

OPEN EDUCATION AND OPEN SCIENCE ON THE HORIZON 600

UCLouvain plan for
distance learning,
Open Education
and Open Science

(English translation by DeepL)

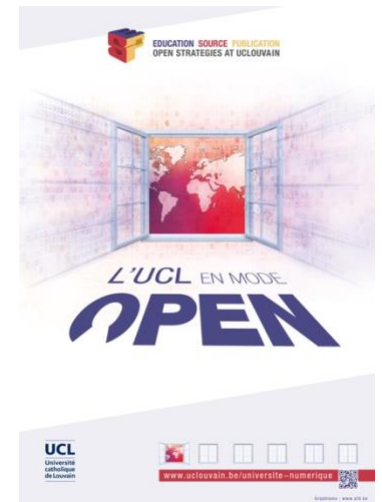


EDUCATION SOURCE PUBLICATION
OPEN STRATEGIES AT UCLouvain

For the past five years, UCLouvain has been committed to a **strong digital university project** in which digital technology promotes the creation, dissemination and acquisition of knowledge.

In the *field of training*, digital technology enables and encourages new teaching approaches to improve the quality of learning and make teaching more inclusive. It facilitates the sharing of knowledge and makes possible flexible learning paths and methods, opening up new perspectives. Open Education is being encouraged (UNESCO, Europe, etc.) for the many opportunities it offers higher education, both to the teaching and student communities and to the institutions themselves, but also to society as a whole. This opening up of education beyond the walls of institutions contributes to the sustainable development objective of quality education for all, throughout life.

UCLouvain has gone from being a pioneer to a benchmark university for its Open Education strategy, its achievements in the field of MOOCs for distance learning, its open educational resources and its use of digital tools to support learning and teaching.



UCLouvain's experience and digital assets have enabled it to successfully set up distance learning and assessment in a hurry in the context of the Covid-19 crisis. The aim is not to continue along this emergency path or to become a virtual university. The proposed uses of digital technology are designed to support and enhance our courses, not to replace the interaction and experience of face-to-face teaching.

In the *field of scientific research*, the free dissemination of research results is also crucial: it's not just a fad, it's a strong position and a democratic issue. In addition, many funding sources now require the research data resulting from their funding to be freely accessible. Open Science, which encompasses Open Education, also covers free access to publications (Open Access), research data (Open Data) and software used in research (Open Source). Open Science is supported by the United Nations, the European Commission and the European Research Council. Our university is already committed to Open Access and Open Source; it must now join the global Open Science movement, which aims to make scientific research, data and dissemination accessible to all levels of society in search of knowledge. This digital transformation project in the run-up to our institution's 600th anniversary contributes to the implementation of the objectives of openness (Open Science, Open Education, international dynamics via Circle U.) and innovation (transformation of the teaching environment) of the Horizon 600 plan. Extending the digital experience developed over the last few years, this project aims to make these uses a permanent part of the university's missions, by incorporating them into the relevant bodies and services.

Yves Deville

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November 2020



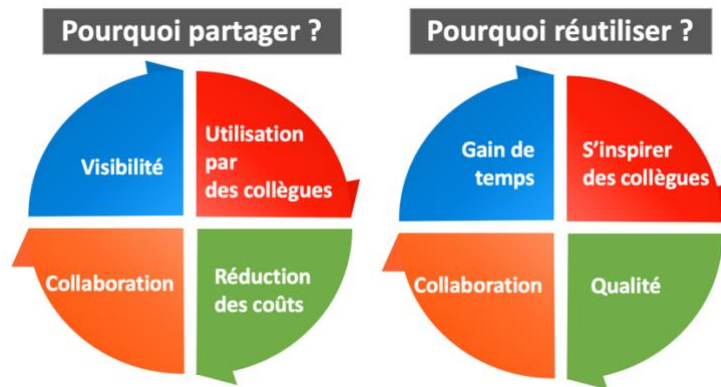
The Digital Transformation project stems from the debates and discussions of the PiloTICE, the MOOCs steering committee and the UCLouvain Open Science group. Around fifty people were consulted. It was drafted with the help of Christine Jacqmot, Digital University project manager, and Françoise Docq, moocXperience project manager.

The posters in this document were produced during a Digital University awareness campaign between 2017 and 2019.

