Mapping data ecosystems

Tools for documenting and mapping data ecosystems

Updated: April 2022

Open Data Institute

Contents

How can it be improved? We welcome feedback and comments.

Why should we map data ecosystems?

Data infrastructure is made up of data assets, standards, technologies, policies and the organisations that steward and contribute to them.

A strong data infrastructure will be as open as possible and designed to benefit everyone. It will support an ecosystem of organisations that collaborate to ensure that the infrastructure is sustainably funded, is trusted and trustworthy and maximises the creation of value from its data assets.

Data infrastructure can be hard for people to visualise and understand. We need tools to help us understand how data is being accessed, used and shared across organisations and communities.

A data ecosystem consists of all the people, communities, and organisations that are stewarding data, creating things from it, deciding what to do based on it, influencing any of those activities, or are affected by any of those activities. A data ecosystem map illustrates the data and other value exchanges in an ecosystem.

Creating a map of a data ecosystem can help us to understand and explain where and how the use of data creates value. It can help to identify the key organisations collecting, stewarding and using data, the relationships between them and the different roles they play. Representing ecosystems in detailed maps can be particularly useful when contexts are complex, not well understood or not yet fully developed.

A data ecosystem map can be used to describe how data is being shared across The Data Spectrum. A map can show how open data is being used to deliver a service, or how data is being shared in more limited ways, for example, to enable access to personal data to support research, or internally within an organisation, or between a specific group of stakeholders.

There are benefits to be gained not only from having a map of a data ecosystem, but also from the process of drawing it.

Mapping requires you to consider different people, organisations, relationships and ideas in the system, and can generate useful insights and talking points. As a collaborative process it can build understanding of a data ecosystem across different stakeholders. The end product is useful as a communication and planning tool to support engagement and implementation of a data project across the data ecosystem.

Data ecosystems can be mapped to support different objectives. Primarily we see this tool used to map an ecosystem that describes the data and value flows in a particular sector, place (country, city, etc.) or around a particular challenge that needs to be solved (for example climate change), with the aim to improve the ecosystem to solve common challenges, including business or societal challenges.

We also see ecosystem mapping around the data held or used by a single organisation with the goal of improving an organisational strategy to use and share data within its wider ecosystem. For these objectives and potential others, the following methodology will provide useful guidance all the same.

We have found that creating data ecosystem maps of existing systems can help to:

- develop a shared understanding of the variety of ways in which participants currently create value from data
- identify gaps and opportunities to improve the data ecosystem by creating additional value and ensuring the ecosystem distributes value equitably
- identify the potential impacts of changing how data is accessed, used and shared
- identify the potential users and communities who might benefit from the creation of new data infrastructure in a sector
- clarify roles and responsibilities to help improve an ecosystem
- help adopt best practices such as:
    - identifying where standards could add value and support data flows
    - setting up organisations to steward data on behalf of others, such as data institutions
    - implementing innovation schemes to foster data use and support a new group of data users
- support engagement, eg by identifying key stakeholders

We have also found that the benefits of mapping data ecosystems can vary depending on the organisations involved. For example:

- Businesses can look to see how data can improve services or reduce costs, benefitting their bottom line, or to plan and communicate the impact of their environmental, social and governance efforts.
- Charities, nonprofits and academia can map data ecosystems of their problem or research area to understand who else is working on the problem, find partners and funding sources, and plan their own use of data
- Government agencies, public bodies and regulators can use data ecosystem mapping to find efficiencies in internal operations, understand how end users are receiving value from services, or plan data infrastructure interventions

Example ecosystem map

Here is an example of a data ecosystem map that we have developed at the ODI. An ecosystem map can be a quick sketch or a more polished illustration.

Using Kumu, we have mapped the data ecosystem for Open Climate Fix, a not-for-profit research and development lab that focuses on tackling climate change, to improve forecasting for the generation of electricity from solar energy sources.

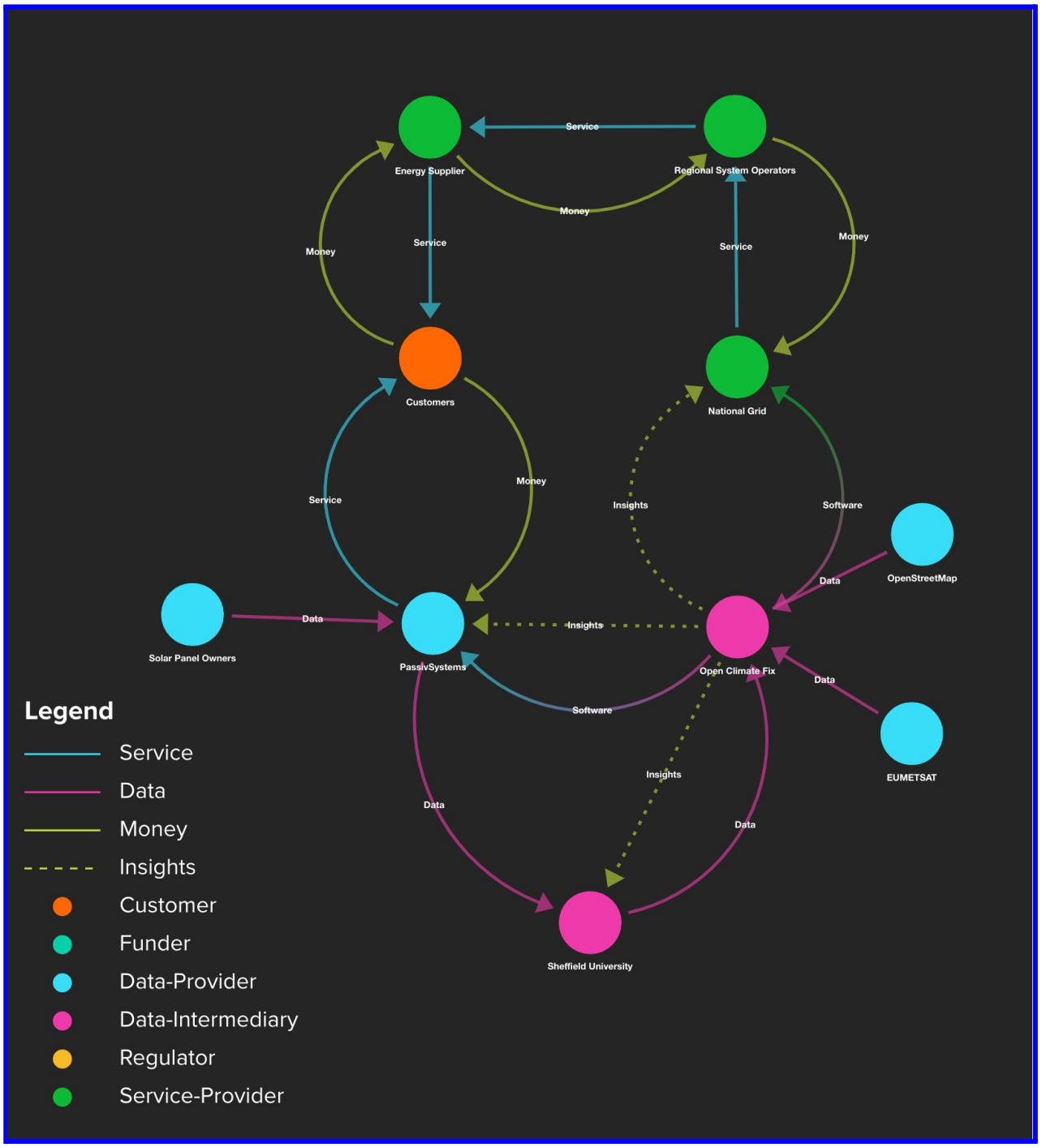
This diagram shows how individual organisations often don't have all the data necessary to address a problem. But working together to collect, share and use data can help to grow markets, improve decision making and adapt to changing environments.

