DATA MARKET AUSTRIA

Data Market Austria

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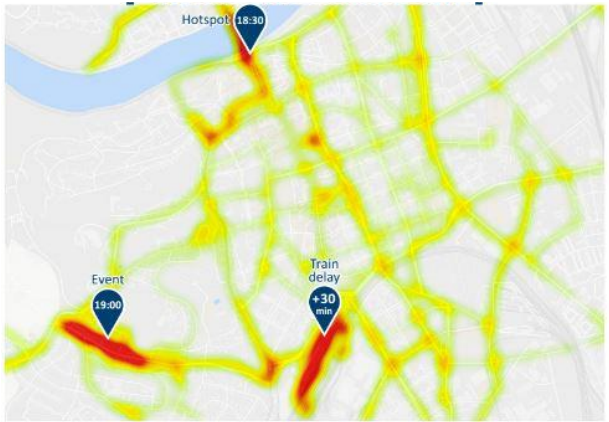
Research Studios Austria Forschungsgesellschaft mbH
www.researchstudio.at

Inhalt

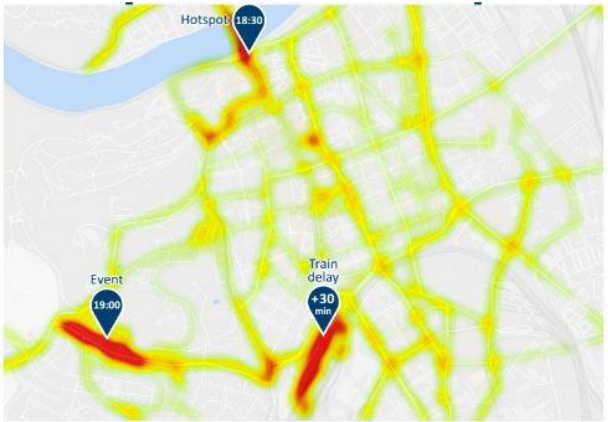
- Motivation and general structure
- Technology
- Pilots
- Community, Sustainability, Legal
- Outlook

motivation



motivation

Data for a Taxi Fleet
Example Use Case
Transport
Events
Traffic
Weather
...

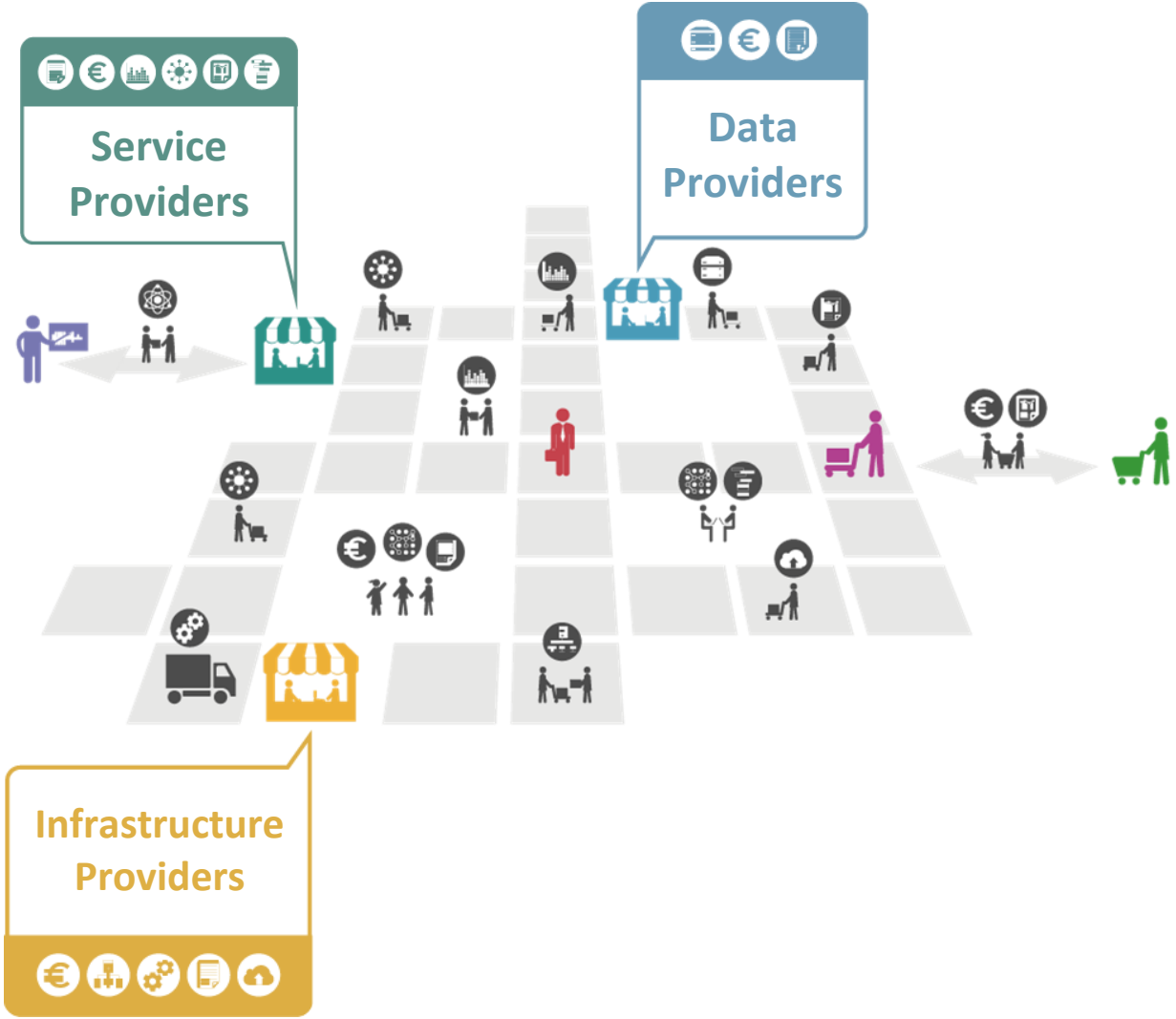

Hotspot
18:30
Event
19:00
Train
delay
+30
min

motivation

Data for a Taxi Fleet
Example Use Case
Transport
Events
Traffic
Weather
...
Result: Taxi Demand Map
Hotspot
18:30
Event
19:00
Train
delay
+30
min

