

Unlocking Smart Data: Design Research into a Possible Smart Data Challenge Prize

Research conducted by <u>Challenge Works</u> (a Nesta enterprise) and <u>DeepSeer</u> on behalf of the Department for Business and Trade

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Contents

Execu	utive Summary	4
Conte	xt and project objectives	4
Oppor	tunities, challenges and implications for challenge prize design - insights from the research	า 6
Smart	Data Challenge Prize Models and Assessment - Design Analysis	8
The D	iscovery and Prototyping Challenge Prize Programme - Detailed Design	12
Concl	usion and Next Steps for Moving to Implementation	15
Unloc	king Smart Data: Design Research into a Possible Smart Data Challenge Prize	17
1. A	Smart Data challenge prize? Setting the scene	18
1.1.	Research project context and objectives	18
1.2.	UK Smart Data context	19
1.3.	Overview of research and design methodology and rationale	22
1.4.	Overview of Challenge Prize literature review	25
1.5. intervi	Stakeholder perspectives on Smart Data opportunities and challenges from expert ews and focus groups	26
1.6.	Critical implications of research findings for design of a possible Smart Data challenge prize	ze
2. D	esigning an Effective Smart Data Challenge Prize	35
2.1.	An introduction to challenge prizes	35
2.2.	Is a challenge prize likely to be an effective method to use in this context?	35
2.3.	Evaluation criteria for assessing Smart Data challenge prize models	39
2.4.	Core elements of a challenge prize	41
2.5.	Three possible Smart Data challenge prize models	43
2.6.	Smart Data challenge prize model conclusion	50
3. D	iscovery and Prototyping Challenge Prize Programme - Detailed Design	52
3.1.	Problem definition	52
3.2. Progra	Overview of the DeepSeer and Nesta Challenge Works recommended Challenge amme structure and rationale	53
3.3.	Phase 1: Discovery (months 1-8)	57
3.4.	Go / No-Go: Review Point (month 9)	59
3.5.	Phase 2: Prototyping (months 10-24)	60
3.6.	Eligibility criteria	63
3.7.	Assessment criteria	64
3.8.	Marketing and communications	65
3.9.	Governance structure and accountabilities	66
3.10.	Learning and evaluation	68
3.11.	Risks and risk mitigations for the Discovery and Prototyping Challenge Programme	72

3.12.	To what extent is the Challenge Programme likely to deliver value for money?	74	
4. C	onclusion and Next Steps for Moving to Implementation	77	
4.1.	Conclusion	77	
4.2.	Next Steps for Moving to Implementation	78	
Appei	ndix A: Key terms used in this Report	80	
Appei	Appendix B: Organisations represented in expert interviews and focus groups		
Appendix C: References			

Executive Summary

Nesta Challenge Works and DeepSeer were commissioned by the Department for Business and Trade (DBT) to undertake research to inform the design and scope of a possible Smart Data challenge prize. This report describes the research and design activities undertaken and summarises its conclusions. References to "we" in this report are to the Nesta Challenge Works and DeepSeer consortium who produced this report.

Context and project objectives

The coming years provide an unprecedented window of opportunity for the UK Smart Data agenda, and for the UK to establish itself as the global leader in this space following the success of Open Banking. Unlocking the potential of Smart Data could be a source of major economic advantage for the UK and generate benefits for consumers and businesses, through stimulating greater competition and innovation.

DBT defines Smart Data as the secure sharing of customer data with Authorised Third Parties (ATPs²), upon the customer's request. These third parties then use this data to provide innovative services for the consumer or business user, such as automatic switching or better account management.

DBT defines a Smart Data scheme as a regulation-based framework that requires data holders to securely share consumer or business data that they hold with ATPs for the purposes of enabling innovative products and services to be provided. Presently in the UK, the scheme progressing at the quickest pace is the one that is underpinned by a legislative mandate for industry participation. Open Banking (under the CMA Retail Banking Order) is the only live Smart Data scheme in the UK, with coverage of bank accounts and credit cards for the largest banks and building societies.³

DBT's ambition is to accelerate the delivery of new Smart Data schemes and increase cross-sector interoperability. To encourage innovation and investment in the development of Smart Data schemes, DBT is exploring the option of launching a Smart Data challenge prize. Challenge prizes are a method for stimulating innovation. They work by offering financial and/or non-financial incentives for solutions to difficult problems, without specifying how the problem should be solved.

DBT's specified objectives for the potential Smart Data challenge prize are to:

- Identify and incentivise the development of a range of new detailed cross-sector solutions (or "use cases")⁴ for Smart Data
- Illustrate the potential value of Smart Data and better understanding the challenges that would need to be overcome to facilitate cross-sector data sharing.

¹ Open Banking has been a UK success story, with latest data showing 7 million consumers and small businesses using Open Banking services, and many jurisdictions around the world have followed the UK's lead. See Open Banking (2023), available at https://www.openbanking.org.uk/news/uk-reaches-7-million-open-banking-users-milestone/

² An ATP is a participant in a Smart Data scheme that has been accredited by the relevant authority to receive the customer's data and act on their behalf, when requested to do so by the customer.

³ The UK Open Banking scheme incorporates both read (e.g. account aggregation) and write (payment initiation) functionality. The scheme was mandated by the Competition and Markets Authority (CMA), with the development of the scheme led by the Open Banking Implementation Entity (OBIE) created specifically for that purpose.

⁴ We are defining a Smart Data "use case" as a specific example of how an identified user (consumer or business) need could be addressed by a product or service that is reliant on Smart Data. Use cases may sit at different stages on a spectrum of development e.g. from a concept on paper, to a product in the marketplace with real customers.

This research project was commissioned by DBT to better understand:

- What lessons can be learned on what works in challenge prize design and delivery from existing literature and previous challenge prizes?
- What specific challenge prize (or similar innovation programme) design and delivery model may be best able and most likely to achieve DBT's specified objectives within indicative timeframe assumptions specified by DBT?
- To what extent is this model likely to deliver value for money?

The research comprised the following activities:

- A literature review of academic and grey literature on challenge prizes to determine challenge prize best practices and any implications for a Smart Data challenge.
- A landscape mapping of Smart Data stakeholders to understand key players within the UK Smart Data landscape.
- 28 in-depth interviews of Smart Data stakeholders, including trade associations, academic
 institutions, regulators, businesses and policy think tanks to understand potential desired use cases
 and opportunities of and hurdles for bringing cross-sector Smart Data use cases to market.
- Three focus groups with 22 Smart Data stakeholders, including trade associations, business and
 policy think tanks, to identify potentially compelling Smart Data challenge topics and use cases and
 to generate ideas around the structure, incentives and other considerations of a potential challenge
 prize.
- Three possible challenge models were developed and evaluated against a set of evaluation criteria to determine their potential performance against DBT's stated objectives for this research and design analysis.
- A recommended challenge model was designed in detail.
- **Five challenge model feedback sessions** with select Smart Data stakeholders to test selected challenge prize model design features and adjust the recommended model based on feedback.

Limitations of the research undertaken were as follows:

- <u>Time available</u>: The research project took place within a limited time period, and therefore it was necessary to prioritise the most relevant literature and to be targeted in our approach to stakeholder engagement.
- Research methods: The research methods could not, on their own, determine a challenge prize design and delivery model. We combined research outputs with our professional judgement, based on extensive experience designing and delivering challenge prizes, to determine a prize design.
- <u>Direct input on challenge design</u>: In general, we found that stakeholders either did not wish to, or
 found it more difficult to, make specific proposals of their own about challenge prize design or did not
 have strong opinions about detailed challenge prize model design questions. We mitigated this
 limitation by focussing our stakeholder engagement on relevant questions where stakeholders were
 expected to have insight and presenting stakeholders with prize design ideas and soliciting their
 response, rather than asking open questions about prize design.
- <u>Stakeholder representativeness</u>: Certain categories of stakeholder were more willing to engage with
 the research than others. For example, in general, trade associations were more willing to engage in
 interviews and focus groups than individual businesses, and among trade associations those
 representing organisations we might expect to be supportive of Smart Data were more willing to
 engage. But given the specific objectives of this research project and the questions it sought to

answer, we believe that any resulting bias likely does not meaningfully impair the conclusions of the research.

This report sets out the research and design activities undertaken by DeepSeer and Nesta Challenge Works and is not intended to be a statement of government policy. The views expressed and conclusions drawn are those of Nesta Challenge Works and DeepSeer, and of research participants where explicitly stated as such, and not necessarily of DBT.

The conclusions from this project will be used to inform government understanding of the features of a successful challenge prize and for accelerating the development of future Smart Data schemes. Next steps will be subject to the outcome of further policy development and Ministerial agreement.

Opportunities, challenges and implications for challenge prize design - insights from the research

Cross-sector Smart Data opportunities

Many stakeholders, in particular those from the digital technology sector, were enthusiastic about the potential for Smart Data to have both a meaningful impact for end customers and to potentially contribute to UK economic growth. This enthusiasm is predicated on the assumption that certain fundamental challenges are addressed, which we explain below.

Stakeholders identified a range of potential Smart Data use cases that could deliver value for consumers and businesses. They highlighted the importance of use cases solving specific problems for consumers or businesses, such as reducing carbon footprints or helping with cost of living, which are inherently cross-sectoral. Additionally, stakeholders emphasised that it may be prudent to build on existing Open Banking use cases.

Contextual challenges

The research identified a set of challenges that the design of a Smart Data challenge prize would need to take into account to be successful in fulfilling DBT's objectives for it. These can be split into three broad categories:

- 1) Lack of cross-sector data. Stakeholders highlighted the nascent nature of Smart Data schemes beyond Open Banking as a hindrance to developing cross-sector Smart Data use cases. Open Banking was frequently cited as the sole existing Smart Data scheme, but almost all stakeholders felt that there was a need for other Smart Data schemes in order to enable any cross-sector opportunities. The absence of additional schemes meant that when exploring potential cross-sector use cases the capacity to identify how these would be brought to life beyond data schemes being mandated was limited.
- 2) **Limited visibility on government plans.** Related to the above, most stakeholders participating in the interviews and focus groups felt that limited visibility on government plans for the scope and timing of new Smart Data schemes inhibits the ability for the industry to consider future cross-sector opportunities. The government providing additional information would be an enabler.
- 3) Business model and investment uncertainty. Lack of cross-sector data schemes and limited visibility on government plans in relation to the policy or regulatory environment makes it challenging for businesses to plan. As a consequence, business models remain unexplored and investment sits on the sidelines to wait for greater clarity with respect to Smart Data generally and cross-sector opportunities more specifically.

Implications for Smart Data challenge prize design

DBT's objectives for a prize, the positive interest around potential Smart Data use cases expressed

by the stakeholders with whom we engaged, and the challenges outlined above led us to a set of implications that the design of a Smart Data challenge prize should address.

Risks to challenge prize outcomes and value for money: Given the contextual uncertainty and the missing data described above, going straight into a challenge prize that would offer financial rewards for bringing forward new detailed cross-sector use cases for Smart Data presents risks, both in terms of challenge outcomes and value for money. Those risks could include:

- Innovators may not wish to participate in a prize, preferring for uncertainty about Smart Data to diminish before investing in developing Smart Data propositions.
- Use cases remain ideas due to Smart Data scheme uncertainty and associated development and testing challenges.
- Disconnect between Use cases that get developed and Smart Data schemes that are established.

These risks will need to be mitigated for a challenge prize design to be effective in this space.

Addressing the difficulty of providing data to challenge participants: Many stakeholders emphasised the need for innovators in a Smart Data challenge prize to have access to relevant data assets to enable them to develop and test use cases. A range of views were expressed as to what these data assets needed to be - for example real or anonymised or synthetic data⁵ - but there was a widely shared view⁶ that data would be necessary to attract the best innovators to a challenge and to enable use cases to advance beyond ideas to development and testing.

However, we consider⁷ that there is no suitable "off the shelf" cross-sector data resource ready to be deployed in a challenge prize - this has not yet been developed. Further, we expect the challenges in identifying or, more likely, creating a useful data asset to be significant with complex technical, commercial and legal considerations. An effective challenge prize design needs to find a way to provide useful data assets to challenge participants.

Using a challenge to learn and to inform the future of Smart Data:

DBT has specified an objective for a possible prize as being to better understand the challenges that would need to be overcome to facilitate cross-sector data sharing.

Given the nascent state of Smart Data schemes beyond Open Banking, a suitably designed challenge prize could present significant opportunities for policymakers to learn both about the challenges that innovators are likely to face in developing (cross-sector) Smart Data use cases, and to inform the many design decisions that will need to be taken as future Smart Data schemes are developed. A Smart Data challenge prize could serve as a kind of "living laboratory" to acquire information to inform decisions that it would be difficult to acquire through traditional research methods, such as specific data requirements to enable particular use cases to be developed and how different schemes will need to interact to enable cross-sector use cases.

To achieve this objective, opportunities for learning and information exchange between prize participants and the Challenge Sponsor will need to be built into the challenge prize design and delivery model.

⁵ Synthetic data is artificially created data, as distinct from real data that is created by "real world" events (such as a real consumer's transactions). Synthetic datasets may be generated to mimic the statistical properties of some real underlying datasets. An advantage of using synthetic data over real consumer data (even anonymised) is the ability to limit the risk of personal data leakage. But a disadvantage of synthetic is that it may not capture important properties of the real underlying data it seeks to mimic.

⁶ In particular among organisations that might participate in a prize or trade associations representing them

⁷ Based on our stakeholder engagement and desk research

Smart Data Challenge Prize Models and Assessment - Design Analysis

Suitability for a Challenge Prize

We consider that a suitably designed Smart Data challenge prize fund could meet DBT's objectives and help accelerate the development of new Smart Data schemes. This conclusion was informed by our evaluation of the UK Smart Data landscape against the following variables, which typically indicate when a prize may be an effective policy intervention: 8

- Well-defined problem and clear goal for innovators to work towards: To translate DBT's high level objective for a prize to "identify a range of new detailed cross-sector use cases" it will be advantageous to define more specifically what would constitute success for the prize. These success criteria can then be translated into more specific goals for challenge prize participants and be reflected in the assessment criteria used to evaluate innovations developed by prize participants.
- Better solutions being generated by opening up the problem to a wider pool of innovators: We can
 expect more and better Smart Data innovations to be developed the wider the pool of innovators
 seeking to develop them.
- Solutions will be adopted or taken to market: For a prize to be successful in encouraging innovators to develop cross-sector Smart Data use cases, it will be important that they have confidence that there are prospects for bringing use cases that they develop to market. This does not, in our judgement, necessarily mean that new schemes (beyond Open Banking) need to be in place at the time the prize happens in order for a prize to be successful. But the more clarity that can be provided by the government about the future path for Smart Data policy, the more confidence innovators will have about market opportunities and therefore the more interest they will have in responding to the incentives offered by the prize.
- A prize will accelerate progress: A prize would likely support DBT's objectives of developing new use
 cases and facilitating learning about the potential barriers and opportunities to cross-sectoral Smart
 Data schemes. However, as outlined above, there would be limitations in terms of how far use cases
 could be developed and progress accelerated, given the nascent nature of existing schemes beyond
 Open Banking.
- A prize will provide the incentives needed to motivate innovators: Financial incentives are often used
 as the main types of incentives for innovators to compete within a challenge, but in the case of a
 Smart Data challenge prize non-financial incentives could also be important for attracting innovators.
 Indeed, research participants indicated that access to data would be a good incentive.

Therefore, we consider a challenge prize could accelerate the development of new Smart Data use cases and learning about potential opportunities and barriers that would be advantageous for informing Smart Data policy development.

Assessing Potential Prize Design Options

After concluding that a challenge prize could meet DBT's objectives we developed a set of criteria (outlined below) to assess potential challenge prize models against. These criteria were informed by:

- the design implications outlined above,
- DBT's ambition for the challenge prize to produce use cases that are developed beyond initial ideas, and

8 Based on Nesta Challenge Works' experience and the challenge literature more broadly

• the requirement for the challenge prize to be delivered within indicative timing and budget constraints.

Table 0.1: Smart Data challenge models assessment criteria

Criteria		Sub-Criteria
1)	Use case discovery and development	 Is this challenge model likely to result in new detailed cross-sector Smart Data use cases that create value for consumers? How advanced a stage of development are use cases likely to reach through this challenge?
2)	Data access	 Can this challenge model provide access to data that participants need in order to achieve the outcomes sought from the challenge?
3)	Attractiveness to relevant innovators	Would this challenge model attract relevant innovators who are able to deliver high quality, innovative cross-sector use cases, and would it induce high quality input from them?
4)	Risk and value for money	 How risky or uncertain is this challenge model, in terms of the degree of variability in potential outcomes it will achieve? Are the upside opportunities greater than the downside risks? Is this challenge model likely to result in value for money?
		 Does the challenge model enable agility and flexibility in response to evolving policy (and other environmental) variables?
5)	Learning outcomes	 Is this challenge model likely to enable the government to better understand the potential benefits and challenges associated with Smart Data?
6)	Deliverability	Can this challenge model be successfully delivered within the indicative (timing, budget and other) constraints?

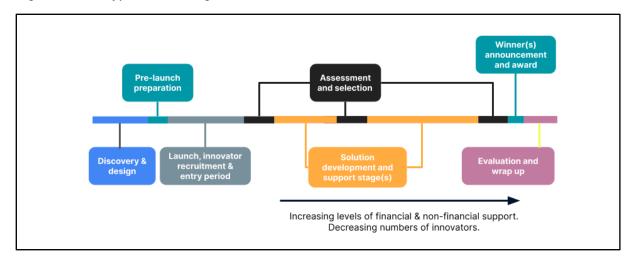
A Starting Point for Prize Design

To develop a set of challenge prize models to assess against the evaluation criteria described above, we first outlined the core elements that comprise a basic challenge prize.

Although there is no "industry standard" for what the core elements of a challenge prize are, the number of challenge prizes in which we have been involved in a wide range of different contexts and for different types of challenge sponsors means that we are confident that the core elements we have outlined provide a good basis from which to develop cross-sector Smart Data challenge prize models.

In our experience Challenge Prizes are delivered in a series of interconnected phases designed to encourage and equip participants to address the challenge that the prize has set. These core elements are described below.

Figure 0.1 - A typical Challenge Prize



<u>Discovery and design phase</u>: Within the Discovery and Design phase of a challenge prize, the focus is to understand the nature of the market failure or innovation that an organisation is seeking to overcome or accelerate, design the challenge itself and set out how the challenge should be delivered.

<u>Pre-launch preparation and launch phases</u>: Here the Delivery Partner is ensuring that all the planning, communications, logistics and associated activities are prepared for the Launch phase before launching the challenge.

<u>Assessment and selection</u>: The Delivery Partner will assess applicants on a range of criteria relevant to the challenge in order to determine which teams should progress; there may be multiple assessment stages depending on the challenge's goal.

Solution development and support stage(s): Stages of support are intended to enable teams to enhance their delivery capability in line with the specific problems they are meant to be solving as part of the challenge. These forms of financial and non-financial support are crafted in order to help incentivise and overcome existing market hurdles or augment participant capabilities.

<u>Winner(s)</u> announcement and award: A single winner or group of winners - depending on the challenge structure - will be selected. The winner or winners often receive a financial award the size of which will vary, and the winners and award will be promoted across a range of communication channels.

<u>Evaluation and wrap up</u>: Following the final award(s) being conferred and communications around the successful completion of the prize, the Delivery Partner will often turn its attention to assessing the challenge's delivery and looking forward to monitoring and evaluation of the impact.

Smart Data Challenge Prize Models Explored

We started with the core elements of a challenge prize, including the phases described in the above sections, and we then sought to determine where a typical prize of this sort might fail or perform sub-optimally. This led us to determine ways to either reinforce a model, combine elements of models or develop entirely new models. Below we briefly outline each of the models explored, how they performed against the assessment criteria and the modifications that we made.

We explored how a challenge prize could focus on going straight to solution development, encouraging prospective teams - within a single phase - to achieve as advanced prototypes as possible using cross-sector data that they source themselves. This model, which we titled "Model 1: Development Challenge Prize", performed poorly against the model evaluation criteria due to

data access limitations, which increase risks and may reduce value for money, the capacity to generate meaningful use cases and opportunities for learning. In assessing this model, the data constraints became apparent as likely severely limiting, meaning that the model was unlikely to produce developed cross-sector use cases due to the nascent nature of Smart Data schemes outside of Open Banking.

Following the evaluation of Model 1, we sought to alleviate the data accessibility issue by focusing on the opposite end of the use case development spectrum - ideas on paper, with no expectation of working prototypes. This model was entitled "Model 2 - Use Case Discovery Challenge". We assumed that access to data would not be required for use case exploration during the challenge, but a good understanding of the data that would be required to develop the use case would be part of the success criteria for challenge participants. This model's performance against our evaluation criteria was mixed. Where the model performed relatively well was on delivery risk, which was rated as minimal, but as the use case development would be limited to idea stage, attractiveness to innovators and risk and value for money considerations were judged to be sub-optimal.

Building on the lessons from exploration of Model 1 and Model 2, we sought to explore ways to address the data hurdle before moving to full prototyping. With this in mind, we created and evaluated "Model 3 - Discovery and Prototyping Challenge Prize Programme" (illustrated below).

Model 3: Discovery and Prototyping Challenge Prize Programme

Discovery phase

Go/No-Go | Review Point

Prototyping phase

Data track

Data Partnership(s) |

Eol prep | Expression of Interest | Data Procurement |

1 year | 2 years |

Cohort Selection | Winner Announcement |

Pre-launch | Innovator | Use Case Tech |
Sprint | Innovator | Use Case Tech |
Sprint | Innovator | Innovator |
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Figure 0.2 - Model 3 structure

This Smart Data Challenge model would comprise a two-phase challenge prize focused on exploring and evolving detailed use cases through a series of tech sprints and surfacing potential datasets. This two-track approach - comprising a Data Track and a Use Case Identification and Development Track - would run in parallel to data partnership activities, to see what data may be possible to surface and procure while identifying desirable use cases. These two activities would happen largely in parallel, feeding into one another to ensure that use case ideas from innovators would shape potential data needs and vice versa. This challenge model assumes that data would need to be procured at cost within the Data Track and that high performing innovators would receive use case recognition awards - possibly in the order of £5,000 to £10,000 - as part of the Use Case Track.

Following a Go / No Go review point to determine whether sufficiently interesting use cases and sufficiently compelling cross-sectoral data could be procured, the challenge would then build out

datasets and a data sandbox⁹ that would enable innovators to move beyond conceptual use cases into more advanced product development. Throughout this phase, innovators would be offered financial (e.g. grants) and non-financial (e.g. product design support, networking with partners or testing with customers) support to evolve their offerings with a winner or set of winners being announced at the culmination of the prize.

This challenge would run over a 24-month period, have a variety of procurement and support packages on offer and seek to solve the missing data hurdle identified earlier in this report while advancing use cases beyond the conceptual to having offerings in market or at least being piloted with consumers through the lifetime of the challenge. It is assumed that DBT would be the Challenge Sponsor within the government for the purposes of overseeing the Challenge Programme, that DBT would contract with a Delivery Partner in charge of delivery of the overall Programme and that the Delivery Partner would in turn and where required engage other parties for data procurement, sandbox activities and non-financial support activities.

