



## **Bachelor Thesis: Model-based Data Sharing Across Organizations**

In interconnected environments, such as modern manufacturing industries, a large variety of complex and interconnected business and production processes use and generate an increasing amount of diverse data, through various sensors and machinery and software integrated in cyber-physical systems. At the same time, facilitating sharing and reuse of this data across organizations has become an important research topic to reduce friction in collaboration along and across supply chains. The recent FactDAG model<sup>1</sup> and its implementation, the FactStack<sup>2</sup> enable sovereign data exchange across organizations, based on open Web standards. While this model handles many aspects for reliable data exchange, such as persistent identification and versioning, it does not consider the underlying process and its requirements for data exchange. Therefore, the current FactStack does not address how access to (partial) data items is negotiated or recorded, which is important for user-friendly data access. The data user should be able to seamlessly integrate data in their local process, even if it originates from another organization.

In this thesis, you will work towards bridging the gap between the process and data dimensions, by developing a system to negotiate and facilitate cross-organizational data exchange based on process models and the FactDAG data model.

For example, a company should be able to model internal processes and directly include the required dataflow from external collaborators in the model, which could then be facilitated through the FactStack.

### **Your Profile:**

- Good programming skills (Web Development / JavaScript/Typescript are an advantage)
- Some experience (from lectures or otherwise) with at least one of the following topics is advantageous
  - Business Process Modeling
  - Semantic Web / Knowledge Graphs

### **Interested? Questions? Contact Us!**

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<sup>1</sup> Gleim et al.: FactDAG: Formalizing data interoperability in an internet of production. [doi.org/10.1109/JIOT.2020.2966402](https://doi.org/10.1109/JIOT.2020.2966402)

<sup>2</sup> Gleim, Tirpitz, Decker: FactStack: Interoperable data management and preservation for the web and industry 4.0. [doi.org/10.18420/BTW2021-20](https://doi.org/10.18420/BTW2021-20)