Struktur

Angebot



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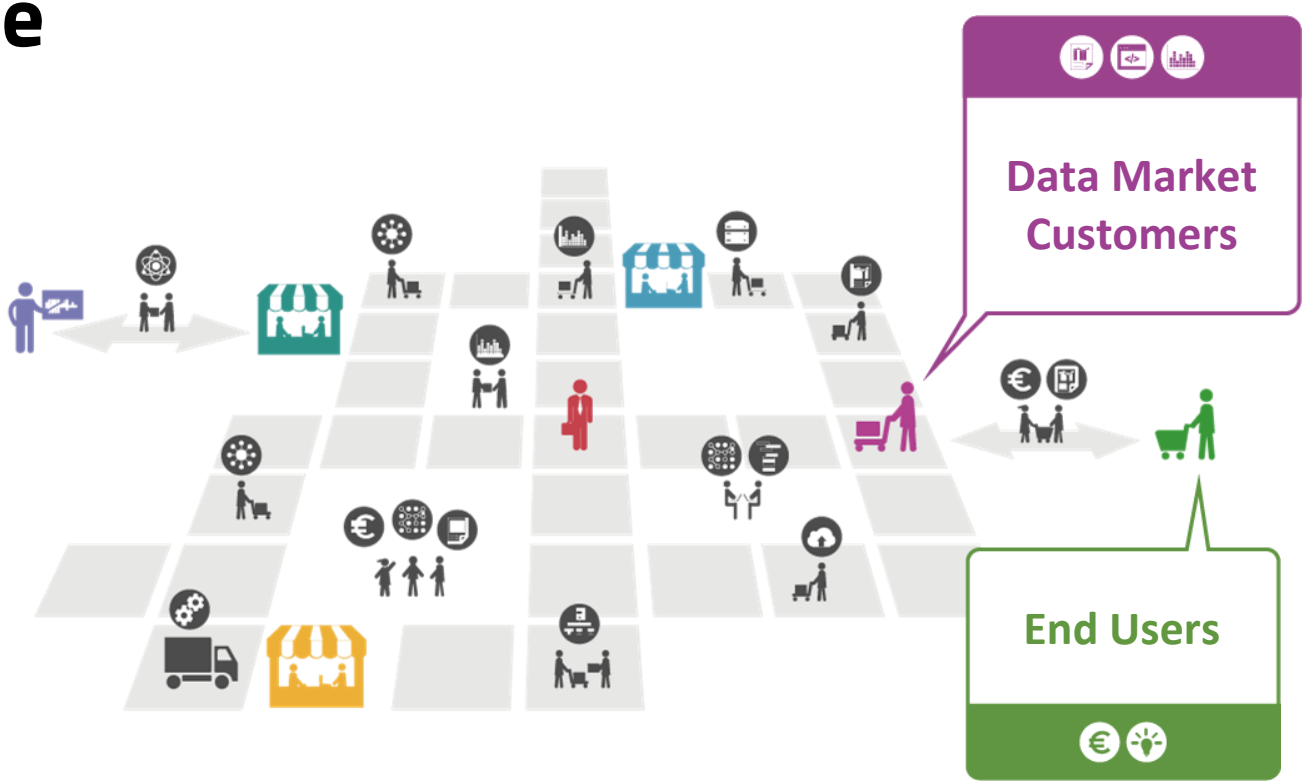
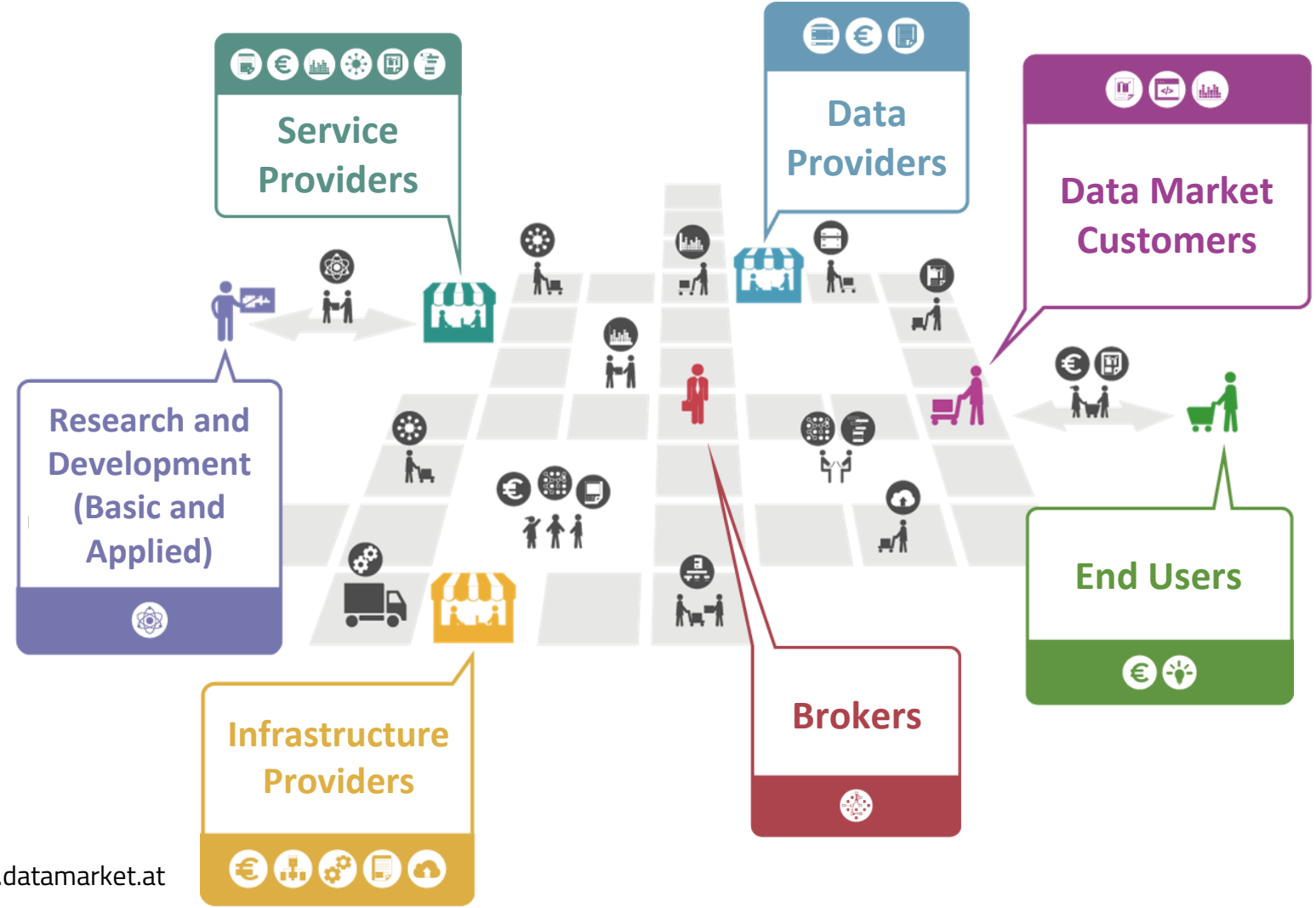
Nachfrage

Nachfrage



Makler



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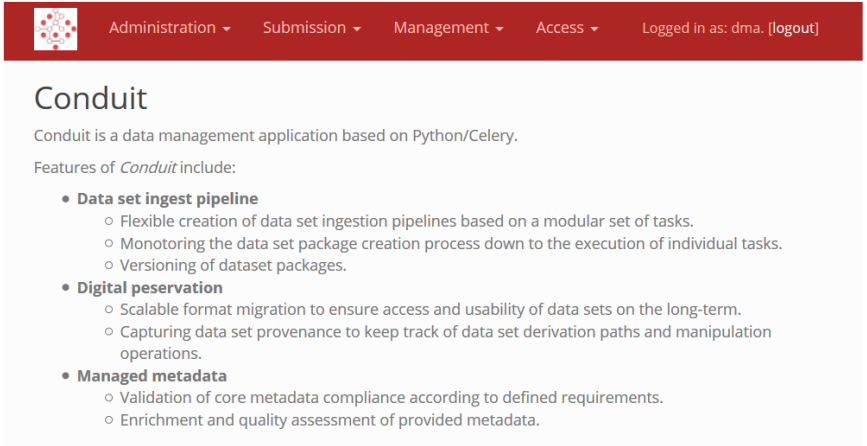
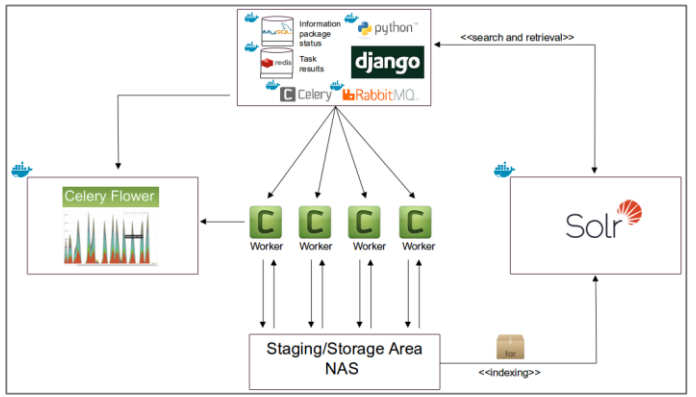
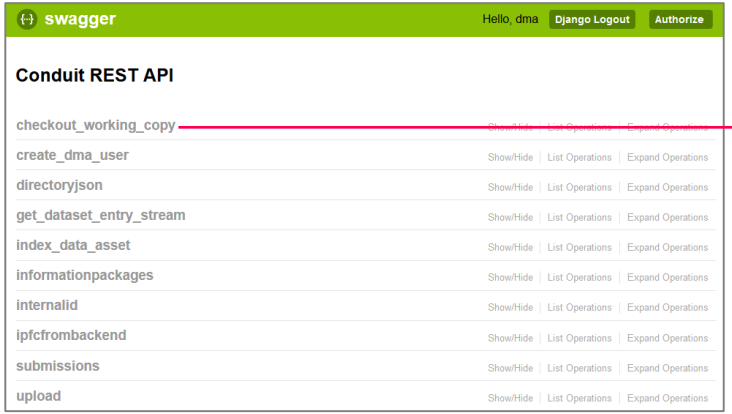
Concept:
an API-based set of tools, allowing each Actor to maintain different levels of control

