

FAIR Sensor Ecosystem: Long-Term (Re-)Usability of FAIR Sensor Data through Contextualization

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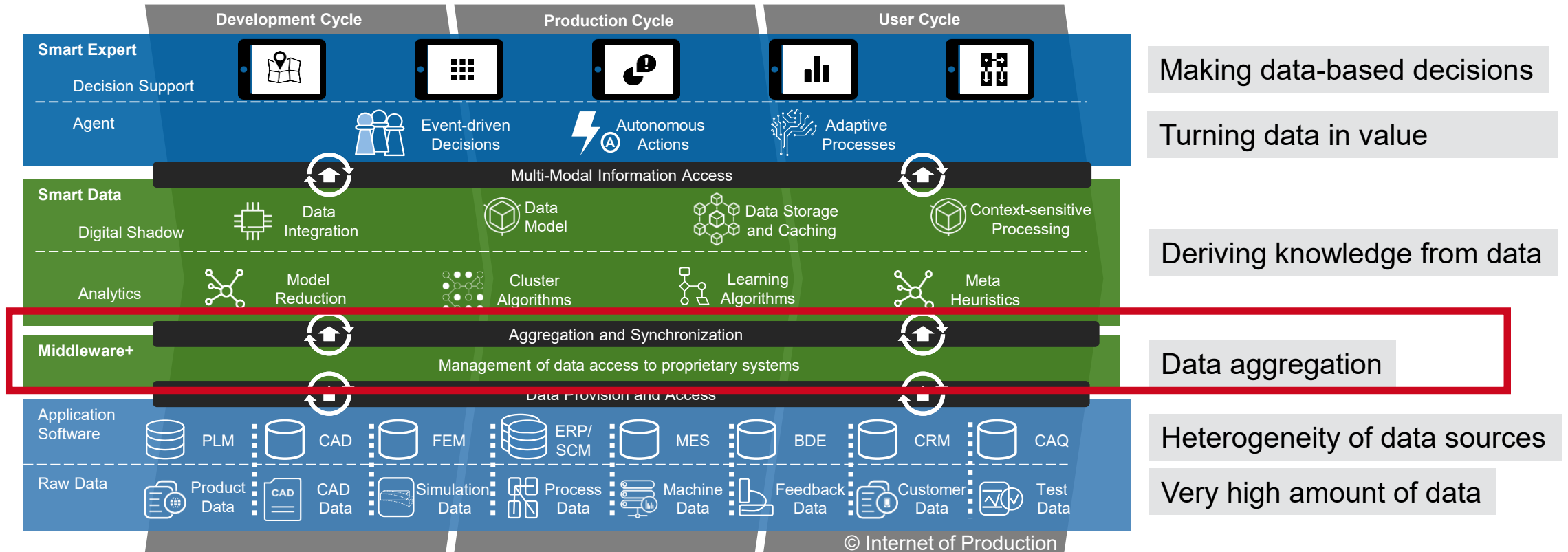
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Introduction

Needs for Long-Term Reusability of Sensor Data





Contributions

- Deriving requirements for long-term (re-)usability of sensor data
- Data model to preserve context information of sensor data
- System architecture for contextualization middleware

Middleware to reconstruct systems' configuration and parametrization at any point in time

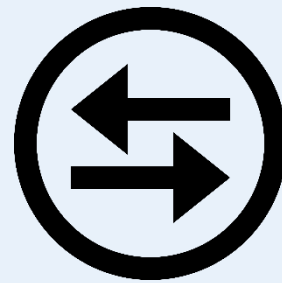
- (meta)data has globally unique, resolvable, and persistent identifiers
- Rich machine-actionable metadata
- (meta)data are registered or indexed in a searchable resource

Findable



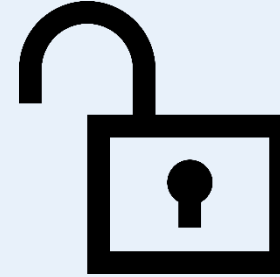
FAIR

- Usage of a formal, accessible, shared, and broadly applicable language for knowledge representation
- Used vocabularies follow FAIR principles
- Usage of qualified references



