



Delft University of Technology

**TU Delft Strategic Plan Open Science 2020-2024 Research and Education in the Open Era
Evaluation 2020 & Work plan 2021**

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DOI

[10.4233/uuid:06e5bd08-407f-4f71-ad33-dc5a07c3994c](https://doi.org/10.4233/uuid:06e5bd08-407f-4f71-ad33-dc5a07c3994c)

Publication date

2021

Document Version

Final published version

Citation (APA)

Versteeg, A. M. C., & Haslinger, I. M. (2021). *TU Delft Strategic Plan Open Science 2020-2024 Research and Education in the Open Era: Evaluation 2020 & Work plan 2021*. Delft University of Technology. <https://doi.org/10.4233/uuid:06e5bd08-407f-4f71-ad33-dc5a07c3994c>

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A satellite view of Earth at night, showing the curvature of the planet and numerous glowing city lights across the dark surface. The lights are concentrated in major urban areas, creating a pattern of bright yellow and orange spots against the deep blue and black of the night sky.

TU Delft Open Science Programme 2020-2024

Research and Education in the Open Era

Evaluation 2020 & Work plan 2021

Anke Versteeg & Irene Haslinger
Januari 2021

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1. Introduction

The *Open Science Programme 2020-2024, Research and Education in the Open Era*, tackles all areas of scholarly engagement where restrictions limit the flow of academic knowledge. It proposes new approaches to the process of research, education and innovation, with a strong focus on transparency, integrity and efficiency.

The programme started in January 2020 with five interrelated projects: Open Education, Open Access, Open Publishing Platform, FAIR Data, and FAIR Software. The projects are aimed at creating and disseminating various types of resources for the benefit of TU Delft researchers, teachers and students, as well as the general public. They will range from educational materials and software to a publishing platform. The outputs of the programme will be as 'FAIR' as possible: findable, accessible, interoperable and reusable.

In addition, each project will address the following three preconditions for successful implementation: ensuring appropriate rewards and recognition, facilitating fruitful collaboration with third parties, and gathering relevant skills. These are therefore incorporated in the programme as cross-cutting themes for all projects.

Portfolio holder of the *TU Delft Open Science programme* is VRM Rob Mudde. The programme is coordinated by a steering committee, and will be managed by a programme team. Chair of the steering committee is Irene Haslinger, director of TU Delft Library. The other steering committee members are Jan Dirk Jansen, Dean of the Faculty of Civil Engineering and Geosciences (representing all faculties); Sacha Kroonenberg, director of ESA (representing all university services) and Frank van der Hoeven, who also chairs the programme team.



2. Evaluation 2020

The first year of the Open Science Programme, 2020, was all about connection: The connection between the projects and the intersecting themes, the connection between the various TU Delft services that are involved in the programme, and also the connection with the faculties, the communities, and the individual researchers and lecturers.

A programme with so many connections and cross connections and so many different stakeholders takes some time to become fully up and running. Unfortunately, from March onwards we had to deal with the lockdown measures due to Covid 19 and everything had to be done remotely. This put an extra burden on communication and engagement within the programme. That is why, besides the regular check-in meetings and individual meetings with the project leaders, extra engagement workshops (led by an external colleague) and thematic sessions were organized to strengthen internal cohesion and team spirit. Our own community engagement manager, Emmy Tsang, started on 15 September. The Open Science Community Delft was launched in September, and a new website was published in November.

Also, the first year showed a lot of changes in staffing. Paul Hillman left TU Delft and thereby the Steering Committee. He was replaced by Sacha Kroonenberg. Bea de los Arcos took over from Willem van Valkenburg in the Open Education project, Marta Teperek took over from Alastair Dunning in the FAIR data project, Ingrid Vos took over from Anneke Vervoort in the cross-cutting theme Rewards & Recognition, Irma Ravestijn temporarily took over in the cross-cutting theme Fruitful Collaboration with Third Parties from Rianne van den Bogerd, who was on maternity leave. Liaison Lotte Melenhorst was also on maternity leave, Jennifer Achterhof (office support) and Najiba Abdellaoui (communications support) left the programme, Miriam Nuijten (communications support) and Wilma van Wezenbeek, chair of the steering committee, both left TU Delft. We are currently looking for a new programme manager, and also for office support. However, a number of new colleagues have joined the programme as well! As mentioned above, Emmy Tsang started as our engagement manager. In addition, 2 data managers (Ashley Cryan and Amir Ebrahimi Fard) and 4 research software engineers (Maurits Kok, Jose Urria Llanusa, Niket Agrawal and Manuel Garcia Alvarez) started in September/October. Due to these staff changes and additions to the team it is important to continue the focus of connection from 2020 into 2021 and beyond.