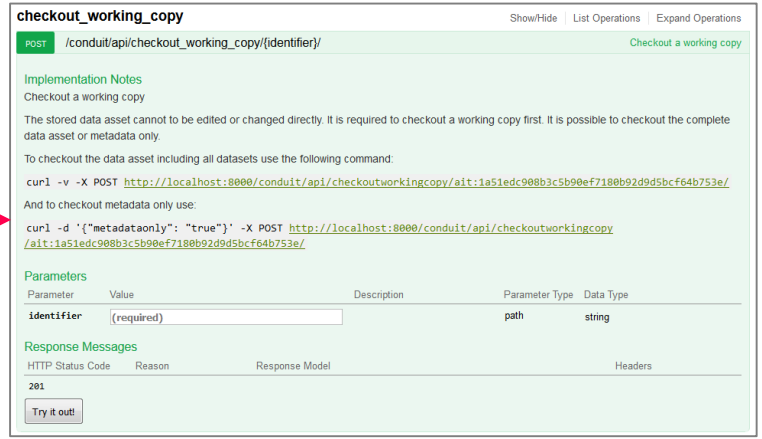
Data Management



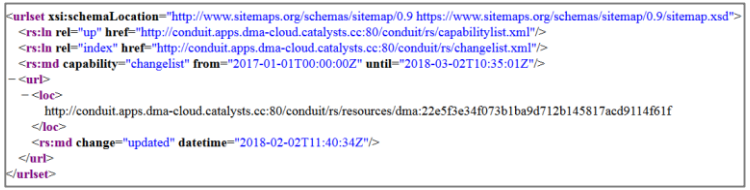


Data Management interfaces





ResourceSync Harvesting Interface

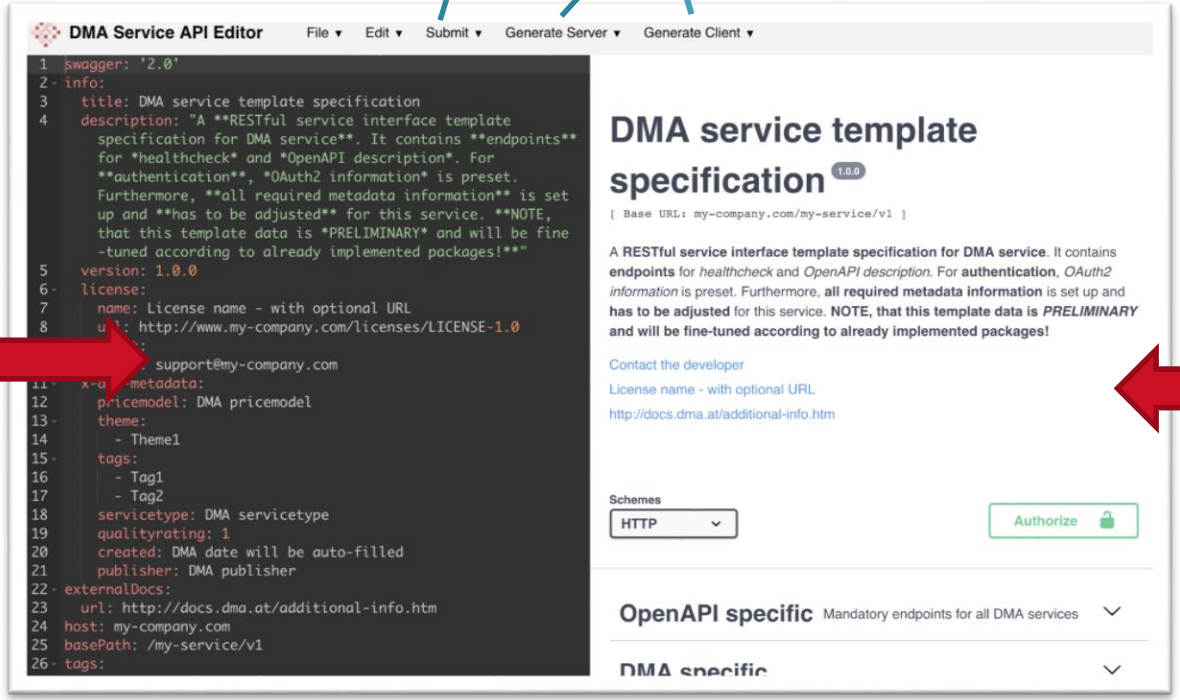


DMA
Service API Editor I

Submit to DMA

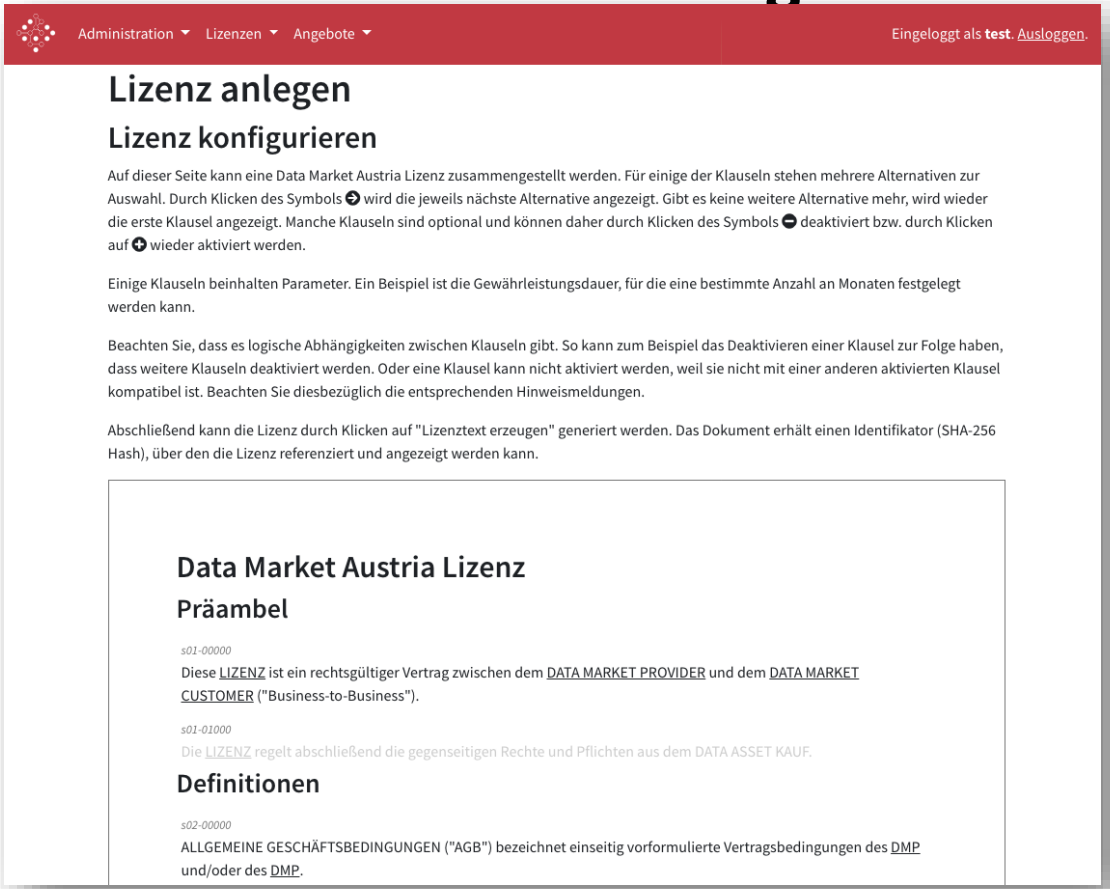
Generate code with all boilerplate components

