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Delft University of Technology

TU Delft Open Science Programme 2024-2028 Research and Education in the Open Era
Evaluation 2024 & Work plan 2025

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Research and Education in the Open Era

TU Delft Open Science Programme 2024-2028

Evaluation 2024 & Work plan 2025

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Colophon

Contents

1. Introduction

On 10 October 2023, the Executive Board adopted the TU Delft Strategic Plan Open Science 2024-2028 as the successor to the Strategic Plan Open Science 2020-2024. The Executive Board thereby recognised the strategic importance of the programme and endorsed the substantive design. However, the Executive Board also indicated that the level of ambition had to be determined in relation to the available financial scope in the current budget process with a multi-year perspective as a precondition. Based on this approval, an initial (significantly streamlined) annual work plan was drawn up. On 13 February 2024, the board approved the implementation of the first annual plan of the programme and requested and approved halfway through 2024 an additional programme for the years 2025, '26 and '27, as well as the budget for 2025. This document builds on the strategic choices as provided by Rob Mudde and endorsed by his ad interim successor Hans Hellendoorn:

- Support and funding for Open Education, Open Hardware and Civic Engagement activities from the programme, with a clear focus on Open Education.
- An obligation to make an effort to obtain NWO funding for the full breadth of the programme and therefore also for Open Publishing, FAIR Data and FAIR Software.

Portfolio holder of the TU Delft Open Science programme is Hans Hellendoorn. The programme is coordinated by a steering committee and is managed by a small programme team. Chair of the steering committee is Irene Haslinger, director of TU Delft Library. The other steering committee members are Stefan Aarninkhof, Dean of the Faculty of Civil Engineering and Geosciences (representing all faculties); Sacha Kroonenberg, director of Education and Student Affairs (ESA; representing all university services), Peter Weijland, programme director Knowledge Security, and Frank van der Hoeven, who also chairs the Open Science programme team. This report consists of two main parts: Looking back on 2024 and showing the outline of actions and corresponding budget for 2025.

2. Evaluation 2024

Context

On 10 October 2023, the Executive Board adopted the TU Delft OS 2024-2028 programme as a successor to the Open Science Strategic Plan 2020-2024. In doing so, the Executive Board recognised the strategic importance of the programme and endorsed its content. However, the Executive Board also indicated that the level of ambition had to be determined in relation to the financial space available in the ongoing budget process with a multi-year perspective as a precondition. Based on this approval, an initial (much slimmed-down) annual work plan was drawn up. On 13 February 2024, the Executive Board approved the implementation of the programme's first annual plan and asked for a supplementary programme for the years 2025, '26 and 27 to be submitted by mid-2024.

By summer, an update was provided for the years 2025-2028, building on the strategic choices communicated by Vice-Chancellor/Vice-President Education Rob Mudde:

- Support and funding for activities for Open Education, Open Hardware and Civic Engagement from the programme, with a clear focus on Open Education.
- A commitment to obtaining NWO funding for the full breadth of the programme and thus also for Open Publishing, FAIR Data and FAIR Software. The update has four components, divided into projects.

This three-year plan is based on the following elements:

Open Education:	**Open Education Stimulation Fund, Open Semester, Sharing Together, Lifelong Development;**
Open Hardware:	**Open Hardware Stimulation Fund, Open Hardware Academy;**
Civic Engagement Hub**:**	**Citizen Science support, Participatory Research, Citizen Science training.**
Team:	**Recognition & Rewards, UNL - Chiefs of Open Science, NWO – Regieraad, OSCD - Open Science Community Delft**

Open Education

Project Open Education had a busy year for the implementation team. The team itself has changed, with Michiel De Jong having left at the end of '23 and Marcell Várkonyi becoming the new lead of the project. From July 2024 Noopur Singh joined the team as an engagement coordinator for the Open Education Stimulation Fund (OESF) grass roots initiative.

Below is a detailed description of the results achieved by the team in 2024.

Digipedia

The TOIPedia platform was used for several years until 2023 in the BSc and MSc programmes of the faculty of Architecture and Built Environment (BK). The aim of TOIPedia was to provide students with online tutorials to acquire skills in the use of software commonly employed in

the professional field, which are also used extensively for course assignments. Having such a comprehensive reference database enables students in accessing materials at their own pace throughout their studies and beyond, and allows educators to focus on advanced instruction during classes. The technical solution (both backend and frontendt) of the platform was becoming outdated, and thus a new solution was required.