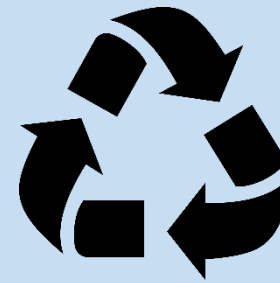
Interoperable

Accessible



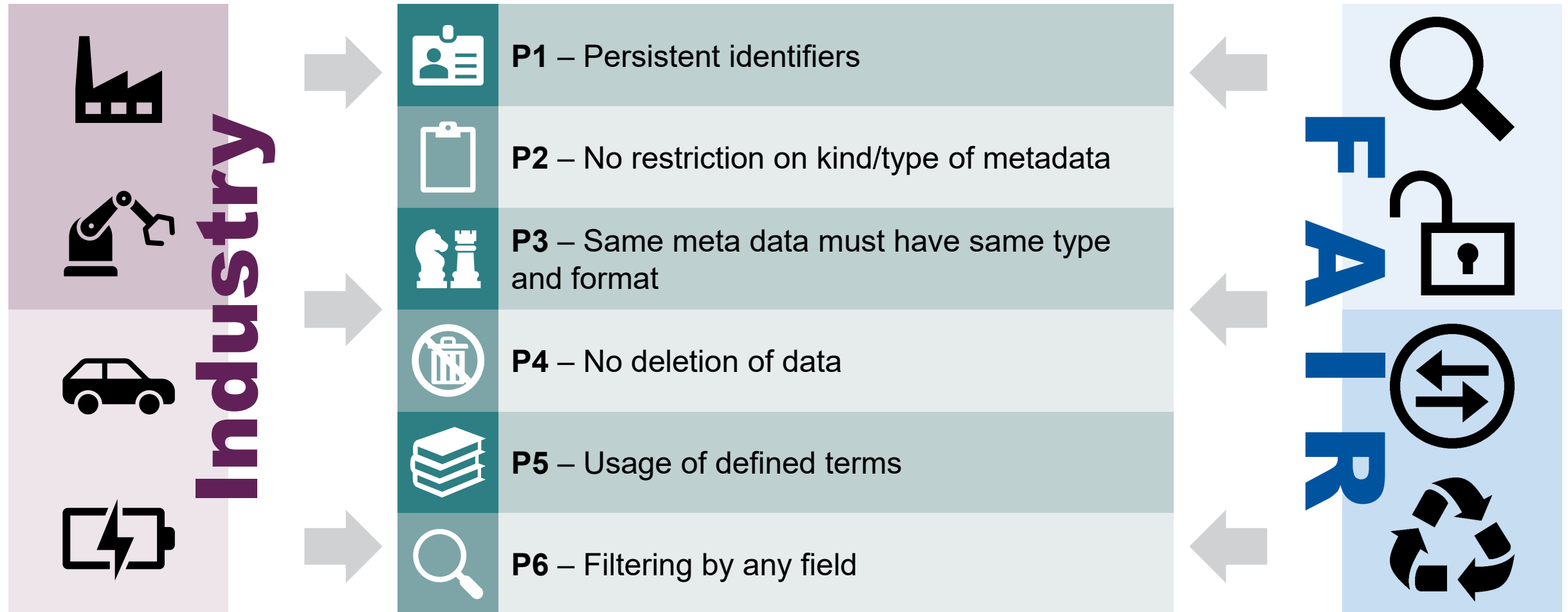
FAIR

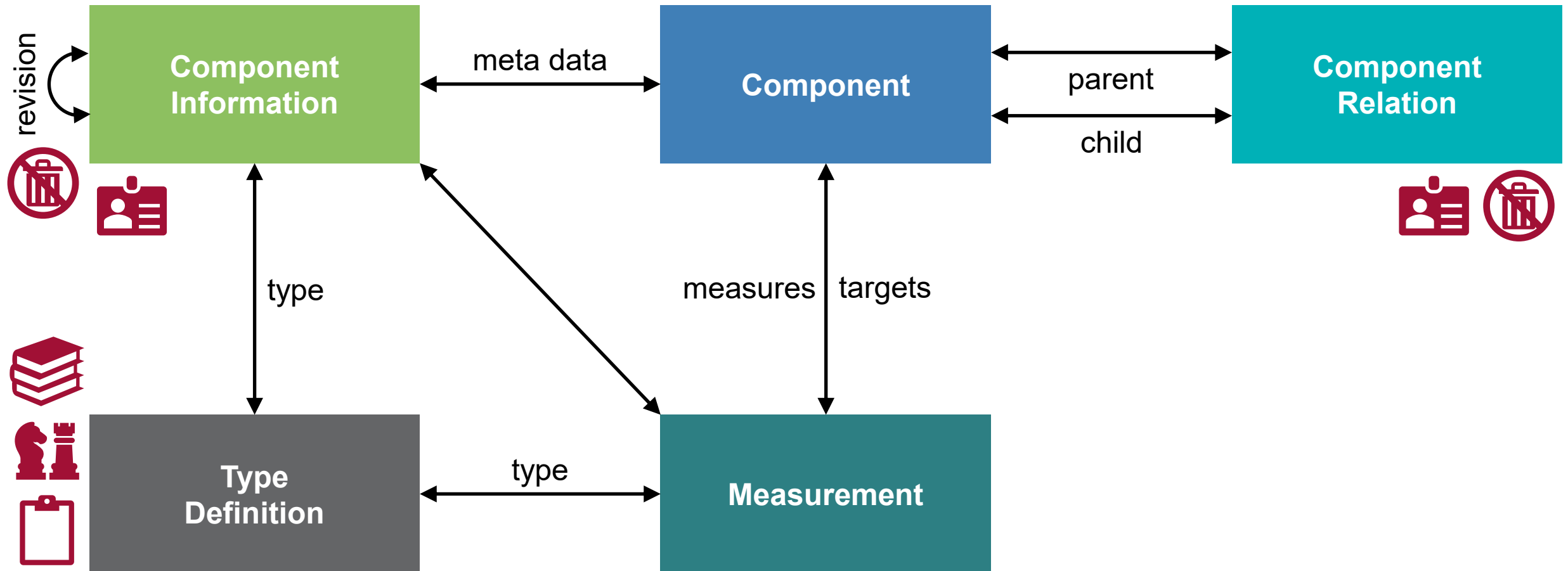
- clearly defined access rules
 - access protocol
 - access authorization
 - metadata longevity
- data has a universal resource locator
- clearly defined terms of use and license
- (meta)data is associated with detailed provenance
- (meta)data meet domain-relevant community standards