Overall, this model performed well across all evaluation criteria save for two - Risk and Value for Money and Deliverability - where the model's performance against our evaluation criteria was mixed.

For the above reasons, we concluded that Model 3 is the most promising model and the one most likely to fulfil DBT's objectives. While there remain uncertainties inherent in this prototype, its multi-track, multi-phase design, the break option after Phase 1, the inclusion of explicit data sourcing and a data sandbox address the deficiencies of the Development and Use Case models explored (Models 1 and 2).

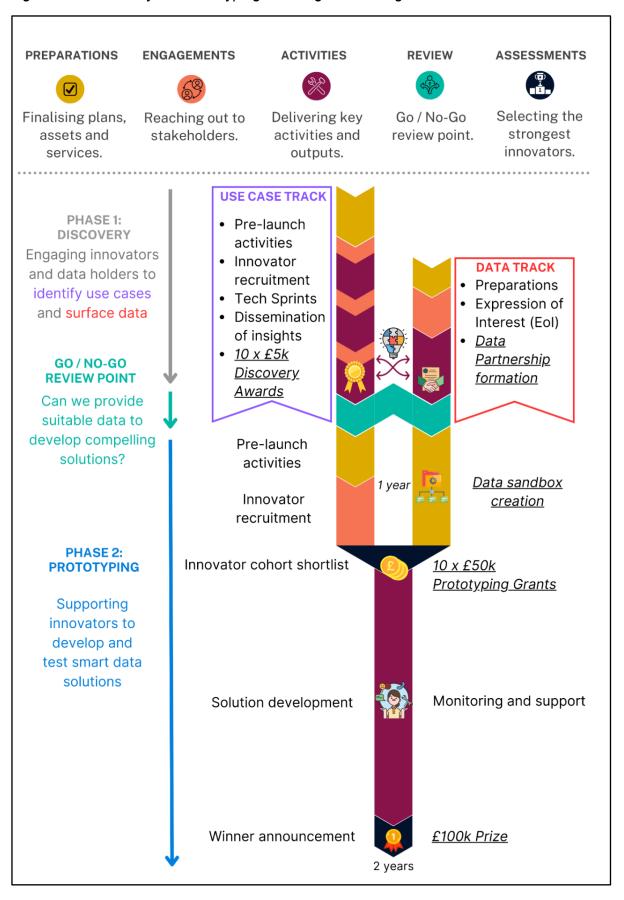
The Discovery and Prototyping Challenge Prize Programme - Detailed Design

Following identification of the model that performed best against our evaluation criteria (Model 3: Discovery and Prototyping Challenge Prize Programme), we then set about developing this into a more detailed design specification as illustrated in the diagram below. The objectives were to identify how this could be delivered over a 24-month period. Within this executive summary, we focus on the key details of the phases and tracks. Additional details on governance, judging criteria and associated delivery-related considerations are explored within the main body of the report.

⁹ A data sandbox is a generally understood to be a secure software environment that allows users to have access to data assets and the ability to interact with, develop on and test applications that use those data assets

¹⁰ DBT defined, as a core planning assumption to inform the development of feasible design options for the challenge prize, the challenge prize would take place across financial years 2023/24 and 2024/25. This is an indicative planning assumption only that may be subject to change, rather than a statement of policy intention.

Figure 0.3 - Discovery and Prototyping Challenge Prize Programme



The Challenge Programme will begin with the **Discovery Phase** (months 1-8) to ensure that the initiative is set up for success in later stages. This phase seeks to identify use case concepts and procure suitable data necessary for prototyping digital Smart Data solutions in the second phase of the Challenge Programme. Given the two distinct objectives of the phase, **it is divided into two parallel and interrelated tracks - the Use Case and Data tracks**.

The Use Case Track (months 1-8) of the Discovery Phase would start earlier than the data track and focus on Tech Sprints, collaborative events where participants ideate and rapidly design technology solutions, seeking to identify aspirational use case concepts to inform and shape the direction of both the Phase and the wider Programme.

The Data Track (months 4-8) of the Discovery Phase has been designed with the aim to interrogate the actual potential supply of data that may be made available to the Challenge Programme and do so in an open and transparent way that invites participation from the broadest possible pool of data providers. This Track will deliver an **Expression of Interest (EoI)** in order to identify potential data holders that may be willing to supply cross-sectoral data. This will subsequently enable a Delivery Partner and government sponsor executing on the Challenge Programme to procure attractive datasets for the prototyping of cross-sectoral Smart Data solutions in phase 2.

The Use Case and Data Tracks are interrelated. The targeted outputs of the initial two Tech Sprints during the Use Case Track will feed into the Data Track with a view to shaping the structure and supply of attractive data sets that the initiative could procure in advance of the Phase 2's prototyping activities. Specifically, this will help refine which data sources and holders could be prioritised in the Data Track's Eol. Similarly, taking stock of possible data offered by interested data holders who responded to the Eol would help to narrow down the focus of the potential use cases that the Challenge Programme would be well-positioned to support in the second phase. Synthetic datasets could also be explored at this point to fill in any gaps in the data on offer.

The Go / No-Go Review Point would happen immediately after the Discovery Phase (month 9) to review the outputs and lessons learned from Phase 1 and assess whether the initiative is set up for success and likely to deliver value if the Challenge Programme progresses to the cross-sectoral Smart Data prototyping activities in Phase 2. If compelling cross-sector use cases and/or suitable data¹¹ have not been identified by this point, the Challenge Programme Delivery Partner and sponsor could choose to wind down the programme at this stage and focus on taking stock of lessons generated by the Challenge Programme to date with a goal of informing the government's Smart Data policy positions. We understand 'compelling' use cases as use cases that innovators would be interested in developing, that align with UK government priorities at the time and that are likely to deliver meaningful benefits to consumers were they to be brought to market. We recommend that this phase should not take longer than a month to keep the momentum going, but it will be for DBT to decide on the details of the review process and the time it requires.

The review point acts as a mitigation strategy to maximise value for money even if the market conditions in which the Challenge Prize operates turn out to be not conducive for innovation.

The second phase - the **Prototyping Phase** (months 10-24) - seeks to support a cohort of ten innovator groups to develop use case concepts into functional prototype offerings. Innovators would be provided with a grant and access to a data sandbox and would be competing for the final prize. This phase would be refined in light of the insights from the Discovery Phase.

¹¹ Acquiring 'suitable' amounts of data means that there is enough of it, and is properly structured, to enable innovators to prototype and build solutions on it that best approximate real-world scenarios.

Conclusion and Next Steps for Moving to Implementation

The focus for this research and design analysis project was to answer:

- What lessons can be learned on what works in challenge prize design and delivery from existing literature and previous challenge prizes?
- What specific challenge prize (or similar innovation programme) design and delivery model may be best able and most likely to achieve DBT's specified objectives within indicative timeframe assumptions specified by DBT
- To what extent is this model likely to deliver value for money?

Through the course of this project, we have engaged with a broad range of Smart Data stakeholders within the United Kingdom - from government departments and regulators to businesses and trade associations - in order to answer these questions. We used a variety of research and analysis methods, including a review of the literature on challenge prizes, stakeholder interviews, focus groups and desktop research focussed on understanding the opportunities and hurdles for Smart Data within the UK.

These stakeholders highlighted a range of potential cross-sector use cases that they believe could comprise future visions for Smart Data within the UK, and they have also identified hurdles that they felt must be overcome in order to realise at scale any Smart Data and, specifically, cross-sector Smart Data opportunities. The use case opportunities that resonated most with stakeholders were those problem-focussed use cases that could be connected directly to meaningful consumer or business needs, whether cross-sector opportunities to reduce carbon footprints or help with the cost of living impacts on vulnerable households. The main and unique hurdle identified in the context of cross-sector Smart Data is the data availability that would power any cross-sector use cases mentioned in the foregoing sections of this report. A lack of formal schemes means that building cross-sector use cases to a desired level of development - products in market, benefiting consumers or businesses - will be challenging.

Synthesising these research inputs and opportunities and hurdles, we developed a set of evaluation criteria against which any cross-sector Smart Data challenge prize models could be evaluated in order to determine if those models would achieve the goals set by DBT. We then set about developing, testing and iterating on challenge prize models to assess how they could overcome the unique hurdles associated with the current Smart Data landscape.

We identified a model - Discovery and Prototyping Challenge Prize Programme - that we conclude is likely to meet DBT's requirements for accelerating Smart Data use cases and generating lessons that support policy advancements. This multi-stage, multi-track model would run over the course of 24 months and seek, in the first phase, to identify data and use cases that would be compelling for cross-sector Smart Data purposes before potentially moving to a second phase focused on prototyping potential solutions. Between these phases a Go/No Go decision point would enable the Programme Sponsor and Delivery Partner to determine if sufficiently compelling data sources and use cases would be generated in the first phase to warrant progression through to the second phase. This innovative design builds in ways to prospectively overcome the hurdles currently facing the Smart Data landscape within the UK, provide financial and non-financial support to potential innovators all while also ensuring value for money and flexibility for DBT given how the policy and wider environmental contexts may develop. We believe that the Discovery and Prototyping Challenge Prize Programme has the potential to fulfil DBT's objectives and demonstrates strong value for money given its design.

Coming out of this project, there remains a set of open questions that will need to be resolved in the run up to and including the Pre-Launch phase, if the government were to proceed with launching the challenge prize. While elements of these open questions may not be possible to

definitively answer prior to implementation activities being finalised, we believe that there is limited downside to exploring these open questions through the Pre-Launch phase of the Programme, particularly as a means of diminishing risks.

<u>Objectives</u>: DBT has provided the objectives of a challenge prize as part of this research and design and analysis project. However, there is an open question as to how to make objectives for the Challenge Programme more concrete and specific, so that they can serve as goals for Challenge Programme participants and to be reflected in the Challenge Programme assessment criteria.

<u>Data</u>: One prominent open question relates to the potential structure, costs and sources of data for the Data Track. Additional discussions with stakeholders consulted during this research phase, as well as other targeted conversations, would be valuable to determine key inputs for going into the Data Track, which would include refinement of potential budgetary considerations for data acquisition activities.

<u>Future Data Schemes or Regulatory Plans</u>: Determining what government may be able to communicate around forthcoming data schemes would enable a prospective Delivery Partner team to consider how best to incorporate those messages into the Prize's positioning and communication plans.

Unlocking Smart Data: Design Research into a Possible Smart Data Challenge Prize

1. A Smart Data challenge prize? Setting the scene

1.1. Research project context and objectives

Nesta Challenge Works and DeepSeer were commissioned by the Department for Business and Trade (DBT) to undertake research to inform the design and scope of a possible Smart Data challenge prize, and to provide a challenge prize design specification. This project took place between December 2022 and March 2023. This Report describes the research and design activities undertaken and summarises its conclusions, including a detailed design of a potential Smart Data challenge prize. References to "we" in this Report are to the Nesta Challenge Works and DeepSeer consortium who produced this report.

Context for this project is DBT's ambition to grow and accelerate the delivery of new Smart Data schemes and to increase cross-sector interoperability. DBT's assessment is that there are multiple problems across markets which Smart Data could help to address, but current market incentives and powers are insufficient on their own to deliver Smart Data schemes. The government is exploring several options, including launching a challenge prize, to help accelerate the delivery of new schemes and foster cross-sector collaboration. Background on Smart Data is set out later in this Section, and on challenge prizes in Section 2.

The overarching research and design questions which the Report seeks to answer are:

- What lessons can be learned on what works in challenge prize design and delivery from existing literature and previous challenge prizes?
- What specific challenge prize (or similar innovation programme) design and delivery model may be best able and most likely to achieve DBT's specified objectives within indicative timeframe assumptions specified by DBT?¹²
- To what extent is this model likely to deliver value for money?

A key output from the project is a detailed design specification for a possible Smart Data challenge prize considered most likely to achieve DBT's objectives.

For the purposes of this research, DBT provided some key planning assumptions, namely that a possible Smart Data challenge prize would:

- Take place in financial years 2023/24 and 2024/25, and
- Have a total budget of £1.5 million available for its delivery.

These are indicative only and not intended to be a statement of government policy.

The objectives specified by DBT for a possible challenge prize are to:

 Identify and incentivise the development of a range of new detailed cross-sector use cases for Smart Data.

¹² For the purposes of this research, we have used the planning assumption that a possible Smart Data challenge prize would take place in financial years 2023/24 and 2024/25. This is indicative only and not intended to be a statement of government policy.

• Illustrate the potential value of Smart Data and better understand the challenges that would need to be overcome to facilitate cross-sector data sharing.

DBT has further specified that the cross-sector use cases developed through a challenge prize would ideally go beyond being "ideas blueprints", and that the challenge prize would ideally facilitate the testing and development of use case ideas using real or synthetic¹³ data.

This Report sets out the research and design activities undertaken and is not intended to be a statement of government policy. The views expressed and conclusions drawn are those of Nesta Challenge Works and DeepSeer, and of research participants where explicitly stated as such, and not necessarily of DBT.

The conclusions from this project will be used to inform government understanding of the features of a successful challenge prize and for accelerating the development of future Smart Data schemes. Next steps will be subject to the outcome of further policy development and Ministerial agreement.

The Report is structured as follows:

- Section 1 provides detail on the background context for the project, on the research methods deployed and on conclusions drawn from the research methods of relevance to the structuring of a Smart Data challenge prize design and delivery plan.
- Section 2 provides further background on challenge prizes, describes three possible challenge prize
 models that were developed for consideration as part of the research project and the assessment
 criteria developed to evaluate the likely performance of those models in line with DBT's objectives for
 this research and design analysis.
- Section 3 provides a more detailed description of our recommended challenge model.
- Section 4 Sets out conclusions, including recommendations for next steps.

1.2. UK Smart Data context

This sub-section provides a high-level overview of relevant features of the Smart Data context within which a possible challenge prize would take place.

Smart Data schemes in the UK exist at varying stages of discussion or development. The schemes that have progressed most are underpinned by a legislative mandate for industry participation: Open Banking (under the CMA Retail Banking Order) and the Pensions Dashboard (under The Pension Schemes Act 2021).

Open Banking: As of writing, Open Banking is by far the most significant and advanced Smart Data scheme in the UK. The Open Banking scheme covers bank accounts and credit cards for the UK's largest banks and building societies. The scheme incorporates both read functionality (e.g. to request account information, such as the transaction history) and write functionality (payment initiation). The Open Banking scheme was mandated by the Competition and Markets Authority (CMA), with the development of the scheme led by the Open Banking Implementation Entity (OBIE) created specifically for that purpose.

¹³ Synthetic data is artificially created data, as distinct from real data that is created by "real world" events (such as a real consumer's transactions)

Synthetic datasets may be generated to mimic the statistical properties of some real underlying datasets. An advantage of using synthetic data over real consumer data (even anonymised) is the ability to limit the risk of personal data leakage. But a disadvantage of synthetic is that it may not capture important properties of the real underlying data it seeks to mimic.

- Smart meter data sharing: The Data Communications Company (DCC), which operates the secure
 telecommunications network that connects smart meters to energy suppliers, provides access to
 customer smart meter data, at the customer's request, to authorised third parties. This arrangement
 is used by consumer apps such as Bright and Loop to provide insight to consumers about their
 energy usage. While this arrangement is not described by DCC as a Smart Data scheme, and may
 not strictly meet all the requirements listed above to count as a Smart Data scheme, it is in our
 opinion at least Smart Data-adjacent.
- Pensions Dashboard: Pensions providers will be compelled by legislation (the Pensions
 Dashboards Regulations 2022, for occupational pension schemes; FCA rules for providers of
 personal and stakeholder pensions) to compulsorily connect to the pensions dashboards ecosystem.
 Large pension providers (those with 1,000 or more active and deferred members) are in the first
 wave.
- Other consumer data-sharing schemes in financial services beyond the coverage of the existing Open Banking scheme (e.g. to cover savings, investments, insurance), in telecoms and in retail energy have been discussed in various fora and at various times since the Midata scheme was first announced by the UK government in 2011.
- Ofgem was exploring a consumer data-sharing scheme called Midata for a number of years, but this
 programme has been paused since 2020.¹⁴
- The FCA undertook a "Call for Input" on open finance between December 2019 and October 2020, publishing a feedback statement in March 2021.¹⁵
- Ofcom undertook a consultation on the potential future introduction of a 'data mobility' initiative in the retail telecoms and pay TV markets in late 2020, publishing its conclusions in July 2021.¹⁶

In March 2022, HM Treasury, the Competition and Markets Authority (CMA), the Financial Conduct Authority (FCA) and the Payment Systems Regulator (PSR) announced the creation of a new Joint Regulatory Oversight Committee (JROC). The key objectives of JROC are "developing the vision for the future of Open Banking and to make recommendations on the design of the future Open Banking entity".¹⁷

The government is seeking powers to extend its ability to establish and mandate participation in Smart Data schemes across the UK economy, within Part 3 of the Data Protection and Digital Information (DPDI) (No.2) Bill.¹⁸ This was introduced on 8 March 2023.

JROC published its recommendations for the next phase of Open Banking on 17 April 2023. ¹⁹ The Treasury has committed to using the Smart Data powers, under Part 3 of the DPDI (No.2) Bill, to provide Open Banking with a sustainable regulatory framework. ²⁰

1.2.1. Mapping the Smart Data landscape: Smart Data stakeholders

The Research Specification that DBT produced for this project requested that we undertake a "landscape mapping" exercise to "map the relevant landscape for the possible Smart Data"

¹⁴ See for example https://www.ofgem.gov.uk/energy-policy-and-regulation/policy-and-regulatory-programmes/midata-energy-programme

¹⁵ https://www.fca.org.uk/publications/feedback-statements/fs21-7-open-finance-feedback-statement

¹⁶ https://www.ofcom.org.uk/consultations-and-statements/category-1/open-communications

¹⁷ https://www.gov.uk/government/publications/joint-statement-by-hm-treasury-the-cma-the-fca-and-the-psr-to-update-on-the-future-of-open-banking/joint-statement-by-hm-treasury-the-cma-the-fca-and-the-psr-to-update-on-the-future-of-open-banking

¹⁸ https://bills.parliament.uk/bills/3430

¹⁹ https://www.gov.uk/government/publications/recommendations-for-the-next-phase-of-open-banking-in-the-uk

²⁰ https://www.gov.uk/government/speeches/economic-secretary-to-the-treasury-speech.

challenge prize (i.e., the context that the challenge prize is being designed within) and range of experts who there could be value in engaging with to inform the challenge prize design."

There are particular challenges in mapping the relevant Smart Data landscape given:

- The (at most) nascent state of the Smart Data ecosystem outside of Open Banking and the lack of any published roadmaps or designs for new Smart Data schemes, with the implication that it is not yet established by government what the different roles will be in future schemes and we can at best speculate which roles specific organisations might play in these schemes.
- A lack of settled terminology for different types of role in a Smart Data ecosystem. For example,
 Open Banking, uses specific terminology for defined roles in that ecosystem (Account Servicing
 Payment Service Providers, Payment Initiation Service Providers, Account Information Service
 Providers, Third Party Providers etc.) but this terminology is unlikely to be appropriate in other
 sectors.

In principle there are different ways in which "Smart Data stakeholders" might be mapped, and approaches might be more or less useful in different contexts. For example, a categorisation might be built around traditional industry sector boundaries (finance, energy, telecommunications etc.) or around an assessment of how "for" or "against" Smart Data different stakeholders are (or might be expected to be).

With these caveats in mind, we chose the following set of categories for Smart Data stakeholders, based on distinct functional roles that different stakeholders might play in relation to future Smart Data schemes:

- Government department
- Regulator
- Other Government
- Trade association
- Business data holder
 - We use the term "Business data holder" to specifically mean a business organisation required to, or that chooses to, share its customers' data under a Smart Data scheme.
- Business Authorised Third Party (ATP)
 - An ATP is a participant in a Smart Data scheme that has been accredited by the relevant authority to receive the customer's data and act on their behalf, when requested to do so by the customer. The equivalent term in the Open Banking scheme is the Third Party Provider (TPP), with TPPs defined as "organisations or natural persons that use APIs developed to [Open Banking] Standards to access customer accounts, in order to provide account information services and/or to initiate payments"²¹. In the Open Banking scheme, TPPs are often smaller, younger companies relative to the retail banks, and are sometimes called "fintechs" as shorthand. We assume that ATPs in other future potential Smart Data schemes will fulfil a similar role to TPPs in Open Banking they will access a customer's account held by other entities, with the customer's consent, in order to provide some service to the customer.
- Business comparison services

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 We separated (price and other) comparison services into their own category. A reason for doing so is that comparison services are a category of business that already offer a service that is one of the use cases that is sometimes referenced as a Smart Data use case.

• Business - other

 We used the "Business - other" category as a catchall for businesses that may have relevant insight into Smart Data, or may ultimately participate in one way or another in one or more Smart Data schemes, but where it is impossible to judge with confidence at this stage of Smart Data's development what specific role this might be.

Consumer group

 I.e. an organisation that seek to represent the interests of consumers generally, or of consumers in specific sectors and/or specific subsets of consumers.

Standards body

- Smart Data schemes, as defined by DBT, require underlying standards and these standards need to be designed, implemented and enforced. In the case of the Open Banking scheme, the Open Banking Implementation Entity led the detailed design of the Open Banking standards, working closely with the banking sector and other experts.
- Thought leadership / research / academic
- Innovation programme delivery

These categories were a factor used to determine which stakeholders we targeted for expert interviews and focus groups. We focussed on stakeholder categories likely to be most important for the success of a Smart Data challenge prize, meaning for example that (potential) ATPs or trade associations representing ATPs were prioritised over data holders, on the basis that the participants in a Smart Data challenge prize developing Smart Data use cases would most likely be ATPs and that their perspectives on a Smart Data challenge prize would be particularly crucial.

1.3. Overview of research and design methodology and rationale

Research and Design Process

The research project was loosely structured in three sequential phases, with Phase 1 falling largely in January 2023, Phase 2 in February, and Phase 3 in March. The research progressed over the course of these Phases from gathering research insights into challenge prizes and the Smart Data challenges and opportunities from stakeholders and towards an iterative design process to develop a specific, detailed prize design specification.

As a foundation for addressing the overarching research and design questions described above, we began Phase 1 of this project by generating our knowledge base on the UK's current Smart Data landscape and its implications for a challenge prize design by using a mix of qualitative methods: desk research - which led to the creation of a literature review and landscape mapping - expert interviews and focus groups. The evidence and insights generated through these activities contributed to our knowledge base and identified design implications that we combined with our own experience of challenge prize prototyping, design and delivery, which includes experience designing and delivering three challenge prizes in the Open Banking space: Open Up 2017, Open Up 2018 and Open Up 2020.

Equipped with insights from the qualitative methods and our experience in prize design, we entered a design process in Phase 2 to develop a potential challenge prize design that satisfies DBT's objectives and constraints, while taking into account the opportunities, challenges and implications that arose in Phase 1. We then developed a set of assessment criteria, focusing on

the likelihood the models would develop use cases and how mature those use cases would be at the end of a prize process.

