Open Science and IPR

Training / webinar

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Goals

1. An introduction to Open Science (OS)

2. Deeper insight into elements of OS through real-life examples

Why take a training on Open Science?

- The term "**Open Science**" relates to the **movement** and **the approach to science** it promotes, that became extremely important in recent years

- **In Europe,** this is **recognized through a large number of projects and initiatives** that support and promote the application of principles of Open Science

- Moreover, it **was mandatory to apply some of these principles within H2020 projects**

- The principle of 'Open Science' **became the modus operandi of Horizon Europe, requiring open access to publications and data**

What is openness?

- "Open means **anyone** can **freely access, use, modify, and share** for **any purpose**

  (subject, at most, to requirements that preserve provenance and openness)."

  (Open Definition)

What is open science?

open science

- **"The movement to make scientific research, data and dissemination accessible to all levels of an inquiring society**." (FOSTER Taxonomy).

- „**The practice of science** in such a way that **others can collaborate and contribute**, where **research data, lab notes and other research processes are freely available**, under terms that enable **reuse, redistribution and reproduction** of the research and its underlying data and methods." (FOSTER).

- Open Science **aims at transforming science through ICT tools, networks and media, to make research more open, global, collaborative, creative and closer to society**. (EC – Open Science Policy)

- **"Research simply done properly"**

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RESEARCHERS IN MOTION

Pros / Cons of Open Science?

- Everyone has his / her own opinion
- Frequently mentioned Pros:
  - Easy and quick to get/share information / knowledge with wide audience
  - …
- Frequently mentioned Cons:
  - Someone else getting detailed results of your work for free
  - IPR
  - …

Open Science and researchers

- You are working with researchers or you are a researcher yourself
- Let's see Open Science from the point of view of the researchers!

Good Research Practice
(according to Medical Research Council)

Good researchers

- Strive for excellence and take responsibility

- Respect the law, research ethics, and professional standards

- **Support a culture of <u>transparency</u>, openness, and honesty towards other researchers and the public**

- **Maximize public benefit and avoid resource waste**
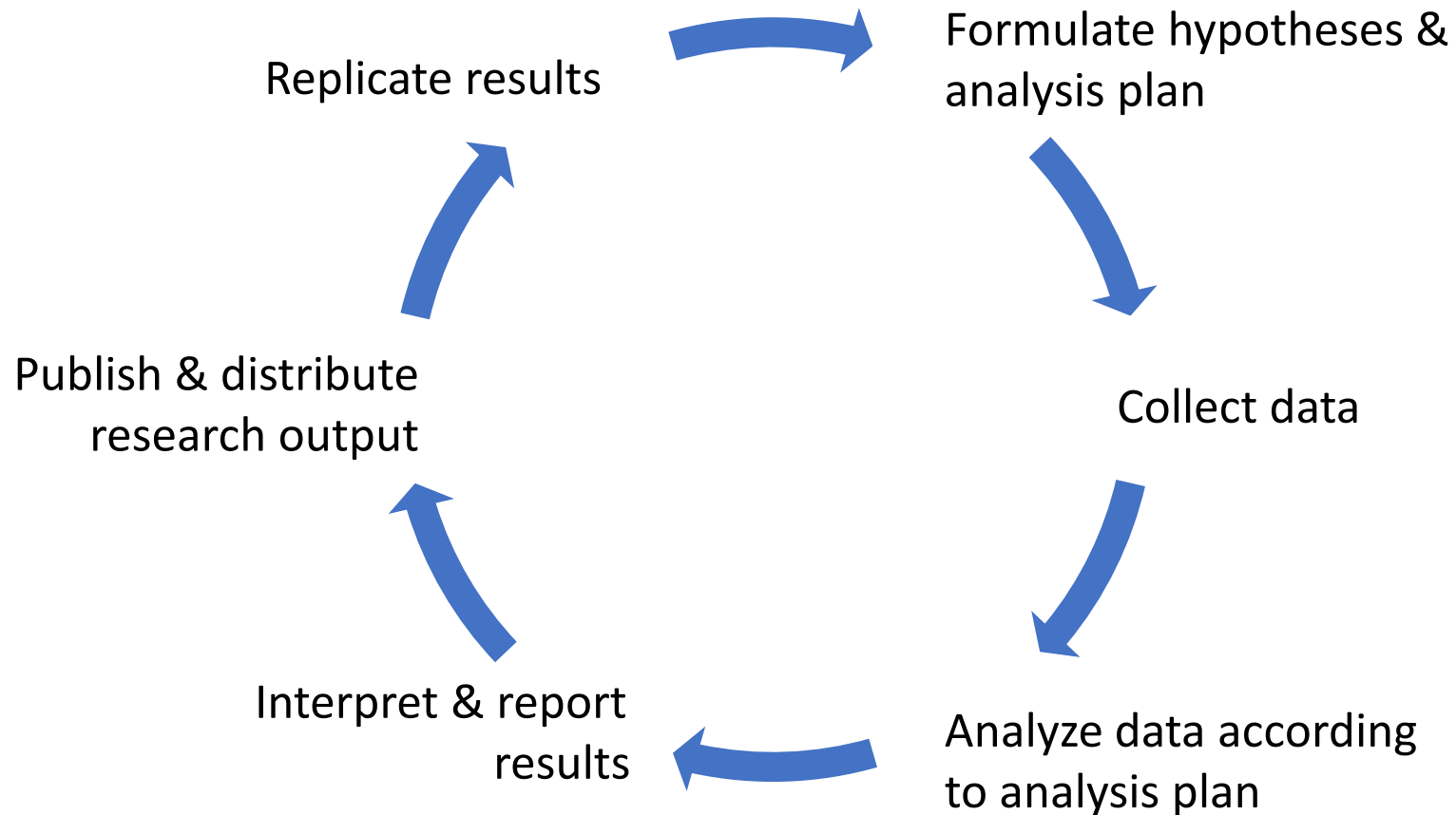
- Continue learning and mentor others

Open Science

Medical Research Council (2012)

Picture from freepik.com by @macrovector

Why transparency?

The Confirmatory Research Process

Why transparency?

How can you know that it does not look like this?

