The Empires of the Future are the Empires of the Mind: Defining the role of libraries in the Open Science landscape

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Content

- The scope of Open Science
- Open Access
- Research Data Management
- European Open Science Cloud
- Citizen Science
- Conclusions

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The Three Major Shifts of Open Science

- How scientists collaborate to create knowledge
  » RDM, EOSC, ERA ERIC

- How scientists find meaning in knowledge
  » Ex. The International HapMap Project

- A change in the relationship Science – Society
  » OA, Citizen Science, Open Days, Pop Science
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What is Open Science?

Open Science is the movement to make scientific research, data and dissemination accessible at all levels of an enquiring society.
Open Science
a paradigm shift in the modus operandi of research and science impacting the entire scientific process

Research Cycle
- Conceptualization
- Data Gathering
- Analysis
- Review
- Publication

Characteristics
- Citizen Science
- Open code
- Pre-print
- Open Access
- Alternative Reputation Systems
- Collaborative Bibliographies
- Science Blogs
- Open Annotation
- Open Data
  - Open Lab Books/Workflows
  - Data Intensive
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Gold APC payments (to March 2017)

8,661 APCs paid since April 2013
RCUK – 3,641  COAF/WT – 2,103  UCL GOLD – 2,917
UCL Press

The UK’s first fully Open Access University Press

UCL Press

50 monographs published (Sept 17)
9 journals published (Nov 17)

http://www.ucl.ac.uk/ucl-press
Written by Deepak Kalaskar, Peter E M Butler, and Shadi Ghali from The Royal Free Hospital, London. The textbook offers a comprehensive overview of reconstructive plastic surgery for introductory plastic surgery and surgical science courses. June 2016
UCL Publishing model

- OA business model
- Sales via Print on Demand
- Enhanced digital interface
- Books peer reviewed before publication

Textbook activity
- Journal programme
- Publishing services offered to other universities

Organizational chart:
- Publishing Manager
  - Marketing and Distribution Manager
  - Managing Editor
  - Commissioning Editor
  - Journals Editor
  - Administrative Assistant
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5 partners
- UCL (University College London) – lead partner
- University of Barcelona
- University of Vienna
- LIBER
- ECLAC – UN Commission for Latin America and the Caribbean

Started in June 2015; ran for 24 months

€497,000 budget
100% funded
LEARN Deliverables

- Model Research Data Management Policy
- Toolkit to support implementation
- Self-assessment survey
- KPIs to measure levels of success at institutional level
- Executive Briefing (in six languages)
- 20 Recommendations on Best Practice in RDM

All Deliverables at: http://learn-rdm.eu/en/dissemination
23 chapters of Best Practice Case Studies in 8 sections

  - Policy and Leadership
  - Advocacy
  - Subject approaches

Open Data
Research Data Infrastructure
Costs
Roles, Responsibilities, Skills
Tool development
Content

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European Open Science Cloud

- EU High Level Expert Group Report
- Launched on 11 October 2016
- Issues considered:
  - Infrastructures
  - Skills development
  - Reward and Recognition
  - Roles and responsibilities
  - Governance & Standards
  - Funding opportunities
- Available [here](#)
European Open Science Cloud

- Headline points:
  - Build on existing infrastructure and expertise
  - Devise Rules of Engagement
  - EU contribution to FAIR data and Open Science
  - Build links to regional Cloud(s) around the globe
  - Develop expertise
    - Half a million ‘core data scientists’ in Europe
    - 5% of total research spend should be on data stewardship

King’s Cross Station, London
EOSC Declaration (Autumn 2017-)

- EOSC is a process not a project

Data Culture & FAIR Data
- Open by default
- Skills development
- FAIR principles
- Data Management Plans
- Engagement with researchers

Services & Architecture
- EOSC is an infrastructure commons
- EOSC to use existing high spec. 3services
- HPC to be developed in tandem

Governance & Funding
- Strong Governance model, but flexible
- 3 levels of membership – institutional, operational, advisory
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Citizen Science: Definitions

Citizen Science refers to general public engagement in scientific research activities when citizens actively contribute to science, either with their intellectual effort or surrounding knowledge or with their tools and resources

>> European Council White Paper on Citizen Science for Europe

Science isn’t just something scientists do. It is something in which every single one of us has a stake

>> Professor Ian Chubb, former Chief Scientists of Australia
# Citizen Science: Perspectives and Outcomes

<table>
<thead>
<tr>
<th>Perspectives</th>
<th>Outcomes</th>
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<tr>
<td>Science</td>
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<td>Education and engagement</td>
<td>Individual</td>
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<td>Event management</td>
<td>Community</td>
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Citizen Science: Components At A Glance

