Swiss Personalized Health Network- SPHN Semantic Interoperability Framework and Tool Stack

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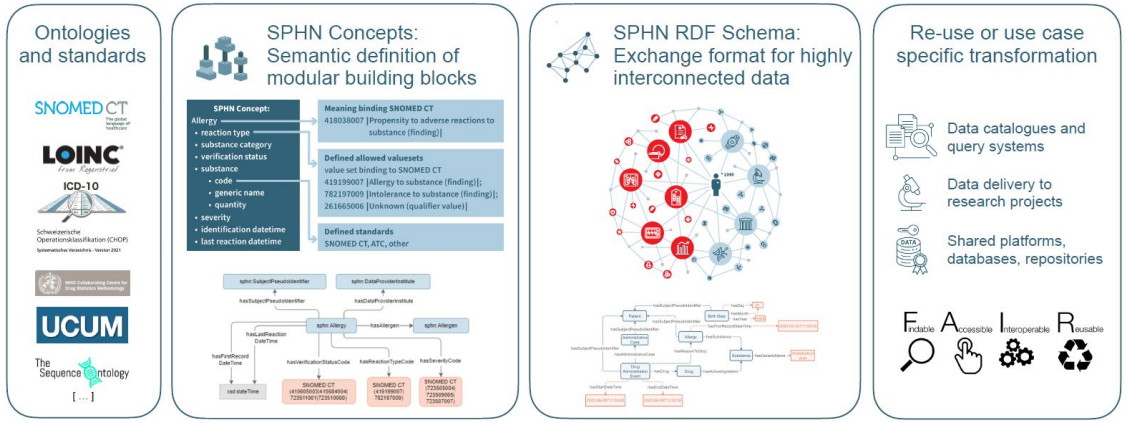
A project of

SPHN Semantic Interoperability Framework

- **Real world data** is complex, diverse level of context of the data is available
- **Biological data** (e.g. omics) adds an additional layer of information
- W3C (RDF and OWL) and data (e.g. SNOMED CT and LOINC) standards allow to **speak a common language**
- **Semantic representation** of the data enables a better understanding

 Multi-layered data integration into a knowledge graph enables a comprehensive view of the patient

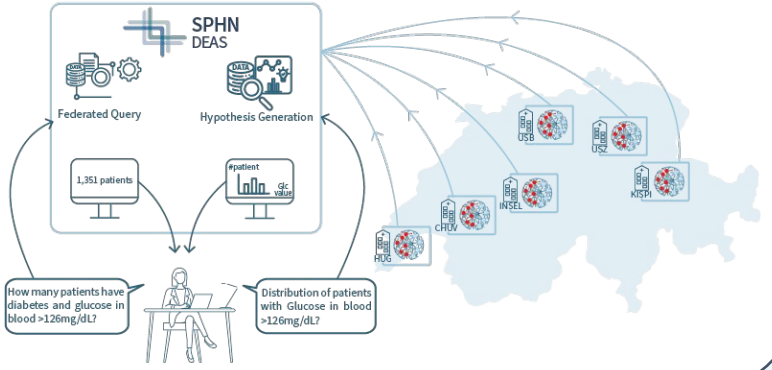


https://git.dcc.sib.swiss/sphn-semantic-framework https://sphn-semantic-framework.readthedocs.io

The SPHN value chain

>BIOMED IT<
Portal

SPHN Data Exploration and Analysis System (DEAS)



1) Project planning
What data is available for my research project?