A data ecosystem map is able to illustrate:

- data assets that are being accessed, used and shared
- relationships and roles of the various people, organisations and technologies involved in the ecosystem
- flows of value besides just data, including insights, money, and products and services.
- opportunities to improve the data ecosystem through changes in the data infrastructure such as creating a data institution or launching a data access initiative.

For a short video tutorial on mapping data ecosystems, our free webinar 'Data ecosystem mapping: plotting the journey from data to value for your business' is available online. Please note this webinar is publicly available but is not openly licensed. Registration is required to access the recorded webinar.

The PassivSystems and Open Climate Fix data ecosystem



By sharing PV cell data with Open Climate Fix, PassivSystems aims to receive insights on how to be more energy efficient, making renewable energy financially sustainable. Explore the map here.

Methodology

There are different ways to map out your data ecosystem, each of which has benefits and drawbacks, but this works best as a collective exercise, enabling knowledge sharing and collaboration:

- On your own, or with some colleagues

  If you have a good knowledge of the data flows in an ecosystem, you can use this methodology by yourself – all you need is a pen and paper, or digital drawing software. This can be especially useful when it is difficult to get participants together. The drawbacks of this are that it is harder to verify whether your drawing is an accurate representation of the data flows. One way to overcome this is to share the map you create with other stakeholders in the ecosystem as a starting point for discussion, and then use their comments and queries as a way to explore the ecosystem in more detail.

- In a workshop setting

  If you can bring together a group of three to 10 people who are involved in different areas in the ecosystem, and have facilitators in the room, you can draw the ecosystem map together in a workshop setting. Ideally, you will need one to two hours of workshop time to draw the ecosystem map, with two to three rounds of written follow-up after the workshop to develop a shareable ecosystem map.

- Online

  If you are unable to convene a group in-person, data ecosystem mapping still works very well online. Similarly to a workshop, gather no more than 10 people from different roles to create a digital map. This can be done via collaborative drawing programmes, or with a mapper screen sharing to get input from the team. It is best to have video conferencing capabilities to make the setting more comfortable and dynamic.

We loosely follow the methodology of rich picturing. This means that your drawings don't have to follow a set structure or format, but they should contain as much detail as you think you need to understand the ecosystem. Maps can get very busy, very quickly, once you start drawing out the ecosystem, so we suggest focusing on the main value exchanges in a specific use case rather than trying to be completely comprehensive (at least at first).

If you are starting this exercise without a strong understanding of the important stakeholders and relationships, you can begin by selecting key stakeholders that you know have involvement or interest in your use case and conduct interviews with them.

Defining the goal of mapping the data ecosystem

Identify the problem/process/opportunity/use case you want to understand

Be clear about what the outcome of the ecosystem mapping exercise should be. This can be understanding an existing ecosystem or considering how an ecosystem might change, for example if new data was available. A useful tip is to clearly define the scope of the exercise to a particular use case and start from there. By having clarity before you start, you'll be able to capture all the relevant information with the right level of detail. It could be helpful to frame this in the form of a question, such as: "What data do I need to build a forecasting model for solar availability in the UK?" or "How can I leverage existing data infrastructure in the sector to reach new users of my service?". Be as clear as possible.

Mapping your data ecosystem

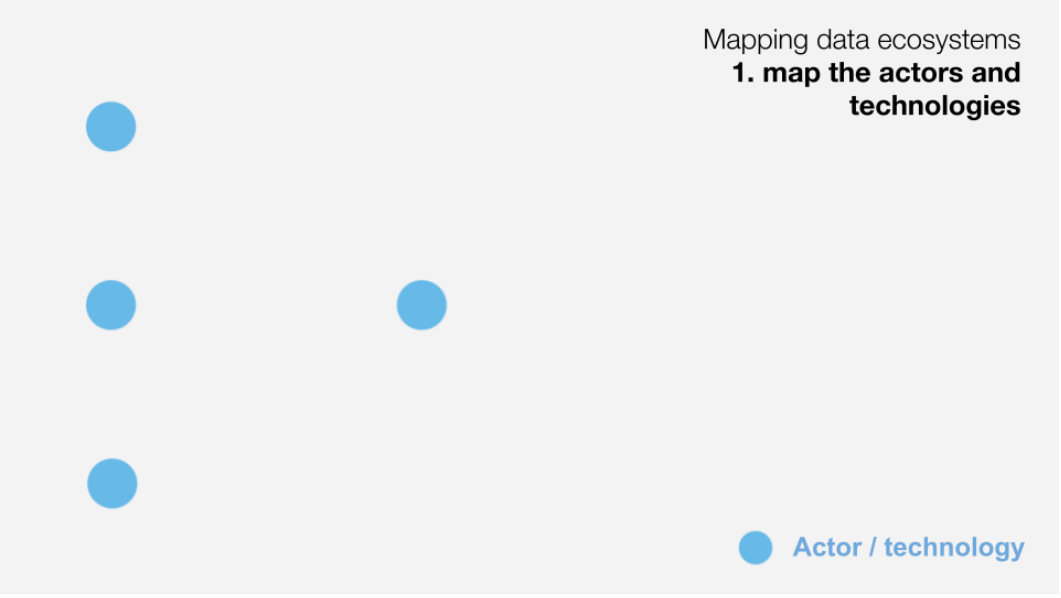
Before you start

Make sure you have the right supplies

You do not necessarily need anything specific when drawing out an ecosystem map by yourself or with others – you could draw it in a notebook or use a drawing package. If you are drawing with a few people you may find it easier to use bigger paper or a whiteboard, with different coloured pens and/or sticky notes. You can use online tools like Miro, Google Jamboard and kumu.

We have created a data ecosystem tool which can be downloaded and printed at home as both an A1 fold to A5, and as an A4 in English, French and German, to help organise your mapping activities.

Map the actors and technologies



Start with the part of the ecosystem you know best

As you draw, start with the part of the ecosystem you know best. We recommend thinking about the most relevant organisations to your use case, including your own.

