



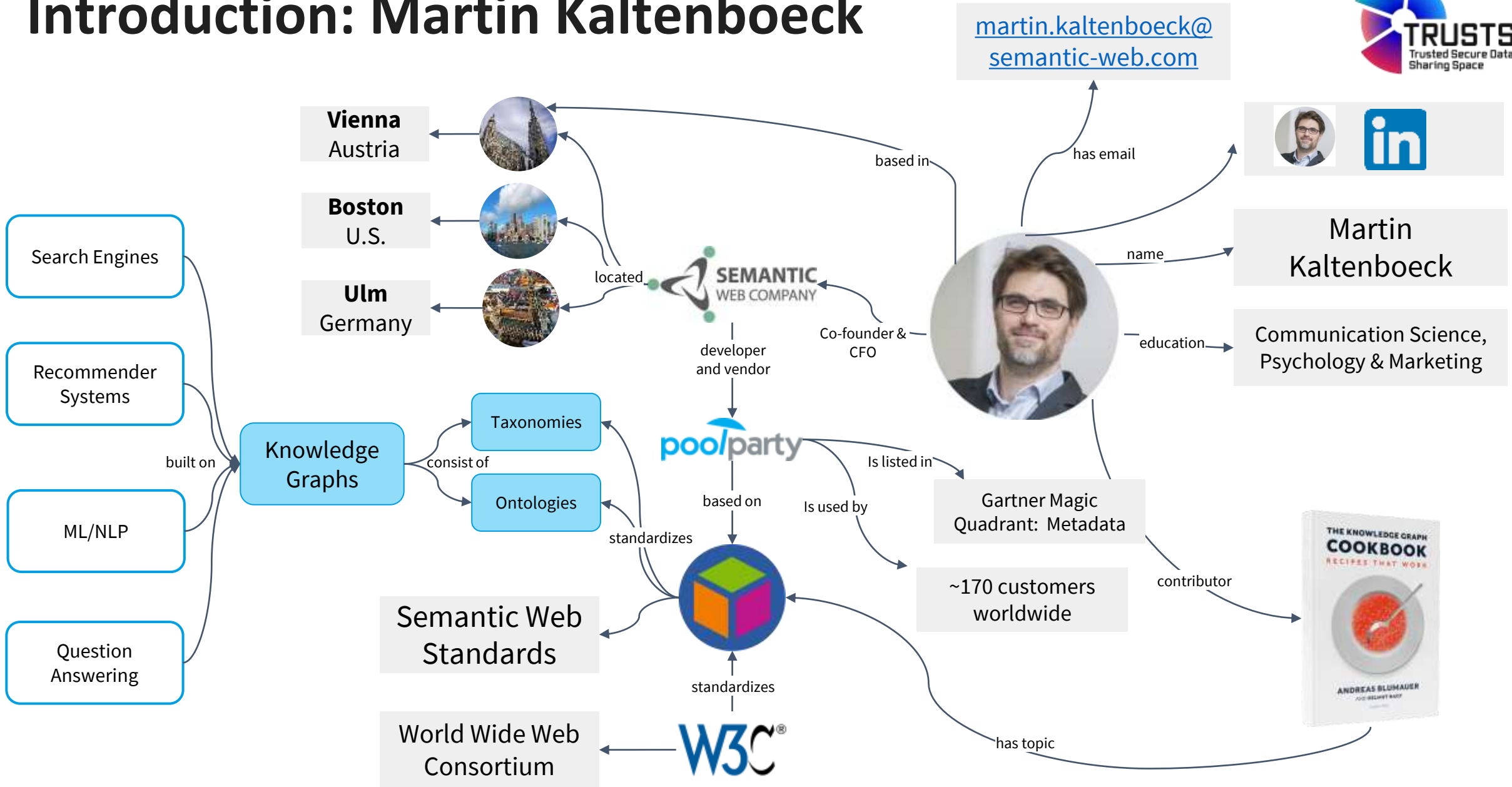
# TRUSTS: Interoperability in Data Spaces

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# Introduction: Martin Kaltenboeck