1 3 4 5

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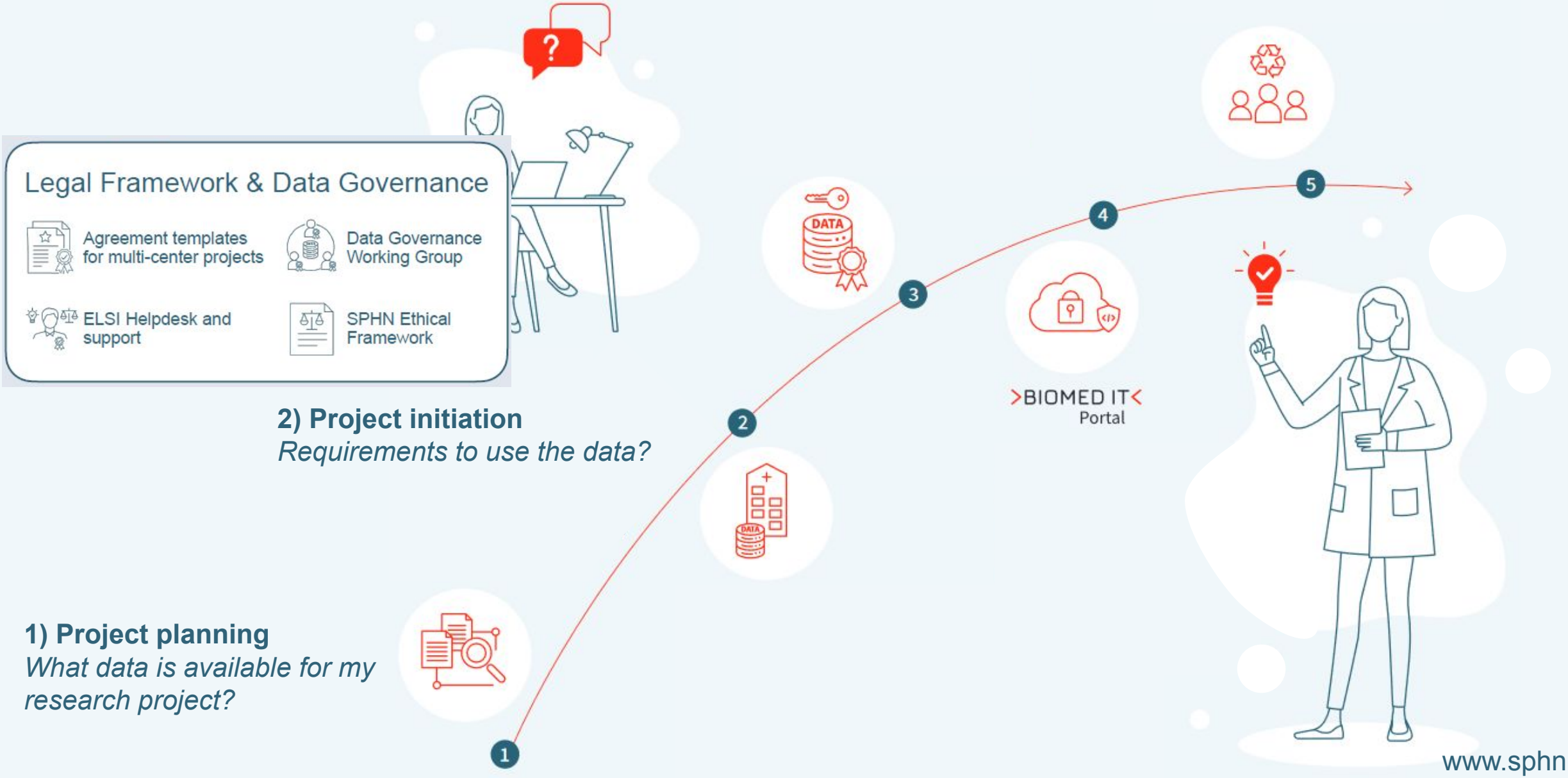
The SPHN value chain



2) Project initiation
Requirements to use the data?

1) Project planning
What data is available for my research project?

The SPHN value chain

3) Data preparation
Is the data available and interoperable?

From raw data to FAIR data

W3C

LOINC

SNOMED CT

2) Project initiation
Requirements to use the data?

1) Project planning
What data is available for my research project?

