



Why this Implementation Network (IN)?

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#INsGOFAIR19
#GOInterIN

Background: Disconnected Data Silos

- Fragmentation of research data landscape:
 - highly disciplinary and disconnected
 - heterogeneous data storage
 - heterogeneous and often unstandardized metadata and vocabularies
 - lack of cross-disciplinary and interconnected systems
- Problematic when it comes to searching and linking research data across community borders in the context of multidisciplinary research
- Cross-domain interoperability: key element to facilitate data integration across community/repository boundaries

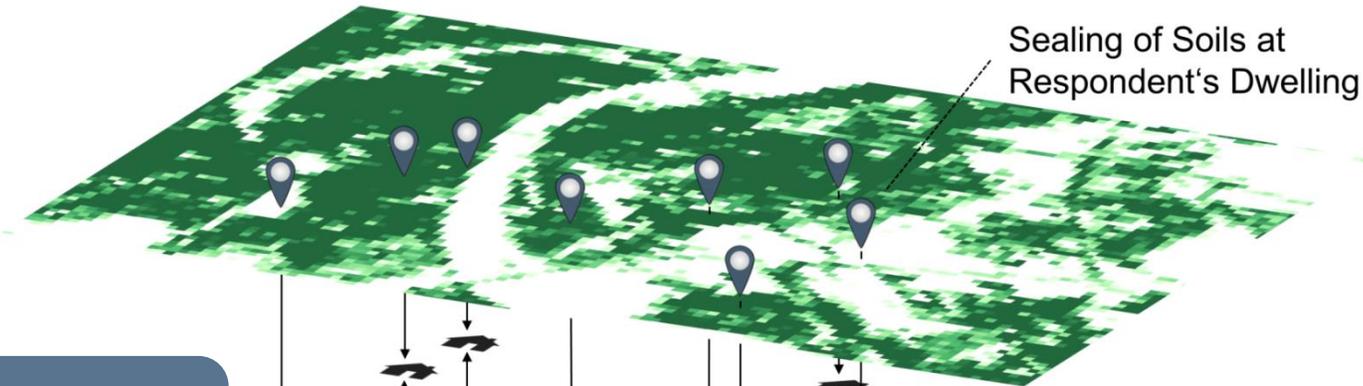


“Data silos are bad news for everyone.”

[<https://www.information-age.com/breaking-down-data-silos-123481841/>]

Linking survey data to spatial data (DFG project SoRa)

How satisfied are you with the accessibility of green areas?