**invent some shiny
new hypotheses**

Replicate ~~results~~

Formulate hypotheses &
~~analysis plan~~

Publish & distribute
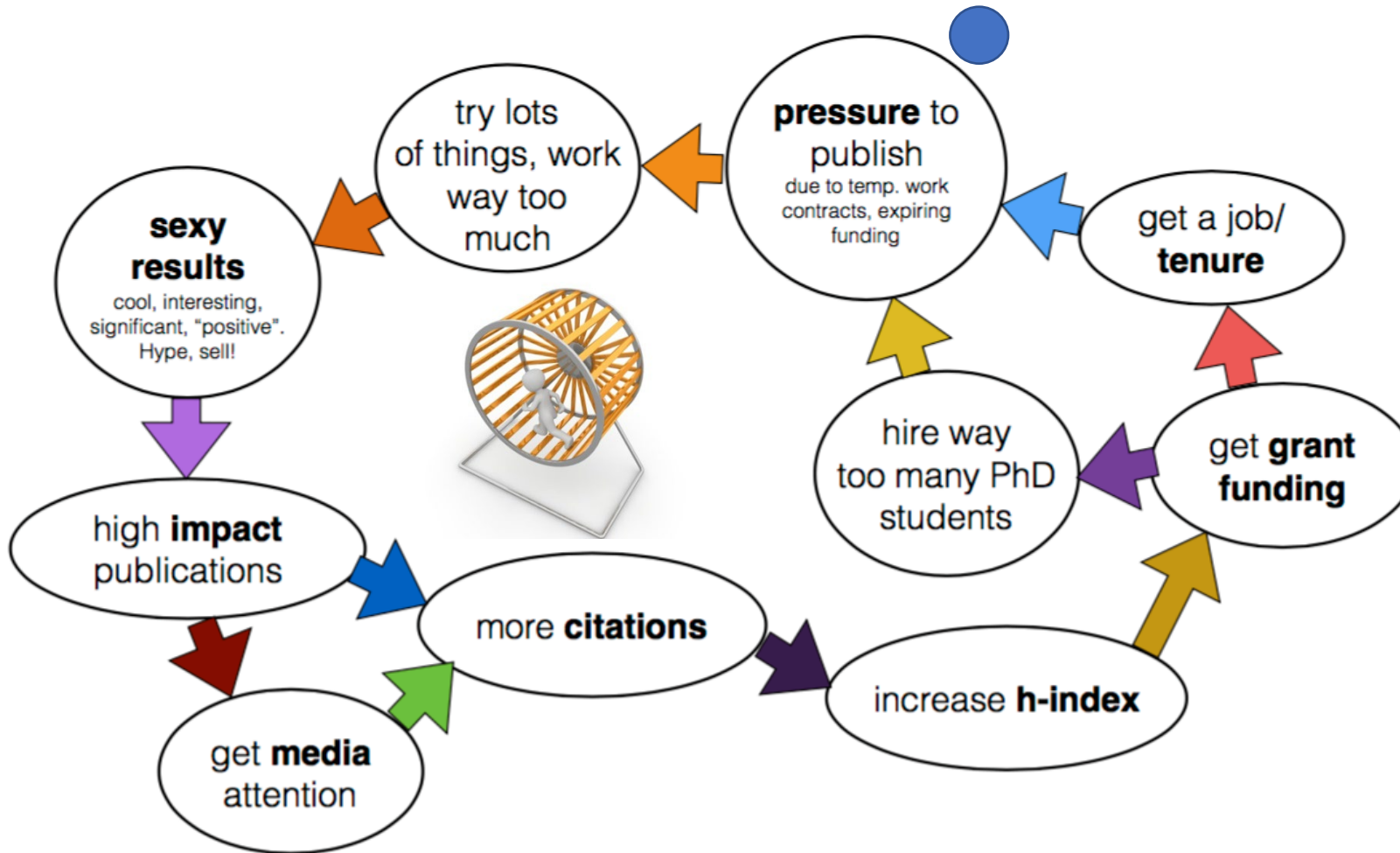research output

**but only with
those who pay**

Collect data **or fake it**

*** p < .05; that fit a theory;
that are surprising /
publishable…**

Interpret & report
results **interesting***

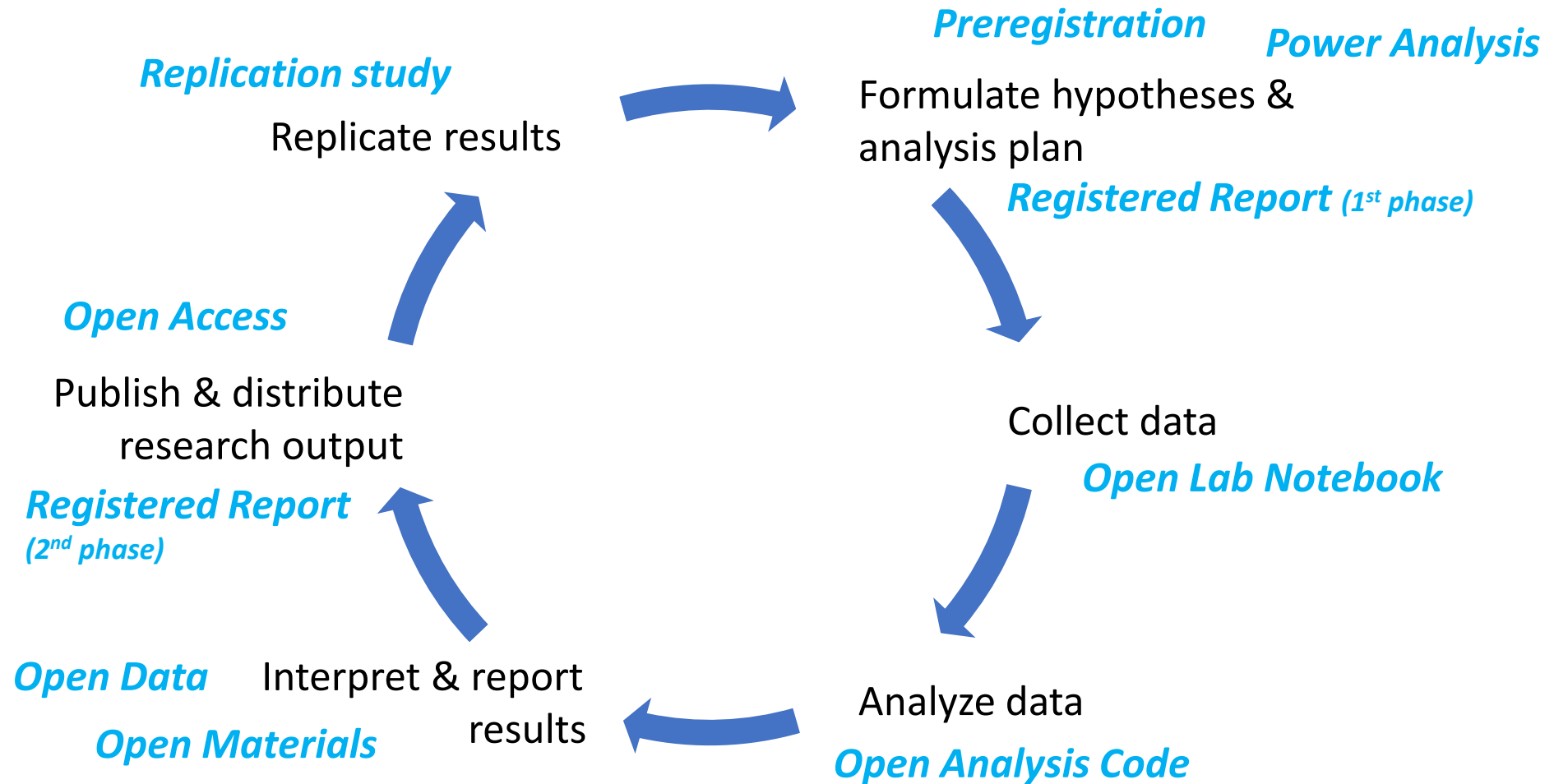Analyze data ~~according
to analysis plan~~ **p-hack**

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The science hamster wheel

try lots of things, work way too much

pressure to publish
due to temp. work contracts, expiring funding

get a job/ **tenure**

sexy results
cool, interesting, significant, "positive". Hype, sell!

high **impact** publications

hire way too many PhD students

get **grant funding**

more **citations**

increase **h-index**

get **media** attention

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Open Science in the research process

Why transparency?

Increase trust in science, don't waste public resources

Get constructive feedback

Be international and inclusive

Increase the speed of discovery

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Topics

1. Principles and concepts of Open Science
2. Citizen Science
3. Open Research Data and Materials
4. Open Access
5. Open Research Software and Open Source
6. Open Licensing, Intellectual Property Rights, Open File Formats
7. Collaborative Platforms
8. Open Peer Review, Metrics and Evaluation
9. Open educational resources
10. Open Science Policies
11. Open advocacy

Pillars of Open Science

Open Science

- Open Data
- Open Material
- Open Access
- Open Source (Software)
- Open Peer Review
- Open Educational Resources
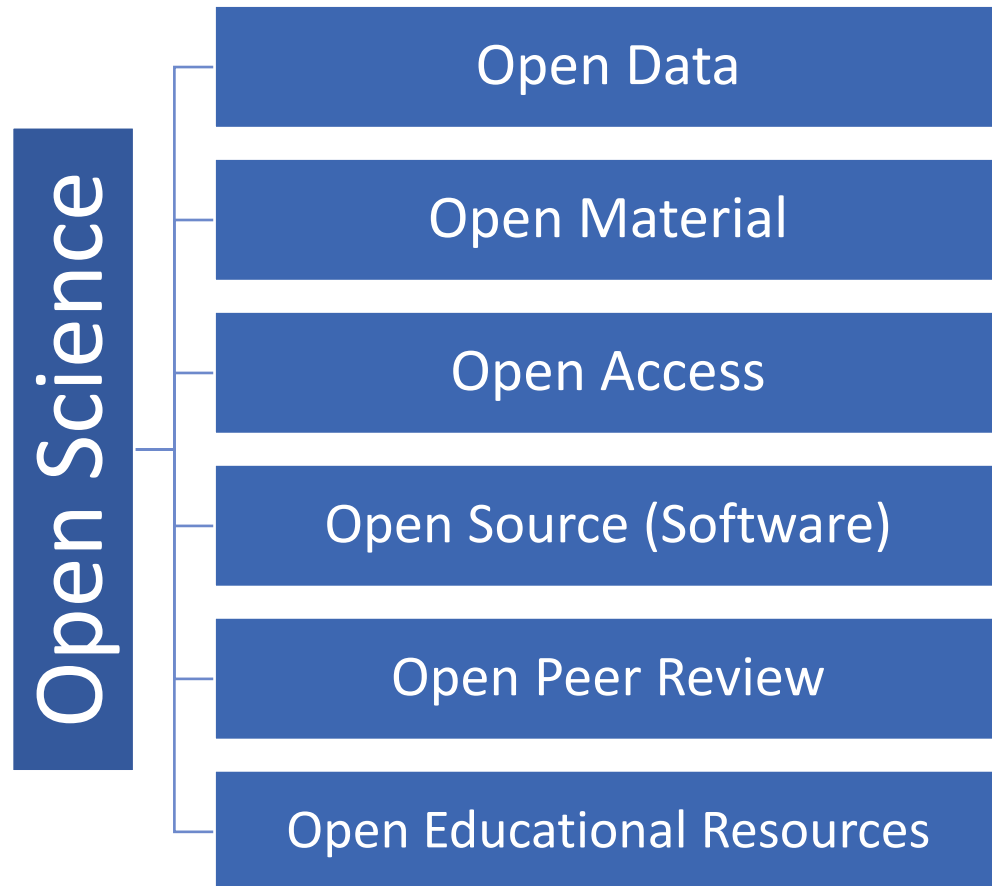
Other important practices

- Open Metrics
- Open Licensing and File Formats
- Citizen Science
- Open Science Policies
- Open Advocacy
- Reproducibility of research
- Transparency in research methods

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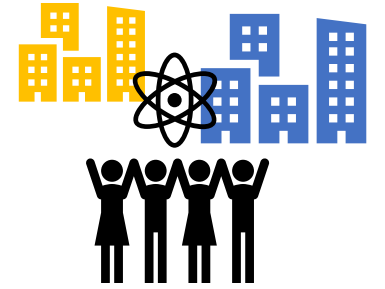
What is citizen science?

- **Involvement of the non-academic public in the process of scientific research** (citizenscience.org)

- **Open science means sharing knowledge, data and tools as early as possible, not only between researchers and between disciplines, but also with society at large** (EC definition)

- **Citizens** do scientific work—often working together with experts or scientific institutions

- Citizen science is **both an aim and enabler of Open Science**
  - Reading open access articles and using open research data leads to **greater public understanding of science**
  - Citizens **support the collection, analysis or description of research data**

# Key elements when starting a citizen science project

- How are you going to engage citizens?

- How are you going to ensure data quality?

- How are you going to deal with ethics and legal issues?

- [Cases studies](#) extracted from the UK Research Excellence Framework, may serve as examples of how citizen science activities can be included as societal impact in evaluation reports

Open Science in practice: OpenClick project

- Examples in this presentation are based on **OpenClick project** by Faculty of Mechanical Engineering Niš

- Project OpenClick **aims to discover physical status, skills and abilities of people based on human – computer interaction tests**

- OpenClick is research project **fully based on Open Science principles**

- **Registered persons can** use OpenClick project infrastructure (tools, methodology, data sets) to **conduct their own research** as long as they respect project's principles, rules, IPR and licensing policy

Example: OpenClick and citizen science

- Go to www.openclick.rs portal

- Explore the portal structure

- Run OpenClick: **Project OpenClick > Run OpenClick**, or go directly to http://openclick.masfak.ni.ac.rs/#/

- Click on **Register New Account** and enter your data (registration is anonymized)

- Tick the box to **confirm data collection** and processing
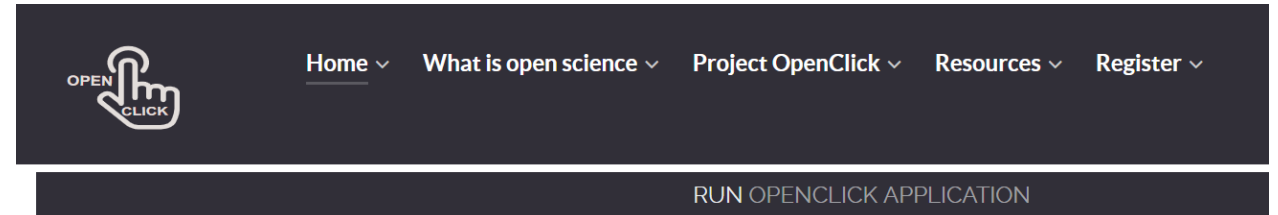
Test yourself as a citizen

- Sign in with your username and password

- You can see the total number of participants and
the total number of tests

- One participant can be tested unlimited number of times

- Carefully read the instructions for each test before you perform it

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Available tests

- There are nine tests available

- Each test relates to an elementary operation in interaction with a computer using mouse and keyboard

- Our motto: Keep it simple

- All you need to test someone's physical status are computer with mouse and keyboard

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Your first test

- Click on **Simultaneosly press two keys test**

- Carefully read the instructions

- Perform the tests

- If you did not do a regular test, then **quit** the test (you were confused, your phone rang, any other disturbance)

- **Save** test results

- Select: Show as histogram

- Compare your data with average results

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This test is stupid and useless?