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OPEN EDUCATION AND DISTANCE LEARNING

Open Education is a movement that aims to make education more open, inclusive and accessible to as many people as possible. On the one hand, it aims to reduce barriers to access to education and increase learning opportunities. Secondly, it supports the production, use and sharing of educational resources and learning pathways. These materials thus become a common heritage that can be circulated, shared, used, enriched and redistributed. But Open Education also concerns the development of teaching methods and learning modalities that are enriched, inspired by the approaches of other teachers, and hybridised thanks to the possibilities offered by digital tools, distance learning environments and online courses.



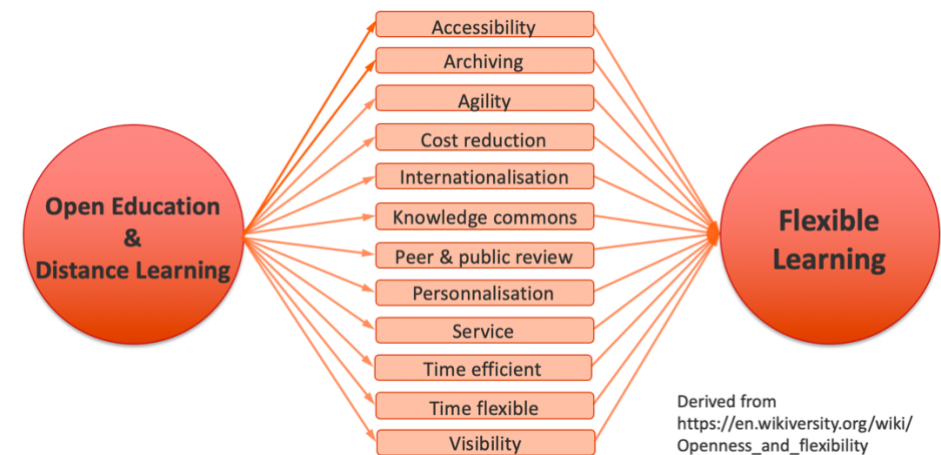
Open Education: Benefits for teachers

Open Education promotes learning for all, particularly throughout life, through greater flexibility in the organisation of learning time and places. Open educational resources offer an abundance of learning materials that were previously inaccessible; they stimulate independent learning and encourage critical thinking by comparing content and approaches.

Distance learning, for its part, makes it possible to envisage methods that are complementary to on-campus teaching and that exploit the added organisational

and pedagogical value of e-learning. From an organisational point of view, distance learning provides a flexible teaching offer that goes beyond the constraints of premises and timetables. This makes it possible to adapt to particular situations and to meet the specific needs of students, as well as to organise courses for large numbers of people from different programmes and faculties, and even from other institutions (virtual exchanges). Both individual careers and institutional projects can benefit. The pedagogical approach specific to distance learning stimulates students to engage in meaningful learning activities that encourage active learning and interaction, inviting teachers who embark on it to review their teaching methods.

*The emergency shift to emergency remote teaching that we experienced in the context of the Covid-19 health crisis **does not reflect the methodology and practices of** online learning. A distance learning system requires a carefully thought-out pedagogical approach, which is different from transposing what usually takes place in the classroom to a distance.*



Derived from
https://en.wikiversity.org/wiki/Openness_and_flexibility

Open Education and distance learning contribute to flexible learning

For many years, the university has been involved in various aspects of Open Education and distance learning, such as Open Educational Resources (OERs),

Massive Open Online Courses (MOOCs) and support for learning using digital tools. UCLouvain wishes to strengthen and extend its commitment in three areas:

- free educational resources, with a particular focus on Open Courseware (online courses open to all and organised according to an educational pathway enabling independent learning of parts of courses or even entire courses),
- MOOCs (open to all) and online courses reserved for the student community, as two complementary forms of distance learning,
- digital tools for learning.

Objectives

- To make Open Education and distance learning part of UCLouvain's teaching mission, by questioning the scope of this mission in the 21^{ème} century: *who are UCLouvain's student audiences in an international society of lifelong learning?*
- Deploy a culture of Open Education at all levels of the institution, including career management and teaching evaluation.
- Increase the international visibility of UCLouvain through its involvement in national and international networks and projects (Circle U., The Guild, Coimbra) relating to Open Education and distance learning.
- Promote inclusive teaching methods adapted to the variety of profiles and needs of the student community.
- Ensure digital accessibility for the entire student community (e.g. disabled students, digital novices, digital divide).

