For the SEP (Self Evaluation Protocol) Open Science is one of the specific aspects that need to be addressed. It is therefore important that Open Science practices are discussed during assessment moments to ensure alignment with the goals of the department. Below you will find a short guide to facilitate these discussions on specific topics. Each category has 1-2 open questions to lead with and suggestions for more detailed follow up questions. The list of questions is not meant to be prescriptive or exhaustive, and should only be used as guidance. Please also see the included glossary for terms in bold.

Category	**Supporting questions**
Publishing	***How is your work shared or conducted in an openly manner?*** • How much (what percentage?) of your articles are **Open Access** or on **preprint servers**? • Are you making use of **preregistration/registered reports**? Do you share/publish **negative results**? • Are you involved in **Open Publishing**, such as publishing in or editing for **Diamond Open Access** Journals, participate in **Open Peer Review** when publishing or as a reviewer)?
Data	***Have you shared data openly? Has the open data been re-used or led to further collaboration?*** • For what part of your research do you publish your **processed data**? Do you also publish your **raw data**? • How many times has the dataset been viewed, downloaded or cited? • To what extent do you follow the **FAIR principles**? Have you discussed your **Data Management Plan** with relevant staff?
Code / Software	***Have you shared code/scripts? Have these shared code/scripts been re-used or led to further collaboration?*** • How many times has the software been viewed, downloaded or cited? How many contributors does your repository have? • To what extent do you follow the **FAIR principles**? Do you share your software using a (data) repository and register it in a software directory? • Is the software open source? Under which license is it shared? • How do you ensure that your code is reproducible? • Do you build on or contribute to existing projects? • Is your software developed and shared in a sustainable way – developing and maintaining software that continues to meet its purpose overtime (for example, do you use a **Software Management Plan** to ensure this)?
Methods / Hardware / Instruments	***Have you shared methods openly? Has sharing methods led to reuse of the work or led to further collaborations?*** • Has sharing your methods led to increased citations of the method or your work? Are other projects implementing your methods? • By how many groups are your instruments used, how many external collaborations? • Do you share your methodology openly (**Open Hardware**, **Open Methods**?) • Do you use open platforms, tools and services in your research (for example, using Python instead of MATLAB)?

Collaboration	***How do you organise collaborations and recognise different types of contributions within your collaborations?*** • Do you provide detailed contribution information, such as **CRediT**? • Do you engage in Team Science/cross-disciplinary research? Do you contribute to projects that you do not lead? If so, how?
Educational Resources	***How has openly sharing your educational resources impacted the reuse and visibility of your work?*** • How much citations have your resources received, are the resources included in other courses? • In which languages are your **Open Educational Resources** (OER) available? • Do you use open platforms to share the resources? Do you reuse open materials or make use of open-source software? • Do you provide detailed contribution information (for example, script writers/producers)? • Do you involve students in your course development, for example adjustments to the syllabus or co-developments of course assignments?
Impact	***Is there any evidence of the use of your research (results) by, for example, societal groups, individuals, and communities?*** ∉ Who can potentially benefit from your research? Do you prepare a stakeholder analysis and engagement plan in your research projects? • Do you include these relevant parties in your research process (for example through **Citizen Science**)?
Engagement	***How do you engage with the general public and relevant parties (industry)?*** • Do you use any **public engagement** methods (such as podcasts, news articles, public talks, workshops with citizens) during your research and/or after the results are published? • How do you ensure that your research is available in the relevant language(s)? (for example, Dutch/English) • Is the research guided by requirements from relevant parties (such as industrial partners) and guided by advice from them, in for example, via user committees?
Leadership & professional development	***How do you participate in Open Science Communities or Open Science projects/events/training/conferences?*** • Do you develop a vision, strategy, and/or policy for integrating and raising awareness of Open Science practices within your faculty/department/research group? • How do you deal with obstacles in implementing open science practices? • Do you have a role with an Open Science focus? (For example, trainer, working group/ project member, participating in **Open Science Communities** or being an **Open Science ambassador/champion**.) • Have you secured any funding for Open Science activities?
Mentorship	***How do you mentor/support others in Open Science practices?*** • How has this positively impacted their ways of working or impact of their work?