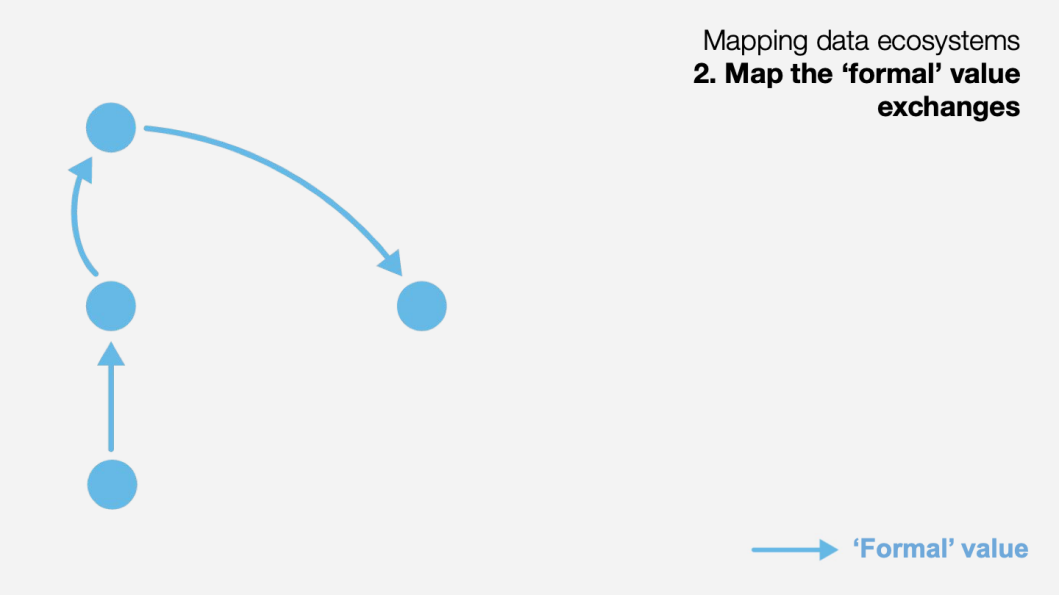
Using sticky notes or drawing circles, plot all the people, organisations or services that are linked in some way to the data. It may help to think of the organisations and groups you need data from, partner with, are supplied by or you provide services to, as there are likely data flows in that relationship. Stay with very specific examples as it encourages the representation to be realistic.

Think about:

- *"What role does your organisation play?"*
- *"Who are your users, customers, suppliers, service providers and partners?"*
- *"Who are the relevant actors from the public, private or third sectors?"*
- *"Where does data innovation – the creation and application of new knowledge to improve the world using data – take place in the ecosystem?"*
- *"Who else plays a key role in governing access, use or sharing of data in your ecosystem?"*

Our example ecosystem map includes a variety of different actors, including data providers, data intermediaries, service providers and customers.

Map the 'formal' value exchanges



Now that we have some of the actors, we're going to start mapping the flows and exchanges in the ecosystem. Start with the data that is shared or used by different actors, drawing lines and adding labels to indicate what data is being shared or used. What types of value are these data flows powering? Draw similar lines for exchanges of services and money.

Think of other types of exchange. Do the actors within the ecosystem provide documents, services or physical goods? Is there an exchange of money, eg fees for services? Add additional arrows for each of these to populate your map.

Think about:

- *"What data does your organisation and other organisations access, use and share?"*

- *“How is data shared? (eg via downloads, APIs, portals…)”*
- *“Is data shared reciprocally?”*
- *“Who is funding what? What services are being provided?”*

Tangible value could include:

- **Data** – Which datasets are you mapping? What is the source?
- **Reports and document**s – Are there relevant reports and documents that support the data ecosystem?
- **Physical goods** – Are there physical goods associated with the data ecosystem?
- **Services** – What services are relevant to the data ecosystem? Eg transport, bank accounts etc.
- **Money** – Are there fees or charges related to the data and its storage or sharing?
- **Certificates** – What certification relates to the data ecosystem? Eg data licences, operating licences or safety certificates.

In our example ecosystem map, PassivSystems provides data on solar panel use to Open Climate Fix through academic partner University of Sheffield. Open Climate Fix also ingests data from EUMETSAT and OpenStreetMap to provide its software services to National Grid.

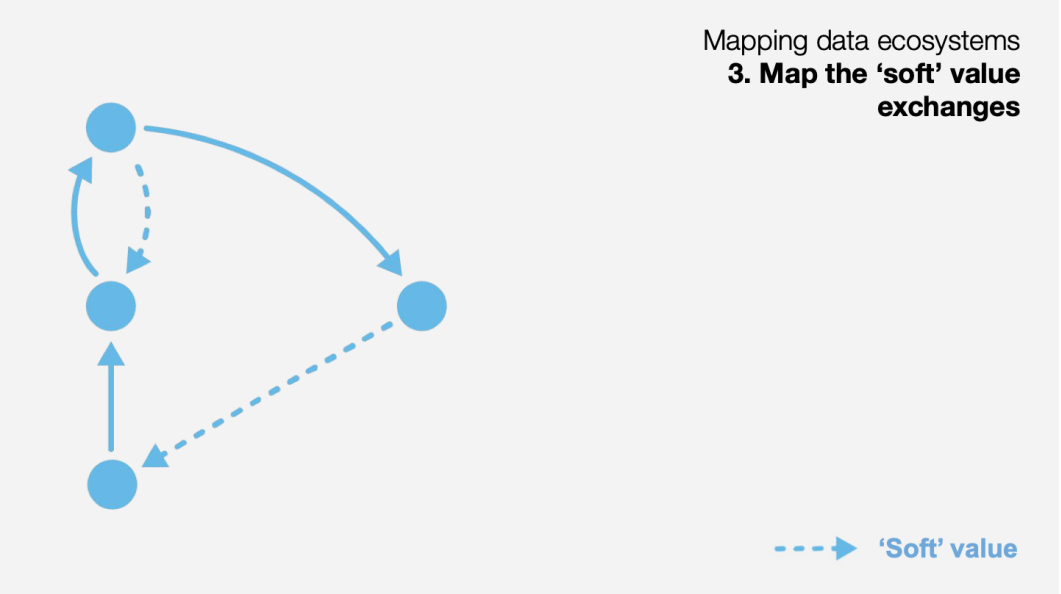
Services and money are exchanged throughout the ecosystem between customers and various companies in the energy sector supply chain, including solar panel provider PassivSystems, as well as energy suppliers and regional system operators.

Draw these connections and continue with the organisations or teams you interact with, including those involved in a process before and after, focusing on how data is used across the ecosystem. Add different actors one by one and add lines to connect them, specifying the relationship between them and adding arrows for direction whenever possible.

Aim to capture the actors involved and how they collaborate, the types of data used, the role of standards and the flow of funding, if relevant. Using symbols and icons can make it easier and more intuitive to follow. Use different coloured markers for different flows, such as data and money. It can be useful to define how data is shared across the ecosystem according to the Data Spectrum, describing when data is being published under an open licence or being shared in more restrictive ways.

If you make any assumptions, or there are important points around the narrative or storyline of the ecosystem, add these to the map as you go – they will be helpful when writing up your ecosystem later!