1 2 3 4 5

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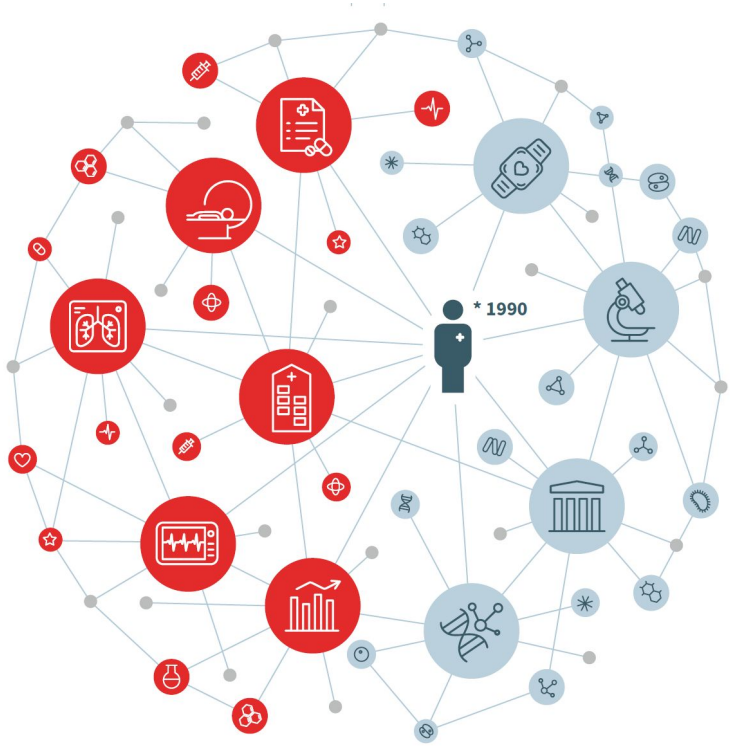
The SPHN Schema to generate knowledge graphs



165 SPHN concepts

– Nationally aligned

– Meaning defined once (e.g. SNOMED CT, LOINC or ICD-10)

Domains covered

– Administrative items (administrative case, consent)

– Demographics, medications, procedures, diagnosis, lab, measurements (vital signs)

