



Deff

Denmark's Electronic
Research Library

DEFF Strategy 2016–2019

Openness, access and sharing

Introduction >

Denmark's Electronic Research Library (DEFF) operates in a rapidly changing environment. Over the next few years, the research and education sector will face many of the same challenges. Users' needs will change, as will their expectations of both content and access. New ways of looking at the roles and core tasks of research institutions will be required.

Openness and sharing are already key concepts in research production. Access to scientific content – including Open Access to scientific articles – is increasing, as is demand for access to research data and tools. Politicians, institutions and publishers are promoting Open Access to research articles. This entails changes to business models, and places new demands on both funding bodies and staff around the negotiating table. It also puts financial pressure on the whole publishing system, as it means exponential growth in the quantity of scientific articles and data.

It also means growth in the range of tools

that support research and education and improvements to the quality of them. Academic institutions are no longer the only bodies to service researchers and students. They are under pressure from private-sector stakeholders like Amazon and Google, who are capable of rapid reorientation to users' wants and needs. Users place greater importance on mobility: the use of mobile devices such as smartphones and tablets has exploded and they are now fully integrated into the everyday lives of many users. Suppliers or partners who fail to offer mobile solutions will find it a struggle to survive.

The many services on offer and the widespread access to them make the whole question of the skills needed to access and use research more pressing. For example, are Danish students good enough at finding and using the knowledge that is being generated? Do they appreciate the difference between Wikipedia and actual research? As long as they acquire basic skills at an early stage, students are able

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to build on them – but this requires a holistic approach to development of students' digital literacy throughout their educational careers.

The same applies, to varying degrees, to teachers. They too regularly have to contend with and adapt to new IT systems that, when properly utilised, have the potential to make administrative work more efficient or enhance the students' learning experience.

The way in which scientific results are arrived at is also changing rapidly. Research articles used to be subject to a lengthy process of peer review. Once approved, they were then published in a print journal that would be delivered to a physical library. Nowadays the process is digital and it is technically possible for multiple people to have access to and influence an article at each stage. Articles are published more quickly and reach a wider audience. New technology makes it possible – expected even – to share academic results – not

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This has concentrated attention on the ways in which the processing, re-use and production of research data can be used to increase the quantity and enhance the quality of research. The fact that research and educational institutions are increasingly aware of their research data as an asset increases pressure to safeguard it and monetise it.

These are not just Danish concerns. “Open” is a key concept for the Dutch EU Presidency in 2016, and a number of European countries are working together in the Knowledge Exchange partnership to meet new transparency requirements with regard to the production and use of research and knowledge.

It is in this light and in this framework that DEFF has drawn up its strategy for the period 2016–2019.



About DEFF >

DEFF's mission is to promote development and co-operation among academic, research and educational (ARE) libraries that provide scientific information and services to researchers, students and teachers. DEFF conducts negotiations and purchases much of the scientific information for ARE libraries, and negotiates contracts on their behalf.

Since it was set up in 1998, DEFF has been promoting effective collaboration between the participating institutions by rationalising the allocation of responsibilities, optimising development work and boosting skills enhancement. This has included a number of inter-agency projects, and a consortium to support centralised negotiation and the procurement of licences at national level. DEFF has demonstrated that a collective approach produces better results for individual institutions at lower cost. By supporting the consolidation of systems, DEFF has also helped reduce both complexity and costs. DEFF has more or

less set the agenda for Open Access, co-ordinating the work done by the different institutions.

In 2013, a new steering committee, chaired by Børge Obel, was set up, focusing on a limited number of strategic priorities. In the period 2013–2015, projects and activities were initiated in the following strategic areas:

- Digital literacy and learning
- Managing research data
- Digital communication and interaction in relation to research results
- Digitisation of source material
- Consolidation of infrastructure in academic, research and educational libraries
- Dissemination of research-based knowledge to Danish companies
- Open Access
- Dissemination of information and knowledge via social media

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DEFF also initiated projects and activities in certain specially selected areas, e.g. youth education.