API Editing

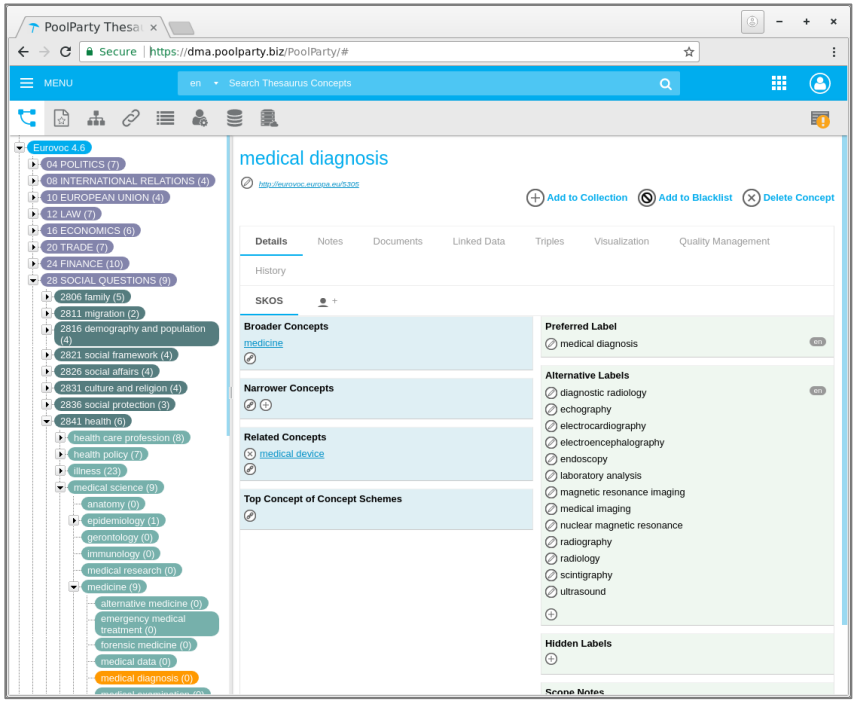


API Documentation

“DMA Data Model License” generation



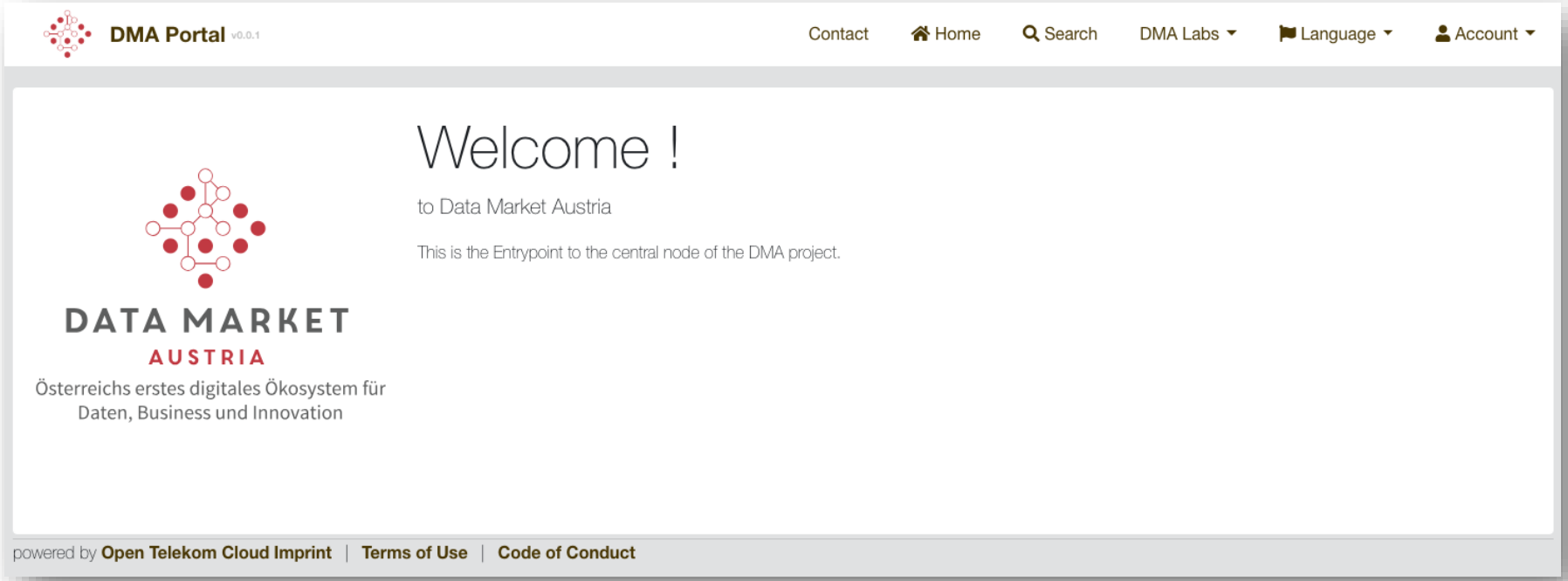
Controlled vocabularies



The DMA Knowledge Graph: Benefits

- Allows high-quality **Data Acquisition**
- Enables efficient **Data Integration**
- Improves **Search and Recommendation**
- As well as highly-targeted **Matchmaking** between Demand and Supply
- Is 100% **standards-compliant** (W3C)
- Is based on **Metadata AND Data itself**
- Establishes a **Graph between Data, Services, Organisations, Users etc.**
- Including rich **Semantics / Context**

AND THEREBY PROVIDES THE BASIS FOR A WORKING & INNOVATIVE DATA ECOSYSTEM IN DATA MARKET AUSTRIA!


DMA Portal v0.0.1
Contact
Home
Search
DMA Labs
Language
Account
Welcome !
to Data Market Austria
This is the Entrypoint to the central node of the DMA project.
DATA MARKET
AUSTRIA
Österreichs erstes digitales Ökosystem für
Daten, Business und Innovation
powered by Open Telekom Cloud Imprint | Terms of Use | Code of Conduct

