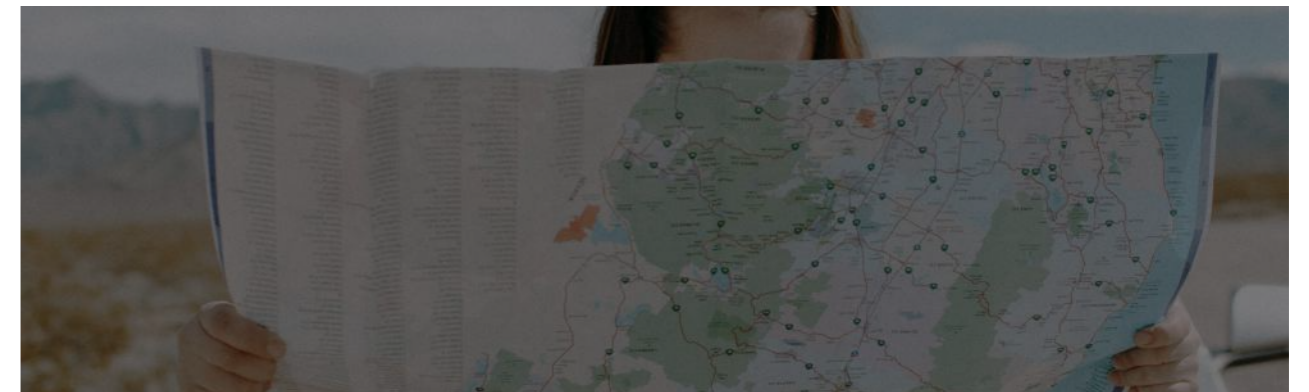
*"I would like to see a tool that brought in information about what was happening around the land in question. How can any actions that are suggested link up with work that is already happening in the area being looked at?"*

Tester #2



## Day 3

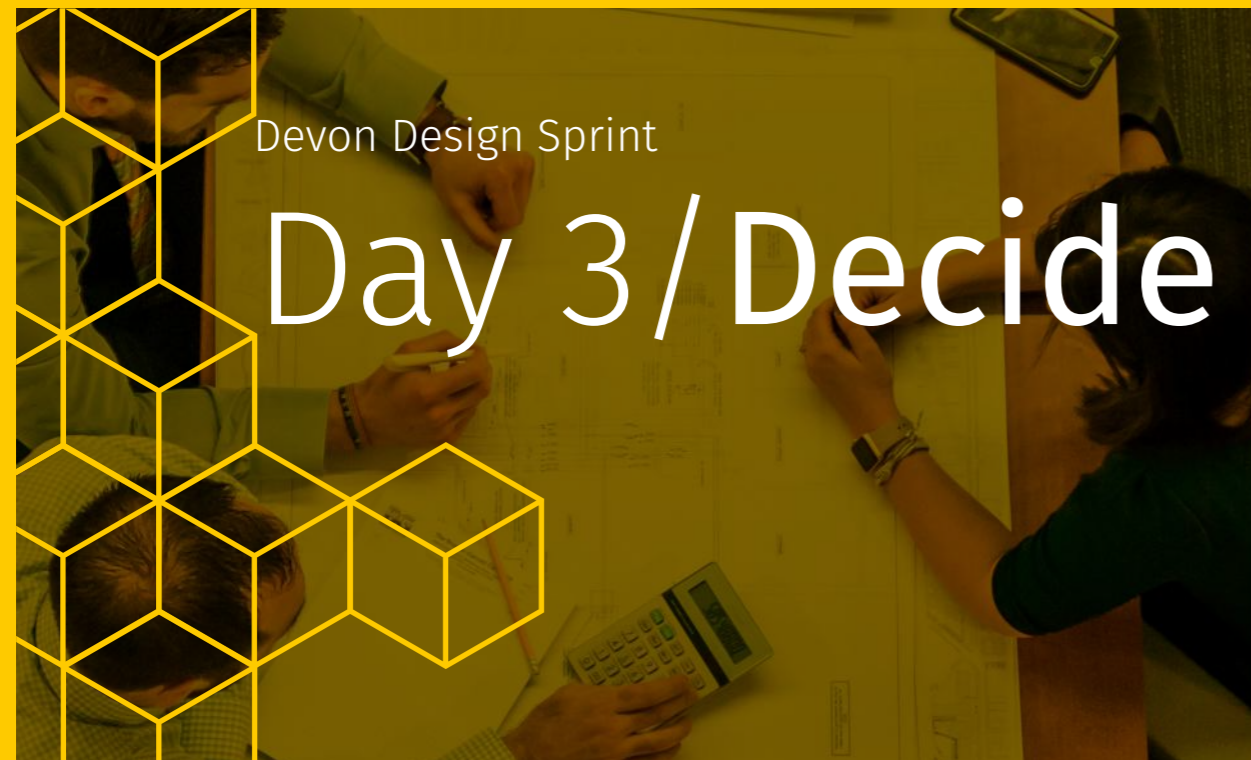
## Use Cases and Storyboarding



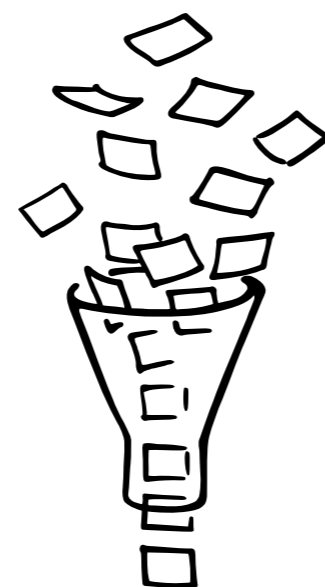
Use cases exercise aims to **identify the various ways users might interact with the product** or service being designed. This exercise helps the design team define the different scenarios that the product or service will need to handle and create a shared understanding of the user's needs, motivations, and goals.

The design team sketches the user's journey, from their initial engagement with the product or service to their ultimate goal, using the use cases identified in the previous exercise as a guide.

