Utrecht University

Open Science Programme 2018 - 2020

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version 0.5

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1. Introduction

In her [Strategic Plan 2016-2020](#), Utrecht University expresses her vision of the importance of interdisciplinary research hubs and knowledge sharing for knowledge ecosystems. In these ecosystems, research output is shared broadly among researchers, societal partners and with a broader audience. It is within this context, that Utrecht University "aims to operate at the forefront of open science […]". This ambition clearly resonates in the strategic goals for 2020 regarding research data sharing, open access for publications and public engagement.

In this document, we propose to create a UU Open Science Programme to implement the UU vision on open science.

Towards Open Science
The scope of the topic open science is broad and represents a new approach to all stages of the scientific processes: from open access to publications, sharing of research data sets, developing research evaluation systems, to public engagement and citizen science. In essence, the development of open science practices entail no less than a culture shift in academic research and teaching.

The road towards open science is characterised by changes in many research practices throughout the research workflow, including to the way we reward research and incentivize research behaviours. It is essential to appreciate disciplinary differences. The changes affect many aspects of research and involve all stakeholders. The changes are partly organic, partly driven by technology, partly by national or funder policies, partly by publisher policies, university codes of conduct, and last but not least, driven by needs many researchers themselves recognize.
In recent years, many stakeholders within the global research community have initiated actions to develop open science. Organisations such as [LERU](#), [LIBER](#) and [SparcEurope](#) are actively lobbying for open science at the European level (eg. for the legal right on text- and data mining). Higher education institutions across Europe also take part in European projects to further implement open science practices. Open access publishing is required by research funders. Thus, not only is the scope of open science potentially broad, the landscape is also complex. Collaboration among the different (inter)national stakeholders and differences among research disciplines is a given.
Within our university, open science practices are already being developed. First of all, new practices have been adopted by researchers themselves in a variety of ways within several disciplines. Inspiring examples within the larger, interdisciplinary research programmes, are available. New support services have been (or are being) developed to accommodate these changes, including an open access repository for publications, an e-infrastructure and support services for research data through the Research IT programme, and a research data policy framework.

A UU Open Science Programme
As said, the scope of the topic is potentially very broad. The Open Science Programme however, needs focus. Its activities and results will add to collaborative (inter)national efforts' impact, not duplicate those. The current UU strategy aligns well with the recently presented Dutch *National Plan Open Science* (NPOS). Therefore, the UU Open Science Programme also connects closely with this national plan: both address *open access publications*, *open & FAIR research data*, and *rewards and incentives*.

To these themes we add *sharing of code and software*, to facilitate collaborative work and also to speed up research and involve more researchers. Another aspect that needs separate attention is *outreach and public engagement* to make sure we connect to communities that support, contribute to, use, and apply our research.

These choices mean that some aspects of open science are not part of this programme. This holds among others for open educational resources and citizen science. It does not imply they are not valuable, just that it is presumed that they are or will be taken care of in one or more of the existing programmes ([Educate-it](), [Research IT](), Public Engagement programme of the [Centre for Science Communication and Culture)]() and university departments.

2. Open Access Publications

Unrestricted immediate access to research publications is a prerequisite for using the latest insights, avoiding double work, and fostering implementation of ideas. Although the idea of open access (OA) and early sharing of publications goes back to the early nineties and although we have widely signed open access declarations dating from 2001 and 2003, overall levels of open access publications are still below 50%, counting both publisher provided (gold) and author provided (green) open access. Sharing preprints, posters and presentations is still in its infancy in most disciplines. Reaching the nationally agreed 100% open access to articles and book publications by 2020 requires full attention and additional efforts on top of what we are doing already. This component of open science is difficult, because it is met by resistance coming from some publishers. Secondly it is interwoven with rewarding based on publishing in journals with (high) impact factors and with publishers that are sometimes slow to make the transition to open access.

Utrecht University's ambitions fully align with the goals in the National Plan Open Science (NPOS). Issues we need to address are the role of the Utrecht University Repository, open access to books and book chapters (crucial for getting humanities and social science publications openly available) and 'preprints' (or: "early paper versions") as a potential parallel route for providing access separate from the peer review trajectory.