In addition to the five projects and the three intersecting themes, there were two extra assignments for 2020: Explore the topic of Citizen Science and the concept of an Open Science Lab to see if they should be included in the programme. The exploration of the Open Science Lab has been postponed for a year as it is dependent on the implementation of various systems (TUD Library, together with ICT and others, are working on this). In consultation with Rob Mudde, another exploratory subject has been added to the list during the year: Open Hardware. The advice is to incorporate both Citizen Science and Open Hardware as projects into the programme. Formal advices will be presented in the beginning of 2021. The Open Science Lab will be further explored in 2021.

From a programme management point of view, experiences in 2020 led to the following lesson learned for 2021

- Strong(er) focus on internal cohesion, especially where there is interdependency between deliverables; no doubt the newly appointed community manager can play a role in this
- Increase priority-setting, especially in projects with many deliverables
- Articulate role of business change manager(s), to increase awareness of and support for Open Science in faculties and university services

- Extend programme's outreach and visibility to communities inside and outside of TU Delft

Below, an overview of the 2020 highlights is given per project/cross-cutting theme.

Project Open Education

- Is writing a roadmap to open education (from free to libre, a scale of openness)
- Set up the Open Educational Resources policy (for last check)
- Hired a copyright expert, Paschalis Kontanas
- Won a SURF grant for *project open learning materials in a multidisciplinary programme* (with applied sciences - Nanobiology)
- Is working on a grant proposal for a smart OER search tool (with EEMCS)
- Is participating in 'nationaal versnellingsplan onderwijsinnovatie' together with ICT
- Co-hosted the Open Education Global (Nov 16-20)

Project Open Access

- Has seen the campaign 'You share we take care (Taverne)' officially approved. Scaled it up to all faculties. Already over 1.500 publications via this route Open Access available
- Monitoring process and figures OA: TU Delft is a fellow leader in the Netherlands with a percentage of 66% OA for articles and 55% for conference papers
- NWO organised knowledge sessions about the application of Plan S. TU Delft participated and is ready for consultancy now. The webpage is completely revised and consultancy hours are announced
- Negotiated important new open access agreements with the publishers IEEE, ACM and Microbiology Society

Project Open Publishing

- Has a new [website](#) running which also shows new services. Started two new journals: Journal of Coastal Hydraulic Structures and Journal of Delta Urbanism
- Is going to align awareness and engagement plans with new community manager OSP
- Started a pilot with a mega journal (together with Orvium)
- Arranged the governance of an advisory board
- A [blog](#) was launched in October 2020. The idea is to share the latest developments and trigger open discussions
- Implementation of a transparent recognition system (CRediT contributor Roles Taxonomy)

Project FAIR Data

- Developed a [vision for RDM training](#)
- Has launched training '[Research Data management 101](#)' and is coordinating the [Carpentry Workshops](#) among the partners of 4TU.ResearchData
- Organised a workshop in June together with 'FAIR sharing' on the use of disciplinary standards
- Hired two data managers from September 2020

- Transitioned the Data Champions to become 'Open Science Community Delft' from 17 September (nb Data Champions are now a sub initiative of the Open Science Community)
- Organised the conference 'Openness and Commercialisation: [How the two can work together?](#)' in collaboration with CESAER and Scientific Knowledge Services on December 3 and 4

Project FAIR Software

- Software licensing policy and guidelines to be formally approved in the CvB meeting on the 16th of February
- Pilot research software engineers (RSE) started
- Concept position paper on RSE/DM support for research
- Research Software module in MOOC on Open Science

Cross cutting theme Rewards and Recognition in the open era

- Ingrid Vos participates in TU Delft committee Recognition & Rewards (chair Ena Voûte) linked to VSNU position paper "Room for everyone's talent"
- Baseline assessment and preparations implementation plan, for example a TU Delft policy for differentiation in career paths to be started soon
- Internal knowledge session held within programme and committee; output will be shared openly for feedback

Cross cutting theme Fruitful Collaboration with Third Parties

- Implementation scheme for publication of master theses in repository; discussed with director ESA and Rob Mudde; now with John van Haare (3ME)
- External advice on data ownership (Martijn Loth, Taylor Wessing)
- Internal programme knowledge session in November
- Worked together with the FAIR Data project in organizing the conference 'Openness and Commercialisation: [How the two can work together?](#)' in collaboration with CESAER and Scientific Knowledge Services on December 3 and 4

Cross cutting theme Skills

- Vision for RDM training completed
- Working on skills roadmap
- Starting collaboration with VU and UU on setting up a matrix for open science skills
- 3rd run MOOC: sharing your research with the world with development and addition of a new module about research software
- 1st run "Research Data Management 101" <https://intranet.tudelft.nl/en/-/r4.a1-research-data-management-101>

Exploratory topic Citizen Science

- Desk research, joined webinars and a conference

- Interviews with experts and researchers from TU Delft and other universities to identify the current stance of citizen science in general and specifically as related to open science and university libraries across the world
- In addition, explored the needs and possibilities for TU Delft in various working sessions with experts and interested parties from TU Delft.
- Supported a pilot with Citizen Science in Delft last summer ('Delft meet regen')
- All findings are currently being incorporated into a report and an advice that will be published by the end of 2020.

