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Policy paper

National Data Strategy Mission 1 Policy Framework: Unlocking the value of data across the economy

Published 24 November 2021

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Executive summary

This document provides a framework for government action to set the correct conditions to make private and third sector data more usable, accessible and available across the UK's economy while protecting people's data rights and private enterprises' intellectual property, in line with Mission 1 of the [National Data Strategy](https://www.gov.uk/government/publications/uk-national-data-strategy/national-data-strategy) (<https://www.gov.uk/government/publications/uk-national-data-strategy/national-data-strategy>).

The framework is divided into two main components:

1. **Principles for intervention:** A set of principles that government will use to guide interventions seeking to unlock data across the economy, to ensure we employ the most effective approach to deliver public benefit.
2. **Priority areas for action:** Building on the above, we have identified specific areas for action that, in combination, can address some of the key barriers to data sharing for public benefit.

These priorities will shape our ongoing work in this area, led and coordinated by the Department for Digital, Culture, Media and Sport (DCMS), working across government and with key organisations to support delivery.

We continue to collate information to refine and target these approaches, which are based on our current understanding of the data landscape. Specific interventions will therefore evolve as our evidence base increases.

Context

Data is the great opportunity of our time, offering the possibility of a more informed and better connected future. Data needs to be at the heart of our efforts to address key challenges and achieve government priorities, including: meeting our net zero targets, levelling up communities across the UK and building back better from the pandemic. Creating the right data ecosystem has the potential to transform almost every part of our society and economy — from boosting trade and productivity, to fuelling business and job creation, securing scientific breakthroughs, and creating a better and fairer society for all.

The realisation of the value of data to our society depends not only on the data itself, but also upon the strategies we deploy for its governance. The National Data Strategy (NDS) sets out five priority areas of action, including [Mission One: Unlocking the value of data across the economy](https://www.gov.uk/government/publications/uk-national-data-strategy/national-data-strategy#data-2-1) (<https://www.gov.uk/government/publications/uk-national-data-strategy/national-data-strategy#data-2-1>). As part of this mission, we committed to developing a considered and evidence-based policy framework to determine what government interventions are needed to set the correct conditions to make data usable, accessible and available across the economy while protecting people's data rights and private enterprises' intellectual property. This policy framework sets out how the government will approach this in relation to data held in the private and third sectors. It aligns with our wider goals and encompasses the work we are already undertaking across government to support the data economy.

How we intervene will be imperative to remaining globally competitive, influencing emerging global norms, and preserving our prosperity; keeping the UK's place at the leading edge of science and technology, as set out in the Integrated Review. The US, EU and China – among others – are investing significant sums to capitalise on these opportunities and show leadership in setting the global norms in data sharing. It is likely that continued investment and action will be required to secure the UK's position in this global order and realise our ambitions of being a scientific superpower and a leading digital nation.

This context remains dynamic: we are continuing to develop our evidence base in order to maintain a robust and informed framework. This document outlines our proposed approach, including our policy priorities, based on the current state of play.

Our objectives

There is increasing evidence suggesting that the full value of data is not being realised by businesses and other organisations because vital information is not getting to where it needs to be. Data that is rich in potential remains locked across the private and third sectors, leading to missed opportunities for growth and innovation.

Research shows that making that data more available could help businesses improve market reach, support benchmarking and insights, drive open innovation, drive supply chain optimisation, embrace regulated data sharing, address sector challenges and build trust. [\[footnote 1\]](#) Those sharing data could make efficiency savings, develop new or improve existing products, create new or better services, solve existing or future business problems, or gain further understanding about the data they hold themselves. [\[footnote 2\]](#) On the other hand, businesses or organisations gaining access to data, which they or their competitors would otherwise not have, could generate new insights, develop new or improve existing products or services, and establish themselves in the market.

The need to intervene and encourage these outcomes was validated by responses we received through the consultation on the National Data Strategy, which showed that respondents tended to believe that better data availability would benefit all sectors; that there were challenges to data sharing between sectors; and that they welcomed a government-led framework for intervention to improve data availability.

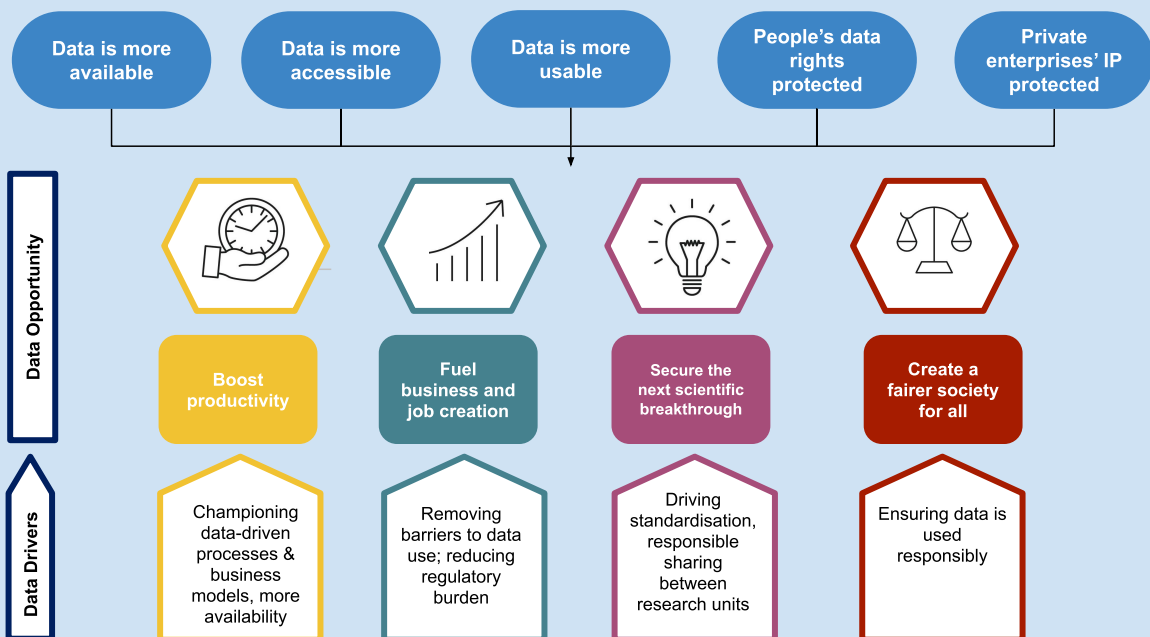
In particular, respondents highlighted the need for the government to improve coordination, incentivise data-driven innovation and address perceived risks to data sharing. This policy framework aims to do this, steered by the following question set out in the NDS:

How can the government set the correct conditions to make data usable, accessible and available across the economy, while still protecting people's data rights and private enterprises' intellectual property?



MISSION 1: UNLOCKING THE VALUE OF DATA ACROSS THE ECONOMY

How do we set the correct conditions so that...



Setting these conditions for unlocking data held in the private and third sectors will help us deliver the opportunities that the NDS has identified for data to positively transform the UK, in particular:

- **Boosting productivity:** Businesses that use data effectively are often more efficient, more productive and more profitable. We want to enhance competitiveness and productivity across the entire UK economy by championing data-driven processes and data-enabled business models, and by making data more available across the entire economy.
- **Supporting new businesses and jobs:** Data is increasingly a driver of new, innovative businesses and jobs. We aim to encourage this business and job creation by removing barriers to data use and reducing unnecessary regulatory compliance burdens on the average business.
- **Increasing the speed, efficiency and scope of scientific research:** Data is at the heart of much scientific research and many ground-breaking developments. We want to increase the speed and efficiency of scientific research by driving the standardisation of data so that it is easier to use and reuse, and by making it easier for universities, labs, clinical trials and other research units to responsibly share their data.
- **Creating a fairer society for all:** Data can empower people and society, delivering benefits beyond the economy. To ensure that data is used to its full potential and the benefits of data transformation are felt equally by everyone across society we must ensure that data is used responsibly and in a way that people trust.

