German University of Digital Science

1 SCIENTIFIC REPORT

Vision of a University of the Digital Tomorrow – The German University of Digital Science

March 31, 2024

Prof. Dr. Mike Friedrichsen
German University of Digital Science

Prof. Dr. Christoph Meinel
German University of Digital Science

german-uds.de

Mike Friedrichsen | Christoph Meinel

Vision of a University of the Digital Tomorrow – the German University of Digital Science

German University of Digital Science

Contents

Preface

The **digital change**, commonly called digital transformation is driven by the ever-increasing development and spread of digital technologies is omnipresent in all areas of our society. It is changing the way we communicate, live, learn, work and look at the world at an unprecedented speed and with unprecedented force. And no area of life is spared from this change, commonly referred to as digital transformation. The digital transformation is reflected scientifically in the disciplines of **digital science**, which focus on the technologies, processes and forces of change of digitalization and the changes caused by the digital transformation in the individual areas of our society. Digital science is both philosophy about the penetration, networking and primacy of digital media and technologies and their intelligent nodes in human society as well as the generation of necessary knowledge about their technical development parameters, steps and possibilities. Digital science thus offers an important area for reflection both on technical developments driven by digital technologies and on individual, collective, social and political decisions, and generates secure knowledge about digital space as a technical, social, economic and political medium and its inherent laws, as well as about people's actions in the new world expanded to include digital space.

In all areas of the economy and society, the digital transformation is fundamentally changing the possibilities and requirements for coping with tasks in professional, social and private life. In all areas of the economy and society, we are therefore faced with the major **challenge of shaping this new world** in a way that is worth living and loving according to our liberal ideas and values. The education system has a central role to play in this. It must enable people to deal with this change and empower them to cope with the demands of digitalization in their professional, social and private lives, to move independently and self-determinedly in this new world and to shape it according to the values of our liberal order.

The *German University of Digital Science* emerges as a necessary institution in the face of the rapidly evolving digital landscape, addressing both the current and future demands of the digital economy. Its establishment responds to several critical needs and trends in education, technology, and the workforce.

1. The German University of Digital Science

In order to master this challenge, the education system itself must change. In light of the new opportunities offered by digital technologies and ways of thinking and the qualifications required for successful digital change, the university must be rethought. With the ***German University of Digital Science***, we want to present a fully digital University of the Digital Tomorrow with highly innovative structures in research and teaching. It will further develop the concept of MOOC platforms (MOOC - Massive Open Online Courses), such as Coursera, Udacity, openHPI or KI Campus, on which learners can complete interactive online courses and graduate with a certificate. The number of enrolments on the aforementioned MOOC platforms, which is in the three-digit million range, shows the need and demand for such modern digital continuing education formats, especially in the field of new digital technologies. The *German University of Digital Science* will offer entire study programs completely digitally on the basis of such an online MOOC platform. It is thus taking up the challenge of breaking new ground in university education and, in particular in the digital field, preparing and offering urgently needed knowledge worldwide, with low thresholds and high quality for interested parties from all over the world.

The *German University of Digital Science* not only aims to promote digital transformation in higher education, but also to make a significant contribution to the **worldwide democratization of knowledge in the field of digital technologies and their applications**, to offer prospective students from the Global South an opportunity for education in this field, which is so important for their personal development as well as for the development of their countries, even with limited financial resources, and to enable people from all countries to creatively master and shape the digital transformation in a humane way.

With the founding of the *German University of Digital Science*, we are taking the next step and creating an institution that

- operates fully digitally,
- makes high-quality university education on digital change accessible anywhere, at any time and in a scalable manner,
- redefines global, interdisciplinary research,
- makes student-centered, challenge-based learning the premise of teaching using innovative digital teaching and learning formats

and that enables people around the globe to shape the new digital world as highly trained digitalization experts – responsibly and self-determined.

The *German University of Digital Science* is designed as a **learning organization**. This is the only way to master the challenges of a fully digitalized university, be it in teaching, in the development and testing of new teaching formats, in research organization with research teams distributed around the world or in staff management and training.

Not only research and teaching, but also the daily work and the entire organizational culture of the *German University of Digital Science* are based on the proven **principles of Design Thinking** and are aligned accordingly. Based on the experience of the Hasso Plattner Institute of Design at Stanford University and the School of Design Thinking at HPI in Potsdam[1] and backed by the scientific findings from several HPI-Stanford research programs, these principles are ideally suited to equip students and researchers with a mindset open to innovation, which, coupled with a high-quality education, enables them to master and shape the challenges of the digital transformation of our society and our economy in particular and thus achieve the desired educational goal.

We see the *German University of Digital Science* as a supplement to the existing university system. On the one hand, we want to offer young people, the so-called "digital natives", **a completely new type of basic scientific education** after general schooling **in the form of a virtual course of study with a virtual campus**, where they can learn to develop their personality and network with like-minded people, just as they would in a face-to-face course of study. In this way, young people are prepared in the best possible and continuous way for the challenges of digitalization in their future working lives during the course of their studies[2].

In addition, there is a growing global demand for scalable yet **high-quality university education in the field of lifelong learning** for professionals and people who want to develop or reorient themselves on the job market. The fully digital study programs offered by the German University of Digital Science are also of interest to **prospective students from the Global South**, for whom studying locally in Europe is unaffordable The *German University of Digital Science* thus makes a very valuable contribution to development aid in the field of digitization, which is so important for all countries and societies, and to improved and simplified access to education for all.

Here are summarized the primary reasons for its necessity and the main topics it should focus on for successful development:

Bridging the Skills Gap: There's a growing demand for digital skills across all sectors. The *German University of Digital Science* can play a pivotal role in equipping students with the advanced digital competencies required to thrive in the modern workforce, thus bridging the gap between education and industry needs.

