Open Communications

An open trustworthy data ecosystem for the telecommunications sector

Open Data Institute

Contents

About

To share feedback by email or to get in touch, contact Josh D'Addario, at info@theodi.org.

OPEN FOR FEEDBACK

To share feedback by email or to get in touch, contact Josh D'Addario, at info@theodi.org

Executive summary

Alongside the wider smart data initiatives championed by the Department for Business, Energy and Industrial Strategy (BEIS), Ofcom, the UK's communications regulator, is currently exploring a data portability initiative: open communications. Open communications would enable people and businesses to share data about their use of telecoms services, held by their providers, with third parties who could help them navigate the market and get a better deal.

As part of the [Innovate UK R&D Programme](), the Open Data Institute (ODI) convened a workshop with industry representatives to generate use cases for consumers and providers and to look at the potential risks of enabling people and businesses to share more information about their use of communications services. Findings from the workshop included the potential to provide better products to consumers, better insights to service providers, while acknowledging the risks of increasing access to data.

Making a sector more open is a long journey, but the communications data ecosystem is poised for such a change and Ofcom will not be the first organisation to attempt a sector-wide open data initiative. Ofcom has been looking at similar initiatives in other industries to understand what works best and what should be avoided. Importantly, Ofcom will have to understand what combination of mandate, reward and opportunity needs to be created to motivate organisations to change and ensure benefits reach as many stakeholder groups as possible.

Background

The ODI works with companies and governments to build an open, trustworthy data ecosystem, where people can make better decisions using data and manage any harmful impacts. In November 2019, we hosted a workshop for Ofcom, the UK communications regulator, looking at the future of data sharing in the communications sector.

The communications data ecosystem contains data that exists on a spectrum,[1] from closed, to shared, to open. Below is a graphic of The Data Spectrum, produced by the ODI. Much of the data is closed or shared in a limited manner for security and privacy reasons, such as security credentials and call data records (CDRs). Some data is shared widely such as product information, coverage, and store location. Ofcom publishes open data on a variety of topics such as fixed and mobile network coverage and the service quality that providers offer.[2]

An open communications initiative would seek to increase open and shared data in the sector in a way that maximises value for communications customers, opportunities for companies, and provides further benefits to society. This could be done by looking at what data infrastructure could become more open. When data is more open, more people can access, use and share that data.

---
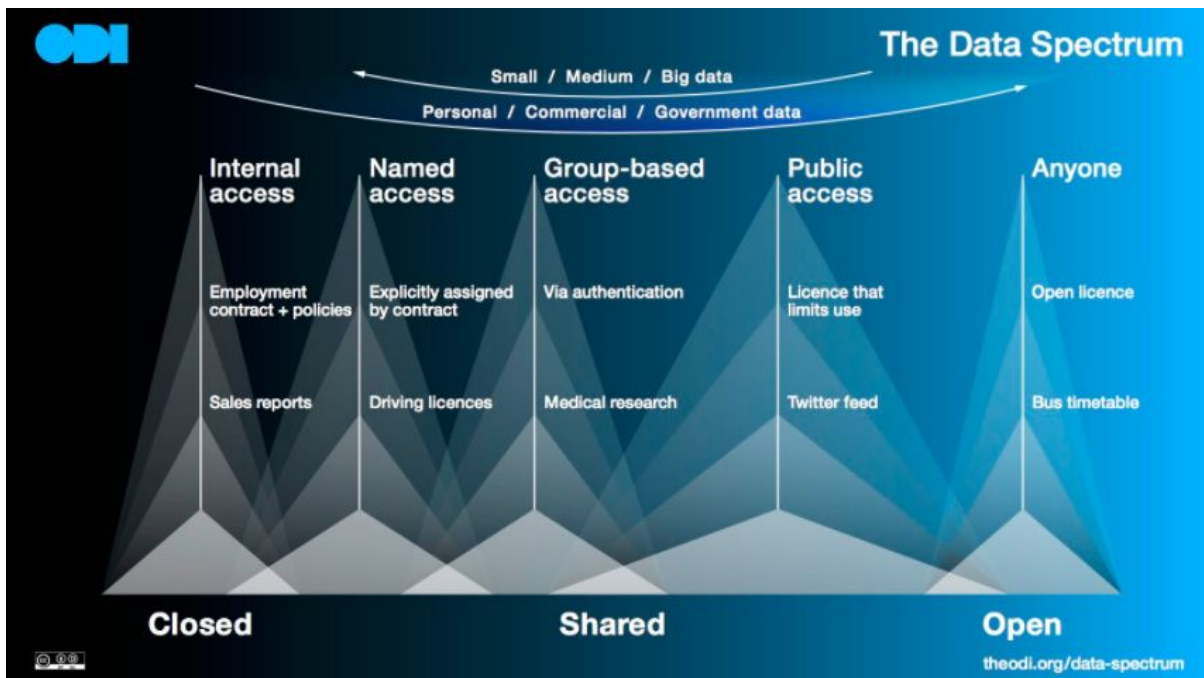
[1] Open Data Institute (n.d.). The Data Spectrum.
https://theodi.org/about-the-odi/the-data-spectrum/
[2] Ofcom (2020), "Open data",
https://www.ofcom.org.uk/research-and-data/data/opendata