In 2017, Utrecht University:
- Maintains an Institutional Repository (IR) to enable Green open access and stimulates the deposit of various types of publications in IR for use and reuse (e.g. preprint, postprint, version of record).
- Contributes to the OA big deals negotiated by the VSNU.
- Runs an open access incentive fund to enable Gold open access for UU researchers.
- Has an expertise centre for open access journal publishing (including an Incubator service model).

Goal 2020:
- Have all scientific publications (articles, books or parts of books, reports) which are publicly funded immediately and openly accessible to anyone from anywhere in the world and available to them to consult and reuse, in alignment with the National Plan Open Science.

By 2020, Utrecht University will:
- Systematically monitor yearly UU open access output based on the VSNU open access framework, and also yearly monitor UU open access costs, e.g. article/book processing charges (APCs/BPCs) levied by publishers.
- Optimize the administrative workflows for the payment of open access costs and save costs through memberships and discounts.
- Develop an open access deposit mandate (or alternative policy measures) including requirements for accessibility (including for TDM), reuse and (employer) copyright. This will include the doctoral degree regulations and stimulation of sharing preprints in all disciplines. In this context the UU will consider the role of the University Repository.
- Create constant awareness among researchers about open access publishing options (e.g. make use of openaccess.nl, OA big deals and OA book publishing options) and offer support programs for researchers on scholarly publishing in an open science environment.
- Contribute to the development of open access for monographs and edited volumes, supporting promising initiatives and performing research into sustainable open access for books.

3. Open & FAIR Research Data

Reuse and verifiability are the main purposes of having research data available. Access to research data (which includes textual data) makes science more efficient and more trustworthy. How research data is being managed and shared, depends a lot on the kind of data (observational, experimental, simulation, derived etc.) and the culture within different disciplines and domains. Stable 10-year archiving is already mandatory at Utrecht University, but making data fully FAIR (Findable, Accessible, Interoperable and Reusable) and also open wherever viable (given constraints of privacy and security) has many additional advantages and is also required by some funders and journals.
In order to open up research data, it is important to prepare for proper sharing and reuse with good research data management (RDM). Though openness is not an requirement for FAIR data, not having to ask, arrange a contract etc. does foster reuse, verifiability and experimentation. Also, deciding to share data openly could mean sharing earlier, increasing the chances for early reuse and collaborations.

In 2017, Utrecht University:
- Has a collaboration of different experts (University Library, ITS, legal, data managers, etc.) working on infrastructure, services and support for research data management, coordinated by RDM Support (as part of the Research IT program), and fosters awareness of available tools and repositories for opening up research data.
- Facilitates researchers in their responsibility to draw up a Data Management Plan (DMP) at the start of the research project and to follow up on the agreements made in this plan as an important step in making sharing and reuse of research data possible.
- Discusses implementation of the university policy framework on research data (including those in textual format) within the faculties including the condition that research data are to be made available for access and reuse at and outside Utrecht University as much is reasonably possible.
- Develops a training programme for data management skills.

Goals 2020:
- Utrecht University researchers will make the research data of their research publicly available for access and reuse, wherever viable.
- Utrecht University's researchers will be part of interdisciplinary communities that share research data.

By 2020 Utrecht University will:
- Have clear policy and guidelines within all faculties on which research data to make open available for reuse and how to do that (incl. guidelines and protocols for privacy, intellectual property rights and licenses for sharing research data).
- Have researchers who are aware of why, how and where to share research data, written down in a DMP for each research project.
- Optimize the research data catalogue with available and reusable research data for use in open science.
- Have next level infrastructure, services and support in place to make valuable research data FAIR (findable, accessible, interoperable and reusable) and open, including a Data Publication Fund.
- Have explicit career tracks for data and software specialists (data stewards, data managers, data engineers, data librarians, data scientists).

4. Sharing code and software

The idea to share code and software openly is older than the promotion of open access and much older than the more comprehensive notion of open science. Complex and sensitive systems run on open source software. Developing software collaboratively using open platforms with version control systems like [GitHub](#) is standard routine for many programmers and has sparked many innovations and speeded up development. In many ways programmers and software engineers are ahead in collaborative, open and transparent ways of working.
Sharing code used in data wrangling and analysis is not only an important element in making research verifiable but also to make it easy for others to reuse it and improve on it, both of which amount to considerable time gains for the science community as a whole.