The evidence

In March 2021, [we published research \(https://www.gov.uk/government/publications/increasing-access-to-data-held-across-the-economy\)](https://www.gov.uk/government/publications/increasing-access-to-data-held-across-the-economy) into the problems associated with data availability, as well as the levers government could use to increase private and third sector access to the data held across the economy. Produced by Frontier Economics and with guidance from expert advisor Professor Diane Coyle, [Increasing access to data across the economy \(https://www.gov.uk/government/publications/increasing-access-to-data-held-across-the-economy\)](https://www.gov.uk/government/publications/increasing-access-to-data-held-across-the-economy) identified the following barriers to data sharing in the private and third sectors for which there is rationale for government intervention:

- **A lack of incentives to share data.** Data providers may not be sufficiently incentivised to share or provide access to their data, for example because sharing requires them to incur costs they are not able to recoup from organisations or individuals that benefit from increased data availability.
- **Regulatory and legal risks.** Perceived or actual risks of breaching data protection law, intellectual property rights or regulatory requirements may be deterring organisations from using or accessing data.
- **A lack of knowledge.** Data providers may lack sufficient knowledge of the potential uses of their data, while data users may lack sufficient knowledge of what data could be made available and how.

- **High costs associated with data access/sharing.** Costs may be prohibitive because of a lack of common foundations, infrastructure and technologies that are needed for data sharing to be cost effective.
- **Commercial, reputational and ethical risks.** Perceived or actual risk of losing competitive advantage, suffering reputational damage from data uses that breach others' trust, or enabling ethically questionable uses of data may deter data access and sharing.

The available evidence, as well as insights from our own research, stakeholder engagement and consultation responses, suggest a lack of trust from data subjects is also a major barrier to data being available in the ways that we want it to be.

Barrier	Where it is occurring
Lack of incentives	<ul style="list-style-type: none"> • Our research (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/974532/Frontier-access_to_data_report-26-03-2021.pdf) found that data providers may be unwilling to make data available due to uncertainty about benefits (relative to costs) and because the perceived/actual costs to a company sharing data are greater than the benefits/costs able to be recouped by companies using the data. • The Department for Business, Energy & Industrial Strategy (BEIS) Smart Data Impact Assessment found that, while the private sector in principle could develop effective standards to share data with third parties, these had failed to materialise in some key markets. This is thought to be due to concentrated (especially upfront) costs and dispersed benefits. That is, although customers and innovative organisations could benefit from data sharing, the implementation costs fall on incumbents that have little to benefit from sharing. (BEIS – Impact Assessment 2020).
Regulatory/legal risks	<ul style="list-style-type: none"> • Frontier's research suggests this problem may arise as a result of actual legal and regulatory barriers; a lack of certainty on the legal and regulatory framework; or insufficient knowledge of the risks involved ('information failure'). • A survey by Open Data Institute (ODI) and YouGov (https://docs.google.com/spreadsheets/d/16GNhHjsKTdsmdYa_rrPJEFDdxvUQqyB3OwkzjDh_tHo/edit#gid=1830055045) revealed that 39% of businesses cite legal risks/data protection as a factor which is stopping them from sharing more data. • This may be of particular concern to smaller organisations that cannot afford legal fees or lack knowledge on how to adhere to these requirements.
Lack of knowledge	<ul style="list-style-type: none"> • Frontier found organisations sharing/accessing data do not know where to find potential data users and vice versa — especially when there is no pre-existing relationship, such as across industries. • Organisations sharing/accessing data may not know whether the data they are collecting or considering buying would actually meet their needs (for example, due to the limited information to be gained from 'test' versions of datasets, or lack of time/resources to assess such versions). They may also not know how to assess or ensure the quality and interoperability of the data shared or acquired. Additionally, organisations may not know enough about the benefits of data due to lack of skills and knowledge or, for example, if an economy's data culture is underdeveloped. • Organisations may also overestimate or underestimate the risks of data sharing — perhaps due to poor understanding of the nature of the risks or behavioural barriers. • Companies may also be misperceiving the trustworthiness of data sharing, worrying about fraud or data theft.
High costs associated with data access/sharing	<ul style="list-style-type: none"> • Our research suggests real or perceived costs, relative to the perceived benefits from data sharing, are a barrier. This is deterring smaller/younger businesses in particular from investing in solid data foundations (which would enable interoperability, for instance, allowing for the sharing and consumption of information generated by other systems) as well as governance arrangements that enable data access and sharing. • Uncertainty about benefits is deterring organisations from investing sufficiently in data foundations that could increase efficiency, lower costs and have spillover benefits for other firms. • High costs are also impeding access to technologies/infrastructure that support data sharing. • Many firms have not made the level of investment needed to participate in data sharing initiatives, and a lack of knowledge makes high costs even more of a barrier because it makes it more difficult to formulate a business case for investment (and for that business case to be understood internally too). • Other cost-related factors include a lack of financing and larger organisations not being incentivised enough commercially to open up to others the technologies and infrastructures in which they have invested.

Barrier	Where it is occurring
Commercial, reputational and ethical risks	<ul style="list-style-type: none"> • Research suggests private companies may retain data because they are worried about losing a potential source of competitive advantage both locally and internationally. This could occur whenever data is in the hands of a small number of potential providers that are in a position to retain the data for their own advantage ('market power'). One example of this was reflected in surveys and interviews conducted by the Committee for European Construction Equipment (https://www.cece.eu/stream/digitalising-the-construction-sector-unlocking-the-potential-of-data-with-a-value-chain-approach), which found that some companies, especially medium-sized firms, believed their market share could be eroded by tech companies if data was not adequately protected. • Organisations may perceive high risks in data sharing such as from security breaches or a lack of trust in the general process. • Just over a quarter of firms surveyed by ODI and YouGov (https://docs.google.com/spreadsheets/d/16GNhHjsKTdsmdYa_rrPJEFDDxvUQqyB3OwkzjDh_tHo/edit#gid=1830055045) regard other risks such as reputational damage as a deterrent. Firms may be worried that sharing and accessing data could lead to a loss of trust from clients or ethically questionable uses of data. For example, social media platforms have frequently come under fire over any perceived sharing of user data, with repercussions from the Cambridge Analytica scandal still felt to this day. • Organisations must also consider concerns about the potential sharing of intellectual property and commercial information as well as risks to their own security and the security of their assets and services when data is more open.
Lack of trust from data subjects	<ul style="list-style-type: none"> • There is a lack of public trust about how their personal data is used, be it by the public or private sector. The ODI found the majority of British adults surveyed in 2019 do not trust most public and private organisations to use their data ethically. (https://theodi.org/article/nearly-9-in-10-people-think-its-important-that-organisations-use-personal-data-ethically/) • A 2020 Centre for Data Ethics and Innovation (CDEI) report (https://www.gov.uk/government/publications/cdei-publishes-its-first-report-on-public-sector-data-sharing/addressing-trust-in-public-sector-data-use#fn:1) identified an environment of 'tenuous trust', citing survey evidence suggesting a significant proportion of the population (between 40-60% of people) believe that the government's use of data is not serving their interests.

This policy framework sets out our overall approach to addressing the barriers identified in existing research in order to increase data availability for the public benefit in a secure and responsible way. It focuses predominantly on cross-cutting and non-sector specific, or 'horizontal', interventions which we believe is the right approach to begin progressing the data economy in the direction we envision. We will continue to work across government to coordinate existing and future sector-specific interventions in line with this framework, and conduct further analysis to deepen our understanding of the most significant opportunities.

From horizontal to specific: Building the evidence base

In due course it will be important to understand how and where these interventions can be targeted to achieve maximum impact. In parallel to developing these interventions, we are developing our evidence base to identify and substantiate these policies. Table X summarises the main evidence gaps, followed by a plan for how we will build our evidence base to plug these and get a clearer sense of how and where to direct action. We have set out key messages on the current state of the evidence in the table below. We are conducting additional analysis to substantiate this evidence, including using the results of the [UK Business Data Survey survey \(https://www.gov.uk/government/statistics/uk-business-data-survey-2020\)](https://www.gov.uk/government/statistics/uk-business-data-survey-2020).

As our work progresses it will be important to understand how and where these interventions can be targeted to achieve maximum impact. We see two key evidence questions:

How do the barriers to data sharing manifest in different sectors / types of business?