Driving Innovation and Research: As digital technologies continue to evolve, there's a need for cutting-edge research and innovation to sustain growth and competitiveness. The *German University of Digital Science* can

---

[1] Meinel, Krohn (Ed.): Design Thinking in Education – Innovation Can Be Learning, Springer, 2022
[2] Plattner, Meinel, Leifer: Design Thinking Research, Understanding Innovation, Springer, Vol. 1- 14

become a hub for pioneering research in digital science, fostering innovation that could shape future technologies.

Supporting Digital Transformation: Many sectors are undergoing digital transformation. A dedicated university like the *German University of Digital Science* can support this shift by producing graduates who are not only adept at using digital technologies but who can also lead and manage digital transformation initiatives within organizations.

Enhancing Global Competitiveness: In the global economy, nations compete on knowledge and innovation. By advancing education and research in digital science, the *German University of Digital Science* can enhance its competitiveness on the world stage, driving economic growth and technological leadership.

2. German University of Digital Science - Studies and Teaching

The design of digital teaching and the courses offered by the *German University of Digital Science* are based on the founding team's many years of experience in the field of digital education and are guided by the principles of Design Thinking, an innovative method for creative idea development and problem solving developed at Stanford University and now used worldwide in studies and teaching.

2.1 Online Learning and Teaching

The great global demand for online education is reflected in the interactive MOOC learning platforms, such as Coursera, Udacity or openHPI, the first European MOOC platform, which was developed, set up, operated and researched over many years by one of the two university founders as part of extensive research activities and projects. Learners can continue their education on digital topics in an international and interactive learning community with between 2,000 and 15,000 participants per online course. Their learning success is confirmed by certificates. The high demand - together with its sister platforms, openHPI alone records over 16 million course registrations - shows the need for such further training, which has also been increasingly documented in the development of the international market in recent years as a result of the coronavirus crisis. Learners also have a great interest in seeing their self-directed acquisition of knowledge and skills rewarded with an academic degree, over and above participation in individual MOOCs and the acquisition of individual course certificates. Such digital courses are to be offered by the *German University of Digital Science* and made available via its Open EdX-based learning platform ***German-UDS.academy***.

In contrast to traditional university teaching, the *German University of Digital Science* has an **"online first" approach** to course design. All teaching

formats and forms of teaching have already been tested by the founding team for several years on the online teaching platform openHPI[3]. In the study programs of the *German University of Digital Science*, the role of face-to-face courses is taken over by asynchronous and synchronous online courses.

In the study programs of the *German University of Digital Science*, different teaching formats[4] and forms of teaching are used to best achieve the desired educational goal. Different digital teaching elements are usually combined within each module. The corresponding analog concept is familiar from traditional university structures.

For example, the digital presentation of lecture modules generally consists of the **asynchronous teaching format** of "**Knowledge Essentials**", in which teaching content (lectures/lectures) is presented in the form of sequences of many short video clips. Knowledge is acquired through self-directed, independent learning in virtual exchange with fellow students. The asynchronous learning process is didactically guided, for example by offering self-tests and interactive exercises after each video and by checking knowledge acquisition via homework and exams to be completed.

The **interaction between students**, the promotion of cross-topic "deep learning" or the reflection of what has been learned takes place through different **synchronous course formats** (learning rooms, fish bowls, live demos, etc.) and tasks (challenges) designed according to the didactic requirements. These can be broadly classified as Experiences, DeepDives and Mastery formats.

"**Experiences**" differ from Knowledge Essentials in their in-depth nature. Here, students work on content independently or in groups and explore it in greater depth. In Experiences, both the learning processes and the learning experiences are planned and shaped by the teachers. This format can also be scaled very well and has already been offered in a similar form on the openHPI platform, so that existing experience can also be drawn on here. The synchronicity or asynchronicity of the format is primarily determined by whether the students work alone or in groups.

"**DeepDives**" are the course format with the highest proportion of independent and self-determined study work. In contrast to other course formats, they are characterized by the fact that students work on and learn new content independently of a teacher. In most cases, students are given a specific time frame in which to work on and solve a set task or in which they find and complete a task themselves in a specific subject area. Specifically, DeepDives provide a framework for project work of varying size and scope. The project work is primarily only supervised by the teachers in terms of

---

[3] https://openHPI.de/ is the online learning platform of the Hasso Plattner Institute (HPI) in Potsdam, Germany. Since more the 10 years, professors of the HPI offer Massive Open Online Courses (MOOCs) on openHPI.
[4] Köhler, Staubitz, Meinel: Innovative Digital Educational Formats. Preprint 2 of the German University of Digital Science, 2024

its organizational structure. Students are responsible for finding their own topics and developing their own results, preferably in interaction with fellow students.

The "**Mastery Format**" is a very open form of course that can be designed in very different ways in terms of content. It is based on the intention of teaching certain skills in depth. The *German University of Digital Science* will start with the two Mastery: **Coding** and **Mastery: Social and Future Skills**. Both are very different from the usual courses of the degree programs in terms of their teaching concept and content and are geared towards teaching coding skills and acquiring professional skills.

Finally, the globally distributed students are prepared for the requirements of digital studies in the best possible way with a **mentoring program**, familiarized with the various digital teaching formats and then supported in their digital studies.

2.2 Interactive Online Learning Platform *German-UDS.academy*

The *German University of Digital Science* relies on the opensource software **Open edX**, which was developed over many years by MIT and Harvard University, for its study programs and works closely with other experienced providers of this system.

