

Promotion and realisation of FAIR and Open Science through CRIS- and Data Management-teams – A roadmap for change

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Introduction

Innovation is more than a buzz word. It is also a knowledge area, that offers systematic differentiation in the methods and approaches. For universities to innovate in - and beyond – the CRIS and meet the ability of creating architectural innovation in their services lies a way of thinking. This builds on top of the definition of architectural innovation coming from Henderson & Clark (1990) and later explored further: “In short, authentic purpose seems likely to increase the odds that an organization will “see” the need for architectural innovation as it emerges, that it will develop a shared sense of strategy and an organization aligned with that strategy, that its employees will work harder and be significantly more engaged and productive than those in conventional firms, and that it will have an advantage in developing the trust that is essential to effective action under ambiguity.” (Henderson 2021).

To explore the potentials and give rise to the discussions, we are now facilitating these talks at Aalborg University with other units and people, who do not traditionally see themselves as complementors of each other. We are in the early stages of this, but in this paper, we will outline a roadmap for these talks and the development, we want to be part of.

“We” are the CLAAUDIA-team and the CRIS-team at Aalborg University. Aalborg University is a full-fledged university with four faculties. Recently the faculty of humanities and the faculty of social sciences were merged in a SSH faculty. Three STEM faculties are also present: The Faculty of Engineering and Science, The Faculty of IT and Design, and The Faculty of Medicine. This diversity has implications for the ways that we can develop and make changes. SSH areas require some initiatives and STEM areas others.

CLAAUDIA was created in 2018 as an initiative across the university library and its services at Aalborg University. It holds both infrastructure, data science and data management competences to provide a broad range of competences to make researchers meet requirements, handle expectations, and explore the potentials in handling their research data and code.

Use of a CRIS-system¹ at Aalborg University has been going on for almost 20 years now. In the early noughties research registration at the university began. It began with a wish for dissemination of research from the university and later came a need for research evaluation and management information related to a national research indicator (Forsknings- og Innovationsstyrelsen 2009). This research indicator has been discontinued (UFM 2021), and at present there is no national research indicator. Reforms of the research assessment system are going on though – especially at EU level (European Commission 2021).

For many years focus has been on making publications Open Access but it is time to have a broader focus on the entire research process and how to make it more open. More specifically, we work on making datasets as FAIR as possible meaning that data should be as open as possible and as closed as necessary

¹ After some decentral solutions in the beginning Aalborg University has been using the Elsevier CRIS Pure: <https://www.elsevier.com/solutions/pure/> - seen on 13 March 2022

(Hansen, Buss & Haahr 2018). FAIR has become the norm and allows a more nuanced view on our dissemination activities related to research data, software, and other research outputs. This means that we are also looking at how to open the way of disseminating and evaluating the research processes beyond just publications. More and more CRIS content types are involved to provide the multidimensional evaluation of research (Melchiorson 2019). This to say that there have been good examples of incremental innovation for years (Henderson & Clark 1990).

The current situation is, that we are stuck somehow. We have much data in the Aalborg University CRIS (<https://vbn.aau.dk>). Some content types are even complete to some extent. This includes publications over a long period and press stories. CRIS-people need to learn that there is more to CRIS than publications, but just adding content types and going for completeness in data may not be enough to promote and realize Open Science and FAIR. And it may not be enough for the CLAUDIA team to make good infrastructure, data science and advise on data management to involve with the Open Science agenda.

Question

How can we move forward in the process of promotion and realization of FAIR and Open Science at the university? And how can we involve more departments at the university in this collaborative process?

Incremental development is getting harder. A fresh example of innovation could be implementation of Data Monitor² integration in our CRIS. Another example of incremental innovation is to include the Impact content type in our CRIS.³ But still, it is more of the same and just very small steps in the Open Science and FAIR direction. The first example is even a costly step.

Method

We want Open Science and the FAIR principles to set the frame for development. That is a condition for developing services in researcher and university support functions: “Open Science has a crucial role in boosting impact, quality, efficiency, transparency and integrity of research and innovation” (French Open Science Committee, 2022). Since the FAIR principles took off and became the de facto way of describing part of good research data handling and especially dissemination, we have also seen more blurred boundaries on when and where the dissemination process starts and ends. And what constitutes good dissemination practice in a broad perspective.

We would like to see beyond the traditional incremental innovation, to advance with an open mindset to change what we are doing. Architectural innovation seems appropriate, given the field we want to advance. “In general, [organisations] appear to find architectural innovation significantly more difficult to handle than either incremental or radical innovation (the challenge of creating something entirely different).” (Henderson, 2021). Even though architectural innovation may seem difficult to handle, it seems the only way as radical innovation can be too expensive and incremental innovation seems a dead end.