The [ODI and YouGov Survey \(2020\) \(https://theodi.org/article/new-survey-finds-just-27-of-british-businesses-are-sharing-data/\)](https://theodi.org/article/new-survey-finds-just-27-of-british-businesses-are-sharing-data/) provides our best source of evidence, although it has a relatively small sample size and was only run once. Its main findings include:

- Company size is correlated with the frequency of data sharing, with larger companies sharing more often.
- There is a difference by sector in the proportion of companies that say they share data, ranging from 14% to 48% of companies.
- There appear to be some differences in the reasons for not sharing more of the data a business holds between businesses from different sectors, but further analysis is required before concrete findings can be drawn out.

Further research is needed on why companies do and do not share or publish their data and, crucially, how this differs between sectors, business types, etc.

Where are the greatest areas of opportunity? Where might greater use/sharing of data unlock the most benefit?

There are a range of sources which can provide insight on specific opportunities for greater use and sharing of data. For example:

- The [UK Business Data Survey 2020](https://www.gov.uk/government/statistics/uk-business-data-survey-2020) (<https://www.gov.uk/government/statistics/uk-business-data-survey-2020>) is a comprehensive and periodical survey about how firms handle, protect and share data by economic sector. These surveys help us understand the drivers as well as the perceived benefits, costs, and barriers to utilising data. By filtering these trends by industry and firm type we can better target our interventions across different sectors of the economy.
- The Centre for Data Ethics and Innovation brings together knowledge from a diverse range of stakeholders to provide research on a range of issues pertaining to data use and trust that can inform our approach, such as their in-depth look at the role of [Privacy Enhancing Technologies](https://cdei.blog.gov.uk/2021/07/14/supporting-the-adoption-of-privacy-enhancing-technologies/) (<https://cdei.blog.gov.uk/2021/07/14/supporting-the-adoption-of-privacy-enhancing-technologies/>), and their work exploring current and future opportunities for [data intermediaries](https://www.gov.uk/government/publications/unlocking-the-value-of-data-exploring-the-role-of-data-intermediaries) (<https://www.gov.uk/government/publications/unlocking-the-value-of-data-exploring-the-role-of-data-intermediaries>) in enabling data sharing.

We need to carry out a more systematic assessment of where these opportunities lie and the magnitude of potential benefits.

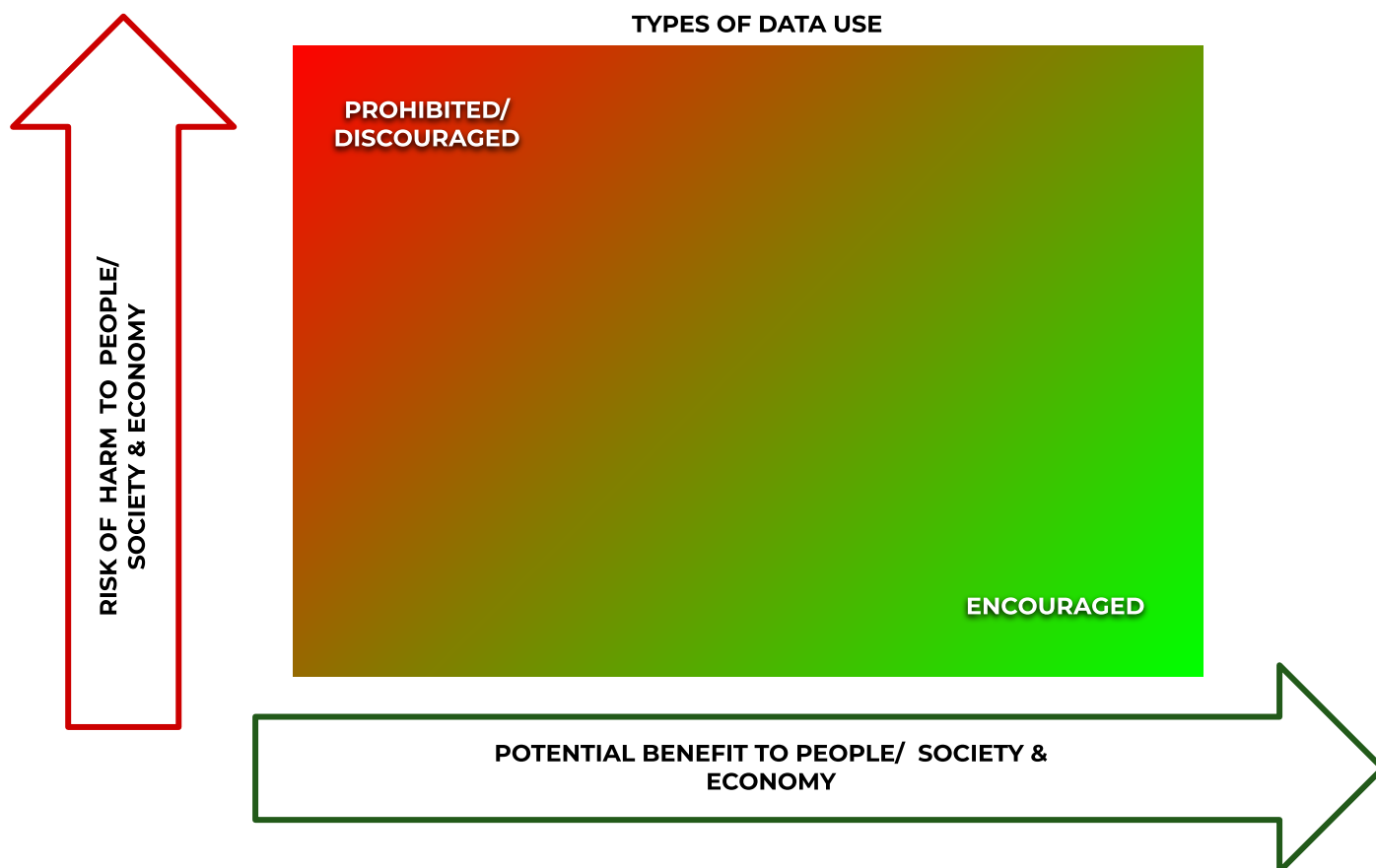
We will develop and curate evidence to continue filling these gaps in the following ways:

1. **Sector-specific trials/pilots/initiatives:** We will support a range of sector-specific data sharing initiatives with the private and third sectors and draw insights from their implementation, for example:
 - DCMS's Online Safety Data Initiative, which aims to increase data availability to support the development of technology aimed at combatting online harms such as child grooming.
 - Development of the Office for National Statistics (ONS)'s Integrated Data Service (IDS), where users of open government data can find and download data in a way that is friendly for both humans and computers.
2. **Bespoke research:** We will continue to carry out and commission research that can help us identify and narrow down where to focus interventions, including research examining the costs associated with data sharing. This will build on our recently published research on [Increasing access to data across the economy](https://www.gov.uk/government/publications/increasing-access-to-data-held-across-the-economy) (<https://www.gov.uk/government/publications/increasing-access-to-data-held-across-the-economy>) and [Data foundations and AI adoption in the UK private and third sectors by EY](https://www.gov.uk/government/publications/data-foundations-and-ai-adoption-in-the-uk-private-and-third-sectors-by-ey) (<https://www.gov.uk/government/publications/data-foundations-and-ai-adoption-in-the-uk-private-and-third-sectors-by-ey>).
3. **Regular monitoring:** We will regularly monitor trends, developments and perceptions related to data use in the private and third sectors, including via the [UK Business Data Survey](https://www.gov.uk/government/statistics/uk-business-data-survey-2020) (<https://www.gov.uk/government/statistics/uk-business-data-survey-2020>).
4. **Case studies:** We are considering a series of sector-specific case studies to help us identify where best to apply our interventions. Our first case study explored the media sector and aims to understand how traditional media platforms, such as print, broadcast and radio, are using data in the digital age. This will be published shortly.
5. **Engagement with domestic stakeholders:** We will continue to engage with various stakeholders including industry, civil society and academia through various channels including forums, workshops and roundtables. This will build on the [National Data Strategy \(NDS\) consultation](https://www.gov.uk/government/consultations/uk-national-data-strategy-nds-consultation/outcome/government-response-to-the-consultation-on-the-national-data-strategy) (<https://www.gov.uk/government/consultations/uk-national-data-strategy-nds-consultation/outcome/government-response-to-the-consultation-on-the-national-data-strategy>) and a series of DCMS-led roundtable discussions on data intermediaries with thought leaders, investors and innovators earlier this year. Current and planned engagement includes:
 - [Data: A New Direction consultation](https://www.gov.uk/government/consultations/data-a-new-direction) (<https://www.gov.uk/government/consultations/data-a-new-direction>)
 - [The NDS Forum](https://www.gov.uk/guidance/national-data-strategy-forum) (<https://www.gov.uk/guidance/national-data-strategy-forum>)
6. **International engagement:** We will engage and collaborate with international partners to share insights and evidence on sectors to prioritise and how best to do so. The UK hosted a series of workshops in October 2021 for G7 nations to identify priority sectors for data sharing, which will be followed by an expert-led forum in November to share knowledge and best practices on those factors that can aid or hinder data sharing and innovation.

