



FIZnews

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Leibniz-ScienceCampus “Digital Transformation of Research” (DiTraRe): Digital research with a value-add for society

Karlsruhe, October 29, 2024 – How can scientists not only drive forward the digital transformation of research, but also make the results of their research more comprehensible, accessible and usable within the scientific community and for society as a whole? The Leibniz ScienceCampus “Digital Transformation of Research” (DiTraRe) aims to identify possible solutions. In this interdisciplinary project, which started in September 2023, FIZ Karlsruhe and the Karlsruhe Institute of Technology (KIT) are working on integrating digital technologies and processes into science under legal security aspects.

Whether data protection, artificial intelligence or the publication of large amounts of data - DiTraRe is designed not only to create ideal conditions for future scientific breakthroughs, but also to consider the associated effects and consequences for our everyday lives. By working together on use cases, for example from climate or health research, the results of the various research clusters can contribute in the long term to improved medical diagnostics, faster use of new technologies and easier access to research data and knowledge.





Four central research clusters: data spaces, data volumes, documentation, and publishing

DiTraRe consists of four research clusters, each of which addresses an important aspect of digital transformation in science and researches it based on use cases.

1. Protected Data Spaces

Secure handling of sensitive data such as personal data from patients, is a great challenge in a world driven by data. Digital data can easily be copied and distributed. Therefore, DiTraRe develops methods and processes to securely store sensitive research data and to make them available to researchers – while at the same time providing maximum privacy protection and complying with legal requirements. This is particularly relevant in areas such as sports science, for example, where sensitive health data plays a key role in researching the factors that influence health. DiTraRe is developing solutions for the responsible and productive use of data for innovative research.



2. Smart Data Acquisition

The second research cluster is dedicated to optimizing the digital acquisition and analysis of data. By means of the Electronic Lab Notebook (ELN) “Chemotion” DiTraRe examines ways to automate laboratory processes, make them more efficient and automatically capture valuable data early on in the research process. The goal: more time for the actual research and less effort for its documentation, with high-quality, standardized and structured research data as a result.

3. AI-based Knowledge Realms

Machine learning and Artificial intelligence play a key role in coping with growing volumes of data. DiTraRe is investigating how AI can be used to generate new scientific findings faster and more precisely, but always in a comprehensible way. For example, AI systems in biomedical engineering help to detect diseases such as cardiovascular diseases at an early stage by analyzing complex data sets and pointing out irregularities that human observers do not notice. DiTraRe is working on a trustworthy, traceable use of AI methods that deliver reliable results. Naturally, ethical and legal issues are also addressed, as well as the possible long-term impact of this new technology.

4. Publication Cultures

The digital age calls for new publishing models. DiTraRe examines the way in which scientific results – i.e. data and software in addition to publications in scientific journals – are published. At the same time, data volumes are constantly increasing, for example in the climate sciences, which work with measurements and simulations. In a use case, new, innovative solutions are developed and investigated to make data generated in research and the resulting knowledge accessible to society at large. This not only increases transparency and trust: it also enables research results to be used more quickly for practical implementation.



Research with an impact on everyday life

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DiTraRe deals with the challenges and opportunities of digital transformation in research and examines the benefits - but also the risks - for society as a whole. DiTraRe is investigating how we can actively support and shape the digital transformation in a way that minimizes risks and maximizes the benefits for everyone.

Dr. Felix Bach, scientific coordinator of the Leibniz ScienceCampus *DiTraRe*, puts it this way: “DiTraRe is a unique example of how close collaboration between science and infrastructure can create new digital tools that will change research in the long term. On the one hand, we want to use transdisciplinary innovation to ensure that these changes lead to an improvement in our future and, on the other hand, to thoroughly think the matter through to ensure that we do not ignore any potential risks. Our aim is to simplify the research process and the exchange of knowledge and to make research results more accessible and easier to understand. We see the digital transformation not only as a technological innovation, but also as an opportunity to renew the working culture in science and accelerate the acquisition of scientific knowledge.”

In the weeks to come, we will publish FIZnews presenting the individual DiTraRe clusters and the use cases researched there in detail.

Learn more about the Leibniz ScienceCampus at: <https://www.ditrare.de>

If you don't want to miss out on any more news about DiTraRe, simply subscribe to the corresponding hashtag on our social media channels LinkedIn, Instagram or Mastodon: #DiTraRe



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