The solution for sovereign data exchange in business ecosystems

More and more frequently, companies are offering a combination of physical products with corresponding services as a tailored solution to fit the individual needs of a customer. Companies will often join forces to function in dynamic business ecosystems and thus render services cooperatively. In conjunction, they develop innovative solutions and focus on end-to-end customer processes.

The importance of data is not only corroborated by the strategic resources they supply for these innovative service offerings, but also by the demand for control resulting from the complexity of using data this way, from the producing perspective. Within companies, thus arises the need, to not just have control over their own data, but to keep this control when exchanging it, or, at least, cope with the joint data management within the business ecosystem.

A key ability for the economy is thus data sovereignty. The data owner must be able to sovereignly decide, manage and control what might happen with the data and who might use it for what purpose. To make data sovereignty possible and exercise it, universal economic and legal procedures as well as standards, especially IT procedures, are needed.

It is for this reason, that twelve Fraunhofer Institutes, funded by the German Federal Ministry for Education and Research, are developing the “Industrial Data Space”: a virtual data room for the standardized data exchange and trade between two participants with a simultaneous preservation of data sovereignty over their own data. The focus is set on developing a scalable and safe to use architecture for such a data room, using modern IT technologies.

Guided by the demand for digital sovereignty the Industrial Data Space aims for a “Network of Trusted Data”.
These are the key aspects of the "Industrial Data Space":

- **Sovereignty over Data Goods:**
The data owner determines the terms of use of their data goods. These terms of use are attached directly to the data goods in question.

- **Security of Data Exchange:**
A protection level concept regulates the requirements for data security while exchanging data and guarantees IT across entire data supply chains.

- **Decentrality and Federal Architecture:**
The Industrial Data Space manifests itself as the entirety of all ending points equipped with an Industrial Data Space Connector. Thus, there is no central authority for data retention or data governance tasks, making the Industrial Data Space an alternative to any architectures focussing on central data storage concepts (e.g. such as so-called data lakes) on the one hand and decentralized data networks without set rules on the other hand. Which architecture to chose, depends on its economic profitability within the individual use case.

- **Governance / Common Ground-Rules:**
On basis of the decentralized architecture of the Industrial Data Space and the thus missing central supervisory authority, the principles of data governance are developed as fixed common ground-rules. These common ground-rules determine the rights and obligations of data management within the Industrial Data Space. They derive from the requirements of the operators.

- **Candor:**
The Industrial Data Space initiative is user-driven and based upon a participatory development process with regard to the reference architecture model. Decisions concerning the concept are made jointly between the research project and the user association “International Data Spaces Association”, that already consists of nearly 100 international members from science and industry.

- **Service and Platform Network:**
The Industrial Data Space connects data suppliers and data users. Data suppliers might be individual companies as well as “things” (individual entities, e.g. vehicles, machines, etc. that operate within the IoT) or even human beings. Other possible data suppliers are data platforms and / or data marketplaces that are already emerging in all kind of industries. Furthermore, the Industrial Data Space offers data services from differing providers via an AppStore.

- **Gradation and Network Impacts:**
The Industrial Data Space offers data services for a safe exchange as well as for an easy linkage of data and thus holds an infrastructural trait because usage of the Industrial Data Space eases the development and offer of, e.g., Smart Services. These are reliant on data services as offered by the Industrial Data Space, without being part of the scope of services themselves. For the success of the Industrial Data Space, gradation and networks are thus paramount. The more users involved in the Industrial Data Space, the more attractive will it be for data suppliers, data users, and data service providers.

- **Protection of Legitimate Expectation:**
The members of the Industrial Data Space have to be able to trust in the identity of the data supplier. This is the reason, why any ending point may only connect to the Industrial Data Space via certified Software (Industrial Data Space Connectors). Moreover, the Industrial Data Space Connector takes over the functions of authentication and authorization.

Would you like to shape the future of data-driven corporate cooperation with us? Start participating and bringing forward your own ideas, requirements, and desires, as a member of the International Data Spaces Association!

More information may be found within the Fraunhofer-Whitepaper “Industrial Data Space – Digital Sovereignty Over Data”

**DOWNLOAD:** [s.fhg.de/tgH](s.fhg.de/tgH)