Open edX is supplemented by a student and campus management system, **Full Fabric**, which is already being used very successfully at many international universities, and a range of peripheral ed-tech tools, a considerable proportion of which have been developed by the founders and continuously investigated via the MOOC platform openHPI.de as part of extensive research activities and projects.

The *German University of Digital Science Service* GmbH, which is located in the **CloudHouse** at Marlene-Dietrich-Allee 14 in Potsdam, is responsible for the operation, further development, maintenance and marketing of the ed-tech tools developed as part of the research. The company contributes its many years of experience in operating the MOOC platforms and peripheral edtech tools mentioned above.

2.3 Immersive Education at German UDS

The idea of integrating the **Metaverse** into the *German University of Digital Science* represents a groundbreaking approach to higher education, particularly in the field of digital science. By leveraging the Metaverse, the university can offer an **immersive, interactive, and highly engaging learning** environment that transcends traditional online education platforms. This virtual university in the Metaverse would enable students to explore digital

sciences in a deeply immersive way, fostering innovation, collaboration, and a hands-on learning experience that mirrors real-world scenarios.

A fully realized **3D virtual campus** that students can navigate as avatars, providing a sense of presence and community. This includes lecture halls, labs, libraries, and common areas where students and faculty can interact as if they were physically present.

Specialized virtual environments for different areas of digital science, such as labs (AI, cybersecurity), software development workshops, and digital design studios. These environments allow students to engage with practical exercises using virtual tools and technologies, simulating real-world challenges and projects.

Modules designed with interactive elements that leverage the Metaverse's capabilities, such as **gamification**, **interactive simulations**, and **virtual reality (VR) experiences**. This approach not only enhances learning outcomes but also keeps students engaged and motivated.

Dedicated virtual spaces for group work and collaboration, enabling students from around the globe to come together to work on projects, share ideas, and innovate, mirroring the collaborative nature of the tech industry.

Virtual events, such as career fairs, networking mixers, and guest lectures, where students can interact with industry leaders, alumni, and peers in a dynamic virtual setting. These events offer valuable opportunities for professional development and community building.

AI mentors and advisors that provide personalized guidance, support, and feedback to students throughout their academic journey. This could include academic advising, career counseling, and personal development coaching.

Design considerations to ensure the Metaverse is accessible to all students, including those with disabilities. This could involve adaptive interfaces, translation services, and support for various input methods.

A strong emphasis on data privacy, security, and ethical guidelines to protect students and faculty within the Metaverse, ensuring a safe and respectful learning environment.

Integrating the Metaverse into the *German University of Digital Science* would not only revolutionize how digital science education is delivered but also prepare students for the future of technology and work. By embracing this virtual university concept, students can benefit from an unparalleled level of **immersion, interactivity, and connectivity**, setting a new standard for digital and technological education.

2.4 Target Groups

The demand for scalable, yet high-quality university education in the field of **lifelong learning** is growing rapidly for an extended target group. These

are primarily professionals and people who want to develop or reorient themselves on the labor market. They need to juggle further education, work, private and family life and are unable to find the time to study at a local university with synchronous learning formats that are typically not available at their place of residence.

The fully digital study programs offered at the *German University of Digital Science* are also of interest to a second very large group of people, namely prospective **students from the Global South**, for whom studying here in Europe or in the USA is unaffordable. For them, a degree from a German university in the degree programs offered on digital topics that are in high demand on the job market opens up very attractive prospects for well-paid jobs in the field of digital transformation at home in their home country or internationally (e.g. here in Germany). The *German University of Digital Science* in particular and Germany in general thus make a very valuable contribution to development aid in the field of digitalization, which is so important for all countries and societies.[5]

The *German University of Digital Science*, envisioned as a University of the Digital Tomorrow, aims to be at the forefront of education, innovation, and research in the digital domain. This institution is designed to serve as a beacon for those looking to thrive in the rapidly evolving digital landscape, fostering a **culture of innovation**, **critical thinking**, and **practical problem-solving**. The main target groups for this kind of university include:

- Individuals aspiring to become software developers, data scientists, AI specialists, and cybersecurity experts. This group is primarily composed of high school graduates and young adults with a strong interest in pursuing careers in the digital science and emerging technologies.
- Current professionals in the IT and digital sectors looking to upskill or reskill to stay relevant in the face of technological advancements. This includes individuals in non-technical roles seeking to transition into digital careers or tech professionals aiming to specialize further or update their skills in areas like machine learning or cloud computing.
- Individuals interested in launching tech start-ups or innovating within the digital space. This group seeks knowledge on how to leverage digital technologies to create new products, services, and business models, as well as insights into the entrepreneurial ecosystem.
- Scholars and researchers focusing on cutting-edge digital science research, including computational theories, digital ethics, and the societal impacts of technology. This group is interested in contributing to the body of knowledge in digital science, collaborating on interdisciplinary projects, and engaging in innovative research that could shape the future of technology.

---

[5] Friedrichsen: Change of society by globalization, Routledge, London, 2019

- Students from around the globe who are attracted by the prospect of studying at a leading institution in Germany, known for its strong engineering and technology education heritage. International students enrich the academic environment with diverse perspectives and contribute to the global network of digital science professionals.
- Individuals involved in crafting digital policy, regulation, and governance. This group seeks to understand the implications of digital technologies on society, economy, and governance to make informed decisions that guide the development of a digital society.
- A broader audience with a curiosity about digital technologies and their impact on everyday life. This includes educators, parents, and retirees who wish to stay informed about digital advancements and acquire basic to advanced digital literacy skills.
- Businesses and organizations looking to collaborate on research, access cutting-edge innovations, and recruit top talent. They are interested in partnerships that can drive digital transformation and innovation within their operations.