Storyboarding exercise aims to **create a visual narrative of the product or service's user journey** by illustrating each step in the user's interaction with the



**Day three** of a design sprint is focused on generating and selecting the best solutions to the problem or challenge identified on the previous day and **storyboarding the most promising idea that will be prototyped the following day.**



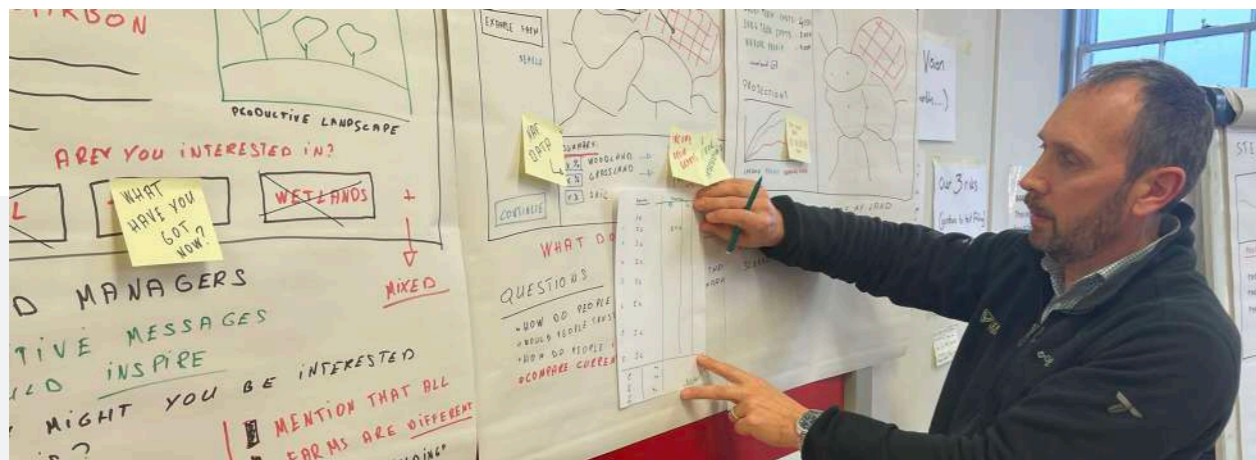
# Day 3 Use Cases



The output from this task was a variety of user journeys that participants envisaged the end users may embark on when using the prototype. Participants voted on the specific steps in their journeys that they would like to explore in the prototype.

This involved **considering the risks and metrics that were previously identified during the design sprint.** The decider had the final say on agreeing a user journey to take forward to the prototype.

# Storyboarding



Following on from the use case and sketch of the chosen solution, the outcome from this activity was to **produce the best possible guidance for the creation of the prototype** (to be carried

out the following day) in the form of a storyboard. The storyboard imagined in detail every step of an end user interaction with the prototype, from first arriving at it through to where the user would go after their last interaction.

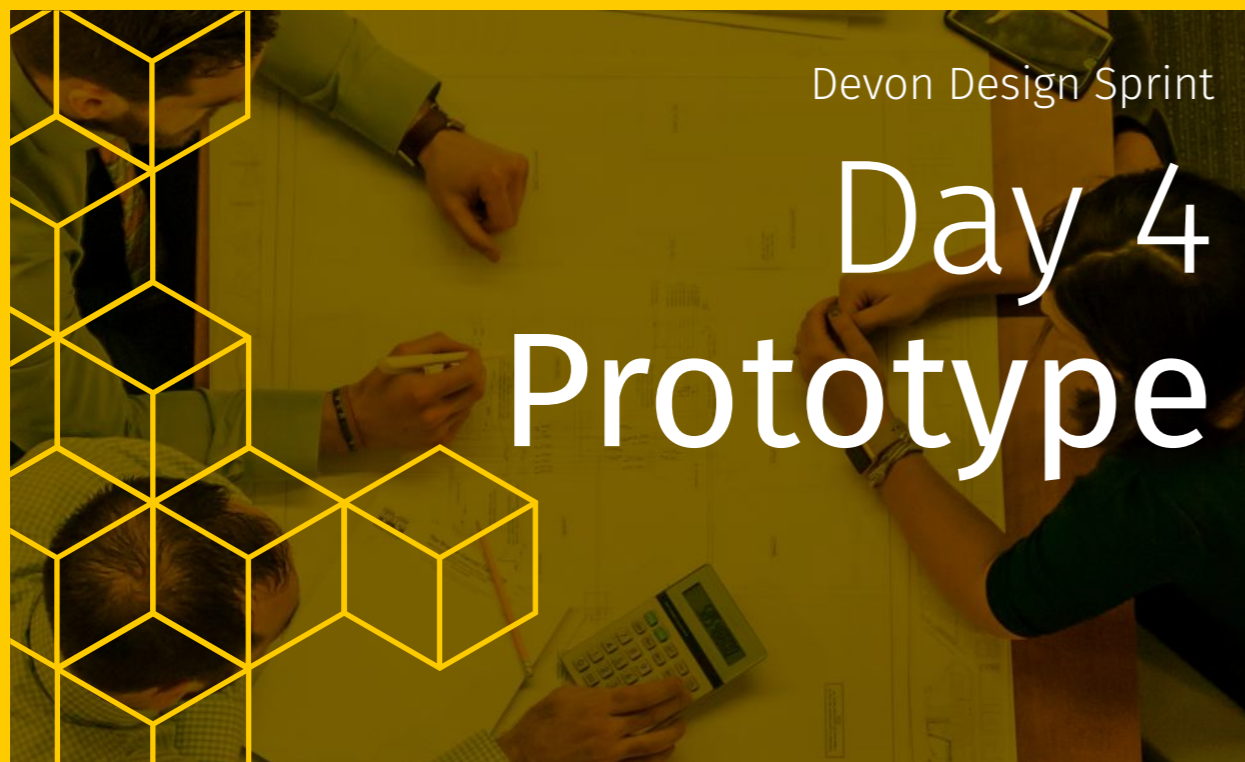
# Day 3 Learning

The learnings on day three consolidated a lot of what had been established over the course of days one and two. It was useful to see the differences in the journeys produced by the participants who were land use influencers, who were much more data focused, compared with the land managers who were much more business focused.

The democratic nature of voting and reaching decisions collectively had been present throughout the week to this point, however the benefits of that really started to crystallise on day three. **The group were comfortable discussing options with one another and making trade-offs at a point in the process when it was important to focus on building consensus.**

The collective development of understanding on how key priorities fit into one another to develop the decision support prototype has clear similarities to the land use framework process more broadly. **A collaborative group interrogating how local priorities fit into a national picture to establish a framework that has a clear route map to follow, is central to the FFCC land use framework.**





The purpose of **day 4** of the design sprint was to **create a realistic, interactive prototype** of the chosen solution. The prototype was designed to simulate the key features and interactions that users will have with the final product.