As a collaboration between the BK faculty, the Open Science Programme and the Library, the new platform Digipedia was created. The platform is fully functional since the end of 2024, and has now completely replaced the former TOIPedia platform. Old content from TOIPedia has been migrated to Digipedia, and new content is continuously being added. The implementation of the technical solution within other faculties of TU Delft and beyond is considered amongst the plans for 2025, together with the enhancement of the platform with additional features.

Open Education Stimulation Fund (OESF)

The OESF funded 13 projects out of the 28 applications submitted in 2024, totaling a sum of EUR 250,000 and involving a total of 51 teaching and educational staff at TU Delft. The projects address the following four themes:

- Open technologies and tools for learning;
- Inclusive and sustainable education;
- Innovations in open pedagogy and methodology;
- Discipline-specific educational enhancements.

In terms of Open Educational Resources, the outputs of the projects are:

1. *Enhancing Electrical Engineering Education: A Digital Twin and Interactive Manual Approach for Dynamic Hands-On Learning*
   Development of a digital twin replicating physical lab hardware setups for Electrical Engineering (EE) BSc students, enabling dynamic hands-on learning.
2. *Coastal Dynamics Open Quizbook*
   Introduction of an innovative assessment system replacing proprietary software with Python-based Jupyter notebooks, offering interim assessments in Coastal Dynamics courses.
3. *Developing educational materials supporting autonomous learning using productive failure didactics.*
   Creation of renewed workshop materials, instruction videos, online aptitude tests, and portable experiential test setups for courses in Advanced Prototyping (graduation projects) and Materials and Manufacturing.
4. *Open Education and Development Collaboration: A Broken Promise?*
   Conference paper addressing awareness and agenda-setting for open education policy development.
5. *Mirte Master*
   Development of modular ROS (Robot Operating System) software for teaching advanced robotics concepts such as machine learning, navigation, and human-robot interaction, including tutorials for integrating open-source robotics programs using MIRTE robots.
6. *Illuminating the Energy Transition*
   Enhancements to the Illuminator, a DIY energy system kit, with creation of workshop exercises for BSc education at EWI and MSc education at IDE, focusing on energy transition challenges in classrooms.

7. *Cultivating Resilience in TU Delft Learning Environments*
   Development of "teach the teacher" training to train educators in cultivating resilience within TU Delft education, complemented by creation of 10 podcasts on principles of designer resilience and pedagogical improvements for resilient learning environments.

8. *Opening Up Classroom Demonstration Experiments*
   Creation of an open-access collaborative repository documenting lab demonstrations for the applied physics program, including detailed descriptions using videos, materials, coding, and didactical approaches, alongside the publication of three related articles.

9. *Open, Online, and Subject-Centered Practice Material for Fundamental Courses in Economics*
   Development of an open-source set of exercises to teach fundamental economics courses.

10. *Towards Open Inclusive STEM Education*
    Tools and resources to help teachers implement changes in their teaching that foster greater diversity and inclusion in STEM education at TU Delft and beyond.

11. *Hands-on bootcamp on Research Methods for Computer Science & Artificial Intelligence*
    The Research Methods Bootcamp (RMB) equips Computer Science and Engineering undergraduates at TU Delft with essential research skills—like formulating research questions, experimental design, and data analysis—through hands-on exercises and personalized training, integrated into the existing Academic Skills curriculum. Its modular approach allows flexible delivery, collaboration across faculties and universities, and supports broader adoption for interdisciplinary research education.

12. *The Quick Reference Project*
    The Quick Reference Project updated and enhanced two key educational resources in structural design—Quick Reference and Vademecum—by making them open-access, interactive, and refreshing their content with a stronger focus on sustainability and circular design. A collaborative team from two faculties completed the project by the end of 2024.

13. *Healthcare Entrepreneurship from TU Delft to the World*
    This interactive open handbook from TU Delft transforms health entrepreneurship education through expert discussions, quizzes, and forums, fostering global collaboration and equipping students to scale healthcare innovations.

An equally important part of the OESF initiative was to create a community of teachers that share experiences and expertise with each other around open education, and with the support of the Open Science Programme, broader awareness was also raised about the OESF throughout TU Delft through events such as the OESF Symposium in March 2024 (about the projects of 2023). To this end, in the second half of 2024 an OESF Community Manager was also hired.