Exploratory topic Open Hardware

- [BFOSH \(build free and open science hardware project\)](#), where we replicated an open hardware centrifuge for science
- [Running Delft Open Hardware projects](#)
- Hosting community events and meetups, both project related workshops and social
- Invited speakers to talk on myriad Open Hardware topics
- Contribution to [Open Hardware Leaders program](#)
- Weekly open meetings to share projects and ideas. Continuing online all through 2020
- Training sessions for Open science and design for MSc students
- Development of the [CombatCovid app](#) to publish design of Covid-19 related emergency equipment
- EOSC funded HardDocs project to improve ease of publication of Open hardware projects (international collaboration with developers in USA and Nigeria)
- Exposition of Open Source history at the TU Library

3. Budget 2021

Project/theme Amounts in K euro	Budget 2020	Budget 2021	Budget 2022 doorgeschoven	Explanation
Open education	155	135	20	Included but for discussion: coordination function (40K) ESA/Library. Split over two years 2021 and 2022
Open access	63	60		realization 2020 (200K): 40K OA project + 30K extra funding for OA fund Library + 130K APC costs MDPI, Frontiers, Springer
Open publishing platform	67	70		no changes
FAIR data	210	220		2 data managers (150K) + datahubs (50K) + new data formats (10K) + teambuilding & training (10K)
FAIR software	175	360		4 RSEs(4x75K=300K)/ICT + Gitlab storage (50K) + training (10K)
Rewards & Recognition	47	25	25	costs Ingrid Vos HR; split over two years 2021 and 2022
Fruitful collaboration	0	15		+ external advice ownership of data, policy development (10K)
Skills	35	35		no changes
TOTAL Project costs	752	920		
Contingency project costs	118	60	60	halved (120K over 2 years)
Programme costs	87	140		Programme manager (50K) + community manager (80K) + Open Science Community Delft activities (10K)
Citizen Science	0	40	15	NEW! Development (10K) + coordination (30K) Citizen Science platform and Community of Practice, Knowledge sharing + sponsoring CS initiatives (15K), total 55K
Open Hardware	0	40	10	NEW! training (15K) + vouchers (10K) + maker space (10K) + community building (10K) + DIY open hardware (5K), total 50K
Open Science Lab	0	50	50	NEW! open science architect (80K) + development open science lab (20K), total 100K. Split over two years 2021 and 2022
TOTAL Programme costs and new initiatives		330		
TOTAL	*957	**1250	180	** Required budget was 1430K
Target UD agenda	*prognose 2020 is 227K, overflow 730K	1144	286	

Historical background

In the business case of the *TU Delft Strategic Plan Open Science 2020-2024* an indicative budget for the four year lifespan of the programme was presented. This indicative budget contained both project costs and programme management costs. Project costs are costs made in delivering the enabling outputs. Programme management costs are costs for managing the programme, and may include entries like programme roles, communication activities, or a contingency budget for dealing with risk and change. Costs that are typically associated with realizing the change in the existing organization (staff or infrastructure in the faculties and university services) are not part of the budget and will remain implicit. The table below from the *TU Delft Strategic Plan Open Science 2020-2024* contains the indicative budget for the period 2020-2023, resulting in an overall estimation of **€3M**.

	2020	2021	2022	2023	Total in K euro
Total in K euro	600	800	800	800	3000

To prevent the Open Science Programme from being perceived as a Library project, it became part of the UD agenda. Initially, **600K** was budgeted for 2020, and **800K** for each remaining year. At the request of Rob Mudde, portfolio holder Open Science in the Executive Board, 2 scenarios have been explored (a light version and a more ambitious one). By the end of 2019, the Executive Board opted for the more ambitious one, and as a consequence a budget of **957K** has been requested, instead of the original **600K**. With an overall budget of 3M, this means there is **681K** available per year for the period 2021-2023.

