Introduction

Faculty of Computer Science
Workflow Systems and Technologies

Interoperability SS 2023

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Interoperability

Interoperability is *" ... the ability of two or more systems or components to **exchange information** and to **use the information** that has been exchanged."* (IEEE Standard Computer Dictionary)

*" ... interoperability means that two (or more) **systems work together unchanged** even though they weren't necessarily designed to work together ..."* (B. Woolf, IBM)

Motivation

- Need for data **exchange** among different systems.
- Ability to **query** across **multiple autonomous** and **heterogeneous** data sources [1].
- Enabled by **common** *protocols, interfaces* and *standards* [2].
- Adoption of *open standards has been* key for the expansion *of www and* **facilitation** *of* interoperability**.**
    - Prominent examples of organisations overseeing open standards include W3C and IETF.
    - Examples: *DTD, XML, HTML, XSLT, XQUERY, HTTP, SOAP, REST, JSON, RDF, SPARQL, …*

Challenges

- Querying data from **heterogeneous sources**
- **Integrating** collected data into a unified representation
    - Data matching and mapping to a schema
    - Data transformation
    - Data validation
- Exposing data using **common** protocols and interfaces
- Annotation of data for enhanced semantics and improved 'query-ability'.

Note: In this course **you will work on selected aspects of all** the mentioned challenges!

References

[1] Halevy, Alon, Anand Rajaraman, and Joann Ordille. "Data integration: The teenage years."
Proceedings of the 32nd international conference on Very large data bases. 2006.

[2] https://computersciencewiki.org/index.php/Interoperability_and_open_standards, Computer
Science Wiki, last accessed: 08.03.2023