We will engage in-house and external experts to critically evaluate our evidence base and identify priority areas for intervention on an ongoing basis, allowing us to target our actions most effectively. This process will include bringing together key experts who can advise on our evidence base under the banner of the NDS Forum, and drawing on the expertise of the Centre for Data Ethics and Innovation's Chair and Board.

How we will intervene

TYPES OF DATA USE



We start from a presumption in favour of sharing data for public benefit where this outweighs the costs or risks. In practice, doing this will require a considered evaluation of the benefits and risks for various parties posed by sharing data sets in different contexts. These are illustrated in broad terms in diagram XX.

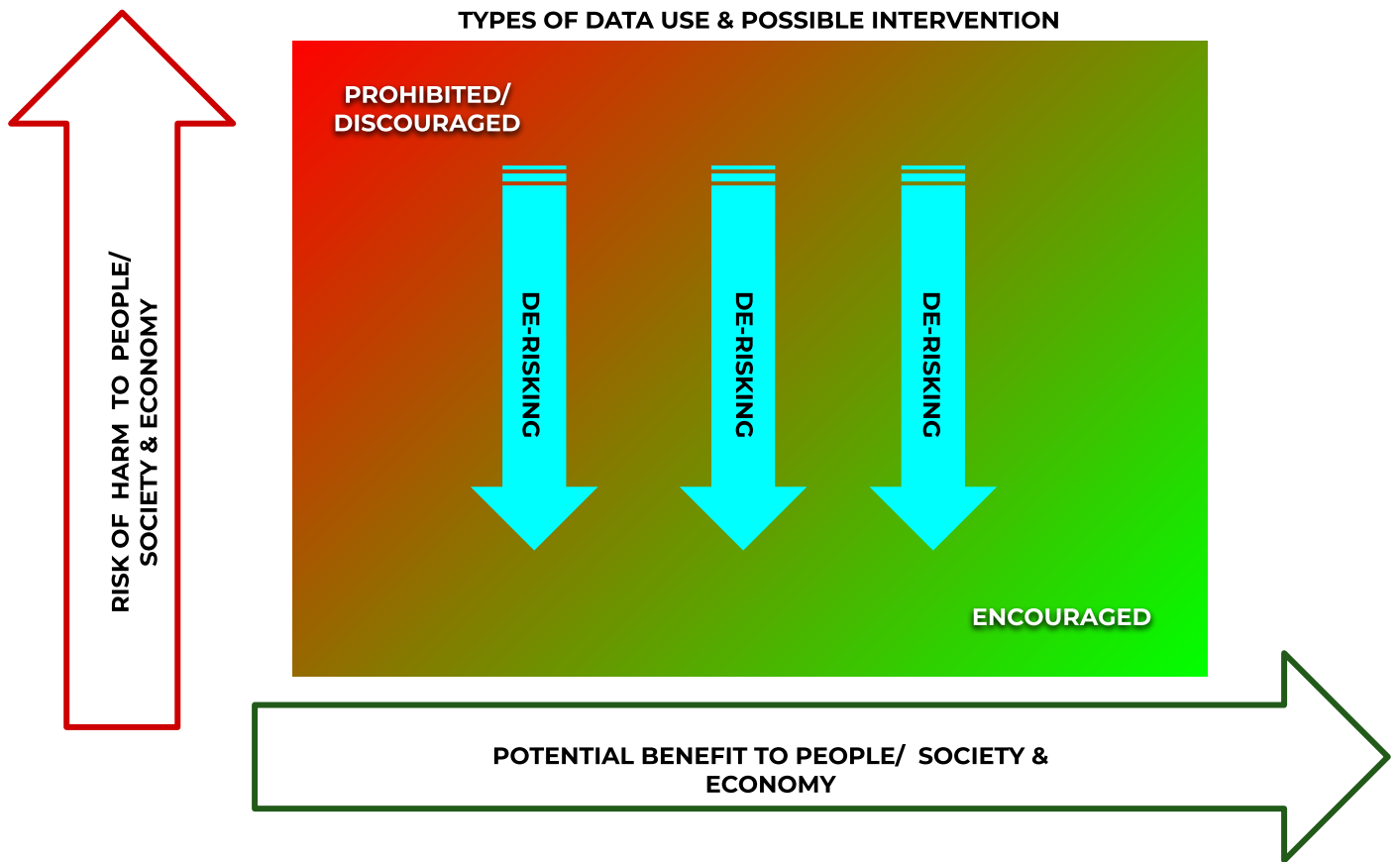
The existing evidence has shown us that some data (the top left of the diagram) would be harmful to share and have limited or no benefit to society or the economy — for example, the personal details of people in sensitive professions. In this case, there is no benefit to intervening to make this data more accessible.

Conversely, in some cases, data sharing will have significant benefits and its associated risks will be low — for example, making live transit data available via a secure sharing mechanism. In many cases, these benefits can also be captured by the data holder when sharing their data and the market will be able to deliver the desired outcome without any need for government intervention.

However, while we acknowledge gaps in our evidence base, the majority of data sharing and use is likely to fall somewhere in between. Data that could bring benefits to one party may pose risks to another. Similarly, data holders may not be incentivised to share data at an optimal level, or at all, even if that data generates significant societal benefits because they cannot capture any benefits for themselves. For example, a small organisation with access to niche user data from a vulnerable group may have to sustain high upfront costs that it cannot recoup by sharing that data with a company developing services to help that group.

Likewise, the potential benefits of using a particular dataset in different ways needs to be considered alongside the potential costs or risk of harm caused by the way that data is shared. For instance, medical data could contribute to life-saving research but could violate the privacy of data subjects unless it was appropriately protected, and inappropriate sharing could cause reputational damage to the organisation sharing that data. Similarly, information on the occupancy and layout of a city centre may be useful for urban planning but could provide threat intelligence for hostile actors if it contained details about sensitive sites.

Part of the way that government can intervene to deliver our objective of data sharing for public benefit is to prohibit or discourage harmful data use and sharing — either by preventing it outright or by ensuring it can only take place under certain conditions, where the risks have been reduced to an acceptable level.



A robust regime is already in place: there are categories of data sharing that are not permitted subject to a consent framework and/or can only be done in certain ways to manage those risks, which the government continues to keep under review. Levers to manage this include the [Information Commissioner’s Office \(ICO\)’s data sharing code of practice](https://ico.org.uk/for-organisations/guide-to-data-protection/ico-codes-of-practice/data-sharing-a-code-of-practice/) (<https://ico.org.uk/for-organisations/guide-to-data-protection/ico-codes-of-practice/data-sharing-a-code-of-practice/>), the [Centre for the Protection of National Infrastructure’s Security-Minded approach to Open and Shared Data](https://www.cpni.gov.uk/security-minded-approach-open-and-shared-data) (<https://www.cpni.gov.uk/security-minded-approach-open-and-shared-data>), the [Official Secrets Act](https://www.legislation.gov.uk/ukpga/1989/6/contents) (<https://www.legislation.gov.uk/ukpga/1989/6/contents>), the [Information Management Framework](https://www.cpni.gov.uk/security-minded-approach-information-management) (<https://www.cpni.gov.uk/security-minded-approach-information-management>) which is currently under development, and other relevant legislation and guidance. The [Central Digital and Data Office’s Data Ethics Framework](https://www.gov.uk/government/publications/data-ethics-framework/data-ethics-framework-2020) (<https://www.gov.uk/government/publications/data-ethics-framework/data-ethics-framework-2020>), which is designed to guide public sector use of data, may also inform how organisations in the private and third sector use data.