	2020	2021	2022	2023	Total in K euro
Total in K euro	957	681	681	681	3000

The budgeting process of the UD agenda 2020 was not finished until spring 2020. Then the Executive Board gave permission to activate a quarter of the requested budget, 957K \rightarrow 1M:4= **250K**. The current estimated realization is **227K**. This means that there is an underspending of **730K**. The available budget for 2021 is then **730K** (underspending 2020) + **681K** (budget for 2021) = **1411K**. A budget of **1430K** was submitted for 2021. At the request of Finance, it was explored whether 20% of the original 2021 budget could be transferred to 2022. This means a budget of **1144K** for 2021 and a transfer of **286K** to 2022. After consultation with all the project leaders, it seems feasible to move **180K** to 2022, which leaves a budget request of **1250K** for 2021.

The work plan 2021 contains 3 new initiatives, and the intention is to see whether the programme can absorb these initiatives within the total amount of 3M. By the end of 2021, halfway through the programme, this will be evaluated. If it turns out that costs for these new initiatives cannot be absorbed, a request will be submitted to extend the overall budget of 3M.

4. Workplan 2021

Completed deliverables for 2020 have been marked with a √. A number of deliverables continue in 2021 and beyond, even though significant results may have been achieved in 2020.

Open Education: Increasing Open Educational Resources

Nicole Will & Bea de los Arcos

I. Brief description of the project

The project supports teachers in adopting and adapting teaching and learning methods through open education. It also helps to keep education accessible and affordable for students. The project builds on current practices such as Open Courseware and MOOCs. Support includes training, advice, tools and infrastructures, for instance for sharing and reusing teaching materials.

II. Deliverables 2021

Deliverables	Sub deliverables	Dependencies with other projects/themes	Year(s)	Costs in 2021
Copyright & Open Licenses helpdesk Nicole HIGH PRIORITY	Functional copyright & open licenses helpdesk including improved website OER policy in January 2021 in CvB Aligning approach (LS, VC) Copyright team working on improved website		2021-2023	
	Integrated Copyright & Open Licensing		2021-2023	

	<p>services in Teaching Academy Services</p> <p>Bea asks Cora update, need for copyright desk in TA? Focus more on support for creative commons advice instead of copyright</p>			
	Teacher support, including training		2021-2023	
<p>Teacher training (Open Education in UTQ)</p> <p>LOW PRIORITY</p> <p>Bea</p>	<p>Difficult discussion, usual barriers, dependent on other parties</p>	'Versnellings-zone, professionalisering'	2021/2022	
<p>Open Textbooks</p> <p>Nicole</p> <p>HIGH PRIORITY</p>	<p>Standard production service for Open Textbook publishing compliant to 5Rs</p> <p>Increasing number of books (now 10)</p> <p>Develop service, editable version > dependent on Open Publishing project</p>	<p>Open Publishing Platform</p> <p>Compliance with European law</p>	2021-2023	€ 25 k
<p>Open Education coordination</p>	For all these activities someone is needed who will do the actual work.		2021-2023	€ 20 k

	There is no existing capacity available			
Nano-biology project Nicole/Michiel MEDIUM PRIORITY	Support for creating and publishing interactive open textbooks	Open Publishing Platform	2021/2022	External funding from SURF 'stimuleringsregeling'
Replacing commercial textbooks with open resources Nicole/Michiel MEDIUM PRIORITY	<p>Inventory of current situation</p> <p>SURF national project 'versnellingszone'; convert formats to editable version. Input for our own platform (end 2020)</p> <p>Related to copyright tool project</p> <p>LMRS project</p>		2021/2022	€ 30 k
	Teacher support for replacing commercial textbooks		2022-2023	
Open assessment & exercise platform	Mathematics and digital skills assessments and exercises published	Skills for Open Science	2021	€ 10 k

<p>Erna project owner, Nicole contact person</p> <p>LOW PRIORITY</p>	<p>online with an open license</p> <p>ICT Erna Kotkamp, Nicole asks her for an update</p>			
<p>Content Curation</p> <p>Bea</p> <p>HIGH PRIORITY</p>	<p>Develop training in finding, selecting and (re)using OER</p> <p>Bea will write a basic document on this (work in progress)</p> <p>Train core users per faculty</p> <p>Call for teams of teachers & students, working with mentors: how can your teaching be improved using open practices. Funded projects. Twice a year (?), on a regular basis, combined with Skills</p>		<p>2021-2023</p>	<p>€ 50 k</p>
<p>OER search engine</p> <p>Nicole</p> <p>LOW PRIORITY</p>	<p>Project proposal EEMCS, submit in 2021 (NWO), preceded by a small project proposal OS fund (Emmy is helping)</p> <p>Proposal with Markus Specht and Christoph Lofi</p>		<p>2021 (submission)</p>	

Total costs deliverables				€ 135 k
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Open Access: Going Forward with Open Access

Just de Leeuwe

I. Brief description of the project

In the coming years, the focus of Open Access will be extended from peer-reviewed scientific articles to books, conference proceedings, book chapters, reports, reviews and educational resources. The project supports this development by addressing both policy and infrastructure aspects that are crucial to the further development of Open Access practices.

