IMPLEMENTATION STORIES

FAIRSFAIR
Fostering Fair Data Practices in Europe

Exploring social dynamics of data interoperability and trustworthiness that shape FAIR in practice

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RDA RESEARCH DATA ALLIANCE

Introduction

This story provides an insight into the social dimensions involved in data interoperability. Kheeran Dharmawardena, a Strategy Analyst and Social Architect from Cytrax[1], Australia and Chair of the RDA Interest Group on Social Dynamics of Data Interoperability, shares his experiences of initiating the discussion around this topic both in the Research Data Alliance (RDA) as well as in Australia. His involvement dates back to 2012-2016 when he was working on a number of projects, where he noticed that while the projects were working really well from a technical perspective, they were still struggling. The reason was found to be inadequate consideration of the social aspects of data interoperability. Sometimes the environment was right and the project became a success, and at other times the project struggled. This clearly had to be addressed. But it was not until 2016 when the concept of social dynamics of data interoperability were really starting to take form in his mind. At this time he was leading a project where success was highly dependent on getting different organisations aligned and working together. At the same time, some other Australian projects had started to put the social aspects of IT and data into focus as well, which crystallised the need for further exploration of the topic. Kheeran took his insights to the RDA in 2018 where he organised a 'Birds of a Feather' session on the topic. He quickly realised that this was a challenge many faced but something that was not being addressed in a systematic way. As a result of the BoF, the Social Dynamics of Data Interoperability interest group[2] (hereby referred to as 'IG') was established. Currently the group is focused on looking at trust and how trust relates to FAIR.

FAIRsFAIR recommendation

"Disciplines and interdisciplinary research programmes should be encouraged to engage with international collaboration mechanisms to develop interoperability frameworks" Turning FAIR into Reality action 4.2

1. https://cytrax.com.au
2. https://www.rd-alliance.org/groups/social-dynamics-data-interoperability-ig

Approach taken

Exploring trustworthiness and FAIR from a social dynamic perspective in the RDA Interest Group

Social dynamics is a very broad topic which can be explored in multiple different ways. The IG has identified a need to systematically identify the important topics to explore and came up with an approach that addresses group member's aims in the data and technology spaces. The group's focus will initially be around the human and organisational aspects, including organisational policies and legal frameworks that influence social dynamics of data interoperability. Once those dimensions have been explored, the group will start to articulate concerns around trust in relation to the FAIR principles. For example, can you be FAIR compliant when looking at indigenous data, or apply the CARE principles[3] alongside the FAIR principles?

The IG brings together a broad range of experts that are involved in different aspects of research data. RDA consists of people tasked with building data infrastructures, people who are handling data and people who are thinking about metadata. The IG is also involving social scientists and people with humanities backgrounds to bring their respective perspectives. Each individual, with their specific disciplines, brings that specialist insight into what it means to build technology or data systems in a collaborative way, and what methods help to establish agreements on interoperability.

Several Australian projects applying social dynamic workflows

Useful related work on social architecture has been done on a national level in Australia at the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO), where they have been looking into ways of constructing the social dynamics of data interoperability via a methodical approach. This approach has been adapted in a number of Australian projects. One example of such a project is called AgReFed[4], where they are developing a data commons for agricultural data and trying to bring a federation of different agricultural data providers together. More specifically, the project explores the perspective of a data provider and what they mean by 'my data', versus the perspectives of a collective view of 'our data', and where these perspectives can collide with each other due to diverging interests (e.g. commercial sensitivities). To be able to align those findings and to make sure that commercial interests do not violate trusting relationships, there was a need to add another dimension to the social dimension study; the FAIR principles and the issue of trust involved in these relations.

Kheeran is now working on a project assigned to a federated biodiversity data repository, looking at building a national view of biodiversity data. As Australia has multiple jurisdictions, these different states and territories have varying systems, legislations, cultures and needs. In this project, Kheeran and his colleagues explore the ways in which all states and territories can be brought together to build trust, as well as bringing the people responsible for funding and management of data infrastructures together to be able to participate in this work. The project takes this exploration one step further to also identify what elements need to be in place in order to establish the formal and informal relationships necessary for building trust. There needs to be solid relationships in place between people responsible for defining the implementation decisions on the one hand and, on the other hand, the people responsible for carrying out implementations of these decisions. This is especially important as they come from different jurisdictions. If they do not have working relationships with each other and the environment to establish those relationships in, as well as the freedom to make decisions, there will be friction and it will be difficult to bring the data and technologies together.