OPEN EDUCATIONAL RESSOURCES AND COURSEWARES

Context

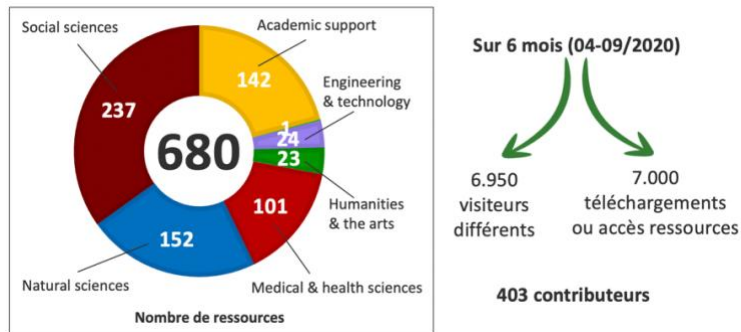
In 2002, UNESCO defined the concept of Open Educational Resources (OERs) as digital materials made freely available to all so that they can be reused, or even modified, for teaching, learning and research. These components of Open Education can take a large number of forms and digital formats. When a learning path is included, the result is Open Courseware: part of an online course or an entire course that can be followed independently.



The Covid-19 crisis and the move to distance learning have led teachers to produce teaching resources for students (videos, slides, quizzes, etc.). Some of these resources, although produced in a hurry, will probably be reused next year by their authors; they could also be useful for other teachers or students. These resources constitute a pool that could, at very low cost, be made available in the form of free educational resources, enabling them to be shared and reused.

UCLouvain now has a platform (oer.uclouvain.be) that enables the teaching community to upload and share with the world the open educational resources it produces. New resources are uploaded on a regular basis, some of which form fully-fledged thematic collections considered to be benchmarks in the field. New needs are now focusing on tools and environments for designing Open Courseware or specific formats of open educational resources such as reference works, interactive videos, self-assessment content, etc.

UCLouvain's open educational resources and Coursewares are aimed at initial university training, continuing education and the professional development of higher education teachers. They are referenced by international digital libraries.



Free educational resources on the institutional platform oer.uclouvain.be

Vision

In 2025, teachers at UCLouvain will be producing OERs and Open Courseware; they will be using open educational resources produced by other universities as part of their teaching. New purposes are emerging and new audiences are being targeted by the content produced, such as helping students to succeed, virtual student mobility, continuing education, mobile learning, etc. Open educational resources are structured in the form of clearly identifiable thematic collections. A digital showcase serving as a global access point for all of UCLouvain's open educational resources enables teachers and students from all over the world, and from our partners in particular (within the Circle U. alliance, for example), to easily identify the most relevant resources for their teaching and learning.

The development of Open Courseware, highlighting widely recognised pedagogical expertise, has led to the choice of a platform to design and host it. Finally, the advantages and added value associated with the design and use of open educational resources - such as those documented in [LLL's Notebook No. 6, dedicated to Open Education](#) - are known and integrated into practices: co-construction of content, evolution of teaching methods and scenarios, use of OERs that are sometimes costly to create and designed in other institutions.

Objectives

- Provide a platform (derived from Moodle) to host UCLouvain's Open Courseware and improve the ergonomics of the oer.uclouvain.be platform.
- To offer a technological environment that facilitates the creation and showcasing of free educational resources of all types and formats.

- Support the production of new open educational resources, either through spontaneous initiatives by teachers or in response to calls for projects aligned with the objectives of the Horizon 600 plan.
- Develop a culture of re-using existing open educational resources in the design of teaching programmes.
- Encourage students to use open educational resources in addition to course materials; where appropriate, invite them to take part in the curation and development of these open resources.
- In synergy with the Louvain Learning Lab (LLL), promote the implementation of educational transformations linked to OERs.
- [\[Circle U.\]](#) As a complement to student mobility and the mobility of teaching staff, stimulate the circulation of teaching materials in the form of free educational resources (in particular Open Courseware) within Circle U.