From a challenge prize model perspective, we began by creating an initial challenge prize model composed of all essential elements that comprise a basic challenge prize (see Section 2 of this Report for more details on challenge prizes) that reflected DBT's expectations and constraints. The subsequent design activities followed an iterative process that aimed to evaluate each model against the assessment criteria, such as use case development, data access, attractiveness to innovators, risks and value for money, deliverability, among others (see Section 2.3 for more details on the assessment criteria).

After each assessment of a model's design, we iterated on the core design elements to determine how we could improve on the deficiencies of that model. To do so, we explored adding different objectives, stages, tracks and other creative features to a given model, thus evolving the models. This was done to ensure that the final recommended model for a challenge prize design and implementation would be likely to achieve DBT's objectives (see Section 2.5 to read about the intermediate prototypes produced and their design shortcomings).

By the end of Phase 2 we had identified three high level challenge prize models for consideration and a set of criteria for assessing the prize models, ultimately proposing to and agreeing with DBT a preferred model for further detailed development in Phase 3 of the project.

In Phase 3, the preferred model's design and delivery plan had been finalised and refined through a set of feedback discussions with a targeted set of stakeholders that the project had engaged with during the interview and focus group stages of the research. These discussions helped to explore the attractiveness and suitability of the model's design and where enhancements and adjustments could be made in order to improve the model's potential for impact.

Data Collection Activities:

Desk research (Phases 1-2): We have explored, gathered and analysed information and data from secondary sources (such as reports, academic papers and grey literature) to help us answer the research questions and objectives set out by DBT. The desk research findings were also used to prepare and facilitate other research and design activities, for example to identify target stakeholders for interviews, and to gather background information about the Smart Data landscape of relevance to a possible challenge prize. In addition to the above, we have delivered the following research outputs as requested by DBT:

- Literature review (Phase 1): We undertook a review of the academic and grey literature on challenge prizes, with a focus on literature most relevant to a possible Smart Data challenge prize. The purpose of the literature review was to identify key lessons on what constitutes good practice in challenge prize design and delivery, and to identify practical implications for a possible Smart Data challenge prize.
- Landscape map (Phase 2): We undertook a "landscape mapping" exercise to map the relevant landscape for the possible Smart Data challenge prize (i.e., the context that the challenge prize is being designed within) and range of experts who there could be value in engaging with to inform the challenge prize design.

Expert interviews (Phase 1 and Phase 2): We undertook semi-structured interviews with stakeholders representing 28 different organisations having a range of different relationships to Smart Data, including government departments, regulators, trade associations, large businesses, Third Party Providers in the Open Banking scheme, standards bodies, consumer groups, academics and other research / thought leadership organisations.

The purpose of the expert interviews was to gather useful information and insight from a range of stakeholders with diverse perspectives on Smart Data, with a view to understanding better the

context within which a Smart Data challenge prize would take place, the perceptions and perspectives of stakeholders who would be important to a prize's success and to inform prize design models. Interviews sought stakeholders' perspectives, in particular, on barriers and opportunities for Smart Data, on potential Smart Data use cases and where relevant on their experience and perspective on challenge prizes.

Focus groups (Phase 2): We undertook three structured 2.5 hour focus groups in which a total of 22 stakeholders representing a range of different types of organisation participated, largely drawn from individuals who participated in expert interviews.

The purpose of the focus groups was to explore with relevant stakeholders potential topics on which a Smart Data challenge prize might focus, and potential design features of a challenge prize that could bring forward Smart Data use cases and enhance lessons for and insights around Smart Data for potential policy development purposes.

The focus groups were delivered online by using slides to introduce the context and objectives of the focus group. The focus groups consisted of several collaborative activities delivered with the help of a virtual canvas where participants discussed and worked through exercises under the guidance of facilitators. Notes were taken on the virtual canvas and the sessions were recorded to aid with ensuring an accurate write-up of the sessions.

Data Analysis:

The notes from the interviews and focus groups were analysed by affinity mapping, which is a common analysis method used to group information and extracts specific insights from complex raw research outputs, making it easier to identify patterns and themes for analysis and generating insights. Affinity mapping is especially useful in the early idea-generation stages of a design process. The notes were merged to prevent attribution to a specific person and consolidated by clustering around similar themes and ideas that were analysed to generate insights.

1.3.1. Limitations and constraints of the research methodology

The following were key limitations and constraints of the research methodology followed:

- A general observation is that the research methods adopted could not, on their own, give rise in a deterministic way to a challenge prize design and delivery model. The research phase is the initial phase that produces valuable insights, but specifying a coherent structure and implementation strategy for a challenge prize is generated in an iterative design process where the challenge prize is assessed and improved upon in cycles. This process is also enriched by the professional judgement of how to leverage research inputs into the analysis and design, which is derived from our experience of researching, designing and delivering over 80 challenge prizes in the past decade. It is important to highlight that a different organisation with different experience, even if it drew the same information and insights from the research, could plausibly make different judgements about what they consider to be an optimal prize design.
- The research project took place within a limited time period given the range of research methods deployed and the desired range of stakeholders with which to engage. This meant that it was necessary to prioritise the most relevant literature and to be targeted in our approach to stakeholder engagement.
- In general, certain kinds of stakeholders were more willing to engage with the research project than others. For example, in general, trade associations were more willing to engage in interviews and focus groups than individual businesses, and among trade associations those representing organisations we might expect to be supportive of Smart Data were more willing to engage. This may have resulted in bias in the perspective of the stakeholders with whom we were able to engage relative to the full range of potential perspectives, and some relevant perspectives (e.g. those of larger businesses in specific sectors that could in principle be mandated to open up customer data through Smart Data schemes) may have been missed. Nevertheless, we expect that, given the

- specific objectives of this research project and the specific questions it sought to answer, as described above, this bias likely does not meaningfully impair the conclusions of the research.
- In general, we found that stakeholders either did not wish to, or found it more difficult to, make specific proposals of their own about challenge prize design or did not have strong opinions about detailed challenge prize model design questions. Rather, stakeholders' input tended to focus at a more strategic level for example on the topics that a prize might focus on or what objectives it should seek to achieve. This should perhaps not be surprising because, as a matter of fact, few organisations have practical experience of designing challenge prizes. But this difficulty may also have been exacerbated by uncertainty about the potential timing and focus of future UK Smart Data schemes, making it difficult for stakeholders to picture how a possible challenge prize might interact with this uncertain environment. We mitigated this limitation by focussing on questions with a bearing on prize design where stakeholders were expected to have insight, and (in particular in the focus groups and in Phase 3 of the project) presenting stakeholders with prize design ideas and soliciting their response, rather than asking open questions of stakeholders about prize design.

1.4. Overview of Challenge Prize literature review

As part of the first phase of the research, we undertook a review of the academic and grey literature on challenge prizes, with a focus on literature most relevant to drawing practical conclusions in relation to a possible Smart Data challenge. Given the time constraints under which the review was performed, the starting point for this review was existing challenge prize literature reviews, and these were supplemented by identifying and reviewing relevant literature published after these reviews. The most comprehensive of these existing literature reviews, by Abdullah Gok from Manchester Institute of Innovation Research, surveyed 19 studies on the impact of challenge prizes, including academic studies and non-academic assessments of prizes run by independent bodies (Gok et al.)

The practical implications we sought to draw from the literature were:

- 1) Whether a challenge prize is likely to be a good model for achieving DBT's specified goals in relation to Smart Data; and
- 2) If so, what form should the challenge prize take

Although the academic literature on challenge prizes is extensive and there are also numerous examples of grey literature, we found that there are significant difficulties in drawing such practically useful implications from the literature, namely that:

- There is very little challenge prize literature geared towards providing specific, tailored insight of
 relevance to a challenge prize relating to Smart Data or for those making design decisions about a
 Smart Data challenge prize. In our assessment this reflects the very small number of organisations
 with practical experience of designing and delivering challenge prizes, the limited incentives these
 organisations have to publish such practical guidance and the specific and evolving nature of Smart
 Data.
- Extrapolating from general principles about circumstances in which challenge prizes are likely to
 prove effective and about challenge prize design principles to a unique, specific set of circumstances
 is not straightforward. While there are examples in the literature of general principles, we conclude
 that the literature does not offer clear-cut guidance as to how these should apply in the new, unique
 and specific circumstances in which a Smart Data challenge prize is being considered.

Of the literature we identified, Challenge Works' five 'Green Light Criteria' (<u>Challenge Works</u>) provide the most systematic practitioner-focussed guide to determining whether a prize is likely to be an appropriate method to spur innovation in a given context, although these remain high level in nature (necessarily, as they aim to apply in all possible situations in which a prize is being considered). These green light criteria are as follows:

1) The problem is well defined and there's a clear goal for innovators to work towards.

- 2) The best solutions will be generated by opening up the problem to a wider pool of innovators.
- 3) Solutions will be adopted or taken to market.
- 4) A prize will accelerate progress.
- 5) A prize could provide the incentives needed to motivate innovators.

In Section 2.2 below we assess against these criteria whether a possible Smart Data challenge prize could be suitable given the current Smart Data landscape within the United Kingdom.

With respect to the form that a possible Smart Data challenge prize should take, it is difficult to draw conclusions from the existing challenge prize literature. The published academic literature has, in general, relatively little to offer the challenge prize practitioner seeking to make specific design decisions, and we found nothing in the academic literature providing guidance relevant to the salient features of the circumstances in which a possible Smart Data challenge prize would take place.

An insight from the grey / practitioner literature is that the provision of non-financial resources can be significant as an incentive to motivate innovators. These might include incentives such as data access, synthetic or otherwise, that may help to overcome the lack of Smart Data schemes. A key feature of the environment in which Smart Data challenge prize will take place is uncertainty about the future of Smart Data schemes - which schemes will be coming forward, when, how they will be designed, and how they will be governed. This uncertainty will serve as a countervailing force to the effectiveness of a prize, so prize design needs to investigate whether these sources of uncertainty can plausibly be mitigated by offering appropriate incentives.

A possible conclusion is that, given this uncertainty, moderate financial incentives alone - whether provided in the form of grants, prizes or a hybrid - may be inadequate for a challenge prize to achieve its intended objectives. McKinsey & Co highlights the hybrid prize-grant model as being appropriate in circumstances where participants are "not willing to accept some costs and outcome risks". A reasonable conclusion is that such a hybrid will be more appropriate in these circumstances than a "pure play" prize model in which all financial rewards are outcomecontingent, given the extent of other contextual uncertainty in which a possible prize will take place.

1.5. Stakeholder perspectives on Smart Data opportunities and challenges from expert interviews and focus groups

This section summarises the perspectives and insight that we acquired from stakeholders, through the interviews and focus groups, that in our judgement are of particular relevance to the specific focus of this research project, namely the design and scope of a possible Smart Data challenge prize.

1.5.1. Interviews

We undertook semi-structured interviews with stakeholders representing 28 different organisations having a range of different relationships to Smart Data. Stakeholders were targeted for interviews based on our mapping of the Smart Data landscape, informed by recommendations from DBT, evidence of prior engagement with the topic of Smart Data (for example through publications on Smart Data or related topics), and prior involvement in challenge prizes. Given the time constraints within which the research took place, organisations were prioritised with which we or DBT had a prior relationship.

Interviews sought stakeholders' perspectives, in particular, on barriers and opportunities for Smart Data, on potential Smart Data use cases and where relevant (for example, if the interviewee was known to have been involved as a participant in an earlier challenge prize) on their experience and

perspective on challenge prizes. We used a core interview guide with questions focussed on these topics, and the specific questions asked were chosen based on the interviewees' areas of expertise.

In general, we found that the stakeholders we contacted, and in particular stakeholders representing the perspectives of startups and consumers, were willing and interested to engage on the topic of Smart Data. Digital startups and those representing them were particularly enthusiastic about the **opportunities** that Smart Data could enable to create value for consumers, though some stakeholders were not convinced that regulated Smart Data schemes were necessarily the best solution to enabling consumers to take control of their data. Some stakeholders stressed that incorporating 'write' functionality (i.e. the ability for an ATP to initiate actions, for example making payments or switching services), and not only 'read' functionality (i.e. the ability for an ATP to receive data from a customer account), into Smart Data schemes creates much greater opportunities for customer value creation by innovators.²²

Over the course of the interviews stakeholders described a range of opportunities for potential cross-sector Smart Data use cases, and these are summarised in the box below.

With respect to **barriers**, many stakeholders expressed uncertainty about the future of Smart Data in the UK, and noted that, since the introduction of Open Banking starting in 2016, progress on Smart Data had been slow. Some suggested that this could be addressed by the government taking the lead in outlining a roadmap and strategy for developing cross-sector Smart Data schemes, and a number of interviewees suggested that moving Smart Data forward likely requires legal or regulatory leadership. Some startups in particular expressed scepticism about whether purely private (as opposed to regulated) Smart Data initiatives would come to fruition due to weak incentives on the part of data holders. Some stakeholders suggested that, in the absence of regulated Smart Data schemes emerging, digital innovators would find alternative solutions to enable consumers to take control of their data.

Several stakeholders from the digital tech sector suggested that the discussion about Smart Data needs to be re-energised, highlighting the lack of progress since Open Banking. These stakeholders agreed that Smart Data use cases need to be brought to life - going beyond theoretical descriptions of use cases - so that decision-makers (e.g. policymakers) can better understand the real potential benefits of Smart Data to consumers.

Some startup stakeholders observed that the biggest barriers to enabling Smart Data use cases are not technological but legal and commercial, for example:

- Agreeing on data scheme structure and standards,
- Identifying the right business model and operating within the legal framework set out by the data schemes.

With regards to a possible **challenge prize**, some stakeholders suggested that focusing on a small number of simple yet impactful use cases would help to build momentum for Smart Data, and would help to grow the user base and establish consumer trust.

Some stakeholders highlighted that the most exciting and innovative use cases will come from letting businesses interrogate the data themselves and identify their own use cases, noting that time and again new technologies have led to transformative innovations that nobody could have anticipated at the outset and in the abstract. Stakeholders provided examples of successful

²² The UK Open Banking scheme incorporates both 'read' and 'write' functionality. The Australian Consumer Data Right has to date only incorporated 'read' functionality but the Action Initiation Bill tabled before the Australian Parliament in late 2022 proposes amendments to introduce the framework for action initiation (or 'write' functionality). See Consumer Data Right in 2023, King & Wood Mallesons

fintechs who identified their business models only after the Open Banking scheme came into existence.

Some stakeholders highlighted that the value of consumer data and the scope for commercial use cases could vary a lot between sectors and suggested that there may be a benefit to focusing a challenge prize on specific sectors and/or data sets. Several stakeholders highlighted the particular value in customers' financial data, for example through supplementing current account and credit card transaction data (as covered by the Open Banking scheme) with pensions and insurance data.

Some stakeholders asserted that it would be possible to either create synthetically, or otherwise make available for participants, cross-sector datasets that would facilitate development and testing of cross-sector Smart Data solutions.

Cross-sector Smart Data use case opportunities highlighted in interviews

As part of our interviews, where in our judgement the interviewee was likely to have insight into potential cross-sector Smart Data use cases, we explored with them potential use cases that a Smart Data challenge prize might bring forward. Our reason for doing so is that a decision whether to proceed with a challenge prize might depend on the kinds of use cases that are possible, and that the challenge prize design may need to take into account the kinds of use case that challenge prize participants may wish to develop. Stakeholders suggested a number of illustrative possible Smart Data use cases across different sectors, including the following:

- Open finance dashboard: combining Open Banking data (current and credit accounts transactions) with data for other financial assets and services such as pensions, investments, loans, mortgages, and benefits (and possibly digital Web3.0 assets) to get a holistic view of all financial assets and obligations in one place.
 - Financial advice: enabling access to open finance information by financial advisors (or RoboAdvisors) to offer advice tailored to people's individual circumstances and, ultimately, offer automated switching for a wide range of financial services.
 - Vulnerable user fraud prevention: sharing an open finance dashboard with family and carers could also create an additional safety net for protecting vulnerable users against scams.
 - Tax assistance: having a holistic view of all financial assets and obligations could facilitate automation of self-assessment and filing tax returns.
 - Mortgage and conveyancing: allowing Mortgage advisors and Conveyancers to simplify finance and legal checks and speed up the process.
- 'Supercharged' switching combining Open Banking and utilities data to enable betterinformed switching of services, offering better tariffs or features (e.g. a larger mobile data plan for data-heavy users), and preventing loyalty penalty.
- Supporting net zero goals:
 - Net Zero lending: combining energy and finance data to work towards Net Zero goals by unlocking credit and directing household/small business finance to Net Zero activities and investments, for example home heating retrofitting or installation of solar panels and batteries.
 - Carbon footprint: combining energy, retail, transportation and transaction data to calculate personal carbon footprint and recommend use of products and services

that have a smaller carbon footprint (e.g. greener electricity sources, less polluting transportation options, products made in a less carbon-intensive process).

- Home energy management integration of energy and financial information together with Internet of Things (IoT) devices and Smart Home Assistants:
 - Automation of energy consumption depending on tariff at the time (e.g. charging or switching on appliances/vehicles when system load is low).
 - Efficient management of household energy flow between energy sources and storage (e.g. in the case of energy stored in batteries of smart vehicles or generated by solar panels, a Smart Data-enabled system may decide to sell energy back to the grid, power home appliances from batteries, or charge batteries depending on tariff, energy output, current household needs, etc).
 - Virtual powerplants: rewarding consumers for helping to match energy system supply and demand. Connecting households and their batteries through Smart Data networks to help manage energy flow and reduce reliance on the grid in times of higher demand.
 - Tackling fuel poverty: using pre-payment transactions to identify vulnerable consumers and their likelihood of becoming disconnected, offering energy consumption and debt advice, and direct support by toping up meters remotely.
- Data-driven health advice: providing health and well-being advice by compiling health records with lifestyle and environmental information such as food and drink purchases, pharmacy transactions, fitness session records, air quality, and observing patterns of behaviour around the use of utilities.
- Data-driven insurance: providing cheaper, faster and tailored insurance by letting insurers access additional data:
 - Vehicle insurance: accessing telemetrics data like vehicle's 'black box' to understand driving behaviour.
 - Health insurance: sharing health and fitness information to tailor health insurance.
 - Contents insurance: reviewing retail and/or financial data to create content lists and estimate their value.
- Identification and age verification: help to identify and demonstrating that the user has permission to access services, e.g.:
 - Digital identification to access online services.
 - 'Phygital' identification (a digital asset in a physical scenario like presenting a QR code on a smartphone) to enter businesses like smart cashier-less shops or agerestricted clubs.
- Priority Services Register (PSR) status: The Priority Services Register (PSR) is a UK government scheme that provides additional support for people who are considered to be vulnerable, such as elderly or disabled individuals, families with young children, and people who rely on medical equipment that requires electricity. Smart Data could allow consumers a streamlined path to register, validate and share their PSR status with providers across industries to minimise paperwork and ensure hassle-free access to the services to which they are entitled. This would have the benefit of reducing potential vulnerability of these customers by ensuring that service providers were joined up on these consumers' needs and likely enable consumers to take better advantage of any relevant support across providers.

- Know Your Customer (KYC): Smart Data can play a significant role in streamlining the commercial KYC process by providing a more accurate and efficient way to gather and analyse customer information from various sources such as social media profiles, government databases, financial transactions, and more to create a comprehensive profile of the customer. This information can then be analysed in real-time to detect any potential risks and verify the customer's identity while reducing the manual effort and time required in the traditional KYC process.
- Data-driven recommendations receiving tailored recommendations for local shopping, entertainment, dining, leisure activities etc. based on compiling data-driven 'preferences.' These preferences would be individualised by creating our 'digital twin' - blending transaction data, retail loyalty schemes, search history, social media activity, etc. - and correlating with geo-located establishments in the area.

1.5.2. Focus groups

We undertook three structured 2.5 hour focus groups in which a total of 22 stakeholders representing a range of different types of organisation participated, largely drawn from individuals who had participated in expert interviews.

The purpose of the focus groups was to explore with relevant stakeholders potential topics on which a Smart Data challenge prize might focus, and potential design features of a challenge prize designed to bring forward Smart Data use cases. The focus groups were structured in two parts:

- The first part of each focus group discussed, refined, and prioritised challenge prize topics a high-level description of a particular problem or opportunity area that could be a productive focus for a challenge prize. Participants were presented with six illustrative examples as conversation starters to be developed further in the session and were also invited to suggest their own ideas. The six initial topics were generated by analysing related themes of Smart Data use cases that were identified in Phase 1 interviews (discussed in previous section). Examples of topics were categorised further into two categories to simplify their presentation in the session but also offer additional prompts for discussion:
 - Problem-first Topics centred around a specific problem that may resonate with a particular group of consumers and which were inherently cross-sectoral, such as cost of living crisis or carbon footprint.
 - Sectors-first Topics centred around the intersection of specific sectors where data may already be accessible and could be combined with new data sources which could be within reach, such as combining Open Banking with utilities, or other financial services.
- The second part of each focus group had the group select two high-priority topics where the
 participants explored potential challenge prize models (i.e. sets of prize design features) that could
 be built around these topics to lead to successful outcomes. The participants explored potential
 components of a prize for each of these topics, including potential opportunities, challenges,
 incentives, focus areas, stakeholders involved, required information or data and other
 considerations.

Focus group participants represented a wide range of different types of Smart Data stakeholders and expertise. Most focus group participants were selected from individuals who had already taken part in an earlier interview on the grounds that these would already be familiar with the context of the research project and therefore the limited time in the focus groups would be used most efficiently. These stakeholders welcomed the intent behind the research into a Smart Data challenge prize and engaged constructively in focus group discussions. We believe that the structure of the focus groups worked well to solicit wide-ranging input from the expert stakeholders, though in general these stakeholders found it more difficult to make specific proposals about

challenge prize design. Stakeholders did not generally have strong opinions on detailed questions about challenge prize models and on the relationship between model choices and expected outcomes from a challenge prize.