This framework will not seek to duplicate these, and other guidance, but any new interventions will be delivered within their parameters and we will support innovations and interventions that de-risk data use accordingly.

The focus of this framework is therefore to target government intervention towards ensuring that the public benefits of data sharing are fully reflected in decision-making by data holders; recognising that organisations may not always be incentivised to do so.

To do this, our approach for this framework is divided as follows:

1. [Principles for government intervention](#)

We know that not all data is equal and different interventions will be needed in different areas depending on the context. We have therefore identified a set of principles that government will use to guide interventions seeking to unlock data across the economy, to ensure we employ the most effective approach to deliver public benefit.

2. [Priority areas for government action](#)

Building on the above, we have identified specific areas of action that can address some of the key barriers to data sharing for public benefit. We elaborate more on this in [our priorities](#).

Principles for intervention

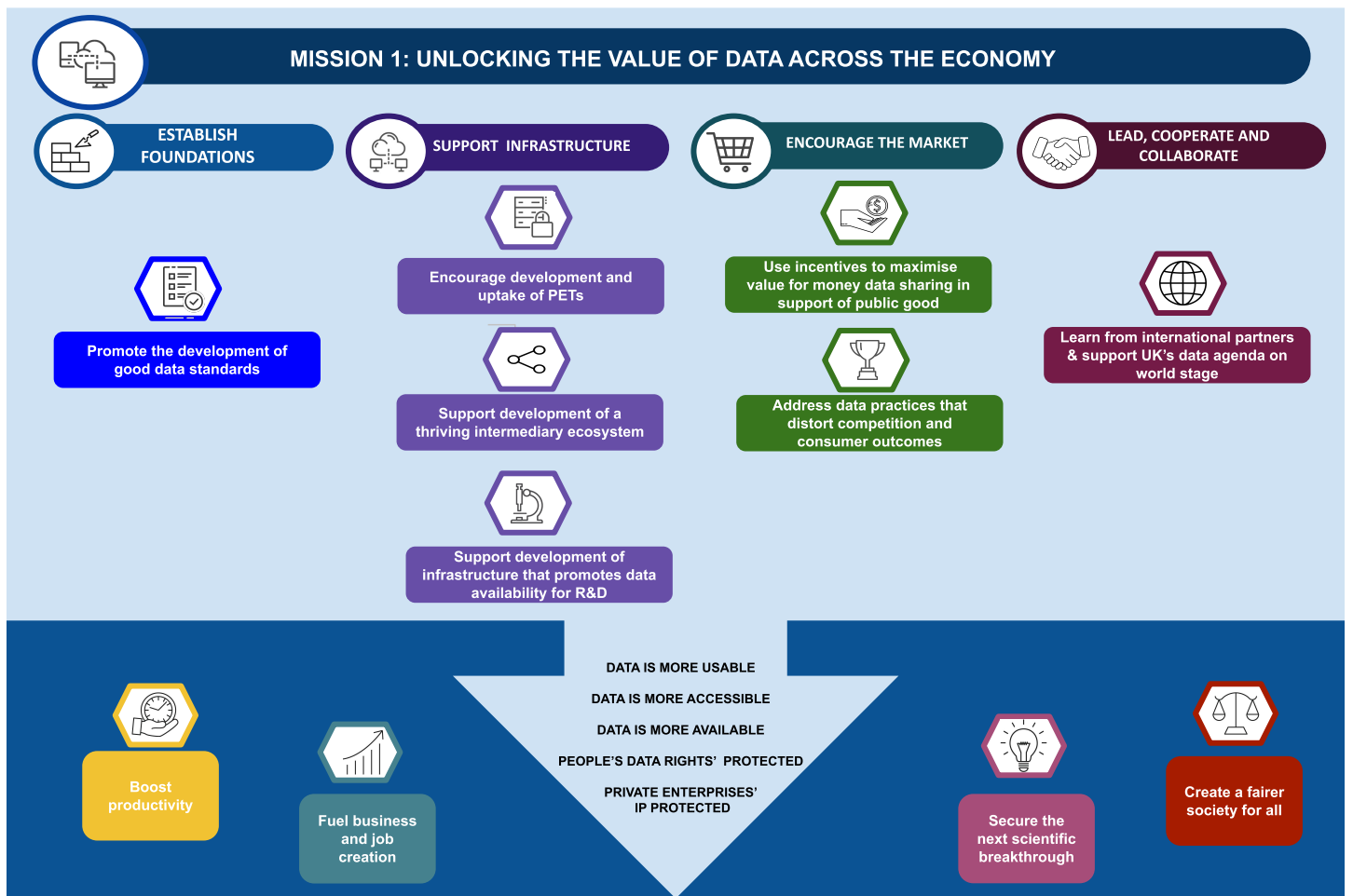
Frontier proposed six potential levers for government action, described as “something that government could manipulate, at least in principle”, and would have an impact on one or more of the ‘access to data’ issues set out in [the evidence section](#). We consider each of these below and build on Frontier’s rationale to set out criteria/principles for how we may seek to deploy them in situations where unlocking or de-risking data would deliver significant positive externalities — where the benefits of opening up that data to the economy and society will likely accrue well beyond the benefits enjoyed in the near term by the organisation holding that data.

Lever	We will consider applying when...
<p>Improve knowledge and understanding of data sharing (e.g. by leveraging government's convening power).</p>	<ul style="list-style-type: none"> • There is a general lack of knowledge in the sector/area about the benefits of data use and data sharing (for example, there is an underlying private benefit to data sharing that is not currently understood). • Societal benefits of data sharing are well aligned with private economic benefits. • Risks of data sharing are overestimated or underestimated. • There is actual/perceived lack of trust in data sharing among organisations and data subjects. • There is a low data skills base within the sector. • Collaboration within/between sectors is currently low (for example, organisations sharing/accessing data do not know where to find users/providers, or organisations sharing/accessing data do not know whether the data they are collecting/considering buying is fit for purpose). • There is a need to bring people/organisations up to a basic level of understanding about data sharing before other interventions can be deployed.
<p>Reduce costs of data sharing through better data foundations (e.g. by supporting more efficient data sharing solutions, developing standards, encouraging or mandating adoption of standards, and data stewarding initiatives).</p>	<ul style="list-style-type: none"> • There is a lack of collaboration, leading to duplication of efforts to improve data foundations and higher costs that are detrimental to the provision of data access. • High fixed costs prevent participation in data foundations and governance arrangements. This is particularly relevant for smaller/younger businesses. • Commercial advantage may be eroded through sharing foundational resources. This is particularly the case among larger organisations that are not incentivised to share technology and infrastructure they have invested in. • There is uncertainty around the benefits of investing in data foundations. • The benefits from using the data require complementary investments to be made. • Trusted relationships between data users and providers already exist or can be developed/nurtured.
<p>Support (new) ways of addressing the risks of data sharing (for example, by supporting innovation in secure data sharing solutions).</p>	<ul style="list-style-type: none"> • Addressing those risks would mitigate perceived or actual commercial, reputational and/or ethical risks that were preventing valuable data from being unlocked (eg. by safeguarding competitive advantage of companies, ensuring ethical and legal sharing and processing of data to avoid reputational damage) • Addressing those risks would reduce a monopoly and increase competition and choice in the market. • Addressing those risks could safeguard national security (i.e. information on the occupancy and layout of a city centre may be useful for urban planning but could provide threat intelligence for hostile actors if it contained details about sensitive sites). • Addressing those risks would increase public trust and confidence in how data is used. • Addressing those risks could reduce costs in the long-term.