*“We are actively thinking about this for local nature recovery strategy (LNRS). Because carbon sequestration and carbon credits will be part of delivery framework. How we can maximise carbon and biodiversity opportunities is a key question. Managing the loss of habitats if certain outcomes are pursued over others is something we need to bear in mind.”*

Tester #4

# Day 4 Prototyping



The process of creating a prototype involved transforming the sketches and storyboard from the previous day into a realistic, interactive model that simulates the user experience. The prototype was designed to simulate the key features and interactions that users will have with the final product, and was refined and iterated on throughout the day based on feedback from the team. The goal was to create a high-fidelity prototype by the end of the day that is ready for testing and validation on day 5 of the design sprint.

## User testing script

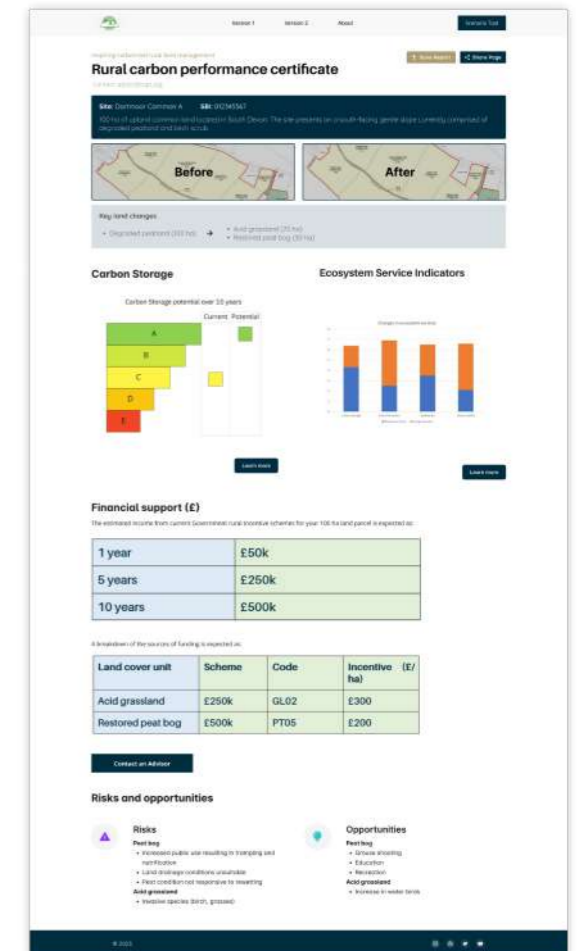


The team created a user test plan for day 5. **The testing script was designed to provide insights to mitigate the 3 risks and answer the 3 sprint questions identified on day one.** The team then reviewed the prototype they created and identified the key aspects of the user experience that they want to test. The goal of creating a user test plan on day 4 was to ensure that the team is prepared to conduct effective user testing on day 5 and gather valuable feedback that can be used to refine and improve the final product.

# Day 4 Findings



We used the prototype as a talking point to invoke discussion around the land use decision making process and the blockers and key opportunities in influencing better land use change for the future.



**Financial support (£)**

The maximum income from carbon sequestration could increase schemes for your 100 ha land parcel in England:

1 year	£50k
5 years	£250k
10 years	£500k

In addition to the sources of funding it is reported as:

Land cover unit	Scheme	Code	Incentive (£/ha)
Acid grassland	E250k	GL02	£300
Restored peat bog	E500k	PT05	£200

### Risks and opportunities

- Risks**
  - Peat bog
    - Increased public use resulting in trampling and disturbance
    - Land drainage conditions unsuitable
    - Peat combustion or response to weathering
    - Acid grassland
      - Reduce species diversity, grasses
- Opportunities**
  - Peat bog
    - Reduce public use resulting in trampling and disturbance
    - Restoration
    - Restoration
    - Acid grassland
      - Improve species diversity

## Day 4

## Learning

The group found it difficult to avoid getting caught up in the technical specifics attached to each area of the prototype. The facilitators keeping the group moving was critical to achieving a final prototype – there were occasions where new ideas were slowing down the process of development.

The drive for clarity and the need for the prototype to suggest features that were believed to be technically feasible (regardless of how difficult they might be to achieve and maintain) were critical to the design. Giving an idea of the art of the possible – without overcrowding the tool with too much information – was a difficult balance to strike. The team had to keep in mind the results of the initial user requirements gathering while responding to the information that had been debated throughout the week. Having this bedrock of user requirements to refer back to helped to sense check the development of the prototype.



## Day 5

## User Testing



## Testing the Prototype

We asked the participants to explore the prototype decision support tool.

During the user testing the participants were presented with the prototype that was created on day 4. They were asked to describe their first impressions - what they think this tool is, who is it for and what is it supposed to do?

## Listening to People

We also presented two different homepages to evaluate which message resonates better with our stakeholders.

Afterwards, the participants were asked to explore the prototype freely for a few minutes and talk out loud to verbalise what goes through their mind. This helped us uncover what the participants found useful, or frustrating.

The tests were facilitated by two people from our design sprint group, and the rest of the group observed it remotely from the other room and took notes.

To fit in with the diaries of our stakeholders we undertook user testing on multiple dates through March 2023.



On **day 5** of the design sprint, user testing was conducted to validate the prototype created on day 4. **User testing involved observing and gathering feedback from potential users as they interact with the prototype.** The insights gained from user testing were then used to make final adjustments to the design and to support writing recommendations for future development.



## Day 5

## Learning

Our user testing has expanded our insights into the capabilities that would be desirable in a functional decision support tool for this user group.