Internationally, DEFF has been a partner in Knowledge Exchange (KE) – a partnership focused on sharing knowledge and experience in areas such as digital infrastructure, and the development of information and communication technology (ICT) for research and higher education. KE's main focus at the moment is on Open Access and research data, and it is helping partner organisations exchange knowledge and experience in areas such as licence negotiations and processing research data.

DEFF has made a significant contribution to the development of Danish education and research, to the benefit of researchers, students and society. It is on these foundations that DEFF now seeks to build further with this strategy.

Facts about DEFF

Denmark's Electronic Research Library (DEFF) is an organisational and technological collaboration between academic, research and educational (ARE) libraries. It is co-funded by the Ministry of Higher Education and Science, the Ministry of Children, Education and Gender Equality, and the Ministry of Culture.

It consists of the following:

- The Co-ordination Committee, which is the general management body, comprising representatives from the three ministries
- The Steering Committee, which deals with planning and priorities and represents a broad range of stakeholders. Its members are appointed by a co-ordinating committee made up of DEFF stakeholders
- The Secretariat, which is responsible for the day-to-day work. The Secretariat is based in the Agency for Culture and Palaces.

Knowledge Exchange

In addition to DEFF, the Knowledge Exchange partnership consists of:

- CSC – IT Center for Science from Finland
- DFG, the German Research Foundation
- JISC from the United Kingdom
- SURF from the Netherlands

New challenges, new opportunities >

One key element of DEFF's strategy is to support development and co-operation between ARE libraries in areas that are expected to present the greatest challenges and opportunities in the next few years.

The Knowledge Circuit describes the process by which research is conducted and new knowledge generated. At every stage, the trend is towards greater openness and more sharing. Open Access means that input connects more quickly to output, i.e. research becomes available as soon as it is published. Research results exist to be used. New knowledge has to be generated, acquired and documented – but also stored and kept up-to-date, because existing knowledge forms the basis for new knowledge, innovation and ideas.

Since the institutions involved operate at every stage of the Knowledge Circuit, it provides a good framework for understanding DEFF's overall priorities for the strategy period 2016–2019. As a model, the challenges associated with the work of ARE libraries are described in the parts of the circuit referred to as Input, Research,

learning and innovation and Output.

Input

The first phase of the Knowledge Circuit consists of information supply. Researchers need access to other research, e.g. via means such as licence-based journals, and they need to be allowed to re-use data.

At this stage of the process, ARE libraries make journals, databases, etc. available to researchers. This kind of licence-based information supply serves as the starting point for new research. The ARE libraries also focus on developing researchers', teachers' and students' information-retrieval skills, in order to improve their access to wide-ranging information resources.

Easy access to published research is essential to producing new research. Access is via two routes: access to articles published in licence-based journals requires a paid subscription to the journal, while articles in Open Access are freely available to all. Open Access articles are either published on the basis of a publishing fee (the gold model) and then made freely available from the publication date; or

after publication, the article may be archived in a repository (digital archive), which may be affiliated to, e.g. a university (the green model).

Under the gold model, libraries play a role in terms of oversight and cost control when publishing Open Access articles. Under the green model, the library operates as a repository. Whichever model is chosen, the library can play a part in centralised negotiations, pressing publishers to agree to prices and conditions that will benefit all of the institutions.

Research, learning and innovation

In this stage of the circuit, when new knowledge is generated, the keywords are: use, acquisition and documentation.

Competition for users' time and attention is fierce – as such, it is essential that ARE libraries offer up-to-date search systems and other tools. It is not just about accessing the resources to buy the systems, but about enhancing librarians' ability to understand and use them. The new generation of researchers has high expectations of the services available to them. ARE



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libraries must work closely with research and educational institutions to identify how they can continue to provide the best possible support for research in the future.

The physical spaces in which ARE libraries operate also play a role. The physical library remains central to education and research, and there is growing demand for group rooms, reading rooms and opportunities for face-to-face encounters.

