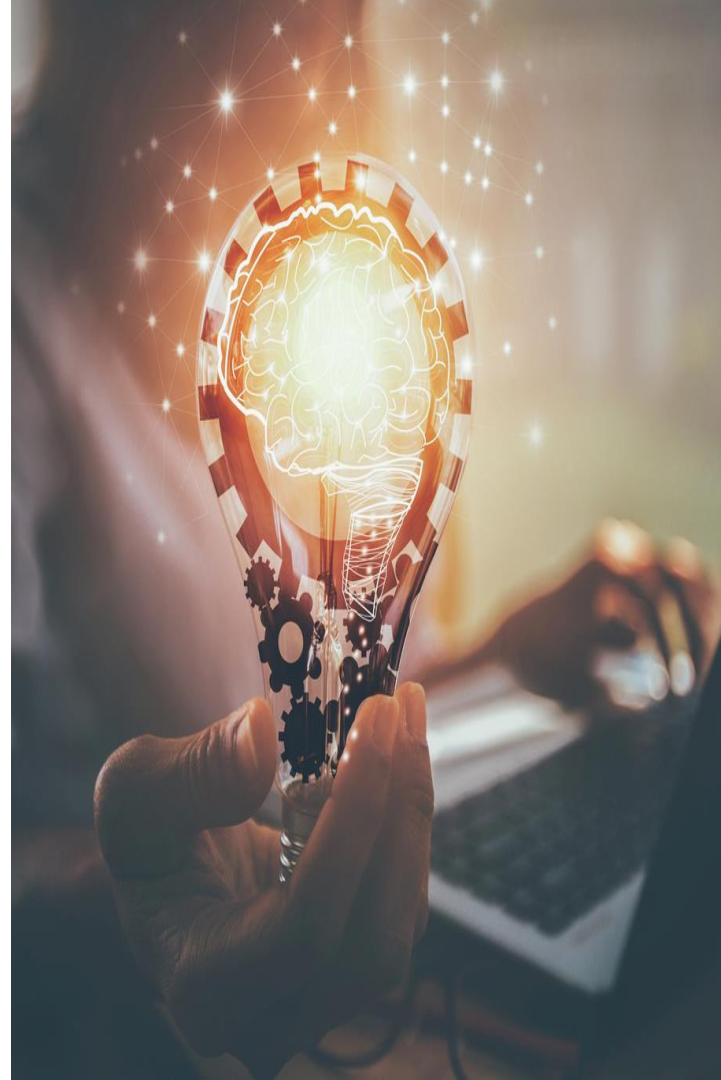ESCALATE

Unit 1 – University governance in the field of research and development

Module 5: INNOVATIONS IN SKILLS, POLICY DESIGN AND EDUCATION SYSTEM GOVERNANCE

Unit 1: University governance in the field of research and development

Module 5: Innovations in skills, policy design and education system governance

1. **University governance in the field of research and development**
2. University governance in the field of higher education
3. University governance in the field of knowledge transfer and science communication

The objectives of this Unit are:

- To provide an understanding about digitalization as a governance task

- To illustrate challenges for research in a digital age

- To think about the way shaping digital transformation through networks and cooperation

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Contents

1.1. Introduction: Digitalisation in the focus of higher education governance

The international higher education landscape has changed massively in recent years. HEIs are also under increasing pressure to legitimise themselves, their research and teaching vis-à-vis society. At the same time, they are actors in their core tasks to meet the knowledge and competence requirements of a digital society.

A provider of higher education is affected by digital transformation in three ways: Education content - the structure of study programs and the didactics of imparting knowledge; An education provider is itself an organization running processes and is thus directly subject to digital change; An education provider may act as a change agent for the regional community and collaborates with others in national and international research and education networks. [1]

This applies, to the governance of HEIs, which, influenced by the spread of New Public Management concepts, has experienced a surge in professionalization [2]. Digitalisation as a socio-economic phenomenon and as a strategic development issue for HEÍs open up a complex problem area: Where should the management and decision-making structures of higher education institutions develop? What about their strategic capacity? Do they have the right governance structures?

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Source: [1] [2]

1.1. Introduction: Digitalisation in the focus of higher education governance

The transformation process triggered by the digital revolution is having a profound impact on practically all areas of the higher education system. The digitisation of research, teaching and administration is a major challenge for universities.

"Digitalisation *[...] permeates all processes, places, formats and objectives of teaching, learning, researching and working in higher education. This digital transformation includes the development of new infrastructures and the increasing use of digital media and technologies for teaching and learning, research, support services, administration and communication, but also the need of students and staff to develop new (digital) skills for their current and future workplaces."* [3]

The digital transformation opens up further opportunities for profile building and positioning universities in the national as well as the international higher education market. Likewise, new potentials also enable HEIs to fundamentally gain national and international visibility. This also implies changes of internal/ external communication and cooperation structures as well as new business models .

Source: [3]

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Did you know...

The COVID-19 pandemic has had a wide and immediate impact on digitalisation higher education

LMS providers experienced a dramatic change in the instructor and learner demands. The use of virtual classrooms (e.g. Blackboard Collaborate) increased by 3600% in March 2020, and by 9000% by the end of September 2020. Much of this was driven by universities moving their courses online, but there was also an unprecedented growth in the use of LMS (Blackboard Learn) and students' use of alterative content formats. The pandemic also sparked a huge spike in interest of provision offered by massive online open courses (MOOCs). Coursera, for example, experienced an increase of more than 18 million registered users between March and August 2020. It is widely expected that higher education systems will experience a sustained intensification of digitalization in course design, instruction, assessment, learning analytics and credentialing, among other aspects teaching and learning.