Other results of the OE Project in 2024 include:

- Training at TLS Continuous Professional Development department: Teaching with Open Educational Resources
  ◊ As a follow-up to a project from 2023 in which a training tailored to an international consortium (Glassroom) was created and delivered, in 2024 we have adjusted the training to meet the needs of a broader audience at TU Delft. The training was developed in collaboration with the Continuous Professional Development department of TLS and delivered in February 2024 to a group of ~15 teachers.
- Open Educational Resources published in 2024 (each of these forms a significant component in the curriculum of at least one course taught in a BSc or MSc

programme):
- ◊ Textbooks published in 2024: 14
- ◊ Interactive Textbooks published in 2024: 7
- Open Interactive Textbooks project:
  - ◊ The Open Interactive Textbook project that was initiated in 2023 as a collaboration between Timon Idema (Faculty of Applied Sciences) and the Open Science Programme, was carried further in 2024. A streamlined process was created to cater to teachers' needs when wishing to create and publish an OER using this approach, and further technical solutions were made available when authoring an OIT, such as the embedding of more advanced graphs and applets such as Moodle. The project team also worked actively on raising awareness amongst TU Delft educational staff of this way of publishing educational resources, provided support to those who decided to publish and OIT, and actively worked on bringing together a community of teachers who make use of, or wish to make use of, this approach. A collaboration was also established with another related project of the Civil Engineering and Geosciences faculty, TeachBooks.

Open Hardware

Open Education Stimulation Fund

The open hardware stimulation fund was created to support researchers and students in developing, documenting and publishing open hardware projects. The fund had a maximum grant of 5000 euros per project and could be used for material, personnel, manufacturing and documentation costs. The requirements for being a grantee was that the applicant be a researcher or student at TU Delft and the project had to be documented and published openly. The projects could have a maximum length of 12 months.

Two projects that were awarded have already been published:
- The WOCA negative pressure wound therapy device designed for low resource settings – Arjan Knulst

  https://www.hardware-x.com/article/S2468-0672(24)00114-7/fulltext

- SteeleLab Vector Network Analyser – Gary Steele,
  https://github.com/steelelab-delft/SteeleLab-VNA
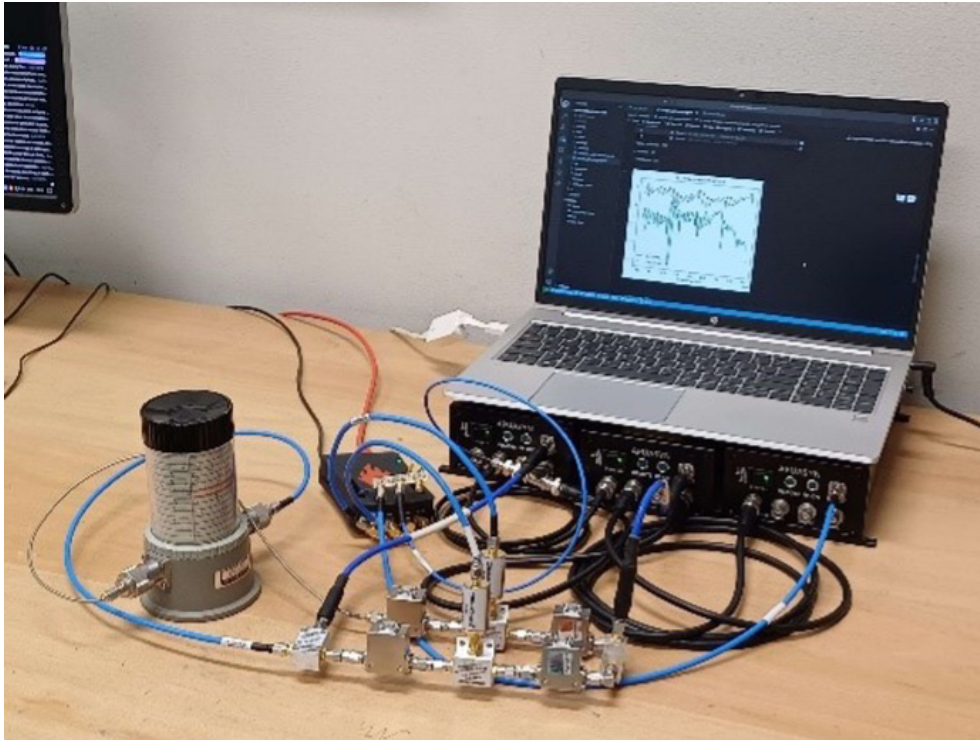
Open Science Festival 2024

Open Hardware team served as part of the program committee of the open science festival, where they supported the decision making and selection of sessions and speakers.