- The **physiotherapist** told us that this is a great test that can be used for monitoring patient's recovery after a hand injury

- **Neuropsychiatrist** claims this is the ideal way to test whether he gave the right dose of a medicine to a patient with diagnosed schizophrenia

- The sports **coach** wants to use this test to track sportsmans' reflexes

- Each test has dozens of applications

- It is possible to create a mix of tests for specific research

More tests

- Mouse positioning speed

- Selecting two keys simultaneously

- Text input using the keyboard

- Alternate selection of the mouse buttons

What is open research data?

- **Data that can be freely accessed, reused, remixed and redistributed, for purposes of academic research and teaching and beyond**

- Ideally, open data have **no restrictions on reuse or redistribution**, and are **appropriately licensed** as such

- At most, the requirement to **attribute** and **share alike** are present

Metadata

- **Metadata** is "data [information] that provides information about other data" (Wikipedia).

```
Errors per ten digits,Time for one digit,User ID,Test date,Gender,Right hand,Birth year
0.0000,0.4199,1,2019-03-20 17:07:49,male,1,1964
0.3333,0.4922,1,2019-02-04 00:00:00,male,1,1964
0.0000,0.2975,2,2019-02-06 00:00:00,female,1,1965
0.0000,0.7907,4,2019-03-09 00:00:00,male,1,1954
0.0000,1.1121,4,2019-02-26 00:00:00,male,1,1954
0.0000,0.6516,4,2019-04-15 23:02:24,male,1,1954
0.0000,0.6259,4,2019-03-11 11:59:39,male,1,1954
0.0000,0.7234,6,2019-02-06 00:00:00,male,1,1974
0.0000,0.6056,6,2019-02-26 00:00:00,male,1,1974
0.0000,0.6013,7,2019-02-06 00:00:00,female,1,1997
0.0000,0.3179,7,2019-02-06 00:00:00,female,1,1997
0.0000,0.3435,8,2019-02-06 00:00:00,male,0,1976
0.0000,0.5865,10,2019-02-07 00:00:00,male,1,1970
```

Metadata for typing numbers test

Attribute	Description
Time required for typing numbers	
Errors per ten digits	number of errors per 10 entered digits
Time for one digit	the time needed for entering of one digit
User ID	user identification
Test date	Date and time of the test
Gender	User gender. This field can have two values: male and female
Right hand	this field can have values 0 and 1. Value 1 indicates that the user's dominant hand is right. 0 indicates that the dominant arm is left
Birth year	year of birth of the user

FAIR data principles

- **Findable:** easy to find the data and the metadata for both humans and computers. Enabled by machine-readable persistent identifiers (PIDs) and metadata

- **Accessible:** data can be retrieved using open protocols, possibly including authentication and authorization

- **Interoperable:** can be combined and used with other data or tools

- **Re-usable:** well-described so that they can be replicated and/or combined in different settings

Difference between FAIR data and Open data

- **Open data** should be **available to everyone to access, use, and share, without licences, copyright, or patents**. At most, it should be subject to attribution/share-alike licenses

- **FAIR data**, uses the term "Accessible" to mean **accessible by appropriate people, at an appropriate time, in an appropriate way**. Data can be FAIR when it is private, when it is accessible by a defined group of people, or when it is accessible by everyone (open data). For example:

    - **New experimental data** - accessible by the generator and their group to start, with consortia partners as the findings become refined, with the public upon publication
    - **Personally sensitive data** may never be publicly accessible and usable
    - **Commercially sensitive data** may be held privately for stretches of time after collection and interpretation. Users are also free to use more restrictive licenses to govern how the data may be reused

Sharing sensitive and proprietary data

- **Sharing sensitive data** is **region-specific** because of differing regulations

- Within the General Data Protection Regulation ([GDPR](#), European Union, 2016a) **personal data** is defined as **any information relating to an identified or identifiable natural person known as 'a data subject'**

- 'Special categories of personal data' according to GDPR:
  - Racial or ethnic origin; Political opinions; Religious or philosophical beliefs; Trade union membership; Genetic data; Biometric data; Data concerning health; Data concerning a natural person's sex life or sexual orientation

GDPR example: OpenClick Data Protection Policy

- According to EU General Data Protection Regulation

- Contents:
  1. Data protection principles
  2. General provisions
  3. Lawful, fair and transparent processing
  4. Lawful purposes
  5. Data minimization
  6. Accuracy
  7. Archiving / removal
  8. Security
  9. Breach

Data Protection Policy

Faculty of Mechanical Engineering, University of Nis, Serbia

Last updated	11.04.2019.

Definitions

Institution	means Faculty of Mechanical Engineering, University of Nis, Serbia, a registered national Institution of Serbia.
GDPR	means the General Data Protection Regulation.
Responsible Person	means dr Miroslav Trajanovic, full time professor
Register of Systems	means a register of all systems or contexts in which personal data is processed by the Institution.

Data management plan

- A **Data Management Plan (DMP)** is a brief plan to define:
  - how the data will be created
  - how it will be documented
  - who will be able to access it
  - where it will be stored
  - who will back it up
  - whether (and how) it will be shared and preserved
- DMPs are often submitted as part of grant applications, but are useful whenever researchers are creating data
- Further questions: CESSDA Data Management Expert Guide, part 6
- DMP templates across EU: CESSDA European diversity

Data management plan example: OpenClick

- **http://www.openclick.rs/index.php/en/project-openclick/data**
- **http://www.openclick.rs/images/files/openclickdtm.pdf**

EUROPEAN RESEARCH COUNCIL (ERC): ERC DMP

SUMMARY

Project Acronym: OpenClick
Project Number

DATASET SUMMARY

OpenClick project aims to discover physical status, skills and abilities of people based on human – computer interaction tests. There are currently 9 different sets of data within the OpenClick project. Each set of data corresponds to a single test that exists within the project.

Testing tools measure specific user performance in human – computer interaction. Each test is designed to measure one, exactly defined, type of interaction. During the test, several samples are taken, the average value is calculated, and then this average value is recorded in the database as a result of the test for specific person.

Recorded data sets are stored in text files, in the CSV (comma separated value) format.

How to make research data accessible

1. As supplemental material **with a research article**, **hosted by the publisher** of the article

2. Hosting data on a **publicly-available website**, with files available for download

3. Depositing data in a **repository** developed to support data publication (e.g. Zenodo)

4. Publishing **a data paper about the dataset** (as a preprint, in a journal, or in a data journal dedicated to supporting data papers). Hosted by the journal or hosted separately in a data repository

Selecting a data repository
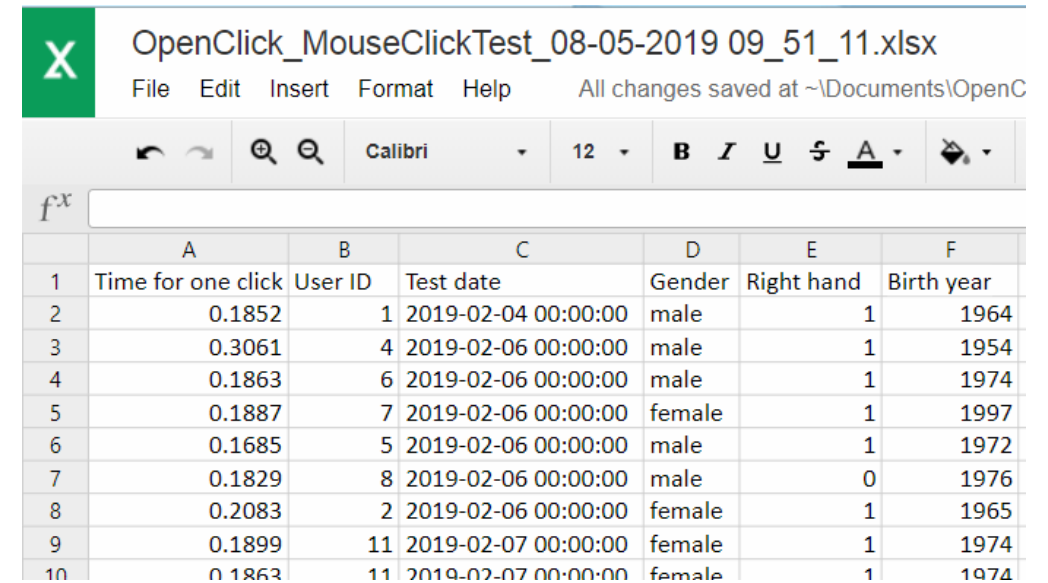
Order of preference recommended by OpenAIRE:

1. Use an **external data archive** or repository established for your research domain to preserve the data. Some recommendations are given by Nature

2. If available, use an **institutional repository**, or your research group's established data management facilities

3. Use a **cost-free data repository** such as Dataverse, Dryad, figshare or Zenodo.

4. Search for **other data repositories** in re3data. Filter options that will help you find FAIR-compatible repositories: access categories, data usage licenses, trustworthy data repositories and data a persistent identifier (PID). Consider whether the repository supports versioning