Lever	We will consider applying when...
<p>Improve or demonstrate incentives for data sharing (e.g. through testbeds and trials).</p>	<ul style="list-style-type: none"> • There are high upfront costs that organisations cannot recoup. This is particularly challenging for smaller/younger businesses and for types of data that are costly to collect and maintain. • The benefits of data sharing do not accrue to the data holder, and they have no means of capturing a portion of those benefits for themselves. • There are actual/perceived commercial/reputational risks that the organisation may face by sharing data. • There is uncertainty around the benefits of data sharing among data providers (for example, due to information asymmetries or regulatory uncertainty). • There is a need to reduce monopolies/increase competition and choice in the market. • There is scepticism about whether data that is shared will be reused and therefore provide the claimed benefits.
<p>Reduce (perceived) regulatory burden associated with data sharing.</p>	<ul style="list-style-type: none"> • There is a lack of clarity about the regulatory risks associated with data sharing. • There is a concern that complying with regulations will involve high costs. This is of particular concern to smaller organisations. • There are perceived regulatory burdens that can be mitigated through innovations such as data intermediaries or privacy-enhancing technologies, which can help take the guesswork out of compliance by ensuring data is shared according to laws and regulations. • There are legitimate grounds (i.e. significant public benefit to be gained) and reasonable scope/capacity to update, influence or create regulations that make data sharing easier.
<p>Mandate data sharing in the public interest, by identifying datasets of national importance or public interest.</p>	<ul style="list-style-type: none"> • There is a clear and immediate need to adjust market dynamics in the interest of the public good. • The current distribution/ownership of data is causing social harm/is preventing significant public good. • Other interventions have not addressed, or are unlikely to address, the issue. • Taking action will (on balance) promote, rather than restrict, future data innovation in this area.

Priority areas for action

Having considered our desired outcomes alongside the identified barriers, we have determined a number of priority interventions that are needed to deliver our overarching objectives.



These priority areas of action are divided into four buckets:

1. [Establish foundations](#)

[1. Promote the development and use of good data standards so that data is held, processed and shared according to FAIR principles.](#)

In order to foster a responsible, efficient and effective data ecosystem, we need to ensure the correct conditions are being set from the bottom up. This will ensure a solid base from which we can foster a trust-driven, thriving data economy in which data is findable, accessible, interoperable and reusable while protecting the rights of data subjects.

2. [Support infrastructure](#)

[2. Encourage the development and uptake of Privacy Enhancing Technologies.](#)

[3. Support the development of a thriving intermediary ecosystem that enables responsible data sharing.](#)

[4. Support the development of infrastructure that promotes the availability of data for research and development purposes.](#)

We want to encourage innovation and infrastructure development that can propel our data environment forward in a secure and responsible way to stimulate and facilitate activities that will ultimately benefit society and the economy.

3. [Encourage the market](#)

[5. Maximise value for money incentives for data sharing in support of public benefit.](#)

[6. Support effective and well-functioning markets by addressing data practices that distort competition and consumer outcomes.](#)

Even after a data ecosystem is established, there may be a need for government intervention where market forces are failing to deliver. We want to explore options that can facilitate and stimulate the development of healthy and responsible data-driven markets.

4. [Lead, co-operate and collaborate](#)

[7. Learn from international partners and develop international cooperation to support the UK's data agenda on the world stage.](#)

The government recognises there is knowledge and expertise beyond our own borders on unlocking the value of data. In order

to develop our domestic data economy, we should forge and foster relationships with international partners, learning from their own successes and challenges in this arena.

These priorities will shape how we seek to deliver Mission 1 of the National Data Strategy across government. Executing them will be led and coordinated by the Department for Digital, Culture, Media & Sport (DCMS), working across government and with key organisations to support delivery.

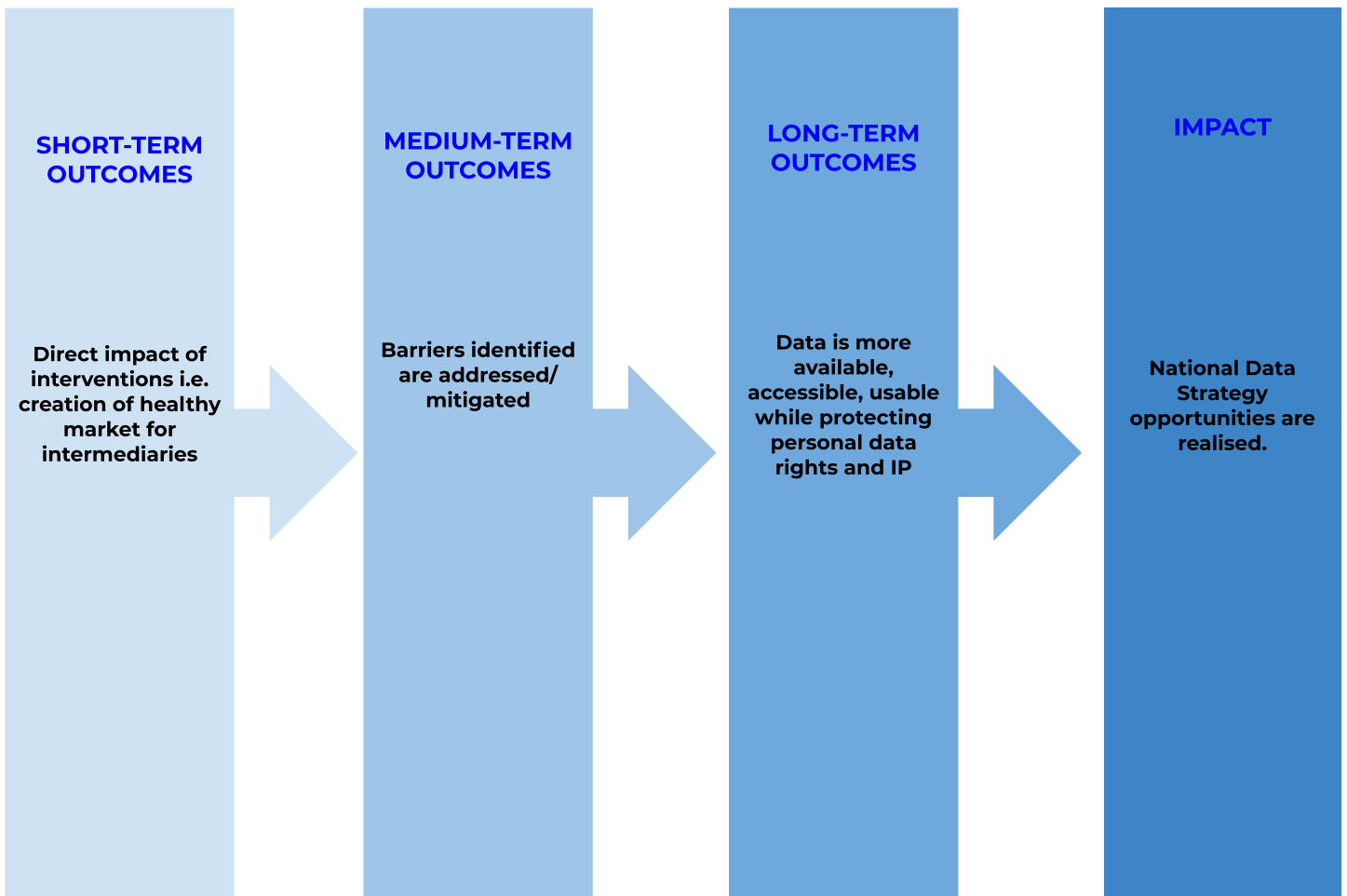


Table Y: Our priorities and how they correspond to the levers

	Lever applied					
Priority	Improve/demonstrate incentives	Reduce legal and regulatory burden	Improve knowledge	Reduce costs	Support ways of addressing risks	Mandate data sharing
1. Promote the development of good data foundations so that data is held according to the FAIR principles.		✓	✓	✓		
2. Encourage the development and uptake of Privacy Enhancing Technologies.		✓		✓	✓	
3. Support the development of a thriving intermediary ecosystem that enables responsible data sharing.	✓	✓	✓	✓	✓	
4. Support the development of infrastructure that promotes the availability of data for research and development purposes.	✓	✓	✓	✓	✓	

	Lever applied					
Priority	Improve/demonstrate incentives	Reduce legal and regulatory burden	Improve knowledge	Reduce costs	Support ways of addressing risks	Mandate data sharing
5. Maximise value for money incentives for data sharing in support of public benefit.	✓	✓	✓	✓		
6. Support effective and well-functioning markets by addressing data practices that distort competition and consumer outcomes.	✓			✓		
7. Learn from international partners and support UK's data economy and innovation agenda on the world stage	✓	✓	✓	✓	✓	

Our priorities

Establish foundations

1. Promote the development and use of good data standards so that data is held, processed and shared according to the FAIR principles.

