



## **Future of the digital working environment**

The way work is structured and managed is constantly evolving due to advancements in technology. The COVID-19 pandemic has accelerated these changes and has had a lasting impact on how work is done. Digitalization has expanded the boundaries of the traditional workplace, making it possible for work to be done from anywhere and at any time. This has led to more flexible and dispersed employment arrangements, such as remote work, outsourcing, and the use of platforms for freelancing and on-demand tasks. The future of work is expected to be heavily impacted by emerging technology, particularly in the areas of automation, artificial intelligence and Metaverse. This may lead to the elimination of certain job roles and the emergence of new ones. Workers may need to adapt their skills and careers to stay employable. It is important to consider the implications of these changes on various levels, such as the individual worker, the organization, and society as a whole, in order to prepare for and navigate the shifts in the future of work. We welcome theses that take a comprehensive and diverse approach to exploring the future of work and its impact on the field of information systems, using a variety of theoretical and methodological perspectives and examining the phenomena at various levels.

Metaverse is one example which has the potential to fundamentally change the future of work. The Metaverse is a concept that refers to the development of an advanced internet, known as Web3, that combines immersive and persistent 3D experiences with the latest advancements in Extended Reality (XR), Artificial Intelligence (AI), Cloud Computing, Quantum Computing, and other technologies. Many major technology companies are investing billions of dollars to develop the Metaverse, such as Meta, Microsoft, Snapchat, Amazon, NVIDIA, Epic Games, and Apple.

This is an appropriate moment for researchers to analyze both the failures and successes of previous AR/VR platforms such as Second Life and Google Glass, and the more recent successful applications of Extended Reality (XR) in various fields such as education, manufacturing, gaming, healthcare, retail, logistics, aerospace, defense, architecture, advertising and athletics. These successes and disruptive business models are likely to shape what will be known as the Metaverse. However, creating a truly immersive, persistent and virtual Metaverse will require significant advancements in hardware, computing power, storage, and memory. For it to be successful, the Metaverse must improve people's lives and foster innovative business models that are profitable, while promoting interoperability, efficiency, remote work, fairness, accountability, open governance, inclusivity, safety, community, and sustainability in an environmentally, socially and ethically responsible manner.

### **I. What We Seek for our Theses:**

Our objective is to evaluate the impact of changes on organizations, groups, and individuals due to the advancement of emerging technologies and to determine how to effectively manage these changes to address the challenges and opportunities they present. We seek research that builds on and contributes to the existing knowledge on managing the future of the digital work environment and utilizing information systems, taking into account the potential for disruption caused by new technologies.

In sum, potential topics for bachelor theses, student research projects (i.e., "Studienarbeiten"), or master theses on "Future of the digital working environment" include, but are not limited to:

- **Applications of the Metaverse (i.e., meta-apps):** The Metaverse has the potential to drive innovation through new business models that add value. It is important to examine the potential implications of the Metaverse on job redefinition, organizational impact, industry transformation, inclusion, and sustainability. Research can explore if there is a "killer" application for the Metaverse and how to learn from past failures such as Second Life to ensure the Metaverse leads to a significant improvement. Some relevant topics to be examined are: Collaboration and teamwork, gamification, education and corporate training, meta-commerce, meta-conferencing, meta-crowdsourcing, meta-fitness, meta-healthcare, meta-socialization, meta-hospitality, virtual objects trading and meta-platforms.
- **Governance of the Metaverse (i.e., meta-governance):** Proper governance of the Metaverse is crucial regarding to issues such as identity, ownership, accountability, responsibility, and interoperability standards. It is important to investigate if it is possible to govern the Metaverse in a sustainable manner (meta-sustainability). There are questions to be answered about who decides on standards and what is allowed and not allowed. Topics that are related to this are: Agents, avatar autonomy, avatars and personal identity, virtual identity, content co-creation and ownership, copyright and trademarks, development of free open standards, governance of digital twins, intellectual property, interoperability, non-fungible tokens (NFTs), and virtual environment development standardization.
- **Challenges to security and privacy on the Metaverse (i.e., meta-cybersecurity):** The Metaverse is likely to raise familiar issues such as privacy, security, trust, and cybercrime, but it may also generate new concerns. It is important to study these potential issues and develop ways to address them. The Metaverse will have implications for government and organizational cyberthreat intelligence (CTI) programs. Some related topics to consider are: accountability, authentication, censorship, computer abuse, cybercrime, counter-intelligence, cyber frauds, CTI programs, deception, deep fakes, fake news, meta consent, security and privacy implications of meta-apps, new forms of identity theft, malware and social engineering attacks.
- **Dark unintended consequences of the Metaverse (i.e., meta-deviance):** The Metaverse may offer a vast platform for various negative behaviors, such as addiction, cyberbullying, and exploitation. To combat these issues, it is important to consider how they can be prevented, measured, and addressed within the Metaverse. Additionally, the unintended consequences of the Metaverse, such as the exacerbation of the digital divide, should also be studied and addressed.
- **Designing immersive, interactive, and persistent 3D Metaverse applications (i.e., meta-interactivity):** The Metaverse will change the way we interact with technology, by creating a 3D persistent environment that uses digital twins, haptic technologies, and AI/ML techniques. This will require rethinking and adapting existing concepts, measures, theories, and techniques in human-computer interaction, as the Metaverse will be used for various purposes such as entertainment, communication and work. Key areas of focus include: adoption, technology affordances, meta affordances, extended reality, avatars, cognitive absorption, cognitive load, computer vision, immersion, usability, and wholistic scene understanding.

## II. Possible Methodologies

Theses should cover one or more methodologies, such as:

- *Structured literature reviews*
- *Quantitative online surveys*
- *Implementations of Metaverse solutions*
- *Qualitative interviews*
- *Experiments*
- *Delphi study*
- *Focus group discussion*
- ...

### III. Application Requirements

**Important:** If you are interested in writing a thesis on AI, please send an email application that includes:

1. a **brief CV**,
2. a current **performance record** (can be downloaded in TUCaN),
3. a 2-page **exposé** including the topics motivation, goal of the research project, approach, structure of the theses, and references, and
4. an **indication** of **one** of the **above presented areas** that **best fits your topic** in your email's subject

to: [abschlussarbeiten@is.tu-darmstadt.de](mailto:abschlussarbeiten@is.tu-darmstadt.de)