II. Deliverables 2021

Deliverables	Sub Deliverables	Dependencies with other projects/themes	Year(s)	Costs in 2021
<p>Open Access Policy TU Delft</p> <p>HIGH</p>	<p>Revision Open access policy TUD compliant with Plan S, and Horizon Europe, Taverne >></p> <p>Make 'Taverne' the minimum default</p> <p>1. Explore the possibility to include this in TUD contract with researchers</p> <p>2.Update current policy with 'Taverne' and PlanS.</p>		<p>Q1 en Q2 2021</p>	

<p>HIGH</p>	<p>Growth ambition of Open Access determined; monitor targets for TU Delft open access publications 2020-2024</p> <p>Await UKB plans? (Maurits de Graaf)</p> <p>TUD Open Access percentage; target 2021: 75-80%</p>		<p>Q1 2021</p>	
<p>Plan S Implementation</p> <p>HIGH</p>	<p>Plan S requirements are processed in the information infrastructure; webpage adjusted and custom-made consultancy kit for researchers</p> <p>%OA monitoring (Jorden) is running</p> <p>Renew requirements for sustainable archiving in repository.</p> <p>Seek for DOAJ registration (Armand & Frederique)</p> <p>Engagement & website with Emmy and comm.</p>	<p>Rewards & Recognition in the Open Era</p> <p>Open Access Policy TU Delft</p> <p>Skills</p>	<p>Q4 2020, Q1 2021</p>	

	<p>Use consultancy kit from NWO work together with data stewards, contractmanagers (and contact projectmanagers VC)</p> <p>Connect with Graduate School and Skills project</p>			
<p>Project Taverne, You share, we take care! implementation</p>	<p>Embedding of Taverne legislation at TU Delft as a result of policy decisions made at VSNU level</p>	<p>Open Access Policy TU Delft</p>	<p>2020</p>	<p>√</p> <p>Done (for update see policy)</p>
<p>Transformative publishers agreements</p> <p>HIGH</p>	<p>10 successful negotiations on transformative deals deliverables in 2020-2022</p> <p>-> 3 in 2020 (IEEE, ACM, Microbiology Society)□□</p> <p>Continuing story. Work together with Alastair (collection costs)</p> <p>Partly TUD, partly Surf. For future maybe acting as 4TU?</p>	<p>Policy paper for handling APC-cost</p> <p>Also waiting for advice from 'Information power, 21st century scholarly collections': they will help to get overview on all the parts of the collection costs</p>	<p>2021-2022</p>	<p>€ 50 k</p>

<p>Dashboard Open Access</p> <p>LOW</p> <p>nice to have</p>	<p>Real-time Open Access visualization tool for TU Delft researchers based on CRIS data</p> <p>Jorden (Tableaux); this is already running</p>		<p>2021</p>	<p>€ 5 k</p>
<p>Infographic(s) Open Access</p> <p>MEDIUM</p>	<p>Professional Infographics informing researchers about Open Access participation</p> <p>Ask the communications team for help</p>		<p>2021</p>	<p>€ 5 k</p>
<p>Total costs deliverables</p>				<p>€ 60 k</p>

Open Publishing Platform: Open Publishing on a TU Delft Platform

Alenka Prinčič

I. Brief description of the project

Open Publishing is a form of scholarly communication that offers not only free access to scientific publications, research data and educational materials, but also provides the infrastructure and processes for creating open content. Open publishing infrastructures use open source software wherever possible, thus reducing the intrinsic costs of the publishing process. The project will deliver a publishing platform, together with services that will enable TU Delft researchers to adopt the open publishing principle.

II. Deliverables

Deliverables	Sub Deliverables	Dependencies with other projects/themes	Year(s)	Costs in 2021
<p>Platform</p> <p>HIGH PRIORITY (Technical maintenance)</p> <p>MEDIUM PRIORITY (Expansion/technical development)</p>	<p>Publishing platform TU Delft OPEN for three initial mainstream products (roll-out website), events, marketing, communication</p> <p>Ongoing deliverable. OJS still fragile. Seeking partnership with other platforms. Openjournals.nl (NWO, KNAW). Costs for upgrade and expansion.</p> <p>Specific attention to communication and engagement with researchers and editors (Emmy can help)</p>		<p>2020</p> <p>2021</p> <p>2021, Q1</p>	√