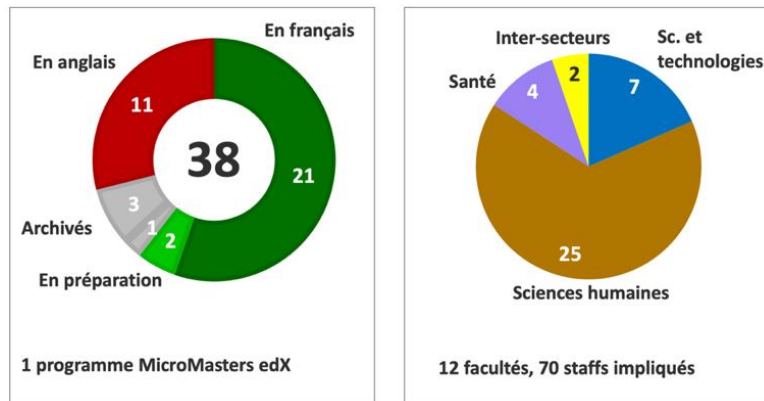


Examples of free educational resources in **orthopaedic surgery**

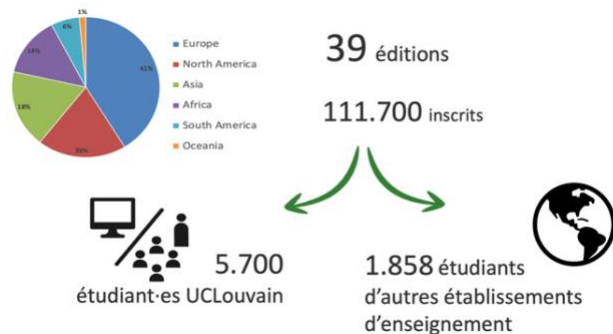
MOOCS AND DISTANCE LEARNING

Context

At UCLouvain, MOOCs have given rise to numerous teaching experiments, both online and in the classroom, as well as new ways of organising training, which are more hybrid and international. They have enabled UCLouvain to collaborate within a large-scale international network. This strategic axis, rich in opportunities for innovation, will be pursued and consolidated by involving the Faculties and programme teams more closely in collective projects where the international dimension and external visibility are at stake.

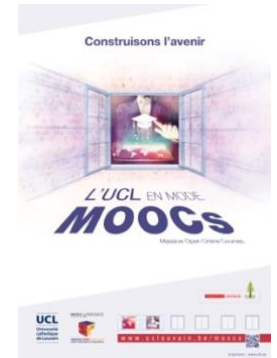


Portfolio of MOOCs in October 2020 (www.edx.org/schools/louvainX)



MOOCs business volume 2019-2020

However, this open form of online education is costly in terms of time and money. And it is not necessarily appropriate to open up all education to the whole world. Other forms of online teaching may therefore be considered, in order to scale up UCLouvain's distance learning strategy: online courses restricted to students enrolled at UCLouvain and at partner universities (such as those of Circle U.), projects for online programmes (or parts of them), and so on.



The Covid-19 period forced teachers to switch their courses to distance learning. This emergency adaptation often consisted of replicating, in distance mode, the activities planned for face-to-face teaching. This practice is not representative of "distance learning", which is based on a specific pedagogical design that exploits the characteristics of online learning to offer a rich educational experience. However, some teachers may have significantly transformed their teaching methods, to their satisfaction and that of their students, and may be prepared to offer their courses at a distance in the future.

Vision

In 2025, the teaching community at UCLouvain will be using online courses to organise teaching flexibly and remotely where appropriate. Students with special needs, who work, are on placement, have busy schedules, etc. can organise their learning portfolio more easily by choosing to take certain courses online. The range of optional courses is enriched by the possibility of choosing courses - organised online - from other faculties and even other universities. Entirely online teaching units are developed in-house, shared with other partners and also borrowed from other establishments (notably within the Circle U. alliance). Some online courses are open to the whole world (MOOCs) when this is part of an institutional, faculty and/or programme internationalisation strategy; otherwise, they are reserved for the UCLouvain community (SPOCs on Moodle UCLouvain). The university community has confidence in online courses as governed by UCLouvain's quality guidelines and considers that they earn credits in the same way as traditional courses. Lecturers are supported by the Louvain Learning Lab

(LLL), through training, the organisation of communities of practice and illustrations of innovative practices. The specific workload involved in developing online courses and supervising distance-learning students, including external students in the context of MOOCs, is taken into account in the university's procedures.

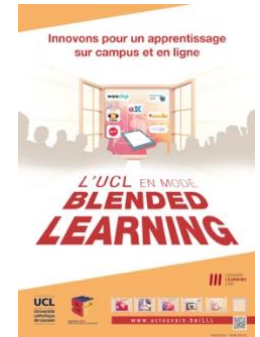
Objectives

- Develop and support, via the Louvain Learning Lab (LLL), distance learning units (MOOCs and SPOCs), selected to contribute to the objectives of the Horizon 600 plan and/or faculty objectives. For example
 - interdisciplinary courses to provide training in the challenges of sustainability;
 - Courses to help strengthen priority international alliances (Circle U. in particular);
 - strategic courses and (parts of) programmes for certain faculty objectives (highlighting expertise; flexibility of courses for very large cohorts, etc.).
- Continuing to work with edX to contribute to and benefit from an international portfolio of online courses from partners of excellence.
- Maintain and consolidate the existing MOOCs and SPOCs.
- Support individual initiatives by teachers who want to transform their practices towards distance learning.
- Integrating distance learning and MOOCs into institutional procedures and tools.
- [\[Circle U.\]](#) Set up a virtual exchange programme within Circle U.