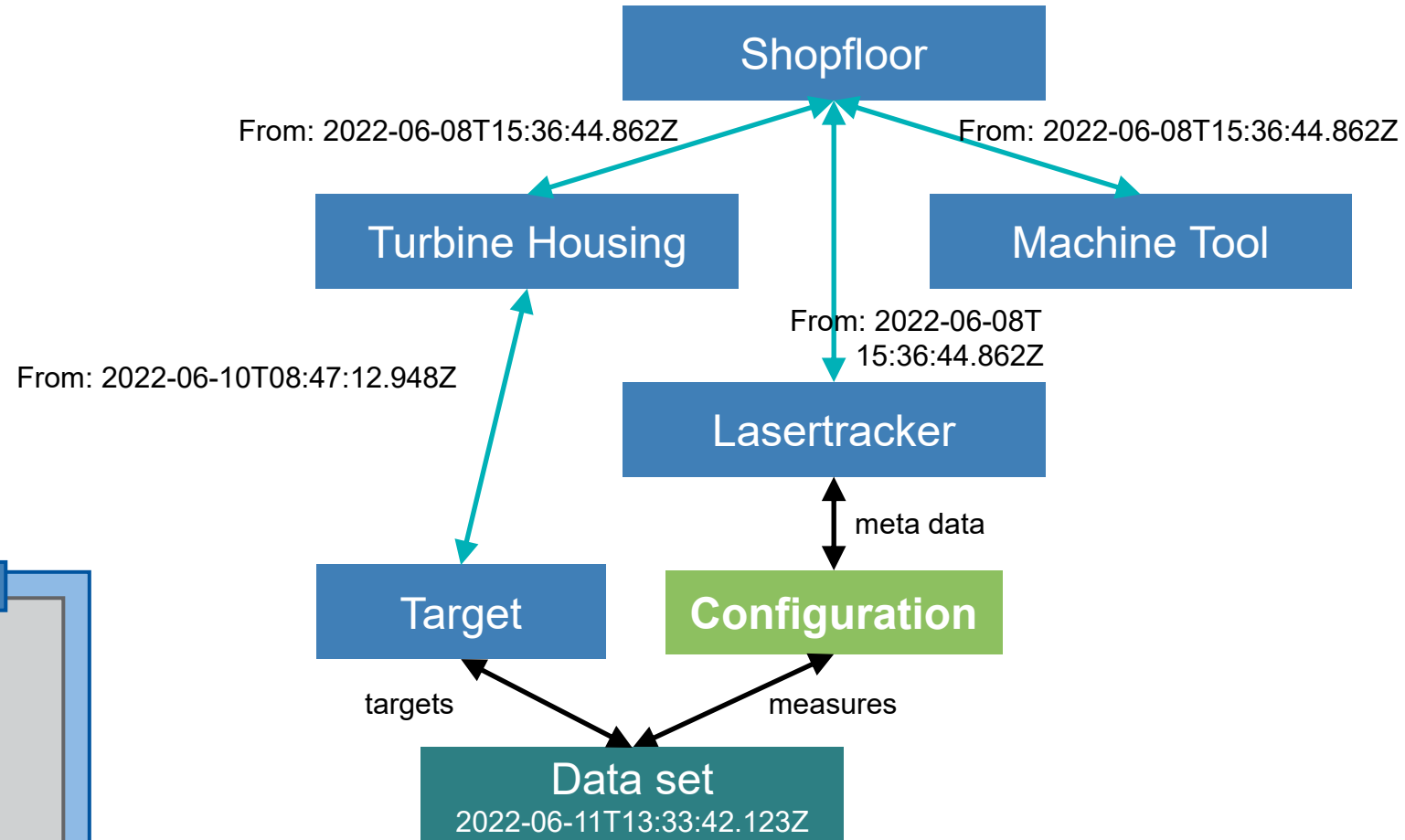
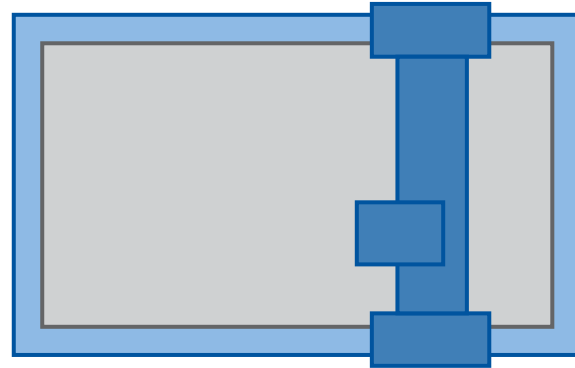
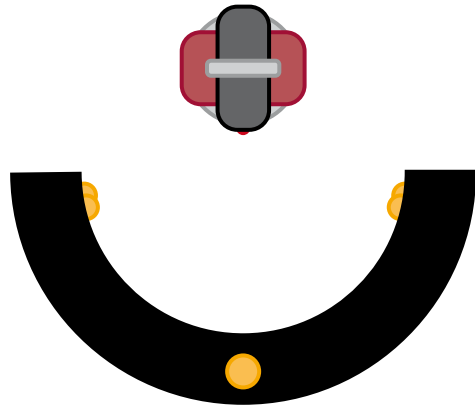