2018



2018

NR	SO	SEXUAL	SEXUAW	BERUFTATIG	WIRTSCHAFTS	WIRTSCH	RAUCH	GR	GRW	SCHULABSCH	SCHULABSCH	SCHULABSCH
1	13	WEIBL.SCH	1890	HAUPTBERU	40	0	NEIN	170	68	HOCHSCHUL	VOLKS-MA	FACH
2	2	WEIBL.SCH	1844	HAUPTBERU	42	1	NEIN	161	71	WETTL.BRE	VOLKS-MA	VOLKS
3	3	HAENGL.SCH	1857	HAUPTBERU	70	0	JA	174	71	WETTL.BRE	VOLKS-MA	VOLKS
4	4	HAENGL.SCH	1852	NEBENBER	-	2	NEIN	172	111	WETTL.BRE	VOLKS-MA	VOLKS
5	5	WEIBL.SCH	1854	HAUPTBERU	28	1	NEIN	168	87	WETTL.BRE	FACHHOCH	FACH
6	6	HAENGL.SCH	1868	HAUPTBERU	80	0	NEIN	182	80	WETTL.BRE	VOLKS-MA	WETTL
7	7	HAENGL.SCH	1847	NECHT.BEW	-	1	NEIN	178	101	VOLKS-MA	VOLKS-MA	VOLKS
8	8	WEIBL.SCH	1888	HAUPTBERU	40	4	NEIN	187	88	HOCHSCHUL	HOCHSCHUL	FACH
9	9	HAENGL.SCH	1855	NECHT.BEW	-	0	NEIN	180	100	FACHHOCH	VOLKS-MA	VOLKS
10	10	HAENGL.SCH	1861	HAUPTBERU	35	8	NEIN	190	115	WETTL.BRE	VOLKS-MA	VOLKS
11	11	HAENGL.SCH	1847	NECHT.BEW	-	1	NEIN	174	82	VOLKS-MA	VOLKS-MA	VOLKS
12	12	WEIBL.SCH	1860	HAUPTBERU	70	1	NEIN	168	54	WETTL.BRE	VOLKS-MA	VOLKS
13	13	WEIBL.SCH	1862	HAUPTBERU	40	1	NEIN	162	14	WETTL.BRE	-	VOLKS
14	14	WEIBL.SCH	1864	HAUPTBERU	38	0	NEIN	167	60	WETTL.BRE	VOLKS-MA	VOLKS
15	15	WEIBL.SCH	1864	NEBENBER	-	3	NEIN	162	61	VOLKS-MA	VOLKS-MA	VOLKS
16	16	HAENGL.SCH	1850	HAUPTBERU	38	3	NEIN	173	82	HOCHSCHUL	VOLKS-MA	VOLKS
17	17	WEIBL.SCH	1859	NECHT.BEW	-	11	NEIN	155	60	VOLKS-MA	VOLKS-MA	VOLKS
18	18	HAENGL.SCH	1853	HAUPTBERU	40	8	NEIN	175	105	WETTL.BRE	VOLKS-MA	VOLKS
19	19	WEIBL.SCH	1859	HAUPTBERU	42	2	JA	180	18	FACHHOCH	VOLKS-MA	WETTL
20	20	WEIBL.SCH	1846	NECHT.BEW	-	10	NEIN	158	18	WETTL.BRE	VOLKS-MA	VOLKS
21	21	HAENGL.SCH	1851	HAUPTBERU	40	2	JA	179	83	WETTL.BRE	VOLKS-MA	VOLKS
22	22	WEIBL.SCH	1841	NECHT.BEW	-	1	NEIN	167	17	WETTL.BRE	VOLKS-MA	VOLKS
23	23	HAENGL.SCH	1840	NECHT.BEW	-	1	JA	170	86	FACHHOCH	FACHHOCH	FACH
24	24	WEIBL.SCH	1868	HAUPTBERU	40	0	JA	172	82	WETTL.BRE	VOLKS-MA	VOLKS
25	25	WEIBL.SCH	1866	HAUPTBERU	50	0	NEIN	175	66	WETTL.BRE	FACHHOCH	VOLKS
26	26	HAENGL.SCH	1843	NECHT.BEW	-	1	NEIN	176	79	FACHHOCH	VOLKS-MA	VOLKS
27	27	HAENGL.SCH	1880	HAUPTBERU	44	-	JA	171	76	FACHHOCH	-	HOCH
28	28	HAENGL.SCH	1842	NECHT.BEW	-	10	NEIN	173	85	WETTL.BRE	VOLKS-MA	VOLKS
29	29	HAENGL.SCH	1870	HAUPTBERU	43	1	NEIN	176	80	HOCHSCHUL	VOLKS-MA	FACH
30	30	WEIBL.SCH	1866	HAUPTBERU	55	1	NEIN	171	100	HOCHSCHUL	FACHHOCH	WETTL
31	31	HAENGL.SCH	1851	HAUPTBERU	39	1	JA	190	93	FACHHOCH	WETTL.BRE	WETTL
32	32	WEIBL.SCH	1846	HAUPTBERU	37	2	NEIN	170	87	FACHHOCH	VOLKS-MA	VOLKS
33	33	HAENGL.SCH	1871	HAUPTBERU	38	0	NEIN	165	85	VOLKS-MA	OHNE ABSCH	OHNE
34	34	HAENGL.SCH	1840	NECHT.BEW	-	4	NEIN	183	68	HOCHSCHUL	HOCHSCHUL	WETTL
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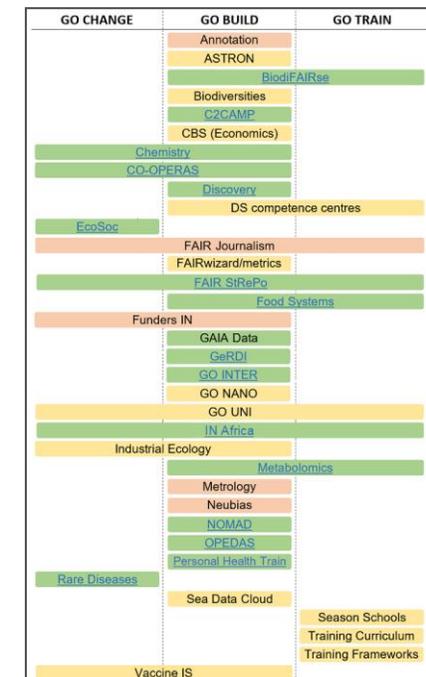
Key Challenges of Implementing Interoperability