DIGITAL TOOLS FOR LEARNING

Context

The use of digital tools is not an end in itself, but a means to serve training and learning. In recent years, numerous digital tools have been deployed and made available to teachers and students at UCLouvain. In the coming years, this technological environment will evolve; new tools will be analysed and deployed if they demonstrate real added value.



The emergency switch to distance learning, following the Covid-19 crisis, has led to the use of various digital solutions that were not previously part of the technological environment offered by UCLouvain. We now need to take a step back and identify and analyse these tools. Together with the LLL, these opportunities need to be refined and, where appropriate, consolidated for the benefit of the entire university community in order to provide support for teaching and learning in both face-to-face and hybrid or distance learning courses.

UCLouvain's involvement in joint programmes or European university networks reinforces and extends the technological challenges to be met. One of these is the diversity of digital tools with which our students will be confronted and their interconnection within a global integrated learning environment.



Examples of digital tools for learning at UCLouvain

Vision

In 2025, the technological environment for teaching and learning has been enhanced with relevant platforms and tools to support the cross-disciplinary needs of teachers and students. Teachers have integrated the use of these digital technologies into their practices, in particular to support student commitment and motivation, both in face-to-face courses and in hybrid and distance learning courses. Training plans are proposed, experiences are shared to highlight the benefits of these environments, and innovative ways of using them are documented and perpetuated thanks to the Louvain Learning Lab (LLL). Digital teaching is firmly rooted in practice.

In addition, the educational impact of certain emerging technologies has been assessed, and they have been prototyped so that they can be offered to the whole community (examples: virtual and augmented reality, chatbots, gamification, analytics, mobile learning, etc.).

Students benefit from a rich range of interconnected digital learning tools within a seamless, fluid and integrated digital learning environment.

For assessments, multiple-choice questionnaires have evolved into systems that allow the type of questions to be enriched while offering partial or complete automation of marking. Digital tools are used to support classroom-based formative and certificative assessments, improve the quality of marking and provide feedback to students. New models of dematerialised face-to-face assessment are emerging.

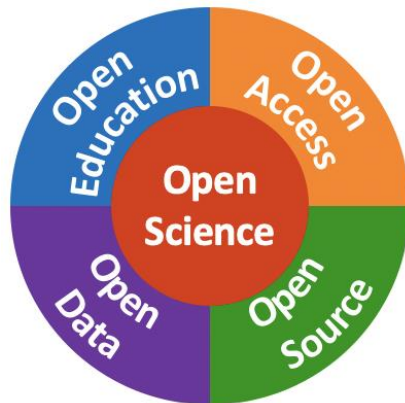
Objectives

- Support teachers' cross-disciplinary needs with relevant, simple and effective digital tools and platforms.
- Assessing the interest and impact, prototyping and proposing emerging innovative technologies to teachers.
- Ensure that the available digital environment serves teachers and students in both face-to-face and hybrid or distance learning courses.
- Supporting teachers, particularly new teachers, as well as resource people in their mastery of tools and technologies, including their impact on teaching practices, thanks to the training provided by the Louvain Learning Lab (LLL). Encourage the emergence of communities of practice.
- Develop existing solutions for digital assessment of student learning. Offer the teaching community a range of effective tools adapted to different assessment methods, both formative and certificative.
- To offer students an integrated global learning environment, a single entry point to the various tools and learning environments used in the courses.
- [\[Circle U.\]](#) Pooling expertise, tools and platforms.