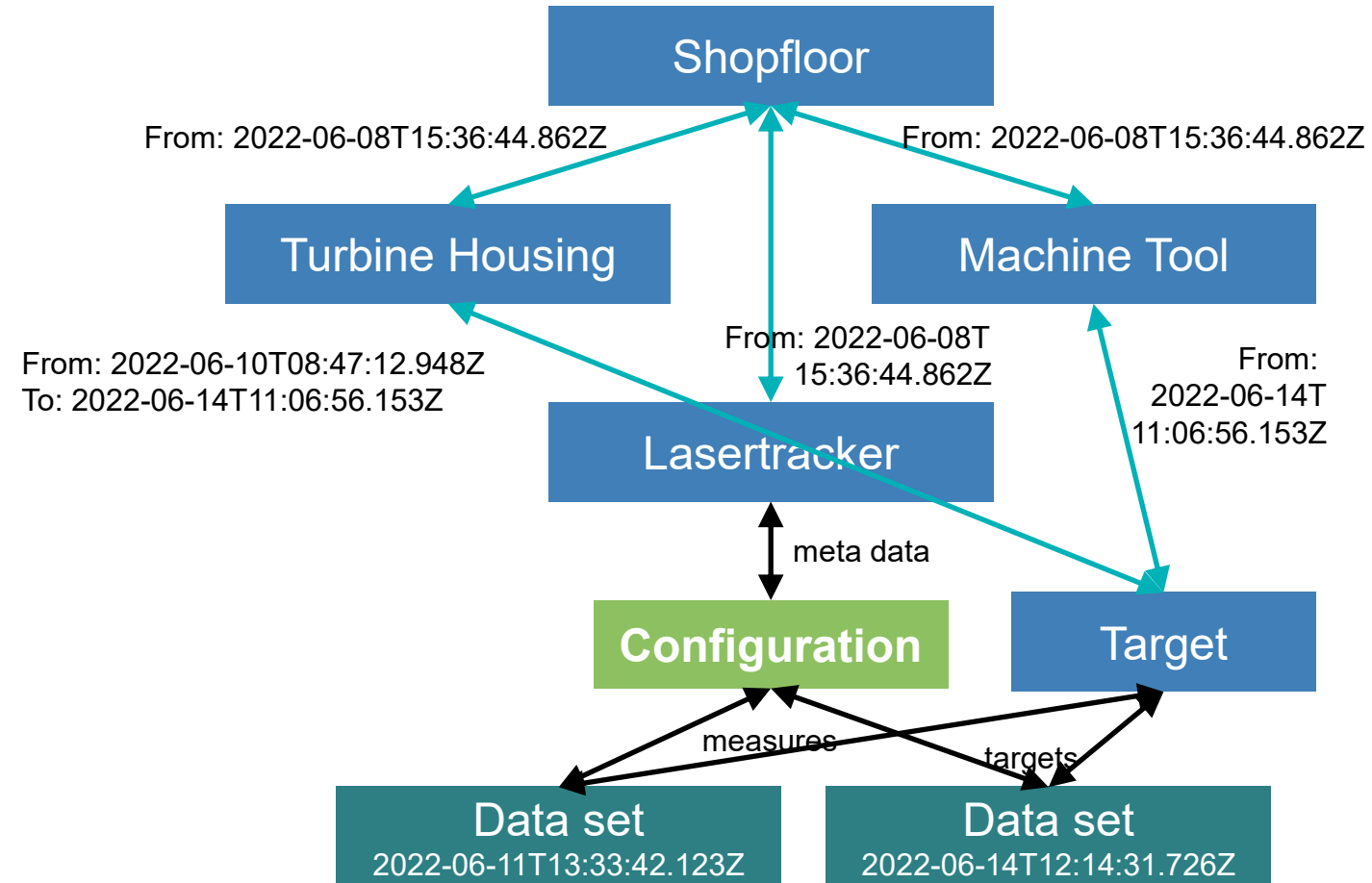
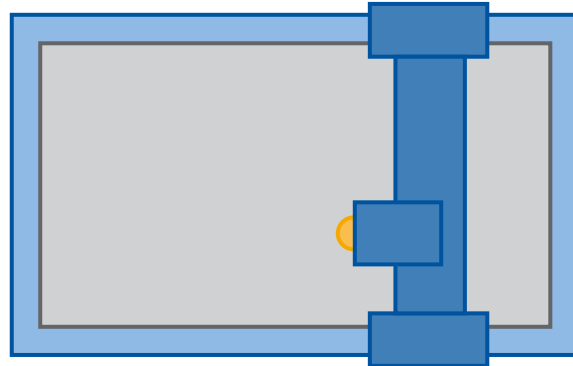
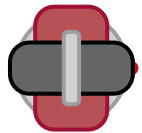
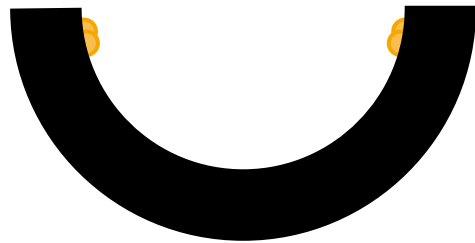
Reusable

