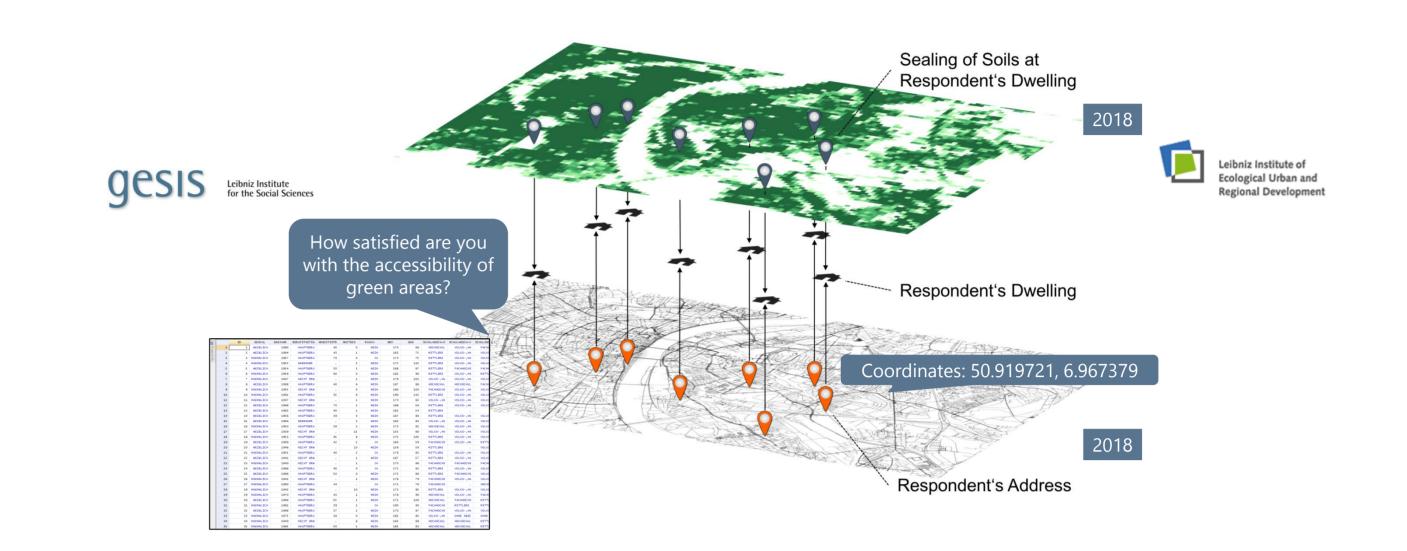# GO FAIR Implementation Network on
Cross-Domain Interoperability of Heterogeneous Research Data (GO Inter)

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Background

- Proliferation of domain-specific, disconnected "data silos": data often described using heterogeneous and unstandardized metadata and vocabularies which cannot be easily linked with each other
- Problematic when it comes to linking data from different communities in the context of interdisciplinary research

Use Case: Linking survey data to spatial data (DFG project SoRa)

Challenges

- Various metadata standards, data formats, encoding methods, representation languages, vocabularies to describe data
- Different layers of interoperability ranging from encoding up to structural and semantic specifications of data (lack of understanding the differences within and across domains)
- Lack of understanding about how best to navigate between different levels of granularity in different domain-specific data documentation schemes and how to map between different knowledge organization systems
- Lack of reference models that represent data in ways that capture the meaning of data across community borders

Objectives

- Cross-domain interoperability framework: methods, tools and guidelines for implementing and assessing **semantic interoperability of heterogeneous research data** across discipline borders
- **Reference implementations** of interoperability for real-world cross-domain research uses case by broadly applying existing Web standards, vocabularies and semantic technologies
- **Knowledge exchange** with other GO FAIR Implementation Networks and related initiatives (such as RDA, FAIRsFAIR)

Tasks

- Explore real-world **cross-domain research use c**ases to better understand interoperability
- **Assistance services** that guide data providers in bringing data into common formats and schemes and in mapping data to existing vocabularies
- **Ontology lookup services** as gatekeeper across different standards, domains and vocabularies
- Methods for **qualified linking and annotating** cross-domain research data (by ontology crosswalks, cross-ontology links, semantic annotation services such as B2NOTE)
- Explore the use of **foundational ontologies** (e.g. UFO) to provide generic means for semantic interoperability
- Semantically rich **cross-domain knowledge graphs** supporting cross-domain data search and analysis
- Explore the **Digital Object Interface Protocol** (DOIP) to improve interoperability at the data organization level
- Novel gradational **maturity models** for assessing cross-domain interoperability
- Implementation and evaluation of **reference implementations** for real-world use cases
- **Guidelines** for implementing and assessing cross-domain interoperability

Consortium