The vision of the *German University of Digital Science* as a University of the Digital Tomorrow is to cater to these diverse target groups, **offering a wide range of programs, research opportunities, and collaborative projects**. By doing so, it aims to equip individuals and organizations with the knowledge, skills, and insights needed to navigate and shape the future digital landscape.

2.5 Study Programs and Courses

The content of all **degree programs and continuing education courses** offered by the *German University of Digital Science* will focus on preparing students from all over the world for the changes associated with digitalization and the use of AI in the individual application subjects and areas in science, business and society and enabling them to develop the potential that always accompanies this on the basis of excellent specialist knowledge and a high level of creativity.

The study programs of the *German University of Digital Science* are designed along the research profile of the university in such a way that graduates are able to understand digital technologies so deeply that they can **become shapers of digital transformation** in their organizations - be it in business, politics or NGOs - or in their private lifes. As "digital experts", they will be able to move independently and self-determinedly in the digital world after their studies and help shape it.

Students and researchers should be empowered to accept, master and shape the immense challenges of the digital transformation of our society and our economy with an innovation-oriented mindset characterized by **design thinking** and paired with a high-quality education, and thus achieve the desired educational goal of the *German University of Digital Science*.

The **range of subjects** at the *German University of Digital Science* will be successively developed and expanded into various fields of application that are particularly affected by digital change and each with reference to the power of change of digital transformation in all areas of our society, e.g., with study programs in the areas of

- **Digital Change**, e.g.,
  - Digital transformation, Digital Leadership, …
- **Digital Technologies**, e.g.,
  - Applied AI, Cybersecurity, Data Engineering, Smart Data Analytics,
- **Medicine and Health Sciences**, e.g:
  - Digital Health, Public Health, Digital Pharmacy, Cyber Psychology …
- **Economic Sciences**, e.g.,
  - Smart Production, Smart Factory, …
- **Media Sciences**, e.g.,
  - Digital Media & Communication, Smart Digital Media Data, …
- **Administrative Sciences**, e.g.,
  - Digital Governance, AI Governance, Sustainability…
- **Mobility Research**, e.g.,
  - Digital Mobility, Smart Traffic, …
- **Geo- and Climate Sciences**, e.g.,
  - Clean IT, Smart Energy, …

whereby the demand and requirements of the job market will play a role in the development and provision of further degree courses.

In order to enable graduates of the *German University of Digital Science*'s degree programs to work successfully, competently and creatively and to master the challenges facing our society in the humane digitalization of our world, **an interdisciplinary approach** is required **in all study programs**. This interdisciplinary approach also makes it easier to gradually expand the range of subjects and the range of study programs in various domains, always with reference to the transformative power of digital change.

The **practical relevance** of the courses offered by *the German University of Digital Science* is promoted by involving lecturers from the business world in addition to the professors and lecturers working at the university, with the aim of providing students with a realistic and practical education and motivating them to study in depth.

All degree courses are designed in such a way that **student-centered, challenge-based learning** using innovative digital teaching and learning formats is at the heart of teaching.

2.6 Professional Skills and Design Thinking

Students at the *German University of Digital Science* should not only receive a first-class education in their respective field of study, but also be optimally prepared for their work and a successful career in the field of digital transformation in business, science or their own start-up. Courses in this area are firmly anchored in the curricula under the heading "**Professional Skills**", which we consider to be core competencies that make a decisive difference in studies and jobs and are indispensable for shaping the digital society.[6]

Courses in the area of professional skills are designed to develop and promote students' innovative ability, problem-solving skills and entrepreneurial thinking and action. Furthermore, the **ability to work in a team**, **social skills, curiosity and flexibility** are to be promoted and **ethical awareness and basic legal understanding** are to be trained, i.e., essential skills for understanding and shaping the use of information technology in business and society.

Design thinking plays a particularly important role here as a proven approach and mindset that can be used to drive transformation processes in society and the economy. Originally developed as an innovation method for products and services at the HPI for Design at Stanford University and now taught all over the world, Design Thinking promotes team intelligence and the ability to collaborate as the basis for new learning and working models.

In addition, the individual degree programs offer a comprehensive range of "**Student Services**", e.g., Career Service/Fairs, Alumni/Expert Talks, "Stammtisch" formats (online/offline), placement of practical projects or internships.

2.7 Continuing Professional Development and Lifelong Learning

In addition to the academic study programs, courses at the *German University of Digital Science* are offered individually or in thematically bundled blocks for **continuing professional development and lifelong learning**. In this way, students who wish to further their education in a specific area or topic of digitalization can complete individual courses with **Micro-Credentials** and **Micro-Degrees** and earn the corresponding ECTS points independently of the academic study programs. If you apply for one of the degree programs at a later date, these can be submitted and recognized as credits.

---

[6] Friedrichsen/Wersig (ed): Digital Competences, Springer, 2021

2.8 Organization of the Study Programs

Permanent access to information about and progress in their studies, partial degrees achieved, work status in ongoing courses, etc. serves as an instrument to support students in the independent organization of their fully digitalized studies. Thanks to the fully digitized study programs offered by the *German University of Digital Science*, all the data required for such a service is available and can be made available to students to help them plan their studies.

The degree programs are structured into **study quarters** in order to **ensure the frequency of courses** offered in a **digitally largely self-organized degree program**. In all study programs, all courses are offered twice a year in order to take into account the desire of digital learners for an individually plannable course of study. This means that interested students can start their studies on April 1 (2nd quarter) and October 1 (4th quarter) of each year. Asynchronous and synchronous online courses take over the role of face-to-face courses in the degree programs at the *German University of Digital Science*. The interactive, synchronous courses that are important for the degree program are structured flexibly based on time zones, for example.