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1.1. Introduction: Digitalisation in the focus of higher education governance

The digital transformation of HEIs in Europe is politically embedded in a national and European dimension. To be mentioned here are

- „Digital Education Action Plan" (EU, 2018) to promote European school and training systems and higher education to develop digital competences and skills; establishment of a dedicated "pan-European platform for digital higher education.

- European research framework program "Horizon Europe" (2021-2027) to promote innovative, disruptive research

- "European Universities": Association of higher education institutions. This should lead to new forms of European study programs and European degrees or new forms of networking and mobility.

- "Digital Europe": focus on high performance computing, artifical intelligence and cyber security, and ensuring widespread use of digital technology across the economy and society.

1.1. Introduction: Digitalisation in the focus of higher education governance

HEIs expectations associated with digitalisation

Teaching: improvement through new formats, didactics, communication platforms, service portals

Research: facilitation through research data management, new collaboration tools, wide-ranging electronic dissemination channels, service portals

Administration: more effective work through electronic communication and synchronous data repositories

Technological developments enable new forms of cooperation that can be used to develop efficient, fast and sustainable solutions to various problems. Thus, cooperation within the university, between departments and faculties or across several universities can be improved through digital structures.

Source: [5]

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1.1. Introduction: Digitalisation in the focus of higher education governance

What are governance structures?

Governance structure is a a system in which the actions of individual actors are coordinated within the framework of clear roles and responsibilities, both horizontally and vertically, in a way that enables the organisation to achieve the best possible success.

The system should promote collaborative, organisational decision-making. Since governance issues are always about how an organisation is steered within a given regulatory framework, a goal-oriented steering system is an essential element of a functioning governance structure.

The design of management instruments (internal committee structures, meeting routines, standards, guidelines, reporting, monitoring and indicator systems) is the task of the university management.

Source: [6]

1.1. Introduction: Digitalisation in the focus of higher education governance

Dimensions of HEIs-governance

- Mission attainment (whole university, faculties, institutes)

- Scientific Advisory Board

- Human Resources

- Financial distribution

- Operational feedback processes

- Innovation potential

Source: [7]

1.1. Introduction: Digitalisation in the focus of higher education governance

Governance instruments that are decisive for the monitoring, steering and development of the higher education system

Development plans of the individual universities

Performance agreements

Quality assurance and development systems

Financial and budget controlling

Thematic strategies (e.g. on university mobility, social dimension)

Thematic governance structures (e.g. Research infrastructures)

Intellectual capital reports and other accountability instruments

Thematic networks (e.g. on Open Access or Open Educational Resources)

Dialogue and dissemination processes (e.g. on the Bologna Process, dialogues/trialogues with university councils, university senates and other bodies or organisations).

Country strategies to promote innovation, research, digital development, …)

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1.1. Introduction: Digitalisation in the focus of higher education governance

Example: Shaping the digital transformation through networks and cooperation - What design options are there for studying and teaching?

Digital transformation can only work by joining forces and thinking together - through networks of the relevant actors. Through university governance, this idea can be taken up in different ways.

a)   Networks within the university

Cross-cutting online offerings in teaching; Synchronisation of processes between departments, faculties and study programs; Development of study programs that explicitly teach digital competences; Interdisciplinary cooperation, for example in the field of *digital humanities*

Creation of new strategic and operational responsibilities; steering committees and working groups in which suitable functionaries and experts are represented as initiators and implementers.

Creating space for discussion on the use of new communication and presentation formats typically associated with digitalisation, such as blogs or pitches

Source: [8]

1.1. Introduction: Digitalisation in the focus of higher education governance

Example: Shaping the digital transformation through networks and cooperation - What design options are there for studying and teaching?

b) Cooperation within the university network

(synergy effects arise in the establishment and (further) development of study programs and in quality assurance; joint online-supported study programs)

Both within and across higher education institutions, e-learning centres, quality management units and didactic institutions, for example, can work together to develop new study programs that use digital resources on the one hand and teach digital skills on the other.

This interaction results in a structure that makes it possible to link e-learning with teaching methodological fields of activity and which, in addition, always reflects didactic topics in terms of teaching supported by digitisation.

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Source: [8]

1.1. Introduction: Digitalisation in the focus of higher education governance

Example: Shaping the digital transformation through networks and cooperation - What design options are there for studying and teaching?

c) Networks with external partners

Inclusion of external institutions in the considerations of digital dimensions of a university. In this way, networks can be established with non-university institutions, with companies as well as with authorities and associations.

The advantage for studies and teaching is the practical relevance: In the exchange with industrial partners, for example, requirements can be plausibilised with regard to digital competences.

For example, networking of laboratory environments for the sharing virtual or augmented reality technologies.

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Example

Working group "open TUHH"

Since 2017, the "open TUHH" working group at the Hamburg University of Technology has been examining the potential for study and teaching from a strategic, structural and cultural perspective. Its members include the Vice-Presidents for Research and Teaching, the Digitisation Officer for Teaching, management and teams from the Computer Centre and Library, as well as staff from the Institute for Technical Education and University Didactics.

