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JUSTUS LIEBIG UNIVERSITY GIESSEN

DIGITAL TRANSFORMATION STRATEGY

IMPRINT

DIGITAL TRANSFORMATION STRATEGY JLU 2030

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FOREWORD



Prof. Dr. Joybrato Mukherjee

This Digital Transformation Strategy formulates the central objectives of Justus Liebig University Giessen (JLU) up to the year 2030. It outlines the dynamics and potentials associated with the developments of a digital university with digital processes. With universities facing major challenges at various institutional levels, digital transformation can contribute to forward-thinking development of all dimensions in order to make university structures and higher education even more open, equitable, international, and efficient.

With around 26,500 students, more than 400 professors and over 5,300 employees, JLU is the second largest university in the state of Hessen. Digital services and products become increasingly relevant to students, teaching, research, and the administration. To target the increasing demands of digital transformation on everyday university life, JLU has initiated a campus-wide dialog. This has made it possible to take into account the relevant perspectives of all university areas and to transfer them into a holistic strategy. In the fields of action *Research, Teaching, and IT Governance, IT Infrastructure, and Administration*, the requirements that affect the entire university are specified with the help of subgoals and measurable indicators. In addition to internal and external target agreements, strategic development planning and specific sub-strategies in JLU's priority objectives serve as the basis.

The Digital Transformation Strategy contains impulses for action and serves as a decisionmaking basis for the ongoing strategic development of JLU in the area of digital transformation. It increases the university's competitiveness and ability to obtain external funding, opens up innovative ways of imparting academic knowledge, offers trendsetting work formats, and realizes a more effective and efficient administration. This strategy process thus increases the attractiveness of JLU as a digital place to study and work.

Digital technologies are therefore of central importance for future-oriented development of the university. They permeate all areas, ensure seamless transitions, avoid non-digital disruptions and create holistic, variable solutions. However, digital transformation is not understood as an end in itself; it only makes sense if a real benefit and added value are created.

JLU is ready to meet the challenges of this extensive transformation process and supports the development towards new forms of academic teaching, learning, advising, and the accumulation of knowledge. The development and expansion of technical infrastructures fully support the possibility to work and study digitally (in selected degree programs), which can be used to create synergies, to support saving measures, and to contribute to securing the university's competitiveness. Learning, researching, and working with digital and virtual formats take place

independently of location and can not only create a better work–life balance but also offer internationalization, sustainability, equal opportunity and communication prospects.

At the same time, JLU also sees itself as a place of encounter and personal exchange. Hence, our goal is to continue to offer teaching, learning, and working on site but also to develop location-independent options and to realize an individual work and study design. In particular, this includes the possibility of designing purely digital study programs and expanding teaching formats in the digital field. In addition to integrating digital competencies into the students' curriculum, such a project also requires a transformation process that assists JLU members in digital transformation, uses the available expertise, and further develops this expertise.

With these joint measures, JLU is not only responding to regulatory requirements such as the Online Access Act (*Onlinezugangsgesetz, OZG*) but is proactively shaping the university's digital future with the aim of increasing its attractiveness as an employer and educational institution. On behalf of the entire executive board, I would like to thank the university and its members for their contribution to digital development. I would also like to thank all those responsible for their support in the conception and creation of this Digital Transformation Strategy.



Prof. Dr. Joybrato Mukherjee
President of Justus Liebig University Giessen



Figure 1. The Seltersberg campus is home to the majority of natural sciences.

RESEARCH

At JLU, digital transformation in research means taking a holistic view of its various aspects and topics and successfully developing them across the university and in the research profile areas. Good research infrastructures and the widespread use of innovative digital methods promote excellent research, increase its performance, and improve its quality.

By establishing a *Center for Applied Computer and Data Science*, JLU is laying the necessary groundwork for forward-looking, interdisciplinary research with a focus on computer science. The center consolidates the diverse, specialized computer science expertise available from various research branches and strengthens both exchange and collaboration among researchers. In addition to the expertise already available, the center will become the home institution for new researchers at JLU. By establishing five new chairs, JLU is creating new parameters for innovative ongoing developments in its focus, potential, and accent areas.

The transfer of established and innovative information technologies (IT) to areas outside of IT promotes digital transformation in research and strategically expands methodological competencies. By offering relevant courses, JLU creates a strong core of young scientists and academics in the long term, who in turn help meet the increasing demand for qualified specialists.

HF1 – GOAL 1. JLU ESTABLISHES AN INTERDEPARTMENTAL CENTER FOR APPLIED COMPUTER AND DATA SCIENCE.

- HF1 – SUBGOAL 1.1. JLU founds a *Center for Applied Computer and Data Science* to establish a central office for research and teaching in this field with high visibility on campus.
- HF1 – SUBGOAL 1.2. By attracting qualified professors, JLU gains expertise in *Applied Computer and Data Science* and reaches new target groups of students and researchers.
- HF1 – SUBGOAL 1.3. The center unites researchers from different JLU faculties in order to firmly establish an interdisciplinary perspective right from the start.

JLU recognizes the relevance of digital topics and methods for research in all disciplines. It encourages the establishment of digital research methods and subjects in all disciplines and focuses on digital approaches, especially in its focus, potential, and accent areas. When selecting professors, JLU takes care to build up expertise in digital matters. In this way, it ensures long-term innovation and relevance in all research areas, as well as competitiveness in research funding, thereby counteracting the exodus of expertise and professionals.