<p>Platform innovation development</p> <p>HIGH PRIORITY</p>	<p>A process enabling innovative forms of open (peer) review, and open post-publication commentary</p> <p>Completed (most of it). Pilot Orvium up and running. Evolving scholar involves open peer review. R&R aspect is discussed with Ingrid Vos.</p>	<p>Rewards and Recognition in the Open Era</p> <p>Related areas: AI, blockchain technology</p>	<p>2021-2023</p> <p>2021, Q1</p>	<p>€ 40 k</p>
<p>MEDIUM PRIORITY</p>	<p>A process enabling registering reviewers' work in order to assign the credits for their work (e.g. model of Publons)</p> <p>Ongoing, pilot-phase</p>	<p>Rewards and Recognition in the Open Era</p>	<p>2021</p>	<p>€ 5 k (membership)</p> <p>(costs will be higher)</p>
<p>MEDIUM PRIORITY</p>	<p>'Enhanced/interactive' publication format.</p> <p>relevant when we have papers from new mega/meta journal Evolving Scholar</p> <p>Discuss concept of enhanced publication, distinctive added value in (persistent) connection between various components</p>	<p>Open Education</p>	<p>2021</p>	<p>€ 5 k (software)</p>

	<p>of the enhanced publication. Enhancement has different connotation for educational materials. > organize a thematic session on this in March 2021</p>			
<p>Tool HIGH PRIORITY</p>	<p>Next generation-, social media metrics and article level metrics</p> <p>Liaise with Ingrid</p>	<p>Rewards and Recognition in the Open Era</p> <p>Resource for Research Intelligence Library</p>	<p>January 2021, Q1</p>	<p>€ 15 k</p>
<p>Support LOW PRIORITY</p>	<p>Editorial support for the material of TU Delft OPEN platform in year 2, incl. embedded copyright check, similarity (plagiarism) check, and 'predatory journals' check, etc.</p> <p>dependency with open journals.nl, admin but also language support, preference for outsourcing</p>		<p>2021-2022</p>	<p>€ 10 k</p>
<p>Guide HIGH PRIORITY</p>	<p>Stepwise guide to open publishing at TU Delft</p>	<p>Skills for Open Science</p>	<p>2021, Q4</p>	<p>€ 5 k</p>

	As part of the engagement plan, discuss with Emmy, maybe find inspiration in open science guide?			
Total costs deliverables				€ 70 k

FAIR Data: making research data FAIR

Marta Teperek

I. Brief description of the project

The project creates a stronger bridge between the current policy, infrastructure and culture of data stewardship and scientific practice, for instance by exploring new roles like data manager, in order to fulfill the researchers' actual needs in managing their research data. A coherent approach to FAIR data, which also takes into account the limits to open data, helps make research more transparent and efficient.

II. Deliverables 2021

Deliverables	Sub Deliverables	Dependencies with other projects/themes	Year(s)	Costs in 2021
Data Managers	Hire data managers ✓ Things run smoothly. One call completed; second one in progress. Combination with RSEs. DCC call awarded for coordination position.	Rewards and Recognition in the Open Era, FAIR software, Open Hardware	2020-2022	€ 150 k (2 data managers for 1 year)
Research Data Training	A completed vision for Research Data Management training	Skills for Open Science	2020	✓
Supporting communities working with specific tools and data formats	Recommendations for tools, skills and infrastructure needed to embed such formats in open science Datasets in NetCDF format, integration of tools and workflows		2021-2022	€ 10 k

	Applying for additional grants to the NWO Open Science Fund as collaboration between research communities and 4TU.ResearchData			
Team building & training	For datamanagers and RSEs (digital skills, programming, conferences, team building)	Skills	2021	€ 10 k
Geospatial Data Pilot	A study to assess how best TU Delft can share and publish geospatial data, merged with data hubs deliverable		2021-2022	50K
Limits of Open Data	<p>A study to define the technical, ethical and commercial limits of Open Data</p> <p>Conference December 2020 ✓</p> <p>SURF project DMP online</p>	<p>Fruitful Collaboration with Third Parties</p> <p>ICT (security & protection of data)</p>	2021-2023	
Total costs deliverables				€ 220 k

FAIR Software: making research software FAIR

Meta Keijzer-de Ruijter & Mark Schenk

I. Brief description of the project

Research software is fundamental to contemporary research, particularly in the context of reproducibility. If Open Science is to contribute to better and more transparent research, research software needs to be treated with the same diligence as research publications and research data. The project will contribute to this goal by developing and facilitating various aspects of research software, including policy, infrastructure and organizational culture.