We have generated insights from the focus groups using an affinity mapping analysis method (see Section 1.3 for details), focusing specifically on what could be learned on topics and design features of a potential Smart Data challenge prize. Insights derived from the focus groups relevant to a possible Smart Data challenge prize include the following:

- Several stakeholders emphasised the importance of clearly articulating the vision for the prize and defining clearly what the prize is seeking to achieve. Many participants suggested that the challenge prize should focus on a specific and well defined topic. Some participants highlighted that the scope of the prize needed to be feasible within the indicative timescale available, and should focus on areas where relevant data is available to prize participants. As an example, a fintech expert commented "In terms of the whole challenge design, we can't give any more advice in terms of what to do unless we know exactly where they want to end up. Other than mapping the landscape and seeing where the use cases are popping up and where potential intersectionality exists, what do they (the government) want out of this? Knowing what the end goal is, what their objectives are, would help us also to give better advice on potential design."
- On challenge prize topics, almost all focus group participants were in favour of problem-focussed topics and using a prize to address problems faced by consumers and articulating how Smart Data might help to address these challenges, rather than sector-based topics. Several stakeholders stressed the need to focus on problems that matter to consumers rather than on what it might be technically possible to build and that the prize should identify clear beneficial outcomes for consumers.
- Two topics that resonated particularly with focus group stakeholders were about using Smart Data to support consumers on cost of living and reduce their carbon footprints. Stakeholders noted that such topics are inherently cross-sector given their complex nature and would be likely to give rise to cross-sector use cases.
- Some stakeholders stressed the need to carefully consider issues around data consent and ethics and suggested establishing principles for data use and baking in ethics through safeguards in the prize criteria. One representative from the energy sector shared "The challenge is going to be more around data legislation, consumer engagement, ethics I think those topics slow it down more so than technology." A digital innovation consultant highlighted "In terms of challenge prize design, I really think that this whole preparation stage around bringing a coalition of organisations that have relevant data sets and/or other kinds of technical contribution to the use case will be helpful." An Open Banking expert highlighted "There was some optimism about access to data sets. I can see that being quite problematic...there are limited incentives to data incumbents to open those up even for good purposes and the history of open banking is that you needed a legislative framework to achieve that."
- Some stakeholders questioned how far use cases could be developed through a Smart Data
 challenge prize, due to uncertainty about the future of UK Smart Data schemes, and stressed
 the importance of prize participants being able to access relevant data in order to be able to
 develop and test working prototypes of use cases. Synthetic datasets, data sandboxes and design
 toolkits should be explored, building where possible from existing assets.
- Some stakeholders recommended that the early stages of a challenge prize process should seek to identify what solutions and initiatives exist already and undertake in-depth discovery and scoping activities to better understand the needs of consumers, data holders and innovators. This would also seek to understand the incentives for data holders to become involved in a prize, for example, where potential practical business or reputational benefits exist. A finance trade association participant shared "The requirement for more research, especially proof of concept research work, is absolutely imperative for this."
- With respect to **prize participants**, some stakeholders suggested proactively identifying and recruiting high-calibre innovators teams to participate in the prize, and noted that getting capable

innovators to participate in a challenge prize will require **compelling incentives, including for example access to data**. A digital economy expert highlighted "What is the environment, the sandbox that you are enabling for participants to access here...Fundamentally you need to give them something new. Otherwise it would already be happening."

- Some participants identified that **consortia** could be compelling ways of encouraging participants to come together to compete in a challenge prize. By encouraging the inclusion of businesses and innovators, as well as other parties such as local councils, consumer groups, the third sector or other parties, it could be possible to enable the inclusion of different perspectives and solutions.
- Several stakeholders suggested that digital start-ups are likely to be particularly well-placed to
 ideate and develop Smart Data use cases in a challenge prize, but that these might lack the
 understanding of wider consumer perspectives and of potential data ethics issues to be
 navigated. Some stakeholders recommended involving consumer champions, third sector
 organisations and people with lived experience in the prize, to help frame the problem statement(s)
 on which a prize might focus and potentially as participants in consortia of solvers.
- Some stakeholders suggested that the Smart Data Challenge Prize should seek to add value to
 participants by offering non-financial support to competitors. One suggestion included facilitating
 consumer focus groups as a sounding board during use case development and testing. Another
 suggestion was to include a support network for innovation projects that includes marketing,
 communications, sales, and other business skills.

1.6. Critical implications of research findings for design of a possible Smart Data challenge prize

Every challenge prize takes place in a context, and this regulatory, legal, market and broader context has implications for the optimal prize design. Desk research and stakeholder engagement through the interviews and focus groups described above highlighted the following as especially important facts about the context within which a Smart Data challenge prize running (by assumption) over financial years 2023/24 and 2024/25 would take place.

- <u>Current Smart Data schemes</u>: There is, as of today, only one live scheme that meets DBT's requirements for what constitutes Smart Data, which is Open Banking.
- <u>Future Smart Data schemes</u>: There is currently no statement of intent or public timetable from the
 government in relation to any further Smart Data schemes. There are no public blueprints or draft
 standards for further Smart Data schemes covering, for example, which entities and which data
 would fall within the scheme; and whether/ how interoperability with other Smart Data schemes
 would be assured.
- <u>Policy and regulatory uncertainty</u>: For potential participants in a Smart Data challenge prize, this is an environment of considerable uncertainty, raising questions such as:
 - Will there be any further Smart Data schemes? In which sectors? How will these schemes work? On what timetable will these schemes be rolled out? Who will be eligible to participate in the scheme and on what basis?
- <u>Investment appetite</u>: Creating and developing Smart Data use cases, including through the medium of a challenge prize, requires investment of resources by suitably qualified organisations, and this investment has an opportunity cost. The contextual uncertainty will serve to deter the investment of effort in a challenge prize: potential participants may judge it better to wait and see how the Smart Data policy landscape evolves before committing resources to developing use cases, even with the incentives potentially offered by a prize.
- <u>Missing "raw materials"</u>: Some of the "raw materials" are also currently missing that would enable innovators to make substantive progress in developing Smart Data use cases:

- The Smart Data "rules of the game" are not yet known for example, how future individual Smart Data schemes will work, or how the schemes will interact with one another.
- There is, so far as we have been able to establish, no existing data resource that approximates to the kind of cross sector data that might ultimately become available through future Smart Data schemes.

In our judgement the following are critical implications that follow from these facts about the current Smart Data context and that need to be reflected in the design of a possible cross-sector Smart Data challenge prize.

1) Risks to challenge prize outcomes and value for money

Given the contextual uncertainty and the missing "raw materials" described above, going straight into a challenge prize that would offer financial rewards for bringing forward "new detailed cross-sector use cases for Smart Data" presents risks, both in terms of challenge outcomes and value for money.

- Innovators may not wish to participate in a prize, preferring for uncertainty about Smart Data to diminish before investing in developing Smart Data propositions.
- It is difficult to envisage how use cases could get beyond "ideas blueprints" and into "testing and development" in these circumstances.
 - Even the most basic testing of use cases would require many (non-obvious) assumptions to be made about the underlying Smart Data schemes which the use case references.
- There is a high risk of a prize developing use cases that turn out not to be relevant to any actual Smart Data schemes that are ultimately established.
- The Smart Data landscape could change quickly over the lifetime of the prize and these changes risk rendering a challenge design no longer optimal.

These risks will need to be mitigated for a challenge prize design to be effective in this space.

2) Addressing the difficulty of providing data to challenge participants

Many stakeholders emphasised the need for innovators in a Smart Data challenge prize to have access to relevant data assets to enable them to develop and test use cases. A range of views were expressed as to what these data assets needed to be - for example real or anonymised or synthetic data²³ - but there was a widely-shared view, in particular among organisations that might participate in a prize or trade associations representing them, that data would be necessary to attract the best innovators to a challenge and to enable use cases to advance beyond ideas on paper to development and testing.

We are, however, confident based on our engagement with stakeholders through the interviews and focus groups, and on desk research, that there is no suitable "off the shelf" cross-sector data resource ready to be rapidly deployed in a challenge prize. We have reached this conclusion on the basis of seeking but finding no evidence of such an "off the shelf" data resource having been

²³ Synthetic data is artificially created data, as distinct from real data that is created by "real world" events (such as a real consumer's transactions). Synthetic datasets may be generated to mimic the statistical properties of some real underlying datasets. An advantage of using synthetic data over real consumer data (even anonymised) is the ability to limit the risk of personal data leakage. But a disadvantage of synthetic is that it may not capture important properties of the real underlying data it seeks to mimic.

developed by those entities that would be most likely to have developed it. Further, we expect the challenges in identifying or, more likely, creating a useful data asset to be significant with complex technical, commercial and legal considerations. An effective cross-sector Smart Data challenge prize design would need to find a way to create and provide useful data assets to challenge participants.

3) Using a challenge to learn and to inform the future of Smart Data

Among its objectives for a possible Smart Data challenge prize DBT has specified "better understand[ing] the challenges that would need to be overcome to facilitate cross-sector data sharing".

A suitably designed cross-sector Smart Data challenge prize could present significant opportunities for policymakers to learn about both the challenges that innovators are likely to face in developing (cross-sector) Smart Data use cases, and to inform the many design decisions that will need to be taken as any future Smart Data schemes are developed. As well as generating specific outcomes in the form of new Smart Data use cases, a Smart Data challenge prize could serve as a kind of "living laboratory" to acquire information to inform policy and related decisions that it would be difficult to acquire through traditional research methods. For example, a challenge prize could:

- Identify the use cases that innovators most want to bring to market, based on their understanding of consumer needs and commercial opportunities. This information will be invaluable to Smart Data scheme designers, as they will wish to design schemes that enable the most valuable use cases.
- Identify what will need to be incorporated into the design of individual Smart Data schemes in order
 for cross sector Smart Data use cases to be enabled. An obvious risk with future Smart Data
 schemes is that these are developed without building in the schemes' ability to interact with one
 another, thereby curtailing the innovation potential and economic benefits of Smart Data overall.

2. Designing an Effective Smart Data Challenge Prize

2.1. An introduction to challenge prizes

Challenge prizes are a method for stimulating innovation. They work by offering financial and/or non-financial incentives for solutions to difficult problems, without specifying how the problem should be solved. Challenge prizes are also called inducement prizes, reflecting the fact that they aim to stimulate innovation geared towards some specified objective.

Challenge prizes are one of the oldest methods used in innovation policy. An early and prominent example was the longitude rewards established by the UK government through the Longitude Act in 1714, in which £20,000 was offered to whoever could produce a practical method of determining longitude at sea within specified parameters, and was won by John Harrison, a Yorkshire clockmaker who invented the first marine chronometer.

While prizes experienced a decline in popularity during the 19th century, recent decades have seen a revival in their usage (Khan et al., Deloitte). In 2009 McKinsey & Co tracked 219 live prizes with award values of more than \$100,000, and found that the total value of that group increased more than 15-fold between 1970 and 2009. The use of prizes grew in particular in the US, the US government creating policies for federal agencies such as NASA to use prizes as policy instruments (Burstein et al). Deloitte analysed the 314 challenges found on Challenge.gov between 2010-2014 and reported a total public spend of \$64 million in that timeframe, with a median budget for challenge rewards of \$9,500 (the maximum being \$15 million).

Besides the public sector, non-government entities have also contributed significantly to the growth in US prizes, most prominently the X Prize Foundation with its series of large technology-focussed prizes, as well as smaller practitioners like Kaggle. Indeed, the private sector spend on challenge prizes in the US is almost three times that of the public sector. Brennan et al. analysed the data on challenges from McKinsey & Co, Love and InnoCentive (now Wazoku), and found \$173 million spent on prizes from the private sector (37 prizes), compared to \$60 million spent over 28 prizes for public sector institutions like DARPA and NASA.

These trends of increased prize spending have played out elsewhere, including Canada (Impact Canada) and Europe, where the European Commission has put up tens of millions of euros in prizes to address problems ranging from cleaner diesel engines to cheaper space launchers as part of its Horizon 2020 programme (European Commission). In the UK, the Centre for Challenge Prizes (now Challenge Works) was set up by Nesta in 2012 to revive the use of prizes in the UK and has designed and delivered prizes with various national and international partners including UK government departments, regulators, international NGOs and corporate foundations.

2.2. Is a challenge prize likely to be an effective method to use in this context?

Before proceeding to identify and evaluate specific models for how a Smart Data prize could work, we asked whether a challenge prize is likely to be an appropriate model at all in the circumstances and given the current context for Smart Data in the UK.

Based on the literature review undertaken as part of this project, we believe that Challenge Works' five Green Light Criteria (<u>Challenge Works</u>), of which an adapted version has been used in the Canadian government's <u>Impact Canada</u> initiative, provide the most systematic practitioner-oriented guide to determining whether a challenge prize could be an appropriate method in a given market context.

These Criteria are necessarily high level in nature, as they aim to apply in all possible situations in which a prize might be considered. The purpose of the Criteria is not to determine that a challenge prize will be effective, but that a prize could be effective. Red flags against one or more criteria could suggest that a prize may not be effective, or may highlight specific issues that will need to be attended to in the prize design process.

The Green Light Criteria are set out below together with our assessment of a possible cross-sector Smart Data challenge prize against them.

Assessing a possible cross-sector Smart Data challenge prize against Green Light Criteria

1) The problem is well defined and there is a clear goal for innovators to work towards.²⁴

Prizes can be particularly effective when they set a clear, achievable and measurable goal or target. So, a key question to be considered in the design of a potential cross-sector Smart Data challenge prize is: what specifically is the goal(s) that such a prize would set for participating innovators, and how robustly can progress achieved against the goal be established and comparisons made between innovators?

In practice in our experience, it is usually not possible or sensible to specify an <u>objectively measurable</u> goal or target for participating innovators, because typically the outcomes sought by the prize sponsor are more complex than can be reflected in such metrics. In this case it is important to provide clarity in other ways on what success looks like for the purpose of the prize, for example through clear, straightforward assessment criteria and through a robust process for assessing performance against the criteria.

As described in Section 1.1 above, an objective of the possible Smart Data challenge prize would be to "identify and incentivise the development of a range of new detailed cross-sector use cases". To translate this high level objective into specific goals for innovators to work towards, we recommend that it will be advantageous for the prize sponsor to define more specifically what would constitute success for the prize. The Delivery Partner can then translate this into more specific goals for challenge prize participants and reflect these in the assessment criteria used to evaluate innovations developed by prize participants.

2) The best solutions will be generated by opening up the problem to a wider pool of innovators.

A core benefit of prizes derives from their ability to attract diverse talent, generate unexpected approaches, and reveal unusual perspectives in the face of a problem or challenge (McKinsey & Co). By encouraging novel solutions from parties that may not otherwise have been enticed into pursuing such innovations without the convening power of the prize, the challenge is able to enhance and, in some instances, instigate an ecosystem around the problem it is aiming to solve. On certain occasions, prize participation can also incentivise collaboration between innovators and researchers working in adjacent fields, which can lead to particularly novel approaches that would not have arisen organically without the convening power of the prize.

In our opinion a Smart Data challenge prize is likely to meet this criterion: we can expect more and better Smart Data innovations to be developed by the wider the pool of

²⁴ This criterion echoes comments made by some stakeholders in the focus groups about the importance of clearly articulating the vision for the prize.

innovators seeking to develop them, and a prize can raise visibility of Smart Data as potential focus area in addition to the incentives that can be used to encourage participation. If we assume, for example, that the "best solutions" are defined as the solutions that in some sense make the most creative use of cross-sector Smart Data to unlock value to consumers, it seems likely that engaging a wider population of innovators will be beneficial.

3) Solutions will be adopted or taken to market.

Challenge prizes are intended to create impact. If the solutions developed through a challenge prize have little chance of being adopted or taken to market sooner or later then the prize will not have been impactful.

Applying this criterion to the specific circumstances in which a Smart Data challenge prize would take place is difficult. This is because (i) whether solutions developed in a Smart Data challenge prize can be taken to market will depend on the evolution of Smart Data policy (e.g. which Smart Data schemes, if any, will be implemented, on what timescale, and how) and (ii) as noted already there is considerable uncertainty about the future evolution of Smart Data policy. These limitations and uncertainty mean that the capacity to bring fully-fledged products or offerings to market may take longer in this instance, but the capacity to begin the journey down the development curve through a prize seems both reasonable and likely.

As noted earlier, there is at present only one live Smart Data scheme, Open Banking, covering a specific set of products in the retail banking sector. Almost by definition, cross-sector Smart Data use cases can only come to market if there are Smart Data schemes covering more than one sector. These schemes might result from regulatory action (like the Open Banking), or – in principle at least – they might be private schemes. It is not within the scope of this work to consider whether and how private Smart Data schemes may come forward in the absence of regulatory action.²⁵

The key implication in relation to a prize is that, for it to be successful in encouraging innovators to develop cross-sector Smart Data use cases, it will be important that they have confidence that there are prospects for bringing use cases that they develop to market. This does not, in our judgement, necessarily mean that new schemes (beyond Open Banking) need to be in place at the time the prize happens in order for a prize to be successful. But the more clarity that can be provided by the government about the future path for Smart Data policy, the more confidence innovators will have about market opportunities and therefore the more interest they will have in responding to the incentives offered by the prize.

4) A prize will accelerate progress.

A prize should demonstrate additionality: it should make something new or better happen than would have otherwise been the case, or should make progress happen more quickly.

²⁵ The Department for Business, Energy and Industrial Strategy (BEIS) noted in BEIS (2022) "Regulatory Powers for Smart Data Impact Assessment" that "Private sector led [Smart Data] schemes, with clear and widely adopted standards for customers to share data with third parties, have failed to materialise in key markets. This is likely due to insufficient incentives, where customers and new market entrants would benefit, but also as implementation costs would primarily fall on incumbent data holders."

Challenge prizes can work well as a means of stimulating innovation in the early stages of a market's development. As argued by Zorina Khan from Bowdoin College in a 2019 workshop on challenge prizes, "prizes are most effective when used to incentivize activities that are not market-driven." (National Academies of Sciences). But there is also evidence that they can leverage substantial amounts of private capital in addition to the investment made by innovators themselves, with some example figures pointing to 2 to 50 times the amount of private capital relative to the cash rewards. (Kudymowa et al.) Such external investment is of course conditional on solutions demonstrating their commercial potential, and may point to a risk of some prizes not being additional. A possible conclusion from these observations taken together is that the best environment for a challenge prize is one in which the market in which it is intervening is neither too nascent, nor too developed.

This is also a difficult criterion to apply to the specific circumstances in which a Smart Data challenge prize would take place, as whether it will be met is contingent on the evolution of the wider Smart Data environment. For example, a challenge prize is more likely to "accelerate progress" in the sense of accelerating the development of commercially sustainable cross-sector Smart Data use cases if new Smart Data schemes are either implemented or committed to be implemented, thereby removing a major element of uncertainty from innovators' decision-making. However, while a Smart Data challenge prize may find the acceleration of mature product offerings in the market a potential stretch given the current policy, legal and subsequently data availability environments, a prize would likely support DBT's use case and learning objectives.

5) A prize could provide the incentives needed to motivate innovators.

A prize works by providing incentives for effort directed towards some goal. The greater and the higher the quality of the effort induced, the more likely the prize is to successfully achieve its targeted outcome(s). So a crucial question in prize design is what kinds of incentives can be provided, and are these adequate.

Since a "prize" is by definition provided only after some outcome is reached, prize funds might not always give sufficient inducement if the innovators in question cannot afford to develop the technology in the first instance (<u>Gok et al.</u>). For this reason, many prize models in practice incorporate grants in a hybrid structure to facilitate the involvement of cash-poor innovators. Challenge prizes may also incorporate non-financial support (for example mentoring or learning opportunities) and other incentives for engagement.

Much of the theoretical and empirical academic literature on challenge prizes focuses on the provision of <u>financial</u> incentives (owing perhaps to the tractability of financial incentives in economic modelling and quantitative empirical work). But in principle other kinds of incentives may be more important than financial incentives.

In the case of a cross-sector Smart Data challenge prize, such incentives for innovators might include, for instance, access to data and the ability to work directly with data holders or with regulators. In the expert interviews and focus groups undertaken as part of this project some stakeholders, in particular those who are or who represent ATPs, stressed that provision of a high quality data asset could serve as an exceptionally powerful incentive for high quality innovator participation in a cross-sector Smart Data challenge prize.

In summary, based on assessment against the Green Light Criteria, in our judgement there are no clear red flags that would indicate that a challenge prize is not potentially an effective model in this

context. However, the success of a cross-sector Smart Data challenge prize will depend, in particular, on what incentives a prize can offer to participants (and in particular whether a compelling data asset can be provided), and whether and to what extent wider uncertainty about the evolution of the Smart Data landscape can be alleviated to give confidence to prize participants that there will be market opportunities for their innovations.

2.3. Evaluation criteria for assessing Smart Data challenge prize models

Section 2.2 described a set of high level Green Light Criteria which we use to assess whether the prize model could, in principle, be effective in a given area.

Moving now to consideration of specific Smart Data challenge prize models, we wanted to be able to compare and evaluate different models against one another, to determine a preferred model and to help assess whether this model is likely to prove effective. To do this we developed a bespoke set of evaluation criteria against which to assess different cross-sector Smart Data challenge prize models, specific to the possible Smart Data challenge prize under consideration. We then subsequently evaluated models, as described in subsequent sections, against these assessment criteria.

We designed these criteria to reflect key insights that emerged from the research described in Section 1 of this Report, as summarised in Section 1.6, as well as the specific objectives that DBT has determined for the possible prize.

In consultation with DBT we identified six assessment criteria and associated sub-criteria as described below.

Table 1 - Smart Data challenge models assessment criteria

Criteria		Sub-Criteria	
1)	Use case discovery and development	 Is this challenge model likely to result in new detailed cross-sector Smart Data use cases that create value for consumers? How advanced a stage of development are use cases likely to reach through this challenge? 	
2)	Data access	 Can this challenge model provide access to data that participants need in order to achieve the outcomes sought from the challenge? 	m
3)	Attractiveness to relevant innovators	Would this challenge model attract relevant innovators who ar able to deliver high quality, innovative cross-sector use cases and would it induce high quality input from them?	
4)	Risk and value for money	 How risky or uncertain is this challenge model, in terms of the degree of variability in potential outcomes it will achieve? Are the upside opportunities greater than the downside risks? Is this challenge model likely to result in value for money? 	

	Does the challenge model enable agility and flexibility in response to evolving policy (and other environmental) variables?
5) Learning outcomes	Is this challenge model likely to enable the government to better understand the potential benefits and challenges associated with Smart Data?
6) Deliverability	Can this challenge model be successfully delivered within the indicative (timing, budget and other) constraints?

Use case discovery and development

Given the importance to DBT of identifying potential cross-sector Smart Data use cases and the aspiration that use cases should advance as far as possible along the development curve, we concluded that a criterion focused on use case discovery and development would be critical. Two critical questions in applying this criterion are:

- Is this challenge model likely to result in new detailed cross-sector Smart Data use cases that create value for consumers?
 - With a focus on cross-sectoral use cases, identifying the capacity for a prospective challenge to unlock such cases would be critical. Doing so would enable the challenge to contribute to DBT's understanding of where the market sees the most potential contributing to the capacity for DBT and other stakeholders to make the case of where the greatest consumer benefit may arise.
- How advanced a stage of development are use cases likely to reach through this challenge?
 - Wherever possible it is desirable to have as advanced innovations as possible as part of a challenge prize, delivering value into the market to actual consumers. While achieving this may not always be possible and concepts on paper may be as far as a challenge can achieve, we wanted to place importance on the capacity of a challenge to encourage and enable as advanced development of offerings as might be achievable within the prize time, budget and related constraints.

Data access

For participants in a Smart Data challenge to be able to develop use cases, providing access to data will be highly desirable, as was stressed repeatedly by stakeholders in expert interviews and focus groups. Given the fact that Smart Data schemes remain nascent, with the exception of Open Banking, and therefore data cannot be acquired through existing schemes, including our finding that there is almost certainly no "off the shelf" suitable data asset available, data access is a problem that needs to be addressed in a cross-sector Smart Data challenge prize design.