At the same time, JLU is fulfilling its obligation to develop solutions for dealing with current societal challenges. In line with Hessen's digital strategy¹ and its own sustainability strategy²,

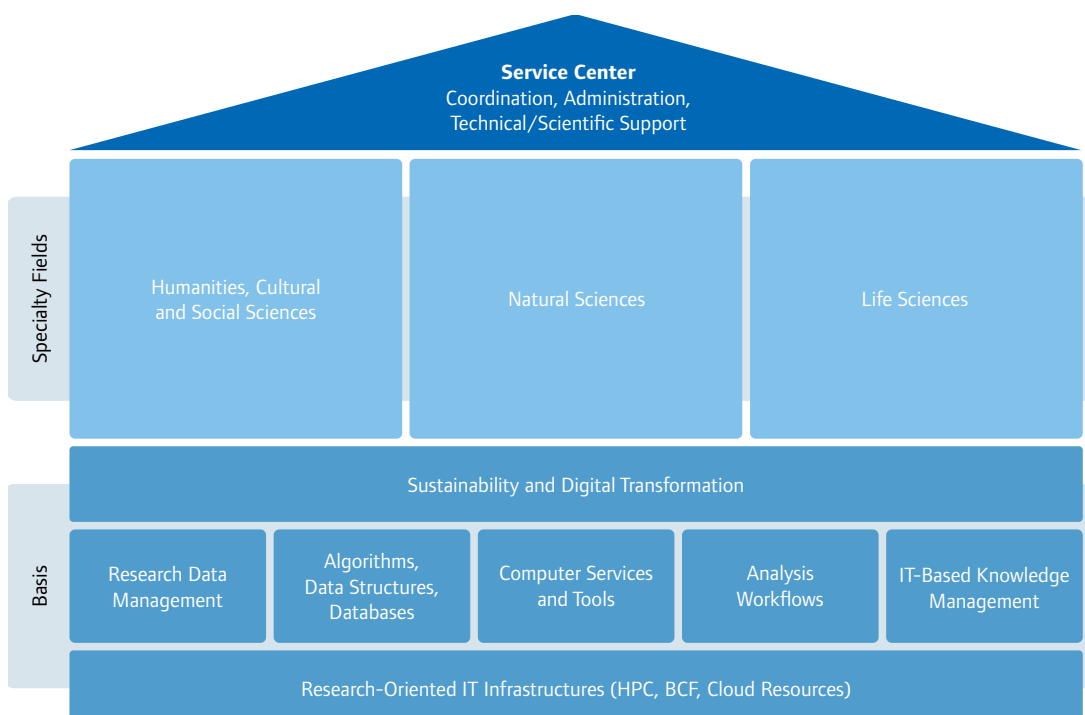


Figure 2: Structure of a *Center for Applied Computer and Data Science*.



Figure 3. The *DroughtSpotterXXL* system is unique in the world. It automatically records plant responses to drought stress at five-minute intervals throughout the year.



Figure 4. Battery research with large-scale equipment: Examining a cross-section through a battery sample in a focused ion beam scanning electron microscope.

the university in particular is strengthening the areas of *E-Health* and *Digital Agriculture* in medicine and agriculture, respectively.

Furthermore, JLU is working with other universities in Hessen to keep developing its infrastructure for processing and using big data. With the expansion of cloud and high-performance computing, it is laying the foundation for all researchers to be able to work with powerful technology at JLU as well. This will ensure long-term support for research approaches such as those in the fields of big data and AI.

In order to address the diverse developments of digital transformation in research, JLU is expanding its infrastructure. It is establishing standards for handling digital research data

HF1 – GOAL 2. JLU RESOLUTELY PROMOTES RESEARCH SKILLS IN THE AREA OF DIGITAL RESEARCH METHODS/SUBJECTS.

- HF1 – SUBGOAL 2.1. JLU expands digital AI-based research approaches in medicine, veterinary medicine, and psychology in the accent area *E-Health* and in the focus area *Cardiopulmonary System*.
- HF1 – SUBGOAL 2.2. JLU establishes a *Digital Agriculture* research focus with connections to the existing focus, potential, and accent areas. It thus pools its strengths in the field of agriculture and promotes innovation and connectivity of research projects in the long term.
- HF1 – SUBGOAL 2.3. In the humanities, cultural studies, and social sciences, JLU continues to increase its support for projects that integrate digital research topics and methods. When filling vacancies, it takes care to recruit qualified staff with experience in the field of digital research.
- HF1 – SUBGOAL 2.4. JLU promotes the development and expansion of research competencies and infrastructure in the field of cloud computing and high-performance computing.

HF1 – GOAL 3. JLU STRENGTHENS ITS DIGITAL RESEARCH INFRASTRUCTURE BY STRATEGICALLY ESTABLISHING AND EXPANDING CORRESPONDING SYSTEMS AND COMPETENCIES.

- HF1 – SUBGOAL 3.1. JLU establishes a structured procedure for handling research data in all departments.
- HF1 – SUBGOAL 3.2. JLU supports the transformation to open access publishing in the various academic cultures so that research results are freely available not only to scientists and students but also to society at large.
- HF1 – SUBGOAL 3.3. JLU uses a research information system accessible for all researchers to centralize information on research and publications and to enable it to be linked to administrative data.
- HF1 – SUBGOAL 3.4. JLU has an overall concept for systematically using core facilities, which enables centralized management by means of software and simplifies access to those facilities.

and supporting researchers with information and consulting services when dealing with open access. In doing so, it is expanding its cooperation with Hessian and national research data infrastructures (HeFDI and NFDI) and creating access to current subject-specific offerings for all researchers.

JLU's current research information system (FIS; *Forschungsinformationssystem*) addresses the need for digital research management and provides an overview of all existing research projects within the university. The system reduces administrative effort in answering political and civil inquiries and creates more space for research.

In addition to handling research data, JLU also makes it easier for its scientists to work with research equipment and facilities. At the Research Campus of Central Hessen, JLU is working together with Philipps University Marburg and the University of Applied Sciences to develop a software-based overview of large-scale research equipment at the three institutions. Moreover, JLU is developing central, digitally supported management of its core facilities in order to optimize their use and workload, and it is supplementing the joint digital equipment map of the Research Campus with its own 'small equipment'.



Figure 5. Programming is just one of many digital skills. These are taught not only in the field of computer science but also in all subjects.

TEACHING

JLU is aware of the importance of digital transformation in the social domain and therefore sees it as its educational mission to anchor this topic to a broad range of its courses. During their studies, students should be prepared in various ways for the digital requirements they will encounter in their professional careers and learn to classify and evaluate digital media.