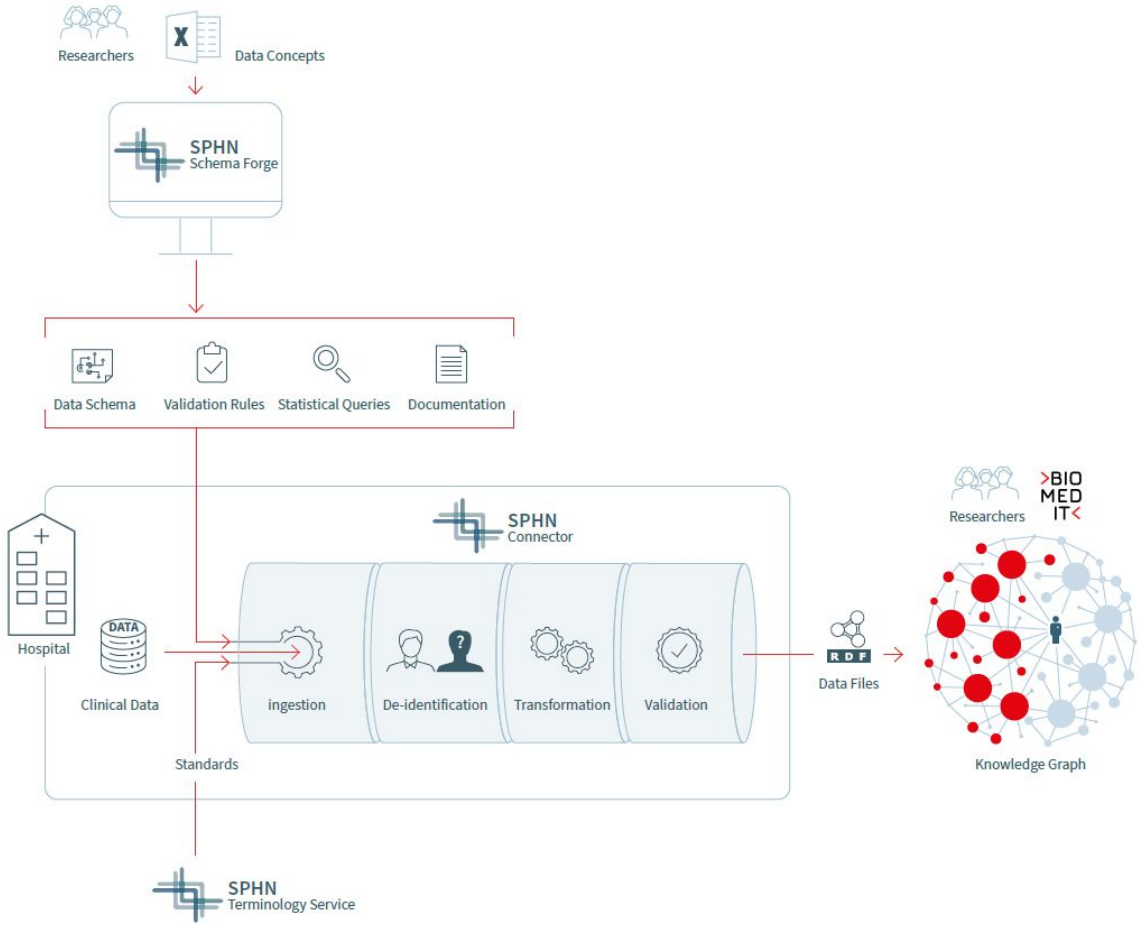
– Sample and biobanks

– Special concept for oncology, intensive care, microbiology

– Omics results and processing

– Data provenance

SPHN Toolstack to generate knowledge graphs



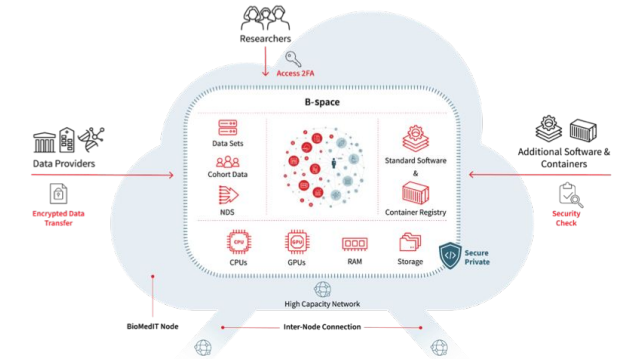
SPHN Schema Forge – Web service for the generation of semantic artefacts (blueprint for the graph)

SPHN Connector – RDF data generation on the data provider side

SPHN Terminology Service – FAIR and versioned terminologies in RDF

The SPHN value chain

Trusted research environment



and

>BIOMED IT<
Portal

1) Project planning
What data is available for my research project?

2) Project initiation
Requirements to use the data?

4) Data mobilization and analysis:
Where can I analyze sensitive data?

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The SPHN value chain

1) Project planning
What data is available for my research project?

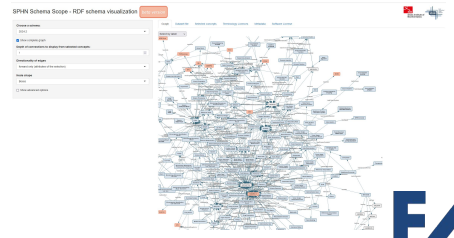
2) Project initiation
Requirements to use the data?

3) Data preparation
Is the data available and interoperable?

4) Data mobil
and analysis:
Where can I analyze sensitive data?

5) Data reuse
How can I make data accessible to other researchers?

SPHN Schema Scope
- SPHN Metadata catalogue



FAIR DATA POINT

https:// schemascope.dcc.sib.swiss/

https://specs.fairdatapoint.org/fdp-specs-v1.2.html

Acknowledgements

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