Through the working group, university staff are made aware of the potential of digitisation in teaching through various measures and supported in its realisation. The TUHH has had an open policy since 2018. The blog "INSIGHTS" reports on the TUHH's digital experimental field in research and teaching. For students and graduates, there are workshops on digital tools, such as working with the web application GitLab with a focus on collaboration and interdisciplinary teamwork.

Goals and measures are evaluated in the working group, adapted and integrated into the overall strategic structure of the TUHH in the long term. Today, the working group is an integral structural component in the design of digitally supported, open teaching and learning opportunities.

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Source: [9]

Example

Center for digital Change

New courses were developed in cooperation with various departments at the University of Hildesheim. Through a teaching cooperation between computational linguistics and business informatics, students of political science, English studies, translation studies and literary studies have been taught basic knowledge on the application of computational linguistic text analysis methods in joint courses since 2018. With "Data Science for all", the use of machine learning methods is being advanced.

MEDIENFAKTUR (Lab for digital teaching and learning)

Since 2018, Medienfaktur has served as an innovation and experimentation space at the University of Oldenburg to develop and test concepts for media education in and for educational institutions in an unconventional way. University staff work openly to design new teaching/learning formats and address strategic and practical challenges of social and cultural change. The core objectives are to sustainably establish the collegial cooperation structure and to develop a professionalisation program for media education in teacher training. Long-term and grassroots democratic strategies offer opportunities to use existing structures to collaboratively advance the digital transformation of studying and teaching.

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Source: [10], [11]

Example

University network BASA-online

The German university network **BASA-online** for part-time Bachelor's degree programs in Social Work online currently consists of seven universities. Curricula, study materials and a blended learning concept, which relies heavily on learning coaching and a close integration of theory and students' professional experience, were developed collaboratively. In this way, synergies from the merger of the various universities in the BASA-online university network can be used.

Joint Project Digital Higher Education Saxony

Cooperation of the Higher Education Didactic Centre Saxony (HDS) and the E-Learning Working Group of the Saxony Rectors' Conference. The aim of the project is to implement the state-wide digitisation strategy for higher education teaching and thus to support and advance the transformation of studies and teaching in the context of digitisation. 1. Digital Fellowships to activate teachers and students with funding for individual and tandem projects. 2. Digital Workspaces for the broad-based implementation of digitalisation processes. 3. A change agent program for the sustainable establishment of digital higher education teaching by qualifying teachers at interfaces of the teaching organisation to become multipliers for digital higher education.

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Example

Open Digital Lab For You

Research consortium consisting of the University of Applied Sciences Stuttgart (HFT), the Bremen Institute for Production and Logistics (BIBA), the Institute for Knowledge Media (IWM) of the University of Koblenz-Landau, RWTH Aachen and the University of Parma.

DigiLab4U at the Stuttgart Technology University of Applied Sciences focuses on the digitalisation and cross-location networking of laboratory infrastructures. Students and researchers can be offered practice-oriented fields of action, learning and research. The aim is to provide students, teachers and researchers with cross-institutional, industry-oriented, digitalised and networked laboratory environments.

The laboratory environment is underpinned by a framework concept that aligns learning and research content from the Internet of Things (IoT) topic area with the European Qualifications Framework: Learning resources (scripts, videos, tutorials, tests, etc.) and laboratory infrastructures are to be provided for each IoT topic with the involvement of experts. The quality of the content is to be ensured via a peer review process.

Source: [14]

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Reflection

- What are the main challenges in digitalization related to university governance?

- What are reasons for not digitalizing your university at once?

- What are typical organisational problems in higher education digitisation?

- Which are relevant internal governance factors that can influence and promote HEIs performance in the digital age? And how do they interrelate with one another?

- What opportunities for networking and cooperation on digital transformation exist at your institution?

- How should internal and external cooperation structures be designed in the future to further advance the digital transformation at HEIs?

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1.2. Research in a digital age

Challenges for science and research

Digitisation is a turning point for science and research: never before has it been able to access so much data, never before has it produced so much data. The research process covers specific activities such as determining goals, applications for funding, identifying partners, conducting research, enhancing the research impact, performance reviews and publishing. Important trends are:

- Openness of science: various currents that aim to make science more easily accessible to a greater number of people (Open Data, Open Source, Open Access, Open Science, Open Educational Resources, Open Innovation Hub University, Open Metrics, …).
- Citizen Science: participation of persons in scientific processes who are not institutionally bound in this scientific field; scientific process openly accessible, traceable and reusable via the Internet.
- Differentiation of the higher education market: new digital university offerings (online programs, new forms of certification, online universities); increased focus on market needs; public vs. private higher education
- AI: new dimensions of data; new evaluation methods; self-learning systems; new scientific fields e.g. Digital Humanities, …