In 2017 Utrecht University:
- Will make the [GitLab repository](#) in use at the Science faculty open to all Utrecht University users.

Goals 2020:
- Utrecht University uses free and open source software (FOSS) whenever that is comparable in functionality to closed, paid options.
- Code and software created by Utrecht University researchers will be shared with an open software license.

By 2020, Utrecht University will:
- Have local Git repositories (e.g. through GitLab) in use at all faculties.
- Have courses for teaching staff and students on how to use open platforms with version control systems to develop code and software, in order to facilitate collaboration, reuse and contribute to verifiability.
- In principle have code created as part of research projects shared openly (either from the start or afterwards).
- Develop and share knowledge about software licensing and support using those licenses

5. Outreach and public engagement

In order for society to reap all the potential benefits of research it is necessary to not only make results available and disseminate them, but additionally try to make the connection with potential users, funders and contributors to the research. This implies basics such as ensuring that profiles are up to date and well-connected, but also more dedicated actions to raise interest in the research, include others (e.g. patient groups) in the process of setting research priorities, engage in citizen science, help 'translate' outcomes for a non-scholarly public and participate in public debate. Really engaging the public and interest groups implies a two-way communication that also demands that we seriously listen to what people outside our own community have to say. Many researchers engaging in public activities find it time consuming but also fun, important and enriching. It helps to make sure that science and scholarship are more closely related to societal issues and to questions people have and profits from inputs and ideas from outside academia. Ultimately, outreach and public engagement should also enhance the support for and trust in scholarly research.

Some of these practices hold for all researchers, others can also be organised in teams and with help from trained communication specialists working in the faculties, at the Centre for Science Communication and Culture or the University Library.

In 2017 Utrecht University:
- Started the Public Engagement Program, coordinated by the [Centre for Science Communication and Culture](#)

Goals 2020:
- Utrecht University has taken demonstrable actions to further increase societal participation in and application of research across all disciplines.
- Utrecht University will promote career diversity and will therefore recognise public engagement activities, activities aimed at societal impact and entrepreneurship initiatives in its promotion and tenure criteria.

By 2020 Utrecht University will:
- Have considered how refraining from patenting and/or promoting to release patents to the public domain could contribute to public availability of solutions and products developed at the UU and by that contribute to more and faster application of solutions and insights coming out of research (see examples in appendix).
- Assist researchers in communicating their research in plain language and engaging the public in their research, a.o. through the Utrecht University Centre for Science Communication and Culture.
- Ensure that data on scholarly and societal impact of UU research are publicly available.

6. Rewards and incentives

The great majority of researchers supports the idea of open science. However, only a minority of researchers already integrate open science practices in their workflow. This may be due in part to infrastructure and support that is not widely known or still in development, but the system of rewarding and the incentives available are often mentioned as the most important reason for the slow adoption of open science practices. As long as researchers and their research are judged by journal impact factors and publisher brands and not by its actual qualities, its real use, its real impact and openness characteristics, it may seem irrational for researchers to spend time and money on conducting open science. Under those circumstances, at best open science practices (e.g. sharing data and publishing preprints) are seen as posing an additional burden without rewards. At worst, they are seen as actively damaging chances of future funding and promotion & tenure.

Funders, institutions and researchers are aware of the problem. Some have been bold and broke the cycle. Individual researchers engage in open science despite 'getting nothing back yet'. Funders (e.g. Wellcome Trust, Research Councils UK and EU) and other organizations (e.g. VSNU with SEP) have changed assessment criteria, moving away from simple counting and include narratives and indications of societal impact. A few institutions have already changed their promotion and tenure systems (e.g. UMCU). Other universities changed their code of conduct to include open science practices (e.g. TU/e, see appendix). A final example is the San Francisco Declaration on Research Assessment (DORA), signed by VSNU and thousands others, that makes researchers and stakeholders commit to moving away from journal based evaluations, consider all types of output and use various forms of metrics and narrative assessment in parallel. The Leiden Manifesto provides guidance on how to use metrics responsibly.

