

Data Sharing and Interoperability for Data Trusts Workshop: Summary Report

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Abstract

Data sharing has been at the forefront of technologically driven domains, enabling advancements in system efficiency via data driven mechanisms, and improving traceability and transparency within safety critical domains. Yet data sharing is fraught with challenges both technological (e.g. interoperability, data quality and privacy) and social (e.g. regarding power dynamics, equality). The Data Sharing and Interoperability IoFT Working Group¹ were formed to investigate the feasibility and implementation of data trust strategies and technological implementations to address the challenges posed by data sharing in the agri-food sector (ODI, 2020a).

The group organised a workshop titled *Data Sharing and Interoperability for Data Trusts* which took place virtually on November 4th, 2020. The workshop offered opportunities to learn about recent technological advancements for transparency and traceability, and identification of the role that data trusts may play in agri-food under different incarnations of a data trust model. Furthermore, the workshop provided a forum for discussion of these topics, helping to identify and address key opportunities and challenges posed by data trusts in agri-food and how to potentially address them. 21 participants attended the half day workshop, which consisted of 2 plenary talks, and 2 breakout discussions. The attendees varied in background including academia, industry and policy makers.

1 Workshop Summary

The workshop began with the first of two invited talks, presented jointly by Mr Paul Mayfield, a senior consultant with SAC Consulting and Dr Hannah Rudman, a senior challenge research fellow of Scotland's Rural College (SRUC). The talk presented their recent contributions made towards traceability and transparency in the food supply chain specifically regarding the cultivation, processing, and distribution of gluten free oats. Mr Mayfield began by providing rationale behind such necessity of transparency and traceability, and the

benefits provided by technological implementations in ensuring standards are met for consumers of gluten free produce. Dr Rudman proceeded with a detailed explanation of the technologies and processes implemented. With her background in Distributed Ledger Technologies (DLT) in agri-food (Rudman, 2020), she advocated the use of DLT and Blockchain for the secure and traceable registry of the oats through the supply chain from farm to consumer, providing assurance of its certification.

The second of the two talks presented by Mr Steve Brewer, the network coordinator of the Internet of Food Things Network+², gave an introduction and overview of data trusts and their implementation in the agri-food sector as data governance models. He provided insights into the structure, opportunities and challenges posed by the open data institute (ODI) model of data trusts³(ODI, 2020b). Leading from this, alternative viewpoints of how data trusts can govern data were explored, posing the idea of more decentralised or federated models for data sharing and the implications associated with each.

Both talks identified key aspects for data sharing, regarding how technology can help solve challenges present in transparency, traceability, and privacy, as well as identifying models for data governance and their benefits in the agri-food supply chain. The remainder of the workshop consisted of two breakout discussion sessions, in which the attendees were to discuss questions in smaller, mediated groups. The questions posed were:

- What do you think are the big challenges to data sharing in agri-food?
- Thinking about the models of data sharing that were discussed in our second talk: What

¹<https://ioftdatatrustwg.github.io/>

²<https://www.foodchain.ac.uk/>

³<https://theodi.org/article/what-is-a-data-trust/>



Figure 1: Main challenges of data sharing in agrifood identified during breakout discussions.

do you think of a model in which data is controlled centrally vs one where it's controlled by data owners, but adheres to agreed APIs or formats?

- Which of the challenges identified are addressed by these models, and which are still to be dealt with?

2 Opportunities and Challenges for Data Trusts in Agri-food

This section summarises the findings of our workshop breakout discussion sessions. Keen discussion from all participants lead to many prominent elements to data sharing and data trusts being raised. Common themes were identified across all groups, highlighting the fundamental attributes of data sharing and data trusts.

2.1 Challenges of Data Sharing in Agri-food

Firstly, data sharing in agri-food presents many technological challenges, where fundamentally a consensus was identified that standardisation of data in terms of units, features and classifications within the digitising of data. This was generally seen as being a result of actors employing differing management systems and individual preferences. In addition, these aspects have significant impact in data quality and the subsequent utilisation of such poor data. Furthermore, under-utilisation of data is also contributed to by a significant lack of technical understanding / expertise and therefore misunderstanding of data wealth within the agri-food sector. More fundamentally, throughout the supply chain, requirements vary drastically, thus resulting in inconsistency with data use and needs throughout the entire chain. Inequality of technical resources also vary throughout actors, providing challenges

in ability of data governance, and in realising the the resulting benefits from data products.

Following technical inequality in data governance, social inequality is one of the leading challenges in data sharing, both with power struggles between competitors and power inequalities between SMEs and larger actors. To overcome this, the building of trust between actors is essential, providing a model that secures commercial sensitivity, both technologically and legally, all whilst equally benefiting all parties. This equality importantly must also be considered financially, essential for SMEs, whilst the benefits clearly defined to provide a strong value given potentially significant effort. Interestingly, the internal politics of individual organisations can provide its own data sharing challenges, as can the integration with larger global supply chains involving policy and technical integration.

2.2 How do Data Trust Models Address Challenges With Data Sharing in Agri-food?

The prospect of data trust models for data sharing in agri-food resulted in thoughtful discussions. It had been seen that data trust may enable the simplification of the legality of data sharing, being an exemplar platform for agreements to be made, especially in closed supply chains. Key, the technological benefits from a pooled or even federated model are significant, providing insightful data analytics of holistic views of the supply chain and opportunities for simplified traceability. Furthermore, trusts were proposed to provide the platform for standardisation of data, addressing a fundamental concern of data interoperability. Yet opposing opinions on trust were observed for single over federated models, the former could be seen as 'one pool, one trust', whilst alternative views posed con-

cerns around internal power shifts within the trust, as larger players or internal groups wish to gain a competitive advantage.

Although it had been identified that data trust models may provide many opportunities in data sharing, many outstanding challenges were introduced. Trust and risk, were common concerns, with key benefits needing to be identified to balance the aforementioned effort-to-value ratio. However, it had been noted that federated models could help achieve this, through smaller more requirement-specific trusts being constructed around sub-sets of the supply chain. Following this notion, the cost of data trusts is an important metric, again with smaller federated trusts being more accessible financially.

3 Future Work

This workshop provided key insights into the key opportunities and challenges posed by data trust and data sharing in the agri-food sector. Our findings will be reflected in an upcoming publication, posing our argument for data trusts in agri-food. Into early 2021, a second paper is to be submitted outlining technical advancements to solve some of the highlighted issues in data sharing for data trust, with a second workshop planned for spring 2021 to disseminate our technological findings. All updates will be posted on the working group project page: <https://ioftdatatrustwg.github.io/>.

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