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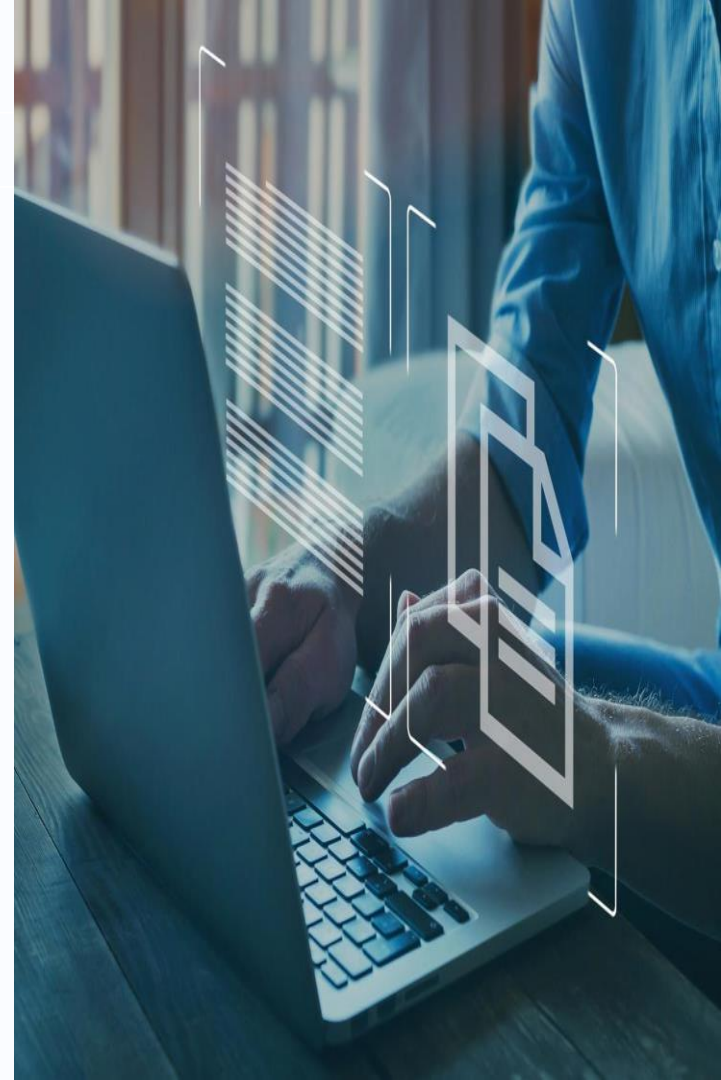
1.2. Research in a digital age

In addition to tasks such as teaching, administration and transfer, the core task of research is affected in many way by digitization. Terms like open access, open data, transparency and collaboration are widely discussed in the scientific community as well as in politics and the media. Platforms like ResearchGate connect researchers worldwide, digital tools allow new research questions to be addressed, large amounts of data can be processed, virtual research environments facilitated collaborations across spatial and disciplinary boundaries.

A distinction must be made between digitisation as a research object and as a research instrument. Digitisation of research is therefore the increasing application of computer-based procedures and the systematic use of digital resources in research. In future, scientific work in almost all disciplines will be decisively shaped by digital research practices and information infrastructures.

For HEIs, this also results in fields of action in the area of governance, for example with regard to the establishment of research data management systems or the expansion of an open access approach.

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1.2. Research in a digital age

Facets of digitalisation in research

The OECD survey provide a snapshot picture of the multi-faceted nature of science and digitalisation, providing a baseline for charting its digital transformation and the mechanisms through which it influences scientific research and its impacts on society.

• the adoption of digital scientific collaboration and productivity tools throughout all stages of the scientific process;

• the digitally-enabled diffusion and access to data and code;

• the use of advanced and data-intensive digital tools to gain insights and develop predications;

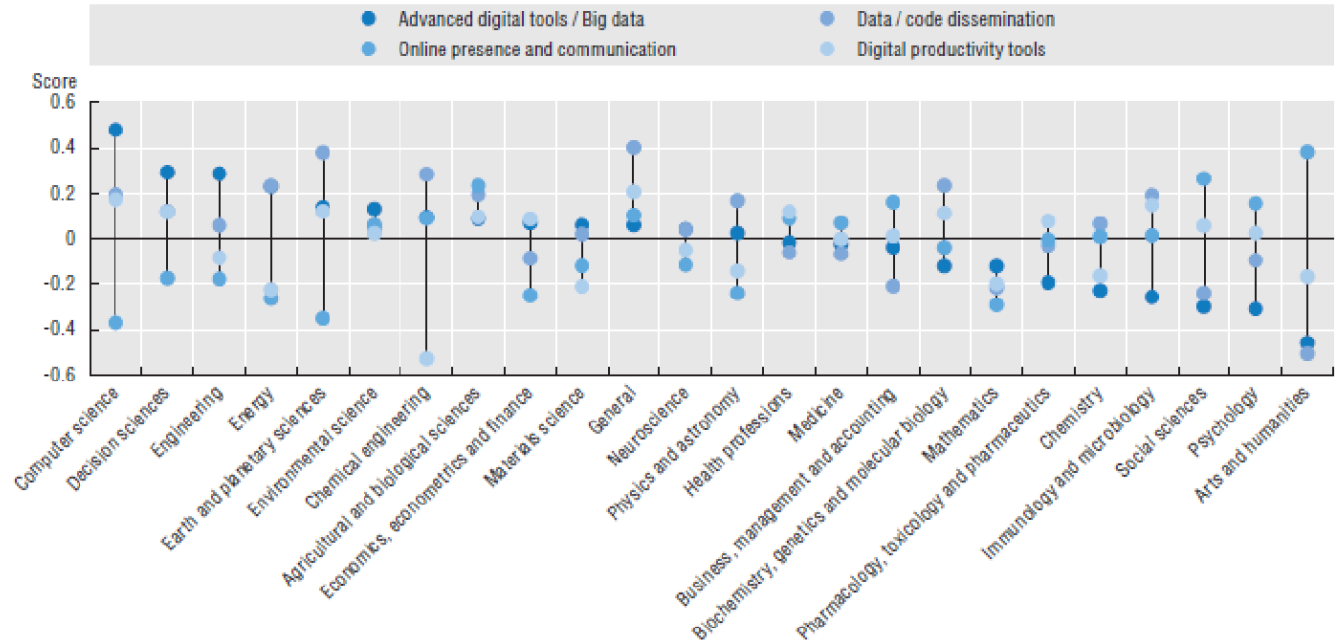• the development of digital identity and online communication of scientific work.

