

Research data management: status at Swedish higher education institutions

Assignment

In the transition to an Open Science system, the Association of Swedish Higher Education Institutions' (SUHF) National Working Group on Research Data¹ has the task of monitoring national and international developments in management of research data. On behalf of SUHF's Open Science Coordination Group², the Working Group is to propose concrete strategies and measures in dialogue with relevant stakeholders. Another aim is to promote coordination of national strategic work to develop research support services for research data management at the Swedish higher education institutions (HEIs).

Background

On 27 May 2016, EU member states adopted Council conclusions on the transition to an Open Science system (9526/16)³. The research policy bill *Collaborating for Knowledge — for society's challenges and strengthened competitiveness* (Swedish Govt. Bill 2016/17:50)⁴ states that the Government's objective is for all scholarly publications resulting from publicly funded research to be made openly accessible immediately when they are published. Similarly, research data underlying research publications should become openly accessible at the same time as the associated publication. The research policy bill states that it is the Government's objective for implementation of open access to research results, including related scholarly publications, artistic works and research data, to be entirely completed within 10 years at most.

With effect from 2017, the National Library of Sweden (NLS) has a government assignment to coordinate efforts to bring about open access to research publications⁵. The Swedish Research Council has a corresponding assignment for open access to research data⁶, and the two agencies have also been commissioned to develop criteria for assessing how far scholarly publications and research data that have been fully or partly obtained from public funding comply with the FAIR principles.

The paradigm shift to an Open Science system and the effects of the new General Data Protection Regulation (GDPR) are imposing higher demands on the HEIs' responsibility for supporting researchers in their correct management of scholarly publications and research data. In Europe, HEIs

¹ <http://www.suhf.se/arbetsgrupp/open-science-samordningsgrupp/nationell-arbetsgrupp-for-forskningsdata> (in Swedish; retrieved 9 May 2018).

² <http://www.suhf.se/arbetsgrupp/open-science-samordningsgrupp> (in Swedish; retrieved 9 May 2018).

³ <http://data.consilium.europa.eu/doc/document/ST-9526-2016-INIT/en/pdf> (retrieved 31 May 2018).

⁴ <https://www.regeringen.se/4adad0/contentassets/72faaf7629a845af9b30fde1ef6b5067/kunskap-i-samverkan--for-samhallets-utmaningar-och-starkt-konkurrenskraft-prop.-20161750.pdf> (in Swedish; retrieved 11 May 2018).

⁵ <http://openaccess.blogg.kb.se/english/> (retrieved 31 May 2018).

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<https://www.vr.se/internationellt-samarbete/europeiskt-samarbete/vetenskapsradet-koordinerar-arbetet-med-open-access.4.6.15fa64715282cc5ba625a21.html> (in Swedish; retrieved 16 May 2018).

have been working for several years to develop policies and research support services within the Open Science framework and to manage, specifically, research data. Progress in this work has varied from one country to another. In countries such as Finland, the UK and the Netherlands, the HEIs have had well-developed infrastructure and support for research data management for a few years. Research organisations and public funders have also been working for a while to adapt their functions and services to the new requirements and recommendations being issued regarding management, storage, availability and preservation of research data.

HEIs' responsibility to cooperate

It is important and necessary for the HEIs to collaborate on the basis of joint, overarching frameworks in the areas where this is possible, so as to create resource-efficient and adequate research support services and research data policies that do not differ too much from one HEI to another. Researchers must be offered equivalent research support regardless of which HEIs they belong to. Work on developing services and support for research data management should take place in close cooperation and dialogue among the HEIs, the Swedish public research funders, research infrastructure providers and other relevant stakeholders, including the researchers themselves.

Research data are part of a much larger research process, and managing publications and data as separate processes entails a risk. At present, these areas are separated because the publishing process and research data services are not as refined and well established as the process and support for publishing scholarly work. This separation should not persist in the long run: instead, these processes and the national and local structures to support them must work in unison. We propose that this should take place under national auspices, based on active international global monitoring.

Questionnaire survey: what kinds of support for research data exist at Swedish HEIs?