OPEN SCIENCE

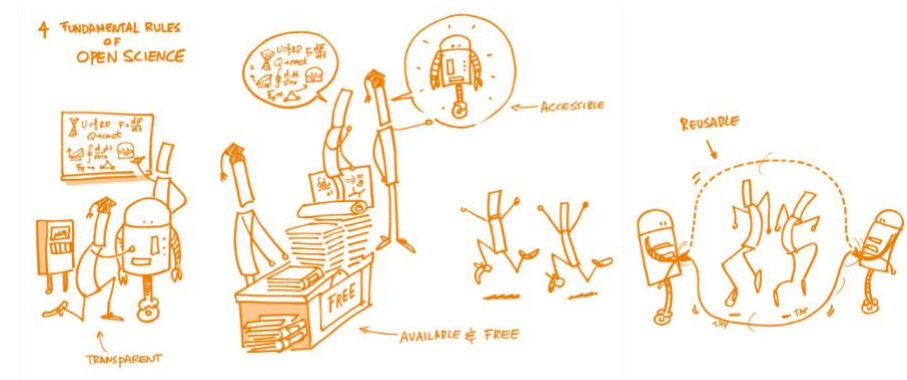
Open Science is the movement to make research, data and scientific dissemination accessible to all levels of a knowledge-seeking society. It aims to increase the transparency, re-use, participation, cooperation, accountability and reproducibility of research. It aims to improve the quality and reliability of research through principles such as inclusion, fairness, equity and sharing. Open Science aims to give research operators back control over access to information and the associated costs.



For nearly five years, UCLouvain has been involved in various aspects of Open Science: Open Education, Open Access and Open Source. Open Access covers scientific publications, while Open Source covers computer software. The university wants to strengthen these areas and extend its commitment to Open Science to include research data (Open Data). The Open Education axis, linked to teaching, was discussed in the first part.

Objectives

- Make Open Science, in all its dimensions, central to the activities of research institutes.
- Deploy an Open Science culture at all levels of the institution (teaching, research, service to society); promote the UCLouvain community's commitment to Open Science.
- Raising awareness of the issues and principles of Open Science and training the various players involved: researchers, (young) academics, students (masters and doctoral training), administrative staff, etc.
- Increase the international visibility of UCLouvain through its investment in Open Science.
- [\[Circle U.\]](#) Actively contribute to national and international networks promoting Open Science (e.g. Circle U., The Guild and CFB universities).



Context

Open Access is defined as free access to scientific publications, enabling them to be reused and redistributed. In this way, scientific results are disseminated more widely, benefiting from reduced communication time and increased visibility. By adopting Open Access, the traditional "reader pays" approach to disseminating research results via scientific communications is replaced by the following methods: the green approach (self-archiving in an institutional archive) and the golden approach (publication in Open Access journals).

OPEN ACCESS: BENEFITS



(www.yearofopen.org/what-is-open-access)

Since 2018, a CFB decree has required researchers to deposit their scientific articles in their institution's repository, in Open Access mode, respecting, where applicable, embargo periods imposed by certain publishers. For its part, UCLouvain has been working for several years to ensure that as many scientific results as possible are made available in Open Access in the **DIAL** institutional repository (95% of scientific articles published after 2019 are accessible in full text; 92% are in Open Access, including 11% with an embargo period), thereby promoting access to and the visibility of scientific publications produced by the UCLouvain scientific community, in accordance with the green path principle. This strategy contributes directly to the implementation of this decree within the institution.

UCLouvain has also embarked on the golden path of Open Access, notably by providing a platform for the editorial management and distribution of Open Access journals published by members of the scientific community (ojs.uclouvain.be). This initiative complements others, initiated by members of the community who

- contribute to Open Access by publishing in open journals,
- are involved in publishing open journals hosted on thematic platforms,
- are investing in **new publishing models**, made possible by digital technology.



Vision

In 2025, Open Access publication is firmly anchored in the practices of researchers. All scientific articles are systematically deposited in Open Access in the institutional repository (green path). The scientific community regularly publishes in Open Access journals (golden path). Scientific books and manuals are published as Open Books and Open Textbooks. In order to control publication costs, UCLouvain supports FAIR Open Access and, in collaboration with the other universities in the CFB, is involved in a review of subscription costs in favour of Open Access. The individual evaluation of researchers is compatible with the objectives of open science and takes into account their contributions to open science.

Researchers are familiar with open access publishing platforms, particularly the institutional platform. This hosts numerous Open Access journals, some of which incorporate new editorial or peer review practices.