Open data ecosystems

Data infrastructure consists of data assets such as datasets, registers and common identifiers like metadata. It also includes the standards and technologies used to curate and provide access to those data assets and the guidance and policies that inform the use and management of data assets. It can also include the organisations that govern the data infrastructure and has to involve the communities involved in contributing to or maintaining it; and those who are impacted by decisions that are made using it.[3]

Increased access to certain communications data infrastructure, including identifiers or other standards, or even the metadata to closed or shared data, could boost innovation in the sector that benefits customers.

Other regulators and industry bodies have explored and implemented initiatives to increase access to data in their sectors:

- Open banking allows retail banking customers to share account and transaction data with trusted partners. When securely shared, the data can be used to build useful services such as account aggregation and personal financial management.[4] The Financial Conduct Authority (FCA) is looking to expand this to other financial data sources under the banner of open finance.[5]
- Open energy standards could help to change markets, create open ecosystems and implement policy objectives. It could improve consumer control over energy data about them, and support the creation of innovative new energy services.[6]
- An open water initiative could benefit all parts of the sector, allowing water companies to learn from each other, encouraging efficiency in sharing technology and increasing transparency to customers, leading to greater customer satisfaction.[7]
- The OpenActive programme from Sport England and the ODI is currently helping the sports and leisure sector adopt data standards and publish open data with the hope of getting more people in England active.

There is also support from UK government initiatives for making data ecosystems as open as possible:

- In October 2018 HM Treasury sought views and evidence on its Digital Competition Expert Panel. The expert panel concluded that data openness can be used as a tool to promote competition, where it is determined this is

---

[3] Dodds, L. & Wells, P. (2019) Issues in Open Data - Data Infrastructure. In T. Davies, S. Walker, M. Rubinstein, & F. Perini (Eds.), The State of Open Data: Histories and Horizons. Cape Town and Ottawa: African Minds and International Development Research Centre. https://www.stateofopendata.od4d.net/chapters/issues/data-infrastructure.html
[4] Open Data Institute (2019), "How far Open Banking has come: our five takeaways", https://theodi.org/article/how-far-open-banking-has-come-our-five-takeaways
[5] Financial Conduct Authority (2019), "FCA asks for proposals on how open finance could transform financial services", https://www.fca.org.uk/news/press-releases/fca-asks-proposals-how-open-finance-could-transform-financial-services
[6] Open Data Institute, "R&D: Open standards for the UK energy sector", https://theodi.org/project/open-standards-for-the-uk-energy-sector/#1558340061441-cb8100c5-47f3
[7] Ofwat (2017), "Driving innovation in water", https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Driving-innovation-in-water-FINAL.pdf

necessary and proportionate to achieve its aims, such as in the case of enduring market power.[8]

- In 2019, the Smart Data Review was published as part of the UK Industrial Strategy. This review proposed that greater access to telecoms data would foster innovation to improve consumer outcomes by:
    - accelerating the development of innovative data-driven services in consumer markets
    - using data and technology to help vulnerable consumers
    - ensuring consumers and their data are protected.[9]

In Australia the rollout of the Consumer Data Right will help give consumers greater access to and control over personal data, starting with banking and gradually increasing to include energy, telecoms, and health.[10]

Our first look into open APIs in the telecoms industry demonstrated that there is potential to enable new products and services that meet the needs of a wide set of users.[11] In this context, the ODI looked further into what it would take to bring more openness to communications data.