Dagstuhl Perspectives Workshop on „Implementing FAIR Data Infrastructures“ (2018)

Challenge	How to address
Many different layers of interoperability: ranging from encoding up to structural and semantic specification of data	(Cross-)domain specific use cases exploring interoperability could help to better understand these differences
Various metadata standards, data formats, data encoding methods, representation languages; no format validation	Use of standards, semantic technologies for data transformation; registries of schemas and vocabularies; Digital Object concept (RDA) for data organization
Different vocabularies to describe data; semantic interpretation varies substantially	Ontologies lookup services, ontology crosswalks, smart ontology mapping, tools for semantic annotations
Lack of means to link digital objects with operations suitable for their type	Mechanisms to link types of Digital Objects with operations (RDA data type registry)

Further issues that have motivated the IN

- Lack of reference infrastructures
 - that fully implement the “I” of the FAIR principles
 - that may serves as a guideline for data provider to make their data FAIR
- Disparate communities:
 - open data world (W3C) vs research data world (RDA, DDI)
 - GO Inter as a contribution to close the gap
- Lack of measures to assess interoperability
 - new IN coming up: FAIRwizard/metrics
- Lack of cross-cutting INs:
 - Most INs domain-specific
 - cross-disciplinary perspective strongly required



Objectives of the IN

- To provide a cross-domain interoperability framework consisting of methods, **tools and guidelines for implementing and assessing semantic interoperability** of research data across discipline borders (by building upon existing standards)
- To develop and evaluate reference implementations of interoperability for **real-world cross-domain research uses cases** by broadly applying existing standards, vocabularies and semantics technologies
- To engage with other GO FAIR Implementation Networks and related initiatives to **disseminate and exchange best practice solutions** for cross-domain interoperability
- Overall goal: to contribute to the establishment of cross-domain infrastructures that build on open standards

Main Tasks

- Define **execution plan & roadmap**
- **Review of existing technologies and standards**
- Explore **cross-domain use cases** to better understand interoperability
- Provide **mapping services** that guide data providers in bringing (meta)data into common representation formats and in mapping their data to existing vocabularies
- Provide **ontologies lookup services** as gatekeepers across different standards and vocabularies
- Provide **methods for qualified linking and annotating** by broadly applying semantic technologies (ontology crosswalks, cross-ontology linking, use of foundational ontologies)
- Create semantically rich **cross-domain research knowledge graphs** supporting cross-community data search and analysis
- Apply existing or provide **novel measures and gradational maturity models** for assessing cross-domain interoperability (see fairmetrics.org and fairsfair.eu)
- Develop and evaluate **reference implementations** for real-world use cases
- Publish **guidelines** for implementing and assessing cross-domain interoperability

Guiding (Research) Questions

How to operationalize interoperability in a way that facilitates data integration across community boundaries (while at the same time capturing the meaning of data)?

- How can a semantic layer look like that tam the semantic disconnects?
 - Metadata templates (see CEDAR), Mapping services, Ontology services
- How can a data access layer look like that encapsulate the specific data organization level?
 - Digital Object Interface Protocol (RDA)
- How can linked data best be represented to finally integrate knowledge delivery?
 - Open Research Knowledge Graphs
- How to measure interoperability?
- How should future RDIs look like?

Goal of the workshop

- Review of the Manifesto
- Clarify open issues
- Identify action points
- Identify WGs on action points
- Specify an agenda until end of 2020 (and beyond)
- Specify the mode of operation of the IN
- Identify next steps (until end of the year)

Thank you!