What:

We want to overcome the undervaluation and under exploitation of data by ensuring it is held according to the FAIR principles so that data is findable, accessible, interoperable, and reusable.

Why:

The standards landscape is complex and fast-evolving. Standards can support system interoperability and data exchange. Better knowledge sharing on existing standards, particularly in emerging markets, and the development and adoption of good data standards will enable increased interoperability and innovation. Government intervention may be needed on data standards to support the delivery of the priorities set out in this framework.

How:

We will work to make this happen by:

- mapping types of data standards and identifying any gaps
- evaluating the best way for government to support the implementation of good data standards in priority sectors or applications, including scoping the feasibility of and options for a data standards hub. This project will aim to align with the work to pilot an AI Standards Hub, announced in the UK's National AI Strategy.

Some of the ways we are already supporting this priority include:

- [Research we commissioned on data foundations](https://www.gov.uk/government/publications/data-foundations-and-ai-adoption-in-the-uk-private-and-third-sectors) (https://www.gov.uk/government/publications/data-foundations-and-ai-adoption-in-the-uk-private-and-third-sectors) setting out points of view from organisations across the UK economy on the perceived value of data in decision-making, the adoption and use of data foundations and artificial intelligence (AI), barriers to the adoption of data foundations and the key considerations for government to address these challenges.
- The Centre for Data Ethics and Innovation (CDEI)'s work developing an [AI Assurance Ecosystem Roadmap](https://cdei.blog.gov.uk/2021/04/15/the-need-for-effective-ai-assurance/) (https://cdei.blog.gov.uk/2021/04/15/the-need-for-effective-ai-assurance/). This will clarify terminology around AI assurance (e.g. audit, certification), document the current state of play, clarify the relationship between different kinds of standards, and identify steps to foster a strong AI assurance ecosystem in the UK.
- The [Open Data Institute \(ODI\)'s programme of work on Data Assurance](https://theodi.org/article/assurance-trust-confidence-what-does-it-all-mean-for-data/) (https://theodi.org/article/assurance-trust-confidence-what-does-it-all-mean-for-data/) will explore and develop tools and guidance to help organisations to assess, build and demonstrate the trustworthiness of data and data practices.
- Supporting the development of the [Information Management Framework \(IMF\)](https://www.cpni.gov.uk/security-minded-approach-information-management/) (https://www.cpni.gov.uk/security-minded-approach-information-management/), which comprises the technical and non-technical frameworks to enable complex, multi-party, secure data sharing. This will be essential for the development of a national capability in digital twinning and wider

cyber-physical infrastructure, and could support the development of open standards for wider data architecture.

Support infrastructure

2. Encourage the development and uptake of Privacy Enhancing Technologies (PETs).

What:

We want PETs to become more accessible and widely used, propelled by innovation and a rise in demand.

Why:

PETs offer novel solutions to use data whilst maintaining the confidentiality of personal or other kinds of sensitive characteristics in that data. However, organisations investing in new data sharing solutions often prefer less sophisticated technologies that mean a larger amount of data goes unused, resulting in enormous untapped potential. Some of this is due to the usability of the technologies themselves. Additionally, the potential of these technologies, the contexts in which they can be used, and their limitations and risks are not widely understood. PETs have particular potential to support data sharing and use in data-intensive sectors such as AI, and their importance is flagged in the [AI Council roadmap](https://www.gov.uk/government/publications/ai-roadmap) and the [National AI Strategy](https://www.gov.uk/government/publications/national-ai-strategy).

How:

We will do this by:

- considering options for developing a community of skilled PETs users
- encouraging the development of vibrant and competitive markets of PETs innovators
- collaborating internationally to explore how PETs can enable data sharing, including across borders, and explore best-practice in real-world settings

Some of the ways we are already supporting the development of PETs include:

- sponsoring the Royal Society, which is conducting world-leading research and outreach on the best ways to put PETs into practice
- working with the ICO, which is [updating its guidance](https://ico.org.uk/about-the-ico/ico-and-stakeholder-consultations/ico-call-for-views-anonymisation-pseudonymisation-and-privacy-enhancing-technologies-guidance/) on anonymisation and pseudonymisation, building on the existing data sharing code of practice, to explore the role that privacy enhancing technologies might play in enabling safe and lawful data sharing
- collaborating with the CDEI, which has published [a PETs adoption guide](https://www.gov.uk/government/publications/privacy-enhancing-technologies-adoption-guide), underpinned by a repository of use cases, in order to increase innovation and standards in security and privacy in data sharing initiatives across the public sector

3. Support the development of a thriving intermediary ecosystem that enables responsible data sharing.

What:

We want to create an environment that reduces barriers for a variety of data intermediaries to operate in data markets and engender confidence in the use of their services. A data intermediary is an organisation which enables data sharing by operating between those sharing and using data, usually to help manage risk or cost.

Why:

In certain cases, commissioning an independent data intermediary to perform data stewardship activities could enable responsible and lawful data sharing that would not be possible without the presence of a fully independent third party, as set out in the CDEI's paper on [the benefits of intermediaries](https://www.gov.uk/government/publications/unlocking-the-value-of-data-exploring-the-role-of-data-intermediaries). Despite their clear potential and established benefit in some sectors, the development of many types of intermediaries – such as those providing confidential data sharing solutions – remains nascent. Data intermediaries face a number of challenges because there is not yet an established market framework for their operation. The development of such a market framework could help to create confidence in the rules of engagement and provide mechanisms for managing risk.

How:

We are working to address this by considering the roles of:

- competition in intermediary markets as well as the potential remedies to support their entry and expansion
- horizontal governance structures for intermediary markets
- strategic investment in market signalling, de-risking and evidence-building

Some of our past and ongoing work in this area includes:

- [consulting on legislative and non-legislative options we may want to consider to support growth and engender confidence in this market](https://www.gov.uk/government/consultations/data-a-new-direction) (<https://www.gov.uk/government/consultations/data-a-new-direction>)
- collaborating with the [CDEI](#) to trial how intermediaries can work in real-world settings
- supporting work beyond government to develop the intermediaries ecosystem — including funding the [ODI's work programme on Data Institutions](#) (<https://theodi.org/project/rd-data-institutions/>), which is exploring and providing support to organisations that steward data on behalf of others, often towards public, or charitable aims.

Case study: OpenSafely - providing safe access to patient records

As an open-source secure analytics platform running across the full pseudonymised primary care records of 55 million patients (more than 95% of the UK population), it allows live analysis of patient records by trusted analysts based anywhere in the world without providing access to these potentially disclosive pseudonymised records. This is done by supporting remote computation directly inside secure data centres and cloud environments that is executed with code developed using dummy datasets. The real-time analysis enabled by the platform has been critical to the response to COVID-19, through the early identification of risk factors.

4. Support the development of infrastructure that promotes the availability of data for research and development purposes.

What:

We want to support the development of infrastructure that makes data for research and development more available in a responsible way.

Why:

Research and development is vital to stimulating our economy and delivering benefits to our society, as we saw during COVID-19. However, good quality data can be a scarce, though much-needed, resource for researchers. The reasons for this include the high costs of accessing datasets and organisations being reluctant to release data due to actual or perceived risks, among other barriers. We are considering the business case for developing a bespoke solution to address the barriers to data sharing for research purposes, which could also act as a testbed for other interventions to enable data sharing.