3. https://www.gida-global.org/care
4. https://www.agrefed.org.au/

Approach taken

■ The development of social dynamics compared to data management in its early days

The serious consideration of social dynamics in data interoperability can be compared to how we thought about research data management in the early 2000s when we did not really understand it properly and were thus not necessarily aware of all the aspects attached to it and what it would need to look like. However, there is a much clearer understanding of the various aspects and requirements of research data management today.

Our progress as a community should hopefully be slightly faster than our progress on research data management, as RDA with its global reach helps in speeding things up, with its engaged groups of experts from various countries. It is a powerful community to accelerate understanding and develop good practices.

■ Supporting the FAIR principles by aligning related contexts

The Social Dynamics of Data Interoperability IG is not directly focused on driving the FAIR agenda. However, FAIR is looked at from a sociological perspective and will enhance our understanding of how organisational and human factors affect FAIR data management. As building data assets becomes an increasingly collaborative effort and data infrastructures become multi-institutional and interconnected, it becomes clearer that social dynamics matter to the context in which the data and technology solutions are developed and maintained. To achieve FAIR data, we need the technologies but we also need people and policies aligned to supporting the FAIR principles. This is what the IG is working on; what needs to be in place and how we go about doing that.

The IG starts the dialogue by looking at each of the four letters of FAIR, and seeing what is important for trust in each of the criteria these represent. As we do this, maybe we will find that one of these is more important for trustworthiness than the others. For example, maybe it turns out that it is more important to focus on trust in the 'Accessible' principles than in the 'Findable' principles. This can lead to tangible things one can proactively do that will lead to building trust amongst the stakeholders of research support. The implications of this study will often mean a change in focus from one context to another. For example, does trustworthiness play a bigger role for 'Accessible' in the Oceanic region compared to the European region? Or is 'Interoperable' more important in astrophysics compared to humanities? Finding ways of understanding these nuances is going to be really important, and we do not yet have the common language or thinking frameworks to assist us in this work.

Challenges encountered and addressed

The most difficult aspect has been to gain recognition of the growing importance of social dynamics and social architecture for research data and data infrastructures. Those working in the RDA implicitly understand the relevance of human and organisational relations and understand that we are affected by these relations on a day-to-day basis. But people who are not directly working on international or cross-organizational projects have difficulty in understanding the relevance of this type of work. In these cases, it is hard to include a focus on the social dynamics in projects and activities.

However, this is slowly improving. The discussion on accessibility to data has moved away from asking whether to make the data accessible to how to make it accessible. We are today in a place where we are thinking about how we link the data from one discipline within an organisation to data at another organisation. The social dimensions of the challenge become more prominent at this stage and we are starting to see that more people are recognising these challenges now compared to five years ago.

> *"At the end of the day, this work benefits research. What it leads to is that we are able to make data interoperability better and faster and lower the barriers to be able to do that, and if we get it right we make our work sustainable beyond the lifespan of the project."*

Impacts

The IG aims to identify approaches that are both generally applicable across domains, and further develop these approaches by taking account of regional and disciplinary contexts. What the IG is really keen on seeing is a lot of dialogue happening around this topic, which will help us all understand how people are thinking about these issues and be able to identify the key things on which to focus. There is a lot of good work being done around this topic around the world that the group is not yet familiar with, so there is a need to be able to share this knowledge with everybody. With the help of this work, the IG will be able to improve and fasten the work around data interoperability and to remove unnecessary barriers to making data FAIR. If the IG is successful in creating a social dynamics framework, the group can make it sustainable, reaching beyond the lifespan of the project. This framework will serve the providers and consumers of data, but ultimately it is research that will benefit from this work exploring social dimensions of data interoperability.

Further information

Social Dynamics of Data Interoperability Interest Group:
https://www.rd-alliance.org/groups/social-dynamics-data-interoperability-ig

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