universität wien

Introduction

Faculty of Computer Science
Workflow Systems and Technologies

Interoperability

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)

Interoperability

EDPS

EUROPEAN DATA PROTECTION SUPERVISOR

English (en)

Data Protection Notice

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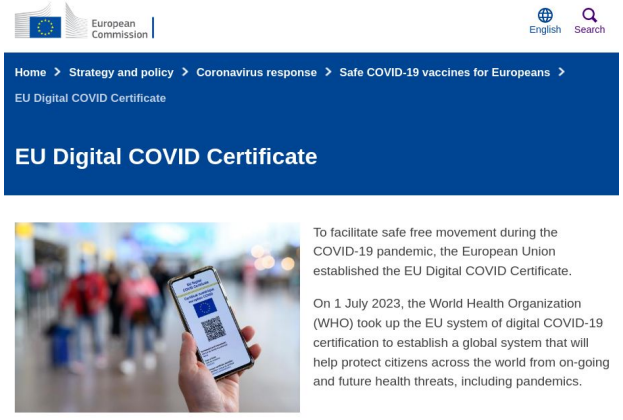
Interoperability

Translate this page

Interoperability refers to the functionality of information systems to exchange data and to enable sharing of information. Several large-scale databases have been set up at EU level to deal with migration, asylum and internal security. These databases contain information about people. Initiatives have been taken to identify and develop where and how these systems could communicate with each other and exchange information. Each of these systems has been created for a specific purpose. In keeping with the main data protection principles, interoperability cannot give rise to the access or use of any data via another information system or give access to more data than is needed.

Motivation

- European interoperability framework (EIF) [3]
  - Support move towards the *Digital Single Market*
  - Seamless access to cross-border content and services
  - E.g. e-Health ➜ EU Covid Certificate
- e-Invoicing
  - B2G, e.g. ebInterface in Austria
  - B2B, e.g. ZUGFeRD in Germany (2025)
- M2M and IoT, e.g. MQTT (ISO/IEC 20922)
- DevOps
- Scientific Workflows
- ...



Requirements

- Seamless exchange of data between different systems
- Transformation between data formats
- Seamless integration of services and business processes
- Integration of data from multiple data sources into a unified representation
- Exposing services and composite services
- Description of data
- Description of the interactions between services and business processes

Challanges

- *Multiple autonomous* and *heterogeneous* databases [1].
- Non standard data formats
- Distributed systems
- Complex business processes

Interoperability Enablers

- ***Common*** *protocols, interfaces* and *standards* [2].
  - E.g. *open standards have been* key for the expansion *of the* ***www.***
  - *Typical example: (mostly) uniform experience* browsing the modern Web via ***standardised*** HTML across different software and devices.
- Prominent examples of organisations overseeing open standards:

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

[3] European Commission (2017) Communication on European Interoperability Framework - Implementation Strategy. COM(2017) 134 Final, last accessed: 13.03.2023 https://eur-lex.europa.eu/resource.html?uri=cellar:2c2f2554-0faf-11e7-8a35-01aa75ed71a1.0017.02/DOC_1&format=PDF