When establishing new degree programs within the subject spectrum of computer and data sciences, JLU will focus on practical applications. New degree programs will complement existing teaching and research opportunities in various faculties and will be one more step towards implementing new digital opportunities for all students at JLU.³ A focus on practical computer science applications characterizes the recently established and planned study programs in this field (B.Sc. Data Science, M.Sc. Data Science, B.Sc. Applied Computer Science, and M.Sc. Data Analytics) and is embedded in a new *Center for Applied Computer and Data Science*. These study programs will thus meet societal and economic demands for specialists trained in this manner.

Furthermore, JLU will impart necessary digital skills to its students in all subjects so that as graduates they will be able to establish themselves in the digital workforce. The university will take into account the scientific requirement of imparting skills when dealing methodically with

HF2 – GOAL 1. JLU SYSTEMATICALLY EXPANDS ITS RANGE OF COURSES IN COMPUTER SCIENCE AND DIGITAL SKILLS.

- HF2 – SUBGOAL 1.1. JLU expands its range of courses in computer science, data science, and their applications.
- HF2 – SUBGOAL 1.2. In order to strengthen key digital competencies, an interdisciplinary course of study geared to all students will be established.

subject matter and research questions (digital literacy), thereby creating a new core of qualified early career staff for itself. In particular, current digital topics such as big data, machine learning, or artificial intelligence are included in this teaching, and the ability to critically evaluate the legal and ethical aspects of knowledge results is consciously trained in the process.⁴

The opportunities offered by digitally transforming the areas of studying and teaching go beyond just establishing new courses of study and teaching basic skills. The faculties will be supported in their plans to develop digital and hybrid formats that expand the range of courses offered, making content more interactive and sustainable and leading to an increase in the quality of teaching.⁵



Figure 6: Illustration of study fields with digital content, as well as digital and hybrid lecture formats.



Figure 7. In virtual reality projects, students receive the necessary theoretical knowledge and practical skills to create their own virtual teaching worlds.

In the faculties, digital formats can be seen as a way to take account of the increasing diversification of the student body and to optimally address existing audiences. Digital and hybrid programs can open up new opportunities for international or working students, as well as for students who want to combine their studies with family responsibilities (child and family care), or who are coping with chronic illnesses and disabilities. Digital teaching opportunities complement straightforward competency instruction with a self-directed learning experience, strengthen its practical orientation, and make room for new interactive formats.

Digital formats for interaction can complement on-site ones, and they provide an opportunity to include more practical, applied study content in international study programs. These digital teaching formats are an opportunity to foster international exchange and cultural diversity in teaching and to attract new students. Joint programs with partner universities help all students gain an intercultural experience. International experts can also digitally integrate their expertise into guest lectures.⁶

A prerequisite for the aforementioned expansion goals of digital teaching is consistent digital transformation of services for students, so that all documents from application to deregis-

HF2 – GOAL 2. JLU INCREASINGLY RELIES ON (PARTIALLY) DIGITAL STUDY AND TEACHING FORMATS.

- HF2 – SUBGOAL 2.1. JLU expands the range of fully digital degree programs and/or digital courses in existing degree programs to enable students to participate in a geographically flexible and easy-to-access manner.
- HF2 – SUBGOAL 2.2. JLU focuses on systematically opening its digital study programs to international (exchange) students.

HF2 – GOAL 3. JLU DIGITALLY TRANSFORMS ITS STUDENT ADMINISTRATION.

- HF2 – SUBGOAL 3.1. JLU digitally transforms the student life cycle to streamline processes that affect all students before, during, and after their studies.
- HF2 – SUBGOAL 3.2. Self-service options for students will gradually expand to enable simple and direct access to digital services and programs, thus making students' everyday study life easier.

tration are mapped in a digital student life cycle. This requirement is made partially binding through the Online Access Act (OZG), although it is primarily a strategic interest of JLU to provide integrated systems for all student processes. As part of the digital transformation of its administrative processes, JLU is implementing projects that enable data and documents to be stored and circulated on standardized platforms with uniform processes and access options.⁷

By establishing self-service options, students can manage their important documents (certificates, attestations, certificates of study, etc.) from any location and at any time. This helps them organize their day-to-day studies as they see fit. Social media resources are increasingly being integrated as a means of digital communication with students and are becoming more and more relevant as a supplement to existing communication formats.



Figure 8. The programs related to student administration are to be digitized and can be used from anywhere at any time.



Figure 9. IT security not only concerns hardware—like the infrastructure here in the HRZ—but is a significant topic for all JLU members and staff.

IT GOVERNANCE, IT INFRASTRUCTURE, AND ADMINISTRATION

JLU strives for an effective, efficient, and modern administration that supports science and encompasses all central and decentralized administrative and technical organizational units.

As a basis for digital transformation, JLU adopted the IT Governance and Security Strategy in 2021. According to this, JLU aims to continue developing and establishing a comprehensive security concept in accordance with ISO 27001 based on proven recommendations for IT baseline protection. The new position of information security officer (ISB, *Informationssicherheitsbeauftragte/r*) will be responsible for its conceptual planning. Implementing appropriate measures will have an impact on all internal processes and will affect all university departments and service dimensions. This will result in a constant need for measures to raise awareness and ongoing training for JLU members.

Successful digital change requires a holistic transformation of the entire university. Responsibility for driving this change lies with all organizational units. In particular, managers are called upon to actively support all employees in transitioning to a digital workplace. The heteroge-

HF3 – GOAL 1. DIGITAL DEVELOPMENT AT JLU WILL BE BASED ON POWERFUL IT GOVERNANCE AND IT SECURITY STRUCTURES THAT WILL BE CONTINUOUSLY ADAPTED TO NEW REQUIREMENTS.

- HF3 – SUBGOAL 1.1. JLU will strategically prepare and implement new IT governance structures. In doing so, it will make long-term resource decisions in the area of digital transformation.
- HF3 – SUBGOAL 1.2. JLU will place a special focus on aspects of information security (ISB chair, ISMS manager), thereby ensuring strategic ongoing development of IT security measures, etc.
- HF3 – SUBGOAL 1.3. JLU will strive for holistic transformation at all levels to ensure successful digital transformation. All employees should be involved in this process.

neous workforce requires an open culture of communication in which employees with their various skills and backgrounds are supported in a manner specific to each audience. Here, the interest groups play a central role, as does the personnel development department. The latter provides continuously enhanced, audience-oriented programs for developing digital skills.