## Findings

- There may be too many tools available already causing some potential users to see anything new as just another tool.
  - Any new solution would need to have a very clear USP and would need an equally clear communications strategy in order to cut through and realise the desired impact.
- Digital solutions should not be 'dumbed down' but they need to be extremely clear, usable and useful to the intended audience.
- Business/finance risk and opportunity are the main drivers for land managers to consider land use change.
- Carbon is one of a range of potential focus topics e.g. flooding, food security, agroecology, biodiversity. These should not be siloed.
  - **Land use decision making is a system of systems challenge.**
- Backend data and models are crucial in powering the user interface.
  - Some exist but fail to fulfil the QFAIR principles. There is still an active space for innovation.
- The catalyst for a land manager thinking about change is often a discussion with a neighbour or having heard of a successful land use change decision by a nearby connection.
- **This insight into how neighbours and nearby land managers are making use of their land is crucial as a way of understanding how to potentially motivate collaborative working and knowledge exchange.**

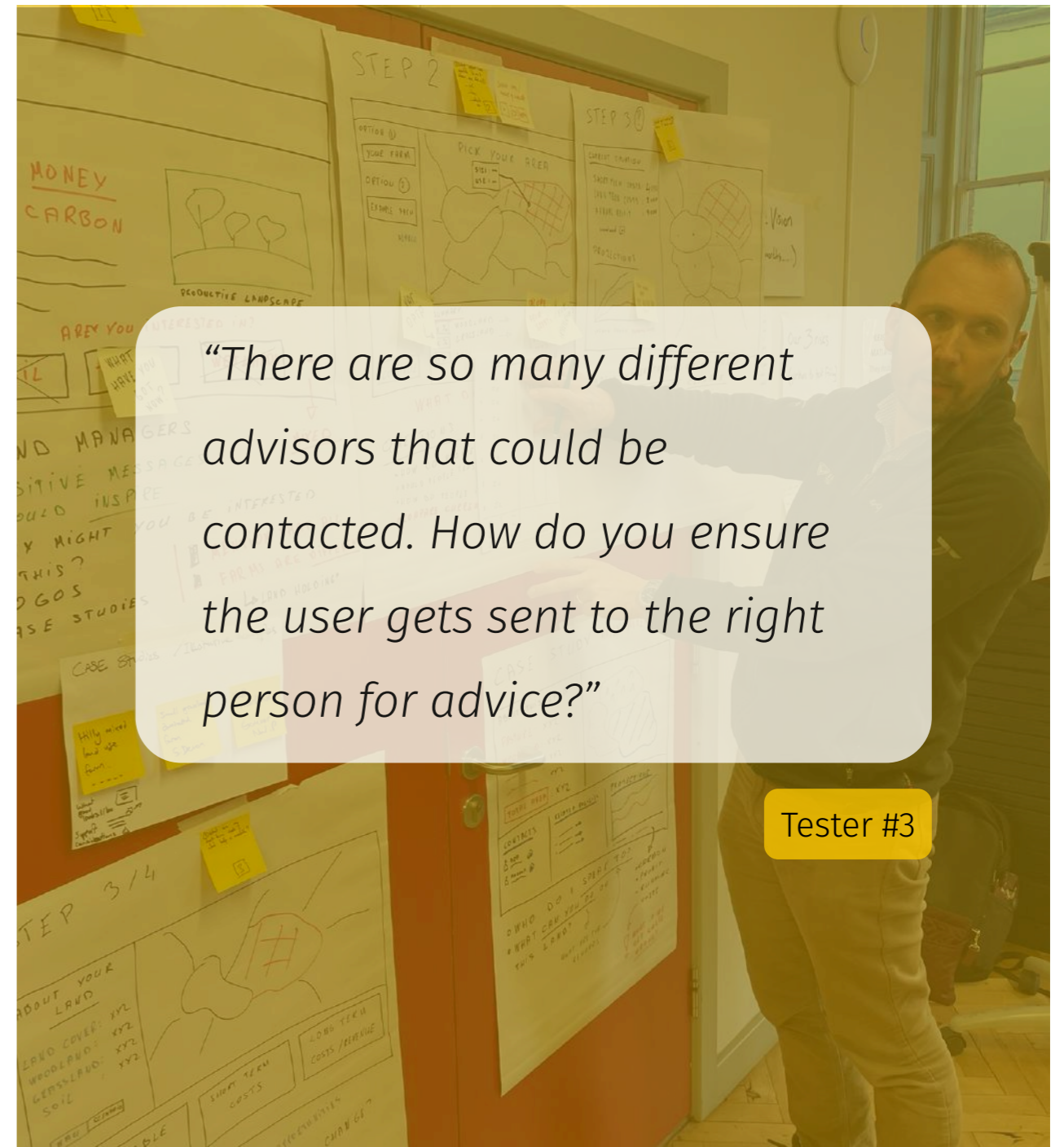
- **A land manager will be more likely to take up the offer of discussing land use change options suggested from within a digital tool with an advisor if the cost (or absence of cost) is highlighted before they take action.**
- Current government incentives for income generation are often considered too low to drive decision making but will be made use of if a land parcel currently complies.
  - Economics are a significant factor in driving change, but beyond that the social and cultural identities attached to being a land manager also influence decision-making.
- A community of practice is highlighted as a huge potential driver for change. Congregating a group of people within and across sectors locally to discuss how they are working to address local challenges can push others to do the same and enable smaller landowners and land managers to enter the market.
- In some local authorities they are struggling to direct their section 106 funds to land managers that wish to undertake land use change projects.
- Stakeholders are worried that local authorities are focused on the achievement of national housing targets at the expense of environmental considerations.
- Outcomes around carbon sequestration and biodiversity don't always go hand in hand. If the goal is to maximise carbon benefits then the solution is to plant high density monocultures. It is important to look at outcomes in the round so we achieve the best multifunctional use of land.
- Current blanket national targets for tree cover, agnostic of localised environment, are unachievable.



Devon Design Sprint

# Final Prototype

A prototype we created served as a visual representation of the proposed solution. It allowed the team to test and validate their assumptions and ideas with real users.