The 20 Open Journals on ojs.uclouvain.be

Objectives

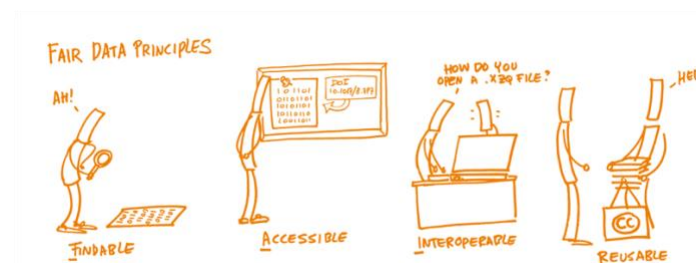
- To make Open Access a common practice that has been mastered by the scientific community.
- To promote Open Access for as many scientific results as possible deposited in UCLouvain's institutional repository.
- Encourage publications in open journals, as long as these are non-profit journals and comply with the **FAIR Open Access** principles, on third-party thematic platforms or on the ojs.uclouvain.be platform.
- Support the transfer or creation of journals on the ojs.uclouvain.be platform.
- Encourage new publication models (e.g., preprint server, overlay journals), **new editorial models and new peer review** models (open peer review, collaborative peer review, etc.).
- To develop the Open Book within the Louvain University Press, as well as the production and use of Open Textbooks as course materials.
- Reduce the amounts earmarked for subscriptions taken out by the university to non-Open Access journals in order to support researchers' publication costs (APC) in FAIR Open Access journals.
- **[Circle U.]** Raising awareness of Open Access among researchers at partner institutions.

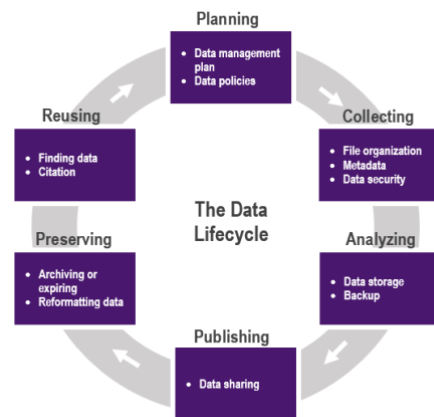
OPEN DATA AND RESEARCH DATA MANAGEMENT

Context

The aim of Open Research Data is to provide free access to research data in order to ensure the reproducibility of scientific results. However, given the sometimes confidential nature of some data, it is not always possible to open it up completely. This is where the **FAIR data principle** comes into play: data must be as open as possible and as closed as necessary. Research Data Management (RDM) covers the entire data lifecycle, addressing the planning, collection, management, storage, publication, referencing, perpetuation and sharing of research data, as well as access and re-use rights. UCLouvain began by focusing on the first stage in the life cycle of a research project, the Data Management Plan, a document that enables a research project to be planned from a data management perspective. In this respect, UCLouvain is a member of the **DMPonline.be** consortium, which enables our scientists to meet the conditions imposed by funding bodies, many of whom now ask for a DMP when carrying out a research project.

To enable data to be opened up, a requirement increasingly frequently demanded by scientific journals and funding bodies alike, UCLouvain set up an Open Data infrastructure in 2020 (opendata.uclouvain.be). This provides researchers with a repository for FAIR data, particularly where there is no international thematic repository. The publication of this research data means that it can be cited by other scientists, which adds value to this data management work in the researcher's career.





(www.goshen.edu/academics/data-management/)

Vision

By 2025, the FAIR principles of open research data management and dissemination have been integrated into the practices of UCLouvain's research institutes and centres. The scientific community is familiar with them, particularly within doctoral training courses. It benefits from advice, training and tools to guide it in the management of research data, at every stage of research projects. They are aware of the importance of documenting and processing data so that it can be disseminated, reused and cited. It is aware of good practice in this area, as well as the contacts who can help if necessary.

Whenever necessary, researchers draw up Data Management Plans to plan the various stages of data management. They use high-performance storage and dissemination infrastructures, as well as data preservation infrastructures, via international thematic warehouses, the UCLouvain open research data repository and the electronic archiving system of the UCLouvain Archives. UCLouvain supports them in this process. Opening up data enables them to raise the profile and value of their data management work, by being cited by their peers.

As an institution, UCLouvain participates in national and international RDM and Open Data initiatives. It pools its expertise within international networks such as The Guild, Circle U. and actively contributes to anchoring Open Science at national level (CRef Open Science group, Bicfb network, DMPonline.be consortium, etc.).

Objectives

- Integrate Open Data/FAIR data (RDM and dissemination and storage strategies) into the research management principles and practices of research institutes and sectors.
- Working with the libraries, research administration and archives department,
 - raise awareness and develop a culture of data management, preservation and sharing among all those involved in the production of research data;
 - provide researchers with training courses, advice and appropriate tools.
- Develop the Open Data infrastructure (opendata.uclouvain.be) at UCLouvain, in synergy with CISM (Computing and Mass Storage), interconnect it with the archiving infrastructure (Archive Service); make use of the Open Data infrastructure free of charge, except for very large datasets.
- Promoting the visibility of UCLouvain's open data (quality of metadata, search engine, automatic indexing in national and international directories, automatic pairing with DIAL and the open journals of ojs.uclouvain.be).
- Providing drafting support for Data Management Plans and Open Data metadata.
- [Circle U.] Raise awareness of Open Data and RDM among researchers from partner institutions; give partner institutions access to our training courses or training material.