Open data example: OpenClick

- Click Resources > Download data sets

- Click on Mouse clicks test

- Click on "OpenClick_MouseClickTest_08-05-2019 09_51_11.csv
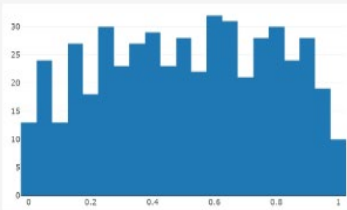
Data processing examples

- Mouse clicks test
  - Time for one mouse click (only left button): 0.2469
- Alternate mouse button selection

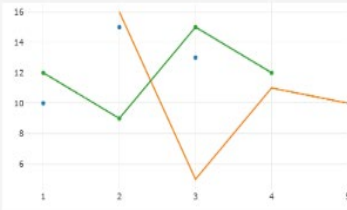|	Left button time	Right button time	Middle button time	Double click time
All	1.029506	0.910285	0.997979	1.389282
Female	1.006681	0.806984	1.023247	1.343797
Male	1.046136	0.985546	0.979568	1.422421
All <20 years	1.014585	0.752221	0.881470	1.404601

More results – Show history

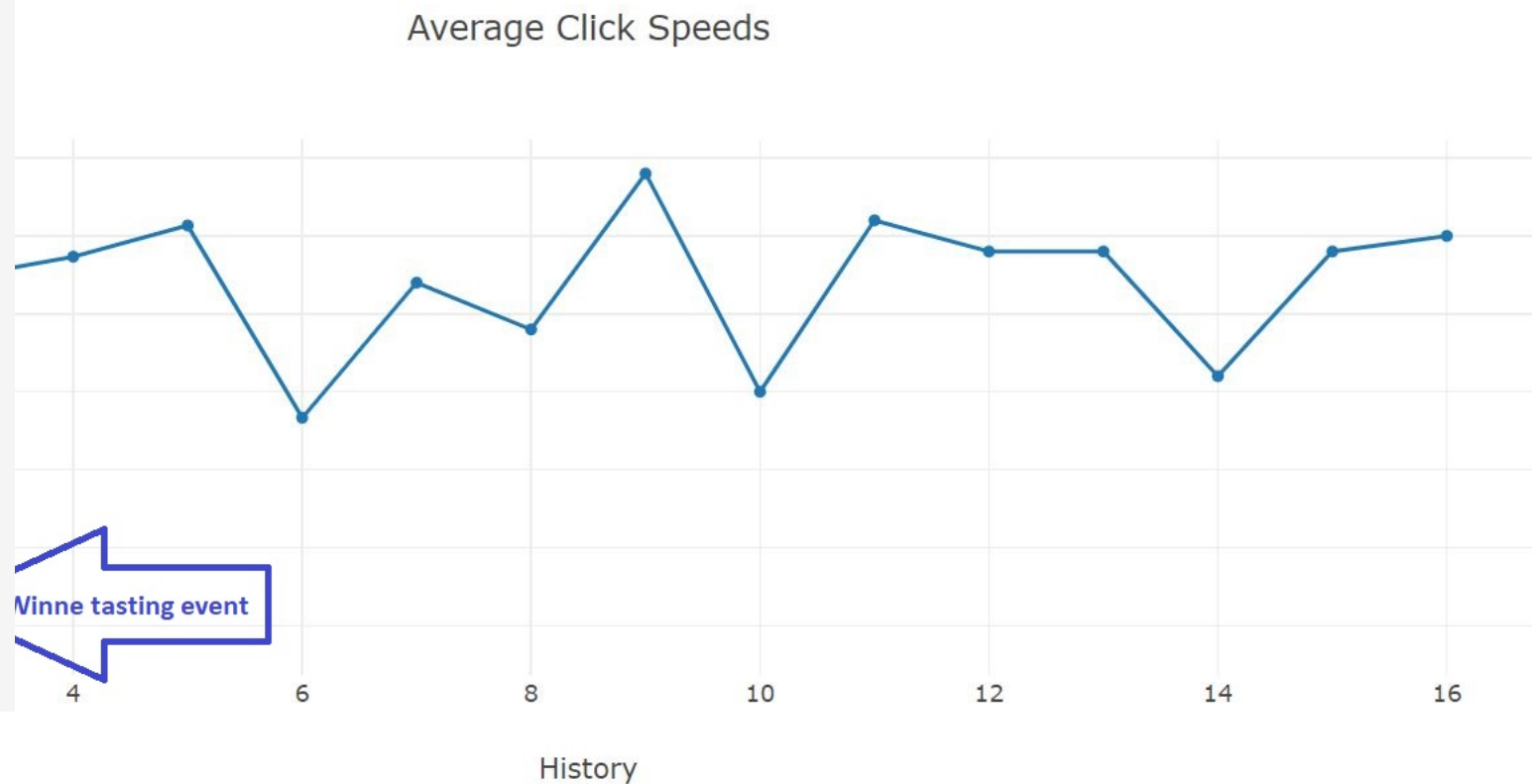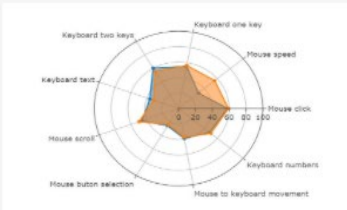

Show as histogram

Show history

Show radar chart

Average Click Speeds

Winne tasting event

History

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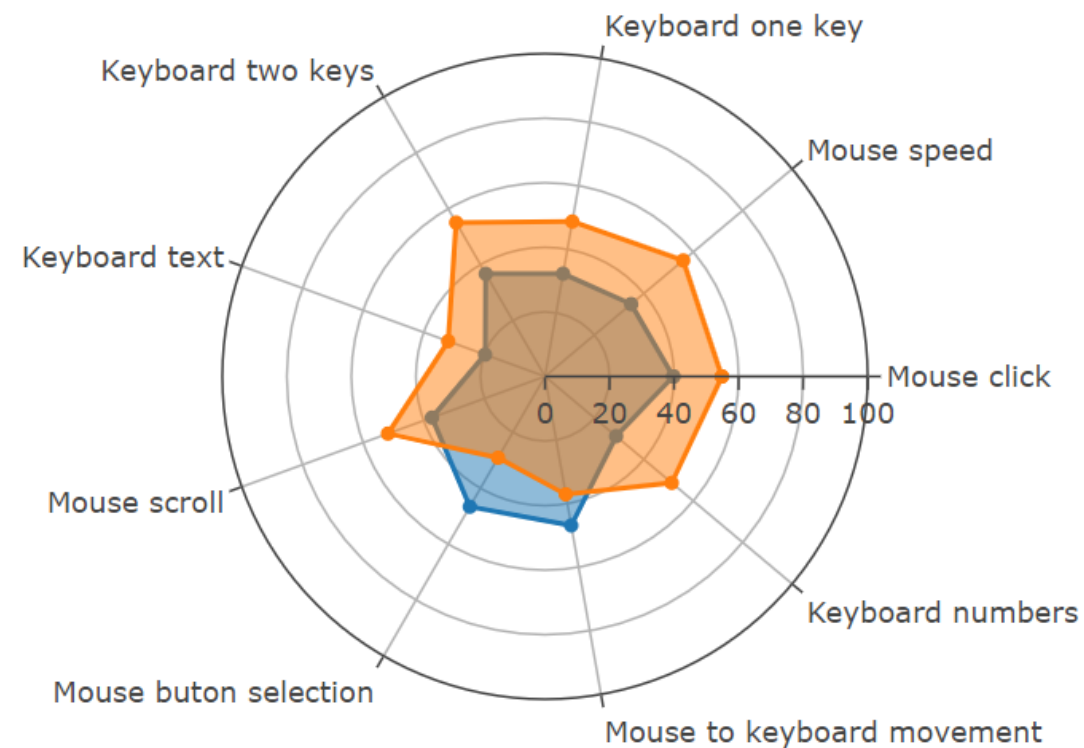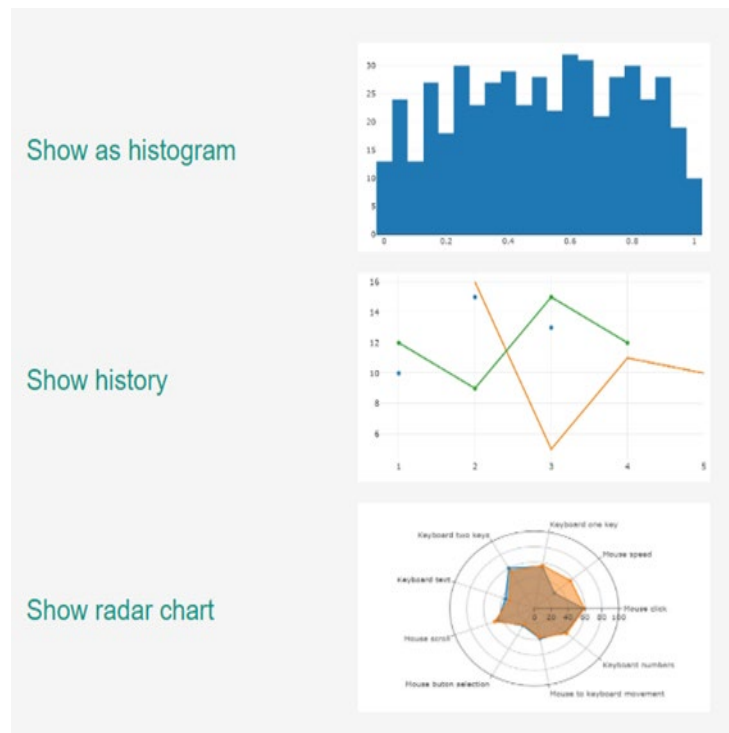
More results – Show radar chart

Open Materials

- In addition to data sharing, the openness of research relies on sharing of materials.

- Examples of materials that can be shared:
  - **Reagents** (a substance, compound or mixture that can be added to a system in order to create a chemical or other reaction)
  - **Protocols** (a formal or official record of scientific experimental observations in a structured format). Example repository: Protocols.io.
  - **Notebooks**, **containers**, **software**, and **hardware**.
    - Containers and notebooks can be shared with Rocker or Code Ocean.
    - Software and hardware used in research should be shared following best practices for documentation as outlined in Open Research Software and Open Source chapter.

What is Open Methodology?

