Open Science Recommendations for the Faculty of Science

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This document provides recommendations for the better implementation of open science in the Faculty of Science, based on the University of Helsinki strategic goal:

> *…making research methods, materials and results accessible to the academic community and society at large and make increasing use of open forums, digital environments as well as self- and peer-evaluation in teaching.*

The document is also responding to the requirements for the Faculty driving from the national and international initiatives towards Open Science, such as the DORA declaration, Finnish governmental recommendations, and requirements of several science funding agencies, such as Academy of Finland and European Commission. There are also reputation and visibility benefits for the being in the forefront of transparent and impactful research.

The recommendations are intended to be realistic and designed to be implemented in short to medium timeframe in the Faculty, requiring low level of additional investment. They mostly refer to the Open Science Products (OSPs) created within the Faculty: e.g. journal articles, grey literature, (curated) research data, teaching material and scientific software.

Recommendation 1: Set the overall faculty policy on science products: "**as open as possible, as closed as necessary"**

It is important to create a consistent policy supporting open science practices, but we also acknowledge that there are cases where there are valid reasons for keeping some of the products less accessible (potential patents, privacy, etc.). There are also significant differences between scientific fields in research cultures and availability of Open Science channels (e.g. journals, repositories, etc.). We suggest that the Faculty would publicly commit to general policy of "*as open as possible, as closed as necessary*" for the research products created by the Faculty staff and communicate it efficiently to faculty personnel.

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Recommendation 2: Value the open science products in the staff annual development discussions

The key aspect is to make sure the Open Science behaviours of the staff are recognised and valued in practice, and the staff will be recognised for their efforts in this field. A natural place for this would be to include it as a part of annual development discussion. Each scientific or teaching merit should be considered also in the perspective of openness in these events, and any valid reasons for keeping them closed should be also discussed with the supervisor.

Recommendation 3: Consider open science products in unit, department and tenure track evaluations

It is important that the Faculty will be aware of the situation and potential bottlenecks in the open science activity in its subunits. We recommend that Faculty will start to follow all OSPs of the units and eventually use them as an additional criterion of success in their internal evaluations. Similar considerations should be extended in tenure track evaluations. We recommend that this evaluation criteria would then be implemented gradually, to ensure that the evaluated units and tenure track professors would have necessary time to adjust their activities.

Recommendation 4: Require listing of Open Science Products in recruiting

Listing OSPs as additional criteria in recruiting will highlight their importance in the future of the Faculty but will also give an important message on our values. As a minimum, the OSP dimension should be clearly and openly visible in the recruitment process and the importance of OSPs for each position would be considered when preparing each recruitment. Additionally, the Open Science goals of the University and the Faculty should be clearly stated in each recruitment notice. Helsinki University general instructions for promoting open science[1] should be the basis for discussing open science during the recruitment process. The Finnish National Board on Research Integrity TENK recent scientist CV template[2] has category 'Research outputs', which would be a natural place to require the list also the degree of openness of the outputs.

We do not propose to set any predefined, automatic or specific value for OSPs in the requirement due to recognised reasons for keeping some products non-open. The importance of OSPs for each position should be considered independently, based on the nature of the position and the needs of the Faculty and involved units.

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[1] https://www.helsinki.fi/fi/tutkimus/avoin-tiede
[2] https://www.tenk.fi/en/template-researchers-curriculum-vitae

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Recommendation 5: Create a short, clear and well documented knowledge base of open science best practices in the faculty

These new aspects need to be supported by the University and Faculty to make them easy to implement by the Faculty staff. We recommend that Faculty, together with different University services (e.g. library, TIKE, legal, communications, etc.), will create a common easily accessible knowledge base on the recommended best practices involving creation of open science products. It should include clear walkthroughs on creating and publishing different kinds of OSPs and should include also discipline-specific information when relevant (e.g. recommended publications, data and software repositories, research infrastructures, etc.), and information on potential costs and funding options. The existing services from the University and other services providers should be well described, as well as relevant links to other services and helpdesks.

The best practices should also include guides on using Open science products and citing them appropriately, as well as clearly and transparently demonstrating the advantages and real-life examples of successes (as well as demonstrated risks) of open science activities.

It is crucial that this knowledge base will be well maintained, easy to use, clearly organised and kept up to date. Finding the information should be easy, and the content should be logically ordered and tailored for different user groups (e.g. by units, fields of science, position type).

Recommendation 6: Organise structured staff training on the best practices, facilitate peer support, and open science culture in the Faculty

Just creating a knowledge base will not necessarily make it well known and used in the Faculty. We recommend that in addition to creating the Knowledge Base, the Faculty would create organised training activities to the staff on the unit or department level on using the information. The staff participation on these activities should be strongly advocated.

Additionally, we recommend that the Faculty would nominate volunteer researchers to act as open science champions to support the activities with practical support in the departments. A periodic award for such activities could also be considered. These actions should be also coordinated with the University communication efforts to maximize the visibility and associated benefits also outside of the University.

The Faculty of Science could consider ways to advertise the open science, and societal impact - related activities within the student population, e.g. by hosting an annual Science Slam, encouraging junior and senior researchers alike to increase the public visibility of their science and public engagement with science.

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Recommendation 7: Develop open science content for curriculum MSc and Doctoral programs

To foster sustainable development towards open science, the next generation of graduates should have early contact with open science, science ethics and good scientific practice. In practice, this could be organised as separate classes, but could be more efficient if embedded on the practical course work throughout the Faculty. We consider that this would be desirable to start at the Master of Science level, and should be included in all doctoral programs. This would help to spread awareness of open science to the general public and could strengthen societal support for science.

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