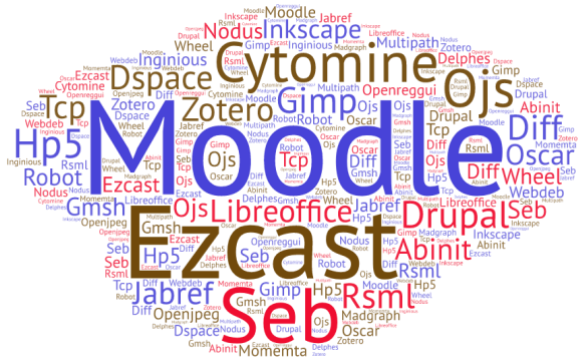


Context

Open Source software is software that allows anyone to use it, study it (through access to the source code), modify or adapt it and redistribute it, with a minimum number of restrictions. The Open Source movement advocates a collaborative model in which a community of programmers contributes to the development and improvement of the software.

Open Source concerns not only administrative or service software, but also software linked to teaching or research; the software tools developed in this context are therefore scientific results that can also be shared. Open Source is therefore one of the facets of Open Science, in the same way as Open Access and Open Data. While Open Data ensures the reproducibility of results on existing data, Open Source also enables results to be replicated on different data.

A great deal of Open Source software is currently used or developed at UCLouvain, both institutionally and through individual initiatives. This software covers general tools, teaching support, administrative support, research assistance, tools linked to specific fields, etc.



Examples of Open Source software used or developed at UCLouvain

Since 2019, UCLouvain has had an institutional forge (<https://forge.uclouvain.be>) that facilitates the development of open source software, ensures the transparency of these projects, supports their collaborative development and enhances their visibility. A forge is a system that brings together IT projects, facilitates their management and encourages the collaborative development of software.

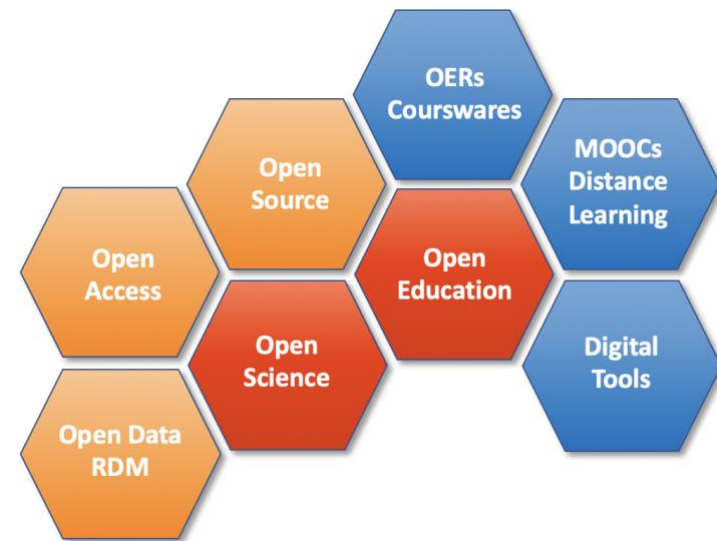
Vision

By 2025, members of the university community are aware of and trained in the various aspects, including legal aspects, and benefits of Open Source. They are encouraged to use and develop Open Source software where appropriate. Open Source contributions are recognised and valued in the career assessment of teachers and scientists. The most useful Open Source software is clearly identified and known to teachers, researchers and students. UCLouvain's institutional force encourages the development and dissemination of Open Source projects.



Objectives

- Create a community of practice (user group) within the UCLouvain community so that everyone can benefit from each other's experience of Open Source.
- To provide legal assistance to researchers in choosing licences and distributing software resulting from their research, in collaboration with ADRE and LTTO.
- Further develop the institutional forge (forge.uclouvain.be), a showcase for Open Source software developed at UCLouvain.
- To list and document the most relevant Open Source software for teaching; to enrich and complete this list on the basis of a technology watch and on the basis of the experiences and uses of teachers at UCLouvain and Circle U.



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UCLouvain



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