- The term "**open methodology**" includes procedural, technical and technological solutions intended for use in scientific research, which are openly available to the scientific community

- These solutions can be available in their final form, but are **usually open to further development**, which implies that each member of the scientific community can contribute to their improvement

- The key feature of open methodologies is their transparency, that is, their direct applicability by the end user

- At this point, probably the best illustration of open methodologies are **different software solutions**, such as the statistical software environment R or software solutions such as statistical packages JASP or jamovi

- Example: OpenClick methodology: http://openclick.rs/index.php/en/project-openclick/methodology

What is Open Research Software?

- Open (or open-source) research software refers to **the use and development of software** (for analysis, simulation, visualization, etc.) **where the full source code is available**

- **must be distributed in source and/or compiled form** (with the source code available in the latter case)

- **must be shared under a license that allows modification, derivation, and redistribution**

Pros of using open research software

- **Sharing software used for research** (whether computational in nature, or that relies on any software-based analysis/interpretation) **is a necessary, though not sufficient, condition** for **reproducibility** (unavoidable ambiguity arises when trying to fully describe software using natural language)

- **Sharing software openly allows developers to receive career credit** for their efforts, either **through direct citation** (Smith et al., 2016) **or via software meta-articles**
  - Software meta article journal examples: Journal of Open Research Software or the Journal of Open Source Software (Smith et al., 2018)
  - A list of many domain-specific journals that publish software articles by Neil Chue Hong

Storage and unique identification of open software

- **Git** is a popular tool that allows version control: management and overall tracking of changes in a particular piece of software

- Services such as **GitHub**, **GitLab**, **Bitbucket**, and others provide an **interface to Git** as well as **remote storage services** that can be used **to maintain, share, and collaborate on research software**

- Apart from software publishing and version control, it is **equally important to have a published and persistent identifier associated with it**, such as a DOI

- There are several ways of **associating a DOI with a GitHub repository**; the easiest one is to employ **Zenodo** (a free, open catch-all repository created by OpenAIRE and CERN)

Open source licensing

- **Publicly shared software is not actually open source unless accompanied by a suitable license**, as any other creative work **it falls under exclusive copyright to the creators** - no one else can use, copy, distribute, or modify your work (choosealicense.com)

- **An appropriate license should be used for software**, based on what is preferred to let others do (or prevent them from doing) with the code

- If the code is to be shared **with no restrictions** – **dedicate it to the public domain** ([The Unilicense](The))

- The choosealicense.org site is a helpful resource to **differentiate between licenses**, although it does not feature [every available or popular open-source license](every)

- Once a license is selected, the text—edited to include the author name(s) and year—is put in the software repository as a **plaintext LICENSE file**

If you choose no licence...

- When you make a creative work (which includes code), **the work is under exclusive copyright by default**

- Unless you include a license that specifies otherwise, **nobody else can copy, distribute, or modify your work** without being at risk of take-downs, shake-downs, or litigation

- **Once the work has other contributors (each a copyright holder), "nobody" starts including you!**

What is Open Access?

- **Research publications** (like articles and books) can be **accessed online**, **free of charge by any user**, with **no technical obstacles** (like mandatory registration or login to specific platforms)

- **Ideally, additional rights should also be provided**: to copy, distribute, search, link, crawl and mine

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Gold Open Access (Open Access publishing)

- The published work is **made available in Open Access mode by the publisher immediately upon publication**

- The most common business model is based on one-off payments by authors (commonly called **APCs – article processing charges**)

- The publisher charges a fee directly from the author or more often indirectly from the institution or the financier of the project

Open Access journals (🔒 📚) © 🪙 ?
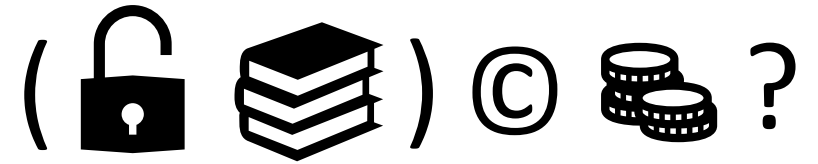
- According to the **Directory of Open Access Journals** ([DOAJ](#)), in October 2020 more than **15,300** journals

- An open access journal **must provide free access** to its contents, but it **also must license them to allow reusability**. No legal notice must be legally understood as "all rights reserved".

- The definition of an OA journal does not include any condition about the business model, but these are **commonly known as journal where you have to pay to publish**.
  - This misconception is due to the fact that the **most successful journals and the ones that got the highest impact follow this model**.
  - A study shows that the majority of journals registered in DOAJ do not charge any fee for publication (data available [here](#)).

„Predatory" publishers

- This is **a proposition** by American librarian [Jeffrey Beall](#) **to label publishers publishing in an open-access regime, charging mainly high publishing fees but not providing a proper review process and quality control**.

- Jeffrey Beall recently updated his list of predatory publishers and magazines, but this site was removed under the pressure of publishers who thought they were unjustly accused. A similar list is currently available at [this address](#).

- Predatory editorial policy may be illustrated by detailed analysis of two journals from Bosnia and Herzegovina that were once removed from the Web of Science: [Legitimacy of citations in predatory publishing: The case of proliferation of papers by Serbian authors in two Bosnian WoS-indexed journals](#) by Center for Evaluation in Education and Science.

Green Open Access (self-archiving)

- The **published work** or the **final peer-reviewed manuscript, accepted for publication** is made freely and openly accessible by the author, or a representative, **in an online repository**

- **Usually, it is not allowed to publish the final manuscript**, prepared for printing by the publisher, **but only pre-prints (pre-refereeing)** or **post-prints (final draft post-refereeing)**

- **Some publishers** request that Open Access be granted only after an **embargo period** (several months to several years)

Other Open Access modes

- **Hybrid Open Access.** Journals charge a subscription or the cost of downloading articles, but allow authors to open access to their article by additional payment of processing fees
  - Institution may pay twice: for the subscription to the entire magazine and for publishing one or more articles
- **Platinum Open Access**. Does not charge either a subscription or a fee from the author. Expenses are covered by other means, such as volunteer work, donations, subsidies, grants, etc.

Journal paper versions allowed to deposit

- **Some** journals allow the **dissemination of the submitted version (which they often differ from preprints)**, and its **replacement for a reviewed version** (once the final paper is published)

- Due to the increase of policies requiring access to research results, **most** of the journals allow **to deposit the accepted version of the paper,** a.k.a. **author manuscript** or **postprint** (the final text without final layout).

- **Some** journals allow researchers **to deposit the final published version**, a.k.a. **the version of record**

Preprints

- Preprints are **documents that have not been peer reviewed but are considered as a complete scientific publication in a first stage**.

- Widely used in physical sciences and now emerging in life sciences and other fields.

- Publication **through institutional repositories and preprint servers**.

- Some of the preprints servers include **open peer review services** and the availability to post new versions of the paper once reviewed by peers.

- Open peer review processes of preprints enabled on new publishing platforms (see Wellcome Trust or the Bill and Melinda Gates Foundation).

Repositories and self-archiving

- In October 2020 more than 4700 repositories available, according to the [Registry of Open Access Repositories](#).

  1. **Institutional repositories** - managed by research institutions to provide a place to archive and share openly papers and other research outputs
  2. **Subject based repositories** - usually managed by research communities and most of the contents are related to a certain discipline.
  3. **Harvesters** aggregate content from different repositories. Sites to perform general searches and build other value-added services.

- A good choice is EU-cofounded repository [ZENODO](#)

Embargo period

- In relation to the moment to make the paper publicly available, **many journals** establish a period from its original publication: the embargo period, which can range **from zero to 60 months**

- **Some journals** include or exclude **embargoes depending on the versions**
  - For instance, the accepted version could be made publicly available after publication, but the published version must wait 12 months

Example: OpenClick related papers

- OpenClick portal > Project OpenClick > Published Papers
- Link: http://www.openclick.rs/index.php/en/project-openclick/published-papers
- Two self –archived conference papers

How to determine self-archiving policy of a journal?

1. At any of the portals that provide general information as SHERPA/RoMEO
   - **Sherpa Romeo** is an online service that **aggregates and presents publisher and journal open access policies** from around the world.
   - Used by researchers, repository staff and research support teams across the world, **to help users understand complex publisher and journal open access policies**.

2. Based on the information available at the journal or publisher website

- There are still some researchers reluctant to deposit other versions than the final published version. It is important to inform them about the copyright implications when they sign a transfer document.

Open Access publication example (1)

Task: check Open Access options for the paper „Mišić, D., Zdravković, M., Mitković, M., Vitković, N., & Mitković, M. (2018). Real-Time Monitoring of Bone Fracture Recovery by Using Aware, Sensing, Smart, and Active Orthopedic Devices. *IEEE Internet of Things Journal*, *5*(6), 4466-4473."

Solution:

- Google the paper (using Google Scholar). Only the abstract is available for free on publisher's site. Login is required for download.

- Use [SHERPA/RoMEO](#) (v2 available from 20th June 2020) to find about „*IEEE Internet of Things Journal*" policies:
  - Type or paste "IEEE Internet of Things Journal" in "Journal Title or ISSN" field and press **Search** button. You will get the information page related to the journal.
  - First section, **Publication Information**, contains basic data about the journal: **Title**, **ISSN**, **URL** and **Publishers**.
  - Next, and the most important section, **Publisher Policy**, contains a set of possible **scenarios through which the article can be made open access**. Those scenarios are called **pathways**.

Open Access publication example (2)

- Pathways are sorted by paper versions: **Published Version**, **Accepted Version (postprint)** and **Submitted Version (preprint sent to publisher)**.

- For some publication types, more than one pathway may appear, which are mutually different regarding funder's request, location of publication or some other condition.

- Pathways are initially shown in one row each, where the rows contain the icons describing various aspects of publisher policy (see the image on the right or Sherpa Romeo user guide).

- By clicking the "+" sign on the right, pathway description gets expanded to show detailed info.

Icon	Name	Description
	Open access publishing	The pathway includes open access publishing
£	**Additional open access fee**	The pathway requires the payment of a fee (in addition to any normal publication fees that may be required) to make the article open access
✕	**Not permitted**	No open access pathway exists for the article version
©	**Copyright owner**	The copyright owner that the pathway requires
	Conditions	Conditions that apply to the pathway
	Licence	The licence that the pathway requires
	Prerequisites	Requirements that must be met to allow the pathway to be used. These may include prerequisite funders, subjects, or permissions from the publisher
	Location	The websites on which the pathway allows the article version to be available. This includes self-archiving and publisher-deposit locations, including the website of the journal
	Notes	Additional notes on the policy
	Publisher deposit	The publisher will deposit on your behalf in the location specified
	Embargo	The embargo that the pathway requires. Unless stated otherwise, the embargo starts on the date of publication

Open Access publication example (3)

- In this case, there are five pathways, one for accepted version, two for postprints and two for preprints.