These and other measures will support cultural change within the administration, which will become a modern, digitized service provider for the entire university. It is essential that all stakeholders be involved in the digital transformation.

In an increasingly dynamic environment, constant ongoing development of structures and processes is necessary. Digital transformation plays a prominent role in this context by enabling optimization of existing administrative processes. Project management and organizational development are directly linked to the digital transformation of JLU.

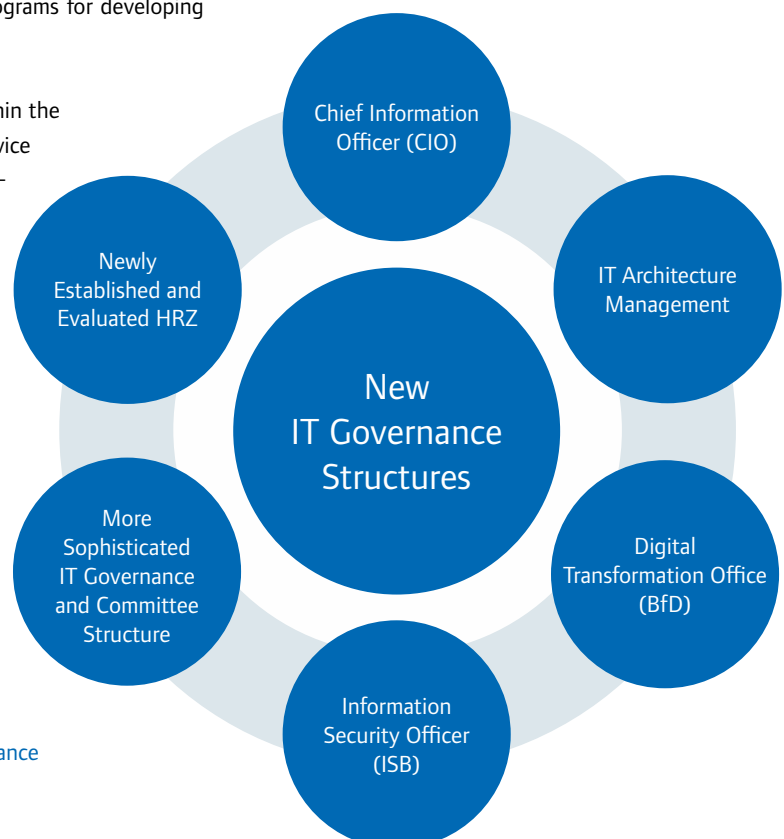


Figure 10: Illustration of the IT governance structures to be established.

Figure 11. Mobile work has a permanent place at JLU Giessen. Administrative systems and processes must therefore be securely usable from anywhere.



A primary benefit for JLU in the context of digital transformation arises in particular when digital applications reduce the administrative workload for JLU members as much as possible so that they can better concentrate on their core tasks. Standard processes should be designed with a focus on an intuitive user experience so that they can be completed quickly and efficiently.

The digital transformation process makes extensive use of the competencies available at JLU and actively involves all members. Digital systems are used across the university and in an integrative manner. This leads to high-quality systems in which organizational responsibilities and IT systems, as well as their interconnections, are defined in a binding manner. This creates a broader, more readily available and uniform basis of data, upon which well-founded decisions can be made.

New concepts are developed not only within the university but also together with other Hessian universities and beyond the state borders. Best practices are applied, and established concepts and solutions are adopted. This includes the consideration of whether systems should be operated jointly by several universities in a network or externally.

HF3 – GOAL 2. THE UNIVERSITY ADMINISTRATION WILL GO DIGITAL.

- HF3 – SUBGOAL 2.1. JLU will create the necessary conditions for digital transformation to relieve research and teaching of administrative burdens.
- HF3 – SUBGOAL 2.2. Intuitive and efficient digitized standard processes take the burden off users in order to accelerate processes and reduce manual work steps.
- HF3 – SUBGOAL 2.3. A consolidated, integrated range of applications and central data maintenance will relieve the burden on users and make data available across the board.



Figure 12. The president's lecture series traditionally takes place in the university auditorium. As a hybrid format, however, it can be accessed worldwide at the same time.

HF3 – GOAL 3. JLU WILL PROVIDE A HIGH-PERFORMANCE TECHNICAL INFRASTRUCTURE.

- HF3 – SUBGOAL 3.1. JLU will have rooms with high-performance technical equipment in the areas of research, teaching, and administration.
- HF3 – SUBGOAL 3.2. The technical IT infrastructure will be continuously expanded as needed.

Excellent and forward-looking research and teaching require a modern and sustainable infrastructure. JLU has set itself the goal of continuously expanding its digital infrastructure. In addition to equipping premises with basic equipment in line with requirements, this includes proactive operation of software and systems with relevant updates or even restrictions in the event of critical changes.

JLU sees great, innovative potential in the ongoing development of campus areas into a virtual and hybrid teaching, learning, and working space and is increasingly focusing on this. Working conditions can be designed flexibly and mobile working made possible, which increases the quality of research, teaching, and administration.⁹

IMPLEMENTATION AND ASSURANCE OF SUCCESS

New developments in digital transformation will allow JLU to break new ground. This includes, for example, closer cooperation with the other universities in Hessen. The high speed of technological change also demands that JLU react flexibly to innovations and changes. To meet this requirement, the Digital Transformation Strategy will be adapted to current developments at regular intervals and as needed.