Map the ‘soft’ value exchanges



Data supports decision-making with insight and knowledge. Organisations can support each other with advice or feedback.

Add these less tangible types of value exchange to your map. It will help you understand more about the connections and relationships between organisations. We suggest using different dotted lines to distinguish them.

Think about:

- *“What insights and advice do your organisation and others need, use and share?”*
- *“How is intangible value shared? (apps, email, etc.)”*
- *“What networks is your organisation and others connected to?”*
- *“What policies and regulations does your organisation adhere to?”*

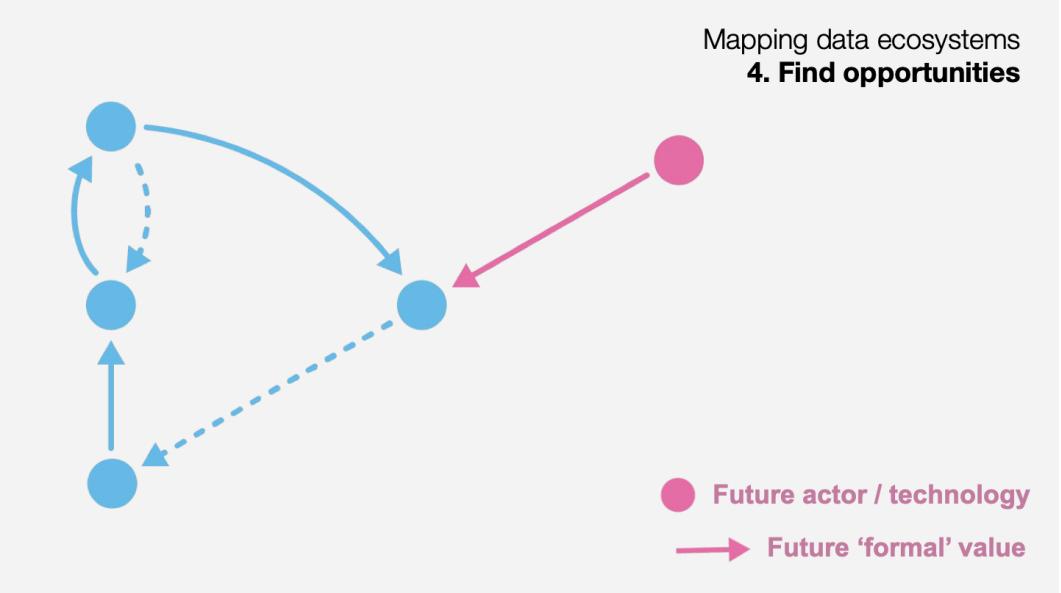
‘Soft’ value could include:

- **Insights** – The insight gained from the data ecosystem, for example when to travel, or how to manage a budget.
- **Knowledge** – Are there knowledge networks that would be useful to note? For example, a professional network or community of enthusiasts
- **Support** – What support is required to help maintain the data infrastructure? This could be financial or structural.
- **Feedback** – What feedback mechanisms are used within the data ecosystem?
- **Advice** – What advice do actors within the ecosystem provide?
- **Network** – Is there a wider network associated with the data ecosystem?
- **Policy** – What policies relate to the data or other assets within the data ecosystem?

In our example ecosystem map, Open Climate Fix shares insights generated from machine learning analytics with academic partner University of Sheffield, data provider PassivSystems, and strategic ecosystem partner National Grid.

Note on 'traditional knowledge':
Traditional knowledge, indigenous knowledge and local knowledge generally refer to knowledge systems embedded in the cultural traditions of regional, indigenous, or local communities. According to the World Intellectual Property Organization and the UN, traditional knowledge and traditional cultural expressions are both types of indigenous knowledge. The differentiation between 'formal' and 'soft' value regarding data vs. traditional knowledge may not be helpful in this context, and may indeed be harmful by replicating colonial logics of 'Western scientific knowledge' as superior to 'traditional knowledge'.

Find opportunities



Now you have your ecosystem mapped out, what does it tell you? How does value flow in the ecosystem? Are there potential future opportunities to share value in other ways, for example, to make data more open or to offer new kinds of support?

You can draw those onto the ecosystem map in a different colour or style.

Think about:

- *"Where are there blockers to data access or where is data being shared inefficiently that improvements to the data infrastructure could address?"*
- *"What data is your service missing that would have a big impact on your stakeholders?"*
- *"Are a lack of data standards inhibiting use of existing data in the ecosystem?"*
- *"Are there blockers to data sharing that could be addressed by setting up independent organisations to steward data on behalf of others?"*

Below are some potential future opportunities you could consider:

- **Improving data flow** – What methods could be used to improve data flows between actors in an ecosystem?
- **Identifying impacts** – What are the impacts of changing how data is accessed, used and shared?
- **Creating new benefits** – Which potential users and communities could benefit from new data infrastructure in a sector?
- **Creating new standards** – Where could data standards add value and bring clarity to the ecosystem? *Tip: standards.theodi.org has a helpful guide.*
- **Finding new stakeholders** – Which new stakeholders should be involved? For example people or organisations who would be needed to help create a new data standard.

Note: The ecosystem map will inevitably become messy, as no formal structure is followed. This is not a problem and in fact allows you to capture as much information as possible.

Our example ecosystem map shows the potential new and improved value that can be provided to the energy sector if Open Climate Fix has access to necessary data for its solar forecasting services. This helps potential partners, funders and end users understand the impact Open Climate Fix's plans could have to help decarbonise the UK.

Writing up and improving your map

This section is relevant whether you are creating an ecosystem by yourself, with a couple of people, or through a workshop setting.

Write up narrative

Once you have finished drawing the ecosystem, it can be useful to write up the narrative in text in a few paragraphs (maximum of two pages), based on the ecosystem map and the narrative notes. If you ran a workshop, or created the map with others, share the write-up and picture of the ecosystem map with the relevant stakeholder contacts so they can review the content, add any missing information, or clarify questions.

Share the ecosystem map

While you might create an ecosystem to help your own understanding of value flows, sharing this more widely with others can help to clarify whether the maps are accurate and explain how processes work. This can include other actors involved in the process, to challenge assumptions and help you arrive at a more accurate picture. It can also include external stakeholders who may benefit from understanding the ecosystem. It can be useful to print the ecosystem maps on posters to encourage discussion.

Design ecosystem map using tools and icons

If the ecosystem map is to be shared with a wider audience, a cleaner and more intuitive design may be useful. Be aware that a very "finished" look may discourage people from challenging the maps, so we recommend creating and sharing less polished ecosystem maps, to encourage discussion. Make sure to explain the

scope of the ecosystem, the purpose of mapping it, the narrative behind it, and clearly label the icons, arrows and other drawings you have used. Useful tools include Kumu, draw.io, and Miro.

Returning to your map after some time to look at it with fresh eyes can help bring greater clarity or important additional information to your map that you may have missed the first time. This can be especially helpful if you have not shared your map with others yet.

Next steps

Once your ecosystem map is finalised, you have various possibilities to make it as useful and as up to date as possible.