- Published version pathway is shown as follows:

Published Version	£	📄	⏳ None	🔓 CC BY	✏️
📁 Journal Website					

£ OA Fee	This pathway has an Open Access fee associated with it
📄 OA Publishing	This pathway includes Open Access publishing
⏳ Embargo	No Embargo
🔓 Licence	CC BY
📁 Location	Journal Website
✏️ Notes	Authors must contact publisher stating Creative Commons Attribution requirement

- In short, published version may be made Open Access if a fee is payed (the amount must be sought on publisher's website), which makes this journal "hybrid", as normally there exists a journal subscription fee. CC BY license is included, and publisher defines the attribution.

Open Access publication example (4)

- Accepted version pathway (a) is shown as follows:

Accepted Version [pathway a]

⏳ None ☰

📂 Any Repository, arXiv, Institutional Website, +3

⏳ Embargo — No Embargo

© Copyright Owner — Publishers

📂 Location —
Any Repository
Author's Homepage
Institutional Repository
Institutional Website
Named Repository (arXiv, TechRxiv)

☰ Conditions —
When accepted for publication, set statement to accompany deposit (see policy)
Must link to publisher version with DOI
Publisher copyright and source must be acknowledged

- Postprints may be put in any repository, institutional repository of website or author's homepage, without embargo.

- Publisher retains copyright. After acceptation publisher's statement must be included as well as a link to publisher's versions via DOI.

- Accepted version pathway (b) is relevant if funder requests a specific publication location. Embargo of 24 months for posting in funders repository may be shortened, which depends on the funder and location.

Open Access publication example (5)

- Submitted version pathway (a) is shown as follows:

Submitted Version
[pathway a]

⧗ None ☰

📂 arXiv, Funder Designated Location, TechRxiv, +3

⧗ Embargo   No Embargo

📂 Location   Author's Homepage

Funder Designated Location

Institutional Website

Named Repository (arXiv, TechRxiv)

Preprint Repository

☰ Conditions   Must be replaced with accepted version

When submitted, set statement to accompany deposit (see policy)

When accepted for publication, set statement to accompany deposit (see policy)

IEEE must be informed as to the electronic address of the pre-print

Publisher copyright and source must be acknowledged

- Preprints may be put in listed locations, without embargo.

- Submitted version must be replaced by accepted version, when it becomes available.

- Statements must be added after submission and acceptation, details must be sought on publisher's website.

Open Access publication example (6)

- Submitted version pathway (b) is shown as follows:

- Preprints may be put on Academic Social Networks, without embargo, but must be removed after acceptance for publication.

- Academic Social Network must be signatory of STM Sharing Principles (ResearchGate is not a signatory)

Submitted Version
[pathway b]

⏳ None   ☰ ✎
📂 Academic Social Network

⏳ Embargo   No Embargo

📂 Location   Academic Social Network

☰ Conditions   Must be removed upon acceptance for publication

✎ Notes   Academic Social Network must be a signatory of STM Sharing Principles

Open Access publication example (7)

- If journal policy is explored further (links below pathways) ([Author Posting of IEEE IEEE Copyright Policy](), [Policy: Posting Your Article]()) it may be found that the **accepted version may be posted only on author's personal website, author's employer's website, arXiv.org or funder's repository (with embargo period of 24 months that may be shortened if the funder requests so)**.

- Authors **should ask the publisher for article version that includes** the Digital Object Identifier, IEEE's copyright notice, and a notice showing the article has been accepted for publication.

- **Preprint could have been published on Scholarly Collaboration Networks (SCNs)** before acceptance**. It **could not have been published on ResearchGate**, as it is not the signatory to the International Association of Scientific, Technical and Medical Publishers' "Sharing Principles".

- **Submitted versions must be accompanied with set phrase** (see [Policy: Posting Your Article]()). Preprints have to be removed after the accepted paper is published.

- [Open Access APCs]() are $2,045 as of 1 January 2019.

Open Access Exercise

- For a given paper from the list on next page, do the following:
  1. Google the paper and find its original journal page and DOI. Use Google Scholar if needed to filter the search results.
  2. Check if the journal is listed in DOAJ – is it an Open Access journal?
  3. Find Open Access policy for the journal using SHERPA/RoMEO. Answer the following questions (using main course presentation as an example):
     a. Which paper versions may be published a open access (submitted version, accepted version, publisher's version/PDF) and under which conditions?
     b. If there is OA publishing cost (APC), how much is it? If the journal is not purely Open Access, is there a paid Open Access option? If yes, use given link to find the fee on publisher's site. Which kind of Open Access journal is this?
     c. Using the links in "Copyright" section find further information related to self-archiving, if applicable:
        - What is the embargo period for the paper (journal)?
        - Is the article free to access after the embargo period (from publisher's site)?
        - How to attach a user license to a post-print?
  4. Use the site How can I share It? and paper DOI to find out where and how the paper from the journal can be shared.
  5. If the journal is not fully Open Access, find the journal (or publisher) page defining paper publishing options. Where can the post prints be shared immediately?

Papers for Open Access exercise

1. Korunovic, N., Marinkovic, D., Trajanovic, M., Zehn, M., Mitkovic, M., & Affatato, S. (2019). In Silico Optimization of Femoral Fixator Position and Configuration by Parametric CAD Model. *Materials, 12*(14), 2326.

2. Korunović, N., Fragassa, C., Marinković, D., Vitković, N., & Trajanović, M. (2019). Performance evaluation of cord material models applied to structural analysis of tires. *Composite Structures, 224*, 111006.

Answers (1)

Korunovic, N., Marinkovic, D., Trajanovic, M., Zehn, M., Mitkovic, M., & Affatato, S. (2019). In Silico Optimization of Femoral Fixator Position and Configuration by Parametric CAD Model. Materials, 12(14), 2326.

1. URL: https://www.mdpi.com/1996-1944/12/14/2326
   DOI: 10.3390/ma12142326

2. The journal is listed in DOAJ – it is an Open Access journal

3. Open Access policy for the journal

   a. Submitted version, accepted version or publisher's version/PDF may be published.

   b. Open Access Conditions

      • Submitted and accepted versions may be self-published in any repository, without embargo. License is CC BY 4.0 and authors retain copyright. Both versions must contain a link to published article. Authors are encouraged to submit their published articles to institutional repositories.

      • Published version may me self-published under same conditions as above. In addition, those are automatically published in journal website and PubMed Central. Published source must be acknowledged with citation.

Answers (2)

c. From DOAJ, the publishing fee is 1800 CHF (updated 8 May 2019). But, on publisher's site (https://www.mdpi.com/journal/materials/apc), it may be found that the price is now 2000 CHF (October 2020). This is gold open access journal.

d. Further information related to self-archiving (section Copyright > Policy, redirecting to https://www.mdpi.com/about/openaccess)
   - This is a full open access journal.
   - The article is **free to access from publisher's site.**
   - All paper versions may be self-published immediately, no embargo period exists.
   - Everyone is free to re-use the published material if proper accreditation/citation of the original publication is given.
   - **The paper is published under CC BY license** (details in course presentation)

4. How can I share It? still does not have info on MDPI journals.

Answers (3)

Korunović, N., Fragassa, C., Marinković, D., Vitković, N., & Trajanović, M. (2019). Performance evaluation of cord material models applied to structural analysis of tires. *Composite Structures*, *224*, 111006.

1. URL: https://www.sciencedirect.com/science/article/pii/S0263822319308840
   DOI: 10.1016/j.compstruct.2019.111006

2. The journal is **not** listed in DOAJ – it is not an Open Access journal

3. Open Access policy for the journal (according to Sherpa Romeo v1, please compare to v2 output)
   a. Only pre-prints and post-prints may be published, not publisher's version/PDF, under the following conditions:
      - Authors pre-print on any website, including arXiv and RePEC
      - Author's post-print on author's personal website immediately
      - Author's post-print on open access repository after an embargo period of between 12 months and 48 months
      - Permitted deposit due to Funding Body, Institutional and Governmental policy or mandate, may be required to comply with embargo periods of 12 months to 48 months
      - Author's post-print may be used to update arXiv and RepEC
      - Publisher's version/PDF cannot be used
      - Must link to publisher version with DOI
      - Author's post-print must be released with a Creative Commons Attribution Non-Commercial No Derivatives License

Answers (4)

b. There is a paid Open Access option, The fee is 2850 USD. This is hybrid open access journal.

c. Further information related to self-archiving

- **Embargo period is 24 months** (Journal Embargo Period List (pdf))
- The article is **not free to access from publisher's site after the embargo period**, it is not on the list find in "Green open access > Select a journal that features an open archive"
- **To attach a user license to a post-print**:
  On the accepted manuscript add the following to the title page, copyright information page, or header /footer: © YEAR. Licensed under the Creative Commons [insert license details and URL].
  For example:
  © 2019. This manuscript version is made available under the CC-BY-NC-ND 4.0 license http://creativecommons.org/licenses/by-nc-nd/4.0/
  (Sharing Policy > How to attach a user license)

4. According to How can I share It?:

a. You can share the metadata and abstract as well as a link to the article on the respective publishers' platforms on: Academia.edu, ArXIV, BioRxiv, Center for Open Science, EndNote, Figshare, Institutional Repository, LabArchives, LOOP, Mendeley, Paperhive, Papers; PubMed Central, ReadCube, RefWorks, REPEC, SSRN and Trellis

b. You can share your **author's original (preprint)** on: **Academia.edu**, ArXIV, BioRxiv, Center for Open Science, EndNote, Figshare, Institutional Repository, LabArchives, LOOP, **Mendeley**, Paperhive, Papers, PubMed Central, ReadCube, RefWorks, REPEC, **ResearchGate**, SSRN adn Trellis

c. You can share the **accepted manuscript (post-print)** on: ArXIV, BioRxiv - after the embargo expired, Center for Open Science - after the embargo expired, **Institutional repository - author showcasing (public),** Institutional Repository - group collaboration (private), **Mendeley - author showcasing (public),** Mendeley - group collaboration (private), REPEC and SSRN - after the embargo expired

d. You can share the version of record on: Mendeley - group collaboration (private)

e. Additional full-text sharing options may exist – please check this directly with publisher Elsevier

Answers (5)

5. Journal (or publisher) page defining paper publishing options: https://www.elsevier.com/about/policies/sharing. Read this in addition to How can I share It? info. If any conflict exists with previously found data, this is the most relevant, as it comes directly from publisher's site.