References

These guiding questions are based on Öztürk et al. 2024. As a signatory of the San Francisco Declaration on Research Assessment (DORA), Dutch higher education institutes are committed to making research assessment more comprehensive (rather than based solely on journal-based metrics) and to encouraging and incentivising participation in Open Science. Open Science is also a part of the Netherlands Code of Conduct for Research Integrity, which promotes openness and transparency in research processes. There are also developments in the Netherlands (Regieorgaan Open Science, Recognition and Rewards) and globally (COARA) that increasingly see Open Science as the norm in research. In addition, funders (such as NWO and Horizon Europe) are increasingly mandating Open Science practices.

Glossary:

Citizen Science (community-led research, participatory research): the involvement of members of the public in scientific research through jointly:

- ∉ setting research priorities, and/or
- ∉ developing research methodology, and/or
- ∉ collecting and analysing data, and/or
- ∉ publishing research results and/or
- ∉ using the results for advancing societal change.

CRediT allows you to specify the contributions that individuals have made to research objects, which is facilitated by Tenzing.

A **Data Management Plan** is a living document that describes how your research outputs will be generated, stored, used and shared within your project (The Turing Way).

FAIR (The Turing Way) is an acronym for:

- **Findable:** Research objects need to be accompanied by **metadata** (information about the data such as keywords) and a persistent identifier (such as a DOI).
- **Accessible**: Data may be openly available, or it may require authentication and authorisation procedures.
- **Interoperable**: Research objects can be integrated with other research objects and interoperate with applications or workflows. Using **metadata standards**, which are more formal ways of structuring the data, makes it easier to integrate research objects. Using **open data formats makes** it easier to integrate and preserve data.
- **Reusable**: Research objects should be well described so that they can be used, combined, and extended in different settings. They also need to be accompanied by a **licence** (allowing re-use and redistribution), so that potential re-users know what they are allowed to do with the research objects.

Note, FAIR does not necessarily mean open - some FAIR datasets cannot be freely used or distributed by anyone.

FAIR Research Software refers to research software developed according to the FAIR principles (see also FAIR4RS Principles).

Open Education is a collective term that encompasses educational resources, tools and practices that can be freely used in the digital environment without legal, financial or technical barriers (The Turing Way 2022). **Open Educational Resources** (OERs) are teaching and learning materials that can be freely used and reused for learning or teaching, without cost.

Open Access means that articles are freely available on the public Internet and that any user may read, download, copy, distribute, print, search, or link to the full text. **Diamond Open Access** is **Open Access** where neither the reader nor the authors pay fees to publish or read.

Open data is data that can be freely used, re-used and redistributed by anyone (Open Data Handbook). **Raw data** is the data originally generated by a device or a person, which has not yet been processed or altered. **Processed data** is the data that has been modified and translated to address research questions.

Open Hardware: Designs and instructions for research equipment that can studied, modified, (re)created, and redistributed by anyone.

Open Methods are available details of the research methods, such as procedures, protocols, plans, notes and interpretations.

Open Peer Review means that the review content is published openly, and in addition the identities of the peer reviewers may be open (The Turing Way).

Open Science Ambassadors/Champions are individuals who are taking a leading role in the practice of Open Science at their institute, such as the Data Champions at TU Delft.

Most of the Dutch institutes have an **Open Science Community (OSC)**, a bottom-up learning initiative where members can share expertise, learn from each other and advocate for change.

Open-source software can be viewed, used, modified, and redistributed for any purpose.

A **preprint** is a version of a scholarly or scientific paper that has not been formally peer-reviewed and published in a journal. It is usually uploaded by the authors to a public server (such as arXiv and BioRxiv) where it is openly available.

Preregistration is the practice of specifying your research plan in advance of your study and submitting it to a registry (Open Science Framework).

A **registered report** is an article format in which the research proposal is peer-reviewed before the research is carried out. Once approved by the reviewers and the editors, the results are published as long as the study plan is followed and any deviations are clearly indicated. This article format facilitates the publication of **negative results** and reduces time wasted on irrelevant study proposals.

Reproducible research can be independently recreated from the same data and the same code that the original team used (The Turing Way).

Science communication or **public engagement** is the practice of engaging, informing, educating, and raising awareness of science-related topics among

the general public.

Software Management Plan helps to implement best practices during software development and ensures that software is accessible and reusable in the short and long term.

Team science is an approach to research in which a team of researchers from different disciplinary backgrounds carry out research together so that their individual strengths and expertise are demonstrably mutually reinforcing. (Based on the NWO description of the Team Science Award)