The team also took part in the "Market Place" at the open science festival showcasing the support offered and results obtained by Open Hardware as part of the Open Science Program at TU Delft.

Citizen Science & Civic Engagement

1. Development of the Civic Engagement Hub

The Citizen Science team continued strengthening collaborations with Erasmus University Rotterdam and Erasmus Medical Center to enhance support for researchers and educators engaging in civic engagement practices. Civic engagement, in this context, encompasses citizen science, community engagement, and science education/communication.

A key milestone in 2024 was the expansion of the partnership to include Leiden University, reinforcing regional efforts and broadening the support base. This collaboration led to the renaming of the initiative as **HIER: Hub for Impactful and Engaged Research**, reflecting its mission more accurately.

Within TU Delft, stronger connections were established with colleagues working on community engagement, and concrete plans for further collaboration were laid out, ensuring the long-term sustainability of the initiative.

2. Civic Engagement Training

In response to the growing demand for civic engagement support, TU Delft, Erasmus University Rotterdam, and Erasmus Medical Center launched **Civic Engagement in Action: Empowering Researchers and Educators to Make an Impact** programme. This training programme equips researchers and educators with practical tools to create meaningful societal impact. Trainers from all three institutions bring expertise from working with local communities in Delft, Rotterdam, and beyond. The programme incorporates lessons learned from collaborations with municipalities, NGOs, and other stakeholders, fostering knowledge exchange and skill-building for impactful engagement.

3. Citizen Science Community Lunch Sessions

To foster community building and peer-to-peer learning, the team organized several **Citizen Science lunch sessions** throughout the year. Based on feedback from participants, the format was adjusted from a monthly schedule to **four targeted events per year**. Attendance ranged between **25 and 50 participants per session**, demonstrating strong interest and demand for similar engagement opportunities moving forward.

4. Co-Creation Services for Researchers

Building on insights from co-creation sessions with the citizen science research community in 2023, two key services were developed in 2024:

- **Expertise Network Map:** A resource connecting TU Delft researchers with colleagues offering expertise in areas such as community engagement, legal considerations, and ethical matters. This network will be embedded on the TU Delft Citizen Science webpage for easy access.
- **Recognition of Citizen Science Knowledge:** A framework was established to categorize and acknowledge different types of knowledge generated in citizen science projects. This initiative aims to enhance the recognition of diverse contributions and may culminate in a **public exhibition as an awareness-raising campaign** in 2025/2026.

5. CS4Water Conference

In collaboration with partners from **IHE Delft Institute for Water Education, Pulsaqua, Earthwatch Europe, Groundtruth SA, TU Delft Global, and Waterlab,** the team launched the planning of the **Citizen Science for Water (CS4Water) Conference**. This international event, set to take place at **TU Delft Aula on 3-5 June 2025**, has attracted significant attention, including from practitioners in the Global South. As the first conference dedicated to citizen science in water research, it aims to advance knowledge-sharing and collaboration in this domain.

6. Team Expansion

In 2024, the team welcomed **Jelle Burger**, who joined from the TU Delft Innovation & Impact Centre. Jelle represents the **WijsWijk initiative** within the Convergence framework at TU Delft, supporting researchers in acquiring kick-start funding and engaging communities in Rotterdam in research conducted by TU Delft and Erasmus University Rotterdam.

Events organized or supported in 2024

Various events were organized throughout the year by the Open Science Programme, Open Science Community and with the support of both. Below is the list of such events in chronological order:

February

- 12 February: OSP thematic session
- 5 February: Open Education Stimulation Fund 2024 Kick-off event
- 29 February: Citizen Science Lunch: Empowering Citizen Participation in Climate Action with digital platforms

March

- 4 March: Open Interactive Textbooks Symposium
- 5 March: Open Education Stimulation Fund Symposium
- 21 March: CS Lunch: Co-creating & engaging communities through WOC-R Community Research Hub

April

- All month: one-on-one meetings with recipients of the Open Hardware Stimulation Fund