- The **post-prints can be shared immediately**:
  - via their non-commercial personal homepage or blog
  - by updating a preprint in arXiv or RePEc with the accepted manuscript
  - via their research institute or institutional repository for internal institutional uses or as part of an invitation-only research collaboration work-group
  - directly by providing copies to their students or to research collaborators for their personal use
  - for private scholarly sharing as part of an invitation-only work group on commercial sites with which Elsevier has an agreement

Open peer review

- Open peer review (**OPR**) **aims to bring greater transparency and participation to formal and informal peer review processes**

- There exists a number of **overlapping ways** in which peer review models may be adapted to the aims of Open Science

- Most important features:
    1. "**Open identities**", where both authors and reviewers are aware of each other's identities (i.e., non-blinded)
    2. "**Open reports**", where review reports are published alongside the relevant article
    3. "**Open participation**", where members of the wider community are able to contribute to the review process

Alternative metrics

- Alternative Metrics" or [altmetrics](#) – a proposal for balanced assessment of research efforts

- **Citation counting is complemented** by **other online measures of research impact**, including **bookmarks**, **links**, **blog posts**, **tweets**, **likes**, **shares**, **press coverage**…

- **A particular advantage to early-career researchers**, whose research-impact may not yet be reflected in significant numbers of citations

- Helps in identification of influential research and potential connections between researchers

Copyright ☺

- **Copyright** is a form of [intellectual property](#) that **grants the creator of an original creative work an exclusive [legal right](#) to determine whether and under what conditions this original work may be copied and used by others**, usually for a limited term of years

- As **animal-made art**, this [monkey selfie](#) is ineligible for copyright in the United States

![Monkey selfie photograph]

What is open licensing?

- **A license is a legal document that grants specific rights to user to reuse and redistribute a material under some conditions**

- **Licenses can be applied to any material** where some exploitation or usage rights exist (e.g., sound, text, image, multimedia, software)

- [Free content licenses](#) **are licenses** that grant permission to access, re-use, and redistribute material **with few or no restrictions**

Open license and copyright

- **Any creative work is automatically copyrighted**, i.e. under copyright terms **"all rights reserved" -** copyright holder *reserves*, or holds for its own use, all the rights provided by copyright law

- **By specifying an open license** copyright terms are changed to **"some rights reserved"**, i.e. copyright holder can choose how the work is shared

- Applying an open license to a **scientific work** (an article, dataset or other type of research output) **is a way for the copyright holder to express the conditions under which the work can be accessed, re-used and modified**

- Since copyright laws are not internationally harmonized one must **refer to [the applicable laws in current context](#)**

Creative Commons (CC) licenses

- The most used licenses for scientific content are **Creative Commons licenses**

- Depending on CC license type:
    - one is always obliged to **attribute the authors (give credit, indicate changes)**
    - material may be free or not free to **adapt (remix, transform, and build upon the material)**
    - **Commercial use** may be allowed or not allowed

- There are also public domain related CC licenses - „all rights granted"

CC licenses – License Conditions (1)

Attribution (by)

- All CC licenses require that others who use your work in any way must give you credit the way you request, but not in a way that suggests you endorse them or their use. If they want to use your work without giving you credit or for endorsement purposes, they must get your permission first.

ShareAlike (sa)

- You let others copy, distribute, display, perform, and modify your work, as long as they distribute any modified work on the same terms. If they want to distribute modified works under other terms, they must get your permission first.

CC licenses – License Conditions (2)

NonCommercial (nc)

- You let others copy, distribute, display, perform, and (unless you have chosen NoDerivatives) modify and use your work for any purpose other than commercially unless they get your permission first.

NoDerivatives (nd)

- You let others copy, distribute, display and perform only original copies of your work. If they want to modify your work, they must get your permission first.

This movie explains the effect of various license conditions on sharing and reuse of CC licensed work.

Types of CC licenses

Attribution CC BY	• [Attribution (CC BY)](#)
Attribution — ShareAlike CC BY-SA	• [Attribution ShareAlike (CC BY-SA)](#)
Attribution — NoDerivs CC BY-ND	• [Attribution-NoDerivs (CC BY-ND)](#)
Attribution — NonCommercial CC BY-NC	• [Attribution-NonCommercial (CC BY-NC)](#)
Attribution — NonCommercial — ShareAlike CC BY-NC-SA	• [Attribution-NonCommercial-ShareAlike (CC BY-NC-SA)](#)
Attribution — NonCommercial — NoDerivs CC BY-NC-ND	• [Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)](#)

CC licenses used for scientific work

- **CC BY license** (only **attribution**) - a good option for scientific works like **articles, books, working papers**, and **reports**
  - Lets others **distribute, remix, tweak, and build** upon the work, **even commercially**, as long as they **credit the author** for the original creation
  - Recommended **for maximum dissemination and use of licensed materials**

- **CC0** - recommended **for datasets and databases**
  - Built for jurisdictions where a full public domain dedication is not possible (e.g. in many continental Europe countries).
  - Creative Commons CC0 Public Domain Dedication **waives copyright interest** in a work you've created and **dedicates it to the world-wide public domain**
  - Used to **opt out of copyright entirely and ensure the work has the widest reach**

An example of CC license in Open Science (1)

Task: based on your scientific work, you (John Smith) created a web site „Internet of things and electric cars". You want to enable intensive sharing of your ideas without copyright issues and to be credited by others for your work.

Solution

- Go to Creative Commons site to choose a license.
- Below "**Allow adaptations of your work to be shared?**" choose **Yes**.
- Below "**Allow commercial uses of your work?**" choose **Yes**.
- You should have selected Attribution 4.0 International license. Click on license link to see the simple description, named "the **Commons Deed** (also known as the "**human readable**" version of the license)". There are two more layers that describe the same license: **Legal Code**, written in the formal language of law, and **Machine Readable**, a summary that software systems can understand (see details here).

An example of CC license in Open Science (2)

- Solution (continued)
  - Examine license elements (that explain what others should be aware of or what should they do if they share or use your work):
    - **You are free to:**
      - **Share** — copy and redistribute the material in any medium or format.
      - **Adapt** — remix, transform, and build upon the material for any purpose, even commercially.
    - **Under the following terms:**
      - **Attribution** — You must give [appropriate credit](#), provide a link to the license, and [indicate if changes were made](#). You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.
      - **No additional restrictions** — You may not apply legal terms or [technological measures](#) that legally restrict others from doing anything the license permits.
  - On the bottom of page click on [use the license](#).

An example of CC license in Open Science (3)

- Solution (continued)
  - Choose which style of button you'd like on your webpage (choose left icon)
  - If you are satisfied with preview of the license, copy the code from grey window to your web site, to be shown in an appropriate place (e.g. on the bottom of each page).
  - The code to copy should look like:

    ```
    <a rel="license" href="http://creativecommons.org/licenses/by/4.0/"><img alt="Creative
    Commons License" style="border-width:0"
    src="https://i.creativecommons.org/l/by/4.0/88x31.png" /></a><br />This work is licensed
    under a <a rel="license" href="http://creativecommons.org/licenses/by/4.0/">Creative
    Commons Attribution 4.0 International License</a>.
    ```

  - The license should appear like:

This work is licensed under a Creative Commons Attribution 4.0 International License.

Attributing CC licensed work

- Most CC licenses require that the authors of the shared work are attributed

- Some authors note how the attribution should be made, but most of the times the one that is attributing should know to create the attribution

- The **wiki-how article** **How to Attribute a Creative Commons Licensed Work** gives step-by-step instructions on how to:
    1. **Find information for attribution**
    2. **Create the attribution**
    3. **Provide data to help others attribute someone's own work**

An example – attributing CC licensed work (1)

Task: You are a scientists who likes the work of John Smith from the previous example, and want to use it on you web site. On one page, you will feature the exact copy of John's work. On the other, you will remix his material, by extracting some chapters and using them as bulleted points. You want to create and use a proper attribution for both pages.

Solution:

- **Find licensing information** on John Smith's site. You should find the text "This work is licensed under a Creative Commons Attribution 4.0 International License."

- Click on license link and **check license elements**. You should see that you are free to share and adapt, if you attribute the author and indicate if changes were made.

- Go to wikiHOW page **How to Attribute a Creative Commons Licensed Work.**

- Click on "Sample Attributions" and on General Creative Commons Attribution, where you can find attribution example for the case where no changes were made.

An example – attributing CC licensed work (2)

Solution (continued):

- Read the text. On the bottom of the page, find the **attribution template**: "[Title, including link to original source]" by [author, including profile page link if possible] is licensed under [license, linked to license deed if possible].

- Use the template to create attribution. If you need further explanations, read the content of **How to Attribute a Creative Commons Licensed Work**.

- The attribution should look like: "**Internet of things and electric cars by John Smith is licensed under CC BY 4.0**". In previous sentence, the title of the work should be linked to John's web page about electric cars and his name should be linked to his profile web page.

- Return to wikiHOW page **How to Attribute a Creative Commons Licensed Work**.