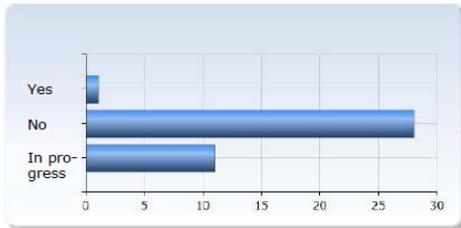
In February 2018, SUHF's National Working Group on Research Data sent a questionnaire to all 37 member HEIs. They all submitted their anonymous replies by the survey's 23 March deadline. The purpose of the questionnaire survey was to compile a quick and simple overview of the Swedish HEIs' progress in their efforts to develop local infrastructure to support research data management. The questionnaire comprised four general questions relating to research data policy, a template for a Data Management Plan (DMP), local infrastructure for research data management and what the key current issues in research data management are. The response choices on offer were 'Yes', 'No' and 'In progress', and comment fields were provided to enable submission of free-text answers.

The purpose of the survey was to get an idea of the current situation at the HEIs, and indications of how SUHF and other relevant stakeholders can jointly support the HEIs, for example by issuing recommendations on research data policies and DMPs.

Summary of survey questions and answers

1. Does your HEI have a research data policy?

At present, only one Swedish HEI has a formally approved research data policy. More than 10 HEIs have begun work on a policy, and some expect to complete it in 2018. The majority of respondents have no such work in progress. Several mention that they are waiting to see what work the other HEIs do on this matter, or state that the time is not yet ripe for such a policy. At some HEIs, a coordinator for research data issues is being recruited and they are waiting for this recruitment to be completed before continuing with the work.



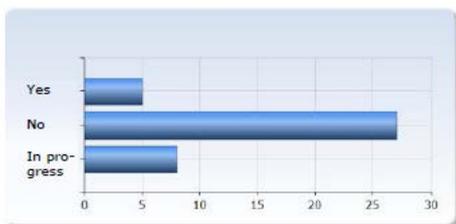
Overall, the responses concerning research data policy show that there generally seems to be a gap between operational activities and the HEI management. A clear link to researcher participation and management support is lacking in the answers, which mainly relate to their own activities.

Several HEIs imply that in their work within the national research infrastructure known as the Swedish National Data Service (SND), a consortium of 7 HEIs and a network of 27 HEIs altogether⁷ are going to work on a research data policy.

2. Does your HEI have a Data Management Plan template?

A handful of HEIs have a DMP template that they refer to. References are mainly to established templates and tools such as Horizon 2020, Science Europe's proposed recommendations, SND's checklist for DMPs and DMP Online. Most respondents are not engaged in any work on DMP recommendations.

The free-text responses mention, for example, that a national initiative for a DMP template is expected, that SUHF is working on this initiative and that a DMP is something HEIs should collaborate on with several relevant stakeholders. Some say they have no need at present. One HEI has a local template that it refers to, while some respondents relegate responsibility for the question to the funders and their templates, if any.



Overall, the responses show that the HEIs do not currently appear to provide active, comprehensive researcher support for writing a DMP. It is essential for procedures for DMPs and local support at the HEIs to exist, become established and be implemented in the immediate future. This is because it is likely that more research funders and publishers will shortly require a DMP to be attached when research funding is applied for and research results published. In university administration, too, there is a pronounced need to be able to structure and organise documentation of research information.

3. What does your HEI regard as the key issues concerning research data management?

The answers received mention, in no particular order, for example, the importance of and need for national coordination and cooperation; clarity about roles at work, regulations, legal aspects and implications of the new GDPR; the necessity of support among researchers and dialogue with them; the need for new incentives, qualification systems and requirements at an overarching level; sufficient support and resources to establish local

⁷ <https://snd.gu.se/en/about-us> (retrieved 31 May 2018).

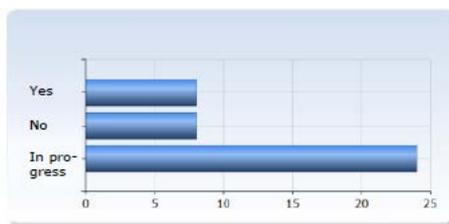
infrastructure; support for short-term and long-term storage and preservation; proper management; the skills that researchers need and how they can develop them; research support functions; metadata issues, national versus local infrastructure, costs and responsibilities; the need for strong management support and a committed management; researchers' needs; finding good forms of cooperation with other HEIs; and generating awareness among researchers.