II. Deliverables 2021

Deliverable	Sub Deliverables	Dependencies with other projects/themes	Year(s)	Costs in 2021
Research Software Engineers	Pilot for RSE Hire 4 RSEs ✓ 1st round still going on (11 calls; mainly RSE's, two combined with data managers), now 19 applications for 2nd call, all fac. except TBM).	Rewards and Recognition in the Open Era	2020-2022	€ 300 k (4 RSE's)
Support software development	Pilot coding assistant support for individuals and groups Challenge: how to exactly formulate the need		2020	✓

<p>(Open) software policy</p>	<p>Existing guidelines transferred into policy incl. licenses for open software</p> <p>January feedback directors' team; February 16, CvB</p> <p>NB communication needed for this and other policies related to OS (Emmy & Comm.)</p>	<p>Rewards and Recognition in the Open Era</p>	<p>2020</p>	<p>√</p>
<p>Skill development for researchers</p>	<p>Curriculum for software development skills implemented</p> <p>NB be close to researchers to experience the real need</p>	<p>Skills for Open Science</p> <p>Ook met Software Carpentries</p> <p>Graduate school</p>	<p>2021</p>	
<p>Deployment, configuration and evaluation of TU GitLab</p>	<p>Roadmap for TU-Gitlab deployment, storage</p> <p>To be continued</p>		<p>2021</p>	<p>€ 50 k</p>
<p>E-lab notebooks</p>	<p>Evaluate current E-lab notebooks pilot</p>		<p>2020</p>	<p>√</p>

	<p>Only R-Space implementation needed now.</p> <p>User group meetings</p> <p>100% digital</p> <p>Focus on lab work</p>			
Training	(NB Connected with skills RSE's)		2021	€ 10 k
Total costs deliverables				€ 360 k

Rewards & Recognition in the Open Era

Ingrid Vos

I. Brief description of the cross-cutting theme

To encourage the actual practice of open science principles, it is imperative that researchers and teachers are rewarded and recognized for their efforts. This cross-cutting theme will support the development of tools and initiatives that acknowledge activities and behaviour that contribute to all dimensions of open science practices, which will also lead to a significant cultural change.

II. Deliverables 2021

Deliverables	Sub Deliverables	Dependencies with other projects/themes	Year(s)	Costs in 2021
Exploration	<p>Overview of incentives and changes in rewards & recognition systems</p> <p>Done. A lot is happening in the Neth. and in Europe. 3-5 dimensions in profiles (research, education, valorisation, leadership, working with patients). Make OS part of all these dimensions.</p> <p>Double role for IV in OSP and TUD R&R commission gives maximum result.</p>		2020	√

<p>HIGH PRIORITY</p>	<p>Baseline assessment of TU Delft climate with rewards and recognition for Open Science</p> <p>Use McKinsey model for Open Science</p>		<p>Q1 2021</p>	<p>€ 15 k</p>
<p>Implementation plan</p> <p>MEDIUM PRIORITY</p>	<p>Incorporate Open Science in criteria for hiring and promotion, including recognition of engagement with Open Science in the R&D cycle</p> <p>Runs parallel with projects from TUD R&R communications. Criteria for education and research are almost set, now busy on developing criteria for valorization. (i.e. explaining, engaging, change making). Make sure OS aspects will be included in all dimensions.</p>	<p>All projects, Skills</p>	<p>2021-2023</p>	
<p>MEDIUM</p>	<p>TU Delft policy for differentiation in career paths</p>	<p>All projects, skills</p>	<p>2021-2023</p>	

	This will be also a recommendation of the TUD R&R commission			
	<p>Development of TU Delft alternative methods for research assessment</p> <p>How and what to measure to support the narrative. Work together with national partners in this.</p>	All projects, Alenka, research intelligence	2021-2023	€ 10 k
Total costs deliverables				€ 25 k

Fruitful collaboration with third parties

Rianne van den Bogerd

I. Brief description of the cross-cutting theme

This cross-cutting theme focuses on guidelines, policies and regulation that help to deal with any issues or opportunities that arise in (developing) collaborations with third parties, with regard to the outputs delivered by the projects in the Open Science programme. Examples include Intellectual Property (IP), copyright and licenses.

II. Deliverables 2020

Deliverables	Sub Deliverables	Dependencies with other projects/themes	Year(s)	Costs in 2021
(Open) software policy	Guidelines transferred into policy about licenses for open software	FAIR Software	2020 16 feb in CvB	√
Landelijke werkgroep werkgevers-auteursrecht (VSNU) Link met arbeidscontract, CAO, gevolgen voor IP, data en software Derya, vz, TUD werkgroep	Merlijn (VC) Just (Library) Pascalis (Library)	FAIR data FAIR software HR VC		