The data ecosystem map can be used to drive different types of actions:

- **Improve understanding of an ecosystem**
  - Help people understand an ecosystem, where change may be required, and what effects changes might have
- **Explore new partnerships**
  - Identify where an organisation sits in an ecosystem, and identify who to collaborate directly with for organisational/ecosystem change
  - Identify where an individual or an organisation is required to take action to enact a desired change in the ecosystem
- **Access or share data**
  - Find new sources of data to improve internal operations
  - Tap into existing data flows to develop new products, services or policies, or improve existing ones
  - Use the map to help you understand how you can share data to solve industry or broader societal challenges
- **Improve services, projects or policies**
  - Inform a project that is building a data-enabled service
  - Identify where initiatives or projects are repetitive, where gaps are, and how to reach better impact through wider initiatives
- **Increase impact**
  - Identify long term impact of data and value exchanges on a whole ecosystem
  - Contribute to wider societal impact creation

Data Ecosystem Mapping can be used as a step in a broader process of understanding the data landscape in a particular sector, place or around a societal or business challenge. It is featured as the second play in the ODI's Data Landscape Playbook. The Data Landscape Playbook supports organisations working on data access initiatives, helping them tackle common challenges by conducting a 'data landscape review' - a broad range of activities that we know will help organisations launching data access initiatives understand better the context they operate in, and the ways they can use data most effectively.

Following the Playbook, other next steps that you can take after mapping your data ecosystem include:

- Conducting data ethics assessments around the use cases that have been mapped, or regarding some of the identified connections
- Creating data inventories to understand what relevant data is currently being collected, shared or managed
- Adopting or building open standards for data, so that different organisations within an initiative or across a sector can interoperate better
- Designing logic models to help initiatives move from initial inputs and activities to the ultimate impact they are trying to achieve

When working on new initiatives based on an ecosystem map, be aware that this map may need to be updated in the future. It may be useful to check if new stakeholders or new exchanges have emerged.

Additional tips for facilitators of data ecosystem mapping

Running a workshop

Before the workshop

Identify people who could contribute

Get a range of different stakeholders from across the data ecosystem in the room or online to ensure a balanced perspective of processes and links. If that is not possible, do not worry – even a few people can produce a useful ecosystem map. The table in the scoping section lists some of the likely roles.

Note: Be aware of the political context and the environment you are working in. In certain situations, for someone to publicly declare in a workshop that a certain organisation/stakeholder is managing their data badly or is refusing to share could be difficult. The facilitation of the workshop needs to reflect this particular context, making it possible for people to share their knowledge in a safe environment.

Prepare the workshop

To run your workshop you will need:

a. ideally, two facilitators to guide the workshop – Facilitator 1 should explain the methodology, ask questions and draw the map. Facilitator 2 sense-checks the answers given, asks additional questions and captures the narrative alongside the drawing. If you only have one facilitator, we suggest:

   i. recording the workshop and listening to it afterwards to make sure the narrative around the ecosystem map is captured;

   ii. asking members of the group to take notes on sticky notes as you go through the exercise

b. participants from across your data ecosystem

c. a big enough room, with a whiteboard and different coloured markers (it works best if drawings can be erased and corrected during the workshop), or a suite of products that ideally allows for videoconferencing (possibly with breakout rooms), presenting slides, and collaborative drawing.

d. sticky notes and pens

During the workshop

Explain the process (15 mins)

Introduce everyone, explain what the goal of the workshop is, give a short introduction to ecosystem maps, explain to stakeholders that they are here to draw the ecosystem map together. Answer any questions.

Draw the ecosystem map (30–90 mins)

Facilitator 1: Start by asking participants about what they know, typically about their organisations, or the service they are trying to better understand. We recommend following the previous steps. Start with the most relevant actors and data exchanges and then add applications and related value flows such as services and funds. In our experience, it works best to use a very specific example that most participants are familiar with, as it encourages the representation to be realistic.

Suggested questions:

- *"What role does your organisation play in the data sharing ecosystem?"*
- *"What data do you need?"*
- *"What data do you use?"*

Draw them on the whiteboard and then continue with the organisations or teams they interact with, including those involved in a process before and after, focusing on how data is used across the ecosystem. Add different players one by one and add lines to connect them, specifying the relationship between them and adding arrows for direction whenever possible.

Suggested questions:

- *"Who provides the data, how do you access it?"*
- *"What data do you release, who uses it and for what?"*
- *"Is data shared reciprocally, what value is exchanged for data? (for example services or subscription fees)"*

Aim to capture the actors involved and how they collaborate, the types of data used, the role of standards and the flow of funding, if relevant. Using symbols and icons can make it easier and more intuitive to follow – for example, labelling data exchanges in some way to add a bit more context, perhaps by using thicker lines for key data exchanges, or a marker to indicate open (versus shared or closed) data sharing, or using different coloured markers for different flows, such as data and money. It can be useful to clearly define how data is shared across the ecosystem according to the Data Spectrum.

Suggested questions:

- *"What format is data released/used in?"*
- *"Are there any data standards in place?"*
- *"Who is funding what?"*

Encourage stakeholders in the room to clarify anything you do not understand, to add detail or to correct anything that is misrepresented, by asking them questions. It will be more difficult to remember details after the workshop. Go through the list of actors and flows defined in step 4 to make sure you cover the most relevant aspects.

Note: The ecosystem map will inevitably become messy, as no formal structure is followed. This is not a problem and in fact allows you to capture as much information as possible.

Capture the storyline (30–90 mins, in parallel to drawing the ecosystem)

Facilitator 2 (if present): As the ecosystem map is drawn, use the sticky notes or online tools to capture the storyline. Write down in as much detail as possible the process and relationships explained on the ecosystem map. Encourage stakeholders in the room to clarify anything that is unclear, to add detail or to correct anything that may be misrepresented, by asking them questions. Go through the list of actors and flows to make sure you cover the most relevant aspects.

Information may not be provided in a chronological or structured way, so moving sticky notes around as needed will help you to capture the explained process as accurately as possible.

Cross-check that content was captured correctly (15 mins)

Facilitators 1 and 2: Summarise the explained process using the ecosystem map and storyline back to the participants and check that it was captured correctly. Take note of anything that was misunderstood and note down any areas where follow-up is needed after the workshop. If ecosystem mapping in person, take pictures of the ecosystem map and notes; the apps Tiny Scanner and Post-it Plus work well. We recommend sharing photos and online drawings with participants for transparency.

Identify one of the stakeholders from each part of the ecosystem to be the contact person for follow-up questions.

Running interviews

If you are having trouble organising a workshop, you can also get useful information from a few interviews with subject matter experts to get a better sense of the ecosystem. You should try and interview people with different perspectives on the ecosystem, as you would have in a cross-functional workshop.

You can begin by using this interview template which outlines some questions that may help you obtain useful information from your interviewee. Not all of the questions may be relevant and the order of questions may need to be switched based on how the interview is progressing. After the first interview, you may have some further contacts and information in order to progress.