---

[8] Department for Business, Energy and Industrial Strategy (2019), "Unlocking Digital Competition: Report of the Digital Competition Expert Panel", https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785547/unlocking_digital_competition_furman_review_web.pdf

[9] Department for Business, Energy and Industrial Strategy (2019), "Smart Data: Putting consumers in control of their data and enabling innovation", https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/808272/Smart-Data-Consultation.pdf

[10] Australian Competition & Consumer Commission (2017), "Consumer Data Right (CDR)", https://www.accc.gov.au/focus-areas/consumer-data-right-cdr-0

[11] Projects by IF (2018), "Open APIs in the Telecoms Industry", https://openapis.projectsbyif.com/

The value of sharing data

Businesses can create value by using third-party data to develop new products and services. Our research has shown that they can unlock additional value by sharing data they have collected.[12] Increasing access to data held in the private sector has proven benefits to businesses in many ways, including:

- Improving supply chain efficiency[13]
- Increasing market reach[14]
- Facilitating benchmarking and market insights[15]
- Building trust[16]
- Improving efficiencies through open innovation[17], including within regulated markets[18]
- Collaborating to address sector-wide challenges[19]

Our research with the Bennett Institute at the University of Cambridge on the value of data has shown that despite increasing access to data being an important way to unlock its wider economic and social benefits, there are various market failures around data and the data economy that mean data sharing initiatives will not necessarily emerge on their own.[20]

---

[12] Open Data Institute (2020), "Report: Sharing data to create value in the private sector", https://theodi.org/article/report-sharing-data-to-create-value-in-the-private-sector/
[13] Open Data Institute (2020), "Case study: The value of sharing data in supply chain optimisation", https://theodi.org/article/case-study-the-value-of-sharing-data-in-supply-chain-optimisation/
[14] Open Data Institute (2020), "Case study: The value of sharing data for improving market reach", https://theodi.org/article/case-study-the-value-of-sharing-data-for-improving-market-reach/
[15] Open Data Institute (2020), "Case study: The value of sharing data for benchmarking and insights", https://theodi.org/article/case-study-the-value-of-sharing-data-for-benchmarking-and-insights/
[16] Open Data Institute (2020), "Case study: The value of sharing data to build trust", https://theodi.org/article/case-study-the-value-of-sharing-data-to-build-trust/
[17] Open Data Institute (2020), "Case study: The value of sharing data to drive open innovation", https://theodi.org/article/case-study-the-value-of-sharing-data-to-drive-open-innovation/
[18] Open Data Institute (2020), "Case study: The value of sharing data in regulated environments", https://theodi.org/article/case-study-the-value-of-sharing-data-in-regulated-environments/
[19] Open Data Institute (2020), "Case study: The value of sharing data to address sector challenges", https://theodi.org/article/case-study-the-value-of-sharing-data-to-address-sector-challenges/
[20] Open Data Institute & Nuffield Foundation (2020), "Valuing data: foundations for data policy", https://www.nuffieldfoundation.org/project/valuing-data-foundations-for-data-policy

Workshop format and attendance

The workshop hosted participants from a variety of backgrounds such as potential data users, consumer advocacy groups and government. The full list of attendees is included in Appendix 1. The workshop was convened to help better understand the potential for Ofcom's open communications initiative. The workshop did not include communications providers as we wanted to give more space to organisations that could start to use open communications data for innovative new consumer-facing applications or have experience doing this in other sectors.

Select participants were requested to give short presentations on their organisations, and on what an open communications initiative might mean to them. These speakers were:

- OpenWrks – an open banking service provider and potential data user under open communications, who focussed on the opportunities for data users to provide better services for customers through access to data from customers and industry.
- Which? – a consumer organisation that aims to help consumers make the right choices around purchases through testing and advice. They spoke of the potential to improve customer outcomes through increased availability to data and information.
- uSwitch – a price comparison and switching service for energy, personal finance, insurance and communications services that saw open communications as a way to improve their service to customers and expand it beyond price comparison.

Participants engaged in 'data ecosystem mapping' to understand the current communications data ecosystem and some of its potential under open communications. Participants also created example use cases in which both consumers and providers of communications services could benefit, and explored their associated risks.

The communications data ecosystem

Data infrastructure can be hard for people to visualise and understand. We therefore need to create ways to understand the ecosystems it supports. These aid communication and enable us to make better decisions about investing in and operating that infrastructure to maximise the value it provides. One approach is a data ecosystem map.

A data ecosystem map identifies the key data stewards and users, the relationships between them and the different roles they play. In the workshop, participants created data ecosystem maps to share information and discuss the current and potential telecoms data ecosystem.

