



UbuntuNet Connect Conference 2017

Open Access, Open Science, Open Data: Who will benefit?

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Overview

- **Background**
- **Research Question**
- **European Orientation**
- **Open Science**
- **Literacy**
- **European Digital Competence Framework**
- **Requirements for Researchers**
- **Recommendations**

Background

Open Science – a dream came through – as a Tsunami

Many researchers around the globe might be overwhelmed and surprised about the fact, the timing and are not prepared to plunge into the digital world of libraries, laboratories and research collaborations.

Research Question

Digital libraries, laboratories and research collaboration are the future.

What kind of digital competences the users of **Open Access** **Open Science** **Open Data** have to have, in order to take advantage of the possibilities offered?

European Orientation

Learned Experience:

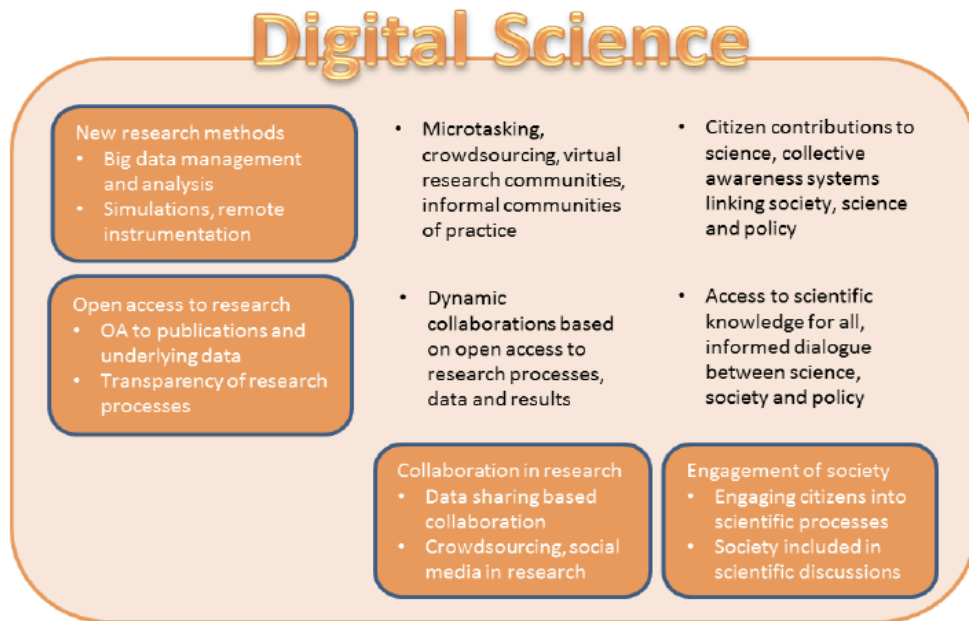
The EU put **high priority** in developing **digital competences to citizens, consumers, educators and students** to succeed in creating the **Digital Single Market** and to bring the European **Open Science Cloud** alive.

Adoption:

Is digital competence for researchers to use the **Open Access, Open Science, Open Data** comparable with the digital competence communicated by the EU?

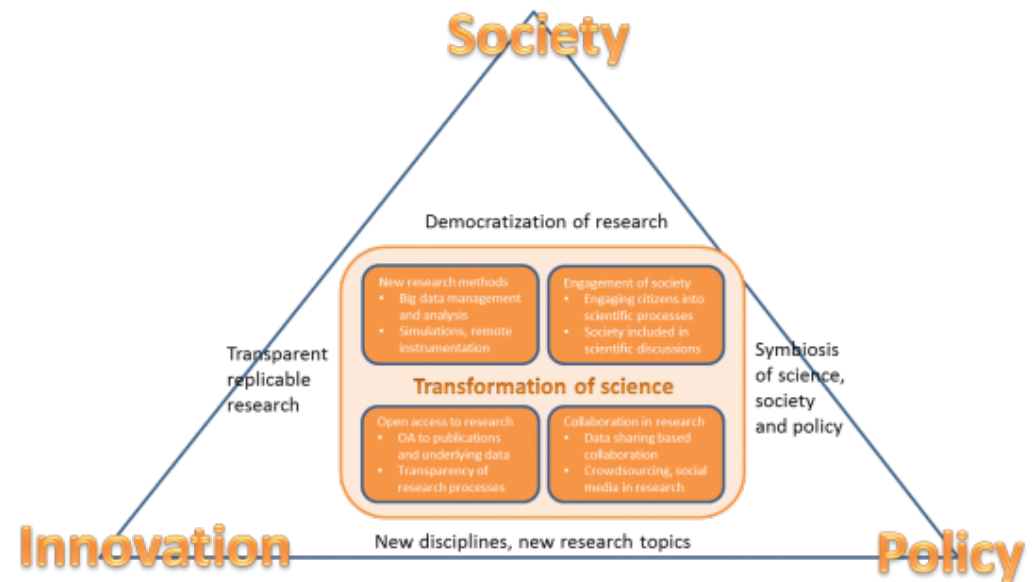
EU Orientation in Open Science (2013)