Transforming the way universities evaluate research and incentivize researchers has proven to be difficult because the evaluation criteria and customs are often part of long standing cultures in academic disciplines. We need to recognize this and reckon with it, but still be adamant about the need for change and try develop new reward structure in dialogue with (all, including young) researchers to make sure it puts research and researchers first.

In 2017 Utrecht University:
- Signs individually and advocates the support of San Francisco Declaration on Research Assessment (DORA) by initiating discussions on reducing the reliance on journal brands and publisher names as impact indicator.
- Conducts a trial of altmetrics data to assess their quality and value for assessing research and to compare the offerings of the various suppliers.
- Explores the possibilities to allow inclusion into the university campus-wide research information system (PURE) of (non-traditional) research outputs such as code, software, designs, annotated editions, pre registrations, peer review activities and outreach activities.
- Decides on what criteria to use in an UU open science monitor, in alignment with the indicators used in the National Plan Open Science and the European Open Science Monitor.

Goal 2020:
- The way Utrecht University evaluates research and researchers is geared to foster high quality research with a maximum value for society, by including openness characteristics (participation, sharing of outcomes, and public engagement) and by considering all types of output/activities when evaluating research and researchers.

By 2020, Utrecht University will:

- Have conducted research into the incentives and disincentives in various disciplines and academic roles for applying open science practices at the UU.
- Have adapted evaluation as well as the tenure and promotion procedure systems to include openness characteristics. Also have fully implemented the San Francisco Declaration on Research Assessment (DORA) and moved away from using and promoting university rankings based on impact factors and other simple publication counts.
- Have a code of conduct in place that includes open science.
- Provide mini-grants (€10K-€50K) to stimulate exemplary open science projects.
- Explicitly mention eligibility of developing open educational material for being part of [SKO portfolio](#).

7. Overarching themes

In addition to the various components of open science included in this programme (access, data, code, rewarding and public engagement) there are some issues that are underlying to the success of the entire programme.

Inclusive and open **internal communication** from the outset is crucial for a successful programme. It will heighten awareness of open science, give early feedback on the programme, stimulate experimentation and sharing best practices (see appendix for an example of how this can be done with e.g. a Q&A service) and more generally make open science something *of* researchers, not just *for* researchers. The discussion should also result in more clarity on how open science relates to academic freedom and author/employer copyright.

In addition, **external communication** about open science ambitions, successes and problems, nationally and internationally is important to connect to other stakeholders (funders, publishers, public in general) and to cooperate with other universities and organisations (e.g. VSNU, LERU). If goals and practices of the institutions and stakeholders are clear and as far as possible also aligned, it will be easier and more 'logical' for researchers to practice open science.

Overall **monitoring** of open science at Utrecht University is important for internal and external communication, to have thorough discussions with researchers and other stakeholders and to verify that the value of science and scholarship has increased through open science. Monitoring should include both the efforts made and benefits gained in *doing* open science.

Finally, having **support for and training** in applying open science practices is necessary to assure that conditions for applying open science are optimised. This includes clear information, technical support and training. For young researchers this training should be an integral part of courses offered by graduate schools. It is important to involve researchers already applying open science practices in the training.

In 2017, Utrecht University:
- Starts raising awareness of open science practices among its support staff concerned with planning, disseminating and promotion of research (Research Support Offices, University Library, Communication, Research Institutes etc.).
- Offers portals and web pages about a.o. publishing in open access, copyright in the academic setting, Research Data Management.
- Becomes a member of the Dutch ORCID (Open Researcher and Contributor Identifier) consortium and starts a campaign to make researchers signing up and make use of their research profiles.

Goals 2020:
- To create full awareness among all UU researchers of the why, what and how of open science.
- To create excellent conditions for implementing open science practices

By 2020 Utrecht University:
Internal communication
- Stimulates open research by raising awareness and by connecting the expertise network, e.g. by means of grass root/innovative projects, an award for best practices, fellowships, developing expertise on copyright issues, and events on open science.

External communication
- Is a partner in open science and an active participant in national and international open science communities.
- Shares its efforts in open science with monitored goals and regular and publicly available reports.

Monitoring
- Has a full monitor in place showing progress in open science, measured at regular intervals, and to that end makes sure that researcher profiles (including ORCID) are optimally populated with research outcomes and integrated with UU research information systems.

