Applying Inverse Transparency to Intercompany Contexts
Bachelor's Thesis

Supervisor: Prof. Dr. Alexander Pretschner
Advisor: Valentin Zieglmeier
Email: {pretschn, zieglmev}@in.tum.de
Phone: +49 (89) 289 – 17834
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Context

In today's information economy, data increasingly becomes a value in itself. Business models and whole industries are based on utilizing data in new and innovative ways [1]. For businesses, controlling access to their data becomes necessary to protect their value creation processes. Yet, in many scenarios, support or services by other companies are required, necessitating them handing over their data and therefore losing oversight and control over it [2].

To protect their business, companies require contractual agreements with service providers before those gain access to their data. In these agreements, the allowed usage of data is limited and penalties for misusage are defined [3]. This can be enough to deter misusage, but it cannot fully prevent it. Therefore, a certain level of trust is still required.

The concept of Inverse Transparency could reduce this need. Its goal is to give data owners more sovereignty over how their data are used. Access to data is therefore enabled on a more case-by-case basis, while monitoring all accesses and making each access visible to the data owner. This could allow businesses to trace usage of their data and hold their service providers accountable in case a data misusage is detected (for inspiration, see [4, 5]).

Goal

The goal of this thesis is to translate the concept of Inverse Transparency, currently developed for the employer-employee relationship, to intercompany contexts. Contrary to the intracompany scenario, there is no single infrastructure and governance that the concept can be applied to. Therefore, an additional intercompany layer may be required. Furthermore, data usage does not occur on a single-datum level, and monitoring is not organized around individuals. Instead, datasets or databases might be the lowest level of discrimination. Possibly, this could be generalized to any data sharing in uncontrolled environments.

Work is split into three phases: The theoretical, implementation, and evaluation phase.

Theoretical phase: First, the status quo of intercompany data sharing and usage is analyzed and documented. Interviews with stakeholders and data sharing agreements serve to understand how companies handle the above-described issues today. Based on those results, an updated generic architecture for Inverse Transparency is developed based on the artifacts from the research project. This architecture is to incorporate the requirements and specifics of today's intercompany data sharing.

Implementation phase: Second, a specific technical challenge of intercompany transparency, derived from the theoretical phase, is tackled with an implementation. This might be ID mapping over heterogeneous authentication systems, distributed trust, or context-dependent display of information.

Evaluation phase: Finally, the implemented tool is evaluated based on functionality (Does it fulfill the intended purpose? Are stakeholder requirements addressed?), applicability (Does it work in the expected technical context?), as well as integratability into the existing Inverse Transparency toolchain (Can it integrate as an API provider or consumer into the toolchain?).

Work Plan

1. Research related literature and data sharing agreements.
2. Conduct stakeholder interviews
3. Implement a tool to facilitate intercompany Inverse Transparency.
4. Evaluate the implemented tool's functionality, applicability, and integratability.
5. Document the work in the thesis.

Deliverables

- Source code of the implementation.
- Transcripts of conducted interviews.
- Thesis written in conformance with TUM guidelines.

References

[1] Porat, Marc Uri, and Michael Rogers Rubin. *The information economy: definition and measurement*. Vol. 77. No. 12. Office of Telecommunications (DOC), 1977.

[2] Scaria, E., et al. "Study on data sharing between companies in Europe." A study prepared for the European Commission Directorate-General for Communications Networks, Content and Technology by everis (a NTT DATA company), 2018.

[3] University of Chicago. "What Is a Data-Sharing Agreement and Why Is It Necessary?" Online: https://ura.uchicago.edu/page/data-sharing-agreements. (Accessed: 2021-02-09).

[4] Jarke, Matthias. "Data Sovereignty and the Internet of Production." *International Conference on Advanced Information Systems Engineering*. Springer, Cham, 2020.

[5] Zrenner, Johannes, et al. "Usage control architecture options for data sovereignty in business ecosystems." *Journal of Enterprise Information Management* (2019).

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