Output

Once the research has been produced, it has to be published, stored and kept up-to-date so that it can be shared with students, teachers and other researchers. At this stage, the focus is on processing the articles and data, and on user interfaces, communication and skills.

The electronic publishing process has presented several challenges to the competencies and systems of ARE libraries. Librarians are expected to be able to give researchers advice regarding Open Access publishing, and there is increasing user demand for services currently available on desktop PCs to be extended to mobile de-

vices, which presents challenges to libraries' IT systems. There is no way around it, librarians have to provide their services in an appealing design and with simple functionality – including on mobile platforms.

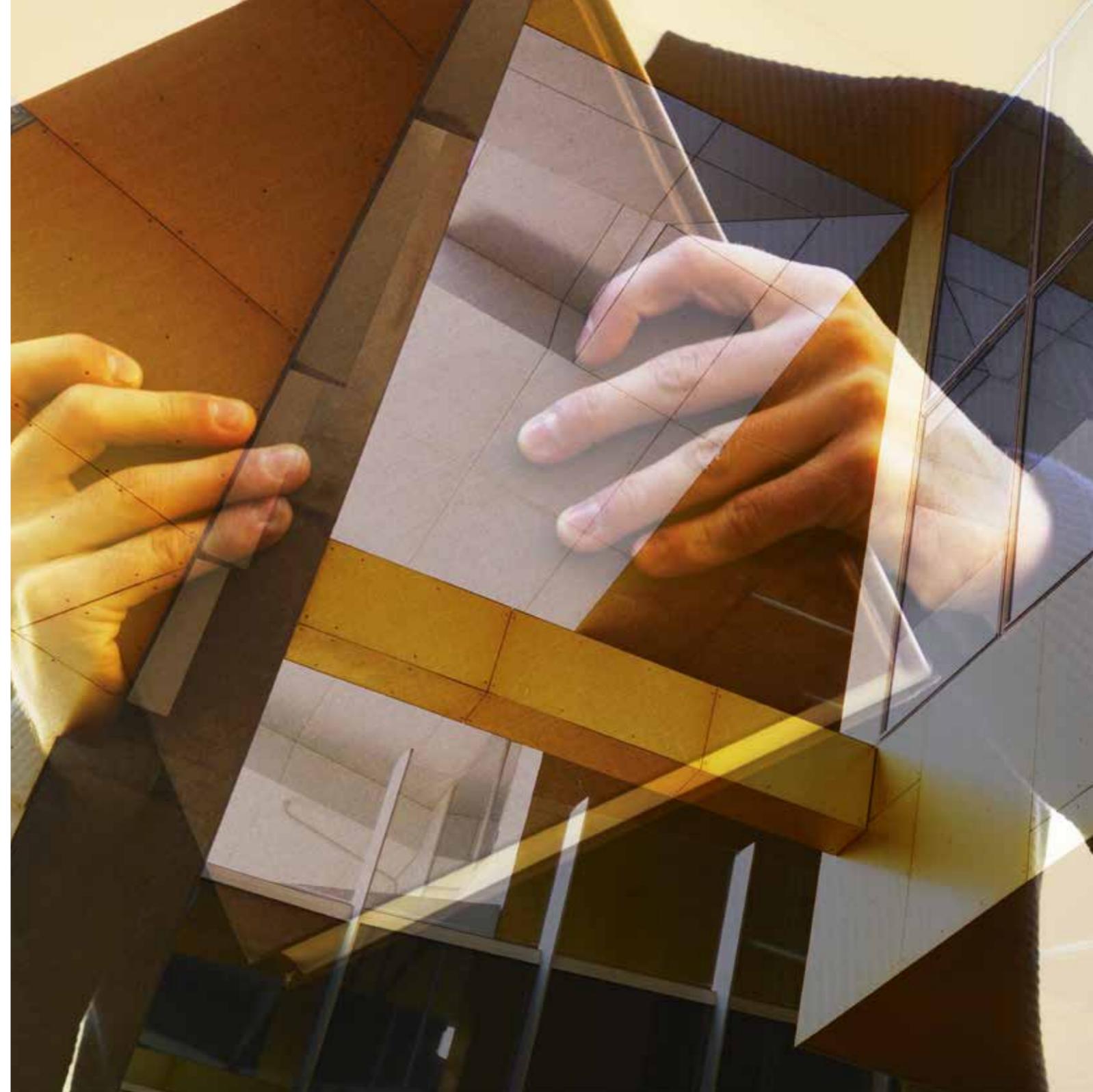
The ability to share and re-use data will play an even greater role in the research of the future. A user-friendly system that inspires confidence is the key to a sustainable publishing system geared towards sharing. Another important prerequisite is that research and data are saved and archived securely.