Support
- Offers a year round training- and workshop programme on open science in master and graduate school courses and for senior scientists.
- Secures program output in the UU-organisation so that expertise, knowledge and services continue after the program ends.

8. Governance

Implementation of open science is a process to further transformation of research practices. It is iterative and based on constant learning. The UU Open Science Programme contributes to this process. The governance of the UU Open Science Programme must therefore be strongly connected with the research community and its policies and practices within the different disciplines. At the same time, the programme is closely connected to the institutional strategy must be explicitly supported by the Executive Board of the University. The Open Science Programme collaborates closely with other UU innovation programmes, such as Research IT, Educate-it and others, to ensure alignment and avoid overlap. Finally, open science is an important development within the (inter)national research and higher education landscape. The UU Open Science Programme will play a leading role while at the same time explicitly seeking (inter)national collaboration.

The organization of the Open Science Programme includes the following bodies:

- An Open Science Policy Committee, which advises the Executive Board, the Steering Committee and the Programme Manager on strategy and policy developments within the (inter)national context. This committee will be chaired by one of the UU deans and consist of prominent members of the UU research community and 'forerunners' (practitioners) with relevant expertise representing a variety of disciplines. To ensure connection to the broader open science landscape, it could be considered to invite an external open science expert, partner or stakeholder to join this committee.
- A steering committee, which focusses on the results and progress of the programme, reports to the UU Executive Board (Rector Magnificus) and communicates with MO. The members reflect strategic competencies in the areas of academic policy & support, HR, finances, communication and IT. The Programme Manager is the secretary to the Steering Committee. The Steering Committee is lead by the Secretary General of the UU.
- A Programme Manager and Team (work package leaders), responsible for the execution of the agreed actions within the programme.

The programme activities will be grouped around themes and lead by Work Package Leaders and Project Teams. The composition of these teams will reflect the needed expertise, key partners and collaborations.
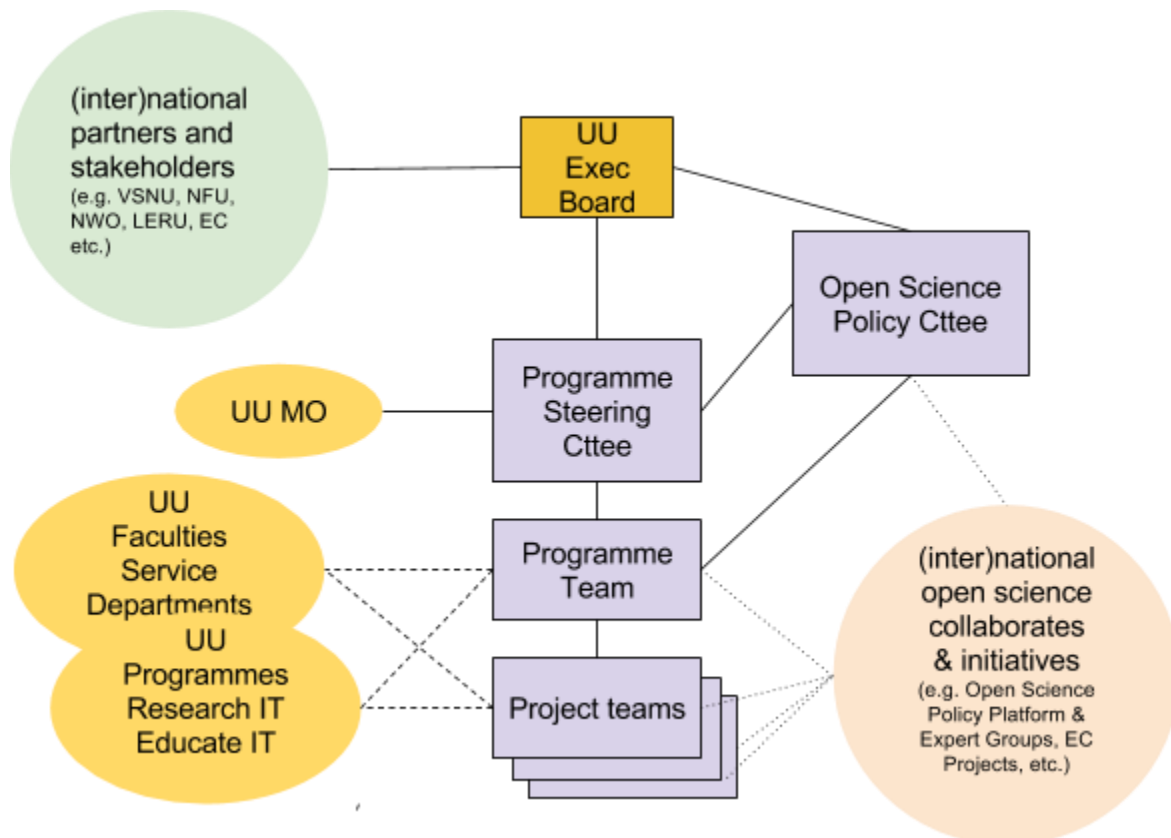
The Open Science Programme can only be successful if it appreciates local practices and bottom up initiatives. The formal programme structure therefore will act as a network organisation in a highly collaborative spirit (this is expressed by the dotted lines between stakeholders in the image above). We also expect the programme to be supported by a broad variety of roles: e.g. leaders-by-example, discussion leaders, ambassadors. These roles will be created as needed during the programme.