*“There are so many different advisors that could be contacted. How do you ensure the user gets sent to the right person for advice?”*

Tester #3



### Prototype - Step 1

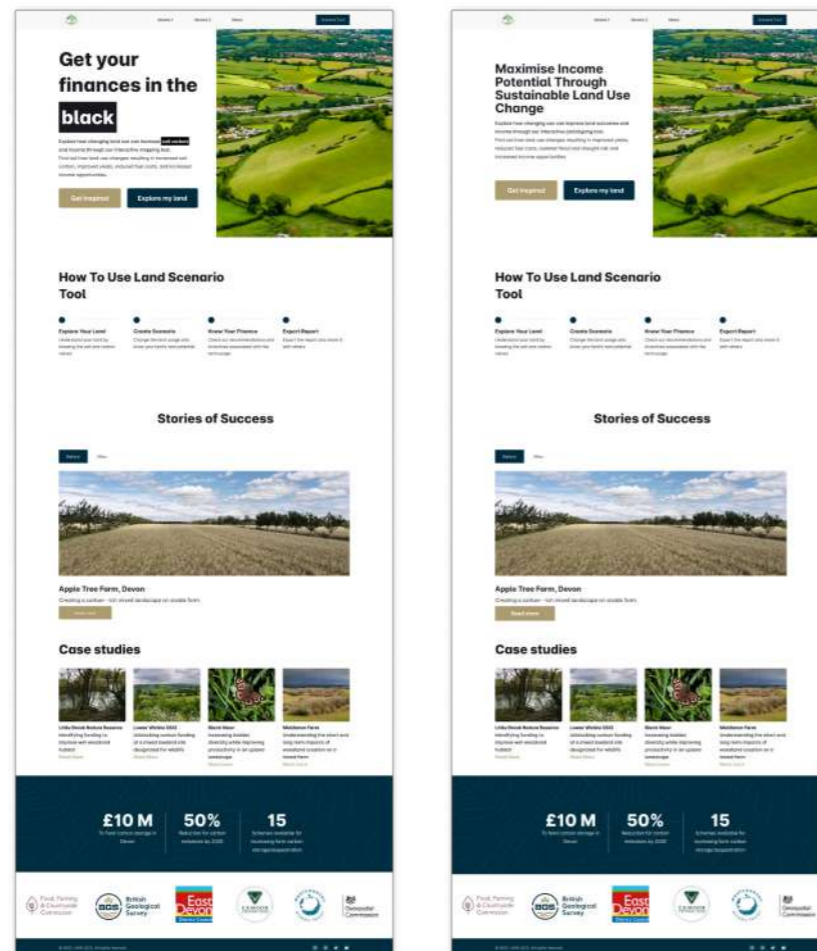
## Learning About the Land Use Tool

The following pages detail the prototype's user flow and actions that could be taken at each step. Users were given a task of selecting a land parcel of interest and exploring the recommended land use changes and their impact.

### Prototyping process



The interactive prototype was created using Figma design and prototyping tool and can be accessed in a web browser using the following link: <https://tinyurl.com/nldp-prototype>



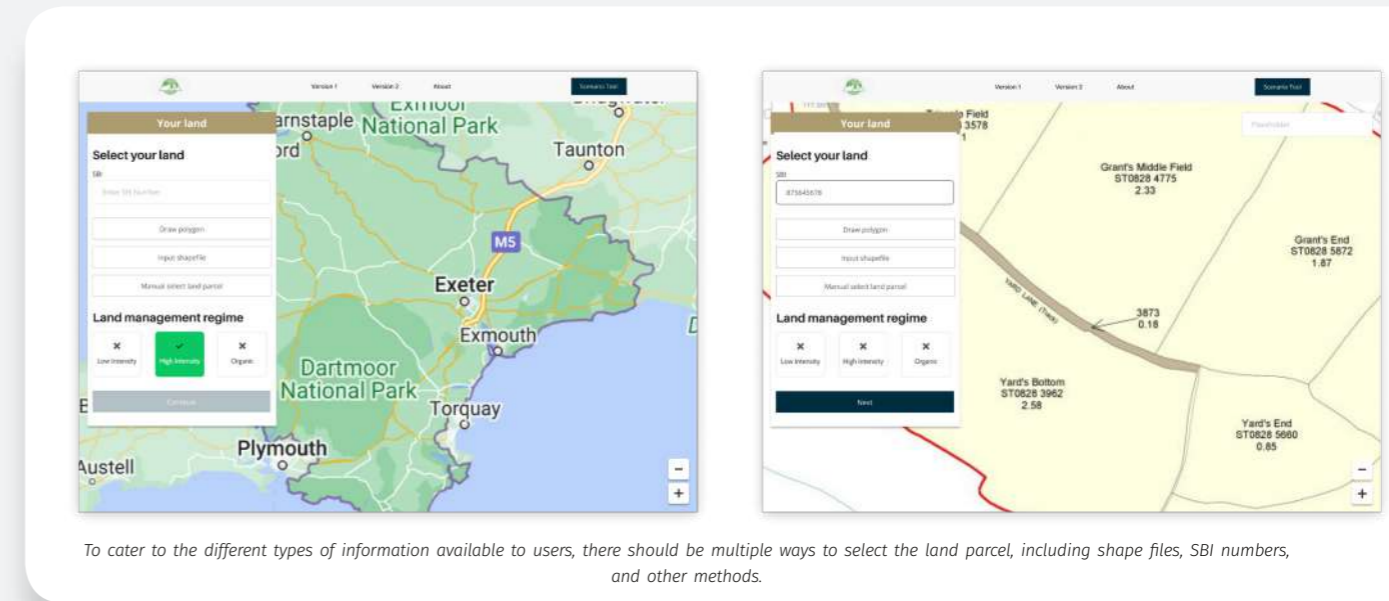
Two different versions of the prototype homepage.

### Prototype - Step 2

## Selecting Land of Interest

In the first step users are asked to identify the land parcel(s) they are interested in. The sprint group decided that the easiest way to do this would be to provide a Single Business Identifier (SBI) number. However, in some cases the users would not know this number (i.e. land advisor), so there should be alternative

methods to select the land of interest as well - drawing polygons, adding shape files, or manually selecting land parcels. At this step we also want the users to specify their land management regime in order to be able to provide better recommendations in the next steps.



To cater to the different types of information available to users, there should be multiple ways to select the land parcel, including shape files, SBI numbers, and other methods.

### Key functionality

- » Select land by SBI
- » Select land by drawing polygons
- » Select land by inputting a shape file
- » Manually select a land parcel
- » Select land management regime



## Prototype - Step 3

# Explore Current Land Use

Once the users specify the land they are interested in, they should be able to get a quick overview of its attributes and how it is currently used.

### Key information

Testing the prototype with the users should help us identify other attributes people are interested to see about their land. For this prototype we showed land cover and soil types to get the discussion started.