<p>Implementation plan for mandatory publication of Master thesis</p> <p>Rianne</p>	<p>Implementation scheme for the 4TU decision to make all Master theses publicly available</p> <p>pushback van IO (status decision 4TU?)</p> <p>Needs to be connected to the TUD Exams regulations (spring 2021),</p> <p>Jan Nuiten</p> <p>“verplichting of pas toe/leg uit”</p>		<p>2021</p>	
<p>Fruitful collaboration with third parties policy</p> <p>Rianne</p>	<p>A policy document on Fruitful collaboration with third parties > seminar December 2020</p>	<p>FAIR data</p>	<p>2021</p>	
<p>Data Problems Analysis</p> <p>Derya</p>	<p>Definition of legal and practical issues and gaps regarding data as a legal topic: meeting Martijn Loth</p>	<p>FAIR data</p>	<p>2021</p>	<p>€ 10 k</p>
<p>Total costs deliverables</p>				<p>€ 10 k</p>

Skills for Open Science

Nicole Will

I. Brief description of the cross-cutting theme

Researchers, teachers, students and support staff will (further) develop certain skills in order to be able to apply the open science principles in their daily practices. This cross-cutting theme will create an overview of the skills needed, connect the existing training modules (and training still in development) in the projects, and coordinate the further development of courses in a comprehensive way. A difference should be made between trainings (courses), where participants learn and acquire skills, and knowledge and activities like roadshows and presentations aimed for creating awareness on certain topics. This project only takes into account the trainings.

Deliverables	Sub Deliverables	Dependencies with other projects/themes	Year(s)	Costs in 2021
Training Overview	Inventory of trainings from projects and cross-cutting themes RDM cursus is opgeleverd, pilot deze herfst via GS	All projects and themes	2021-2023	€ 10 k
	Standardized course description; classified by audience, levels, topics Only relevant when Skills frame work is ready		2021	
Calendar	Coordinated training calendar		2021-2023	€ 5 k

	<p>Paula and Education support have to align; subscription through GS, for courses and training outside GS new subscription system has to be developed or chosen</p>			
<p>Open Science personal development path</p>	<p>Guidelines about skills levels depending on career stage</p> <p>Rob Mudde asks for RDM component for master graduates. Try to get a formal request from him to do so.</p> <p>Ask the users: what do they need and want. Use open science community for this. PhD's can be reached through GS.</p>	<p>All projects and Rewards & Recognition in the Open Era</p>	<p>2021</p>	<p>€ 15 k</p>
<p>Skills overview</p> <p>HIGH PRIORITY</p>	<p>Study that defines skills required</p> <p>More important than inventory is to find out what is needed.</p> <p>Possible topic for thematic session in April</p>	<p>All projects</p>	<p>Q1 2021</p>	<p>€ 3 k</p>

	Formulate assignment for someone to create the skills framework			
	Identify gaps in proposed skills trainings		2021	€ 1 k
	Open Science skills framework Last step; after inventory and creation: implementation.		2021	€1 k
Total costs deliverables				€ 35 k

Citizen Science (NEW!)

Sabine Kunst

I. Brief description of this project

The exploration of Citizen Science has made clear that this form of research offers significant added value to Open Science. Active participation in scientific research by non-scientists offers an additional dimension to Open Science. Delft University of Technology has already experience with various forms of Citizen Science and researchers are interested in this research approach. We identified the researchers' need of sharing experience, of learning about possibilities of working with citizens, as well as the need for support and resources requisite for clear new forms of activities and skills specific to Citizen Science.

Deliverables	Sub Deliverables	Dependencies with other projects/themes	Year(s)	Costs in 2021
Citizen Science Platform	Design platform		2021	€ 10 k
	Coordination platform, and community of practice		2021	€ 15 k
Knowledge sharing activities & sponsoring CS initiatives			2021	€ 15 k
Total costs deliverables				€ 40 k

Open Hardware (NEW!)

Santosh Ilamparuthi

Brief description of this project

Open hardware or open source hardware is “Hardware whose design is made publicly available so that anyone can study, modify, distribute, make, and sell the design or hardware based on that design”. The open hardware project has the goal of introducing open source hardware into the Open Science movement. The idea is that without open source hardware a missing link would remain in the open science and open source ecosystems. This will be accomplished by supporting students and researchers in making their hardware projects open source. Workshops and training sessions will also be conducted to further build the community.

Deliverables	Sub Deliverables	Dependencies with other projects/themes	Year(s)	Costs in 2021
Teaching & training	Workshops and training sessions		2021	€ 15 k
Encourage more open hardware projects	Support thesis projects across faculties		2021	€ 15 k
Community building and visibility on campus, including open hardware infrastructure (maker space)	Build open hardware replication projects and publication of documentation		2021	€ 10 k
Total costs deliverables				€ 40 k

Open Science Lab (possible new cross-cutting theme from 2021 on, but waiting for acquiring and implementation of new systems)

Open science architect (40K), development open science lab (10K).