May

- 13 May: Open Science Programme thematic session
- 13 May: Workshop with researchers and OSCD Board on rewards and recognition
- All month: one-on-one meetings with recipients of the Open Hardware Stimulation Fund

June

- 4 June: (Re)defining education in the age of AI (part of the AI Symposium)
- 20 June: Citizen Science Lunch: Citizen Science in Action – Climate Adaptation in Dordrecht

September

- 18 September: Manifesto Evolving Education (organized by teachers with support of funding from the Open Science Programme)
- 23-27 September - National OSC NL Open Science Week:
    ◊ 23 September: Open Science and Industry – Partnership Challenges and Opportunities (panel discussion)
    ◊ 23 September: Universities and Open Hardware (panel discussion)
    ◊ 24 September: Ethical AI – Sparkling Debate in Academia (Oxford debate)
    ◊ 25 September: Beyond the Lab: Harnessing the Power of Science with Citizens (panel discussion)
    ◊ 26 September: Diverse Approaches to Monitoring Open Science (workshop)
    ◊ 26 September: Kick-off meeting for TU Delft the Civic Engagement Strategy Development

October

- 22 October at the National Open Science Festival (Maastricht):
- Workshop on Open Educational Practices (co-designed with colleagues from Maastricht, Akorshi Sengupta and Michel Saive)
- Marketplace stall, featuring Open Hardware outputs and preliminary results under the Open Hardware Stimulation Fund.

November
- 21 November: #2 RDi Kick-starter workshop & check-in | Ethics & Engagement (delivred a joint TU Delft/EUR presentation for researchers on Open Science & Citizen Science)
- 26 November: Open Education Stimulation Fund Community event: Recognition and rewards in Open Education
- 8 November: OSCD Networking event - Building a Culture of Openness: Empowering Change through Community Action

December
- 9 December: OSCD Organizational and planning retreat
- 16 December: Second meeting for the TU Delft Civic Engagement Strategy Development

There were also a number of meetings that were organized on a regular basis. They are listed below:
- Open Science Community Delft (OSCD) Advisory Board meetings (monthly)
- Civic Engagement Hub incubator: co-creation sessions with TU Delft staff and faculty members, as well as colleagues from Erasmus University Rotterdam (bi-monthly)
- Weekly Open Hardware Community meetings (weekly)
- Open Science Programme Core team strategy meetings (weekly)

Proposal support for NWO Open Science Funding

Throughout the year, we supported the development and submission of a number of diverse proposals for NWO Open Science and other relevant funding. A few examples of such submissions are:
- Strengthening Local and Thematic DCC's (application successful in 2024)
- OSHNED Open-source Hardware Infrastructure for The Netherlands (decision pending)
- Recognizing & Rewarding Open Science practices: a stakeholder - centred approach (application successful in 2025)
- Ab-initio Biowaste Loop - ABEL (decision pending)

3. Year plan 2025

Context

On 10 October 2023, the Executive Board adopted the TU Delft OS 2024-2028 programme as a successor to the Open Science Strategic Plan 2020-2024. In doing so, the Executive Board recognised the strategic importance of the programme and endorsed its content. However, the Executive Board also indicated that the level of ambition had to be determined in relation to the financial space available in the current budget process with a multi-year perspective as a precondition.

Based on this approval, an initial (much slimmed-down) annual work plan was drawn up. On 13 February 2024, the Board approved the implementation of the programme's first annual plan and asked for a supplementary programme for the years 2025, '26 and 27 to be submitted by mid-2024.

Update

This present document is the first year plan for period 2025-2028. It builds on the strategic choices communicated by Vice-Chancellor/Vice-President Education Rob Mudde:
- Support and funding for activities for Open Education, Open Hardware and Civic Engagement from the programme, with a clear focus on Open Education.
- A commitment to obtaining NWO funding for the full breadth of the programme and thus also for Open Publishing, FAIR Data and FAIR Software. The update has four components, divided into projects.

The year plan is based on the following elements:

Open Education:	**Open Education Stimulation Fund, Open Semester;**
Open Hardware:	**Open Hardware Stimulation Fund, Open Hardware Academy;**
Civic Engagement Hub:	**Citizen Science support, Participatory Research, Citizen Science training.**
	Team: Recognition & Rewards,
	UNL - Chiefs of Open Science,
	NWO – regieraad,
	OSCD - Open Science Community Delft

Open Education

Open Education Stimulation Fund

The Open Education Stimulation Fund (OESF) brings together educational innovations, increases student autonomy in educational processes and links them to values of diversity and inclusion.

