Workshop: Data Spaces & Semantic Interoperability

Requirements, standards, certification, tools, licenses and more

3rd of June 2022, 9 am – 4:30 pm CEST | Vienna, Austria

Dr. Achille Zappa
Data Science Institute - NUIGalway
Insight SFI Research Centre for Data Analytics
Galway, Ireland
Design Principles supporting the Creation of Tools for the Interoperability of European Digital Data Spaces and Marketplaces

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www.i3-market.eu
Data Lifecycle Process
What About the Information on Assets, Metadata and Modelling Activity

Semantic and Information Model & Data Lifecycle Process

Ontology
- Formalisation
- Vocabulary
- Taxonomy
- Description
- Classification
- Formats

Collect
- Data sources
- Ownership
- License
- Quality assessment and enrichment

Access
- Interface
- Public versus private access
- Access granularity
- Pricing and licensing model

Store
- Query and backup capabilities
- Local versus cloud, distributed versus centralized storage

Utilize
- Alone or in combination with other data sources
- Redistribution
- Updates

Sell
- Price Model
- Revenue Model
- Offering Description
- Provider Model

Marketplace Data Lifecycle Process

i3-MARKET Semantic Models
- Integrates different vocabularies and taxonomies in relation to Marketplaces Operation and Management
- Formalise the state of current marketplaces by using best practices and standards
- Vocabularies and Ontologies for Collecting, Accessing, Store, Utilise and Sell Data
• **i3-Market Semantic Models**

  • **i3-Market Semantic Core Model**
  • **Contractual Parameters**
  • **W3c Data Catalog Vocabulary (DCAT)**
  • **W3c Verifiable Credentials and DID**
  • **Pricing**
  • **EU Vocabularies Frequency Named Authority List , EU Vocabularies File Type Named Authority List , EU Vocabularies Languages Named Authority List , EU Vocabularies Continents Named Authority List , ADMS licence type vocabulary**
  • **Domain Annotations and QUDT**

• **Semantic Engine & Metadata Framework**
  
  a. **Data Offering Creation**
  b. **Data Offering Discovery**
  c. **Data Offering Registry**
  d. **Federated Discovery on different node registries**
  e. **Management of Data Sharing Agreement and Service Agreement Parameters to comply with Smart Contract Manager**
  f. **Alignment with entities and IDs in backplane Information models**

• **Semantic Vocabulary Management** (Git Repository for models, files, cooperative engagement)

We developed and implemented dedicated software components for Semantic Engine System as SEED, that is in charge to manage the semantic metadata, descriptions, queries, discoveries, retrieve, create and map descriptions and manipulate registries, federated queries and components interactions and interfaces. To make easier the interface and use of functionalities we present the external operations via APIs that are more agnostic and easier to use also for non-semantic experts.
Data Offering Description
i3-MARKET – Secure Federation Data Economy Concept Approach
IDM and Self sovereign identity

- OPENID standard authentication
- Crypto Wallet
- Distributed
- Identity
- Verifiable
- Credentials
- Crypto token

Identity Holder

**Crypto Wallet**

**Name:** John
**Surname:** Doe
**Country:** Italy
**Age:** 38

- **Issuer:** did:eth:0x77b9ac37c499d9e2386...
- **Public Key:** H3C2AVlMv6gmMNa...

- **Role:** Data Marketplace
- **Country:** Spain
- **Business:** Automotive

- **Subject:** did:eth:0x77b9ac37c499d9e2386...
- **Role:** Car Owner
- **Name:** Mario
- **Surname:** Rossi
- **Country:** Italy
- **Age:** 38

**Key Personal Data**

**Verifiable credentials**
i3-MARKET – Secure Federation with Distributed Consent

Verifiable Credentials

**Issuer:** did:eth:0xk7bhac37c498d8e2386....
**Role:** Data Consumer
**Country:** Italy
**Business:** Automotive

**Issuer:** did:eth:0xt3noiz45c744....
**Role:** Data Provider
**Country:** Italy
**Business:** Health

**Issuer:** did:eth:0xt3noiz45c744....
**Role:** Data Market Place
**Country:** Spain
**Business:** Automotive

**Issuer:** did:eth:0xt3noiz45c744....
**Role:** Data Market Place
**Country:** Germany
**Business:** Health

**Issuer:** did:eth:0xk7bhac37c498d8e2386....
**Role:** Data Market Place
**Country:** Spain
**Business:** Automotive

Verifiable Data Registry (Blockchain)
Introduction to Data Sharing

Non-personal data

Data Sharing Agreements

There is no universal law that regulates all aspects of data sharing across sectors, especially in non-personal data. Data sharing, especially in B2B context, is typically implemented on the basis of contracts, through which the parties agree on the subject and value of the trading as well as on all other modalities.

Commission guidance on sharing private sector data in the European data economy

Five Principles for B2B DSAs in EU

<table>
<thead>
<tr>
<th>Principles</th>
<th>DSAs should therefore...</th>
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<tbody>
<tr>
<td>Transparency</td>
<td>Identify the persons or entities that will have access and use the data generated by the product or service in question and specify the purposes for such data use.</td>
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<tr>
<td>Shared value creation</td>
<td>Recognise that, where data is generated as a by-product of using a product or service, several parties have contributed to creating the data.</td>
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<tr>
<td>Respect for each other's commercial interests</td>
<td>Address the need to protect both the commercial interests and secrets of data holders and data users.</td>
</tr>
<tr>
<td>Ensure undistorted competition</td>
<td>Address the need to ensure undistorted competition when exchanging commercially sensitive data.</td>
</tr>
<tr>
<td>Minimised data lock-in</td>
<td>Allow and enable data portability as much as possible, particularly where companies offer products or services that generate data as a by-product.</td>
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</tbody>
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Most common clauses for DSAs

DSAs for non-personal data

General legal provisions
- Parties and Roles
- Preamble, Scope of the Agreement, and Definitions
- Description/ Specification of the Subject Matter → Description/Scoping of the data and data trading and the Agreement
- Duties/Obligations and Rights → Terms & Conditions for data trading (room for flexibility)
- Intended use
- Warranties → Room for flexibility
- Liability and Dispute resolution mechanisms → Room for flexibility
- Duration and Termination → Performance, Breach, Modification, Conditions for premature termination & consequences

Specific License Types

Report on EU law applicable to sharing of non-personal data

What the colors mean:
Maybe not applicable in smart contracts
Not necessarily there in all DSAs
Intelligent, Interoperable, Integrative and deployable open source MARKETplace backplane with trusted and secure software tools for incentivising the industry data economy