Regardless of this, the objectives formulated in this strategy will be consistently pursued and implemented using the established scheme of structured quality management processes. This involves going through the following four phases

With the publication of this strategy document, the planning and target definition phase has been completed for the time being. The relevant departments and staff units implement and manage the strategy in close coordination with the executive board and continuously monitor its success. Management is responsible for actively driving forward the goals of the Digital Transformation Strategy in their areas. StW/BfD will annually review the achievement of objectives based on the indicators. Furthermore, as part of the ongoing development process, regular reviews are carried out to determine whether the course and objectives are still appropriate and take account of current challenges. Progress in implementing the Digital Transformation Strategy and new developments of importance to the university as a whole in the area of digital transformation will be presented once a year at a senate session.

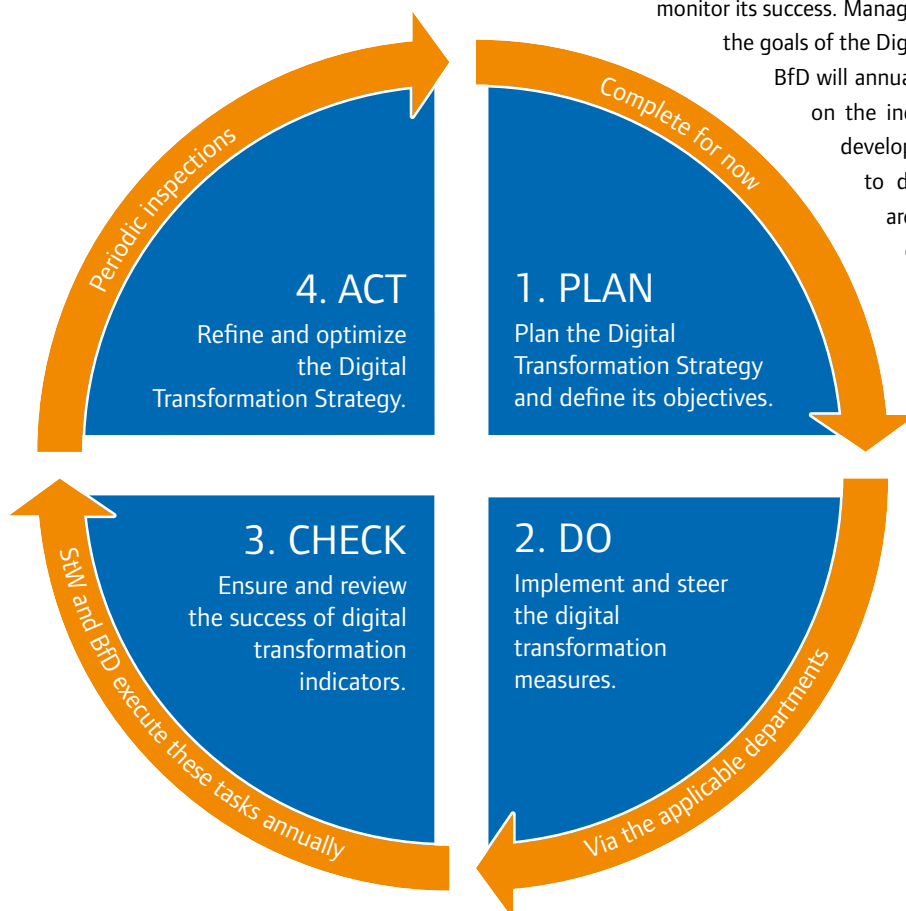


Figure 13: Structured quality management cycle for the Digital Transformation Strategy.

GOAL TABLES

RESEARCH ACTIVITIES



Figure 14: Insect anatomy via VR glasses: Giessen researchers explore the tobacco hawkmoth as a 3D model from the inside and discover previously unknown intestinal structures.

Photo: Fraunhofer IME / Kim Weigand

Goals	Subgoal/Action	Indicator
HF1 – Goal 1. JLU establishes an interdepartmental <i>Center for Applied Computer and Data Science</i> .	HF1 – Subgoal 1.1. JLU founds a <i>Center for Applied Computer and Data Science</i> to establish a central office for research and teaching in this field with high visibility on campus.	HF1 – Indicator 1.1.1. A <i>Center for Applied Computer and Data Science</i> will have adopted a charter by 2025.
	HF1 – Subgoal 1.2. By attracting qualified professors, JLU gains expertise in <i>Applied Computer and Data Science</i> and reaches new target groups of students and researchers.	HF1 – Indicator 1.2.1. JLU will have substantively integrated five chairs into a <i>Center for Applied Computer and Data Science</i> by 2026.
	HF1 – Subgoal 1.3. The center unites researchers from different JLU faculties in order to firmly establish an interdisciplinary perspective right from the start.	HF1 – Indicator 1.3.1. By 2030, the center will have brought together researchers and teachers from at least six faculties who are advancing projects in various areas of <i>Applied Computer and Data Science</i> .

RESEARCH ACTIVITIES

Goals	Subgoal/Action	Indicator
HF1 – Goal 2. JLU resolutely promotes research skills in the area of digital research methods/ subjects.	HF1 – Subgoal 2.1. JLU expands digital AI-based research approaches in medicine, veterinary medicine, and psychology in the accent area <i>E-Health</i> and in the focus area <i>Cardiopulmonary System</i> .	HF1 – Indicator 2.1.1. Additional faculties will be participating in the <i>E-Health</i> accent area by 2025 and will have initiated externally funded projects.
		HF1 – Indicator 2.1.2. JLU will have permanently established a new chair, <i>Predictive Deep Learning in Medicine and Healthcare</i> , by 2024 (funded with a Hessian.AI grant).
		HF1 – Indicator 2.1.3. JLU will have established a junior research group in the area of AI-based research methods by 2030.
	HF1 – Subgoal 2.2. JLU establishes a <i>Digital Agriculture</i> research focus with connections to the existing potential and accent areas. It thus pools its strengths in the field of agriculture and promotes innovation and connectivity of research projects in the long term.	HF1 – Indicator 2.2.1. A W2 chair on the topic of <i>Digital Agriculture</i> will have been established by 2027.
		HF1 – Indicator 2.2.2. By 2026, JLU will have accredited a new research-oriented degree program on information technology in agriculture and environmental science.
		HF1 – Indicator 2.2.3. By 2027, the <i>Droughtspotter XXL</i> system will have been equipped with digital infrastructure for fully automated experimentation and data acquisition.
	HF1 – Subgoal 2.3. In the humanities, cultural studies, and social sciences, JLU continues to increase its support for projects that integrate digital research topics and methods. When filling vacancies, it takes care to recruit qualified staff with experience in the field of digital research.	HF1 – Indicator 2.3.1. By 2028, there will be at least five externally funded projects with integrated digital research topics and/or methods, as well as one to two larger collaborative projects (LOEWE, DFG, VW, etc.).
		HF1 – Indicator 2.3.2. In the humanities, cultural studies, and social sciences, JLU will have appointed approximately one to two professors per faculty (FB 01-05) with a digital research connection or focus by 2030.

