

## *Open Access*



1

### Doctoral training 2023

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<sup>1</sup> PIRO4D. *Earth*. Image numérique. Pixabay. 6 août 2021.

## *Table of content*

1. INTRODUCTION OA.....	3
1. 1. Definition.....	3
1. 2. Introduction .....	3
2. OPEN ACCESS .....	4
2. 1. Green route / self-archiving.....	4
2. 2. Gold route / pay-to-publish.....	4
3. OPEN SCIENCE.....	6
3. 1. Open data .....	6
4. OPEN ACCESS DECREE.....	8
5. GLOSSARY .....	9
6. BIBLIOGRAPHY.....	11

## 1. Introduction OA

### 1. 1. Definition

*“By ‘open access’ to the literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself.”*

*The Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities*

Open access (OA) means **free access to information** and **unrestricted use of electronic resources** for everyone. Any kind of digital content can be OA, from texts and data to software, audio, video, and multi-media. While most of these are related to text only, a growing number are integrating text with images, data, and executable code. OA can also apply to non-scholarly content, like music, movies, and novels.

### 1. 2. Introduction

Open access appeared in the early 90's thanks to the development of the internet, with the creation of the first scientific journals accessible online and the first open archive (arXiv).

This movement is in response to the never-ending growth in the costs of scientific journals<sup>2</sup>. This increase is such that libraries are forced to choose between different journals because their budget is no longer sufficient. These events lead to particularly ridiculous situations: the university library of Namur could not give its readers access to an article published by its own University. This increase has affected the whole scientific world, including Harvard University, which has a much larger budget than us.

In this practice, the university pays twice and loses out completely. The university pays the researcher to conduct his/her research and then pays for a subscription to scientific journals to have access to the results of the research.

The researcher needs to publish in order to be recognized and to make his or her research known and has no other alternative than to submit his or her work to high-impact journals whose subscription fees are outrageous.

That's why the European union established, in 2002 and 2003, that all research funded in part or fully by public funds should be accessible to all.

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<sup>2</sup> Due to the near-monopoly of certain publishers

## 2. Open Access

There are different routes to achieve open access to journals. Here are the most common ones :

### 2. 1. Green route / self-archiving

It's based on self-archiving. The researcher registers his articles in an archive, a repository or a directory. These can be :

- “institutional”, set up by an institution to group all the publications of its members, such as [PURE](#) for UNamur or [ORBI](#) for ULiège.
- thematic archive, created by institutions, open to all but limited to a subject, such as [arXiv](#) which contains only publications related to physics.

You will often find preprint versions that have not been peer-reviewed. You must therefore be careful about the type of document you consult if you're going to use it. This route is used as a complement to publication with a publisher. Given the extent of the movement, publishers have been forced to revise their editorial policies and allow the deposit of preprints.

The following two sources will allow you to find an archive or a directory specific to your field of activity : [OpenDOAR](#), [ROAR](#)

### 2. 2. Gold route / pay-to-publish

The article is published in an Open Access journal where the content is completely free for everyone. They have a peer review process, an editorial board and even an impact factor. The difference between traditional newspapers and the golden way journals is in its economic model. Where the reader used to pay for access to the content, here it is the author and/or his institution that pay to put his article in open access. Currently, there are four different economic models :

#### APC (Article Processing Charge) <sup>3</sup> model

It's a fee called Article Processing Charge (APC) that covers the cost of publishing. This cost changes from one editor to another. [PLOS](#) often uses this model but beware of abuse and fraud.

- Predatory journals : they invite you to publish by email. Very often, their message looks like a spam, on their website there's little information about peer review, the

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<sup>3</sup> Voir Glossary

editorial board, no editorial chief, the journal's name doesn't reflect his content, ... In many cases, your article isn't published or isn't reliable because it wasn't peer reviewed. Here's a non-exhaustive list of those predators « [Stop Predatory Journal](#) ».

- Hybrid journals are created by big traditional editors. All the articles aren't in open access. The journal publishes both regular and open access articles provided that an additional fee is paid for this option. The university has a subscription to access to the journal and the researcher has to pay again to have his article in Open Access.
- High APC cost. Editors inflate the prices of their APC (sometimes more than 3000€). It's often used by hybrid journal.

#### Funding model

The publication is financed by an institution or an association that support the publishing cost. Most journals which are in [DOAJ](#) are using this model.