- Determine if your research is suitable for citizen science
- Form a team (ideally: scientist+educator+librarian+evaluator)
- Develop, test, and refine (protocols, data forms, educational support materials and a marketing and communications package)
- Recruit citizens (and include them in a retention programme)
- Train citizens (and keep records of their training certificates)
- Event development (on sites, online, base camps, etc)
- Build FAIR Data (accept, edit, make it FAIR and display data)
- Analyze and interpret data (inform citizens about research methods and the use of their data)
- Disseminate results (use both academic and pop-science standards)
- Measure outcomes (perspectives: scientific, educational and engagement, event management)
- After event / project actions (equally important with any from above. Ask us!)
Citizen Science: Examples

*Citizen Science it's not only about bugs, birds and stars (although we love them)*

✔ **MATHEMATICS**
  - 1938, The Math Tables Project
  - 2016, CrowdMath

✔ **PUBLIC HEALTH**
  - 2005, Malariacontrol

✔ **NEUROSCIENCE**
  - 2012, Eyewire

✔ **GOVERNANCE**
  - 2015, Open Seventeen
OH! LOOK AT THIS!

European Illegal Parking (a project of SciStarter)

Excerpt from the project:

The information you provide will help us collect enough data to build a European Illegal Parking Ranking. Hopefully, this ranking will raise awareness of the problem in Europe and thus pressurize national and local institutions to pursue more effective measures to tackle the problem.
Citizen Science: Roles for Libraries

- Build skills for engaging in citizen science projects
- Support, build (or be part of) a toolkit for developing citizen science projects in your institution
- Build collections of protocols, data forms and educational materials
- Contribute to make data FAIR and develop collections of datasets
- Offer infrastructure
- Contribute to evaluation processes
- Communicate all new findings and support both scholarly and pop science communications
- Participate in the recruiting and retention process. Assist volunteers to participate in projects
- Participate in marketing activities
- Promote a positive attitude towards citizen science
Citizen Science: Part of European Strategies

As part of LIBER’s 2018-2022 Strategy, LIBER wants to increase the role of libraries in supporting citizen science. It proposes to do this by:

- Ensuring that Citizen Science enthusiasts are informed about library support for this field
- Making an overview of Citizen Science actions in Europe available to LIBER members
- Organising a Citizen Science workshop where members can discuss the most valuable actions.

European Council recommends:

- Promote the creation of appropriate tools as well as standards for interoperability, metadata, citations, anonymization and accessibility.
- Promote the design and definition of sustainability models for Citizen Science projects with long-term commitment for infrastructures and data repositories

LERU:

- Recognises citizen science as an evolving set of research methods, as well as its societal and educational benefits;
- Recommends creating a single point of contact for citizen science within the institution, to advise scientists and ensure liaison with national and regional citizen science initiatives
Citizen Science: Roles for Libraries, A Survey

Its aim is twofold:
1. To picture the current involvement of libraries in citizen science
2. To receive ideas about suitable roles for libraries in citizen science initiatives

We sent over 130 invitations.
We received 8 answers.
We look of course to receive more inputs!

You are kindly invited!
knowledge.services/citizenscience
Citizen Science: Acknowledgements

• BONEY, R. Citizen Science: A Developing Tool for Expanding Science Knowledge and Scientific Literacy (2009)
• NIELSEN, M. Reinventing Discovery (2011)
• EC Green paper on Citizen Science for Europe: Towards a society of empowered citizens and enhanced research (2014)
• LERU: Citizen Science at Universities: Trends, Guidelines and Recommendations (2016)
• University of Zurich: Citizen Science: New Ways for Research (2016)
Challenges for libraries in Open Science

- 4-step test for libraries to engage in Open Science

1. Offer leadership across the university in open science approaches
2. Identify infrastructure needed to deliver change
3. Engage in skills development for staff
4. Ensure that your advocacy leads to innovation
Focus on Open Science
Workshop Series in Europe

In partnership with:
LIBER, e-Infrastructures Austria Plus, EISZ Budapest and CTK Ljubljana

Nov.20th, Vienna: https://www.knowledge.services/events/2017-vienna/
Nov.22nd, Budapest: https://www.knowledge.services/events/2017-budapest/
Nov.24th, Ljubljana: https://www.knowledge.services/events/2017-ljubljana/

The purpose of the Workshops is to introduce the concept and values of the Open Science agenda to new communities in continental Europe.

We are happy to consider other countries in which to organise such Workshops!
Happy to answer your questions!