The Open Science program has already released two OESF calls challenging educators to submit proposals for such open education projects. In doing so, up to EUR 20,000 funding

is available per application with a project duration of up to 1 year. Projects were selected for quality based on predefined criteria. Given the number of submissions, we are meeting a strong need. By 2024, we have been able to honor half the number of applications. As long as the supply is substantially greater than the available budget can fund, we will issue new calls every year. The OESF will therefore continue with its third call in 2025, aiming to fund another round of 12-14 open education projects. The projects are facilitated by a community manager.

Open Semester (2025)

The purpose of the Open Semester programme component is simple. Instead of supporting separate educational materials (e.g. open textbooks), we aim to make coherent educational components open: entire semesters of a regular TU Delft Bachelor's or Master's programme. In this way, we can evaluate with both students and lecturers what the experiences are, where we encounter potential bottlenecks in implementation, where there are opportunities, or where, with a view to knowledge security, it is actually better NOT to make education open.

Positive exploratory talks have already been held with the Faculty of Civil Engineering and Geosciences with a view to a pilot here.

The bigger picture here is that educational institutions have set themselves the goal in the Npuls programme that:

> NL: *"in 2032 alle digitale leermaterialen voor iedereen, altijd en overal, toegankelijk zijn. Zodat iedereen die kennis kan en mag (her)gebruiken en delen."*
> *(Npuls website)*

> ENG: *"in 2032 all digital learning materials will be accessible to everyone, anytime and anywhere. So that everyone can and may (re)use and share that knowledge."*
> *(Npuls website)*

In that context, based on the experience with Open Semester, a better picture emerges of how extensive the effort is to make Open Education the norm within TU Delft campus education. This will benefit a campus-wide rollout.

Interactive textbooks and platforms (2025)

Apart from the aforementioned initiatives, in recent years the Open Science Programme has been approached by educators for various activities, ranging from creating open textbooks to helping develop a specific teaching platform. This need will certainly continue and may even grow as open education becomes commonplace.

In the last years, much work has been done at the TU Delft on developing and publishing interactive textbooks based on the Jupyter platform. With the support from the Open Science Programme, the TU Delft has taken a leading role among Dutch universities in open education in general and interactive open textbooks in particular.

In previous years, focus was on project-based experimenting, learning and publishing. Two initiatives emerged: Open Interactive Textbooks and TeachBooks, leading to the following results:
- Publishing books created with the Jupyter Book tooling (https://jupyterbook.org/) as interactive textbooks on https://interactivetextbooks.tudelft.nl/ with manuals,

components, advice, copyright check, editing support, cover design and DOI application provided by project assigned staff from the TU Delft Library and the Open Interactive Textbooks initiative.

- Creating and improving tooling for creating open interactive textbooks in education and for publication, and easing the editing process with a template and manual by the open-source initiative TeachBooks on https://teachbooks.io/, initiated and supported by teachers from various faculties. This open-source initiative has many contributors and users from all over the world

- Sharing of dozens of open interactive textbooks in education and for publication created with Jupyter Book and TeachBooks tooling on various platforms. These books are actively used in education by teachers from multiple faculties.

The two groups propose to work together with the following aims:
1. Promotion of open interactive textbooks and competence development;
2. Continue delivery of interactive textbooks;
3. Investigate services and technologies for interactive textbooks;
4. Prepare and transfer services (development and publication) to line.

DigiPedia (2025)

The TOIPedia platform was used for several years until 2023 in the BSc and MSc programmes of the faculty of Architecture and Built Environment (BK). The aim of TOIPedia was to provide students with online tutorials to acquire skills in the use of software commonly employed in the professional field, which are also used extensively for course assignments. Having such a comprehensive reference database enables students in accessing materials at their own pace throughout their studies and beyond, and allows educators to focus on advanced instruction during classes. The technical solution (both backend and frontend) of the platform was becoming outdated, and thus a new solution was required.

As a collaboration between the BK faculty, the Open Science Programme and the Library, the new platform Digipedia was created. The platform is fully functional since the end of 2024, and has now completely replaced the former TOIPedia platform. Old content from TOIPedia has been migrated to Digipedia, and new content is continuously being added. The implementation of the technical solution within other faculties of TU Delft and beyond is considered amongst the plans for 2025, together with the enhancement of the platform with additional features.