In general, it is evident from the answers that no common, coherent, overarching strategy exists at the HEIs for research data management issues. This is probably because the HEIs have not discussed this in an HEI perspective; rather, the issue is still being handled mainly in support activities and at an operational rather than a strategic level.

4. Is there a local infrastructure for managing research data at your HEI?

Sixty per cent of the respondents answer that local infrastructure is under way. In their replies, most HEIs refer to the work in progress in the national research infrastructure SND and the Data Access Units (DAUs). Most HEIs establish their administrative support specifically for research data, based on the models that SND recommends for work in SND.

Judging by the answers, much of the work seems mainly to have the HEIs' libraries as its starting point. Organisation and resource allocation for work at the HEIs vary greatly, as does their scope for cooperation with relevant local stakeholders within the HEI. The HEIs are highly confident that the DAUs will assist with some of the infrastructure work. It is important to remember here that SND is one form of research infrastructure among several. In their work on other forms of infrastructure and research contexts too, the HEIs will need to support their researchers. Several of the answers mention metadata issues and the FAIR data principles⁸. According to these principles, research data must be 'findable', 'accessible', 'interoperable' and 'reusable' as important components of the work.



Conclusion

It may be concluded from the replies to this limited questionnaire, comprising just a few general, open questions, that Sweden's HEIs have considerable work ahead of them in developing university-wide research support services and infrastructure for managing, storing, accessing and preserving research data. The answers show that awareness of issues about managing research data exists, but the structures for implementing the work in the HEIs seem unclear. Developing research support services of this type, which require several different skills in the course of the research process cycle and affect various stakeholders both within and outside the HEI, calls for active and strong involvement in the matter from staff performing the HEIs' executive functions. It also requires the ability to work throughout the HEI rather than on the basis of specific activities and their individual needs.

⁸ <https://www.force11.org/group/fairgroup/fairprinciples> (retrieved 11 May 2018).

Implementing these efforts both in the management organisation and in dialogue with the researchers and the core operation calls for coordination, cooperation, and new working methods and task forces throughout HEIs' activities. Inevitably, some of the most important parameters in the operational development of research support services for data management will be researcher participation, funding issues, resource allocation, skills development and organisational structures, in addition to regulatory and legal aspects.

Over the past two years, Open Science issues have been highlighted more clearly. Through the coordination assignments of the National Library of Sweden and the Swedish Research Council respectively, jointly with other relevant stakeholders' work, more nationally coordinated efforts have now begun on a larger scale. Sweden has not yet progressed as far in its work at the HEIs as most other European countries. However, we are now well on track and it is gratifying to see that there is new awareness of and expertise in these issues.

Unlike Finland, for example, Sweden has a tradition of applying a decentralised approach. Work on resource-efficient infrastructure and research data management services needs much more coordinated, communicated efforts on a shared national basis than before. The HEIs face new challenges, and building local research support infrastructure for managing research data to meet the newly imposed tighter requirements and recommendations is a pioneering activity. For the majority of questions, no perfect answers are available at present, and the activities need to be developed successively in step with neighbouring countries. There are several good examples to look at and be inspired by, around Europe and in our immediate vicinity, in the Nordic nations.

In the questionnaire answers, there seems to be an overall tendency for respondents to base answers on their own professions and operational areas, rather than on the university's strategies. In general, very little is said about the overarching work required at the HEIs. The same applies to the need for strong management support to be able to drive these issues throughout the university and develop adequate support that includes skills from several areas. This suggests that there are many HEI managements that have yet to embark on working actively on these issues, or else that at lower levels in the organisations this work is unknown.

Also lacking are a clear connection and interactivity with how well the work is supported by researchers and how their needs should be taken into account in the development of research support services.

It would be appropriate to send out a new questionnaire with relevant questions at year-end, and then also obtain answers linked to the respective HEIs, without anonymity.

SUHF thanks all the HEIs for their participation in the survey and for all the responses we have received. This helps us in our further work both within SUHF and in cooperation with relevant stakeholders in our joint national and international efforts.