Elements of Digital Science



Source: Digital Science in Horizon 2020;
in <https://ec.europa.eu/digital-single-market/en/open-science>

Vision for Science Digital



Source: Vision for Digital Science;
in <https://ec.europa.eu/digital-single-market/en/open-science>

EU Orientation in Open Science (2013)

Challenges for Digital Science



Source: Challenge for Digital Science;
in <https://ec.europa.eu/digital-single-market/en/open-science>

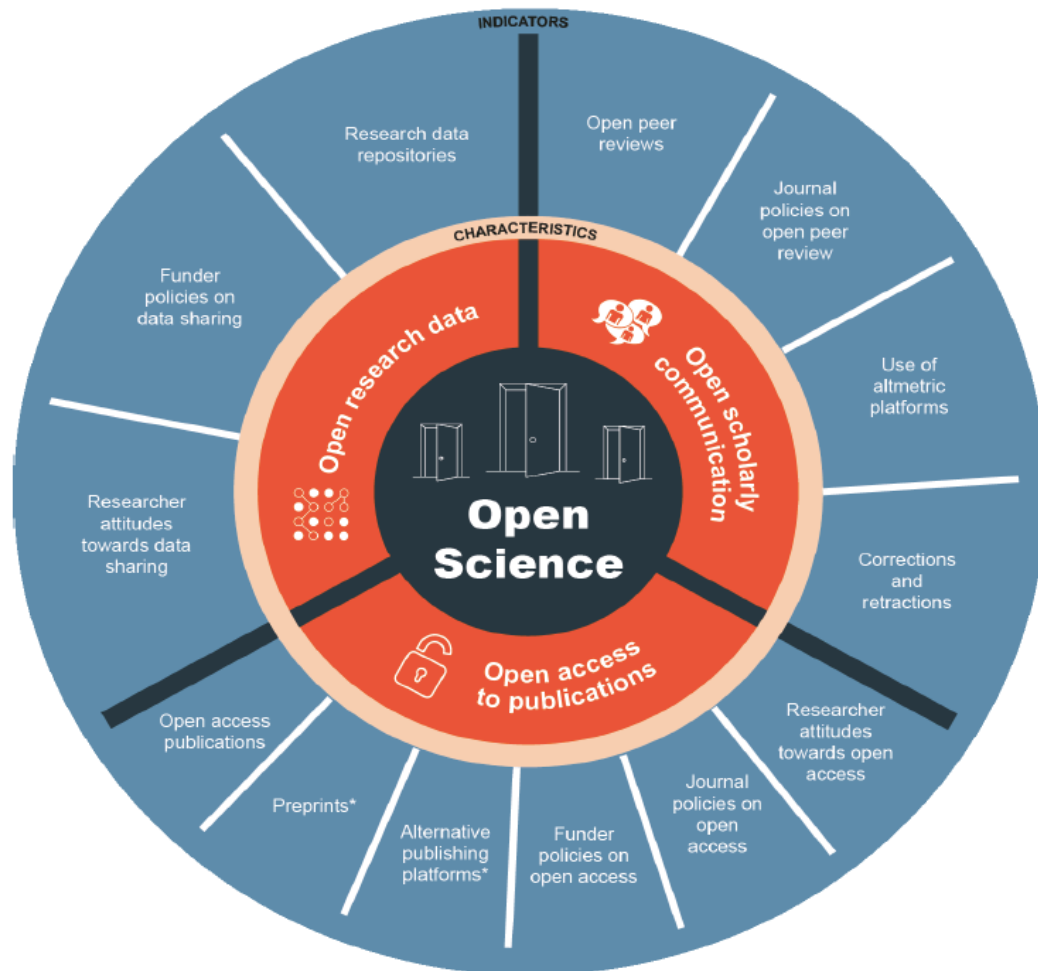
Open Science Characteristics and Indicators (2017)

Integration of Open Access Open Science Open Data in to Open Science

“Open Science represents an approach to research that is collaborative, transparent and accessible....