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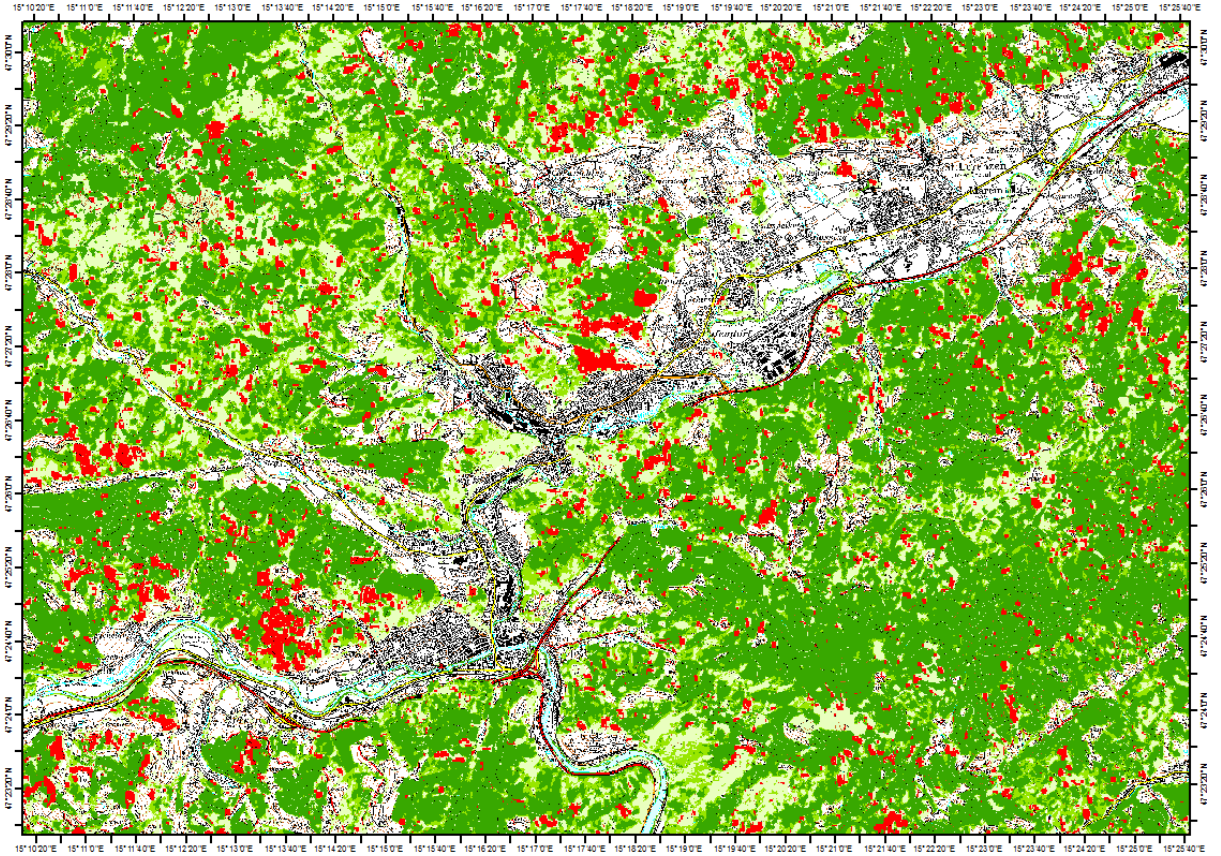
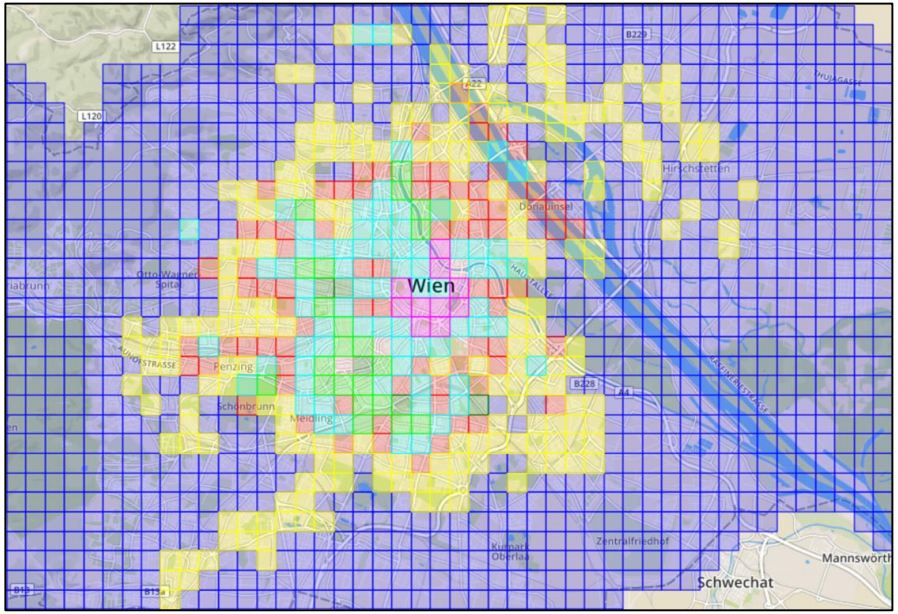
Forest (Change) Monitoring

- Result of Forest (Change) Monitoring
- Data from:
  - Sentinel satellites
  - Styrian government
- Forest Type Map (Coniferous. Broadleaf, Mixed Forest)
- Change areas in **RED**
- Input for service → „Updated Rockfall Propagation“



Detecting Practical Borders of Prediction Models
Classifying T-Mobile Data: Absolute Clusters

- Absolute clusters show the regions of similar number of people during a day
- *These clusters can help in energy forecasting to normalize the predicted values*



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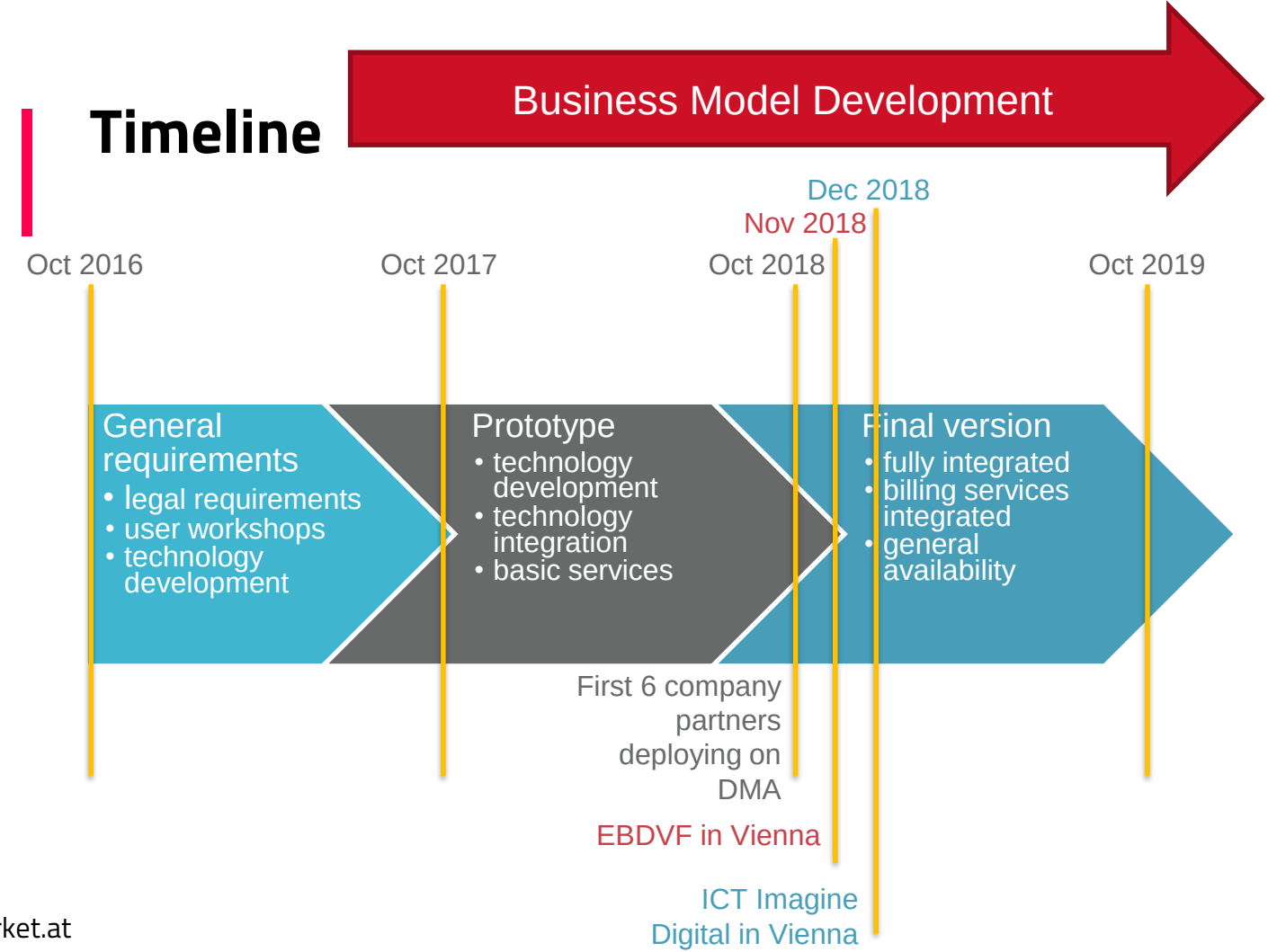
Community & Dissemination:
DMA Partner Programme (for project duration)

Timeline


Business Model Development
Dec 2018
Nov 2018
Oct 2016
Oct 2017
Oct 2018
Oct 2019
General requirements
• legal requirements
• user workshops
• technology development
Prototype
• technology development
• technology integration
• basic services
Final version
• fully integrated
• billing services integrated
• general availability
First 6 company partners deploying on DMA
EBDVF in Vienna
ICT Imagine Digital in Vienna

Business model development

The DMA is designed as a **mall operator** (central node), who provides the infrastructure and supports the contracting parties with different processes and services e.g.:

- Registration
- Identification
- Catalogue of data and services
- Search functions
- Contracting
- Billing
- Payment services

Community & Dissemination: Incubator Call 2018

6 bewilligte Projekte

- Integration of Geospatial Services for the DMA
- Semantic Containers
- Sophisticated Web Information Service (SWIS)
- Mental Health Research-Kit
- Innovative Frequenzzählung mittels anonymisierten standortbezogenen Mobilfunkdaten (ASM-Daten)
- AAL+Healthcare Data: Exploration of Usage Scenarios, Dataset Structures, Legal Considerations and Business Models for the Data Market Austria