Source: [17]

1.2. Research in a digital age

Facets of digitalisation in scientific research

Patterns of digitalisation in science across fields

1.2. Research in a digital age

Drivers of the digitisation of research

New research formats and methods: digital data-collections, new publishing and collaboration formats (DataHub, ResearchGate, Academia, Mendeley…), analytical methods like Machine Learning, computational social science, or professionals discussions on social networks

Virtual research groups: virtual communication, distributed work on the same object through groupware, Scientific information dissemination (cloud based library platforms, electronic resources management, …)

Data: Sharing data and research results via the Open Data approach, new database concepts (inmemory, non SQL, …) enable the real-time evaluation of large databases

Project management: Complex research projects with many participants require professional project management(Electronic Lab-Books, Emdesk,…) modern IT tools for project management are also available here; project management also forms the transition to digital administration

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1.2. Research in a digital age

Digital technologies change science

In order to differentiate the effects of the digital transformation on sciences, a simplified distinction can be made between three types:

Transformative change concerns the conversion of analogue information and practices into a digital form, for example the digitisation of texts, images and objects, as well as processes of searching, collecting and mapping.

Enabling change is the use of data-intensive technologies to address research questions that could not be done in any other form.

In substitutional change, digital technologies are used to support or even replace conceptual parts of the research process .

In principle, all types of change lead to altered research practices, but what is really decisive for the expansion of knowledge possibilities are the accompanying scaling effects (volume, speed, complexity).

Source: [15]

1.2. Research in a digital age

Digital technologies change science

The current challenges of the digital transformation to enable excellent research practice essentially include the following aspects.

Access to data and software: data from research are made available in accordance with the FAIR principle. It is just as relevant that software - wherever possible - is open source, freely usable and documented for research.

Digital infrastructures for research: must be designed for the long term and at the same time enable rapid adaptation to technical changes; this requires new organisational and responsibility structures (e.g. in data centres and libraries).

Financial challenges: They range from longer-term and joint financing of national and international digital infrastructures to the funding of staff with digital expertise in research and infrastructure projects and infrastructure projects., even for digital services from commercial providers.

Clarification of legal issues: The use of digital technologies opens up new legal issues.

Source: [15]

Did you know...

from E-Science to Digital Science

The digitisation of HEI´s has begun primarily in the field of science and academic research. Computer science and related disciplines whose research subjects include ICT, but also the service institutions in charge of information acquisition, processing and dissemination, such as libraries and computer centres, have always played a pioneering role in the use of ICT in higher education. The transition from e-science to digital science can be well illustrated by the emergence of the digital humanities, which developed at the interface of the humanities and computer science as an independent research field from around the year 2000. In the digital humanities ICT is no longer just a tool, but an integral and essential component of subject-specific research methods and processes. Similar developments can now be observed in almost all disciplines.

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1.2. Research in a digital age

Digital Research Services – Implementation of structural responsibilities

Considerations on digitisation in research aim to provide researchers with the best possible scientific information infrastructure. Ideally, this can be oriented towards the research data cycle - from creation to re-use.

Since research is increasingly digital or digitally supported, specific service structures have been established at many European universities to support digital shaped science and research processes.

Typical tasks:

- Research Data Management;