RESEARCH ACTIVITIES

Goals	Subgoal/Action	Indicator
	<p>HF1 – Subgoal 2.4. JLU promotes the development and expansion of research competencies and infrastructure in the field of cloud computing and high-performance computing.</p>	<p>HF1 – Indicator 2.4.1. By 2030, JLU will have developed a document on strategic cloud use at the university with a focus on universal applicability.</p>
		<p>HF1 – Indicator 2.4.2. JLU will have become a permanent de.NBI site by 2025 and in this context will have enabled cloud use for all research areas by 2030.</p>
		<p>HF1 – Indicator 2.4.3. JLU will have expanded the HPC core facility by 2025 and will ensure obsolete technology is overhauled as needed.</p>
		<p>HF1 – Indicator 2.4.4. JLU will continue to support collaborative work within HKHLR after 2024 by actively participating in the development of consulting and training services.</p>
<p>HF1 – Goal 3. JLU strengthens its digital research infrastructure by strategically establishing and expanding corresponding systems and competencies.</p>	<p>HF1 – Subgoal 3.1. JLU establishes a structured procedure for handling research data in all departments.</p>	<p>HF1 – Indicator 3.1.1. JLU continuously offers training, information, and consulting services in the area of research data management and, starting in 2023, will continue to develop these in exchange with Hessian-wide, national, and international consortia in line with demand (HeFDI, NFDI).</p>
		<p>HF1 – Indicator 3.1.2. JLU will offer diversified solutions for long-term archiving of digital assets and research data from 2025 onwards.</p>
		<p>HF1 – Indicator 3.1.3. JLU will have written and officially published local, discipline-specific research data guidelines by 2028.</p>
	<p>HF1 – Subgoal 3.2. JLU supports the transformation to open access publishing in the various academic</p>	<p>HF1 – Indicator 3.2.1. An advisory and information service on open access publishing will be an integral part of the</p>

RESEARCH ACTIVITIES

Goals	Subgoal/Action	Indicator
	cultures so that research results are freely available not only to scientists and students but also to society at large.	services offered to researchers in 2025.
		HF1 – Indicator 3.2.2. Electronic resource stewardship is optimized for utility-based portfolio management in 2025.
		HF1 – Indicator 3.2.3. Based on a prototype for monitoring publications generated at JLU and the funds spent on them, the university will have established a comprehensive procedure by 2028 that will enable the analysis and forecasting of the volume of publications and the resulting funding requirements.
	HF1 – Subgoal 3.3. JLU uses a research information system accessible for all researchers to centralize information on research and publications and to enable it to be linked to administrative data.	HF1 – Indicator 3.3.1. JLU will have fully implemented a research information system by 2025 and will use it to systematically monitor research.
		HF1 – Indicator 3.3.2. By 2030, JLU will make it possible to verify research data in its research information system and will network this with its research data repository.
	HF1 – Subgoal 3.4. JLU has an overall concept for systematically using core facilities, which enables centralized management by means of software and simplifies access to the those facilities.	HF1 – Indicator 3.4.1. By 2025, JLU will have established a digital equipment map in conjunction with FCMH, which they will use to map the spectrum of existing (large-scale) research equipment. Starting in 2026, JLU will track and optimize the utilization of its research equipment with the help of this equipment map.
		HF1 – Indicator 3.4.2. JLU will have established two new, interdepartmental core facilities to support cutting-edge research by 2025 that are based on a corresponding overall concept (including investment and utilization planning).

TEACHING ACTIVITIES



Figure 15: Digital services are an integral part of studying. Not only in teaching, but also in administration, they are accessible to JLU students at any time and from anywhere.

Photo: colourbox.de

Goals	Subgoal/Action	Indicator
HF2 – Goal 1. JLU systematically expands its range of courses in computer science and digital skills.	HF2 – Subgoal 1.1. JLU expands its range of courses in computer science, data science, and their applications.	HF2 – Indicator 1.1.1. JLU will have introduced the bachelor's program <i>Applied Computer Science</i> in the winter semester 2023/2024 with 15 first-year students.
		HF2 – Indicator 1.1.2. JLU will have introduced the computer science-oriented master's degrees in <i>Data Science</i> by 2023 and <i>Data Analytics</i> by 2024.
	HF2 – Subgoal 1.2. In order to strengthen key digital competencies, an interdisciplinary course of study geared to all students will be established.	HF2 – Indicator 1.2.1. By 2025, JLU will have established an additional digital literacy program as part of its overall <i>Liberal Arts & Sciences</i> program and will continue to develop it.