Example mobile data ecosystem map from the workshop redrawn on kumu:
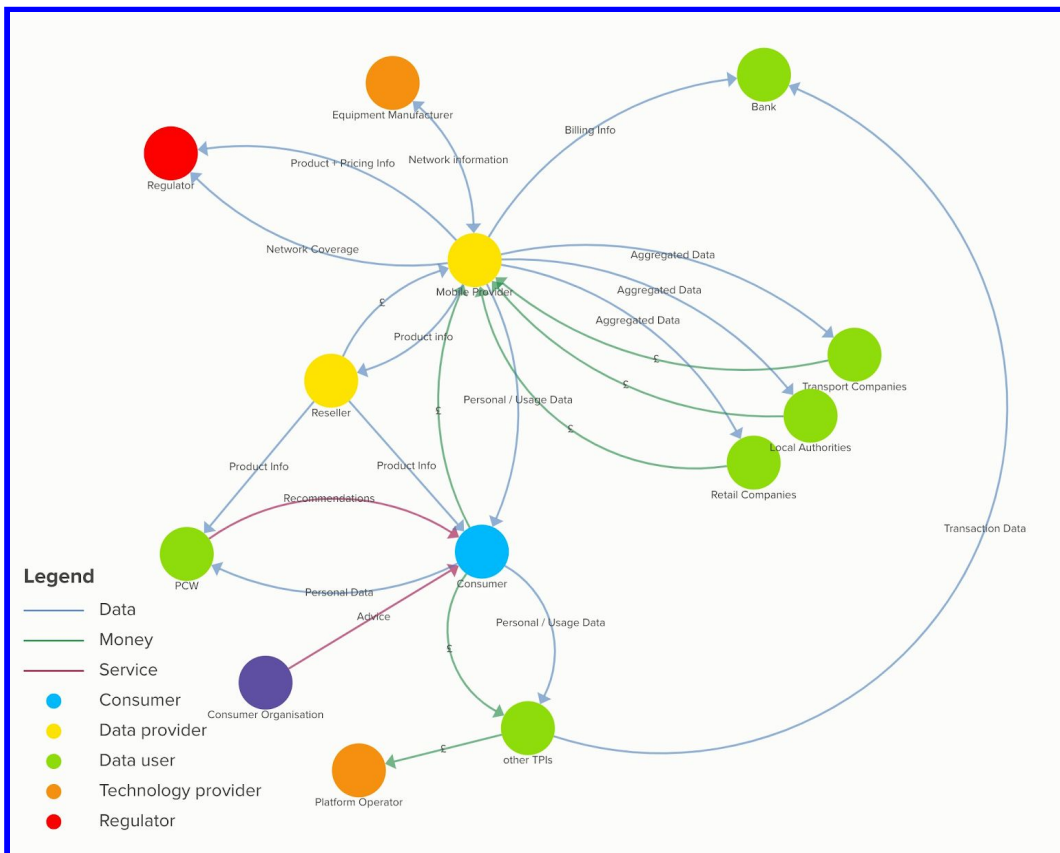
All the ecosystem maps were different but they captured the complexity of the data ecosystem, with large numbers of actors playing a variety of roles in the ecosystem and creating value in different ways.

All the maps highlighted two main aspects: how consumers navigate the communications market; and how different types of communications providers access data and value across the ecosystem.

A variety of other insights were highlighted by the groups through the mapping exercise and subsequent presentations, such as:

- Valuable communications related data sits not just with mobile providers, but also adjacent organisations, such as banks, transport companies, and regulators.
- Customers could be incentivised to share communications data and more with mobile providers as well as third parties in order to improve service delivery.
- The physical infrastructure of the ecosystem can influence the data and value flows of the ecosystem.
- Mapping the data ecosystem could help new challengers identify where to access data from.
- Consumers provide data and money and often get back value in the form of services and insights, but do not receive monetary compensation for providing data.

With a better shared understanding of the data ecosystem they operate in, the workshop then moved on to the main focus, use case generation.

Use cases for open communications

Workshop teams were asked four questions about the potential of increasing access to data in the communications sector, and generated, discussed and prioritised their answers. The four questions all had the same format:

- What are the possible services that could have **most benefit to communications customers?**
- What are the possible services that could have the **most benefit to communications providers?**
- What are the possible services that could be the **easiest to implement** with increased access to data?
- What are the **risks that are associated** with possible new services?

Greatest benefit to consumers

The overarching theme of what would be the greatest benefit to consumers was around finding the communications products that were best suited for them. Comparing, switching, aggregating and managing communications products based on their needs and lifestyle – such as location, commute, living situation – were seen as the greatest benefits of increased access to communications data. Other priority products included bill splitting in shared households, unbundling services across multiple providers for the best deal, and understanding usage patterns in public services.