9. Planning & budget

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10. Appendix: a few examples and illustrations

A.   Refraining from patenting: Montreal and Aarhus showing how it can be done

A number of institutions have taken courageous steps in the field of patenting by refraining from it or by having patents permitting all kinds of reuse and sharing those openly in the public domain. See this article on the steps taken by the Montreal Neurological Institute or have a look at the patent free playground created by Aarhus University.
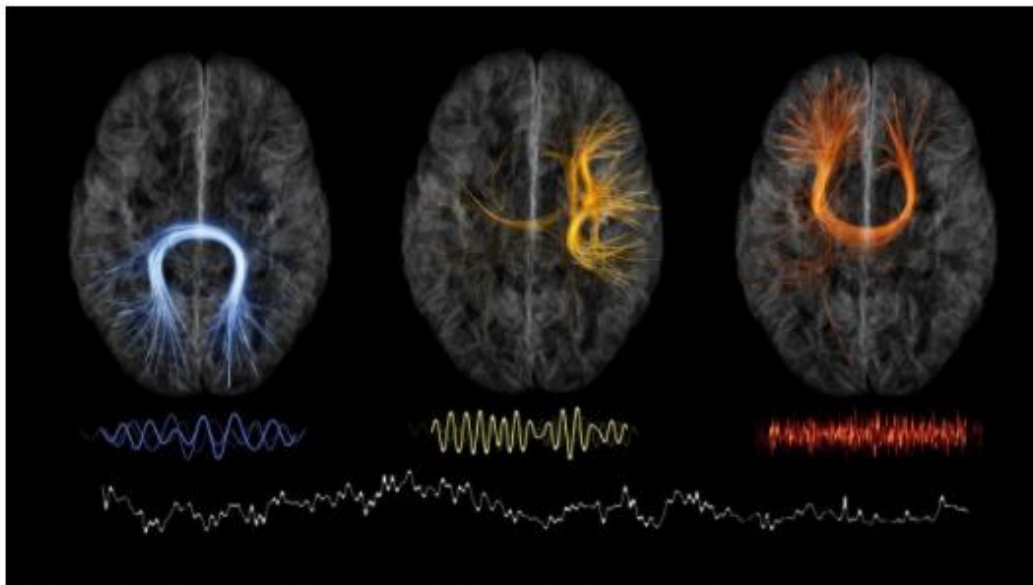
The Montreal Neurological Institute plans to free up its findings, including data that point to connections between brain regions communicating at different neural rhythms.

SÉBASTIEN DERY, MCCONNELL BRAIN IMAGING CENTRE, MONTREAL NEUROLOGICAL INSTITUTE

Montreal institute going 'open' to accelerate science

By Brian Owens | Jan. 21, 2016 , 2:00 PM

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Aarhus University and industry open patent-free playground

Along with a number of leading Danish industrial companies, Aarhus University has opted out of the rat race in a new collaboration on industrially relevant basic research. Researchers and companies from all over Denmark publish all their results and data on the innovative Open Science platform, where the information is available free of charge to everyone interested.