# TRUST Project - <https://www.trusts-data.eu/>



Consortium: 17 Partners, 9 Countries



## COORDINATOR



Leibniz  
Universität  
Hannover

## TECH LEAD



Fraunhofer

## RESEARCH & ACADEMIA



KU LEUVEN



RSAFG

Research Studio DSc



FORTH

## INDUSTRIAL PARTNERS



SEMANTIC WEB COMPANY

DELL EMC



INTERNATIONAL DATA  
SPACES ASSOCIATION

G1 Business Development &  
Organizational Growth



DIO  
Data Intelligence  
Offensive

eBOS



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## 3 Use Cases

- Aim at **testing & demonstrating TRUSTS data space potential**
- Define **paradigm shift** for established business processes w/ real stakeholders.
- Conduct advanced field trials within the sectors of:

- **Financial** Institutions
- **Telecom** Operators
- **Corporate** Data Providers



**1** Anti-Money Laundering Compliance

**2** Agile Marketing through Data Correlation

**3** Data Acquisition to improve Customer Support Services



# TRUSTS Contributions



Ensuring **trust** in the concept of **data markets** via its focus on developing a platform based on the **multidisciplinary experience** of the consortium



Allowing the **integration and adoption** of future platforms by means of **interoperability**



Investigating the **legal and ethical aspects** that apply on the entire data valorization chain



The **TRUSTS platform** will act independently & as a **platform federator**

# TRUSTS Contributions: Interoperability



Allowing the **integration and adoption** of future platforms by means of **interoperability**

**Zu dem Begriff Interoperabilität** (von lateinisch opus ‚Arbeit‘ und inter ‚zwischen‘) existieren zwei unterschiedliche, jedoch sinngleiche Definitionen:

- 1. Als Interoperabilität** bezeichnet man die **Fähigkeit** zum Zusammenspiel verschiedener **Systeme, Techniken** oder **Organisationen**. Dazu ist in der Regel die Einhaltung gemeinsamer technischer Normen notwendig. Wenn zwei Systeme miteinander vereinbar sind, nennt man sie auch interoperabel.
- 2. Interoperabilität ist die Fähigkeit** unabhängiger, **heterogener Systeme**, nahtlos zusammenzuwirken, um Daten auf effiziente und verwertbare Art und Weise auszutauschen bzw. dem Benutzer zur Verfügung zu stellen, ohne dass dazu besondere Adaptierungen notwendig sind.

Source: Wikipedia, accessed: 06/2022, <https://de.wikipedia.org/wiki/Interoperabilit%C3%A4t>

# FAIR Principle: Interoperability

## FAIR Principles

Findability, Accessibility, **Interoperability**, and Reuse of digital assets.

*The data usually need to be integrated with other data. In addition, the data need to interoperate with applications or workflows for analysis, storage, and processing.*

- (Meta)data use a formal, accessible, shared, and broadly applicable **language for knowledge representation**.
- (Meta)data **use vocabularies** that follow FAIR principles
- (Meta)data include **qualified references** to other (meta)data