Lower priority services included:

- Automated switching across service providers
- Emergency services locator
- Add-ons without tie-ins and shorter tie-in on contracts

In our previous work on [Open APIs in Telecoms](#) we looked at three potential use cases that could benefit telecoms customers.[21] These use cases were tested with communications providers to ensure their feasibility.

- [Choosing a new mobile network](#). Comparison sites are typically geared towards price, helping people find the cheapest deal. Using data for signal strength, ethical preferences such as carbon footprint and sourcing practices, or real data usage this could enable the creation of services for managing and switching between mobile network providers based on more than price.
- [Managing utility bills in a shared household](#). Most utility companies do not optimise for the complexity of people living together in shared houses, including shared responsibility for paying and managing the bills and some people

---

[21] Open Data Institute (2018), "Building the future: opportunities for new services and stronger digital rights in telecoms and utilities", [https://theodi.org/article/building-the-future-opportunities-for-new-services-and-stronger-di gital-rights-in-telecoms-and-utilities/](https://theodi.org/article/building-the-future-opportunities-for-new-services-and-stronger-digital-rights-in-telecoms-and-utilities/)

periodically moving. Making this data portable could help to split the bills in a household, while allowing everyone to see all the accounts in one place.

- Improving a city's air quality using bulk location data from mobile phones. Cities may have rich street-level data about air quality, but can lack footfall and cyclist data. Better data would help urban planners working to combat pollution to prioritise the streets in which the highest number of people are affected by poor air quality.

Greatest benefit to providers

Increasing access to communications data could also benefit the organisations currently stewarding this data. Our research shows that private sector organisations can gain value from sharing data. In the Open Banking ecosystem, traditional banks have benefitted from improved Know-Your-Customer (KYC) – the process whereby a business verifies the identity and suitability of their customers, the ability to create personalised product offerings, and access to competitor customer information.

There were no current representatives from communications providers present at this workshop, but participants discussed how providers could benefit from improving their service provision. Open communications could give communications providers a better understanding of the market by having better insights to customer preferences and service use through consented data access. Service providers would potentially be able to compete better by providing personalised services, using competitor data to target certain market segments, and improve services with non-telecoms data.

Lower priority services that were mentioned in this category included:

- Targeting investment in networks (in infrastructure, coverage, etc.)
- Understanding switch incentives
- Consumer feedback mechanisms
- Upselling to customers
- Identifying vulnerable consumers
- Identifying opportunities to share assets with competitors
- Standardisation of product metrics

Communications providers are investing in new technologies that have the potential to generate large quantities of data. Analysing data generated from Internet of Things (IoT) devices, software defined networks (SDNs) - the separation of network control functions from network data functions - and network function virtualization (NFV) - software implementations of network functions - could provide a lot of value to communications providers.[22] Given the difficult nature of analysis however, communications companies may be best served using an open innovation approach that draws on external expertise. This approach could be facilitated by the wider open communications initiative in similar ways to how the Data Pitch programme was able to do so for data providers in different sectors[23].

---

[22] Cisco (n.d.) "SDN vs. NFV: What's the difference?",
https://www.cisco.com/c/en/us/solutions/software-defined-networking/sdn-vs-nfv.html
[23] London Economics (Jan 2020), "Data Pitch Evaluation",
https://datapitch.eu/wp-content/uploads/2020/01/London-Economics-Data-Pitch-evaluati
on-FINAL-PDF.pdf

Quick wins

Some services will be more difficult to implement in the market than others due to technical requirements or data privacy and sensitivity. In order to ensure continued momentum and support for an open communications initiative, lower risk and more technically simple services could be implemented first.

Participants noted that publishing some types of data could be an easy "quick win", such as open standards around products, and data around geographic coverage. Groups also noted that enabling people to combine their communications data with data from other household utilities for ease of bills management could feature in the first rollout of services.

Lower priority services that were mentioned in this category included:

- Publishing better and more product data for Price Comparison Websites (PCWs)
- Standard publication of usage data per service and per user
- Make metadata available to help decide which data to share first
- Publishing fuller information on tariffs

Outside of increasing access to customer data to third parties, open communications could also mandate organisations to publish open data. Ofcom and the industry should focus on first publishing data that is of low risk to data providers and high benefit to potential users, they should consider:

- Publishing data without personal information openly first removes the need for potentially risky anonymisation processes.
- Publishing low risk geospatial data - data about a place, such as a building, river, or city - quickly has the additional benefit of improving the overall geospatial data infrastructure of a region, with uses beyond the communications sector.
- Publishing data on terms and conditions for various communications products could promote consumer choice and protection but requires some standardisation of product offerings.