• Can this challenge model provide access to data (and other resources) that participants need in order to achieve the outcomes sought from the challenge?

Attractiveness to relevant innovators

Challenge prize models should be evaluated against whether the design of the challenge is likely to stimulate the interest and committed participation of a range of participants who are able to deliver high quality, innovative cross-sector use cases. For example, if the challenge model cannot overcome near-term hurdles faced by innovators or convince them that there are longer term

opportunities which participation in the challenge could unlock, the challenge may yield participants with less relevant experience and capabilities who bring forward less compelling ideas and concepts.

 Would this challenge model attract relevant innovators and would it induce high quality input from them?

Risk and value for money

There are particular risks and value for money considerations associated with undertaking a Smart Data challenge prize at present. In particular, given uncertainty about the legal and regulatory environment for Smart Data in the UK and the potential for change in the coming years, a significant risk is that a Smart Data challenge prize model could quickly be rendered obsolete by unexpected changes in the wider environment.

- How risky or uncertain is this challenge model, in terms of the degree of variability in potential outcomes it will achieve? Are the upside opportunities greater than the downside risks?
- Is this challenge model likely to result in value for money?
- Does the challenge model enable agility and flexibility in response to evolving policy (and other environmental) variables?

Learning outcomes

DBT has specified as an objective sought from a possible Smart Data challenge prize as being to "better understand the challenges that would need to be overcome to facilitate cross-sector data sharing". Different challenge prize models are likely to perform differently against this objective and so we believe this should be incorporated explicitly in evaluation criteria.

• Is this challenge model likely to enable the government to better understand the potential benefits and challenges associated with Smart Data?

Deliverability

We sought to take into account the indicative budgetary and timing constraint assumptions provided by DBT (described in Section 1.1), to determine the potential deliverability of any given challenge model.

• Can this challenge model be delivered within the indicative (timing, budget and other) constraints?

2.4. Core elements of a challenge prize

To iteratively develop a set of challenge prize models that we would then assess against the evaluation criteria described in the previous section, we began by creating an initial challenge prize model composed of the core elements that comprise a "basic" challenge prize as, in our experience, the challenge prize model is deployed in practice. These core elements are implied to a large degree by the definition of a challenge prize (see Section 2.1), and we complemented this with Challenge Works' experience of designing and delivering over 80 challenge prizes since 2012, for a wide range of governments, foundations and businesses around the world. Although there is no "industry standard" for what the core elements of a challenge prize are, the number of challenge prizes in which we have been involved in a wide range of different contexts and for different types of challenge sponsors means that we are confident that the core elements we have outlined provide a good basis from which to develop cross-sector Smart Data challenge prize models.

In our experience Challenge Prizes are delivered in a series of interconnected phases designed to encourage and equip participants to address the challenge that the prize has set. These core elements are described below.

Pre-launch preparation

Assessment and award

Pre-launch preparation

Assessment and award

Solution development and support stage(s)

Increasing levels of financial & non-financial support. Decreasing numbers of innovators.

Figure 1 - Core elements of a challenge prize

Discovery and design phase

Within the discovery and design phase of a challenge prize, the focus is on understanding the nature of the market failure that a prize will seek to overcome or, relatedly, the "missing" innovation that the prize will seek to stimulate or accelerate. It typically comprises research on how a given market functions, and what in the market is impeding development of the innovation sought from the prize, in order to shape the structure of a potential challenge prize that could overcome the hurdles identified.

The research activities within this phase may include interviews with innovators, established businesses operating in the relevant market, regulators, government bodies, academics, social and third sector organisations and any other parties that may have valuable perspectives to contribute. Coming out of this phase, the team leading the research and design will construct a design for the challenge itself, setting out the problem statement that the challenge will seek to address, outlining the phases of activities, types of innovators or participants to engage, nature of incentives and support and related details that will enable the successful delivery of the challenge in line with the challenge's ultimate objectives.

Pre-launch preparation and launch phases

Following the discovery and design phase, the Delivery Partner typically transitions to a pre-launch phase before the prize launch. In this phase, the Delivery Partner aims to ensure that all the planning, communications, logistics and associated activities are prepared for the public launch of the prize. At launch, the Delivery Partner makes the challenge public, promoting it across a range of channels, and works to encourage a diverse and high quality set of innovators to put themselves forward as participants to the challenge.

Assessment and selection

Once prospective participants have submitted their interest in the challenge and potential preliminary approaches to solving the challenge, the Delivery Partner - possibly with the support of independent assessors or judges - will assess applicants on a range of criteria relevant to the challenge in order to determine which teams should be selected as participants in the prize.

Solution development and support stage(s)

Following the first assessment phase, there will be one or more solution development stages, in which challenge participants have the opportunity to develop their solutions to the challenge that has been set. A challenge may seek to progress solutions from concepts on paper to increasingly developed product offerings designed to address the customer or stakeholder needs identified as currently unmet in the discovery and design phase. At the end of each stage there will be an assessment of participants' solutions, with participants potentially not progressing to subsequent stages.

Support may be provided to participants in these stages, with the aim of enabling teams to enhance their delivery capability in alignment with the specific problems they are being asked to tackle through the challenge. Support may be financial (e.g. grants) or non-financial (e.g. product design support, networking with partners or testing with customers). The package of financial and non-financial support may be designed both to incentivize participation in the challenge and to augment participant capabilities.

Winner(s) announcement and award

To close the challenge, participants that have progressed through all the previous development stages and their corresponding assessment processes (if there is more than one development stage) will be evaluated against a final set of assessment criteria. One or more winners will be selected. The winner(s) often receives a financial award the size of which should offer a suitable incentive for participation, and the winner(s) and award will be promoted across a range of communication channels for their accomplishments, which is often valuable to participants raising their profiles and enabling them to engage with key market stakeholders such as prospective investors, customers or other parties in more effective ways.

Evaluation and wrap up

Following the final award(s) being conferred and communications around the successful completion of the prize, there may be an evaluation phase, which may be conducted by the Delivery Partner or by a third party. Evaluation activities will often include surveys to challenge participants to assess their perspectives on the delivery, a debrief with the challenge sponsor on what worked and what could be improved, perspectives on what the sponsor or its partners can do in order to further develop the relevant innovation ecosystem on an ongoing basis. There is a wide range of evaluation methodologies in principle available, depending on the prize sponsor's objectives, and monitoring may continue for months or longer after a prize has ended as part of an evaluation process should the sponsor wish to gather and evaluate such data.

2.5. Three possible Smart Data challenge prize models

Following on from the evaluation criteria development, we iteratively designed a set of high level challenge prize models, which we describe below, and evaluated these models against the evaluation criteria. This iterative design process started from a simple model including the core elements shown in Figure 1, with subsequent iterations designed to address weaknesses identified in earlier models.

Specifically, we started our prize model exploration with a single development stage version of the "basic" prize model illustrated in Figure 1. This became "Model 1: Development Challenge Prize", described below. In evaluating this model against the evaluation criteria, the data constraints became apparent as likely severely limiting, meaning that this model was unlikely to produce developed cross-sector use cases due to the lack of data schemes beyond Open Banking. Our assessment was that the only teams likely to be able participate would be those already operating within the Open Banking space where those teams might attempt to tack on some ancillary types of data in other industries.

Following the evaluation of *Model 1: Development Challenge Prize*, we sought to alleviate the data accessibility issue by focusing on the opposite end of the use case development spectrum - limiting the ambition of the challenge prize to generating cross sector Smart Data ideas on paper, with no expectation that participants could develop working prototypes of these use cases. This model, entitled "*Model 2: Use Case Discovery Challenge*", was envisioned as a series of short, sharp tech sprints to generate use cases on paper. A shorter, less involved model, Model 2 responded to the data challenge of Model 1 but presented other less desirable outcomes such as likely superficial results at the conclusion of the challenge.

Building on the lessons from Model 1 and Model 2 exploration, we sought to explore a model that would address the data hurdle before moving to a full prototyping phase. With this in mind, we created and evaluated "Model 3: Discovery and Prototyping Challenge Prize Programme". This model created space for data and use case discovery before a Go/No Go break point at which - assuming sufficiently compelling data could be acquired and use cases ideas were sufficiently compelling - the model would proceed to a prototyping phase.

In the remainder of this section, we outline each of the models explored, how they performed against the assessment criteria and the modifications that we made as we iterated from model to model in an effort to design a model that would meet DBT's objectives for cross-sector Smart Data.

Model 1: Development Challenge Prize

Description and rationale

The first model that we explored was a single development stage version of the "basic" prize model illustrated in Figure 2. The intention motivating this model is to incentivise prospective challenge participants to develop Smart Data use case prototypes to as advanced a degree of development as possible - and at a minimum to product prototyping - in line with the challenge's objectives. In this model to win the prize (or prizes) participants would need to develop a cross-sector Smart Data use case prototype.

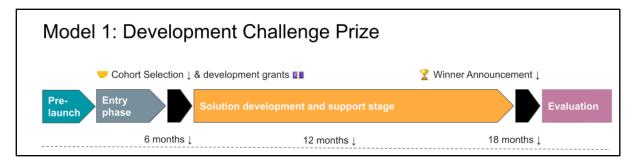
Importantly, our assumption for this model was that participating innovators would source their own data. This data could be Open Banking data, potentially through other methods such as screen scraping,²⁶ or working with data intermediaries. No attempt would be made by the prize sponsor or the challenge prize Delivery Partner to provide data to participants.

A likely outcome of this design feature is that it would be of most interest to organisations already participating in the Open Banking scheme and that use cases developed through the Prize would be anchored within the Open Banking scheme. However, an objective of the Prize would be to encourage innovators to venture into other sectors (e.g. into parts of finance not covered by the Open Banking scheme, and beyond finance) in order to achieve the cross-sector ambition set out by the Prize.

The Prize structure would entail a single support and development stage lasting up to 12 months, to give participants significant time to develop and test prototypes before the assessment phase. Development grants could be provided to participants and there would be one or more winners at the end of this single stage.

²⁶ TrueLayer, a business that operates in the Open Banking ecosystem, defines screen scraping as "the process of collecting display information from a 'screen' (typically a webpage) to use elsewhere or to perform actions that the user would normally carry out." Screen scraping can require that the end user shares their login credentials (e.g. login details for online banking services) with a third party. (Source: https://truelayer.com/blog/product/what-is-screen-scraping).

Figure 2- Model 1 structure



Performance of Model 1 against evaluation criteria

In our assessment, Model 1 performed poorly against the model evaluation criteria due to data access limitations, which would likely increase risks and may reduce value for money, the capacity to generate meaningful use cases and opportunities for learning.

Table 2 - Model 1 Assessment

Criteria		Sub-Criteria	
1)	Use case discovery and development	Potential applicants are limited to those who may already have access to the necessary data. This creates barriers to entry into the challenge, a smaller pool of innovators and less competitive environment which may lead to a smaller range and poorer quality of use cases.	
2)	Data access	No provision of data or means of procuring data that participants may need for use case development.	
3)	Attractiveness to relevant innovators	May attract participants who are motivated by short term financial rewards from the challenge rather than from the long term commercial opportunities from Smart Data.	
4)	Risk and value for money	The variability in potential outcomes, and value generated, is high due to uncertainty about quality of applicants, what individual resources are available to them and lack of flexibility of the programme to policy changes.	
5)	Learning outcomes	Insights may highlight lessons about barriers to data access, customer trust and consent, and integrating new data sources with Open Banking information. Cross-sectoral business models and commercialisation considerations may also be surfaced, among others.	
6)	Deliverability	This model can be delivered within timescale and budget	
Overall Evaluation		Poor: Data access limitations increase risks and may reduce model's value for money, number and quality of use cases and learning outcomes	

Specifically, this model performed poorly against the following evaluation criteria:

Data access: As the Challenge would not be providing data or a means of procuring data, participants would be left to source data on their own. The lack of data or lack of uniformity of data could significantly curtail the capacity to generate meaningful use cases.

Attractiveness to relevant innovators: Due to the lack of data and uncertainty around how sustainable building for these Smart Data use cases might be, in our estimation such a model risked attracting participants that would be motivated by the short-term financial rewards rather than building for the long-term. Additionally, we estimated that teams with high quality ideas may prefer to hold those back until such time as there was greater certainty around the legal or regulatory landscape with respect to Smart Data.

Risk and value for money: The variability in potential outcomes and value generated is potentially very high due to uncertainty about the quality of applicants and the lack of flexibility in the programme were policy changes to occur during the period of the challenge.

The model performed well with respect to *deliverability*, on the grounds that we are confident it could be delivered to DBT's specified indicative timescale and budget.

Model 2: Use Case Discovery Challenge

Description and rationale

Given the data-related constraints in Model 1, we sought to identify ways in which a challenge prize could be decoupled from these data constraints.

Model 2: Use Case Discovery Challenge would focus on developing ideas for potentially high impact cross-sectoral use cases and provide good opportunities for government to learn about the challenges that will need to be addressed for these use cases to be further developed. Access to data would not be required for developing use case ideas during the challenge, but a good understanding of the data that would ultimately be required to develop the use case beyond an idea would be part of the success criteria.

As the Challenge would target only a relatively basic level of development of the use cases, participants would not need a lengthy development stage with extensive support. Instead of a long development and support stage as in Model 1, we envisioned staging a series of Smart Data use case "tech sprints".

Our use of the term tech sprint is inspired by the FCA's ongoing development and deployment of its "TechSprint" model since 2016. In the FCA's words, "TechSprints bring together participants from across and outside of financial services to address industry challenges".²⁷ They are an evolution of hackathons, which typically focus on developing a software project over a short period of time, to include a wider range of stakeholders and activities. As the FCA itself stresses in its 2020 evaluation,²⁸ each of the tech sprints that it has run has been different (ranging for example between two days and two weeks in duration), but they have delivered outcomes such as "profound and rapid learning for regulators, firms and others on the application and impact of emerging technology" that we believe could be equally desirable to purse in relation to Smart Data.

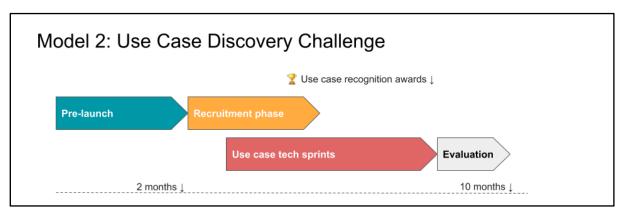
In the *Use Case Discovery Challenge*, four tech sprints might take place over 6 months. The early sprints might focus on problem-oriented themes such as cost of living crisis, reducing consumer

²⁷ https://www.fca.org.uk/firms/innovation/techsprints (accessed March 2023)

carbon footprint or health and wellbeing as these are inherently cross-sectoral and were well-received by participants during the focus groups we undertook. Later tech sprints might take into account barriers or lessons encountered in the earlier sprints. The tech sprints would be more collaborative in spirit than is typically the case with a challenge prize in which participants are incentivised to compete for a high stakes prize. Nevertheless, participants bringing forward the best use cases, as defined by evaluation against some assessment criteria to be defined for each tech sprint, may receive modest financial rewards which would serve more as "recognition awards", possibly in the order of £5,000 to £10,000, than higher value financial incentives. For this reason, we call Model 2 a "Challenge" rather than a challenge prize.

The core activities in a *Use Case Discovery Challenge* would focus on the design of, recruitment for and management of the use case tech sprints over a six-month period.

Figure 3 - Model 2 structure



Performance against evaluation criteria and implications

In our assessment Model 2's performance against the assessment criteria is mixed and not compelling.

Table 3 - Model 2 Assessment

Criteria		Sub-Criteria	
1)	Use case discovery and development	Use cases will be limited to ideas on paper, which will require future proof of concept validation, development and testing to understand their potential to create real value for consumers.	
2)	Data access	Access to actual Smart Data (or other restricted resource) is not a limiting constraint for the ideas development process. As such, we have not scored it.	
3)	Attractiveness to relevant innovators	Participants with highly valuable use case business models are incentivised to not disclose their ideas at this time. Waiting until the Smart Data landscape in the UK changes to implement their ideas as an early mover may offer a greater long-term financial reward.	
4)	Risk and value for money	The variability in potential outcome is low. However, unvalidated use case concepts do not offer as much value and lessons as more advanced, developed and tested Smart Data solutions.	

5) Learning outcomes	Lessons may include proposing sector priorities for Smart Data, identifying data sources of potential value and ideas about possible use cases. Cross-sectoral business models and commercialisation considerations may also be surfaced, among others.	
6) Deliverability	This model can be delivered within timescale and budget	
Overall Evaluation	Mixed: Delivery risk is minimal but use cases limited to ideas on paper and therefore value for money lower	

Specifically, there were four evaluation criteria where this model had a mixed or not compelling performance. For this model, we did not score Data Access as this model avoids a requirement for data by being limited to developing ideas for use cases.

Use case discovery and development: Use cases will be limited to ideas on paper, which will necessitate a range of future activities from concept validation to development and testing in order to determine their true potential to create value for customers.

Attractiveness to relevant innovators: In our estimation, innovators with compelling Smart Data use cases may be unwilling to disclose their ideas at this stage, and innovators with relevant capabilities may see little value in investing time and energy in engaging in this process, given uncertainty in the Smart Data landscape and given the limited rewards on offer in the Challenge.

Risk and value for money: Unvalidated use case concepts offer lower absolute value than more advanced, developed and tested cross-sector Smart Data solutions, though the budget required to undertake this Challenge was envisioned to be lower than for Model 1.

Learning outcomes: Model 2 presents opportunities to identify potential priorities for Smart Data going forward and may surface previously unforeseen challenges and opportunities, as evidenced by insights achieved from the FCA's TechSprints programme, but the richness and validity of implications that can be drawn from the Challenge will be limited by the fact that use cases will not be developed beyond idea stage or tested with consumers.

Model 3: Discovery and Prototyping Challenge Prize Programme

Description and rationale

Key insights from the previous models considered are that *Model 1: Development Challenge Prize* underperformed largely due to data constraints and *Model 2: Use Case Discovery Challenge* underperformed due to the limited extent of use case development that it would achieve. With the performance of these two models in mind, we sought to identify a model that could overcome both of these limitations.

The model we developed, *Model 3: Discovery and Prototyping Challenge Prize Programme*, is a more complex, two-phase model that incorporates elements from Models 1 and 2. The first phase, the Discovery Phase, would comprise two tracks running in parallel with one another: a Data Track and a Use Case Track. The Data Track would aim to identify and acquire potential datasets. The Use Case Track would aim to identify compelling cross-sector use cases ideas, along similar lines to *Model 2: Use Case Discovery Challenge*. The two Tracks would feed into one another to ensure that use case ideas from innovators could potentially shape potential data assets to be acquired and vice versa.

At the conclusion of this first phase there would be a Go / No Go Review Point to assess whether sufficiently compelling cross-sector Smart Data use cases had emerged from the Use Case Track,

and whether sufficiently compelling cross-sectoral data could be procured by the challenge sponsor based on findings from the Data Track. This assessment would determine whether to proceed to a second phase of the Programme, the Prototyping Phase which itself builds on *Model 1: Development Challenge Prize*.

In the second phase - the Prototyping Phase - a cohort of innovators would be supported to develop use case concepts into functional prototypes. Participating innovators would receive a grant to support their participation in the Prototyping Phase, access to a data sandbox providing access to data (secured through the Phase 1 Data Track), and would compete for a financial prize. Throughout this phase, as would be the case throughout the Programme envisioned in this model, the Delivery Partner tasked with managing the Programme would be engaging with participants and partners, procuring data on behalf of the Programme and its support and overseeing any support parties that are involved in the process.

Because this model comprises a programme of various elements, culminating in a Prototyping Phase which itself uses a challenge prize model, we call the overall model a Challenge Prize Programme.

Model 3: Discovery and Prototyping Challenge Prize Programme

Discovery phase

Go/No-Go | Review Point

Prototyping phase

Data track

Data Partnership(s) |

Data Procurement

1 year |

2 years |

Winner Announcement |

PreInnovator recruitment |

Solution development and support

Use Case track

Figure 4 - Model 3 structure

Performance against evaluation criteria and implications

Overall, Model 3 performed well against our evaluation criteria. The model performed well across all evaluation criteria save for two - Risk and Value for Money and Deliverability - where the model's performance against our evaluation criteria was mixed.

Table	4 -	Model	3 Assessment
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Criteria	Sub-Criteria	
·	Barriers to entry for development of cross-sectoral Smart Data solutions are likely to be lower within the Challenge ecosystem in comparison to current market conditions. This is expected to have a beneficial impact on the quality and quantity of innovators entering the challenge and enable better outcomes on the range and detail of use cases developed.	

2)	Data access	Incorporates a process seeking to procure data that challenge prize participants need to succeed, potentially enabling the development of more advanced Smart Data solutions.	
- /	Attractiveness to relevant innovators	May prove attractive to high quality innovators as requires very limited investment of resources to participate in Discovery phase, and in Prototype phase the model may offer assets that would otherwise be not available.	
٠,	Risk and value for money	The variability in potential value created is moderate due to uncertainty about the exact datasets and use cases surfaced in the Discovery phase. This is mitigated by implementing a Go/No-Go decision point and an exit strategy after the Discovery Phase, which would allow for partial delivery on the project objectives. The programme is also flexible to policy changes in the 12 months from initiation.	
5)	Learning outcomes	Lessons from both the Use Case Track and Prototyping Phase offer a broad learning potential.	
6)	Deliverability	There are risks to budget (due to uncertainty about data procurement costs), and potentially to timetable deriving from data procurement and data-related legal due diligence processes	
Overall Evaluation		Good: Strong on delivery of objectives. Mixed performance on risk management and value for money. Some deliverability risk	

Overall, this model, if successful in facilitating access to datasets needed for the development and testing of cross-sector Smart Data use cases, would address limitations on data access thereby potentially enabling more sophisticated and desirable use case discovery and development opportunities. This would increase the attractiveness of the Programme to innovators with relevant capabilities given the strong incentive for participation that data access would provide.

Risk and value for money: We concluded that Model 3's performance against this criterion is mixed. This is due largely to uncertainty about the quality of the datasets it will be possible to procure and of the use cases that may come forward in the Discovery Phase. For this reason, the model design includes a Go / No Go Review Point at the end of the Discovery Phase at which point the Programme can be terminated should it be established that adequate data cannot be secured. While this limits value for money risk, termination would mean that the model would only deliver partially on its objectives. Importantly this model is also adaptable to policy changes in the 12 months after its initiation, which is a positive.

Deliverability: This was also assessed as a potential weakness for reasons including uncertainty about potential data procurement costs, legal due diligence requirements relating to data and resulting risks to the timetable.

2.6. Smart Data challenge prize model conclusion

For the above reasons, we conclude that *Model 3: Discovery and Prototyping Challenge Prize Programme* is the strongest of the models evaluated against the assessment criteria, and is the model most likely to fully achieve DBT's objectives for a Smart Data challenge prize. While there remain uncertainties inherent in this model, its multi-track, multi-phase design, the break option

after Phase 1, the inclusion of explicit data sourcing, a data sandbox and potential support activities for prospective participants address the deficiencies of the Development and Use Case models explored (Models 1 and 2).