- Consulting/Training

- Research Software

- Data Visualization

- Scholarly Communication

Research data cycle
https://www.kit.edu/forschen/13557.php

1.2. Research in a digital age

Research data management – a key challenge for HEIs management

The exponential growth, increasing complexity and increasing use of digital research data have had a significant impact on the research process in recent years. Research data management (RDM) is understood as the handling of these data throughout the entire data life cycle and includes the collection, evaluation, (further) processing, archiving and, if necessary, publication of the data. The management of research data, the possibilities of its networking, its permanent availability and its open access require adequate new infrastructures.
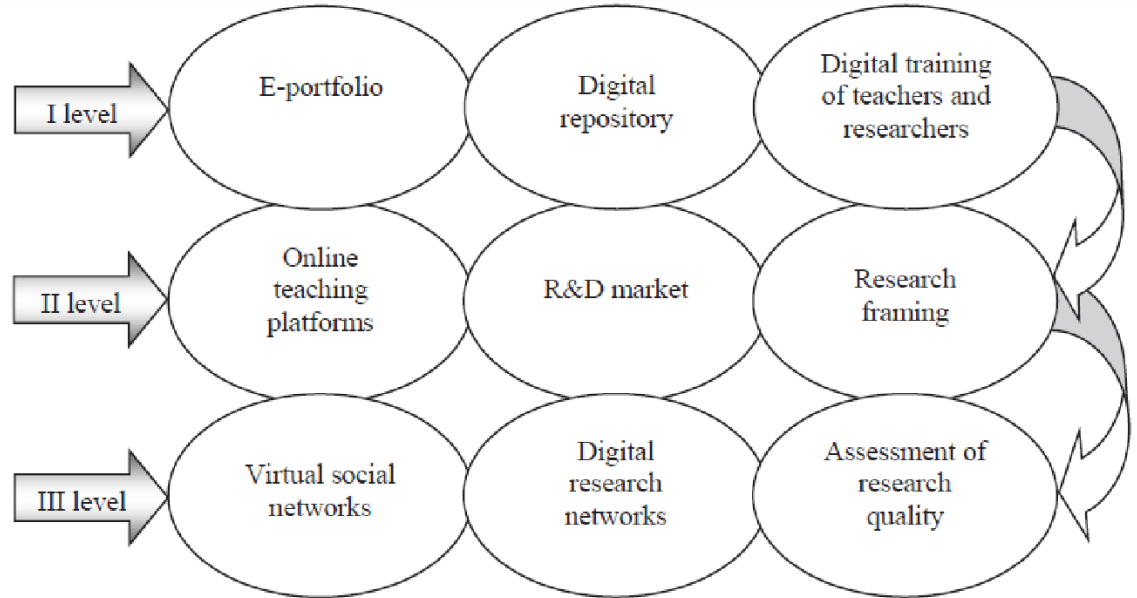
University administrations are called upon to strategically manage these processes. They are called upon to agree on guidelines for handling digital research data at their universities and to support agreements with other universities, non-university research institutions and subject-specific data infrastructures. **Strategic activities** in RDM: e.g formulation of RDM-guidelines; Using the Research Data Management Organiser (RDMO) tool to write data management plans (DMPs); Open Source Program Dataverse to permanently secure research data, make it publicly available in open access;

Source: [19]

1.2. Research in a digital age

Model of digital research universities

"A three-level model, which illustrates processes and infrastructure units, uses digital technologies in research universities, and is focused on providing not only modern needs but also hypothetical needs arising in the strategic future."

I level → E-portfolio | Digital repository | Digital training of teachers and researchers

II level → Online teaching platforms | R&D market | Research framing

III level → Virtual social networks | Digital research networks | Assessment of research quality

Source: [20]

Example

Germany: Action Plan Research Data

The BMBF's (Federal Ministry of Education and Research) **Research Data Action Plan** bundles activities and projects with the aim of creating a culture of sharing and reusing research data. In addition to the necessary structures, the action plan also takes into account the need for standardisation in the handling of research data and the promotion of competence in science, industry and technology.

The Action Plan is based on three core elements that together strengthen technological, economic and scientific sovereignty and make data reliably usable:
1. Development of technologies and methods for data-related research and development.
2. Promote innovation and ideas from research results in the form of data. Uniform methods, standards and data formats are to be defined for this purpose.
3. Promote a common level of knowledge about the handling, collection and use of these data through qualification in all scientific disciplines and university subjects.

Source: [21]

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Example

Establishment of a national research data infrastructure (NFDI)

NFDI is a digital, distributed infrastructure that is currently being set up and will offer the scientific community in Germany services and advice on all aspects of research data management. The NFDI is intended to systematically develop, sustainably secure and make accessible the data holdings of science and research and to network them (inter)nationally. The NFDI is to be designed by users and providers of research data in cooperation with institutions of the scientific infrastructure. Currently, 9 consortia from different scientific disciplines have been accepted into the network. The following goals are to be achieved:

- Sustainable, qualitative and systematic securing, indexing and utilisation of research data via regional and networked knowledge repositories.
- Connection and networking to international initiatives such as the European Open Science Cloud.
- Establishment of research data management according to the FAIR principles

Source: [22]

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Example

Digital Research Services -The University of Edinburgh

The **Digital Research Services** works as a single point of access to all of the data and computing services available to researchers at the University of Edinburgh. One strength lies in the fact that the support is oriented towards the research life cycle: 1. Plan and Design, 2. Collect and Capture, 3. Organise and Store, 4. Interpret and Analyse, 5. Manage and Preserve, 6. Publish and Share, 7. Discover and Re-use. A variety of tools, information aids or learning opportunities are offered for each phase.
Digital Research Services also offer a wide range of training and development opportunities, from skills workshops to software carpentries and programming courses.

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Good practice

eResearch Alliance

As one of the first German universities, the University of Goettingen published a research data guideline in 2014, which supports researchers in the various issues related to the handling of research data. The eResearch Alliance actively supports researchers in the planning and implementation of research data management in accordance with the Research Data Guideline of the University of Goettingen. Services cover aspects of eResearch across the entire research lifecycle. They range from advice on research data management plans in the preparatory phase of research projects, to the application of digital tools and services in the actual project phase, to publication options, archiving solutions and retrieval options for research data at the end of projects. A central task is the establishment of a network of experts on the Goettingen campus. An important role in this process is played by the eResearch Council, a campus-wide network of eResearch specialists which acts as a strategic advisory body. This body consists of about thirty researchers from all faculties of the University of Goettingen and the partner institutions of the Goettingen Campus.

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Reflection

# Think about your own university or your own work...

- What are the central effects of digitalisation on the field of research that you perceive?

- Please consider to what extent digitisation is creating or changing new methods of scientific work?

- What does digitisation mean for the conception of research as a public good and the involvement of non-scientists in the development, implementation and communication of research processes (citizen science)?