Source: <https://www.go-fair.org/fair-principles/>, accessed: 06/2022



# Interoperability: The TRUSTS Knowledge Graph



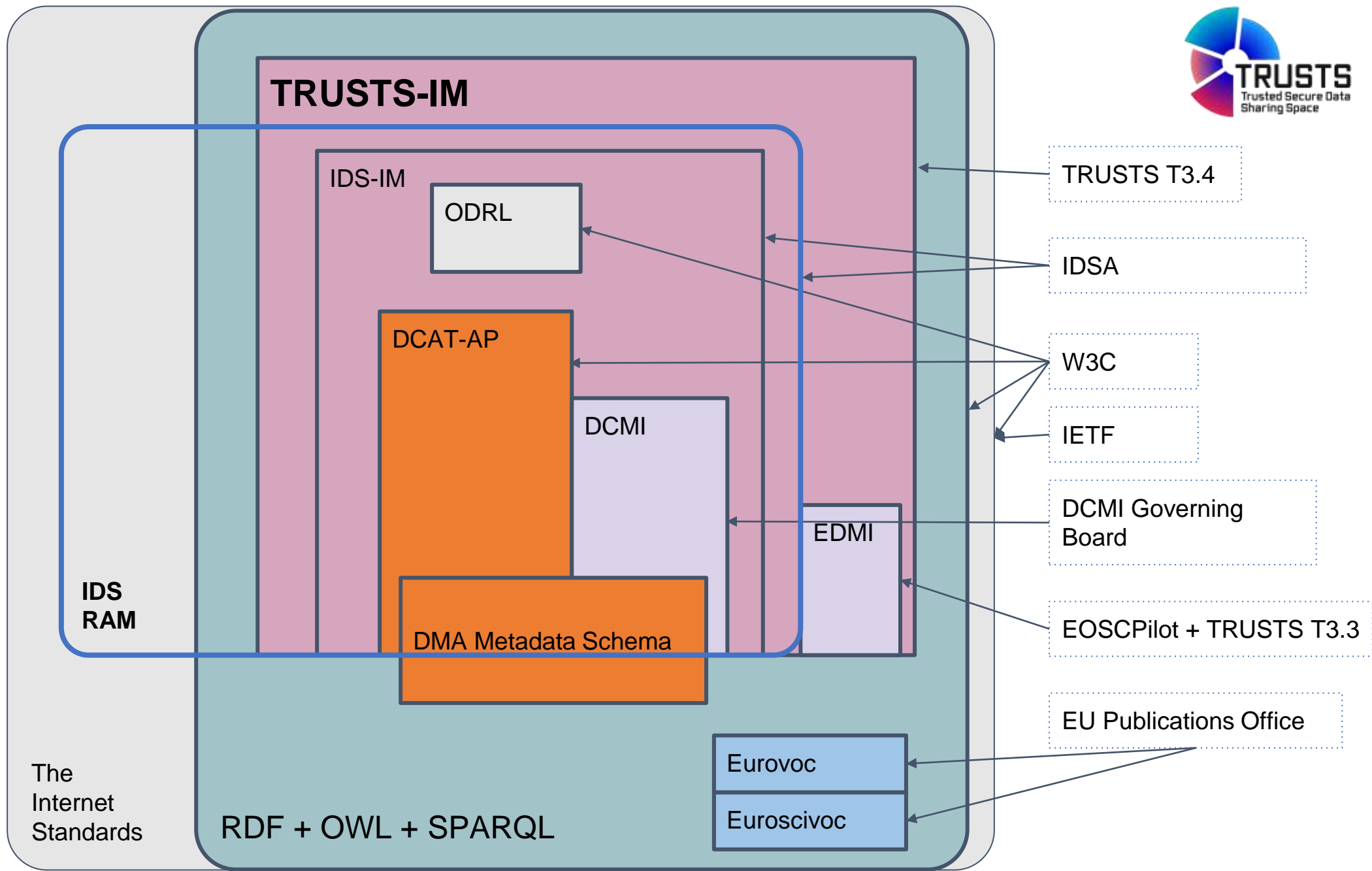
## The TRUSTS Knowledge Graph

- Provides controlled vocabularies / code lists for all metadata
- Enables entity linking for metadata (schema) mapping
- Allows enrichment of metadata by analysing metadata and data
- Contextualises data, services, organisations, users and their interactions

## The TRUSTS Knowledge Graph is based on

- IDSA InformationModel / DMA information model
- Several code lists: ISO language, DCAT themes, NACE, ...
- Taxonomies: EuroVoc, domain specific vocabularies
- Established standards for metadata and data management

- How are things described?
- How are catalogues organized?
- How are things permissioned?
- How are things accessed?
- What categories do things belong to?
- How are descriptions specified, transmitted and queried?
- What do we expect from data and metadata?



# The TRUSTS Knowledge Graph: Benefits



- Interlinked, contextualised network of all data space objects
- Enables search, recommender/broker, other data space services
- Supports a high-quality data governance approach
- Enables efficient data & metadata ingestion and delivery
- Standards-compliance (W3C, ISO) ensures easy adaptation
- Rich in semantics: providing context & meaning

**A Knowledge Graph is an enabler for DATA SPACE INTEROPERABILITY**

## Identified Gaps in Interoperability in Data Spaces

- Interoperability often on **metadata level ONLY** (what about the data?)
- No industry specific **controlled vocabularies & Knowledge Graphs**
- Resources **not available in other languages** than English
- **Insufficient data usage control** mechanisms (right-, value-, purpose modeling)
- Connection of the **physical and digital world** still missing





**Thank you.**

**Please raise your Questions?**



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