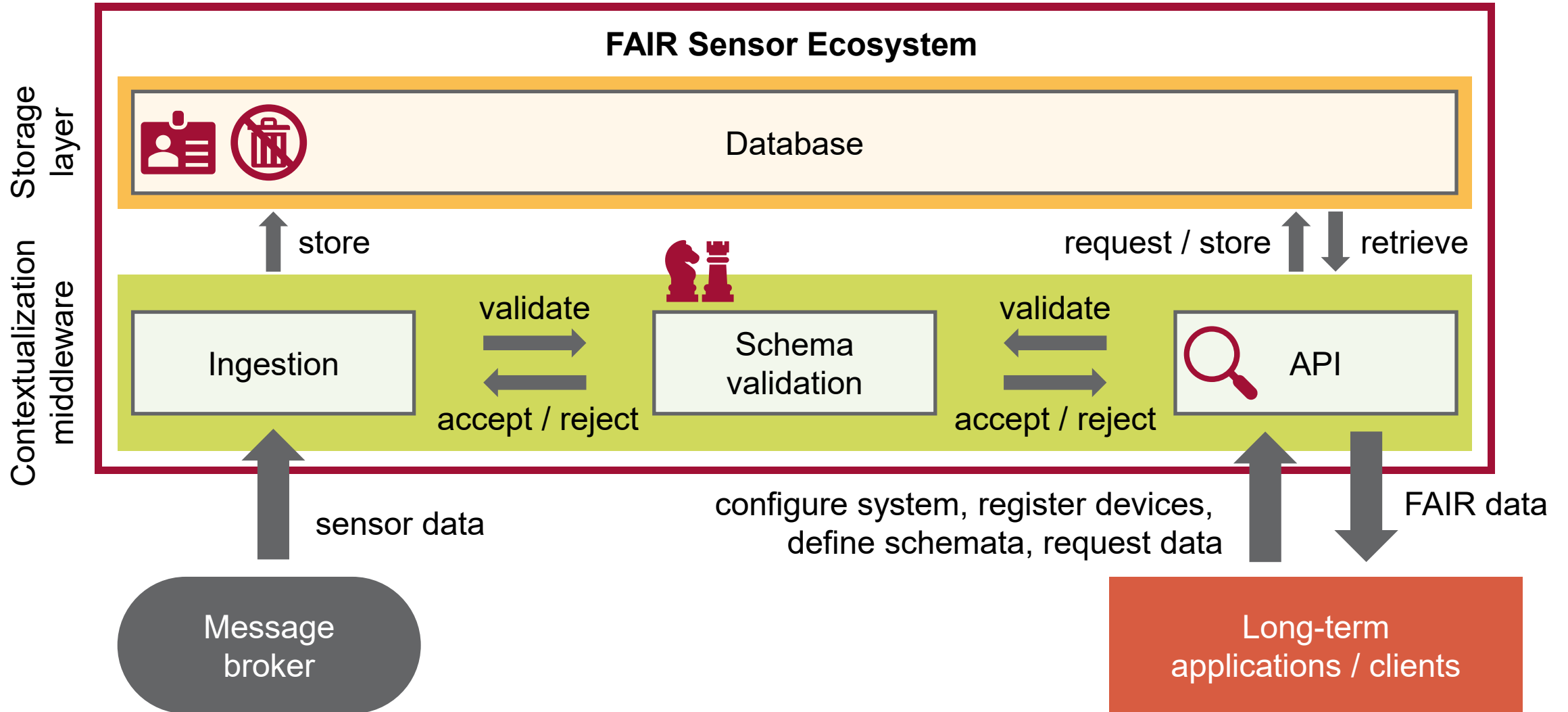
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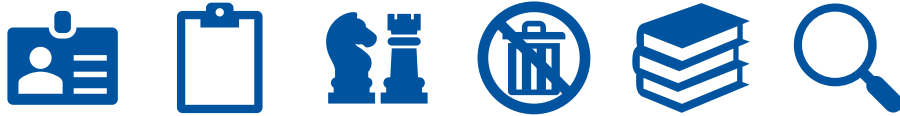


Framework	Findability	Accessibility	Interoperability	Reusability	Aggregation
FAIR Metrics (Manual)	100	100	60	100	90
FAIR Metrics (Automatic)	25	20	71	100	54
Maturity Model	100	100	20	0	55
Stewardship Wizard	80	83	90	84	84
Average	76	76	60	71	71

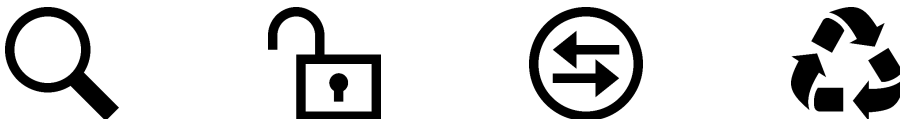
Some metrics are not suited for assessing FAIRness of industrial sensor data

Summary

- Derived six specific prerequisites for *FAIR Industrial Sensor Data*



- Proposed the FAIR Sensor Ecosystem
 - Definition of a contextualization data model
 - Development of the system architecture
- Assessed the FAIRness of contextualized and stored measurement data



Outlook

- Mapping to the *Asset Administration Shell*
- Extending relations
- Adopting existing terminology
 - Semantic Sensor Network Ontology
- Including external links

Thank you very much



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