An example – attributing CC licensed work (3)

Solution (continued):

- Click on "Sample Attributions" and on **Creative Commons Attribution for Modified Material**, where you can find attribution example (if changes were made).
- Read the text. On the bottom of the text, find the **attribution sample**, which is similar to previous one but contains a "/" in the end followed by indication of what was changed.
- **Use the template to create attribution**. If you need further explanations, read the content of **How to Attribute a Creative Commons Licensed Work**.
- The attribution should look like: "**Internet of things and electric cars by John Smith is licensed under CC BY 4.0 / Original chapter separated into bulleted points**"

Software licensing

- Creative Commons licenses **should not be used for licensing software** because they were not designed for that purpose, as the organization states

- Software developers should use appropriate licenses like those collected by the Open Source Initiative or Free Software Foundation (https://choosealicense.com)

Example: OpenClick License

- License text :
  http://www.apache.org/licenses/LICENSE-2.0

- License information:
  http://www.openclick.rs/index.php/en/resources/licensing

- Provides rights to use and modify the software
  - all changed files must be marked

- Attribution only and patent rights granted
  - patent rights are withdrawn if litigation is initiated

File formats and open science

- **A file format** is a standard way that information is encoded for storage in a computer file

- Not all formats have freely available specification documents, partly because some developers view their specification documents as trade secrets

- **Within the context of Open Science**, files should not be compressed or encrypted and should avoid proprietary or patent-encumbered formats in favor of **open formats**. This ensures the access and re-usability of the content

Examples for open file formats

- Text: TXT, ODT, PDF/A, XML

- Tabular data: CSV, TSV

- Image: TIFF, PNG, JPG 2000, SVG, WebP

- Audio: WAV, FLAC, OPUS

- Video: MPEG2, Theora, VP8, VP9, AV1, Motion JPG 2000 (MJ2)

- Binary hierarchical data: HDF5

Collaborative platforms

- Collaborative platforms are **usually online services that provide a virtual environment to which multiple people (geographically-dispersed) can concurrently connect and work on the same task**

- **Virtual research environments (VREs)** facilitate sharing and collaboration tools (e.g. forums), collaborative document hosting and discipline-specific tools

- **Single specific tools** enable researchers to work together in real time on specific aspects of research (such as writing or analysis). Include **social networks**.
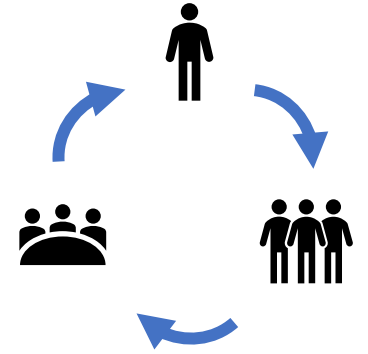
What are Open educational resources?

- "**Teaching, learning and research materials** in any medium – digital or otherwise – **that reside in the public domain or have been released under an open license** that permits **no-cost access, use, adaptation and redistribution** by others **with no or limited restrictions**" ([William and Flora Hewlett Foundation definition](#))

- **Open educational resources include:**
  - full courses, course materials, modules,
  - textbooks, streaming videos, images,
  - tests, software,
  - any other tools, materials, or techniques used to support access to knowledge.

Open educational resources and Open Science

- Open educational resources are **often built upon research findings**
- An Open Science practitioner will probably want his **educational resources to maintain the level of openness as his research**
- Other teachers **can use the open material to elaborate new resources or adapt existing ones**
- **The creation of educational resources** can be seen as **a cycle similar to the research cycle**: **find**, **compose**, **adapt**, **use**, and **share**

OER platforms and their intended use

- OpenCourseWare (OCW) is one of the first open educational resource platforms and key initiators of the OER movement.

- Open Education Consortium, initiated at MIT in 2002 provides materials from all over the world as **courses under free licenses**.

- Other examples of OER platforms:
  - Creative Commons Search for image, audio, and video files
  - OERCommons for educational resources

What are Open Science Policies?

- **Strategies and actions** aimed at **promoting Open Science principles** and at **acknowledging Open Science practices**

- **Usually established by:** research institutions, research funders, governments or publishers

- **Initial policies** were based on the idea that results achieved from publicly funded research should be available to the public without any restriction

- Now **the scope of the policies has grown:**
  - **National policies foster Open Science** practices at any point of the research level
  - There are **specific provisions in new and existing laws, regulations or directives**

Stakeholders and relevant OS politics topics

- **Researchers**
  - How Open Science policies affect them
- **Policy makers**
  - Designing and implement a policy to foster Open Science
- **Funders or policy makers within an institution**
  - How to design, develop, implement and monitor a policy

EU policy and Open Science

- EU has recognized that linking science and society leads to advance in all areas.

- The importance of **open access to data and research results** has been present in Europe for a long time but is particularly prominent in the calls and recommendations related to H2020 projects. **Within H2020, EC requires that all participants have to ensure Open Access to the publications** generated during the research, while **in the domain of open data it is recommended to enable Open Access** whenever possible.

- The principle of **'Open Science' will become the modus operandi of Horizon Europe, requiring open access to publications and data.**

- In order for current recommendations to become reality in Europe, EC has implemented various projects and initiatives in last ten years.

OpenAIRE project

- **OpenAIRE (Open Access Infrastructure for Research in Europe)** is one of the pioneering projects, which started in 2006, under the name "**Driver**". Goals:
  - creating a network of digital repositories, for storing digital data
  - to support the implementation of open access in Europe
- **OpenAIREPlus** expanded the network of repositories, including specific scientific fields related ones
- **OpenAIRE2020**:
  - possibilities of finding and using the results of projects realized under the H2020 program
  - creation of services that enable the exchange of scientific data, literature and methods.
- **OpenAIREAdvance** continues to support Open Access and Open Data in Europe

Other Open Science related EU projects

- **FOSTER**, 2014, accelerating acceptance of an open approach in the context of the ERA. Showed that OA principles can be integrated into the research process

- **FosterPlus** - to help accept the principles of open science in Europe

- The most recent and probably the most comprehensive initiative: **European Open Science Cloud**
  - Launched in 2015, opened 23.11.2018.
  - By 2020, it should lead to the creation of a virtual environment for all researchers in which they can store, manage, analyze and reuse their data, related to research, innovation and education

European Open Science Cloud (EOSC)

- **European Cloud Initiative,** a part of the package of measures for Digitising European industry, provides European science, industry and public authorities with:
  - a world-class data infrastructure to store and manage data (European Open Science Cloud);
  - high-speed connectivity to transport data (European Data Infrastructure); and
  - ever more powerful High Performance Computers to process data (HPC)

- A European Open Science Cloud (EOSC) offers Europe's researchers and science and technology professionals a virtual environment to store, share and re-use the large volumes of information generated by the big data revolution

- This is underpinned by the European Data Infrastructure (EDI), deploying the high-bandwidth networks and the supercomputing capacity necessary to effectively access and process large datasets stored in the Cloud

cOALition S

- On 4 September 2018, a group of national research funding organizations, with the support of EC and the ERC, announced the launch of cOAlition S

- It is an initiative to make full and immediate Open Access to research publications a reality.

- It is built around Plan S, which consists of one target and 10 principles.

- **"With effect from 2021, all scholarly publications on the results from research funded by public or private grants provided by national, regional and international research councils and funding bodies, must be published in Open Access Journals, on Open Access Platforms, or made immediately available through Open Access Repositories without embargo"**

Horizon Results Platform

- The newly revamped **Horizon Results Platform** is the central pillar of the EC-funded research results "exploitation ecosystem"

- • **Is Free** – you can promote the Key Exploitable Results* (KER's) of your projects
  • **Is Easy** to use – *hosted under the Funding & Tenders Portal* where you manage everything else for your projects
  • **Is a Matchmaking tool** - use the wide range of *flags* and *attention-grabbing features* to attract your target audiences
  • **Is Managed by you** – *you can publish* and update KERs whenever they are available,
  • **Reaches out to many audiences** – politicians, investors, researchers, scientists, scholars, entrepreneurs, financing experts, IP specialists, and other stakeholders visit regularly
  • **Triggers services and opportunities at no cost to you** – depending on the nature and needs of your result(s) it allows EC to inform you about relevant upcoming calls for proposals, pitching events with investors, possibilities for assistance with your dissemination plans, business development plans, innovation management, IP management, and many more.

What is Open Advocacy?

- Advocacy in all its forms **seeks to ensure that people, particularly those who are most vulnerable in society, are able to**:
  - **Have their voice heard** on issues important to them
  - **Defend and safeguard their rights**
  - **Have their views and wishes genuinely considered** when decisions are being made about their lives

- Includes **defending**, **influencing**, **changing**, **decision-making**, **persuading**, **lobbying**, **attracting attention**

- **Open Advocacy** focuses on the movement to **promote Open Science at various levels of stakeholders**, highlighting and stressing the societal, professional and personal advantages that it entails

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Advocacy and EURAXESS trainings

- **Trainings (workshops, seminars, presentations) can be used as advocacy tools**

- Training here is considered as **a tool for effecting specific changes, and for building an Open Science advocate community**
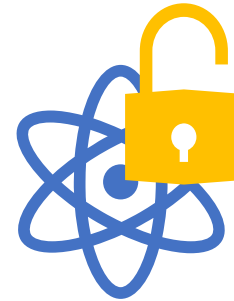
How to organize OpenScience training

1. **Use this and the extended presentation available on EURAXESS Extranet and OpenClick portal** and create your own training materials
    - The materials should be adapted to the audience, be interactive and include specific examples and exercises
2. **Book the trainer over EURAXESS Extranet**
    - If the contents of the training is similar to this one
    - The training should be at least 1 day long, if held to researchers and/or institutional staff, to contain all the necessary information (and, if possible, interactive)

Literature

- **The Open Science Training Handbook: https://open-science-training-handbook.gitbook.io/book/**

- Open science – introduction, OSC LMU Open science center:
https://mfr.osf.io/render?url=https://osf.io/z7954/?action=download%26mode=render

- Vicente-Sáez, R., & Martínez-Fuentes, C. (2018). Open Science now: A systematic literature review for an integrated definition. *Journal of business research*, *88*, 428-436.

- Fecher, B., & Friesike, S. (2014). Open science: one term, five schools of thought. In *Opening science* (pp. 17-47). Springer, Cham.

- Open Definition: http://opendefinition.org/

- Smith, Arfon M., Daniel S. Katz, Kyle E. Niemeyer, and FORCE11 Software Citation Working Group. 'Software Citation Principles'. PeerJ Computer Science 2 (19 September 2016): e86. https://doi.org/10/bw3g.

- Piwowar, H., Priem, J., Larivière, V., Alperin, J. P., Matthias, L., Norlander, B., ... & Haustein, S. (2018). The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles. *PeerJ*, *6*, e4375.

- Candela, L., Castelli, D., & Pagano, P. (2013). Virtual research environments: an overview and a research agenda. *Data Science Journal*, GRDI-013.

Other used literature is referenced throughout the text.

Thank you for your attention!

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