TEACHING ACTIVITIES

Goals	Subgoal/Action	Indicator
		<p>HF2 – Indicator 1.2.2. JLU will have increased the (digital) competencies of its teaching staff by 2024 through the Hessian-wide platform for digital teaching content (Qualification Compass). The HessenHub project will become permanent starting in 2025.</p>
<p>HF2 – Goal 2. JLU increasingly relies on (partially) digital study and teaching formats.</p>	<p>HF2 – Subgoal 2.1. JLU expands the range of fully digital degree programs and/or digital courses in existing degree programs to enable students to participate in a geographically flexible and easy-to-access manner.</p>	<p>HF2 – Indicator 2.1.1. By 2028, JLU will have successfully implemented three fully digital or 'digitized' degree programs. These degree programs will be at least at 90% capacity starting in 2030.</p>
		<p>HF2 – Indicator 2.1.2. By 2026, all faculties will have their own specialized concepts for hybrid and (partially) digital teaching.</p>
		<p>HF2 – Indicator 2.1.3. The proportion of hybrid and/or (partially) digital courses will be at least 10% across the university by 2027.</p>
		<p>HF2 – Indicator 2.1.4. Starting in 2023, JLU will continuously incentivize (ongoing) development of digital formats that expand the spectrum of courses offered and enhance the quality of teaching (e.g., with annual awards of an innovative teaching prize).</p>
	<p>HF2 – Subgoal 2.2. JLU focuses on systematically opening its digital study programs to international (exchange) students.</p>	<p>HF2 – Indicator 2.2.1. Every year, at least 250 exchange students use the Virtual International Program (VIP).</p>
		<p>HF2 – Indicator 2.2.2. JLU will have developed and implemented a concept for digital student exchange (VIP 2.0) by 2024 that is fit for the future.</p>
<p>HF2 – Goal 3. JLU digitally transforms its student administration.</p>	<p>HF2 – Subgoal 3.1. JLU digitally transforms the student life cycle to streamline processes that affect all students before, during, and after their studies.</p>	<p>HF2 – Indicator 3.1.1. JLU will have digitized the application and enrollment process by 2026.</p>

TEACHING ACTIVITIES

Goals	Subgoal/Action	Indicator
		<p>HF2 – Indicator 3.1.2. By 2027, JLU will have introduced electronic student records, within which student administration and examination procedures are digitized in accordance with requirements.</p>
	<p>HF2 – Subgoal 3.2. Self-service options for students will gradually expand to enable simple and direct access to digital services and programs, thus making students' everyday study life easier.</p>	<p>HF2 – Indicator 3.2.1. JLU will predominantly provide documents electronically to students by 2029. The independent, digital accessibility of documents for students (academic records, certificates, etc.) will be universally available.</p> <p>HF2 – Indicator 3.2.2. By 2029, students will be able to independently and digitally edit their personal data (health insurance, bank details, address changes, etc.).</p> <p>HF2 – Indicator 3.2.3. Starting in 2023, JLU will test the use of a campus app (myJLU) for students, which will consolidate various digital e-campus services into a mobile application.</p>

IT GOVERNANCE, IT INFRASTRUCTURE, AND ADMINISTRATION ACTIVITIES



Figure 16: Server rack in the HRZ at JLU: Digital administration requires a powerful infrastructure that is constantly being developed through good governance. Photo: Katrina Friese

Goals	Subgoal/Action	Indicator
<p>HF3 – Goal 1. Digital development at JLU will be based on powerful IT governance and IT security structures that will be continuously adapted to new requirements.</p>	<p>HF3 – Subgoal 1.1. JLU will strategically prepare and implement new IT governance structures. In doing so, it will make long-term resource decisions in the area of digital transformation.</p>	<p>HF3 – Indicator 1.1.1. By 2023, JLU will establish a W3 professor of IT Management, who is also the chief information officer (CIO) and head of the IT service center (HRZ; Hochschulrechenzentrum).</p>
		<p>HF3 – Indicator 1.1.2. JLU establishes IT architecture management by 2024.</p>
		<p>HF3 – Indicator 1.1.3. JLU will have enhanced IT governance and committee structures in place by 2025.</p>
		<p>HF3 – Indicator 1.1.4. JLU will permanently establish a Digital Transfor-</p>

IT GOVERNANCE, IT INFRASTRUCTURE, AND ADMINISTRATION ACTIVITIES

Goals	Subgoal/Action	Indicator
		<p>mation Office by 2023 for effective networking and continuous collaboration with the universities in Hessen.</p>
		<p>HF3 – Indicator 1.1.5. JLU will reorganize the HRZ by 2025 based on a full-scale evaluation.</p>
	<p>HF3 – Subgoal 1.2. JLU will place a special focus on aspects of information security (ISB chair, ISMS manager), thereby ensuring strategic ongoing development of IT security measures, etc.</p>	<p>HF3 – Indicator 1.2.1. JLU will establish a W2 chair for IT security in conjunction with the position of university-wide information security officer (ISB) by 2024. An ISMS manager will support this position.</p>
		<p>HF3 – Indicator 1.2.2. JLU will implement appropriate guidelines to increase the level of IT security by 2024 and regularly establish measures to increase the awareness of users towards IT security measures (awareness training, recommendations for action, etc.).</p>
	<p>HF3 – Subgoal 1.3. JLU will strive for holistic transformation at all levels to ensure successful digital transformation. All employees should be involved in this process.</p>	<p>HF3 – Indicator 1.3.1. JLU will have established a training program for employees with management tasks and project-related tasks, as well as for administrative employees, in the field of digital mindset (and digital leadership) by 2026.</p>
		<p>HF3 – Indicator 1.3.2. JLU will offer interdepartmental exchange formats on digital transformation and digital working methods at regular intervals (at least twice a year) by 2024.</p>
		<p>HF3 – Indicator 1.3.3. JLU will have developed a cloud strategy for the administration by 2026, reviewed it from a data protection perspective, and adopted it.</p>
		<p>HF3 – Indicator 1.3.4. JLU will roll out three collaboration tools university-wide by 2024 and make them available to all employees (e.g., for file sharing, collaborative work, and unified messaging).</p>