In order to present information in a useful and comprehensible way, it is important not to overload users with too many attributes about their land all at once.

### Next steps

From here people could view recommended changes for their land or create a new land use scenario themselves. We did not prototype the 'Recommendations' step and instead asked users what type of recommendations they would expect to see.

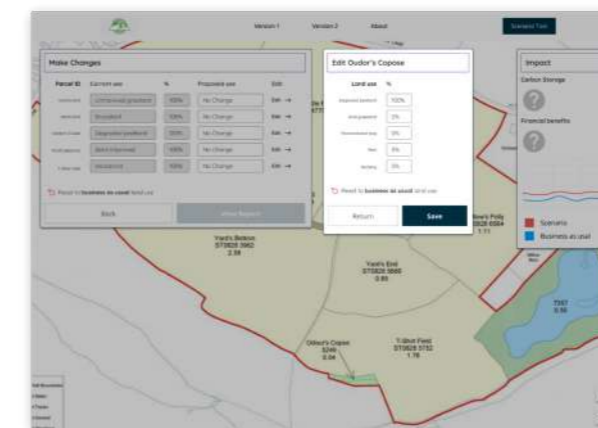
### Key functionality

- » View current land use cover
- » View soil types
- » View recommended land changes
- » Explore selected land parcel on a map

## Prototype - Step 4

# Make Changes to Your Land Use

We wanted to make the process of changing land use as simple as possible in order to allow user to experiment with different scenarios quickly and see a preview of the impact these changes might have.



The first screenshot displays the current land use of the selected parcel, while the second screenshot illustrates how users can modify the land use of the selected parcel.

### Instant feedback

Users should be able to select the land parcel they want to edit, see its current use and then change it.

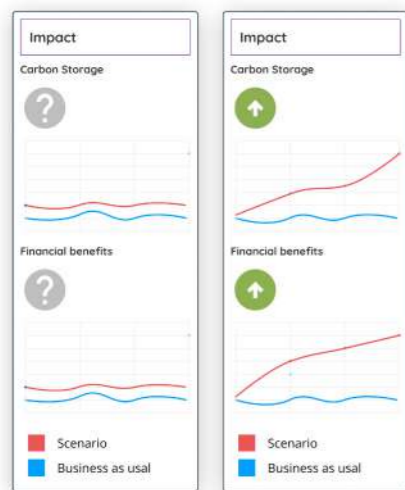
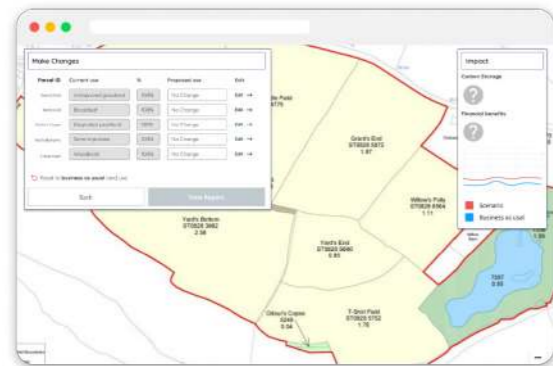
We also want to provide instant feedback on the effects of land use change. After each change users should be able to see what effect they might have on the potential carbon storage and financial benefits. More details about the impact of their scenario would be provided in the final report.

### Key functionality

- » View current parcel use
- » Propose new changes
- » Reset values to default business as usual values
- » See how the changes affect carbon storage
- » See how the changes affect financial benefits

# Prototype - Step 5 View Impact

To offer users a quick preview of the impact of their changes, we illustrated the projected carbon sequestration and financial benefits as line graphs.



The graphs compare the new scenario to business as usual giving users a quick indication where their proposed changes are going to make an improvement compared to doing nothing.

### Glimpse into projected impact

To make the tool more interactive, we wanted to instantly visualise how the land changes users introduce will compare to the business as usual scenario. This should allow users to virtually try different land uses to find the scenario that seems most impactful and financially beneficial to them. Once they're happy with their scenario, they can explore in more detail in the scenario report.

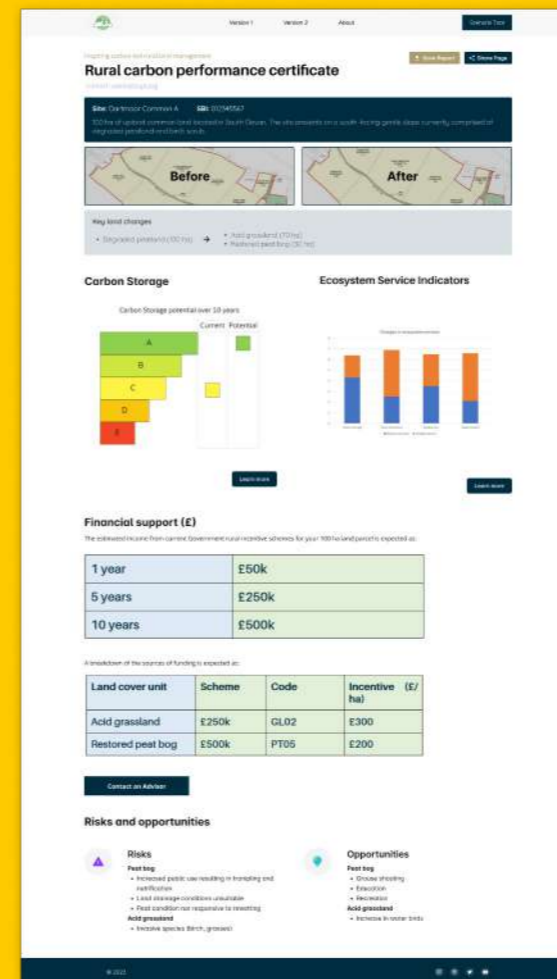
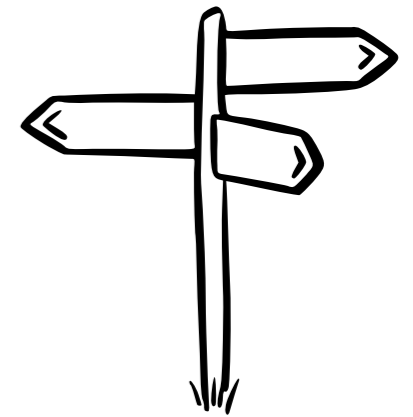
### Key functionality

- » Instantly preview the impact of the new scenario
- » Compare it to business as usual



# Prototype - Step 6 View The Detailed Report

The final report should give users an overview of the changes made and a *before* and *after* map. Users should also be able to share and save these reports.