A central aspect of **quality assurance in online teaching** is ensuring reliability in the completion of courses and the formation of stable study groups in the individual digital courses to promote learning, especially for discussions, reflections, group and project work. We work with a credit point system for all degree programs. Every student receives a **credit point account** with one and a half times the number of points when they start a degree course that requires a certain number of ECTS points. Upon enrolment in a course, as many points are irrevocably deducted from this credit point account as the number of ECTS points that can be achieved upon successful completion of the course. If the credit point account is empty before the course is completed, the student will be de-registered.

In addition, **learning analytics** and **online evaluations** of all courses and study programs by students and regular graduate surveys enable quality assurance and the further development of programs and courses. Evaluation results are regularly discussed with teaching staff, university management, the Vice President for Studies and Teaching, the Study Commission and Quality Management, changes are implemented accordingly and feedback is given to students.

2.9 Start of Teaching Operations

Following its admission, the *German University of Digital Science* will **start teaching with six degree programs**: From October 2024, a study program in English geared towards excellent ranking results will be offered to obtain a **Master of Science in "Digital Leadership"**. This university program is

aimed at lifelong learners and talents from all over the world who – equipped with a deep understanding of digital technologies and their potential for industry-changing business models – act as pioneers in their organizations at the forefront of digital change.

The **Master of Science in** "**Applied AI**" is to be launched as the second Master's degree program. It is aimed at lifelong learners and talents from all over the world who - equipped with a deep understanding of the current methods and models of artificial intelligence and their potential for industry-changing business models - can initiate and shape transformation processes for the use of artificial intelligence in their organizations.

The **Master of Science in "Advanced Digital Reality"** is intended for the target group that is interested in comprehensive education in emerging digital technologies, preparing graduates for successful careers in various sectors. Graduates of this program have unique and diverse career prospects in a rapidly growing field. The Master's program prepares students to become leading experts in the field of digital realities and actively shape the future of these technologies.

The **Master of Science in "Cybersecurity"** is aimed to lifelong learners to take on management and leadership positions, particularly in areas where the development, maintenance and operation of complex security systems play a key role. As security engineers, security analysts, privacy officers, chief security officers or IT security entrepreneurs, IT security professionals identify and address weaknesses, vulnerabilities and security gaps in IT systems. Graduates of this Master program are expected to work across all industries, primarily in large organizations, but also in academia.

The two **MBA programs in "Digital Transformation" and "Digital Technologies"** will also be offered from October 2024. The program can be completed by participants, especially professionals with at least five years of professional experience, within 12 months (equivalent to four quarters) up to three years, depending on the available learning time.

In order to live up to the *German University of Digital Science*'s claim to democratize university education, a **Bachelor of Science in "Digital World"** will also be offered from 2025. The degree program combines the teaching of the basics of digital technologies and programming, business knowledge and future/professional skills.

3. German University of Digital Science - Research

From the very beginning, the *German University of Digital Science* has strived to be an **international leader not only in digital teaching, but also in the field of research** focusing on digital science topics. This applies to all subject areas associated with the digital transformation in science, business and society driven by digital technologies and current developments in artificial intelligence.

The new university offers an **inspiring and cosmopolitan university framework for active research in all contexts of digitalization** in order to be able to shape this new digital world in a **self-determined and responsible, active and creative manner in accordance with our values**. The topics to be addressed in the research of the *German University of Digital Science* range from the investigation and further development of digital technologies and data sciences to research into the potential offered by digital technologies and artificial intelligence in the various areas of human activity in society, business, communication, health, education, sustainability, individual life, etc., to the active shaping of digital change while safeguarding civil and human rights such as freedom, the rule of law, equality, self-determination and tolerance.

Research is carried out by members of the *German University of Digital Science*'s global teaching staff, i.e., professors, postdocs and doctoral students as well as professors and researchers from other universities and research institutions in Germany and abroad who are associated with the university.

3.1 Professors, Researchers and Doctoral Students

Professors, academics and doctoral students at the *German University of Digital Science* form the highly qualified academic core of the new university, which is **distributed around the world**. They are the fundamental rights holders of the freedom of teaching and research and assume important tasks of academic self-administration in order to ensure the performance of the *German University of Digital Science*, which is geared towards excellence in all its areas.

Internationally outstanding professors from other universities and researchers are appointed as professors, who have achieved habilitation-equivalent achievements in the fields of digital science and digital change and are highly visible and recognized in their respective scientific communities. In accordance with the character and profile of the *German University of Digital Science*, they must have innovative concepts and special experience in online teaching in addition to their academic experience and visibility in the field of digital science. Experience in collaborating with external partners and involvement in third-party funded research is also expected.

By defining the teaching load – offering courses amounting to 8 ECTS per quarter – and regular sabbaticals, it is ensured that sufficient time is available for free and active research, doctorates and academic collaboration with other researchers from academia and industry.

The founders of the *German University of Digital Science* are aware that **excellence in research** can only be achieved through a very targeted, extremely demanding personnel policy when appointing professors. The professors should be recruited worldwide and can work for the *German University of Digital Science* in their home country.

The scientific exchange and collaboration between the professors and scientists at the *German University of Digital Science* is organized in **Research Centers**, which are agile and temporary organizational units that provide an inspiring framework for the dynamic research activities of the researchers. In addition to the professors, academic staff, mostly doctoral candidates and postdocs, are active in research at the *German University of Digital Science* and work on their doctoral and research projects in the Research Centers and there in the PhD programs designated as **Research Schools**. The joint supervision by the professors of the respective Research School ensures an open and broad perspective from the outset when working on the research topic agreed with the doctoral supervisor. Doctoral candidates and research assistants also support the professors' courses and conduct smaller independent courses. They are closely involved in the supervision and mentoring of students.