How to provide feedback on the methodology

We are looking for feedback on how this tool works for you. In particular, we are keen to learn more about:

- thoughts on the methodology we have outlined and how we can improve it
- how the tool is being used in different contexts and countries
- how useful do people find the tool, and where we can improve it
- different (physical or online) tools people can use to design their ecosystems
- different examples of ecosystem maps you have created

Please leave comments on this document, or send any other feedback you have to feedback@theodi.org

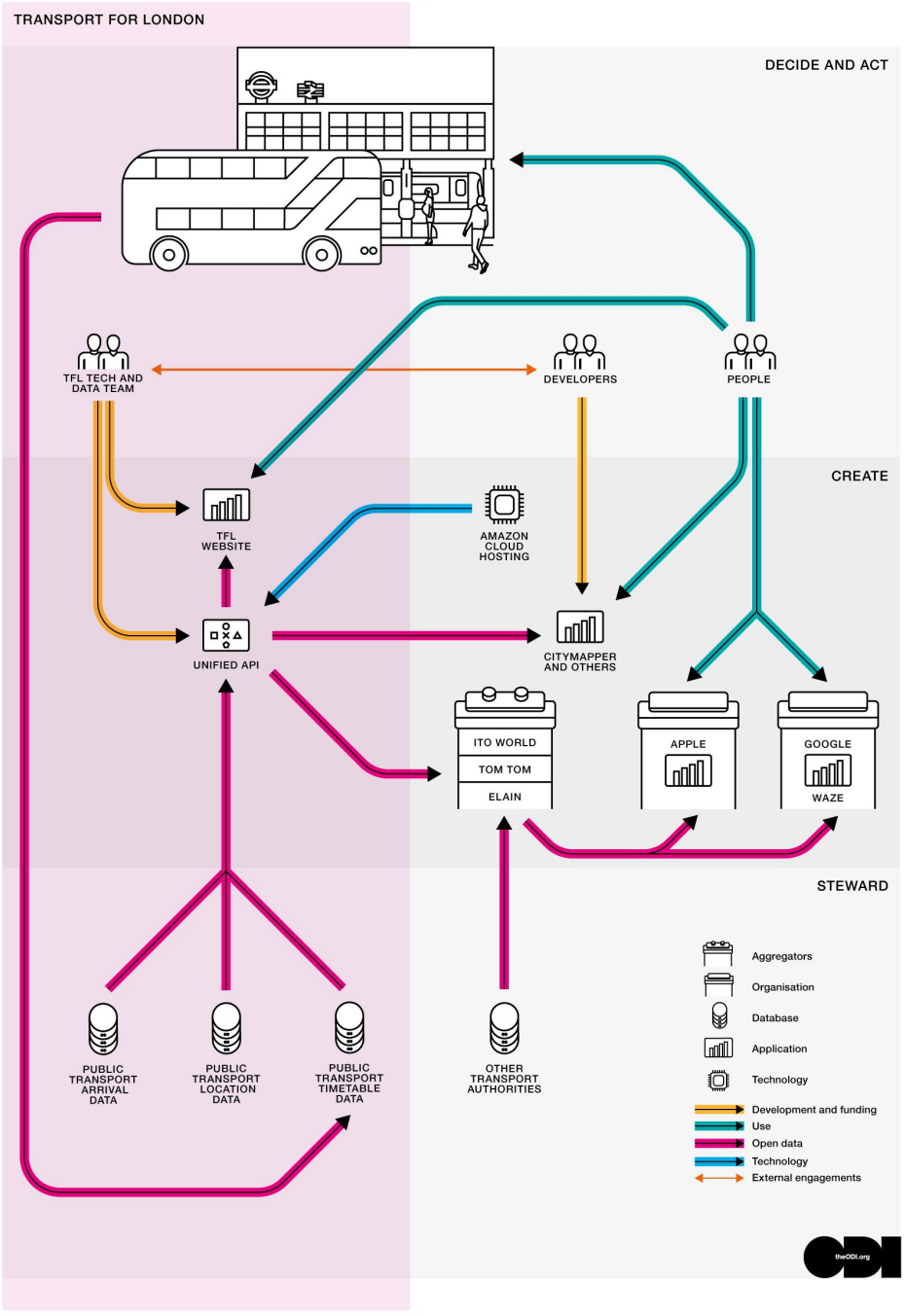
Who to contact for more information

Contact bizdev@theodi.org to discuss how the ODI can help you understand the ecosystems you are part of, as well as how our other tools can support you to use data better.

Appendix 1: Example ecosystem maps

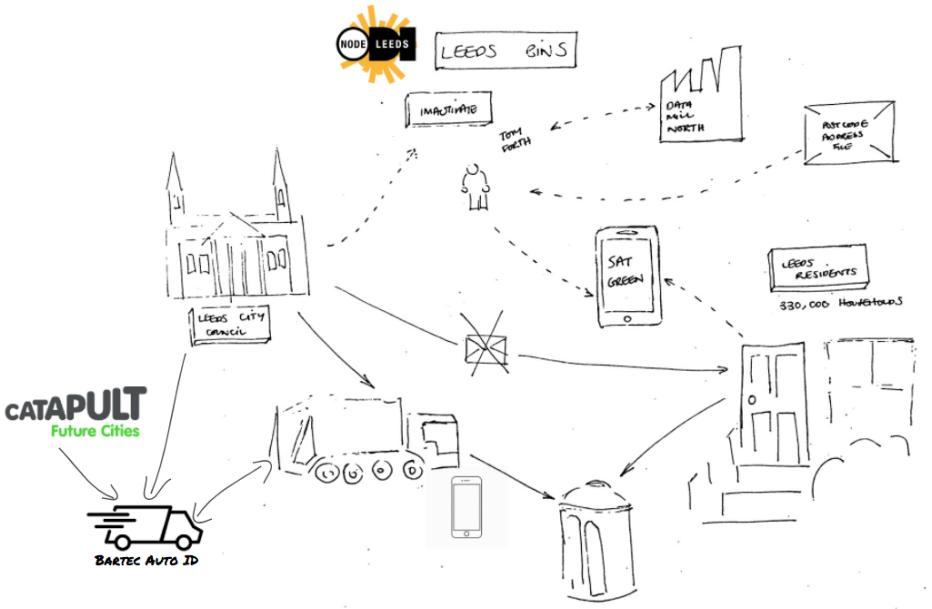
Example 1: Transport for London release of transport data

This is a polished example of an ecosystem map. It is based on a case study described in our report on using open data for public services.