2017.07.24 | PETER F. GAMMELBY

B. Code of conduct including OS aspects: steps taken by of TU/e

On top of the VSNU code of conduct making openness requirement specific locally can advance openness. The Technical University Eindhoven has gone that route with its own CoC that makes openness explicit and ask researchers to sign it.

Anne Scheel @annemscheel · Aug 23

Today I signed a 4-year contract with this employer. And... I think I might be in love 😳
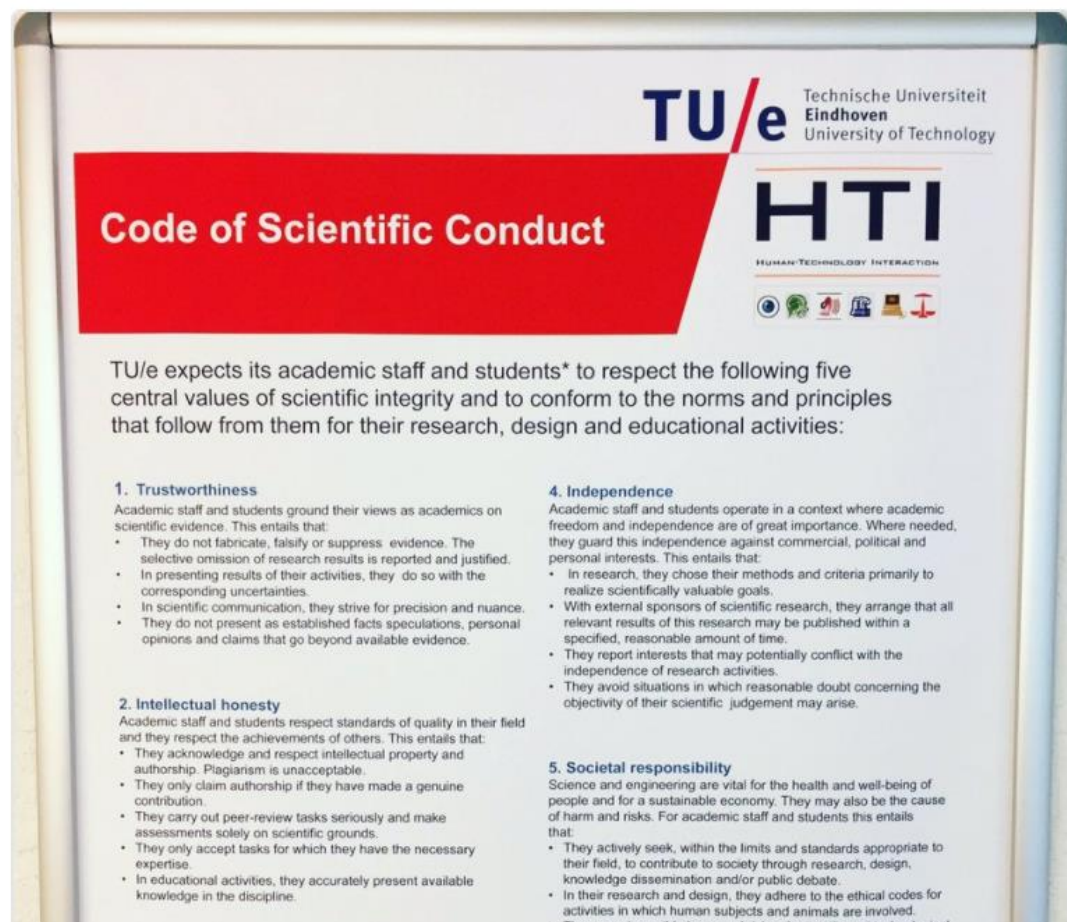
C. Sharing best practices of applying open science: Open Science Q&A to the rescue

It is important that sharing information on how to apply open science is made easy and best practices are readily available. A good starter is the international Open Science Q&A.

Recent questions and answers

+2 votes **1 answer**
Where can I publish a paper on a reproducibility experiment with several subject areas?
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answered **Jul 25** in Open Science by dlaehnemann (20 points)
publishing reproducibility journal

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green-oa funding requirements

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