3. Discovery and Prototyping Challenge Prize Programme - Detailed Design

In this Section, we provide a detailed description of a design and delivery model for the *Discovery* and *Prototyping Challenge Prize Programme* ("the Challenge Programme"), the model that performed most strongly against the challenge prize model assessment criteria as described in Section 2 of this Report.

This more detailed model has been produced based on an iterative design process (see Section 1.3 for an overview of the research and design methodology and rationale). The design process was informed by research insights generated through scoping interviews, focus groups and desk research as described in Section 1 of this Report and our own experience of delivering challenge prizes, including experience designing and delivering three challenge prizes in the Open Banking space (Open Up 2017, Open Up 2018 and Open Up 2020). Our design was tested and refined based on further feedback interviews undertaken in Phase 3, which we describe as part of this section.

This Section begins with the problem definition for the Challenge Programme, based on conclusions drawn from previous sections of this Report. Moreover, this section explores the proposed structure of the Challenge Programme such as phases, tracks, including their associated activities and outputs, and provides an indicative high-level budget for delivery of the Prize. It proposes eligibility criteria for potential competition entrants, and the assessment criteria that will be used to evaluate use cases and give out awards, grants and prizes at different points in the process.

In addition, this Section clarifies the potential roles of the various stakeholders involved in delivering the initiative, including a governance structure. It further elaborates on the communication strategy, different plans for generating lessons from the Programme and for evaluating it, and potential risks and mitigation strategies associated with the implementation of the proposed Challenge Programme.

3.1. Problem definition

The objectives specified by DBT for a possible Smart Data challenge prize are to:

- Identify and incentivise the development of a range of new detailed cross-sector use cases for Smart Data
- Illustrate the potential value of Smart Data and better understand the challenges that would need to be overcome to facilitate cross-sector data sharing.

As described in earlier sections, this research and design analysis project has identified several key hurdles to the market-driven emergence of Smart Data solutions in the UK. These include limited access to Smart Data outside of Open Banking and a lack of identified compelling cross-sector use cases for Smart Data. These challenges are compounded by a knowledge gap and regulatory uncertainty surrounding Smart Data Schemes, as described in earlier sections.

To overcome these hurdles and foster a thriving Smart Data ecosystem in the UK, we have developed a Challenge Programme model that we believe would incentivise the identification and development of pioneering cross-sector use cases and stimulate further constructive cross-stakeholder dialogue about the future of Smart Data in the UK. In developing this Challenge

Programme we have assumed, per indicative planning assumptions provided by DBT²⁹, that it would:

- Take place in financial years 2023/24 and 2024/25, and
- Have a total budget of £1.5 million available for its delivery.

3.2. Overview of the DeepSeer and Nesta Challenge Works recommended Challenge Programme structure and rationale

The Challenge Programme will begin with the **Discovery Phase** (months 1-8) to ensure that the initiative is set up for success in later stages. This phase seeks to identify use case concepts and procure suitable data necessary for prototyping digital Smart Data solutions in the second phase of the Challenge Programme. Given the two distinct objectives of this phase, it is **divided into two parallel and interrelated tracks - the Use Case and Data tracks**. This will allow for the tailoring of engagement activities for different stakeholders and for the benefits and insights of the use cases to feed into and shape the required data needs. The length of this phase is estimated to last 8 months, been based on the workload required. In our experience, the most time-consuming factors are the amount of preparation required for delivering events and recruiting participants ahead of time, which has the biggest impact on this estimated timeline.

The Use Case Track (months 1-8) of the Discovery Phase would start earlier than the Data Track and focus on tech sprints, collaborative events where participants work together and rapidly design solutions to industry challenges, with the aim of identifying aspirational use case concepts to inform and shape the direction of this initiative. The main outputs of this track are the publication of insights from the Tech Sprint discussions, and the presentation of awards recognising compelling cross-sector Smart Data use cases ideas which focus on consumer benefits and explain factors affecting progress to help inform and shape the direction of this initiative (referred to as Discovery Awards). The awards will recognise compelling concepts, and / or raise the profiles of emerging solutions that illustrate the potential that Smart Data can bring. They can also draw out the factors that stand in the way of putting those use cases into practice.

We have received anecdotal information during our research interviews and focus groups, indicating that some data providers might be willing and capable of sharing or synthesising data to facilitate the development of solutions during the Prize Programme. **The Data Track** (months 4-8) of the Discovery Phase has been designed with the aim to interrogate the actual supply of data that may be made available to the Challenge and do so in an open and transparent way that invites participation from the broadest possible pool of data providers.

This Track will deliver an **Expression of Interest (EoI)** in order to identify potential data holders that may be willing to supply cross-sectoral data. This will enable a Delivery Partner executing on the Challenge Programme, acting on behalf of the Challenge sponsor, to procure attractive datasets for the prototyping of cross-sectoral Smart Data solutions in phase 2.

The Use Case and Data Tracks are interrelated. The targeted outputs of the initial two Tech Sprints during the Use Case Track will feed into the Data Track with a view to shaping the structure and supply of attractive data sets that the initiative could procure in advance of the Phase 2's prototyping activities. Specifically, this will help refine which data sources and holders could be prioritised in the Data Track's Eol. Similarly, taking stock of possible data offered by interested data holders who responded to the Eol would help to narrow down the focus of the potential use cases

²⁹ These planning assumptions are indicative only and not intended to be a statement of government policy.

that the Challenge Programme would be well positioned to support in the second phase. Synthetic datasets could also be explored at this point to fill in any gaps in the data on offer.

The Go / No-Go Review Point would happen immediately after the Discovery Phase (month 9) to review the outputs and lessons learned from Phase 1 and assess whether the initiative is set up for success and likely to deliver value if the Challenge Programme progresses to the cross-sectoral Smart Data prototyping activities in Phase 2. If compelling cross-sector use cases and/or suitable data have not been identified by this point, the Challenge Programme Delivery Partner and sponsor could choose to wind down the programme at this stage and focus on taking stock of lessons generated by the Challenge Programme to date with a goal of informing the UK government's Smart Data policy positions. We understand 'compelling' use cases as use cases that innovators would be interested in developing, that align with Gov't priorities at the time and that are likely to deliver meaningful benefits to consumers were they to be brought to market. Acquiring 'suitable' amounts of data means that there is enough of it, and is properly structured, to enable innovators to prototype and build solutions on it that best approximate real-world scenarios. We recommend that this phase should not take longer than a month to keep the momentum going, but it will be for DBT to decide on the details of the review process and the time it requires.

The review point was introduced as a mitigation strategy to maximise value for money even if the market conditions in which the Prize Programme operates would turn out to be not conducive for innovation.

The second **Prototyping Phase** (months 10-24) seeks to support a cohort of ten innovator groups to develop use case concepts into functional prototype offerings. Innovators would be provided with a grant and access to a data sandbox and would be competing for the final prize. This phase would be refined in light of the insights from the Discovery Phase.

The choice of selecting ten innovators to enter the competition balances several factors.

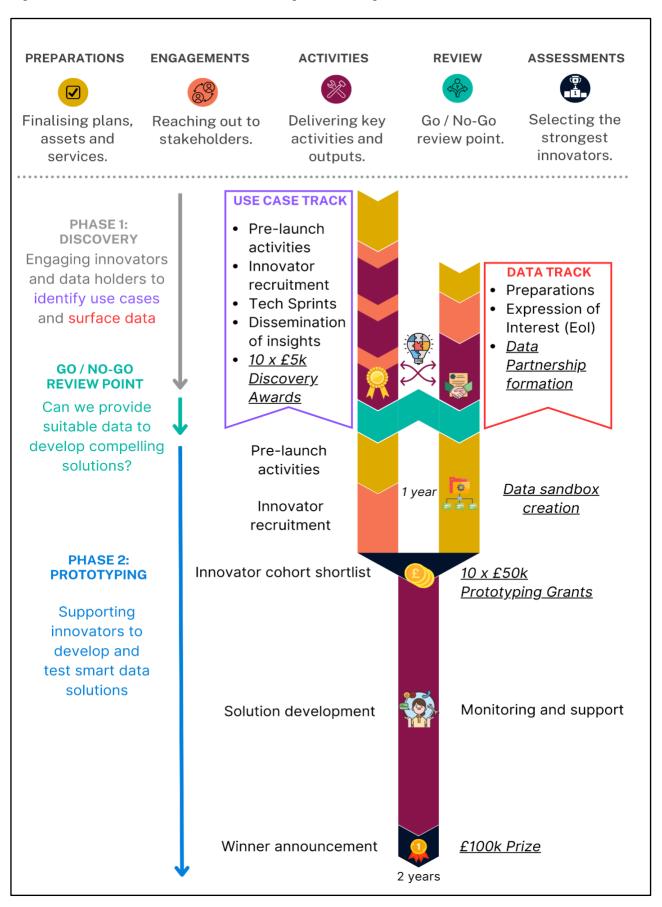
- 1) Quality of entrants. On average, most entrants will be of average quality, with some being poor and some being exceptional. The larger the initial pool of entrants, the higher the chances of this Prototyping Phase supporting more high-quality solution(s). Going below ten entrants reduces the chances of success. Unfortunately, factors relating the availability of funds and the scale of financial incentives prevent us from recommending that more than 10 entrants should be supported in the competition.
- 2) **Availability of funds**. When modelling the indicative budget, we could not allocate more than £500,000 for the prototyping grants due to other financial needs of the project. This restricts the total amount of money that can be given out as grants to innovators.
- 3) **Scale of financial incentives.** The scale of incentives should be sufficient to motivate and attract high-quality entrants. The prototyping grants are meant to cover only part of costs associated with development but need to be attractive enough to make participation worthwhile for the duration of the Prototyping Phase. Based on our past experience and analysis of similar programmes, such as the Open Up Challenges, we proposed £50,000 for prototyping grants and £100,000 for the final winner (as a matter of convention, final prizes are larger than prototyping grants). These figures were further tested in interviews and did not raise concerns among interviewees. This may be due to the Challenge Programme promising exclusive access to datasets and an early mover advantage to participants, which is a far greater incentive than the financial rewards on offer.

The timing of the phase has been estimated to last 15 months. Two months of pre-launch activities are required to finalise the design based on insights from the discovery phase and action any decisions made by DBT during the review point. Additionally, there are two assessment stages (innovator shortlist and winner selection). Each assessment takes a month and is a critical point in the process where assessors analyse the entries and judging panels of independent judges come together to award the prize funds. These timings are based on our experience of running assessment processes and we consider these adequate, if not conservative, estimates. Shortening these timings would be detrimental to the quality of the delivery process and judging proceedings. Nine months were allocated to the solution development period which is sufficient to produce a

prototype of a solution and is comparable to similar initiatives of this kind. Feedback on the length of the development period by interview participants was mixed, but in our experience, shortening the development phase poses far greater risks to the success of the initiative than extending it, especially given the pioneering nature of the solutions being developed. Therefore, we advise keeping to the nine-month period if the overall timeline allows for it.

Figure 5, below, illustrates the proposed Challenge Prize Programme structure and activities. These are explained in more detail in the following text.

Figure 5. Outline of the Smart Data Challenge Prize Programme structure and activities



3.3. Phase 1: Discovery (months 1-8)

Discovery Phase Objectives:

The objective of the Discovery phase is to understand the art of the possible for cross-sector Smart Data use cases in the UK and procure necessary data assets for prototyping digital Smart Data solutions. Insights from the Discovery phase will be used to refine the next phase of this Challenge Programme.

Discovery Phase Activities:

After initial two months of preparation (details of which are covered later in this section), the Discovery phase will launch and consist of the following activities and deliverables taking place over a 6-month period:

- Communication campaign During the Discovery Phase of the Challenge Programme, a communication campaign would run concurrently with other activities. The goal of this campaign is to stimulate interest in the initiative and recruit stakeholders with potential for high-calibre contributions to the Challenge Programme (details on marketing and communications activities can be found in Section 3.8).
- Tracks The Discovery phase would be divided into separate engagement tracks focusing on the
 delivery of either use cases or data outputs. Insights from both tracks will be consolidated and
 disseminated publicly through social media, grey literature and inform government thinking. These
 insights include data availability concerns, incentives for data sharing, which use cases are
 considered compelling by market participants, and overall lessons about barriers to Smart Data.
 These insights will be also used to enrich and finalise the framing of the second (prototyping) phase
 of the Challenge Programme.

Months	Use Case Track This track would engage innovators and key stakeholders to identify detailed crosssector Smart Data use cases that would create value for consumers and be compelling for innovators to develop.	Data Track This track would engage data holders and intermediaries within the private and public sectors who could make data available for innovators in Phase 2, and are in possession of consumer consent that would be necessary to make this happen. Opportunities would be explored for procuring or otherwise acquiring anonymised data sets modelled on real data, as well as tailor-made synthetic datasets that would be shared with innovators within a secure data sandbox environment in the next phase. The Data Track would begin soon after the first Tech Sprint in the Use Case Track, to incorporate emerging thinking on required data types, potential sources or partners and accessibility.
1	Pre-launch activities - initial preparation stage of finalising branding and	
2	communications campaign, creating website assets and materials, procuring platforms and support providers and preparation of engagement events. By completing these pre-launch activities, the Prize Programme will be well-positioned for a successful	

	launch and effective engagement with potential participants and stakeholders.		
3	Tech Sprints - the main activities on the use case track are Tech Sprints, collaborative events where participants ideate and rapidly design technology solutions. The Challenge Programme would aim to hold three Tech Sprints centred around specific themes, such as a cross-sector challenge (e.g. cost of living) or a sector-specific opportunity (e.g. efficient home energy management). Each subsequent Tech Sprint will take account of opportunities, barriers and lessons learned in earlier sprints to refine the topic and	Preparations - preparation stage using emerging insights from the Tech Sprint of the Use Case Track to help refine which data sources and holders should be prioritised and engaged in the Data Track. These insights will be reflected in the design of the upcoming activities, including website assets, materials, and preparation of engagement events.	
4		Expression of Interest (EoI) - the main engagement activity of the Data Track. Potential data holders and intermediaries would be invited to express interest in providing data for the second (prototyping) phase of the Challenge Programme. The EoI would outline their offer and the needs and conditions that	
5	content of the next event. The Tech Sprints would be an additional platform for allowing market participants to engage with		
6	regulators and public bodies to align the Challenge Programme with government priorities at the time, including the National Data Strategy. Having three events will allow the Delivery Partner and sponsor (DBT) to explore enough breadth of topics to improve their chances of finding a successful topic for a Challenge Prize. Specifically, this will also provide the Delivery Partner and sponsor with two opportunities to act on feedback from previous events and pivot the Smart Data discovery activities to increase our chances of refining the Phase 2 prototyping towards a successful outcome.		
7		would form the starting point of procurement negotiations with the interested party.	
8		Ideally, the data procured during the Eol process will facilitate the creation of compelling cross-sector Smart Data use cases that leverage data from multiple sources.	

Discovery Phase Incentives:

The primary impetus for actively participating in the discovery phase is to effectively shape the subsequent phase of the initiative by assisting DBT in determining which Smart Data use cases and sectors warrant prioritisation. To help with this, the Challenge Programme would additionally offer awards for innovators and financial incentives foster opportunities for data partnerships.

Discovery Awards (10 x £5,000) - alongside the Tech Sprints during the Use Case track, innovators would be incentivised to submit detailed concepts of cross-sector Smart Data use cases (focusing on consumer benefits, and factors affecting progress) to help inform and shape the direction of this initiative and a chance of winning a Discovery Award (see Section 3.7 for details on the Assessment Criteria). These detailed concepts would likely include the following types of attributes that would enable the Delivery Partner to assess the potential attractiveness and feasibility of the concept: types or segments of customers focussed on as part of the concept, customer pain points that the use case would address, what benefits come from addressing those pain points, the nature of the solution the team would prototype and develop, key resources required to bring this solution market, channels through which the team would engage with customer segments, barriers to successfully launching the use case, data or other requirements, risks and mitigation considerations.

The Awards would recognise compelling concepts, or raise the profile of emerging solutions, that illustrate the potential that Smart Data can bring but also seek to draw out the factors that stand in the way of putting those use cases into practice.

We propose awards of £5,000 to winners for the following reasons.

- There are significant amplitudes of awards for tech sprints and related hackathons. These range from no financial rewards to modest cash prizes (and occasionally more). Given the effort required, we believe that the amount presented here is a reasonable incentive, which would attract high-quality participants and use cases.
- 2) We anticipate many people with the knowledge and experience required to produce an insightful entry could be working in well-paid sectors associated with Smart Data, such as the technology sector. We believe that £5,000 is a significant sum that can provide motivation and recognition to people from across industries.
- 3) We believe that the amount is reasonable and feasible to allocate within the project's budget constraints and is an order of magnitude smaller than grants and the final prize. It allows multiple awards to be given out, encouraging more participants to engage and compete.
- **Data Partner Incentives** The EoI process will culminate in the formation of partnerships with selected data holders and intermediaries who are willing to share their data.

Ideally, the Challenge Programme budget would have ring-fenced funds for procuring this data from partners to allow them to recover costs, or supporting data holders who lack the technical know-how to mobilise data. Data partnerships could also be beneficial for stakeholders in gaining insights into how their data can be used to create new services and improve existing ones.

The selection of partnerships will be based on factors such as the market appetite for this data, value for money of the final EoI offer, whether the data can be made in time for Phase 2 and within the allocated budget for data procurement along with other potential factors that the Delivery Partner may decide on during the delivery itself.

Numerous concerns were raised across all research activities, suggesting that we can anticipate limited interest in engaging with the Eol due to the current market incentive structures for data sharing (see Section 3.11 for detail on risks and risk mitigations). However, some market actors who find themselves in unique circumstances may consider taking part. For example:

- Data aggregators and intermediaries³⁰ whose business models include building novel services on top of the databases they hold may be interested in promoting innovation.
- Forward-looking corporations may see the value in acting as first movers or early adopters of Smart Data applications in their industries. This may lead to strategically sharing some datasets to enable visibility on how the market may develop, the capacity to engage with potential innovators or regulators as part of the Programme or other strategic considerations the details of which may not be readily available for outside assessment.
- Public institutions inspired by the UK's National Data Strategy and who are willing to share
 and combine data to improve public services may see this as an opportunity to access
 support in mobilising data by taking part in the Challenge Programme.

3.4. Go / No-Go: Review Point (month 9)

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sources and provide it to marketers looking for specific demographic data.

30 Data aggregators and intermediaries are companies or organisations that collect, organise, and distribute data from various sources. Data aggregators collect data from multiple sources and combine it into a comprehensive database. They can collect data from various sources, such as public records, social media platforms, and other sources. Data intermediaries, on the other hand, are companies that facilitate the exchange of data between two parties. They typically operate as a middleman between data providers and data consumers. For example, a data intermediary might collect data from various

The objective of the Review Point is to allow the Department for Business and Trade to review the outputs and progress of phase 1 to decide if the initiative should proceed into the second phase and begin data acquisition and sandbox development along with prototyping cross-sector Smart Data solutions.

Review Point Activities:

The Delivery Partner will work together with DBT to assess whether:

- an attractive and sufficiently rich data set can be procured in time, and
- there are clear signals of innovator appetite to prototype compelling Smart Data solutions.

If DBT decides that the Challenge should proceed to the next phase, the Data Partnerships negotiated in Phase 1 would receive the green light to proceed, and work on creating the data sandbox would commence.

If Phase 1 is not judged to be successful at delivering sufficiently attractive or compelling use case concepts and data outputs, the Go / No Go point would enable the Delivery Partner and Challenge sponsor to close the Challenge Programme and not progress to the Phase 2 prototyping activities. The lessons from this scenario will be dissected to understand what this means for the current state of the Smart Data landscape in the UK and aim to inform future policy. DBT may consider revisiting the Phase 2 activities at a more suitable time in the future, e.g. when the policy and data scheme landscapes are more mature. Should Phase 2 not progress, the Delivery Partner and sponsor would benefit from gathering data from participants to understand what worked well and what hurdles remained for those teams with respect to conceptualising or building cross-sectoral Smart Data solutions.

3.5. Phase 2: Prototyping (months 10-24)

Prototyping Phase Objectives:

The objective of the Prototyping Phase is to recruit top innovators and provide them with access to grants, data and other non-financial support to help with prototype and test cross-sector digital Smart Data solutions.

Prototyping Phase Activities:

The Prototyping phase will launch after an initial two months of refinement, preparation, and actioning the decisions made during the Review Point. Based on our experience of delivering challenge prizes, we estimate that this phase will take place 13 months from launch, during which shortlisted innovators will have access to a data sandbox, a grant and other non-financial support to prototype and test their Smart Data solutions. Once the prototyping phase is complete, the best-performing team will be selected as the winner of the competition and awarded with a prize. The rationale for having one prize in a challenge prize is to create a sense of competition and to motivate participants to strive for excellence. Furthermore, having one prize can increase the perceived value of the competition and the prize itself. A single prize can create a sense of exclusivity and prestige, and can motivate participants to invest more time, effort, and resources into their entry. Runner-up prizes could be considered if DBT sees value in recognising more entrants and are willing to increase the budget to accommodate for these additional prizes.

• **Pre-launch activities** (months 10-11): The Prototyping phase will involve extensive preparations such as updating of branding and communications campaign, creation of new website assets, innovator handbook, assessment guidance, procuring platforms and support providers, preparation of events, and more. The goal is to create a conducive environment where innovators can thrive and bring their best ideas to the table.

- Challenge Statement the specific focus area, call to innovators and competition design elements will be refined based on insights from Phase 1 and strategic decisions made by DBT during the Review Point.
- Innovator Recruitment (months 12-13) in our experience of delivering challenge prizes, engaging innovators are required to inform and excite the market participants about this opportunity. Our observations suggest that a proactive approach to innovator recruitment helps to increase the diversity of innovators. This can be achieved by identifying diverse marketing channels and by targeted outreach of potential entrants, providing support to help them understand the requirements of the competition, and offering guidance on how to develop a compelling competition entry.

Participation in the Discovery Phase is not a requirement for eligibility in this phase.

• Innovator Cohort selection (month 14) - innovators will be invited to enter the competition by submitting an entry form with their proposed cross-sector Smart Data use case, a development plan and insights into what would have to be true to make it possible from the perspective of the wider Smart Data ecosystem in the UK. A cohort of 10 innovator groups will be shortlisted to take part in the competition. Please see Section 3.9for details on the Judging Panel.

Prototyping Phase Incentives:

The Prototyping Phase will provide a range of financial and non-financial support to entice innovators and help with prototyping of digital cross-sector Smart Data solutions:

- Data Sandbox data acquired in Phase 1 will be made available within a secure data sandbox in time for the start of the Prototyping phase. A Technical Partner would be recruited to support the Delivery Partner in order to aid the delivery of the data sandbox and supporting innovators in accessing it.
- **Prototyping Grants** (10 x £50,000) and other support the innovator cohort will be awarded £50,000 each, access to a data sandbox with the procured data, and other possible non-financial support that will be identified as crucial during the Tech Sprint and which the Challenge Programme may consider providing.
- Prototyping support (months 15-23) the key stage of the Prototyping Phase. During the 9 months
 after being awarded the prototyping grants, the Innovator Cohort would develop and test their Smart
 Data use cases to create prototypes of digital Smart Data solutions. The Challenge Programme will
 monitor progress and provide support. The monitoring activities will generate insight to inform DBT's
 policy considerations and future evaluation activities.
- **Final Prize** (£100,000, month 24) the winner of the Challenge Prize will be chosen based on their development progress and the quality of their Smart Data solution prototype. See the Section 3.7 for detail on assessment criteria.

