



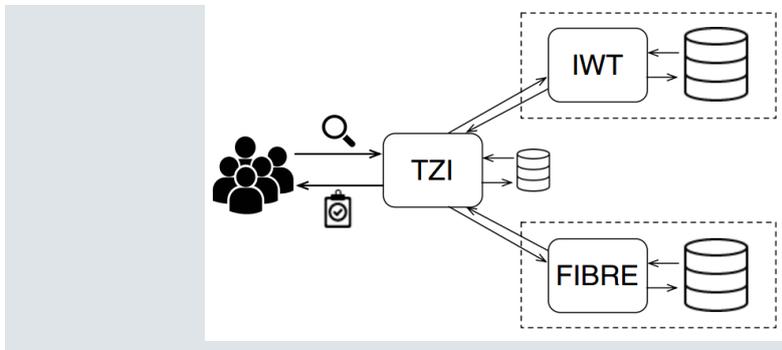
**Motivation**

In the material sciences, a broad spectrum of different experiments generates a large amount of research data. Experimental research data, including metadata, are nowadays often stored decentrally by the researchers who carry out the experiments, without generally accepted standards for the storage of data. The experiments carried out are often associated with substantial investments by public funding agencies who wish to make the results available in order to increase their effectiveness. In order to meet this demand, citable and openly accessible experimental research data will be required in the future.

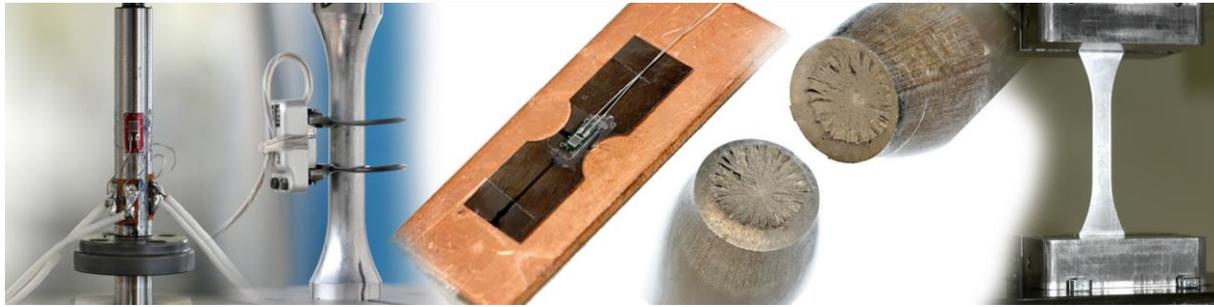
The aim of the project is to transform the previously decentralized and heterogeneously organized data management into a powerful, centrally organized data infrastructure in order to make scientific research data available to the research community on a long-term and sustainable basis. For this purpose, a first system was developed in the predecessor project Infosys and made available to the pilot Uuer Institut für Werkstofftechnik for test data on metallic materials. Several institutes of the University of Bremen: Faserinstitut Bremen e. V. (FIBRE), Institute for Integrated Product Development (BIK), Institute for Materials Technology (IWT), Technologie-Zentrum Informatik (TZI) and the Official Materials Testing Institute of the Free Hanseatic City of Bremen (MPA) are participating in the current project.

**Approach**

The InfoSys platform is an information and communication tool, which has been developed at the University of Bremen since 2011. The main objective is to support the exchange of research data between scientists worldwide. The current focus is on material science experiments such as tensile and fatigue tests for metals and fiber-reinforced composites. InfoSys relies on decentralization because the participating institutes maintain their own InfoSys servers for data storage. The participating research institutes decide which data sets are public and which are not. Public records can be searched using search functions. These functions are provided by a central InfoSys server that is connected to all data stores.



In addition to the infrastructure for the exchange of scientific data, InfoSys will also include a concept for quality assurance of the data. The aim is to support the identification of data



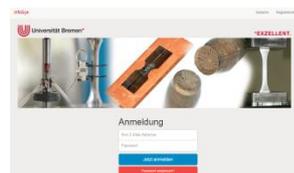
sets that meet the needs of researchers. For this purpose, the data sets are given quality indicators for categories such as completeness, accuracy, credibility and timeliness. These indicators take into account, for example, statistical calculations, peer reviews and the use of standards.

The Fiber Institute is the second pilot user in the field of fiber-reinforced plastics (FRP). FRP consist of a matrix and the reinforcing fibres and only form a material during curing. A challenge is to implement the specific features of the FRP in the system. A complete overview of the metadata, i. e. type matrix and fibres, curing cycle, etc., has to be collected in order to complete the data set.

InfoSys was developed as a flexible and scalable solution for scientific data exchange. Therefore, we encourage all interested researchers to give feedback and suggest new types of experiments and materials.

#### Application

<http://devinfosys.iwt.uni-bremen.de>



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AimData is a German infrastructure project funded by the LIS program of the DFG since 2011.

#### Project Partners

- Faserinstitut Bremen e.V., Bremen
- Institut für integrierte Produktentwicklung BIK, Bremen
- Institut für Werkstofftechnik IWT, Bremen
- Technologie-Zentrum Informatik TZI, Bremen
- Amtliche Materialprüfanstalt der Freien Hansestadt Bremen, Bremen

#### Faserinstitut Bremen e.V.

The Faserinstitut Bremen e. V. carries out research and development tasks in the fields of testing, further development and processing of fibres, textile semi-finished products and fibre-reinforced composites.

The competence field of [Fiber and Material Development](#) deals with the development and investigation of new fiber materials and manufacturing technologies. Research activities focus on the development of technical fibers and the modification of materials for their application in fiber-reinforced composites. The Natural Fibres division covers the entire process chain from cultivation and fiber modification to use in technical applications (e. g. natural fiber-reinforced plastics).