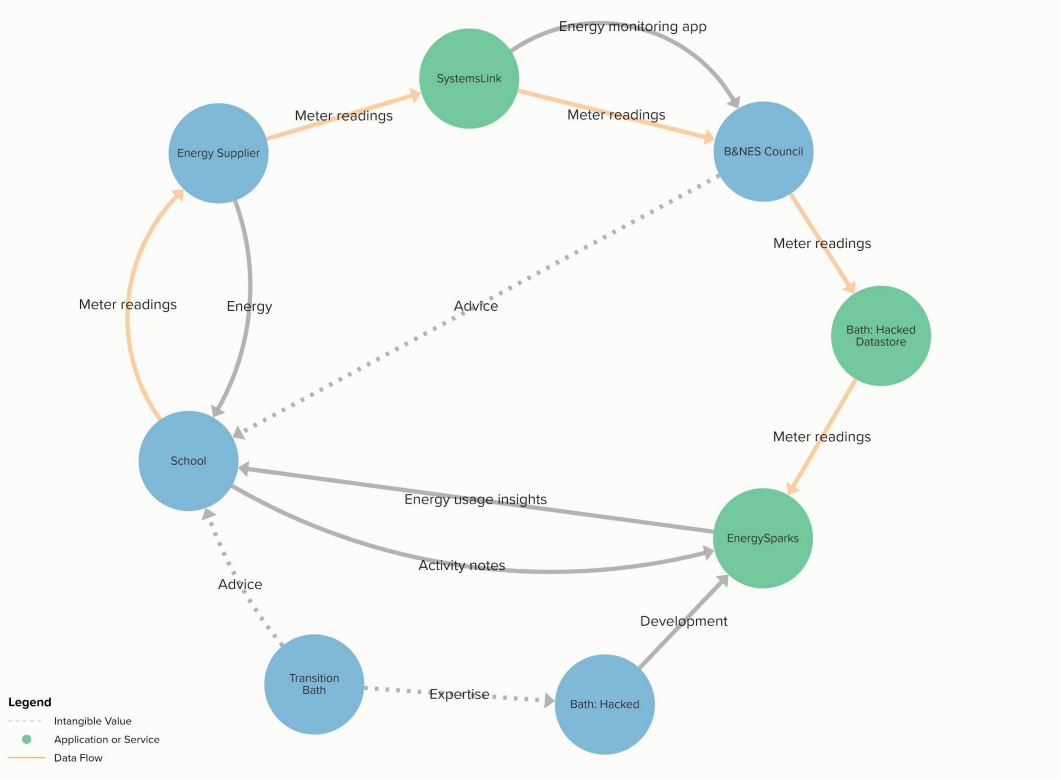
Example 2: Leeds Bins app

This is a sketch of the data ecosystem that exists around the Leeds Bins app. Similarly to the TfL example, it is based on a case study described in our report on using open data for public services.



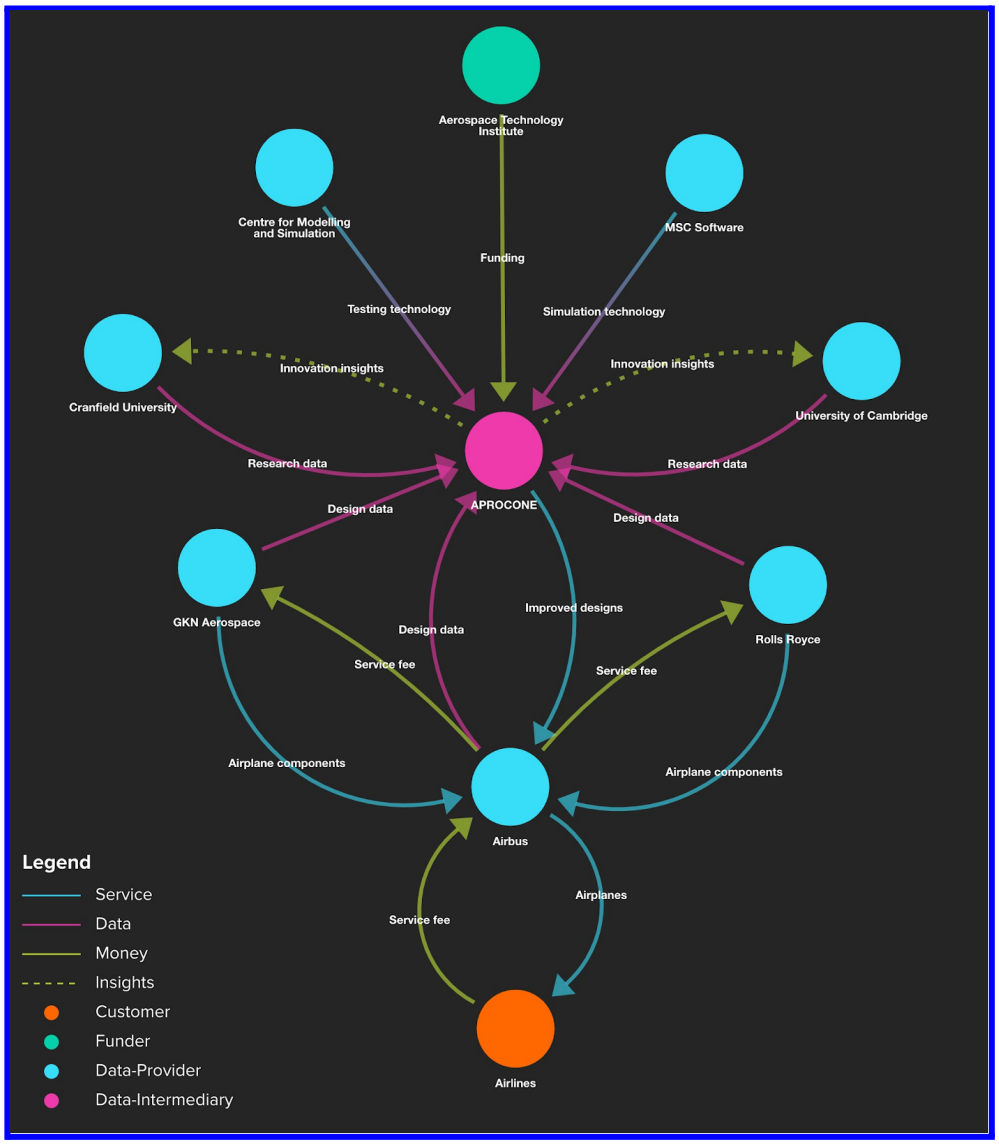
Example 3: School energy-saving application

This map illustrates the data ecosystem that supports an application that helps schools to be more energy efficient. This map has been drawn using Kumu.io to make it easier to explore online.