How:

Ways we are doing this include:

- exploring how the development of this infrastructure could constitute a proof of concept use case for a number of our other priorities (including standards, intermediaries, privacy enhancing technologies and incentives) and demonstrate what works
- considering how this infrastructure should be designed and funded to enable researchers to access and upload data from multiple sources

We're working with a number of departments across government to ensure key initiatives are complimentary, coordinated and interoperable from the outset, including:

- the [UK Research and Development Roadmap](https://www.gov.uk/government/publications/uk-research-and-development-roadmap) (<https://www.gov.uk/government/publications/uk-research-and-development-roadmap>), which looks to maximise the use of trusted data in innovation; and
- the [Integrated Data Service' (<https://blog.ons.gov.uk/2021/06/02/how-the-ons-is-helping-to-deliver-the-national-data-strategy/>), led by the Office for National Statistics (ONS), which is delivering a data sharing solution to enable government data sharing and access for research purposes.

Encourage the market

5. Use incentives to maximise value for money data sharing in support of public good.

What:

We want to explore incentives to encourage the responsible sharing of data that can lead to benefits for society and the economy without compromising the rights of data subjects and data owners.

Why:

Making data accessible can be expensive, with costs accruing across different stages of the data lifecycle. For instance, it takes resources to ensure datasets are in the right format to be shared as well as when setting up data sharing infrastructure. Responses to the NDS consultation, as well as our research, suggest incentives may help address the reluctance many organisations have to share data; either by offsetting some of these costs or by helping organisations overcome any actual or perceived commercial or reputational risks.

How:

To do this, we are:

- building our evidence base on how incentives could work in practice
- considering the types of data use that most requires incentivisation

Aside from DCMS's exploration of incentives, related work in this area includes:

- As announced at the October Budget, R&D tax reliefs will be reformed to support cutting-edge research methods by expanding qualifying expenditure to include data and cloud costs. This includes modernising the reliefs to better incentivise R&D methods which rely on vast quantities of data that are analysed and processed via the cloud.

Case study: How vouchers spurred innovation in Finland

Between November 2016 and October 2017, the City of Tampere distributed ['digital innovation vouchers'](https://business tampere.com/entrepreneurs/innovation-voucher-experiences/) (worth up to €5,000 to 205 companies to encourage innovation, internationalisation and growth services. In a survey of beneficiary companies, half said using the vouchers had resulted in them starting export operations or expanding into a new market area with 27.5 new jobs created and 17% achieving a considerable boost in turnover. Overall impact analysis supported the idea that vouchers could "nudge" companies towards implementing/starting activity (for example new R&D projects) that may not have happened without them.

6. Support effective and well-functioning markets by addressing data practices that distort competition and consumer outcomes – including by widening access to data, where appropriate

What:

We want to support healthy competition and innovation in digital and other markets.

Why:

Restrictions in data mobility can amplify the advantages of economies of scale and scope afforded to digital platforms. Interventions to improve data access and to reduce anti-competitive practices can advantage innovative competitors and lead to a more dynamic market and a better deal for consumers.

How:

We are doing this by:

- ensuring that the future Digital Markets Unit (DMU) is able to support effective and well-functioning markets, including by addressing data practices by Strategic Market Status-designated firms that distort competition and consumer outcomes. Interventions could include opening up or widening access to specific datasets, where there is evidence this will drive up competition
- building on the successes of the Open Banking initiative by delivering the full potential of Smart Data solutions

Ongoing work in this area includes:

- the government consultations on a new [pro-competition regime for digital markets](https://www.gov.uk/government/consultations/a-new-pro-competition-regime-for-digital-markets) (July-October 2021) and on wider reforms to [competition and consumer policy](https://www.gov.uk/government/consultations/reforming-competition-and-consumer-policy) (July-October 2021), which are currently being analysed
- BEIS's work to [support and accelerate the development and use of Smart Data schemes](https://www.gov.uk/government/publications/smart-data-working-group-spring-2021-report) (which involves the secure and consented sharing of customer data with authorised third-party providers. These providers then use this data to provide

innovative services for the customer, such as automatic switching and account management. The CDEI is also working with BEIS on a project to identify the ethical and trust questions associated with Smart Data, and the ODI is working with BEIS to identify innovation models for Smart Data.

Lead, co-operate and collaborate

7. Learn from international partners and promote international cooperation to support the UK's data agenda on the world stage.

What:

We want to set direction, show international leadership, learn from the work and experience of our international partners and build international cooperation to shape approaches to data in support of the ambitions of Mission 1.

Why:

Considering, and delivering against, international goals is critical for the realisation of the UK's overarching domestic data ambitions to foster a global competitive advantage. The government recognises that the data ecosystem is rapidly evolving, with expertise and innovations being explored beyond the UK that we can draw from. Adoption of specific approaches to data in one economy will have the greatest impact if there is consistency in approaches and support from a sufficient number of international actors in the global data ecosystem. There is currently limited international agreement on approaches to data sharing. If the UK does not pursue a proactive agenda, instead taking a passive role, the eventual consensus on approaches to global data sharing could be unnecessarily burdensome, hard to operate, and costly for businesses operating in the UK.

How:

We have already been doing this by taking actions including:

- delivering actions to support knowledge sharing on data innovation and regulatory cooperation as part of the UK Presidency of the G7 on [Data Free Flow with Trust](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/986160/Annex_2_Roadmap_for_cooperation_on_Data_Free_Flow_with_Trust.pdf) (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/986160/Annex_2_Roadmap_for_cooperation_on_Data_Free_Flow_with_Trust.pdf)
- building a strategic partnership with Japan to promote closer cooperation on data
- working to deliver on the Department for International Trade (DIT)-led G7 Digital Trade Principles, including on data free flow with trust
- chairing of the Global Privacy Assembly by the UK Information Commissioner, who has promoted the development of initiatives that support innovation such as sandboxes
- influencing the Organisation for Economic Co-operation and Development (OECD) soft law instruments (for example Enhancing Access to and Sharing of Data) that will shape global norms in this space

We will aim to go further by:

- seeking international partners to drive Mission 1 objectives, through innovative data sharing projects, developing of common standards, and regulatory sandboxes
- considering the role of data innovation provisions in trade and other international agreements through cross-departmental collaboration between DCMS and DIT
- leading dialogues in multilateral forums, including negotiations at the World Trade Organization and work with the OECD, as well as by building on the data free flow with trust programme and the Digital Trade Principles from during the UK's G7 Presidency

How we will evaluate success

The impacts of our priority work streams will be assessed using the [National Data Strategy's Monitoring and Evaluation Framework](https://www.gov.uk/government/publications/national-data-strategy-monitoring-and-evaluation-update/national-data-strategy-monitoring-and-evaluation-framework) (<https://www.gov.uk/government/publications/national-data-strategy-monitoring-and-evaluation-update/national-data-strategy-monitoring-and-evaluation-framework>). The framework is designed to track the delivery and assess the effectiveness of government interventions and to enable us to plan further interventions in the future.

Research on tracking and evaluating data use and data sharing is still at a relatively early stage and there are numerous pieces of work being carried out to build [an evidence base](https://www.gov.uk/government/publications/national-data-strategy-monitoring-and-evaluation-update/national-data-strategy-monitoring-and-evaluation-framework#eva) (<https://www.gov.uk/government/publications/national-data-strategy-monitoring-and-evaluation-update/national-data-strategy-monitoring-and-evaluation-framework#eva>). The Data Availability measures we are currently considering in the call for evidence are:

- the percentage of businesses that think data has become more available from the UK Business Data Survey
- the percentage of businesses using digital data from the UK Business Data Survey
- the UK's Data Availability Score in the OECD's open data index

We will provide an update on our final metrics as these are established as part of the broader National Data Strategy indicator suite next year, following the completion of the call for evidence.

1. [Sharing data to create value in the private sector, ODI \(2020\) \(https://theodi.org/article/report-sharing-data-to-create-value-in-the-private-sector/\)](https://theodi.org/article/report-sharing-data-to-create-value-in-the-private-sector/)
2. [The benefits of data sharing, Datapitch \(https://datapitch.eu/toolkit-benefits-of-data-sharing/\)](https://datapitch.eu/toolkit-benefits-of-data-sharing/)

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