#### Freemium model

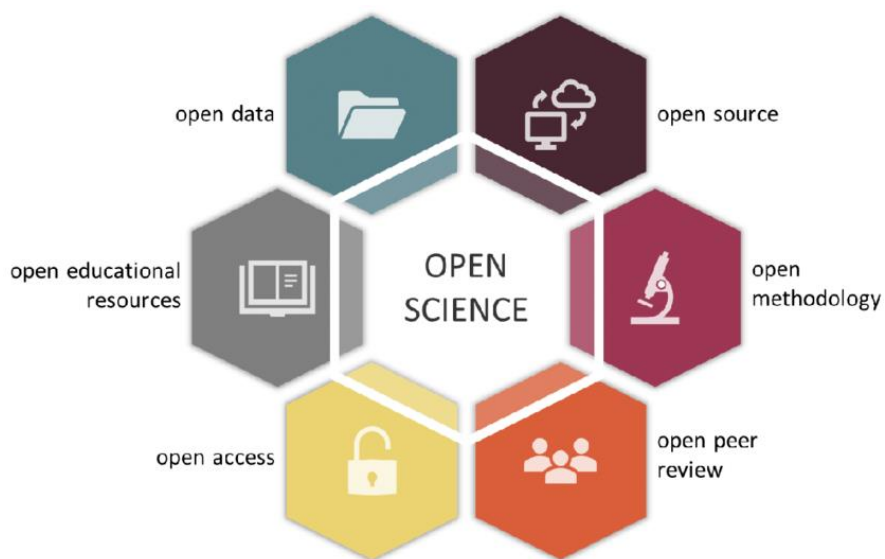
The article can be read in HTML but there is a charge for downloading the PDF or EPUB. [Open Edition](#) is using this model.

#### Subscription

It's based on a crowdfunding model. The issue is published once the amount fixed is reached. [Knowledge unlatched](#) used this model.

### 3. Open Science

Open access is part of a larger movement called "open science" which aims to make research more transparent and collaborative by making every step open. As shown in the image below, many fields are already involved. There is now a lot of open source software, open peer review journals, documentation of research methodologies, platforms compiling data in a specific field, ...



4

#### 3. 1. Open data

The data is free to access and reuse by anyone. This allows to collaborate easily on a larger scale.

The data comes from all over the world which allows to advance more quickly and to find new solutions to current problems in all scientific fields. Concrete case: [Human Genome Project](#), [MyGene2](#).

The other reason to open up your data is that it makes fraud much more difficult and unscrupulous researchers will no longer be able to tamper with their results.

Here are some principles to respect when opening access to our data. They are the "FAIR" principles :

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<sup>4</sup> Gallagher, Rachael et al. *The six core principles of open science which guide the open traits network*. Image numérique. ResearchGate. Avril 2019. 2 août 2021.

- Findable. We give a unique identifier to find them easily (such as ISBN). And we describe them with metadata.
- Accessible. It is clearly indicated where they are located and how they can be accessed: open to all, on request, authentication procedure,...
- Interoperable. In order to facilitate the reuse of these data, they must respect certain standards of use and share the same vocabulary. This language must be formal, accessible, shared and widely applicable.
- Reusable. The metadata must clearly mention the access license to be followed in case of use.

#### *4. Open Access decree*

In 2018 a decree concerning Open access was published in the Belgian Official Monitor. This decree concerns accepted publications in a periodical / journal that appears at least once a year.

The researchers deposit in an institutional digital archive all their publications resulting from their research carried out in whole or in part on public funds and immediately after the acceptance of the article by a publisher.

Funding agencies can only evaluate the searcher work from a list generate by the institutional deposit.

Access to publications in an institutional digital archive is immediately free at the initiative of the researcher. If the publisher requires a delay of this access (by contract), you have the possibility to placean embargo of 6 months (Sciences) or 12 months (social sciences).

This decree only concerns the Belgian publishers and the accepted articles.



## 5. Glossary

### Impact factor

It is an indicator that estimates the visibility of a scientific journal based on the number of citations. The higher the impact factor, the more visible the journal is and therefore the more it is considered a reference in its field. The impact factor is different for each discipline. It is used by traditional journals to encourage researchers to publish with them. In truth, the impact factor is not necessarily a guarantee of quality, because it is enough for journals to have only 2-3 articles that are cited many times to increase this figure.

### Article Processing charge (APC)

Also known as a publication fee, which is sometimes asked to the authors. The purpose is to make a work available in open access (OA), in either a full OA journal or in a hybrid journal. This fee may be paid by the author, the author's institution, or their research funds. [https://en.wikipedia.org/wiki/Article\\_processing\\_charge](https://en.wikipedia.org/wiki/Article_processing_charge)

### Creative commons

The creative commons have defined 6 licenses that can be given to an article. They inform the reader of what he can do with the article : attribution (mentioning the author), no commercial use, sharing with same conditions, no modifications. It gives every person and organization in the world a free, simple, and standardized way to grant copyright permissions for creative and academic works; ensure proper attribution; and allow others to copy, distribute, and make use of those works. <https://creativecommons.org/about/>

### Embargo

An embargo is a period that can go from 3 to 12 months, during which a document published on the Internet (publisher's website, institutional archive, ...) is not available. It is the concession made to publishers to respect their editorial policies.

### Interoperability

Interoperability means that different information systems can interact with each other by exchanging information in a correct and uniform language.

### Metadata

Metadata are structured data that describe online or physical resources. They are essential and it's necessary that they are structured to allow interoperability between electronic devices.

### Peer review

When an article submitted to an editor is accepted by the editor, the editor contacts researchers who work in the same field to review the article by providing comments, asking questions of the author, etc. Traditional peer review does not disclose the names of these reviewers. Traditional peer review does not disclose the names of these reviewers.

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