### Actionable insights

To encourage communication between various stakeholders and landowners, the generated reports should be readily shareable and reproducible. While not the final step before implementing land use changes, the reports could aid in fostering a shared understanding of potential impacts and establishing an evidence-based consensus. This is why links to the sources of data used are important.

### Key information in the report

- » Carbon storage potential
- » Financial support options
- » Available schemes
- » Risks and opportunities
- » Contact information for potential advisors

### Feedback from user testing

- » Not everyone knows what SBI number is
- » People want to see before and after comparisons on a map
- » People would like to easily find contact information for different advisors depending on the changes the user has suggested they might make
- » The report should be easily sharable and printable to help people facilitate discussions outside this platform
- » Finding the information about available schemes in one place is very useful
- » People would also like to know what is happening around the land in question



The prototype was tested with 5 different users. The first test was carried out on Friday - at the end of the design sprint. The other four could not be scheduled for the end of the sprint, so they happened slightly later - in the following two weeks after the sprint.

The prototype did not change fundamentally after each test, however some small bugs and inconsistencies were fixed to make the testing smoother.



## User Feedback

### Platform Prototype

Most of the testers emphasised the importance of viewing the land in context and from different perspectives, as they expressed their desire to "zoom out" and see where the land sits within the wider landscape to gain a better understanding of the broader factors that impact the land.

#### Jumping off point

The user testing also emphasized that the decision support tool should not be the final step in making a land use decision, but rather a starting point for considering options. To facilitate the next step, information about available advisors, how to contact them, and their associated costs should be clearly presented and easily accessible.



#### Multiple levels

There is a desire to enable the tool to work at a granular level and alter the display of data for different scales of decision-making, from farm to national. A baseline tool that keeps track of different payments could be useful, along with scenarios that show optimal outcomes from catchment management, biodiversity, and carbon perspectives.

# Prototype

## User Feedback

*Often the catalyst for thinking about doing something new comes from speaking to a neighbour or hearing about someone doing something differently during a meeting.*

Tester #2

*Actively thinking about this for LNRS. Because carbon sequestration and carbon credits will be part of delivery framework. How we can maximise carbon and biodiversity opportunities is a key question. Managing the loss of habitats if certain outcomes are pursued over others is something they need to bear in mind.*

Tester #4

*I would be more interested in the strategic landscape approach.*

Tester #4

*The big benefit would be knowing what others are doing with the land around you – how do you stitch all the actions that are happening around you together? In a points system where different actions are weighted – you need to understand how that affects decision-making.*

Tester #5

*“Interesting that you haven’t mentioned the water on the farm picture in the table. Is it a scrape for wildlife that’s in CS? Is it a SuD? What is the water quality associated to the water running through the farm and can you get paid for that (environmentally sensitive areas and EA payments available on The Levels) – using water to sequester phosphates out of the land. Is it a nature reserve?”*

Tester #5

*Could there be scenarios baked into the tool to show ‘optimal’ outcomes from catchment management, biodiversity, carbon perspectives?*

Tester #3



## User Testing Feedback

# Suggested Changes to the Prototype



### Technical/feature comments

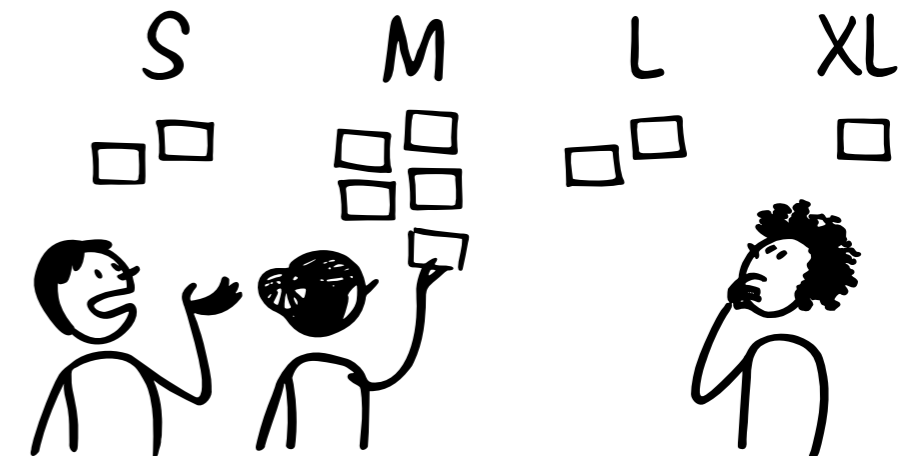
#### Comments and suggestions for prototype improvement

- Need to have a larger font in the report
- Land management regime button was either ignored or something that prompted further questions – this would need refining in a future iteration
- Longer term projection of economic benefit (30 years – ties in with BNG scale)
- The contact advisor button needs to be bigger:
  - It also needs to say that clicking that button will link the user to free advice – farmers less likely to click if it doesn't mention cost implications.
  - So many different advisors that could be contacted. How do you ensure the user gets sent to the right person for advice?
- SBI number is useful but land agents/advisors often will not have access to this and sometimes farmers reluctant to share. The other methods of selecting an area are essential.
- Could there be information about the purpose of the water that is present on the farm? Can we include information about other features than what is contained within field boundaries? How do designations show up in the overview?
- Summary graphs on the land use change page were sometimes missed by testers – would need to consider making these a more prominent feature. Would also need to label the impact scale with appropriate unit (e.g. £s or CO2e)
- Would want to see more behind the ecosystem services metrics - i.e. is it BNG units that the increase is being measured in?
- The print, share and export buttons need to be much more prominent.
- Clear and precise way of viewing the land was noted as being really useful – particularly the use of RPA boundary, field number and hectareage info
- 'EPC' style graphic is an engaging and straightforward way to represent potential that all testers were positive about
- A baseline tool that keeps track of, and up to date with, all the different payments that are available could be really useful– the ability to keep it up to date is the key constraint to think about here.