As the quantity of scientific content continues to grow, so too does the problem of data storage. ARE libraries have traditionally performed this role, but if they are to continue to do so, then librarians' skills must be constantly kept up to date. There is an increasing focus on research data management, which means that libraries must involve themselves in recording and storing data and metadata. This requires both that libraries have the right systems in place and that librarians possess the necessary skills.

Research also needs to be available to and

(re)used by students, teachers and other researchers. This places considerable demands on students' ability to search, evaluate and process information – and also on the teaching of these skills. For many years, ARE libraries have been working to enhance students' information skills. However, various studies suggest that there is still a need to focus on this. It is not enough for students to have digital access to research-based knowledge if they do not have the necessary skills to make the best use of it.

ARE libraries can also help promote these skills in upper-secondary schools so teachers can make optimal use of information systems in their teaching.



Open research, learning and innovation >

In order to ensure open research, learning and innovation in the future, DEFF must support ARE libraries with regard to the challenges and opportunities listed above.

During the strategy period, this will entail work on both the technology and the skills needed to support easy and equal access to research-based and application-oriented knowledge. This will require continued focus on integrated thinking and embedding digital systems in education and research, as well as initiatives aimed at consolidating and securing the digital infrastructure of academic, research and educational libraries for the benefit of users.

DEFF has therefore set out its vision:

Vision

DEFF creates the best possible conditions for access to knowledge and knowledge infrastructure that supports research, learning and innovation in Denmark.