New call in 2019

Final Report on Legal, Social and Cultural Aspects

Deliverable number *D3.4*

2 Modelle für (self executing) Smart Contracts 11

3 DMP-DMC: Lizenzvertrag 25

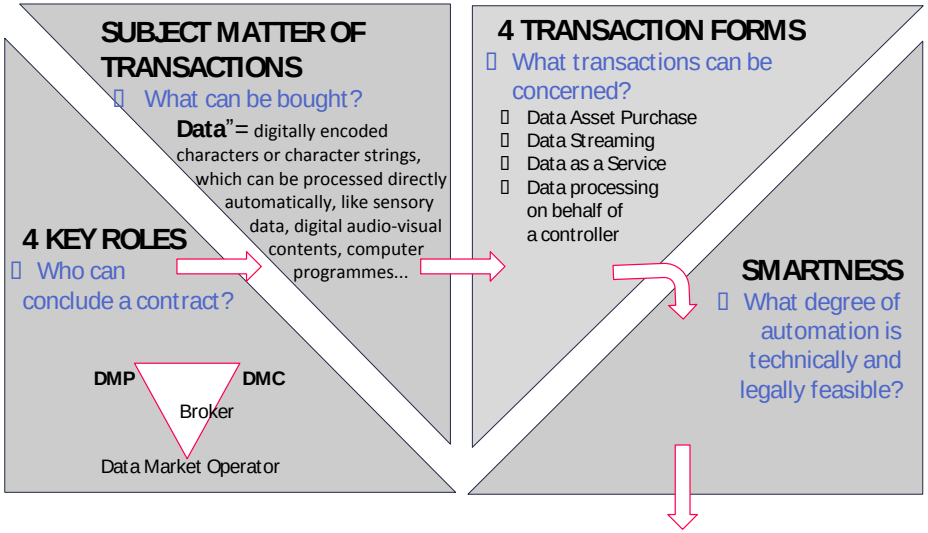
4 Broker-DMP/DMC: Vermittlungsvertrag 63

5 Data Market Austria: Entwurf einer „Allgemeine Nutzungsbedingung" (DMA AGB) für Datenanbieter (DMP), Datennachfrager (DMC) und Datenbroker (DMB) 73

6 Data Market Austria: Entwurf eines "Code of Conduct" 86

7 Leitlinien für DMP betreffend Datenschutz 92

Smart Contracts



3 phases of a contract are taken into account:

Negotiation - offer - acceptance validity

Performance delivery

Termination

publications

- Johann Höchtl, Thomas J. Lampoltshammer; **Social Implications of a Data Market**. CeDEM17 - Conference for E-Democracy and Open Government; 2017
- Rinnerbauer, B., Thurnay, L., Lampoltshammer, T. J. **Limitations of Legal Warranty in Trade of Data**. Proceedings of the International Conference EGOV-CeDEM-ePart 2018,
- Höchtl, B.; **Making Economic Use of Data and Protecting Individuals from Full Transparency: An Opposing Pair?.** Medien und Recht International, 2018 (vol. 15)
- G. Viale Pereira, S. Virkar, M. Vignoli, **Exploring the political, social and cultural challenges and possibilities associated with trading data: the case of Data Market Austria (DMA).** In Conference on Digital Government Research: Governance in the Data Age. 2018
- Matthias Traub, Heimo Gursch, Elisabeth Lex, Roman Kern; **Data Market Austria: Austria's First Digital Ecosystem for Data, Businesses, and Innovation; Exploring a changing view on organizing value creation: Developing New Business Models**. 2017
- Ivanschitz, B-P.; Lampoltshammer, T.J.; Mireles, V.; Revenko, A.; Schlarb, S.; Thurnay, L. **A Data Market with Decentralized Repositories**. 2018
- Ivanschitz, B-P.; Lampoltshammer, T.J.; Mireles, V.; Revenko, A.; Schlarb, S.; Thurnay, L. **A Semantic Catalogue for the Data Market Austria**. 2018
- Ivanschitz, B-P.; Karl, R.; King, R.; Lampoltshammer, T.J.; Mireles, V.; Schlarb, S.; Thurnay, L. **Using Blockchain Technology to Manage Membership and Legal Contracts in a Distributed Data Market.** submitted

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“The project is technically very solid and profound progress has been made in the first period. Legally the team has shown solid expertise and good results.

The reviewers believe that there is a very good chance for the project to complete successfully with significant impact.

DMA Projekt-Review

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Thanks!

Any questions?

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Overall architecture

Data Provider

Data Consumer

Service Provider

Central Node:

- Catalogue
- User Portal
- Blockchain node

External Node

- Stores Data
- Blockchain node

External Node

- Runs services
- Blockchain node

Open Data Portal

External Node

External Node

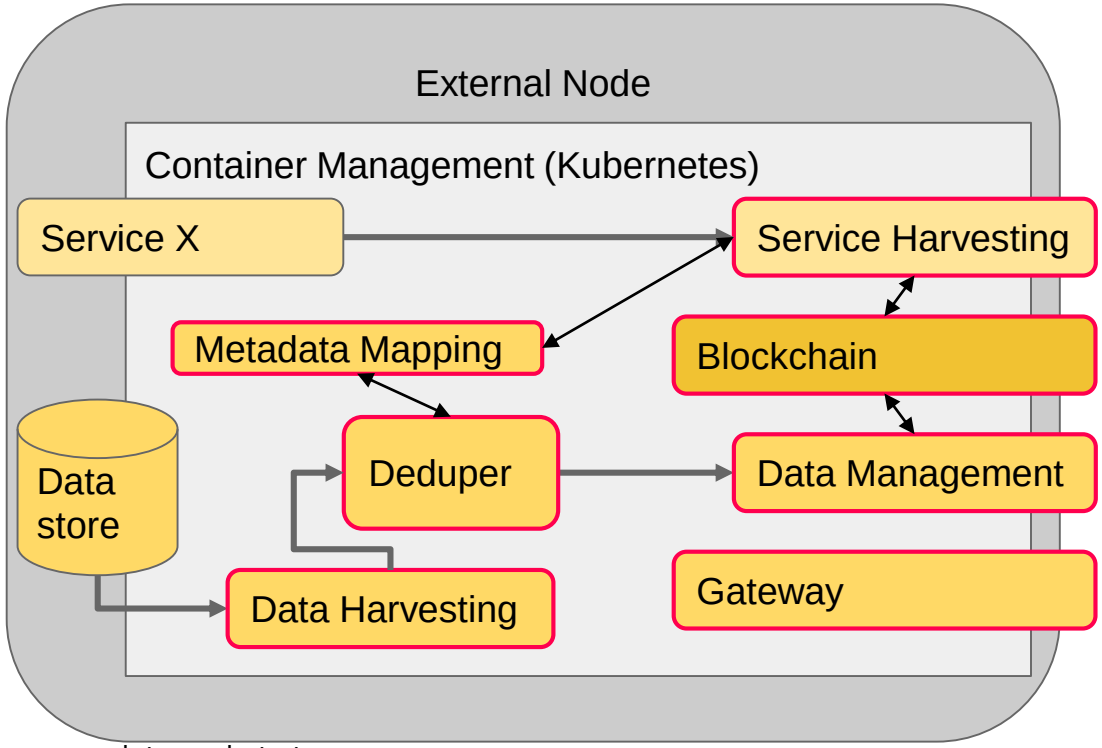
Architecture

DMA Component

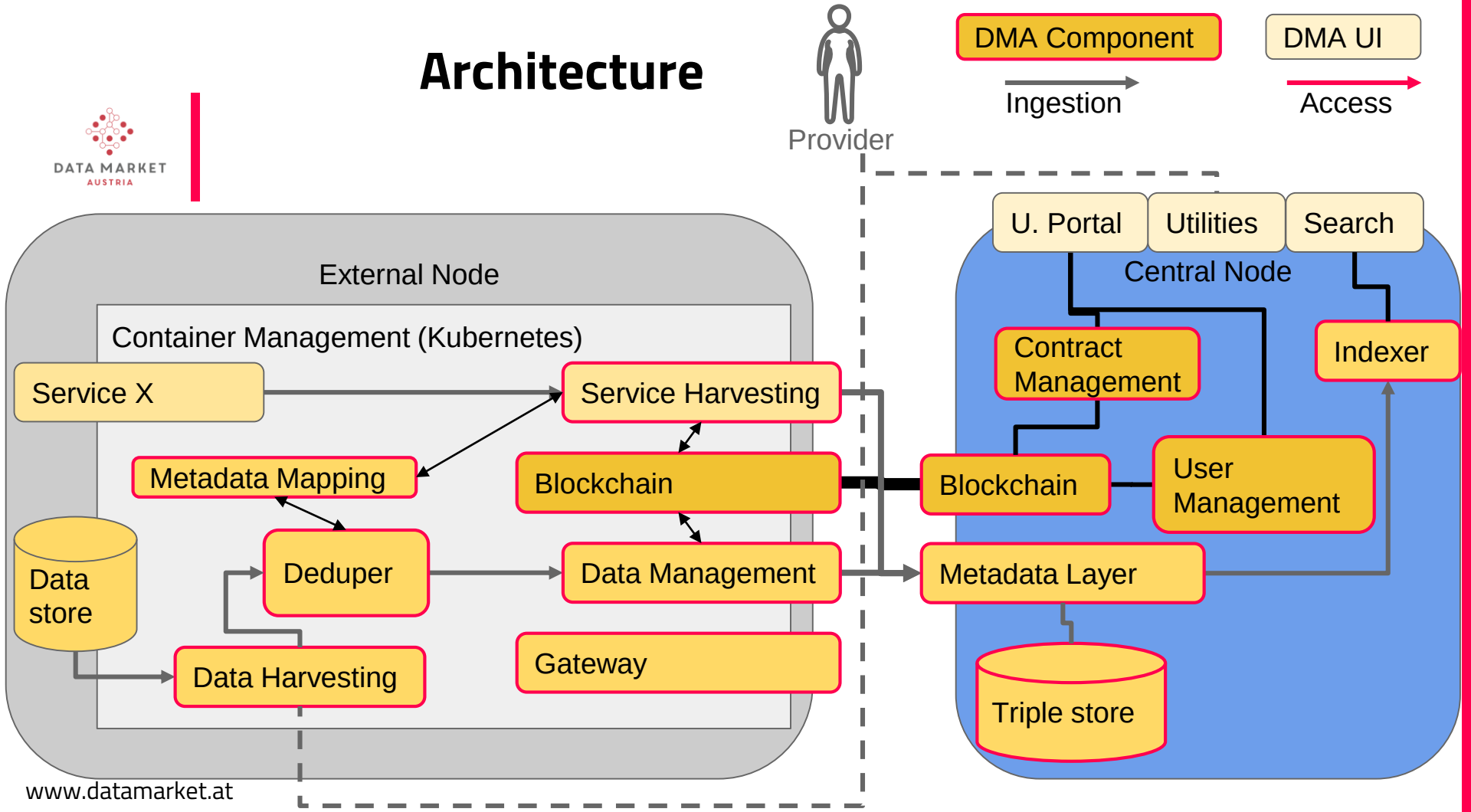
DMA UI

Ingestion

Access



Architecture



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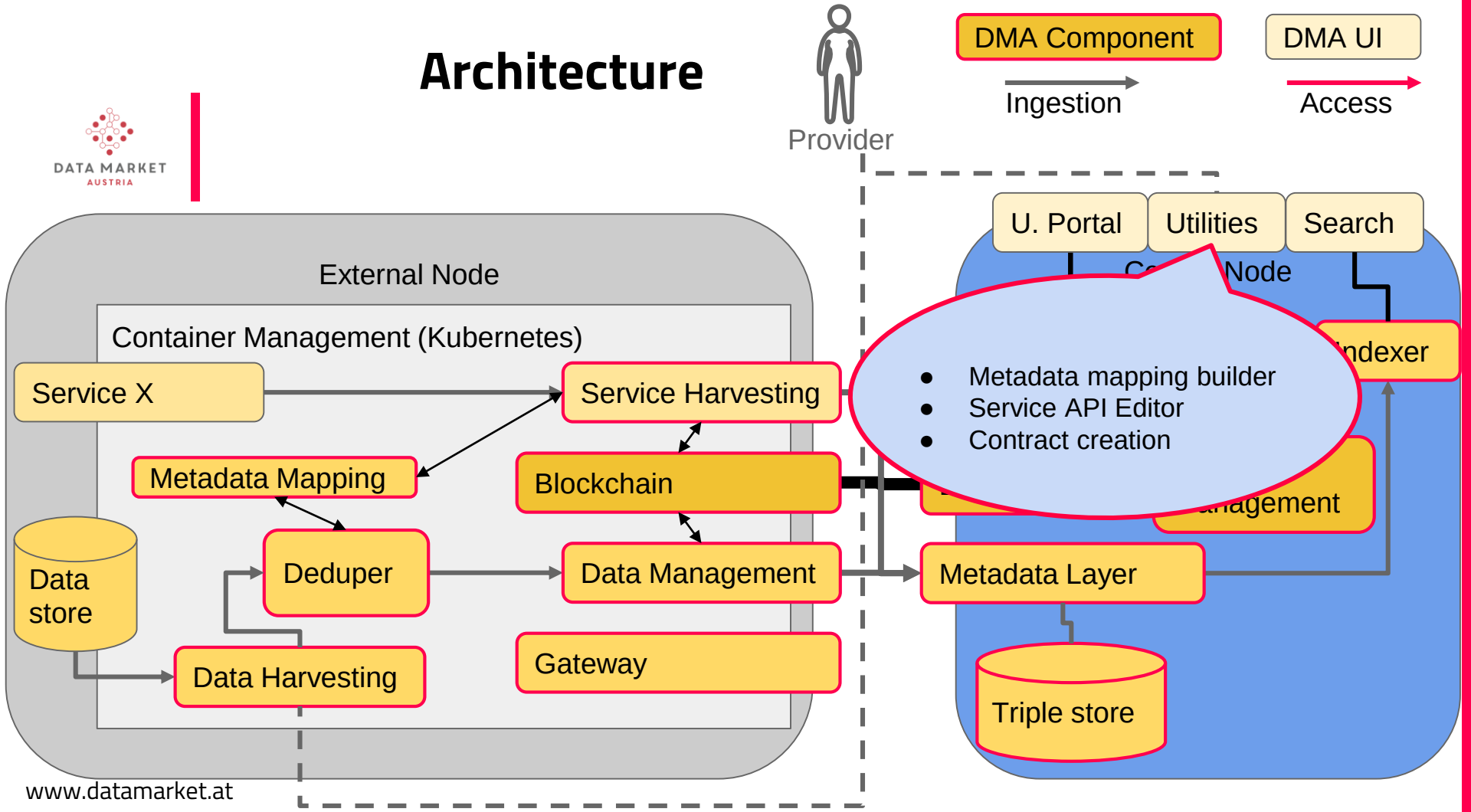