Feedback on Model and Design Adjustments

Phase 3 of this research and design analysis project involved testing and refining the Challenge Programme described above through feedback interviews with a targeted group of representatives from large membership organisations. The goal was to quickly assess the attractiveness and suitability of the design to a wide portfolio of potential participants.

Five interviews were conducted, and all interviewees expressed positive views towards the initiative. However, concerns and suggestions were raised, which were carefully considered and, where appropriate as judged by our team, incorporated.

Overall Structure:

The participants praised the two-phase approach, stating that it struck a good balance of activities. They also welcomed creating opportunities for discussion and shaping policy. A member of the fintech industry referred to it as a "good model for establishing the known unknowns." One

suggestion made by a financial data expert was to consider pausing the initiative (instead of terminating it) until the landscape is more favourable to Smart Data innovation if DBT does not decide to proceed to Phase 2.

Discovery Phase

The Discovery Phase was seen as crucial for creating clarity and identifying potential use cases and data. The initial design of the proposed Challenge Programme model assumed that both use case and data tracks begin simultaneously. However, we incorporated a suggestion from one of the participants to attempt to stagger the start of the two tracks. This has been done so that the insights from the first two Tech Sprint of the Use Case Track can inform the priorities the Data Track, e.g. using emerging articulation of problems and uses cases to begin mapping the data value chain and identifying data sources that could be prioritised in the Data Track's Expression of Interest and the partner selection process.

Use Case Track

A representative of the technology sector concluded that the Use Case Track is a good way of demonstrating to ministers that "this is what we could get if these things were in place". The Tech sprints were seen as an effective way of generating and sifting through ideas. The cross-sector data expert emphasised the opportunity for this track to clearly articulate the problem, define users, and identify their needs, leading to specific data needs.

Data Track

A startup expert expressed their appreciation for explicitly articulating the need for data. However, this individual was sceptical about "why anybody would be proactively exposing their proprietary datasets". Similar voices were raised by the fintech industry and wider technology sector representatives, suggesting that it may be challenging to acquire compelling datasets. We were informed that data holders are likely to ask for a cost/benefit analysis before considering providing data. Some suggested that procuring data for this initiative is not the right choice and that it should be mandated instead (a suggestion raised before in the interviews and focus groups), but it was also recognised that this is a high-friction, long-term path to acquiring data and that the time associated with mandates is both uncertain and likely lengthy. Risk mitigation to problems with acquiring data that were proposed by participants included mobilising governmental datasets (such as NHS data) and investing in synthetic data sets. Legislation is outside of the tool sets available to us as designers of this Challenge Programme, but we agree with other suggestions of creating an inclusive Data Track process that invites government datasets, as well as considers exploring synthetic data after taking stock of data offered through the Expression of Interest path. We recognise that interest in the Data Track may well be limited overall. However, we believe that the Eol process is worth keeping as we have learned that certain data holders may be interested in taking part and this should be interrogated further through the EoI and there is utility in testing the market to see what data may be forthcoming, in what structure and with requirements attached.

Marketing, Communications, and Networking

A representative of the fintech industry stressed that this initiative could act as a networking platform to help startups connect with larger companies. Also, a financial data expert stressed the opportunity of a communication campaign to help educate market actors about the Smart Data opportunity and their potential role in making it happen. Other interviewees made similar comments on the importance of marketing and promotion for the success of this initiative. In particular, a cross-sector data expert concluded that the "language here is a pain" in reference to how the market actors might perceive this initiative. Specifically, "Smart Data" has a broader dimension than the consumer data dimension that this initiative is limited to, and it needs to be well-communicated to be clear to potential participants. The main feedback on messaging was that it should be focusing on "demonstrating the art of the possible" and visualising the different kinds of incentives this initiative creates to "widen the net of organisations that will find this attractive".

These incentives include the opportunity to be ahead of the regulatory curve, showcase their work, grow their exposure and make connections. In particular, a fintech industry expert saw the Challenge Prize communication campaign as a valuable platform for digital startups to raise their credibility by showing that they are aligning with government priorities.

Assessment and Judging

A cross-sector data expert emphasised the importance of prioritising consumer impact over innovation. Other interviewees made insightful suggestions to ensure that the Judging Panel is balanced and diverse. In particular, to include industry and customer champion voices on the Judging Panel and to not overweight the Venture Capital voice, as some tech competitions sometimes do.

Government Alignment

Alignment with UK government priorities was deemed necessary to focus the initiative and increase its chances of synergy with other data strategies and legislation, such as the National Data Strategy. Topics provided as examples were cost of living, levelling up, modernising the NHS, and working towards net zero carbon emissions.

Incentives

A spokesperson for the technology sector highlighted that tech firms are not homogenous and that financial incentives will be more attractive for some than others. However, competitions often require investing resources which may be prohibitive for smaller organisations. Therefore, the grants this initiative provides will be particularly valuable to those participants that might otherwise struggle to compete.

Timing

According to the experts we spoke to with extensive experience in startups and consumer data, there is a need to be more ambitious with timelines. They suggest that a two-year timeline may be too lengthy and slow to act. Although the possibility of expediting the process by cutting corners has been explored, this approach has been weighed against other suggestions mentioned above, which insist on delivering thorough work, addressing knowledge gaps and delivering ambitious outputs described above. We believe that it would be counterproductive to the success of the initiative to attempt to save time by slimming down activities. However, some interviewees believe that it may be possible to shorten the development time from nine months to six months. It is our view that that shortening the development phase could pose far greater risks to the success of the initiative than extending it, particularly considering the pioneering nature of the solutions being developed along with the data procurement timelines that would be associated with the Programme. Therefore, we have recommended to stick to the nine-month timeline if the overall timeline allows for it.

3.6. Eligibility criteria

Eligibility criteria are an essential component of any challenge prize, representing a set of requirements that entrants must meet in order to participate. These criteria must be established once the design of the Prototyping Phase has been refined and finalised at the end of Phase 1, taking into account both the specific needs of the initiative that may arise in that time and the legal requirements of the institution responsible for administering the funds.

To ensure that the eligibility criteria accurately reflect the goals and objectives of the Prototyping Phase, we recommend a thorough and thoughtful approach to their development. This may involve validation with a range of stakeholders during the Tech Sprints in Phase 1.

Furthermore, we highly recommend that DBT seek the guidance of its commercial team on legal matters, as needed, to ensure that the final set of eligibility criteria conforms to all relevant regulations and requirements related to the source of the prize funds and their intended recipients. This will help to ensure that the eligibility criteria are fully aligned with the overarching goals of the Prototyping Phase and are in compliance with all applicable laws and regulations.

Based on experience, we suggest a set of initial eligibility criteria for DBTs consideration, that may be applicable to the Prototyping Phase of the proposed Challenge Programme.

- 1) **Legal entity**: All entrants must be a legally registered entity in the United Kingdom. This can include businesses, non-profit organisations, academic institutions, or any other entity that is legally recognized in the UK.
- 2) **Individual or partnership**: The Challenge Prize is open to both individual entrants and partnerships. Partnerships can include any combination of individuals, businesses, non-profit organisations, or academic institutions.
- 3) **Novelty**: Entrants must propose novel and innovative ideas and concepts related to Smart Data that are currently not being done or explored in depth.
- 4) **Intellectual property**: Entrants must have the right to use any intellectual property that is included in their proposal. This includes any proprietary technology, algorithms, software, or other materials that may be integral to their idea or concept.
- 5) **Consent for Smart Data use**: If the proposal involves the use of data, the entrant must have the appropriate consent to use the data for its intended purpose. This includes any data privacy or security regulations that may apply to the use of personal data.

3.7. Assessment criteria

The assessment criteria for a challenge prize are a set of predefined and transparent criteria that an independent Judging Panel will use to evaluate the proposals submitted by the entrants at different phases of the competition.

In our experience, assessment criteria are crucial in any competition or evaluation process, as they provide a transparent, fair and objective framework for judging entries. Moreover, the assessment criteria provide clear guidelines for entrants to follow when submitting their proposals. This helps to ensure that proposals are aligned with the goals and objectives of a challenge prize, and that they meet the minimum standards required to be considered for assessment. By setting specific criteria, a challenge prize also encourages entrants to think more deeply about their proposals and to consider all the factors that will contribute to their success.

The suggested criteria below have been formulated to guide the selection of use case proposals that have the potential to generate substantial benefits for consumers, as well as present a clear development and deployment roadmap towards a sustainable business model.

Additionally, a crucial objective for this Challenge Programme is to identify policy intelligence to facilitate the resolution of the cross-sectoral Smart Data obstacles that would need to be overcome to achieve the desired objectives.

The suggested assessment criteria are derived based on our understanding of the overall objectives that DBT would be seeking to achieve in undertaking a challenge prize. We propose that there are distinct assessment criteria for the two proposed Phases, reflecting the different objectives of the two Phases. In our experience, challenge prize assessment criteria are normally subject to significant iteration and development in collaboration with the challenge prize sponsor, to ensure that they properly reflect the sponsor's objectives for the prize.

In the Discovery Phase, the assessment criteria will be used to select and award the Discovery Awards. Suggested criteria are:

- Consumer benefits This criterion evaluates the potential benefits that the proposed cross-sector Smart Data use case could provide to consumers. The proposal should clearly outline how Smart Data could improve the lives of consumers and create value for them.
- 2) **Factors affecting progress** This criterion evaluates the innovator's understanding of what would be required to develop the proposed cross-sector Smart Data use cases, including the identification of any barriers, enablers, and risks that may affect the progress of the proposal.

In the Prototyping Phase, the assessment criteria will be used to select and award the prototyping grants to the cohort of innovators and the final prize. The assessment criteria and detailed assessment guidance documents would be refined based on insights derived from Phase 1.

- Consumer benefits This criterion evaluates the potential benefits that the proposed cross-sector Smart Data use case could provide to consumers. The proposal should clearly outline how Smart Data could improve the lives of consumers and create value for them.
- 2) Factors affecting progress This criterion evaluates the innovator's understanding of what would be required to develop the proposed cross-sector Smart Data use cases, including the identification of any barriers, enablers, and risks cutting across regulatory, technical or other considerations that may affect the progress of the proposal.
- 3) **Business model** This criterion evaluates the scalability and sustainability of the proposed Smart Data use case. The proposal should demonstrate a clear and viable business model that can make the solution sustainable and has the potential for significant market penetration.
- 4) **User experience and acquisition** This criterion evaluates the strategy proposed by the entrant for understanding the needs of potential users and attracting their business. The proposal should provide clear and comprehensive details on how the innovation will be marketed to the target audience and how it will create a positive user experience.
- 5) **Development and capacity** This criterion assesses the quality of plans or outputs at various stages of the development cycle, including the initial proposal submitted by entrants and the final iteration of their digital solution prototype. The proposal should outline a clear and realistic development plan that includes timelines, milestones, and budget. Additionally, the proposal should demonstrate that the team possesses the necessary expertise and capacity to execute the proposed Smart Data use case.

3.8. Marketing and communications

Marketing and communications strategy

In our experience, marketing and communications are key to the success of a challenge prize. At a minimum, high quality participants need to hear about the opportunity presented by the prize and be convinced to dedicate effort to participating. However, a prize also presents an opportunity to generate much broader interest and engagement in the Smart Data opportunity in support of wider policy goals.

Key activities to be undertaken in pre-launch activities in Phase 1 will include the development of prize branding and a Phase 1 communications plan. This includes creating a strong visual identity for the challenge prize, developing compelling messaging that clearly communicates the benefits of the initiative to potential participants and wider stakeholders and that generates interest and excitement, and a plan for a campaign that will reach and convince relevant audiences to engage. Challenge prize campaigns, in our experience, should leverage a range of communication channels such as social media, targeted online advertising, events, and partnerships with trusted intermediaries and stakeholders that can amplify and convincingly deliver key elements of the

communications plan to the Challenge's desired target audience members. Varied communication channels would help to increase the reach of the initiative and target more diverse innovators.

A Phase 2 communications plan will need to be developed as part of the pre-launch activities for Phase 2, and this plan will build on communications activity undertaken in Phase 1. Should Phase 2 proceed as we envisage here, we believe that the data assets available to participants and financial rewards on offer would be central to the messaging.

It will be for DBT to determine to what extent the communications plan should reach beyond the population of potential challenge prize participants to the wider ecosystem of stakeholders with an interest in Smart Data. But we note that the communications campaign for the prize is also an opportunity to stimulate interest and curiosity more broadly in the opportunities that Smart Data could enable, as well as to encourage direct engagement with the challenge prize by potential participants.

Additional Challenge Programme communications assets

In our experience, other key pre-launch activities include the creation of a **challenge prize website assets and an innovator handbook** setting out for potential applicants to the challenge in one place all the information they need to know. The challenge prize should have a dedicated website that provides clear, concise and authoritative information about the challenge prize, including explanations of the application process, eligibility criteria, and any other important details that potential participants may need to know or that will be communicated during the challenge process.

Systems and infrastructure

In addition, based on our experience, it is crucial to stand up the necessary **application and communications systems** to ensure that the challenge prize runs smoothly and efficiently. This may include software platforms for receiving applications, for communicating with applicants, and for managing the application assessment and judging process.

Events

Pre-launch activities may also involve the preparation of **events such as a launch event, information sessions, and networking events**. In our experience, participants derive value from these events for the following reasons. These events provide opportunities for potential participants to learn more about the challenge prize, meet other innovators and stakeholders, and ask questions about the initiative. Events will also enable participants to share their perspectives, exchange ideas and network with other innovators, data providers, and policymakers. Such events help to build a sense of community and collaboration around the challenge prize, further encouraging engagement and participation.

3.9. Governance structure and accountabilities

The success of the proposed Challenge Programme will be enabled by a robust governance structure, with clarity about the responsibilities of different agents involved in the Programme and the relationships of accountability between these agents. A clear governance model that draws on various types of experience described below will enable the Programme to operate smoothly and transparently. This section details a potential governance and accountability structure for the Programme. This is illustrated in Figure 6 below.

Challenge Sponsor

Evaluation Partner

Delivery Partner

Judging Panel

Support Providers

Data Sandbox
Partner

Figure 6 - Smart Data Challenge Prize Programme governance structure

Steering Group

DBT, as Challenge Sponsor, may wish to consider appointing a Steering Group, to provide strategic guidance to the Challenge Programme. This Steering Group may include representation from key Smart Data stakeholders from outside the department, including regulators and representatives from the digital technology sector. It would be consulted periodically (for example, either every few months or at key moments during Challenge Programme execution). We envisage that the Steering Group's guidance would not be binding on DBT, but this would provide a useful channel for formally engaging stakeholders and incorporating their insight into decision making during Programme delivery.

Challenge Sponsor

DBT will act as the Challenge Sponsor and hold the overarching responsibility for the proposed Challenge Programme. This will include setting the strategic direction and ensuring the programme's alignment with emerging UK government priorities, taking strategic decisions as required, and providing oversight of the Delivery Partner.

Delivery Partner

The Delivery Partner will be responsible for the design and execution of the Challenge, contracted by DBT. The Delivery Partner will be responsible for the day-to-day management of all activities required for execution of the Challenge Programme, including developing and leading assessment processes, managing stakeholders and innovators, and communications and messaging. The Delivery Partner will be accountable to the Challenge Sponsor for Programme design and execution.

Evaluation Partner

As described below, the Challenge Sponsor may wish to appoint an independent third party evaluator, which will be accountable to the Challenge Sponsor for delivery of evaluation services in relation to the Challenge Programme.

Judging Panel

The Judging Panel will be responsible for applying the assessment criteria to scoring entries in Phase 2 of the Challenge Programme and determining the ultimate winners of the Challenge Programme. Our experience is that the Panel should be composed of a range of individuals having relevant experience and collectively covering all the kinds of expertise that will be necessary for making robust judgements in relation to competitive aspects of the Programme.

For this Programme we would expect a Judging Panel to include tech start-up representatives, consumer representatives, data holders and investors, and potentially regulators with an interest in Smart Data. The specific composition of the Panel should be determined by incorporating insight from Phase 1 and in our experience would typically be agreed in consultation with the Challenge Sponsor.

The Delivery Partner will be responsible for coordinating the work of the Judging Panel, but the Judging Panel should take its decisions independently of the Delivery Partner and of the Challenge Sponsor to ensure impartiality and fairness in the selection process. The Judging Panel's independence is essential to ensure that the best solutions are selected based on their merit, without any bias or influence from the Delivery Partner or Challenge Sponsor. This helps to maintain the integrity of the challenge prize and ensure that it is perceived as a transparent and credible initiative. By ensuring that the Judging Panel operates independently, the Delivery Partner can demonstrate that they are committed to promoting a fair and unbiased selection process, which is key to achieving the best results for the challenge prize. The potential for actual or perceived conflicts of interest with Panel members can be significant, as individuals with relevant expertise often also have a commercial interest in the kinds of solutions that might be developed through the initiative. Any actual or perceived conflicts need to be mitigated through methods such as declaration of potential conflicts from the outset and recusal - where relevant - in scoring certain participants or assessing data partners, suppliers and other participants.

Data Sandbox Partner

The Smart Data Sandbox Partner will be responsible for creating the data sandbox, helping data partners share their data into the data sandbox, and supporting innovators during the initiative with accessing data. The Partner will work closely with the Delivery Partner to ensure that the data sandbox supports the challenge prize's objectives and is a valuable and useful asset for participants in Phase 2 of the Challenge Programme.

Support Providers

The Delivery Partner will engage support providers who will be responsible for providing non-financial support to participants in Phase 2 of the Challenge Programme, depending on needs identified in Phase 1 and where such support aligns with the Programme's direction and will make a material contribution to achievement of its objectives. These support providers will be accountable to the Delivery Partner for the provision of appropriate and high-quality support participants. Support services may include business model mentorship, user experience research and design, branding and communication strategy, and access to networks and resources.

3.10. Learning and evaluation

DBT has specified that, at this initial scoping stage for a possible Smart Data challenge prize, it is seeking conclusions on key considerations regarding a possible monitoring and evaluation approach, and implications for design of the possible challenge prize. DBT envisages that, if it decides to proceed with a challenge prize, a detailed monitoring and evaluation plan would need to be developed and delivered with its chosen Delivery Partner for the challenge prize.

This section provides recommendations on how DBT and its Delivery Partners can generate insight from the proposed Smart Data Challenge Programme for the purpose of evaluating the

initiative's effectiveness in achieving its objectives and to generate other kinds of learning of potential value to DBT as it takes forward the Smart Data agenda.

There is a wide range of potential formal evaluation approaches available. The best approach will depend on practical considerations and constraints as well as on the specific purpose(s) of the learning and evaluation activity that DBT intends and what questions DBT wishes the evaluation to inform or answer and for whom.

We envision that undertaking any formal evaluation of the initiative will require a dedicated analyst or a group of analysts to act as evaluators. To ensure transparency and credibility of the evaluation workstream, we recommend that the evaluation is done independently of the Delivery Partner and the Challenge Sponsor. This could be achieved by bringing in a third party to perform the evaluation or by requesting independent figures to oversee and peer review the evaluation work performed by an in-house resource within the Delivery Partner or provided by the Challenge Sponsor.³¹ Ideally, an evaluator will be involved in the initiative from as early as possible in its evolution, to establish the preferred method(s) of evaluation and so that it can put in place suitable data collection or other information-gathering processes as inputs to the evaluation.

Theory of Change

A first step in the process of establishing a learning and evaluation strategy should be the creation of a Theory of Change (ToC) to capture the theory of how the intervention (in this case the Smart Data Challenge Programme) is expected to work, including the causal chain of events expected to bring about the desired outcomes³², which have been specified by DBT as being to:

- Identify and incentivise the development of a range of new detailed cross-sector use cases for Smart Data.
- Illustrate the potential value of Smart Data and better understand the challenges that would need to be overcome to facilitate cross-sector data sharing.

Creation of the ToC will be helpful in consolidating and communicating the thinking behind the initiative. The challenge Delivery Partner will be expected to consult externally with key stakeholders and iterate further on the ToC in the future, e.g. when creating new strategy and evaluation documents, adding new Delivery Partners to the team, and when new insights become available.

Process, impact and value-for-money evaluations

DBT has expressed potential interest in process, impact and value-for-money evaluations.

Of these methodologies we believe the most practicable and possibly the most useful is likely to be process evaluation, which would build on the ToC and aim to answer questions such as:

- whether an intervention is being implemented as intended;
- whether the design is working;
- what is working more or less well and why;
- how has the context influenced delivery.³³

³¹ HM Treasury (2020) Magenta Book, p.16 & 17

³² HM Treasury (2020) Magenta Book, p.21

³³ HM Treasury (2020) Magenta Book, p.31

Insight into these kinds of questions may be of particular value to DBT as Smart Data policy evolves in the coming years.

A theory-based impact evaluation, "exploring the causal chains thought to bring about change by an intervention," have also be appropriate. The Magenta Book notes that "Theory-based [impact evaluation] methods tend to be particularly suited for the evaluation of complex interventions or simple interventions in complex environments," which we believe would be an appropriate characterization of the challenge prize proposed here.

An example of such a theory-based method which may be appropriate in this case is contribution analysis, described in the Magenta Book as a "step-by-step process used to examine if an intervention has contributed to an observed outcome by exploring a range of evidence for the Theory of Change".³⁶

We believe that experimental and quasi-experimental impact evaluation methods are not feasible for evaluation of the proposed challenge prize, on the basis that there is no practical or acceptable way of establishing a counterfactual in this case. The formula that the outcomes sought from the challenge prize - such as "identifying a range of new detailed cross-sector use cases for Smart Data" - are meaningfully quantifiable. For example, it is not clear how the value of any individual use case developed as the result of the Prize could be meaningfully quantified.

Value-for-money evaluation is undertaken to establish whether an intervention was a good use of resources, for example whether the benefits of the intervention outweighed the costs, potentially in comparison with other means of achieving the same objectives. A significant impediment to undertaking a value-for-money evaluation in this case is that, as noted, quantitative estimates of the benefits of the challenge prize are unlikely to be available, though it may be possible to use outputs from theory-based evaluation as an input to value-for-money evaluation.³⁸

Whichever evaluation approach, or combination of approaches, is taken, evaluation should take into consideration the benefits to different kinds of Smart Data stakeholders, including consumers, Smart Data innovators, data holders, and regulators. These evaluations could help DBT and its Delivery Partners to draw out lessons for future initiatives and ensure that Smart Data policy and initiatives remain grounded in evidence and real-world needs.