At the *German University of Digital Science*, **digital teaching itself is the subject of research**. The newly developed innovative digital teaching forms and formats must be evaluated and further developed. This will be a particular focus of research at the new university's "Learning Analytics and Digital Education" research center, which will be founded right at the start of the *German University of Digital Science*. Professors and their doctoral students will conduct their research here in the field of learning analytics and the didactics of digital forms of teaching. Their direct access to the ***German University of Digital Science*'s online learning platform *German-UDS.academy*** will provide them with excellent data for investigating questions relating to the didactics of digital teaching, the effectiveness of digital learning formats and social interaction in virtual learning spaces.

The development and **promotion of young scientists** is an important concern of the *German University of Digital Science*. Doctoral projects are geared towards global exchange, interdisciplinarity and excellence, for example through close and structured cooperation with the doctoral schools of other universities worldwide. In addition, teaching assignments for small courses of max. 2 ECTS per quarter are awarded during the doctoral phase in line with the academic profile in order to provide doctoral students with independent teaching experience in the field of digital teaching under the guidance of their doctoral supervisors. Postdocs are given independent teaching assignments of up to 4 ECTS per quarter. The scope of the teaching and supervision tasks is calculated in such a way that there is sufficient time for work on the doctoral project and later for independent research and qualification measures. The preparation of postdoctoral researchers for a professorship at a university takes place in the targeted promotion of habilitation-equivalent research achievements.

3.2 Research Priorities and Topics

Since the introduction and ever-increasing development of digital technologies, our society has been affected by fundamental change in all areas of life. In the economy and society, this is fundamentally changing the possibilities and requirements for coping with tasks and activities in professional, social and private life.

The *German University of Digital Science* is thus opening up a wide range of research opportunities in the various scientific **disciplines of digital science**. The results achieved in research at the *German University of Digital Science* should help to better understand digital change, to recognize and develop the potential of digital technologies in the various areas of human activity in society, the economy, the environment, communication, health, education, individual life, etc. and to shape the digital future of humanity in accordance with our values - civil and human rights, such as freedom, the rule of law, equality, self-determination and tolerance - and a digital future shaped by humanistic principles.

The *German University of Digital Science* also manages to **overcome traditional challenges of higher education** by dissolving the traditional separation of departments in a permeable, integrative communication concept across all university instances, teaching relevant, interdisciplinary skills in the university's project-oriented teaching and research cooperation concept. In the collaborative basic principle of scientific work at the *German University of Digital Science*, the quality of education is detached from the performance of individual lecturers and thus successful education is understood as an institutional achievement.

3.3 Research Center and Research Schools

As previously mentioned, research and academic collaboration between professors, postdocs and doctoral students at the *German University of Digital Science* is organized within the organizational framework of very flexible R**esearch Centers**. Instead of the much-criticized silo-like faculties of conventional universities, the Research Centers are planned as flexible, lightweight and temporary organizational units that can also be formed by the researchers of the *German University of Digital Science* themselves through a merger. Researchers always work in at least one Research Center, but can also be assigned to several Research Centers for certain research projects and phases. In order to enable top-class, internationally acclaimed research, the Research Centers are equipped with the necessary digital laboratories and work equipment according to their specialist focus.

In the Research Centers, research work and scientific exchange on a scientific topic are concentrated and specifically promoted. The Research Centers offer an inspiring framework for active scientific exchange between the professors, postdocs and doctoral students of the German University of

Digital Science, which stimulates and promotes cooperation between the researchers of a Research Center and makes it manageable for the researchers distributed around the world.

Each Research Center operates a **Research School**, i.e., a doctoral school that is endowed with attractive doctoral scholarships. These Research Schools follow the successful model of the DFG Research Training Groups. In the Research School, the professors of a Research Center can recruit doctoral and post-doctoral students and enter into a close scientific exchange with them and the other professors of their Research Center and conduct research together. Weekly research seminars, joint retreats, symposia and conferences are proven forms of cooperation.

The professors of a Research Center elect a **spokesperson for the Research Center** each year, who represents the Research Center to the university management and the Council of the *German University of Digital Science* and to the outside world, supported by a secretariat. The spokesperson of the Research Center also coordinates the day-to-day work in the Research School of his or her Research Center.

The following three Research Centers and their Research Schools will be established immediately at the start of the *German University of Digital Science*:

- **Research Center for Learning Analytics and Digital Education**

The term "learning analytics" refers to the collection, aggregation, analysis and evaluation of data about learners and their digitally supported learning context. This form of data analysis is motivated by the inclusion of technical, pedagogical, political and economic considerations. The evaluation of learner data makes it possible to assess the effectiveness of digital learning formats and methods in order to better understand and optimize the learning process as a whole. Digital education enables personalized support for learners, which the *German University of Digital Science* can use directly to improve its offering.

- **Research Center for Digital Science - e-Science and Science2.0**

Digital science should take into account all aspects mentioned in the concepts of e-science, e-infrastructures, open science and science 2.0 as topics to be considered in policy making. Different terms have the development of new ways of conducting scientific activities with ICT, incorporating previous topics and adding a new layer. Digital science is the new growth of science and research resulting from all the existing and new, constantly evolving possibilities offered by communication networks, the digital availability of scientific content and new activities and interactions enabled by technology.