² Data Monitor harvests research data – datasets – from several repositories and it is possible to import metadata from the datasets into Pure – the CRIS from Elsevier. <https://www.elsevier.com/solutions/data-monitor> - seen on 11 March 2022.

³ In 2021 the CRIS-team at Aalborg University launched a pilot on how to implement the Impact content type in our work. Early 2022 we went from pilot to running operation. The principle is that daily press stories may be catalysts for creating an impact-registration in the CRIS. Impact here deliberately defined in vague terms as “a situation where science moves outside academia to create an influence – be it small or large”.

Preliminary results

A CRIS is a central player when it comes to showing the entire research process. It is possible to relate organizations to researchers and further to research outputs such as datasets, publications, and press stories as well as collaborating entities such as external organizations and external persons. A CRIS can help universities make their research FAIR – to some extent. We may even support some aspects of Open Science – for instance Open Access and showing various impacts of science. The CRIS is central to some aspects of the promotion and realization of FAIR and Open Science, but collaboration with other teams is necessary in order to make this happen. Or to put it another way, would it be possible to make better innovation around the promotion and realisation of FAIR and Open Science, if we not only focus on incremental innovation in separate teams, but try to go down the architectural or systemic innovative way?

To answer that question, we have outlined points of attention, that we may address. The points are thought as steps towards potential architectural innovation.

Roadmap for innovation

- Authentic purposes of the CRIS-team and the CLAAUDIA-team are to be defined or revisited – both to make innovation possible but also to get a shared vision of where to go.
- Relational contracts are to be made between the CRIS-team and CLAAUDIA, and with other university departments as well to further trust, clarity, credibility, and integrity. Trust, clarity and credibility are interconnected as described by Henderson (2021), and integrity is a focus point for Open Science (French Open Science Committee 2022).
- Trust and purpose are important concepts - also for the way university management operates. When discussions around research assessment are going on, Open Science principles may help fostering exactly that - also for that reason we should encourage the Open Science agenda.
- Acknowledge the need to design much more according to a modern data centric, but also user centric, point of view. This includes embracing new ways of joining and exploiting data, to provide a richer and more full-fledged approach to our thinking – and to the platforms we develop. This also means that we must embrace on a more DevOps friendly approach to platform thinking and design.
- We should listen to data already present and listen to users/management/researchers. That is, we should analyse our CRIS data and we should interview users. We should build services based on registrations in the CRIS. That might lead to development in library systems and development in teaching/support efforts.
- Architectural innovation requires ambidexterity (Henderson 2021). We should look at competencies in the teams. Both
- When discussing purpose – the purpose of data quality in the CRIS is basic. We must discuss, what we mean by completeness, what we mean by data quality.
- Leadership should be transformational rather than transactional (Henderson 2021). Internalising purpose and building common interest should be valued over appeal to self-interest through incentives.
- Prosocial purposes should be embraced (Henderson 2021)
- We should be inspired by and an inspiration to other departments at the university (Henderson 2021) – to find purpose and to cooperate in the pursuit of Aalborg University goals.
- Structural discussion on how to involve other departments: Traditional library researcher services, Project and funding-office, Communications department and more.
- Suppliers should also be involved. We need to discuss lock-in and rights to use data (LERU 2022). The knowledge society should not be privatised. That is, CRIS and integrated systems should

be accessible. Software and content should be open as far as possible, so that the common culture of knowledge isn't threatened.

Discussion and conclusion

There has been 20 years of incremental innovation of CRIS use at Aalborg University, and in many respects the work may be seen as successful. However FAIR and Open Science agendas are moving. We need to move along. This requires new ways of working and thinking. A tool to accomplish this is architectural innovation.

The concept of openness should be discussed. Open access to public research is key, but issues are emergent. Costs of developing a product may be the same if only two people have knowledge of how to build the product and if the whole world have the same knowledge. But the economic risk may be smaller when only a few people have the knowhow. Another pitfall: Researchers should be open about their research – open to peers and to the wider society. But in some cases, it has been difficult to control the cascades arising at social media, and single researchers and universities are associated with obscure comments.

In this paper we have not included considerations concerning economy and resources in the plan. To go further with the proposed roadmap, it is necessary to build proper project management plans and include circumstances around competencies, timeframes, and the overview of resources. This should be done with transformational leadership in mind, off course!

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