Other learning opportunities from the Challenge Prize

The process of designing and delivering our proposed Smart Data Challenge Programme model will create significant opportunities to generate other kinds of useful learning and insight for policymakers, in addition to the kind of information about the Challenge Prize itself that various evaluation methods described above can furnish. This is consistent with the second objective specified by DBT for the Challenge Prize, namely to "Illustrate the potential value of Smart Data and better understand the challenges that would need to be overcome to facilitate cross-sector data sharing".

While we recommend that the formal evaluation should sit with a third party expert evaluator separate from the Prize Delivery Partner, these wider learning opportunities from the prize sit more

³⁴ HM Treasury (2020) Magenta Book, p.43

³⁵ HM Treasury (2020) Magenta Book , p.43

³⁶ HM Treasury (2020) Magenta Book, p.45

³⁷ HM Treasury (2020) Magenta Book, p.46

³⁸ HM Treasury (2020) Magenta Book , p.49: "Without a quantified estimate of the net effect, theory-based methods can be used to assess whether the impact [of the intervention] is likely to be of the size consistent with breaking even."

naturally with the Prize Delivery Partner itself, given that it will be deeply involved in all aspects of the Prize delivery process and will be in constant interaction with the relevant stakeholders.

Because delivery of the Prize requires extensive and regular engagement with Smart Data innovators, data holders, and regulators, the process can generate insights into the potential customer benefits arising from cross-sector Smart Data use cases in the UK, the market appetite for developing these use cases, incentives for sharing data for these purposes, and challenges that need to be overcome to facilitate the creation of cross-sector Smart Data use cases.

At a minimum, the Delivery Partner should be able incorporate brainstorming sessions to reflect on developments of the Challenge Programme during its lifecycle, and provide qualitative observations to inform Smart Data policy discussions and insight into effective approaches to engaging key stakeholders in the future.

The process for capturing these insights should be adaptive and iterative and allow for flexibility and evolution over time. The process should start with a plan for the learning activities that will be undertaken, and the kinds of learning sought with a view to ensuring that the relevant information is collected systematically. Updates to the plan should be made throughout the challenge as learning priorities change, new opportunities to capture insight are developed, and as the Delivery Partner gains a better understanding of the learning needs as the Challenge progresses. The learning plan may involve regular check-ins and feedback loops with key stakeholders, including Smart Data innovators, data holders, regulators, and others involved in the challenge.

Data collection

To ensure the credibility and validity of the collected data and the proposed analysis methods, the evaluator should collaborate closely with the Delivery Partner to ensure that data collection methods proposed are feasible and will yield high quality data. This collaboration will help ensure that the evaluations generate reliable and meaningful insights.

During delivery of the Challenge Programme, the Delivery Partner and evaluator should regularly review the data being collected and the insights gained. This will help to identify any gaps in the learning and evaluation process and allow for adjustments to be made as needed. It will also enable the Delivery Partner to identify any emerging trends or issues that need to be addressed, both during the challenge and in future initiatives.

From our experience, we anticipate that several kinds of data could be collected for the purpose of evaluation:

- 1) Quantitative and qualitative evidence relating to outcomes.
- 2) Data on the challenge participants, including their demographics, and their experiences in the challenge.
- 3) Secondary data sources such as media coverage, social media analytics, and website analytics to gain insights into the broader impact of the challenge on public awareness and understanding of Smart Data.

Example of potential quantitative data collection include:

- Survey data from participating stakeholders at different stages of the challenge, including:
 - Expression of Interest forms filled in by potential Data Partners
 - Tech Sprint participant feedback forms
 - Innovator entry form (both Phase 1 concept awards and Phase 2 prototyping prize)
 - Innovator onboarding survey (Phase 2)
 - Innovator experience (exit) survey (Phase 2)

Assessor and Judges surveys (both Phase 1 concept awards and Phase 2 prototyping prize)

Qualitative data collection may be gathered via:

- · Summary of Tech Sprint discussion insights
- Summary of Data Procurement negotiation insights
- Interviews and/or focus groups with innovators
- Case studies of selected innovators
- Interviews with judges
- Interviews and/or focus groups with other key stakeholders

Additional sources of secondary data will include:

- Information shared by innovators in support of their applications
- Information shared by data holders in support of their expression of interest
- Judges' and reviewers/assessors' scoring sheets
- Participants reports or other reporting required for grant agreements
- Delivery Partner observations

3.11. Risks and risk mitigations for the Discovery and Prototyping Challenge Programme

There are potential risks that may arise when delivering a complex innovation initiative such as the Challenge Programme. This section covers major risks that we have identified during the research phase that pertain to the design of the Challenge Programme or its delivery and for which we have developed corresponding mitigations to address them.

Strategic

Risk: That prize prototypes do not have sufficient relevant datasets on which to build attractive or advanced prototypes

This risk would arise if challenge participants are left to source their own data.

To mitigate this risk, we have integrated a data track in Phase 1 of the selected Challenge. However, this mitigation may not fully address this risk as the data track may not yield sufficiently attractive or actionable data. In addition, we have built in a Go / No Go gate in the Challenge Programme to further mitigate downstream risk associated with insufficient datasets.

Risk: Lack of stakeholder engagement with the initiative.

To mitigate this risk, we propose to implement a comprehensive communications campaign aimed at engaging with innovators, data holders, and other key stakeholders and recruiting them to the initiative. This campaign will be designed to raise awareness of the challenge and its potential benefits, as well as to encourage stakeholders to participate and contribute their expertise.

Risk: The challenge prize may be disconnected from other data initiatives.

To mitigate this risk, we propose to align the Discovery and Prototyping Challenge Prize Programme with government priorities at the time (such as National Data Strategy) and invite regulators from key strategic sectors to participate in the initiative as part of the steering group. This will help ensure that the challenge prize is fully integrated into the broader context of ongoing initiatives and aligned with the government's priorities.

Risk: Uncertainty about Smart Data schemes and regulatory environment hinders the Discovery and Prototyping Challenge Prize Programme's' attractiveness.

This risk is particularly important within Phase I of the Programme, but is true throughout the initiative, and would potentially reduce innovator participation, leading to less high-quality participants or an unwillingness for prospective data partners to engage.

To mitigate this risk, we believe that two important mitigation steps are taken. The first is to include within the Challenge Prize itself an element of a data incentive that would help to overcome potential lack of cross-sectoral Smart Data and may partially overcome uncertainty associated with the existing state of Smart Data Schemes or Trust Frameworks. The second is for DBT to communicate proactively around potentially beneficial - either in the near to medium-terms - developments on the Smart Data front.

Operational and Financial

Risk: Budget required for data acquisition is too low

This risk arises within the data stream where the challenge may be unable to afford the cost of the data it wishes to procure for the challenge thereby jeopardising the capacity for the prototyping phase to move forward.

To mitigate this risk, we have incorporated several mitigation activities. The first is that there is a Go / No Go decision point between the two main phases of the challenge prize. This enables the Challenge sponsor to end the challenge early if data requirements prove too costly. The second is that the design plans allow for a narrow set or type of data to be explored that may reduce costs. A third mitigation option would be for incremental budget to be reserved for data acquisition that can be tapped into where the Delivery Partner and programme sponsor agree it may be appropriate.

Risk: Not enough data or the ideal type of data can be procured in the data track of the Challenge

This risk arises where an insufficient amount of data can be procured, or an insufficiently useful type of data can be procured thereby reducing the potential attractiveness of the Challenge to potential participants.

To mitigate this risk - and on the assumption that budget is not the main constraint – we propose that the Delivery Partner and DBT explore the possibility of filling data gaps with tailor-made synthetic data and ensuring that the use case track and data discovery track are interdependent and sequenced appropriately. This will help ensure that participants have access to the data they need to develop innovative Smart Data solutions while also maintaining data privacy and security. We acknowledge that this approach may still reduce the potential maturity of the prototypes that participant teams may develop in Phase 2. Additionally, the sequencing and interdependence of the use case and data discovery tracks will mean that the programme maximises the insights coming out of both for the benefit of the other and the downstream prototyping activities should those move forward.

Risk: Delivery timing in line with indicative planning assumption timings

This risk arises when potential procurement, legal or other delays, push the delivery phase of the Challenge beyond the indicative planning timeline articulated by DBT.

DBT can mitigate this timing risk by moving quickly to a set of implementation activities following this research and design analysis phase to ensure that there is capacity to deliver the Challenge Programme within the indicated timing window. In our opinion, it will be exceedingly difficult to reduce the overall time available for the proposed model to fewer than approximately 24 months. This is on the grounds that:

- Phase 1 of the Programme, in our judgement, requires at least 8 months for delivery given the activities proposed, and
- Phase 2 requires approximately 15 months once account is taken of time needed for pre-launch
 activities, recruitment and providing adequate time for solution development by participants (9
 months in this design).

It may be possible that the time allocated for solution prototyping for participants could be reduced slightly, but this risks compromising the overall outcomes from the Programme as participants need adequate time to develop and iterate solutions. Further, there may be optimism bias in allocating only one month for the Go / No Go Review Point and it may be prudent to allocate two months for this; this will depend on the process that the Challenge Sponsor intends to follow in the Review Point and the time it needs.

Governance and Stakeholder

Risk: Lack of understanding of Smart Data (or cross-sectoral Smart Data) among potential stakeholders leads to sub-optimal stakeholder or participant engagement

This risk arises when and if DBT's description or conception of Smart Data differs from the market's in such a way that stakeholders believe their own interests do not line up with that of the government's.

To mitigate this risk, we propose two mitigation strategies. The first is to create clear communications materials for potential challenge prize participants to ensure there is clarity around the desired Smart Data attributes relevant for the challenge. The second is to communicate frequently through the formal governance system of the challenge itself to key stakeholders, such as industry bodies and the like, ensuring buy-in and a capacity to amplify DBT's definitions with a wider stakeholder set.

Legal

Risk: Data sharing generates potential legal liability risk for data partners

This risk arises when there is lack of clarity around where liability rests with respect to any procured or stored data, thereby reducing willingness of data partners or sandbox providers to have the Programme procure or store data.

To mitigate this risk, we suggest several mitigation activities. The first is that DBT liaises with the Department's internal stakeholders - such as relevant commercial and legal teams - to determine suitable clarity around liability protections. It may be relevant for the Department to reference the legal considerations that arose with Open Banking as this may prove instructive for the Programme's data sharing and storage considerations. The second mitigation is that the Programme design itself incorporates a timing buffer enabling legal matters to be resolved in the data track.

3.12. To what extent is the Challenge Programme likely to deliver value for money?

One of the overarching questions which DBT set for this research and design project is: to what extent is the preferred challenge prize design and delivery model likely to deliver value for money? In this section we consider this question. We propose, based on HM Treasury's Magenta Book, that "value for money" is understood as meaning that the Challenge Programme is a good use of resources and that the benefits of the intervention outweigh the costs.³⁹

As described in Section 2.3 there are particular risks and value for money considerations associated with undertaking a Smart Data challenge prize at present, given uncertainty about the legal and regulatory environment for Smart Data in the UK. We have also stressed the importance of data access for a successful prize, and uncertainty about whether such data can be acquired. The proposed Challenge Programme has been designed to address these issues.

The crucial feature of the Challenge Programme design in this regard is its structuring in two Phases, with a Go / No Go Review Point before proceeding to the Prototyping Phase. The expected value for money of the Prototyping Phase is conditional on successful outcomes from the Discovery Phase, and the Challenge Programme would only proceed to the Prototyping Phase conditional on these outcomes. There are therefore two scenarios to consider:

- Scenario 1: Discovery Phase is undertaken, decision is made to proceed to Prototyping Phase
- Scenario 2: Discovery Phase is undertaken, decision is made not to proceed to Prototyping Phase

Our assessment is that Scenario 1 is highly likely to deliver value for money. The UK government's assessment is that Open Banking, the only existing Smart Data scheme, "has been a UK success story, with significant take-up and ever-accelerating growth" and the Joint Regulatory Oversight Committee has stated its belief that "there is potential to build on the progress to date of open banking, to drive further benefits for consumers and businesses, and maintain the UK's position as a leader in innovation". BEIS' Smart Data Impact Assessment (2022) provides a range of evidence on the potential impacts of a scheme. For instance, that the Open Banking Implementation Entity has estimated that the potential annual benefit from Open Banking is £12 billion for consumers, and £6 billion for business users. This also cited "modelling of the impact of Smart Data legislation by Frontier [Economics] [that] suggests cost savings for SMFs [small and micro firms] over five years could be £35bn across existing banking, and new finance, energy and communications sector schemes". Given such government assessments of the potential value of Smart Data, a Challenge Programme that successfully achieves DBT's objectives for it and costing £1.5 million has the potential to generate benefits many times larger than its cost.

In Scenario 2, only the cost of the Discovery Phase would not be incurred. While by assumption in Scenario 2 the outcomes of the Discovery Phase are not sufficiently compelling to justify proceeding to the Prototyping Phase, the Use Case and Data Tracks in the Discovery Phase would nevertheless generate insight of significant value to the government. DBT has stated that an objective for a possible challenge prize would be to "illustrate the potential value of Smart Data and better understand the challenges that would need to be overcome to facilitate cross-sector data sharing", and even the Discovery Phase on its own could be expected to deliver significant insight of this nature.

³⁹ HM Treasury (2020) Magenta Book

⁴⁰ https://www.gov.uk/government/publications/joint-statement-by-hm-treasury-the-cma-the-fca-and-the-psr-on-the-future-of-open-banking/joint-statement-by-hm-treasury-the-cma-the-fca-and-the-psr-on-the-future-of-open-banking

⁴¹ https://www.fca.org.uk/firms/future-open-banking-joint-regulatory-oversight-committee

⁴² Final stage Impact Assessment - Smart Data primary legislation

On this basis, in our judgement the proposed Challenge Programme is highly likely to deliver value for money, and the proposed two-phase structure including the Go / No Go Review Point provides a powerful safeguard to ensure value for money is achieved.

4. Conclusion and Next Steps for Moving to Implementation

4.1. Conclusion

The focus for this research and design analysis project was to answer:

- What lessons can be learned on what works in challenge prize design and delivery from existing literature and previous challenge prizes?
- What specific challenge prize (or similar innovation programme) design and delivery model may be best able and most likely to achieve DBT's specified objectives within indicative timeframe assumptions specified by DBT
- To what extent is this model likely to deliver value for money?

Through the course of this project, we have engaged with a broad range of Smart Data stakeholders within the United Kingdom - from government departments and regulators to businesses and trade associations - in order to answer these questions. We used a variety of research and analysis methods, including a review of the literature on challenge prizes, stakeholder interviews, focus groups and desktop research focussed on understanding the opportunities and hurdles for Smart Data within the UK.

These stakeholders highlighted a range of potential cross-sector use cases that they believe could comprise future visions for Smart Data within the UK, and they have also identified hurdles that must be overcome in order to realise at scale any Smart Data and, specifically, cross-sector Smart Data opportunities. The use case opportunities that resonated most with stakeholders were those problem-focussed use cases that could be connected directly to meaningful consumer or business needs, whether cross-sector opportunities to reduce carbon footprints or ameliorate the cost of living impacts on vulnerable households. The main and unique hurdle identified in the context of cross-sector Smart Data is the data availability that would power any cross-sector use cases mentioned in the foregoing sections of this report. A lack of formal schemes means that building cross-sector use cases to a desired level of development - products in market, benefiting consumers or businesses - will be challenging.

Synthesising these research inputs and opportunities and hurdles, we developed a set of evaluation criteria against which any cross-sector Smart Data challenge prize models could be evaluated in order to determine if those models would achieve the goals set by DBT. We then set about developing, testing and iterating on challenge prize models to assess how they could overcome the unique hurdles associated with the current Smart Data landscape.

We identified a model - Discovery and Prototyping Challenge Prize Programme - that we beis likely to meet DBT's requirements for accelerating Smart Data use cases and generating lessons that support policy advancements. This multi-stage, multi-track model would run over the course of 24 months and seek, in the first phase, to identify data and use cases that would be compelling for cross-sector Smart Data purposes before potentially moving to a second phase focused on prototyping potential solutions. Between these phases a Go/No Go decision point would enable the Programme Sponsor and Delivery Partner to determine if sufficiently compelling data sources and use cases would be generated in the first phase to warrant progression through to the second phase. This innovative design builds in ways to prospectively overcome the hurdles currently facing the Smart Data landscape within the UK, provide financial and non-financial support to potential innovators all while also ensuring value for money and flexibility for DBT given how the policy and wider environmental contexts may develop. We believe that the Discovery and Prototyping Challenge Prize Programme has the potential to fulfil DBT's objectives and demonstrates strong value for money given its design.

4.2. Next Steps for Moving to Implementation

To bring to life the Challenge Programme, there is a set of immediate implementation steps that DBT and other parties can take following the publication of this report to push toward implementation.

Procurement and Legal

Should DBT wish to launch the Challenge Programme, there is a set of procurement and legal steps that we recommend the Department should take.

If DBT chooses not to run the Prize directly, the Department will need to shape and run a procurement process for a Delivery Partner. This process post-RFP finalisation and internal approvals is likely to run over a 2-3 month period the tender, selection and contracting processes. However, overall timing will vary in line with government procurement standards and the Department's preferred internal processes.

In parallel, the Department should explore the legal considerations with respect to data acquisition and sandboxing activities that would feature within Phase 1 of the Programme. Based on experience of and research into Open Banking, the legal liability considerations are important to address and resolve such that potential Data Partners are clear on where liability may sit should they contribute data to the Data Track. By running this exploration in parallel to the Delivery Partner procurement activities, this will ensure that key procurement and legal considerations are dealt with prior to the Pre-Launch phase of the Programme.

Stakeholder Engagement

As DBT will have completed this research and design analysis phase and there is the prospect of a 3-4 month or longer lag prior to the above delivery considerations being resolved, we recommend that the Department engages proactively with the stakeholders consulted during this phase and expands into other parties that may become relevant as part of the Pre-Launch and Launch phases of the Prize. The nature of these engagement points could include informal updates on the intention to move to prize delivery, including details on when this may be likely to happen, messaging around the desire for those stakeholders to activate their networks to generate interest and exploration of other potential parties that may be relevant to areas of critical open questions. In addition, DBT can begin considering any specific prospective Steering Group members that would feed into engagement with a Delivery Partner at Programme commencement.

Resource Planning

We recommend that DBT firms up its internal resource planning and governance mechanisms for how its sponsorship role would likely develop through the period of the Programme delivery. Identifying the Smart Data team's capacity and capabilities to engage with a Delivery Partner, internal government stakeholders, reporting requirements and related considerations would be valuable to ensure that should delivery move forward DBT has clarity around where and how it will engage as a Challenge Sponsor.

Key Open Questions

Coming out of this project, there remains a set of open questions that will need to be resolved in the run up to and including the Pre-Launch phase. While elements of these open questions may not be possible to definitively answer prior to procurement and legal activities being finalised, we believe that there is limited downside to exploring these open questions through the Pre-Launch phase of the Programme, particularly as a means of diminishing risks.

Objectives: DBT has provided the high objectives of a challenge prize as part of this research and design and analysis project. However, there is an open question as to how to make the objectives

for the Challenge Programme more concrete and specific, so that they can serve as goals for Challenge Programme participants and be reflected in the Challenge Programme assessment criteria.

<u>Data</u>: One prominent open question relates to the potential structure, costs and sources of data for the Data Track. Additional discussions with stakeholders consulted during this research phase, as well as other targeted conversations, would be valuable to determine key inputs for going into the Data Track, which would include refinement of potential budgetary considerations for data acquisition activities.

<u>Future Data Schemes or Regulatory Plans</u>: Determining what government may be able to communicate around forthcoming data schemes would enable a prospective Delivery Partner team to consider how best to incorporate those messages into the Prize's positioning and communication plans.

Appendix A: Key terms used in this Report

Challenge prize: Challenge prizes are a method for stimulating innovation. They work by offering financial and/or non-financial incentives for solutions to difficult problems, without specifying how the problem should be solved. Further detail on challenge prizes is provided in Section 2.

Cross-sector Smart Data use case: A *cross-sector Smart Data use case* is a use case which uses data from more than one sector (for example, retail banking data plus energy data).

Smart Data: For the purpose of this research project, we have used the following definition of *Smart Data* as provided by DBT:

"the secure sharing of customer (consumer or small business) data by a data holder with an Authorised Third Party (ATP), upon the customer's request. These providers then use this data to provide innovative services for the consumer or business user, such as automatic switching or better account management"

where an **Authorised Third Party** is a participant in a Smart Data scheme that has been accredited by the relevant authority to receive the customer's data and act on their behalf, when requested to do so by the customer.

Smart Data scheme: A Smart Data scheme is a set of arrangements that enables Smart Data.

DBT specifies that Smart Data can generally be characterised by requirements beyond the UK GDPR right to data portability, by requiring data holders to:

- Provide data securely via Application Programming Interfaces (APIs), or equivalent secure methods, and only once the ATPs have authenticated the customers' identity and received their consent.
- Provide data broader than "personal data" as defined under UK GDPR, including product and performance data, such as standard pricing data, and customer data, and data on their household consumption of a service.
- Similarly, data holders must provide data at the request of individuals and businesses (where a business is a customer), rather than simply individual "data subjects". 44
- Adhere to common or consistent technical standards, guidelines, and/or data formats to ensure
 interoperability and to minimise barriers for ATPs. Standards may require the use of Application
 Programming Interfaces (APIs) to provide data. APIs ensure data shared by the data holder is
 provided in a secure, standard format that is ready to use by an ATP's app or service.
 - Data provided under UK GDPR needs to be "structured, machine-readable, and interoperable". In practice, this could simply mean a spreadsheet database of raw personal data that is not readily usable by customers or ATPs.

Smart Data use case: A *Smart Data use case* is a specific example of how an identified user (consumer or business) need could be addressed by a product or service that is reliant on Smart Data. Use cases may sit at different stages on a spectrum of development e.g. from a concept on paper, to a product in the marketplace with real customers.

⁴⁴ Data subjects are defined in UK GDPR as "the identified or identifiable living individual to whom personal data relates." Information Commissioner's Office, legal definitions.

Appendix B: Organisations represented in expert interviews and focus groups

The following tables show the distribution of participants in the interviews and focus groups, by sector and organisation type.

Interviews

Figure B.1: Interview Participants - By Organisation Type

Organisation type	Number of participants		
Business	10		
Consumer group	1		
Government department	3		
Other Government	1		
Regulator	2		
Standards body	1		
Thought leadership / research / academic	4		
Trade association	6		
Total	28		

Figure B.2: Interview Participants - By Sector

Sector	Number of participants	
Energy	3	
Finance	10	
Multiple	8	
Retail	1	
Technology	5	
Telecoms	1	
Total	28	

Focus Groups

Figure B.3: Focus Group Participants - By Organisation Type

Organisation type	Number of participants		
Business	11		
Consumer group	1		
Government department	1		
Other Government	0		
Regulator	0		
Standards body	1		
Thought leadership / research / academic	3		
Trade association	5		
Total	22		

Figure B.4: Focus Group Participants - By Sector

Sector	Number of participants			
Energy	3			
Finance	6			
Multiple	7			
Retail	0			
Technology	5			
Telecoms	1			
Total	22			

Appendix C: References

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