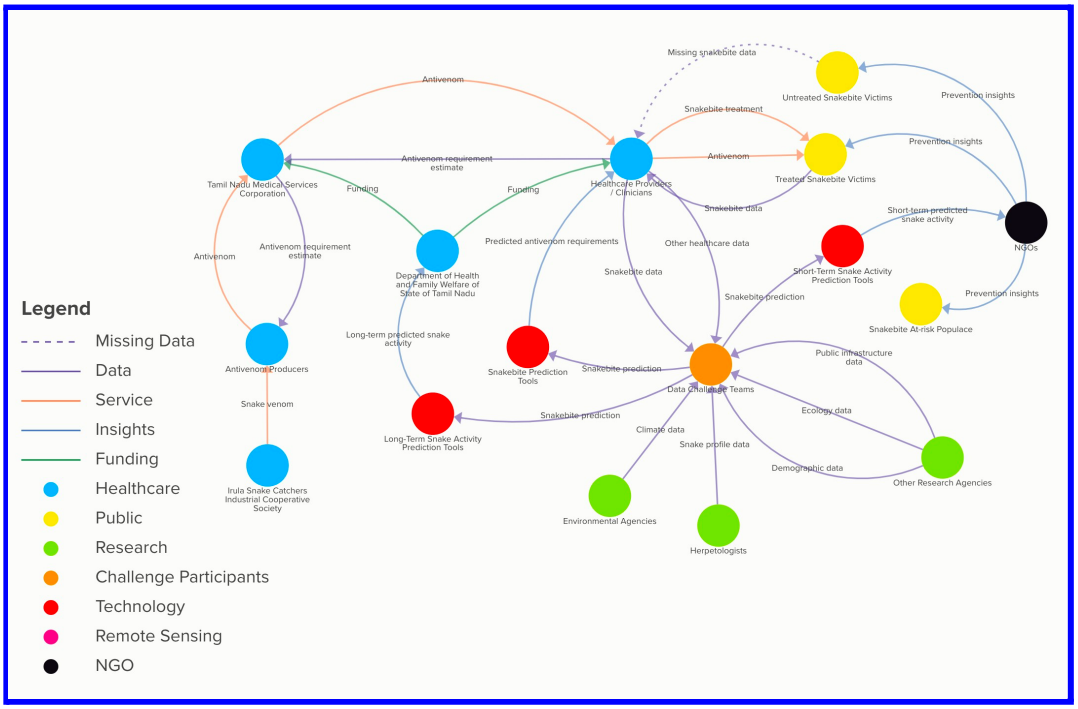
Example 4: The role of sharing data in supply chain optimisation

By sharing engineering data securely across the APROCONE platform, Airbus is significantly reducing time spent in the design process, optimising the supply chain and reducing costs. Explore the map here.



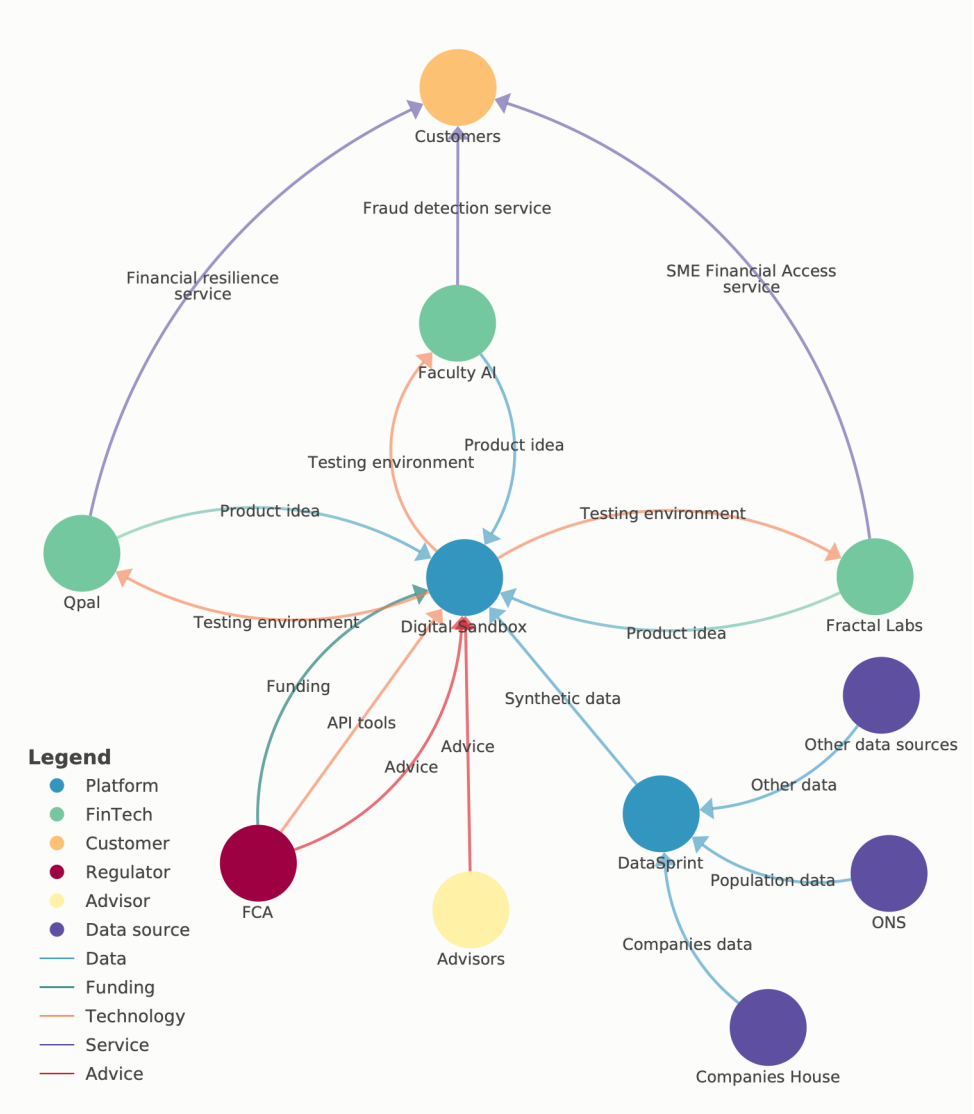
Example 5: Public health data challenge ecosystem for snakebite

A data ecosystem map showing how combining existing data on snakebite incidence and envenoming with related data such as climate, ecology, and urbanisation could help better predict the level of snakebite incidence and envenoming and the resources that need to be allocated for snakebite management. Explore the map here.



Example 6: The FCA Digital Sandbox

A data ecosystem map showing how the Digital Sandbox innovation platform uses synthetic data, expert advice and code testing technology to help FinTechs improve their product offering, thus providing better value to their customers. Explore the map here.


Customers
Fraud detection service
Financial resilience service
SME Financial Access service
Faculty AI
Testing environment
Product idea
Product idea
Testing environment
Qpal
Testing environment
Digital Sandbox
Product idea
Fractal Labs
Funding
API tools
Advice
Advice
Synthetic data
Other data sources
Other data
DataSprint
Population data
ONS
FCA
Advisors
Companies data
Companies House
Legend
Platform
FinTech
Customer
Regulator
Advisor
Data source
Data
Funding
Technology
Service
Advice

Appendix 2: Further reading

Related tools

- The Data Landscape Playbook can help you understand the wider context of the ecosystem you are mapping, and provides tools to support a data access initiative.
- The Data Ethics Canvas helps identify and manage ethical issues at the start of a project that uses data, and throughout, and can help mitigate risks identified in the data ecosystem map.
- The Sustainable Data Access Workbook helps organisations that steward data to make better decisions about their revenue models to improve their data ecosystem.
- The Trustworthy Data Stewardship Guidebook has been created to help organisations assess, build and demonstrate both their trust and their trustworthiness amongst other stakeholders in the data ecosystem.
- The Data and Public Services Toolkit helps people designing and delivering public services to use data more effectively to improve their data ecosystem.