Research Data in Norway: How Do Expectations, Demands and Solutions Correspond in the Knowledge Infrastructure for Research Data?

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Abstract. Amounts of digital data combined with incentives for open research challenges researchers to share their research data (RD). Researchers are meeting requirements for data management plans (DMPs), and in Norway the Research Council has made it a priority to develop an infrastructure for making RD available. This project investigates how these constraints influence the researchers' choices and how the solutions created fit with the expectations from other stakeholders. Is there a satisfying dialog between the research environments and the service providers? Do the researchers experience that their voices are heard by the infrastructure providers and the research funders? The work aims to strengthen the dialog between the stakeholders in the knowledge infrastructure (KI) for RD and contribute to an improvement of this.

Keywords: Research data management · Knowledge infrastructure

1 Background

Edwards [1] defines KI as "robust networks of people, artifacts, and institutions that generate, share and maintain specific knowledge about the human and natural worlds". Borgman [2] elaborates on this: "[knowledge] infrastructures are not engineered of fully coherent processes. Rather they are best understood as ecologies or complex adaptive systems" and "these networks include technology, intellectual activities, learning, collaboration, and distributed access to human expertise and to documented information". By this she includes, in the context of RD, not only the technical solutions we often associate with the use of the term infrastructure, but also human recourses and competence. Sharing of RD can be viewed from different perspectives; organizational, political, technical, and ethical. Different stakeholders typically weight each of these differently, yet they are all important to keep in mind in order to get the whole picture of the KI for RD.

Norwegian KI stakeholders include funders, researchers, infrastructure providers and institutional research support functions such as libraries, research administration, and IT. If we look into the terms technical solutions, human resources, and competence, there appears to be a clear connection between these. It is, however, not evident that the stakeholders related to the different functions act with a full understanding of

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the matter as a whole and that they are aware of the other stakeholders' positions. A better understanding of the different stakeholders expectations in regards of roles and responsibilities will make it possible to improve the workflow within the KI.

The KI for RD in Norway is undergoing big changes in order to follow requirements of open science coming from both the EU [3] and several research environments. The research is expected to give input for how the KI can be improved. As an approach for investigating science and technology Bruno Latour's [4] seven rules of method for studying "science in action" will be applied.

2 Research Question and Method

The main research question *How do expectations, demands and solutions correspond in the KI around RD that is being established in Norway?* reflects on the KI as a unity where the researcher, the technical infrastructure and its providers, the funders, and the political control exist as separate but connected entities. In turn, we can divide the research question into two sub-areas:

1: What expectations do the different stakeholders have of each other?
2: What expectations do the different stakeholders have of sharing RD (making RD available)?

This leads to the following sub-questions: How do funders influence the researcher's choice regarding RD? How do funders wish to influence the researcher's choice regarding RD? How do the different funding programs influence the services and tools developed? How do the funders wish services and tools to be developed? To what extent do the researchers find the solutions available for RD to be satisfactory? To what extent do the service providers find their solutions to be satisfactory? How do research support services adapt to new demands and needs? What role do the research support services[1] at the universities have, from the perspective of the other stakeholders? (in relation to knowledge spread, choices/political influence, and other possible roles). What roles and functions do the research support services see for themselves?

A Delphi inspired mixed methods study is applied with data collection through interviews with the different stakeholders. Two rounds of interviews will be conducted in order to identify possible agreement on different roles and responsibility between stakeholders. Interviewees will be key-persons from the two main data storage facilities representing the infrastructure, the research council and the ministry of knowledge representing the funders, researchers with H2020 project requiring DMPs representing researchers, and from the research support services individuals engaged in DM services will be interviewed. Researchers and research support staff from the universities of Bergen, Oslo, Trondheim, and Tromsø will be interviewed. These universities (BOTT) have a long tradition of collaboration on administrative support systems, IT, and infrastructure. In addition, a questionnaire will be sent out to a larger group of

[1] Research support services at the universities include IT, library and research office.

researchers with questions based on preliminary analysis. Relevant documents and policies will be analyzed.

3 Challenges

At this stage, the questions I ask myself relate much to definitions, theoretical perspective and methodology. I find that the challenges here often are interconnected and it will be my focus for the autumn of 2017 to sharpen and pin down what "my way" is when it comes to theoretical perspective and method. Below are some of the questions I tangle with.

3.1 What Are Expectations?

According to Merriam Webster expectation is "The act or state of expecting: anticipation in expectation of what would happen" [5], but it can also be expectations for an economic recovery such as prospects of inheritance. Even if the anticipation in expectation of what would happen is not stated as a positive, the term can still give the impression that the anticipation is of something positive that will come. In my usage, I do not wish to enforce this positive sentiment but rather for the interviewees to express their thoughts on the subject, independent of these being positive or negative. In other words, I wish to use "Expectation" as a neutral term.

3.2 How Do I Identify and Measure Expectations?

Clearly stating expectations is one thing; it will be more difficult to identify what might not be reflected upon by the interviewees. I hope that doing two rounds of interviews can be useful, since it makes it possible to follow up on issues that emerge from my analysis of the first interview.

3.3 The National Perspective

The selection of the national perspective might not be obvious. My reasons for such a restrain are based current organization and traditions within the higher education system in Norway. Many solutions are national or shared by several universities. Further juridical issues are grounded in national legislation, which for data that is openly shared is not an issue, but there are still a lot of data with access restrictions for which national storage facilities are necessary. At the same time, European requirements, international partners and the research as a global network of knowledge makes the national perspective redundant, and somewhat "old school" in a global world.

3.4 My Role

Too much reflection upon one's own role in a PhD project might turn the focus off the project itself. I do however sometimes find myself on the other side of the table as I am both writing a PhD thesis on the subject and working with it from the University of

Oslo Library (UiOL). Being a visible agitator for sharing of RD in Norway for some years, and outspoken on my personal views in my position at UiOL, I risk that this influences how my respondents see me and how they respond to me. I do not believe that I can be completely objective, but by revising and reflecting upon the decisions I make along the way and in particular during data analysis, combined with discussing with peers, I will aim at making my research process as transparent as possible.

3.5 Pinning Down the Methodology

Many of the issues above relate to what methodological approach I end up with, both theoretical perspectives and data collection methods will somehow be a response to the issues above. I would therefore be most grateful on feedback that helps me make decisions regarding my methodological approach.

4 Path Forward

During the autumn of 2017 I will plan my first round of data collection, define, and describe my methodological approach. In the beginning of 2018 the first data collection will take place, followed by a stay at the University of Illinois Urbana-Champagne were I hope to be discuss findings data collection with fellows. In the last part of 2018 a second round of data collection will take place. After this the focus will be analysis, writing, presenting, and publication, my deadline is in primo 2021.

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