Driver for Open Science is the improvement of the transparency and validity of research as well as Public ownership of science.”

Source: Providing Researchers with the Skills and Competences they need to practice, Open Science; [http:// europa.eu](http://europa.eu)



Integration of Open Access Open Science Open Data in to Open Science

Source: Open Science Wheel; in Providing Researchers with the Skills and Competences they need to practice Open Science;
<http://europa.eu/research/openscience/index.cfm?pg=home§ion=monitor>

Open Science

Open Science spreads out to researchers at all levels (R1 – R4) and has impact on

- **Research integrity**, avoidance of plagiarism, data manipulation and data falsification.
- International **research cooperation**.
- **Access to data bases**.
- **Relevance** of research topics.
- **Funding** of research.
- **Dissemination** of research outputs and outcomes
- ...

Literacy

Digital literacy:

“the skills requires to achieve digital competence. It is underpinned by basic skills in ICT and the use of computers to retrieve, assess, store, produce, present and exchange information and to communicate and participate in collaborative networks via the internet”. Source: EU 2008

Information literacy:

“to empower people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals”. Source: <http://www.unesco.org>

Media literacy:

“is a 21st century approach to education. It provides a framework to access, analyze, evaluate and create messages in a variety of forms - from print to video to the Internet. Media literacy builds an understanding of the role of media in society as well as essential skills of inquiry and self-expression necessary for citizens of a democracy. “ Source: <http://www.medialit.org/reading-room/what-media-literacy-definitionand-more>

European Digital Competence Framework

5 Competence areas

**8 Proficiency levels as:
Foundation, Intermediate,
Advanced and Highly
Specialised**

21 Competences

<i>Dimension 1</i> Competence areas (5)	<i>Dimension 2</i> Competences (21)
1. Information	1.1 Browsing, searching, & filtering information 1.2 Evaluating Information 1.3 Storing and retrieving information
2. Communication	2.1 Interacting through technologies 2.2 Sharing information and content 2.3 Engaging in online citizenship 2.4 Collaborating through digital channels 2.5 Netiquette 2.6 Managing digital identity
3. Content creation	3.1 Developing content 3.2 Integrating and re-elaborating 3.3 Copyright and Licences 3.4 Programming
4. Safety	4.1 Protecting devices 4.2 Protecting data and digital identity 4.3 Protecting health 4.4 Protecting the environment
5. Problem solving	5.1 Solving technical problems 5.2 Expressing needs & identifying technological responses 5.3 Innovating, creating and solving using digital tools 5.4 Identifying digital competence gaps

Source: www.eucis-ill.eu/eucis-ill/wp-content/.../eu-commission_digital-competences.ppt

European Digital Competence Framework

The European Digital Competence Framework is focusing on citizens digital competence that citizens get enabled to participate in the Single Digital Market.

- Researchers as citizens have an advanced digital literacy.
- What is the proficiency level a researcher has to complete?
- Does the European Digital Competence Framework prepare for Open Science?

Requirements for Researchers

Researchers' Open Science skills are defined by the *Work Group on Education and Skills under Open Science* (July, 2017)

- Skills related to Open Access Publishing:
 - Library and research information skills
 - Open publication literacy skills
- Skills related to Data Management and Open Data
 - Technical skills, in particular data science skills
- Skills enabling professional research conduct
 - Research management skills
 - Legal skills
 - Research integrity and ethics skills
- Citizen science skills

Requirements on Researchers

Researchers combine function of

- Domain specialist**
- Data science specialist**

=> Researchers at all levels are digital literate to handle the necessary skills for Open Science or work in cooperation with a Data Science Professional.

Recommendations

- Specifically for developing and emerging countries, digital literacy has to be increased from the primary school onwards.
- The Computer Driving License (CDL) composed of Base, Intermediate and Advanced Modules are integrated in the curriculum from in primary and secondary schools.
- Introducing digital literacy at advanced level an imperative for lecturers and researchers at all levels
- Expanding training programmes on Open Science supported by Data Carpentry and Hackfests

Thank you

For further Communication

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