- **Research Center for Artificial Intelligence**

Over the past 30 years, artificial intelligence has transformed from an exotic research subject to a driving force behind the development of IT

applications. In the early phase of AI, the emphasis was placed on solving combinatorial and logical tasks. A classic example is computer chess, the mechanization of which has been studied since the 1940s. The rapid progress in computing speed has finally made it possible to solve such combinatorial problems better and faster than humans - the world champion in computer chess was defeated by a computer in 1997. Since then, research has focused on so-called machine learning. Instead of laboriously programming solution algorithms, the computer is supposed to discover the solution strategy for a variety of problems from large amounts of data on its own. This is why today's AI is developing hand in hand with strategies for the storage and rapid provision of massive data sets. Today, this is known as big data, i.e. data that is no longer collected locally but in the cloud across the globe. Deep learning is therefore much more than just the use of multi-layer neural networks. Deep learning requires the combination of all of the above factors in adaptive systems that are able to understand and translate language or even drive autonomous vehicles.

4. Organization and Foundation of the German University of Digital Science

The **institutional operator** of the *German University of Digital Science* is the non-profit ***German University of Digital Science* gGmbH**, located in the CloudHouse at Marlene-Dietrich-Allee 14 in Potsdam, and the bearer of all its rights and obligations. It respects the independence and academic self-administration of the university. The *German University of Digital Science* is **sponsored by the *German University of Digital Science* Foundation**, a foundation under public law the *German University of Digital Science Foundation* is the majority shareholder of the *German University of Digital Science* gGmbH. It focuses its support on the well-being of the *German University of Digital Science*, its academic excellence and independence in research and teaching, respects the constitutionally guaranteed freedom of science, research and teaching in all respects and guarantees the academic freedom rights of professors and academics.

The *German University of Digital Science* gGmbH is financed by grants from the *German University of Digital Science Foundation*, the sale of shares of the operator company, the *German University of Digital Science* gGmbH (up to 49 percent, 51 percent always remain in the hands of the Foundation), very moderate tuition fees and third-party funding from industry and society. The level of **tuition fees** – we calculate at €7,500 per academic year – should also enable less well-off students, and in particular students from the Global South, to take up and complete a degree in the digital field at the *German University of Digital Science*. The *German University of Digital Science Foundation* provides the necessary funding, particularly in the start-up phase.

To establish the *German University of Digital Science*, an **Advisory Board** consisting of leading international university experts, which accompanies the establishment of the university and supports the *German University of Digital Science* gGmbH in all academic matters during the foundation phase, **recommends the appointment of the two university founders as professors and presidents** of the German University of Digital Science.

4.1 Founding Phase

In the founding phase of the *German University of Digital Science*, it is the **responsibility of the founding presidents** to ensure that the Council, which is responsible for **academic self-administration** in accordance with the basic regulations, and the various committees of academic self-administration can establish themselves and begin their work on the further development of the university in a timely manner. To this end, the first professors of the *German University of Digital Science* will be appointed in consultation with and on the recommendation of the Advisory Board so that the **University Council** can establish itself. Once the Council has been established, it will assume responsibility for further appointments.

Doctoral students and postdocs from the founders and the development team of the first European MOOC platform openHPI will join the *German University of Digital Science* at the start of the new university. Many of the doctoral students and postdocs have already been involved in teaching teams for interactive online courses and have been active researchers in the fields of learning analytics and digital education.

The team will set up the **digital learning platform *German-UDS.academy*** for the *German University of Digital Science*. In its closed area, the digital courses of the new university's study programs will be offered and played out. In the open section, teaser offers for prospective students to be acquired worldwide will be offered in the form of free 2-week courses that provide information about the teaching content of the individual study programs of the *German University of Digital Science*, but which also aim to help the general population in the sense of digital education to better understand the digital transformation and to invite and empower them to participate in shaping it.

When they join the *German University of Digital Science*, the doctoral and postdoctoral students will be assigned to the Research Center "Learning Analytics and Digital Education" and the Research School of the Research Center, where they will work scientifically and investigate questions relating to the didactics of digital teaching, the effectiveness of digital learning formats and social interaction in virtual learning spaces.

4.2 Start of the Study Programs

As already mentioned, studies will start with the following fully online, English-language courses:

- A one-year **MBA program "Digital Transformation"**, which is aimed in particular at working professionals and, as an "MBA of the Future", offers management basics combined with knowledge and applications of digital technologies and enables graduates to become active as digital transformers in business and society.
- A one-year **MBA program "Digital Technologies",** which is aimed at working professional combining both sound IT and management competencies and provides a comprehensive education in emerging digital technologies. This program opens doors to innovative work, entrepreneurial ventures, and positions graduates as leaders and decision-makers in the digital transformation of society.
- A two-year **M.Sc. program "Digital Leadership"**, which is aimed at top international talents and whose graduates act as pioneers at the forefront of digital change in their organizations and in their environment.
- A two-year **M.Sc. program in "Applied AI"**, which is also aimed at top international talents who, after completing their studies, will be able to understand and further develop current AI processes and models as pioneers of digital progress and apply them in various fields of application.
- A two-year **M.Sc. program in "Advanced Digital Reality"**, which is also aimed at top international talents who want to study in the field of digital realities: With an interdisciplinary approach, the program combines technical know-how with creative application to enable students to solve complex problems in digital environments and develop innovative solutions. The program covers various aspects of Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR) and related technologies and applications.
- A two-year **M.Sc. program in "Cybersecurity"**, which is also aimed at top international talents who will be able to understand and further develop the basics in the field of cybersecurity. Whether through viruses, malware or phishing, cyber-attacks on governments, businesses and individuals are becoming increasingly sophisticated and on the rise. The protection of digital systems is becoming increasingly important as the volume of data grows rapidly.
- A three-year **B.Sc. program in "Digital World"**, which is aimed at both vocationally and academically qualified students and teaches the basics of digital technologies and programming, business management knowledge and business/professional skills, whose graduates drive digital change in the workplace or gain further qualifications in other degree courses at the University of Digital Science.