Risks

In order for a data ecosystem to be trusted it must be trustworthy. Having an understanding of the risks of increasing openness and putting in place measures to combat those risks is a fundamental aspect of trustworthy data stewardship.

The results of this question were mixed across the groups but the main theme to emerge was a lack of initial trust from consumers to share personal data with third parties. This risk is not new when trying to implement an open data initiative and was a similar concern with Open Banking. Another key set of risks were around the misuse of data after being shared, a concern that can go hand in hand with low consumer trust.

Lower priority risks included:
- Large costs for industry
- Slow progress developing standards

- Misleading recommendations due to incomplete sets of data being used
- Lack of market incentives
- Potential for unacceptable price discrimination

There are important steps that Ofcom and industry organisations can take to reduce the risk and minimise harm from increasing access to data, such as:

- Ensuring strict alignment to regulation around personal data such as the General Data Protection Regulation (GDPR) in the EU, and using proper anonymisation techniques when aggregating personal data so that it can be opened.[24]
- Implementing data ethics assessments that go beyond compliance and legal issues. Tools such as the ODI's Data Ethics Canvas can help identify and make decisions about potential ethical issues. Publishing findings openly can help build trust.[25]
- Implementing safeguards so that incumbent communications providers do not unfairly benefit and that vulnerable customers are protected from harm.

---

[24] Open Data Institute (2019), "Anonymisation and open data: An introduction to managing the risk of re-identification",
https://docs.google.com/document/d/1CoXniaTnQL_4ZyQuji9_MA_YCEElQjx4z1SEdB08c2M/edit#

[25] Open Data Institute (2019),"The Data Ethics Canvas,
https://theodi.org/article/data-ethics-canvas/#1557853049317-baab6160-135f

Recommendations

It takes a lot of work to create an open, trustworthy data ecosystem. Ofcom is well positioned to begin that journey. The communications sector is poised for a data portability initiative, and there is interest by end users, data users and providers. There are other sectors to look at for inspiration and caution. Culture change in a sector requires understanding the various motivations of the different actors. Ofcom will have to understand what combination of mandate, reward and opportunity needs to be created, and for whom, to further the goals of the initiative.

Ofcom should focus on the next steps in their journey so as to ensure a strong foundation to move forward:

- Confer with key representatives from other data portability initiatives in the energy, water, and banking sectors to learn best practice and where pitfalls may exist
- Seek buy-in from the industry's main service providers to ensure a smooth implementation and achievement of goals
- Convene a working group of different industry representatives to develop a programme of activity for further discovery and implementation
- Focus initial work on a non-contentious and low risk quick win, such as geospatial data
- Explore ways to stimulate and encourage further work on specific use cases. This might involve engaging in discovery projects, funding hackdays or offering stimulus funding for small projects
- Promote and sponsor further engagement and research to understand the data ecosystem better, such as a report on communications data infrastructure and standards, or on an appropriate model for data access, such as a data trust or other institution for data that cannot be openly published.

Appendix 1: Workshop Attendance

The following organisations had one or more members attending the workshop:

- Ofcom
- Which?
- Bud
- OpenWrks
- OpenDataSoft
- USwitch
- DCMS
- UK Regulators Network
- Open Data Institute

Appendix 2: Additional Resources

- [Mapping data ecosystems](#) methodology and [tool](#) – a tool for documenting and mapping data ecosystems
- [Open APIs in the Telecoms Industry](#)
- The ODI's [Data Toolkit for Business](#) is a set of collaborative tools that will help businesses unlock the value of data
- [Open standards for the UK energy sector](#)
- [Furman Review: Access to data is a new tool against monopoly](#)
- [Anonymisation and open data: An introduction to managing the risk of re-identification](#)
- [How far Open Banking has come: our five takeaway](#)
- [Open Standards for Data](#) - This guidebook helps people and organisations create, develop and adopt open standards for data.
- [Open data for public services](#) – includes example data ecosystem maps
- Report: Sharing data to create value in the private sector
- [Data sharing in the private sector](#) - includes case studies on businesses gaining value from increasing access to data they hold and a [summary report](#)
- [The Value of Data report](#) - exploring ideas around how to effectively and ethically tap into the value of data