NEW GENERATION AND OPEN SCIENCE: TOP-DOWN OR BOTTOM-UP

Masoome Shariat, Research Support Officer
University of Twente / Faculty of Geo-information and Earth Observation (ITC)
Open Science requires a culture change

- Requirements to realize Open Science
  Make OS...
  - Possible through Open Infrastructures
  - Easy through Support & Training
  - Normative through Community Engagement
  - Rewarding through incentives
  - Compulsory through Policies & Regulations

Further reading: National Plan Open Science
ITC’s motivations for doing OS

ITC strategic goals
Reducing the knowledge divide among countries and tackling global challenges

Shaping2030
UTwente’s mission, vision, and strategy to increase the societal impact of research as well as diversity and inclusion in science

OS is on the rise and driven by several high-level organisations, funding programs and projects
ITC’s steps toward Open Science

ITC’s Strategic Plan for Open Science

Access to scientific articles, these principles contain public availability of reusable methods (e.g., code and tools), data, and educational materials. This document outlines a plan to achieve the transition towards OS. ITC’s Strategic Plan for OS 2021-2025 - Towards an Open Future contains five initiatives:

1. **OS at ITC** - aims to provide guidelines and OS capacity development to address the obstacles ITC researchers encounter when doing OS.
2. **The ITC Knowledge Hub** - will provide services and tools to access, create, and publish open research, including scientific results based on qualitative/quantitative analyses using computational workflows.
3. **Open Educational Resources** - will be addressed by exploring options to realise Open Educational Resources at ITC and providing lectures with guidelines and support to create them.
4. **The OS Community Twente** - serves as an inter-disciplinary, bottom-up community to promote, learn, share, and discuss OS practices.
5. **Research & Funding** - aims to address challenges in OS through innovative developments and user studies. A further output is to generate funding to realise the ambitious aims presented in the plan.

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ITC’s steps toward Open Science

Open Science Community Twente

Open Geospatial Data Publication
(Flagship datasets)

Code Review Service

The figure comes from OSCT

Further reading: Nüst and Eglen (2021)
Open Geospatial Data Publication @ ITC

Challenges

- Data dumping is not data publishing!
- Not enough supplementary material for reusing geospatial data
- Limited amount of metadata

Solution

- Encapsulating the data in an interactive environment
  - Publish a Jupyter Notebook that contains data exploration
  - Use open-source online tools for sharing Jupyter Notebook (e.g., Binder)
  - Explore the data via the browser without installing any tools
The culture is changing!

- Digital Competence Centers
- Data Stewards
- Training materials

Possible through Open Infrastructures

Easy through Support & Training

Normative through Community Engagement

Rewarding through incentives

Compulsory through Policies & Regulations

• Open Access Journals (UT close to 100% OA)
• Open Data Repositories (e.g. 4TU.ResearchData, EASY, GKH)
• Data Journals (e.g. ESSD, Geoscience Data Journal)
• DMP Tools (e.g. ARGOS, DMPonline, UT DMP-Tool)

Alternative evaluation approaches (e.g. DORA)

Research funder’s policies for OS (e.g. NWO, Horizon Europe)

OSCTwente
• OS week 2022
• Several OS Kitchen
• Several Joint OSCT-DCC events

04/07/2023
Culture Change requires time

- When Open Access publications started it was not common, now become norm in a short period
- We expect the same happens for Open Data

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The figure comes from: Dutch Open Access Monitor(202)

The figure comes from: Open Access Publishing Statistics(2023)

The figure comes from: University of Twente very close to 100% Open Access
The future is Open!

The sooner you get used to it in your early carrier, your life will be easier as you learn the skills.

Make all phases of your research as transparent and accessible as possible by adding alternative evaluation, e.g. with altmetrics communicating through social media, e.g. Twitter sharing posters & presentations, e.g. at FigShare using open licenses, e.g. CCO or CC-BY publishing open access, ‘green’ or ‘gold’ using open peer review, e.g. at journals or PubPeer sharing preprints, e.g. at OSF, arXiv or bioRxiv using actionable formats, e.g. with Jupyter or CoCalc open XML-drafting, e.g. at Overleaf or Authorea sharing protocols & workfl., e.g. at Protocols.io sharing notebooks, e.g. at OpenNotebookScience sharing code, e.g. at GitHub with GNU/MIT license sharing data, e.g. at Dryad, Zenodo or Dataverse pre-registering, e.g. at OSF or AsPredicted commenting openly, e.g. with Hypothes.is using shared reference libraries, e.g. with Zotero sharing (grant) proposals, e.g. at RIO
CONTACT DETAILS

EMAIL ADDRESS
m.shariat@utwente.nl

PHONE NUMBER
+31 53 489 6025