- Are there assumptions/definitions/criteria that exist behind low intensity, high intensity buttons? If there were – would be good to have an explainer. This is similar to the desire to know what would be behind the 'learn more' button . It would be good to have a couple of sentences about the limitations of the data that are powering the predictions. The questions that this button could answer are:
  - What does this information mean?
    - What is the background to the information?
    - How has that been arrived at?
  - Ecosystem services indicators – would be good to show where the negative impacts lie. E.g. reduction in food production potential
  - If the land use change were suggesting

tree planting - Carbon is of course a benefit – but need to be aware that carbon and biodiversity do not go that well together if you are looking to maximise your carbon benefits as you have to plant at a high density to achieve this. High density monoculture isn't that great for biodiversity – we want to be able to present the rounded version of the benefits that can be derived from a planting plan that does not seek to prioritise carbon, rather it links all ecosystem services to present a picture of all the economic benefits when stacked.

“All the key data behind the tool needs to be really robust in order to make this feasible. If that did exist this would be brilliant.”



## Insights

# Unlocking Different Perspectives

If there was sufficient funding and desire to create a tool that builds on the prototype we have created in this design sprint, these are some of the findings we gathered about the tool itself in terms of usability, feasibility and content.

- » The home screen needs to **draw people in with a real “why am I here” and “why should I go any further” message/visual** for most to use it, which it does not quite do.
- » The interactive zoom in/out map is key for context and both SBI number and drawing tools are key for both user groups.
- » Whilst it fills a gap currently with a carbon focus, its use is limited by a lack of cross functionality to other land use issues such as Biodiversity Net Gain and flood resilience.
- » Sight of strategies in an area surrounding the selected parcels is an absolute must. I.e. local plan, Local Nature Recovery Strategy, schemes that neighboring farms are part of, etc.
- » The report page holds the most value and should contain:
  - » Before and after;
  - » Financial opportunities with associated scheme links;
  - » What next/call to action free advice; and
  - » All figures must have some sort of explanation/data grounding.

The outcomes of this design sprint have helped inform the findings and recommendations set out in the Geospatial Commission's '[Finding Common Ground](#)' report. These may be aimed at the same key audiences in order to enable the successful completion of the key targets for net zero and the environment.

Full notes from all the user testing carried out are [available online](#).



## Creating Communities of Change

There was a strong sense among the testers that the scenarios generated through the prototype, if based on robust data, could be a **catalyst for the development of farm clusters** or could be taken to existing clusters. This speaks to the finding of the user requirements gathering of wanting **data to be available as shared evidence base** that multiple decision makers can access.

## Leveraging Data Visualisation to Drive Collective Action for Sustainable Land Management

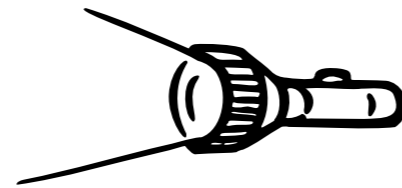
Testers suggested that the **visualisation of the work already happening around a specific land holding** could include functionality to bring together parties interested in pulling together a scheme around carbon/another outcome. By connecting individual actions to those being taken by others it could enable smaller landowners to enter the market. This could be a chance for data visualisation to drive landowners towards making changes on the key priorities within their area – and could ultimately lead to the offer of weighted payments towards achieving particular outcomes as a collective.

## Insights

# Challenges and Opportunities for Data Visualisation

One tester asked about how site allocations on local plans would show up in this tool. If that might be an option for land use change – how is it represented in the tool? This links to the work done in Cambridgeshire around overlaying datasets in a data viewer to give a more rounded view of the pressures on land use. Trying to disassociate carbon from the other ecosystem services and

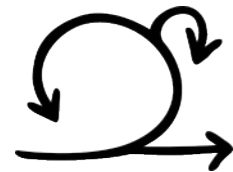
benefits it is intrinsically linked to is not the right approach. The insight is that alongside the multifunctional benefits associated to pursuing positive carbon sequestration and storage outcomes, a tool in a land use framework would need to consider the multiple pressures on land use to give a true sense of the opportunities and constraints.



### How has the analysis generated evidence for decision making? What is the role of visualisation here as well?

There is some debate around whether the data incorporated into the tool would be able to be represented in different ways for varying audiences. User testers asked, would it be possible for the view that is available at different scales of decision making to differ depending on the resolution required for that audience? If a land use decision support tool is built on field scale data – could the way the data is presented change depending on the user? We would want to keep the same design and visual principles – they have been

well received by our user testers. The possibilities regarding the generation of pre-populated evidence was something we heard in testing. Could there be scenarios baked into the tool to show ‘optimal’ outcomes from catchment management, biodiversity or carbon perspectives? This quick visualisation might be able to give a range of scenarios to be discussed – at both granular and strategic levels – around what the most palatable mix of land use change to achieve multiple outcomes actually looked like. This could be where land use framework principles and processes are applied to help guide and support those conversations.



## Key Findings

# Recommendations

Collaborating to achieve shared outcomes from land use change **requires a land use framework that tackles all aspects of decision making.**

Multifunctional land use should be considered a mixed scale and multi-stakeholder challenge and be underpinned by a shared digital evidence base comprising data and decision support tools.

Design sprints are an effective way to bring together diverse stakeholders with common goals to co-design new solutions.



## Key Findings

# Conclusions

The design sprint was conducted as part of the Devon Land Use Framework pilot and the Geospatial Commission National Land Data Programme. The process demonstrated that there is an appetite for user-friendly tools that incorporate easy to understand visualisations which make clear the impacts, opportunities, and risks for different land use choices.

**It is key that tools should include the multifunctional benefits and competing pressures of land use change to give a holistic picture of land use opportunities and constraints.** The team learned that stakeholders want information presented in a clear and easy to interpret way which can help them understand

business risks and make better use of financial opportunities that would support land use change.

The group reflected on how incorporating data-driven decision support tools is integral to a land use framework process. Using the set of principles that reside in the framework allows a group to collaboratively navigate the steps in a land use change decision-making process, by applying individual and organisational knowledge and experience to the interpretation and analysis of data insights and to make optimal land use decisions.



Image by [vectorjuice](#) on [Freepik](#)



Image by [Freepik](#)

# Devon Design Sprint Report

## June 2023



NLDP

## Thank You

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