- Where do you see dangers in an increasing penetration of research structures and processes in a digital age?

- Does your university provide concrete incentives to motivate researchers to make research data available as open data?

1.3. Research networks

There have always been networks in science and research. International networking and cooperation are taken for granted almost everywhere. The network became a universal metaphor when, in the second half of the 20th century, "with the paradigm shift from physics to biology and from sociology to computer science, not only the biological systems of life, but above all the informational control and communication networks moved to the centre of scientific attention" [25]

Shared research infrastructures play an increasingly important role in most scientific fields and account for a significant part of total public investment in science. Research ministries at state, federal or EU level are funding more and more collaborative projects in which research institutes and commercial enterprises work together.

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Source: [25
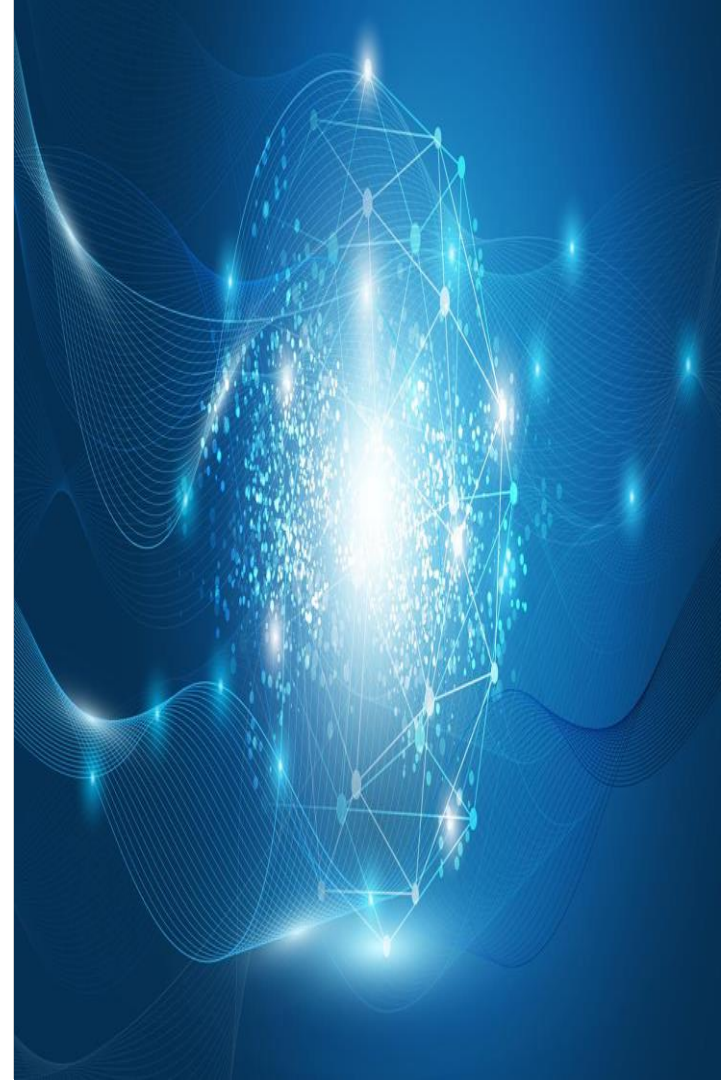
Did you know...

The digital science platforms **ResearchGate** and **Academia.edu** count more than 15 and 108 million registered users respectively. According to ResearchGate, around 10,000 researchers, who only had to specify an institutional affiliation when registering, log in daily to contact each other and gain access to the papers, which are made available there quickly because long editing and editorial processes in publishing houses are eliminated. This gives a broad mass of people easy access to specialist knowledge that they can process further. This creates a new framework in which knowledge is exchanged and produced. This virtual mobility of knowledge changes the form of knowledge itself.

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Source: [25]

1.3. Research networks

Potential impact of digitalization

- New quality that researchers can exchange ideas with the scientific community, with representatives from politics, business and society

- Internationalization of research

- Practical transfer of research results

- Forms of self-organised cooperation

- Simplification of workflows for closer, faster and better networking

1.3. Research networks

Collaborative work - Digital opportunities in research networks

Cooperative research projects with several partners are increasingly characterised by a transnational as well as interdisciplinary character. This brings additional challenges in the management of research data, which can be met through coordinated planning of data management and cooperative working methods.

The implementation of data management should therefore be planned jointly and agreed procedures and responsibilities recorded in a project policy and a data management plan.

Digitizing research enabels realtime collaboration of international and interdepartmental teams

1.3. Research networks

Blocks for Digitization of Research networks

- Collaboration Tools

- Videoconferencing

- Cloud-Platforms

- Wikis

- Blogs

- Open Access and

- E-Publishing ...

Did you know...

European initiatives

The **European Open Science Cloud (EOSC)** is an environment for hosting and processing research data to support EU science. It aimed to develop a trusted, virtual, federated environment that cuts across borders and scientific disciplines to store, share, process and re-use research digital objects (like publications, data, and software). EOSC is being co-created in a series of funded projects and initiatives from Member States and Associated Countries. Supporting the EU's policy of Open Science, EOSC aims to give the EU a global lead in research data management and ensure that European scientists enjoy the full benefits of data-driven science. EOSC is part of the European Cloud Initiative. It aims to provide:
- a world-class data infrastructure to store and manage data
- high-speed connectivity to transport data
- powerful high performance computers to process data

Plan S is a strategy to promote open access to scientific knowledge generated with public funds. The project is supported by 18 national and international research funders, as well as the European Commission and the European Research Council.