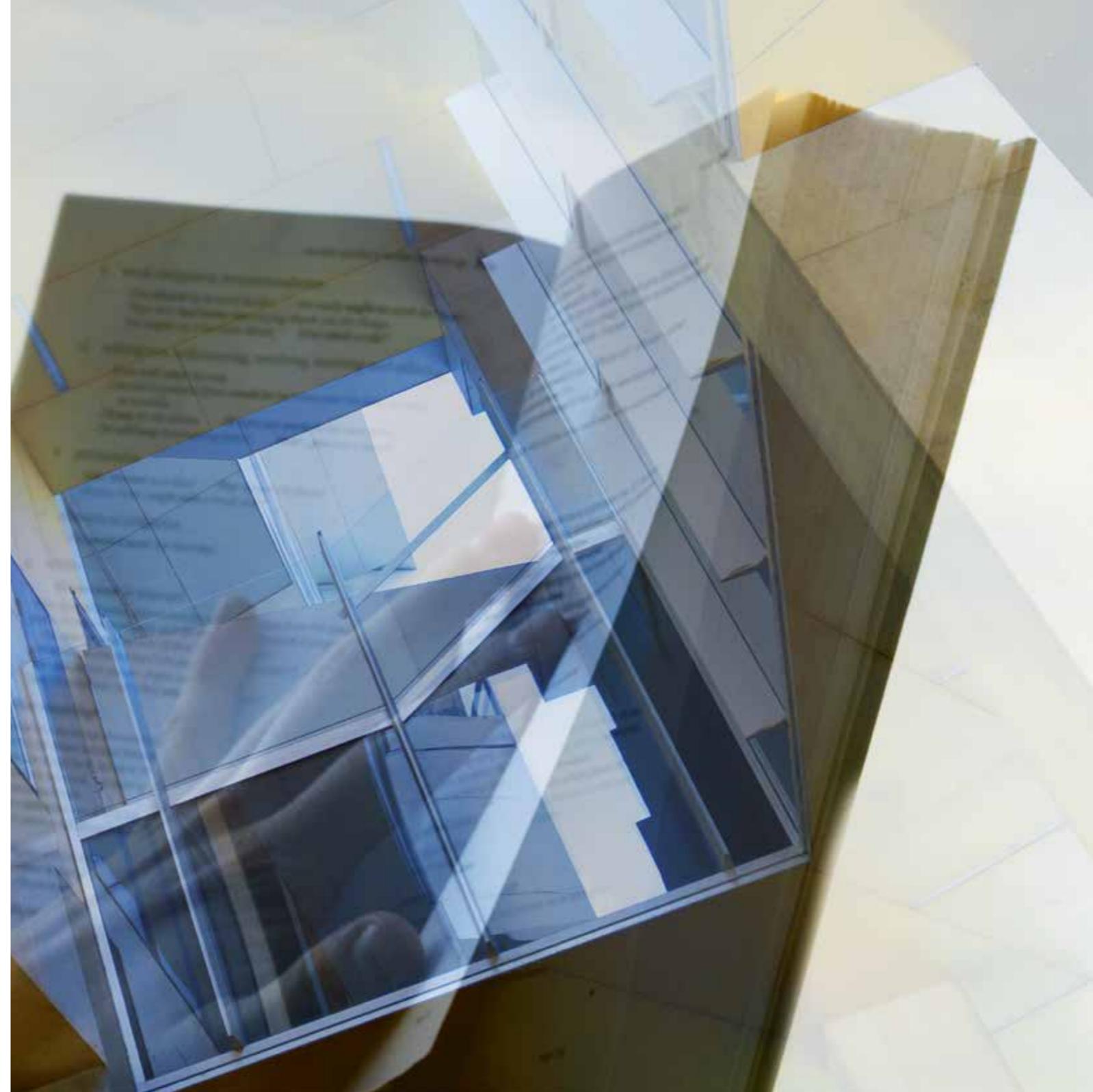
DEFF is well placed to realise this vision. The institutions involved in DEFF represent all levels in the research and education sector that provide scientific information and services to researchers, students and teachers in secondary schools, business academies, university colleges and universities.

Firstly, this enables DEFF to take a holistic view of the whole educational cycle of the students who, in the final analysis, are the ones who will acquire digital skills and use them to generate new knowledge and innovation in Denmark. Secondly, it provides good opportunities to work together on knowledge infrastructure, with a focus on library systems, licence negotiation and digital literacy, for the benefit of all types of research and educational institutions.

DEFF's mission sets out the means by which this vision will be achieved:

Mission

DEFF will strengthen organisational and technological co-operation between all academic, research and educational libraries in Denmark, via development projects, strategic initiatives and the joint procurement of licences.



Strategic objectives 2016–2019.

1. DEFF will support sustainable, open access to research and knowledge

DEFF will continue to ensure access to research and knowledge, and to support opportunities for sharing knowledge. It will encourage a more sustainable publication ecosystem and more balanced business models. This implies closer focus on developing innovative processes in the negotiation, purchasing and administration of licences – including greater involvement of university management in relevant negotiations. The objective will continue to be to provide as much relevant content as possible, under the best possible conditions and at the lowest possible prices.

In addition, DEFF will focus on raising the profile of research, and on the structuring of and access to research and knowledge. DEFF will also strive to consolidate facilities and library services that provide access to digital resources, especially at upper-secondary school level.

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2. DEFF will enhance information skills

DEFF's objective is not only to ensure easy access to knowledge resources, but also to enhance users' information skills and awareness. New insights and new knowledge require new skills in searching, using, producing, evaluating, assessing, reusing and communicating knowledge, as well as the ability to critique sources. Both students and teachers are the target group for this work, which will encompass all institutions and stakeholders.