In coordination with the Educational Programmes at the TU Delft BK faculty, a platform is being developed that aims to facilitate training in the AECO domain regarding Digital Literacy: DigiPedia.

The project intends to create a reference environment that enables students to navigate the online teaching material useful in the general context of digitalisation, and specifically for the BK Education. The educational material is implemented and disseminated according to Open Education principles and is thus easily accessible also to current professionals.

DigiPedia collects tutorials and educational material on computational methods, techniques, and tools. It supports education in BK on content related to "Digital" – from the basics of software tutorials to the advanced features of programming, developing machine learning models, AI techniques, etc.

Teachers can upload various types of educational material (text, images, videos, code, etc.) and publish it via the DigiPedia teachers' dashboard. Via the public DigiPedia front page, students can navigate through the educational material per course (BSc and various MSc tracks), per subject (e.g. Simulations; GIS; Parametric Modelling; Machine Learning; etc.), per software (e.g. QGIS, Rhino, Grasshopper, etc.) and, when relevant, per BK LAB.

The team aims to further expand the platform according to their roadmap with the aim to broaden the use of the platform.

OE Week 2025

Open Science Programme will coordinate the organization a week of events, with and for the TU Delft open education community. In addition to participating in this global initiative by OE Global, the goal is to give further visibility to some of the most important open education initiatives at our university, and to further strengthen the community by bringing colleagues and students together from all faculties and services of TU Delft.

Open Hardware

Open Hardware Stimulation Fund

For the second time, the Open Hardware Stimulation Fund is making a limited number of grants available to researchers who want to turn their projects into open hardware initiatives in 2025. The fund supports the development of projects along the lines of open hardware, whether it is resources to build hardware, support for documentation, or assistance in maintaining research output. There is sufficient response to repeat the call for projects annually.

Open Hardware Academy

The Open Hardware Academy has also proven to be successful. The Open Hardware team therefore wants students and researchers to have regular opportunities for professional development in their open hardware skills through:
- offering the academy twice a year,
- expanding the pool of technical classes,
- rewarding participants in the Open Hardware Academy with ECTS credits,
- having projects from the open science community participate in the academy.

Civic Engagement Hub (Hub for Impactful and Engaged Research – HIER)

With the focus on building the capacity of researchers and teachers in citizen science and civic engagement, raising awareness of such practices and focusing on making such practices easy and impactful, the Citizen Science team has a number of activities planned for 2025.

Training and Capacity-Building
- **Civic Engagement Training:** The pilot training programme, jointly developed in 2024, will be implemented and evaluated in 2025, with participants and trainers from TU Delft, Erasmus University, and Erasmus MC.
- **Ethical Evaluation Process:** The team will collaborate with the human ethics

committee to establish a more effective process for ethical review of projects.

- **Citizen Science (CS) MOOC:** The CS module of the Open Science MOOC will be fully converted into a self-paced format.
- **Training for I&IC Colleagues:** The team will develop a training programme for Innovation & Impact Centre (I&IC) colleagues to support researchers applying for CS project funding.
- **Data Management Plan (DMP) Template:** The team aims to further improve the existing DMP templates to reflect the categorization of different types of knowledge, including associated costs, and integrate it into training as a pilot. They plan to collaborate with Data Stewards to ensure qualitative data is considered.

Community and Awareness-Raising

- **Community Lunches:** The team will organize four lunches per year, connected to relevant events/themes (e.g., Civic Engagement training conclusion, exhibitions, Climate Action, TU Delft Global initiatives).
- **CS4Water Conference:** Co-organized with IHE Delft, Pulsaqua, Earthwatch Europe, Groundtruth SA, TU Delft Global, and Waterlab, the conference will take place on 3-5 June at TU Delft Aula.
- **Civic Engagement Day at TU Delft:** A half-day community event in collaboration with community engagement and science communication colleagues will be organized. The programme will potentially include the launch of the TU Delft Civic Engagement Strategy and Hub for Impactful and Engaged Research (HIER, TU Delft branch).
- **Diverse Citizen Science Types of Knowledge Exhibition:** To showcase diverse knowledge contributions to CS projects beyond the standard scientific knowledge shared through academic publishing, the team will organize an exhibition. In partnership with the Science Center, Library, and partners in Rotterdam and Leiden to promote awareness of diverse knowledge types in CS, the exhibition will be developed in 2025 and held in 2026.