Source: [26]

Example

GÉANT

GÉANT is Europe's leading collaboration on network and e-infrastructure services, helping to accelerate research, drive innovation and enrich education to ensure Europe remains at the forefront of scientific excellence. The GÉANT network builds on the interconnection of Europe's National Research and Education Networks (NRENs), operates at speeds of up to 500Gbps and connects over 50 million users at 10,000 institutions across Europe. It offers a comprehensive portfolio of e-Infrastructure services to support open science and enhance the connectivity options available.

In collaboration with regional partners, GÉANT also manages international networking projects to support the development of high-capacity internet networks for R&E and boost global collaborations. Additionally, GÉANT is collaborating with major European e-Infrastructures to develop the European Open Science Cloud (EOSC

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Good practice

Research Network on Intelligent Digital Systems IRIXYS

The digital research platform was founded in 2016 by the University of Passau, the Sciences Appliquées (INSA) Lyon and the Università degli Studi di Milano with the aim of bringing together researchers from academia and industry on the topic of digitalisation, big data and artificial intelligence. IRIXYS organises workshops twice a year specifically for PhD students, where they can exchange ideas with other researchers, but also with tradespeople. IRIXYS enables links between science, business and politics. The international research network offers young researchers the opportunity to advance their research for practice-relevant issues.

Source: [28]

Good practice

Prosperkolleg – virtual research network

The Prosperkolleg in North Rhine-Westphalia/Germany aims to bring together researchers from different disciplines to jointly analyse the potential of circular value creation and to develop circular strategies and approaches. The Virtual Research Network Circular Value Creation NRW promotes the exchange of members, organises events and workshops and aims to implement joint research projects. Through the network, existing competences can be bundled, research gaps can be identified and synergies can be used.

Good practice

KI Campus Ostbayern - A cooperation platform on artificial intelligence

The KI Campus Ostbayern is a cooperation platform with which the universities and colleges in Eastern Bavaria pool their competencies in the field of artificial intelligence (AI), strengthen scientific exchange and expand cooperation with business and society. The network was initiated in 2020. The Eastern Bavarian universities (OTH Amberg-Weiden, TH Deggendorf, Landshut University of Applied Sciences, University of Passau, OTH Regensburg and University of Regensburg) work together in the network. Currently, the campus is engaged in the development of the following areas: 1. Research collaborations from basic research to concrete AI applications in practice, 2. Knowledge and technology transfer, 3. Specialist qualification for AI.

Source: [30]

Good practice

German-Dutch Fieldlab

Artificial Intelligence for Digital Twins (AI4DT)

The focus of AI4DT is the cross-border networking of companies and research institutions, the support of the economy in market development and the transfer of knowledge into application. The AI4DT network consists of companies, experts and technology providers who regularly meet, inform and share experiences in joint events. For this purpose, a cooperation platform is permanently available at www.ai4dt.com for networking and virtual cooperation.

In Werk150, the factory on the campus of Reutlingen University, and on the Brainport Industry Campus Eindhoven, the "Fieldlabs", test environments for intelligent industrial solutions, are being created for this purpose. Demonstrators will be set up here to show the technology potential and experts and companies will come together to work together.

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Reflection

Think about your own university…

- How do international research networks work and how do they change under the impact of new challenges? How can digital tools help?

- What impact does digitalisation have on research networks and science cooperation?

- How can HEIs management digitally support the work and establishment of research networks?

Key takeaways

- Provider of higher education are affected by digital transformation in multiple ways:

- The digital transformation of HEIs in Europe is politically embedded in a national and European dimension.

- Technological developments enable new forms of cooperation.

- For HEIs, developments in research also results action in the area of governance.

- HEIs management can support the work and establishment of research networks in different ways.

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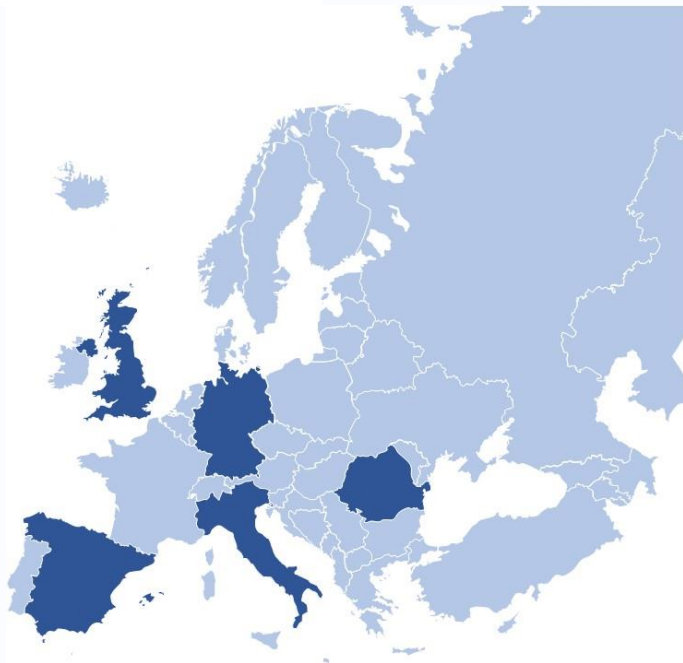
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