If the state recognition - as announced by the Brandenburg Ministry of Science - takes place in summer 2024 and the accreditation of the above-mentioned degree programs is completed in time, they will be offered to prospective students from all over the world from October 2024 and the *German University of Digital Science* will thus be **the first University of the Digital Tomorrow** to be launched and begin its studies.

5. Summary: Five Unique Selling Proposition (USP) of the German University of Digital Science

The USP of the *German University of Digital Science* focuses on providing specialized, high-quality education in the digital sciences field through an innovative, online platform. This concept combines the accessibility of digital learning with the rigorous academic standards and cutting-edge research typically associated with traditional universities. Here are key aspects that might constitute its USP:

1. Accessibility and Flexibility:

Global Reach allows students from anywhere in the world to access top-tier education in digital sciences without the need to relocate or commute, breaking down geographical and economic barriers to education. Modules and resources available 24/7 cater to students with varying schedules, including working professionals looking to upskill or reskill.

2. Industry-Relevant Curriculum:

Cutting-Edge Content offers a curriculum that is continuously updated to reflect the latest trends and technologies in the digital domain, ensuring that students learn the most current and in-demand skills. Incorporates virtual real-world projects, simulations, and internships with industry partners to provide hands-on experience, making students job-ready upon graduation.

3. Innovative Learning Experience:

Interactive and engaging material utilizes the latest in educational technology to deliver content in an engaging manner, including interactive modules, virtual labs, and augmented reality (AR) or virtual reality (VR) experiences. Personalized learning paths for employs based on AI and data analytics to offer personalized learning experiences, adapting to the individual learning pace and style of each student, and providing tailored support and resources.

4. Community and Networking:

The global network builds a community of students, alumni, and professionals from around the world, facilitating networking, collaboration, and exchange of ideas. Mentorship and support provides access to mentors, industry professionals, and academic advisors, offering guidance, support, and opportunities for research and career advancement.

5. Affordability and Value:

In the context of the *German University of Digital Science*, **a non-profit institution**, "cost-effective" goes beyond mere affordability. It encapsulates a comprehensive approach to delivering high-quality education in digital science, ensuring that the value students receive far exceeds the financial investment they make. The *German University of Digital Science* exemplifies how a non-profit organization can deliver cost-effective education that is both **affordable and of high value**. Through a combination of strategic financial planning, investment in technology, and a commitment to accessibility, the university ensures that students receive an education that prepares them for the challenges and opportunities of the digital future without imposing undue financial burdens. This approach not only enhances the affordability and value of the education provided but also aligns with the university's mission to **democratize access to quality education** in digital science.

In summary, the USP of the *German University of Digital Science* lies in its unique blend of accessibility, cutting-edge curriculum, innovative learning experience, and strong community and networking opportunities, all delivered at an affordable cost. This approach meets the evolving needs of students and the digital economy.

The *German University of Digital Science* emerges as a necessary institution in the face of the rapidly evolving digital landscape, addressing both the **current and future demands** of the digital economy. Its establishment responds to several critical needs and trends in education, technology, and the workforce.

The *German University of Digital Science* stands out with a unique proposition that marries the globally respected rigor and depth of **German engineering and academic excellence** with the forward-thinking approach of offering double degrees in collaboration with international universities. This combination is especially compelling in the context of digital science, a field that is inherently global and requires both deep technical knowledge and an understanding of diverse international contexts. With regard to the Unique Selling Proposition (USP), this means German Engineering and Academic Excellence:

Tradition of Innovation: Germany is renowned for its engineering prowess and its tradition of innovation. By highlighting the **"German"** aspect in its marketing, the German UDS taps into a long-standing reputation for quality, precision, and excellence in science and technology education.

Research-led Teaching: German universities are known for their **strong emphasis on research-led teaching**, offering students access to cutting-edge developments in digital science. This approach ensures that graduates are not just well-versed in current technologies but are also prepared to contribute to future innovations.

Industry Links: **Germany's industrial landscape** includes numerous world-leading companies, particularly in tech, automotive, and manufacturing sectors. The university's location and connections provide unique opportunities for collaboration, internships, and practical experience within these industries.

Double Degrees with International Universities: Offering double degrees with international universities presents students with a unique opportunity to gain diverse cultural and academic perspectives. This approach enriches their educational experience, making them more versatile and adaptable professionals. Graduates with double degrees are highly attractive to employers, as they demonstrate not only a breadth of knowledge across two academic institutions but also the soft skills gained from studying within different cultural contexts. This includes **adaptability**, **cross-cultural communication skills**, and a **global outlook**. Students benefit from access to an expanded network of alumni, academics, and professionals across two institutions and potentially two countries. This network can be invaluable for career opportunities, collaborations, and research endeavors.

The **"German"** tag in the context of education assures **quality**, **thoroughness**, and a focus on producing graduates who are **well-prepared** for the challenges of the digital age. Positioning the university within Germany's vibrant ecosystem of start-ups, tech companies, and research institutions highlights the opportunities for students to engage directly with leading-edge digital innovation.

In conclusion, the *German University of Digital Science'*s USP lies in combining **Germany's sterling reputation in engineering and academics** with the global perspective and enhanced career prospects provided by double degrees with international universities. This unique blend positions the *German University of Digital Science* as a premier destination for students seeking a comprehensive, globally-oriented education in digital sciences, ready to meet the challenges of the digital age.