Specifically, DEFF will continue to facilitate digital literacy in youth education. In other words, it will aim to ensure that students have both access to digitally processed knowledge and the skills to use it. DEFF will therefore create a future-proofed library service for upper-secondary schools to help ensure that both teachers and students are capable of using the knowledge made available to them.

3. DEFF will work to strengthen the dissemination and sharing of research results

In the last decade, Open Access has heralded a new way of publishing knowledge and making it available. Open Science – which brings together Open Access, Open Research Data and Open Tools – refines the concept of openness. DEFF will use this as the launch pad to make tools, publications and data available in a sustainable manner, to ensure that researchers, teachers and students throughout the research and education system have equal access to knowledge.

DEFF will therefore work to make the dissemination, distribution, publication and sharing of research results easier. It will also promote the implementation of the National Strategy for Open Access, and work to support Open Research Data and Open Science wherever possible.

4. DEFF will support better management and utilisation of research data in Denmark

DEFF will promote better and more competitive research in Denmark, via the efficient acquisition, sharing, re-use and secure handling of relevant research data.

Research data is an important scientific and financial asset, not only for Danish universities, but for Denmark as a whole. Today, most research data is not archived in a manner that protects it for use in the future. It is often isolated, filed by the researcher, or stored by an IT department or a commercial cloud service, and only rarely clearly linked to researchers, projects and publications. As a result, the data is difficult to share, retrieve for verification or re-use in new research.

DEFF will continue its close collaboration with DeIC (Danish e-Infrastructure Cooperation) on improving good practice in managing research data in Denmark,

with a view to compliance with the Danish Code of Conduct for Research Integrity. This work must be carefully planned and visionary; it must embrace all elements of the data life cycle; and it must be implemented in close collaboration with those who produce, manage and use the data.

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Priorities

2016–2017. >

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1. Access to digital scientific knowledge

Background

Knowledge forms the basis for all education, research and innovation.

DEFF strives for cost-effective, sustainable access to scientific knowledge, and to ensure that the results of publicly funded research are made freely available.

Access alone is not enough – people need the right skills too. Access also necessitates the ability to process and understand the material. This applies to students and teachers in youth education programmes, university students, researchers, librarians and business users. These groups all have different skill levels, so the work must be tailored to suit each group's specific needs and conditions, and continuously updated in the light of a field of knowledge that is developing rapidly.

Objectives behind the priority

The point of the priority is, through project work, to produce results in the following areas within two years. It is a requirement that project applications formulate tangible goals in one or more of these areas, and achieving these goals must be documented as part of the project.

1. To provide researchers, students and companies with access to as much digital scientific knowledge as possible, at the lowest possible cost and under the best possible conditions. This can be done by making knowledge more available via Open Access and licence negotiations.
2. This will, in turn, improve users' digital learning, information competencies and knowledge management.

2. Open Science, social media and linked data

Background

Open Science is a priority for the EU, the Danish government and Danish research. National strategies are in place for both Open Access and research data management. DEFF strongly supports these initiatives and ambitions.

DEFF initiated the debate on national Open Access and is the co-creator of a historically big Danish investment in the development of research data management. DEFF will continue this work as part of the broader Open Science agenda. The main focus remains on Open Access to publications, but research data (Open Data), software (Open Source) and other infrastructure elements are now also included.

In addition, social media plays an increasingly significant role, even within scientific communication. This presents new

opportunities (and challenges) for libraries in relation to research communication and sharing. Linked Open Data is another concept that has emerged along with the internet. By making data freely available in the form of small, well-defined pieces of information, computers (and libraries) can reveal new interconnections. The information can then be disseminated in new and effective ways. DEFF focuses on identifying these opportunities and launching experiments in the most promising areas.

Objectives behind the priority

The point of the priority is, through project work, to produce results in the following areas within two years. It is a requirement that project applications formulate tangible goals in one or more of these areas, and achieving these goals must be documented as part of the project.

1. To make research data an increasingly significant part of library work, and encourage more libraries to embrace the Open Science concept, for the benefit of researchers.
2. To improve the dissemination of knowledge and skills in open and social data use among research libraries.