Citizen Science Advocacy and Sustainability

- **Citizen Science Guidelines:** The team will engage with the CS community at TU Delft to assess the need for guidelines or policies. We will also explore whether these would enhance recognition for practitioners and influence Executive Board advocacy for shared institutional thinking on CS.
- **Sustainability and Network Engagement:** We aim to maintain active participation in national and international CS networks and conferences.
- **Exchange Visit:** The chair of the team will facilitate a visit to King's College London, Imperial College London, and University College London for TU Delft HIER Hub members (with Erasmus University and Leiden University participants covering their own costs).
- **Sustainability Strategy:** The team will initiate work on a long-term sustainability strategy for the CS and HIER Hub at TU Delft.

Hub for Impactful and Engaged Research (HIER)

- **NWO Proposal:** The team, together with colleagues from Leiden University, Eramus University Rotterdam and Erasmus Medical Center will coordinate, write, and submit a

proposal for funding.

- **Network Map Completion:** The team will finalize the HIER Hub Network Map, integrating all TU Delft Hub members, trainers, and mentors from the Civic Engagement Training. We will proceed to establish maintenance, user engagement, and promotional strategies for the map.

Team

There is a compact core team that coordinates the various activities of the Open Science programme: Programme Manager, Secretary and Community Manager. Besides supervising the aforementioned activities, they are jointly responsible for:

Recognition & Rewards

The Recognition and Rewards project in Delft has a separate Open Science component, where the Open Science programme is expected to make an important contribution with regard to the Academic Position criteria. To this end, the Open Science programme has successfully submitted an NWO application to guide that process.

UNL – member of the Chiefs of Open Science (COS)

UNL organises the so-called Chiefs of Open Science meetings, where managers of open science programmes meet to discuss national policy issues. The fact that TU Delft is represented here is essential.

EUA – member of the Expert Group Open Science (EGOS)

TU Delft represents the Netherlands / UNL Chiefs of Open Science group in the Expert Group Open Science in the European University Association (EUA).

Embedding Citizen Science in Higher Education Institutions – member of the national Working Group

Open Science Programme is a member of the national Working Group aimed at developing strategies and best practices for embedding citizen science support into higher education institutions as a standard practice.

NWO - regieraad

The Open Science programme has taken on the responsibility of securing external funding. During the first OSP, we acquired €250,000 for citizen science. We plan to continue this approach and acquire a substantial part of the budget NWO makes available each year.

Open Science Community Delft

Work on the Delft Open Science Community continues and is strengthened by grassroots open calls and the creation of a strong and diverse Community Board ready to further coordinate community efforts within each of TU's faculties.

4. Budget 2025

Open Education

Open Education Stimulation Fund

- **Project grants: Projected**   **€ 260.000**
- **Community management**   **€ 40.000**

Open Semester

- **Open Education expert**   **€ 50.000**
- **Community management**   **€ 40.000**

Interactive Textbooks and Open Systems

- **OIT + Teachbooks**   **€ 130.000**
- **DigiPedia**   **€ 50.000**

Subtotal   **€ 570.000**

Open Hardware

Open Hardware Academy   **€ 20.000**

Open Hardware Stimulation Fund   **€ 80.000**

Subtotal   **€ 100.000**

Civic Engagement

Training and Capacity Building   **€ 3.300**

Community Awareness-Raising (Citizen Science Stories)   **€ 49.570**

Citizen Science Advocacy and Sustainability	€ 10.000
Hub for Impactful and Engaged Research	€ 300
Student assistant	€ 16.830
Subtotal	€ 80.000

Team

Program Manager € 65.000	
Community Manager	€ 105.000
Open Science Community Delft Grassroots Programme € 50.000	
Other (Communications, Meetings, Travel)	€ 30.000
Subtotal	€ 250.000

Open Science Programme 2025

Open Education	€ 570.000
Open Hardware	€ 100.000
Civic Engagement	€ 80.000
Team	€ 250.000
Total	€ 1.000.000

OS Team

Program Manager	Frank van der Hoeven;
Executive Secretary	Anke Versteeg;
Community Manager	Tanya Yankelevich;
Open Education	Marcell Várkonyi;
	Noopur Singh;
Open Hardware	Santosh Ilamparuthi;
Citizen Science/Civic Engagement	Tanya Yankelevich.