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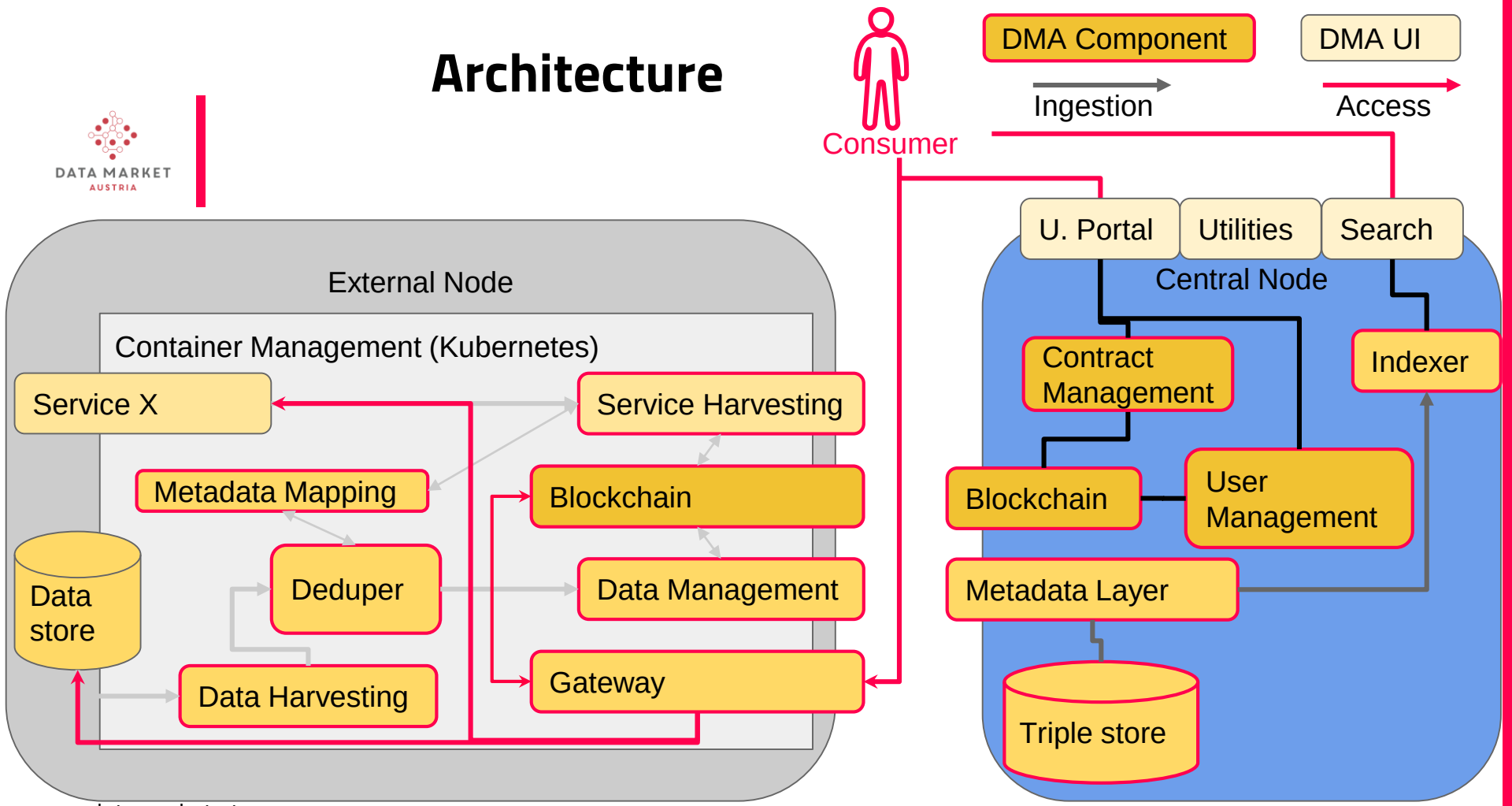

DATA MARKET
AUSTRIA

- Blockchain
- User Management
- Gateway
- Metadata Mapping
- Data Management
- Deduper
- Data Harvesting
- Service Registry

Blockchain node and API server.
For every asset, creates a key-file that the organization must used to sign any transactions involving that asset.
Optional: if not installed, all security is in the hands of the DMA

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If the organization wants to create its own users centrally
Optional: if not installed, all security is in the hands of the DMA

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When a consumer requests an asset, checks the blockchain for an entry confirming the purchase (if not free)
Optional: if not installed, all security is in the hands of the DMA

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This set of services take as input the data in the node and output a local catalogue of the data through a ResourceSync interface, using DMA-specified metadata standards. The identifiers of these assets come from the blockchain.

There are reference implementations by the DMA that can be installed on a node.

Optionally, an organization can choose to reimplement any or all of these components, as long as they adhere to the protocols.

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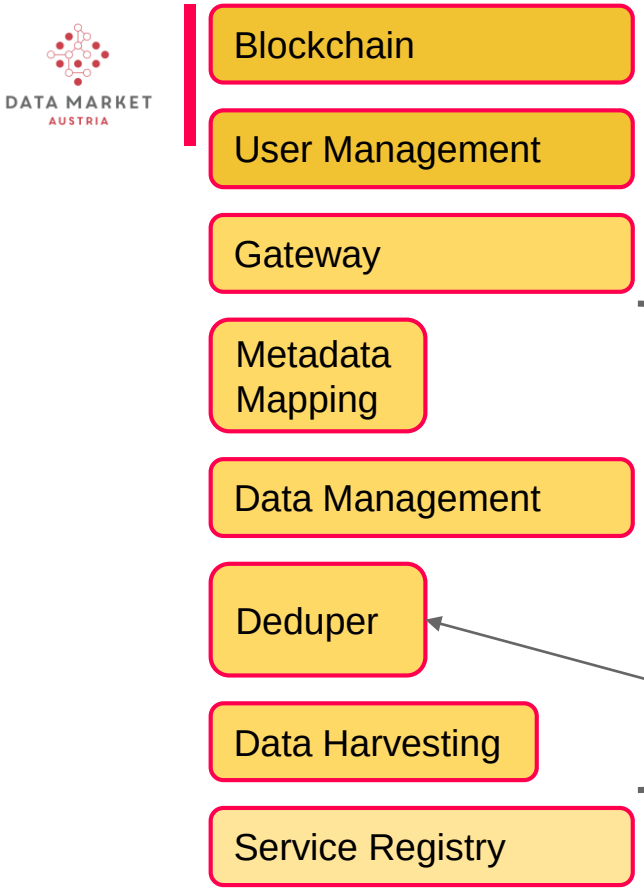
The DMA has developed an easy-to-adapt harvester that is already integrated with the other components.

DATA MARKET AUSTRIA



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Allows for state-less harvesting of large amounts of data, and initiates metadata mapping

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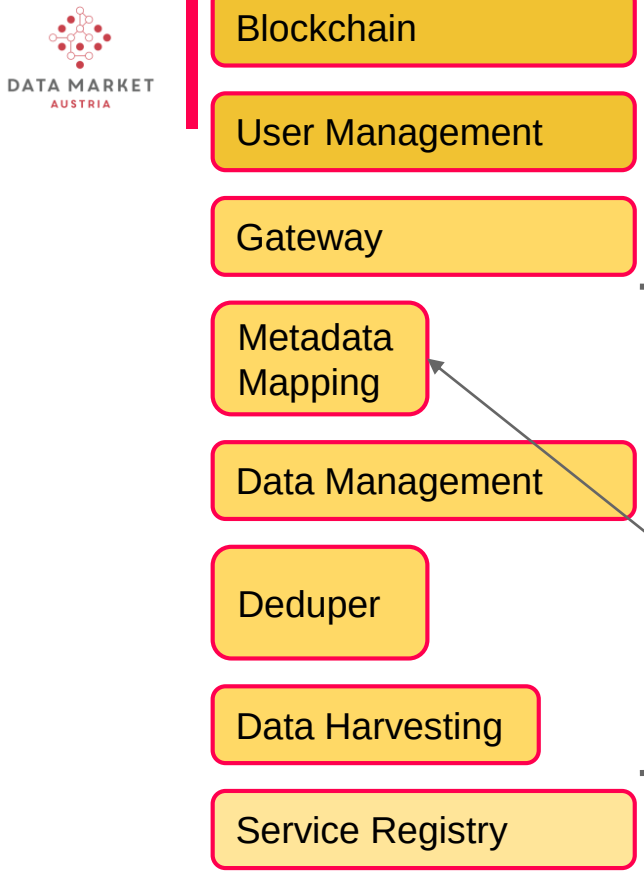
Takes care of data versioning, and assigning identifiers from the blockchain.
Optionally, exposes and endpoint for browsing datasets of single user.



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Converts metadata in JSON or XML into RDF using the DMA's controlled vocabularies and schemas.

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Interface between the container-management solution and the DMA: monitors states of services

Optionally, an organization not requiring scalable services can go without

Steps

1. Register your organization
2. Set up components
    a. Configure using DMA's access parameters
3. Inform DMA of access points: Gateway and ResourceSync interface
4. Do integration tests (to be defined)
5. For data:
    a. Expose local catalogue in ResourceSync interface
    b. DMA will harvest it and put it into central catalogue
6. For services:
    a. Trigger Service Metadata Editor in portal, fill up, submit.