3. Knowledge transfer, research analysis and bibliometrics

Background

The dissemination and communication of knowledge and tools that can be used to analyse the ever-growing supply of information is crucial for research, learning and innovation. DEFF will promote greater opportunities for all concerned.

Researchers must have the best opportunities to communicate with their peers, to publish research results quickly and efficiently, and to receive feedback and acknowledgement. A multitude of services facilitate international knowledge communication between researchers. DEFF will strive to ensure that publishing and communication of this kind is conducted on the best and most sustainable basis possible.

In order to evaluate the impact and relevance of the rapidly growing range of

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information, there is a constant need for development of analytical and bibliometric tools. New systems and concepts are constantly being developed. One example is altmetrics, which complements citation-based bibliometrics. Innovations such as these must be identified and evaluated so that libraries are able to include the best innovations in the range of competencies and services the libraries offer.

Objectives behind the priority

The point of the priority is, through project work, to produce results in the following areas within two years. It is a requirement that project applications formulate tangible goals in one or more of these areas, and achieving these goals must be documented as part of the project.

1. To discover and test new concepts and models for research communication in order to make new and relevant digital tools available to researchers and students in a sustainable manner.

2. Increase the volume of digital distribution and the availability of digital scientific materials.

3. Identify and test new concepts and systems in research analysis, e.g. bibliometrics and altmetrics, in order to provide new services to researchers, students, businesses and the public.

4. Consolidation

Background

For many years, DEFF’s core activity has been consolidation, which requires co-ordination and consensus among the stakeholders. DEFF has a key role to play as a collaborative organisation for Danish ARE libraries. The incentive to consolidate is establishing better services for the users at a lower cost than is possible by individual libraries acting alone. Consolidation presents opportunities for libraries to share work for their mutual financial benefit.

Services are moving from local desktop

PCs in the institutions to shared, cloud-based centres. Cloud services can be provided by global suppliers or by a consolidated national provider. There are numerous possibilities in this area, and thorough investigation is needed. In addition to the financial benefits, consolidation reduces complexity within each individual institution, freeing it up to focus on its own core functions. The opportunities for using data in a better way have only just begun. Consolidation can encompass many areas, including systems, software, workflows, tools and data. It can also refer to consolidating skills, e.g. greater sharing of human resources between institutions.

Objectives behind the priority

The point of the priority is, through project work, to produce results in the following areas within two years. It is a requirement that project applications formulate tangible goals in one or more of these areas, and achieving these goals must be documented as part of the project.

1. To continue the consolidation work.

2. To offer users more cost-effective and sustainable services, and to discontinue services that do not meet these criteria.
3. Consolidation projects should involve drawing up business models that are ready to fund and set up at the end of the project.
4. Consolidation projects should reduce complexity as a basis for greater efficiency via standardisation and the allocation of responsibilities.

5. The virtual library in upper-secondary schools

Background

Secondary school students provide the raw material for universities, university colleges and business academies.

It is at the upper-secondary schools that students first encounter academic methods, data management, source citation and other skills that are key to participation in the knowledge society.

Upper-secondary programmes are provided by a range of types of institutions, but what they often have in common are limited library and information resources. As such, secondary schools are often overlooked when it comes to offering the right library services, knowledge resources and tools. These resources are instead distributed between public libraries on the one hand, and ARE libraries on the other. Upper-secondary school reform and the generally growing need for research-based teaching highlight the need for a well-thought-out solution in this area.

Objectives behind the priority

The point of the priority is, through project work, to produce results in the following areas within two years. It is a requirement that project applications formulate tangible goals in one or more of these areas, and achieving these goals must be documented as part of the project.

1. To draw up the specifications for a modern, virtual library for the upper-secondary schools, in order to provide access to the right digital information via the necessary underlying licence agreements. The specifications must also define the skills needed to service the virtual library.
2. To undertake more joint work on comparable information and infrastructure needs.
3. To establish collaboration on a library solution for the upper-secondary school sector.

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