IT GOVERNANCE, IT INFRASTRUCTURE, AND ADMINISTRATION ACTIVITIES

Goals	Subgoal/Action	Indicator
HF3 – Goal 2. The university administration will go digital.	HF3 – Subgoal 2.1. JLU will create the necessary conditions for digital transformation to relieve research and teaching of administrative burdens.	HF3 – Indicator 2.1.1. JLU will build an identity and access management (IAM) system and put it into operation by 2025.
		HF3 – Indicator 2.1.2. JLU will gather requirements for data-based support of management and strategic decisions in the area of administration (data warehouse) and decide on implementing such a system by 2025.
		HF3 – Indicator 2.1.3. JLU will organize itself as a modern university administration by 2027 with the conversion to SAP S/4HANA, enabling access to all necessary services, digital structures, and processes at any time and from anywhere.
		HF3 – Indicator 2.1.4. By 2027, JLU will introduce a next-generation library management system that can easily integrate into a wide variety of teaching and research contexts via open interfaces.
		HF3 – Indicator 2.1.5. JLU will fundamentally redesign its website by 2029.
		HF3 – Indicator 2.1.6. By 2030, JLU will gradually establish a central document management system for electronic processing and at the same time optimize its processes.
	HF3 – Subgoal 2.2. Intuitive and efficient digitized standard processes take the burden off users in order to accelerate processes and reduce manual work steps.	HF3 – Indicator 2.2.1. JLU will establish an advanced training and continuing education program to develop digital skills by 2025 as part of its human resources development and will continue to develop the offerings in line with demand.
		HF3 – Indicator 2.2.2. Starting in 2026, JLU will automatically equip all new employees with all necessary digital access from day one.

IT GOVERNANCE, IT INFRASTRUCTURE, AND ADMINISTRATION ACTIVITIES

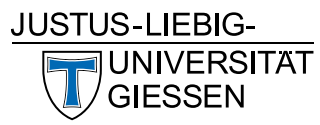
Goals	Subgoal/Action	Indicator
		<p>HF3 – Indicator 2.2.3. JLU will set up easy-to-use digital self-service options for all employees by 2024 (e.g. sick leave reports, room reservations, parking permits, etc.).</p>
	<p>HF3 – Subgoal 2.3. A consolidated, integrated range of applications and central data maintenance will relieve the burden on users and make data available across the board.</p>	<p>HF3 – Indicator 2.3.1. By 2027, JLU will have harmonized the IT systems used and networked them with each other, with single sign-on possible.</p>
		<p>HF3 – Indicator 2.3.2. By 2030, JLU will consolidate the digital systems in use to an amount that meets its needs.</p>
<p>HF3 – Goal 3. JLU will provide a high-performance technical infrastructure.</p>	<p>HF3 – Subgoal 3.1. JLU will have rooms with high-performance technical equipment in the areas of research, teaching, and administration.</p>	<p>HF3 – Indicator 3.1.1. JLU will have adopted a concept for minimum technical standards for rooms by 2024 in order to ensure performance.</p>
	<p>HF3 – Subgoal 3.2. The technical IT infrastructure will be continuously expanded as needed.</p>	<p>HF3 – Indicator 3.2.1. By 2030, JLU will equip the HRZ with the building infrastructure and staffing it needs to provide its services.</p>
		<p>HF3 – Indicator 3.2.2. JLU will regularly modernize its technical IT infrastructure to the extent necessary (approximately 20% of the existing hardware per year).</p>

LIST OF ABBREVIATIONS

AAA	International Office (<i>Akademisches Auslandsamt</i>)
BCF	Bioinformatics Core Facility
BfC	Equal Opportunity Office (<i>Büro für Chancengleichheit</i>)
BfD	Digital Transformation Office (<i>Büro für Digitalisierung</i>)
BfN	Sustainability Office (<i>Büro für Nachhaltigkeit</i>)
CIO	chief information officer
DPH	Hessian Academic Digital Pact (<i>Digitalpakt Hessen</i>)
de.NBI	German Network for Bioinformatics Infrastructure (<i>Deutsches Netzwerk für Bioinformatik-Infrastruktur</i>)
FCMH	Research Campus of Central Hessen (<i>Forschungscampus Mittelhessen</i>)
HeFDI	DPH project: Hessian Research Data Infrastructures (<i>Hessische Forschungsdateninfrastrukturen</i>)
HessenHub	DPH project: HessenHub. Digitally Supported Teaching and Learning
HF	activity (<i>Handlungsfeld</i>)
HKHLR	DPH project: Competence Center for High-Performance Computing in Hessen (<i>Hessisches Kompetenzzentrum Hochleistungsrechnen</i>)
HPC	high-performance computing
HRZ	IT Service Center (<i>Hochschulrechenzentrum</i>)
IAM	identity and access management system
ISB	information security officer (<i>Informationssicherheitsbeauftragte/r</i>)
ISMS	information security management system
KB	Chancellor's Office (<i>Kanzlerinbüro</i>)
NFDI	National Research Data Infrastructures (<i>Nationale Forschungsdateninfrastrukturen</i>)
PB	President's Office (<i>Präsidialbüro</i>)
S/4HANA	new generation of SAP applications
StF	Staff Office for Research and Graduate Studies (<i>Stabsabteilung Forschung und Förderung des wissenschaftlichen Nachwuchses</i>)
StL	Staff Office for Studies, Teaching, Continuing Education, Quality Assurance (<i>Stabsabteilung Studium, Lehre, Weiterbildung, Qualitätssicherung</i>)
StP	Staff Office for Planning and Development (<i>Stabsabteilung Planung und Entwicklung</i>)
StW	Staff Office for Academic Infrastructure (<i>Stabsabteilung für Wissenschaftliche Infrastruktur</i>)
UB	university library (<i>Universitätsbibliothek</i>)
VIP	Virtual International Program
WTT	Knowledge and Technology Transfer (<i>Wissens- und Technologietransfer</i>)

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- ² <https://www.uni-giessen.de/de/org/admin/stab/bfn/nachhaltigkeit/strategie> (last accessed on June 28, 2023).
- ³ *Studium und Lehre an der JLU: Strategie 2030*, p. 11.
- ⁴ *Studium und Lehre an der JLU: Strategie 2030*, pp. 24-25 (B.A./B.Sc. Liberal Arts & Sciences).
- ⁵ *Studium und Lehre an der JLU: Strategie 2030*, pp. 11; 26-27.
- ⁶ *Studium und Lehre an der JLU: Strategie 2030*, pp. 12; 25-26.
- ⁷ *Studium und Lehre an der JLU: Strategie 2030*, pp. 37.
- ⁸ Cf. *Studium und Lehre an der JLU: Strategie 2030*, pp. 36.



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