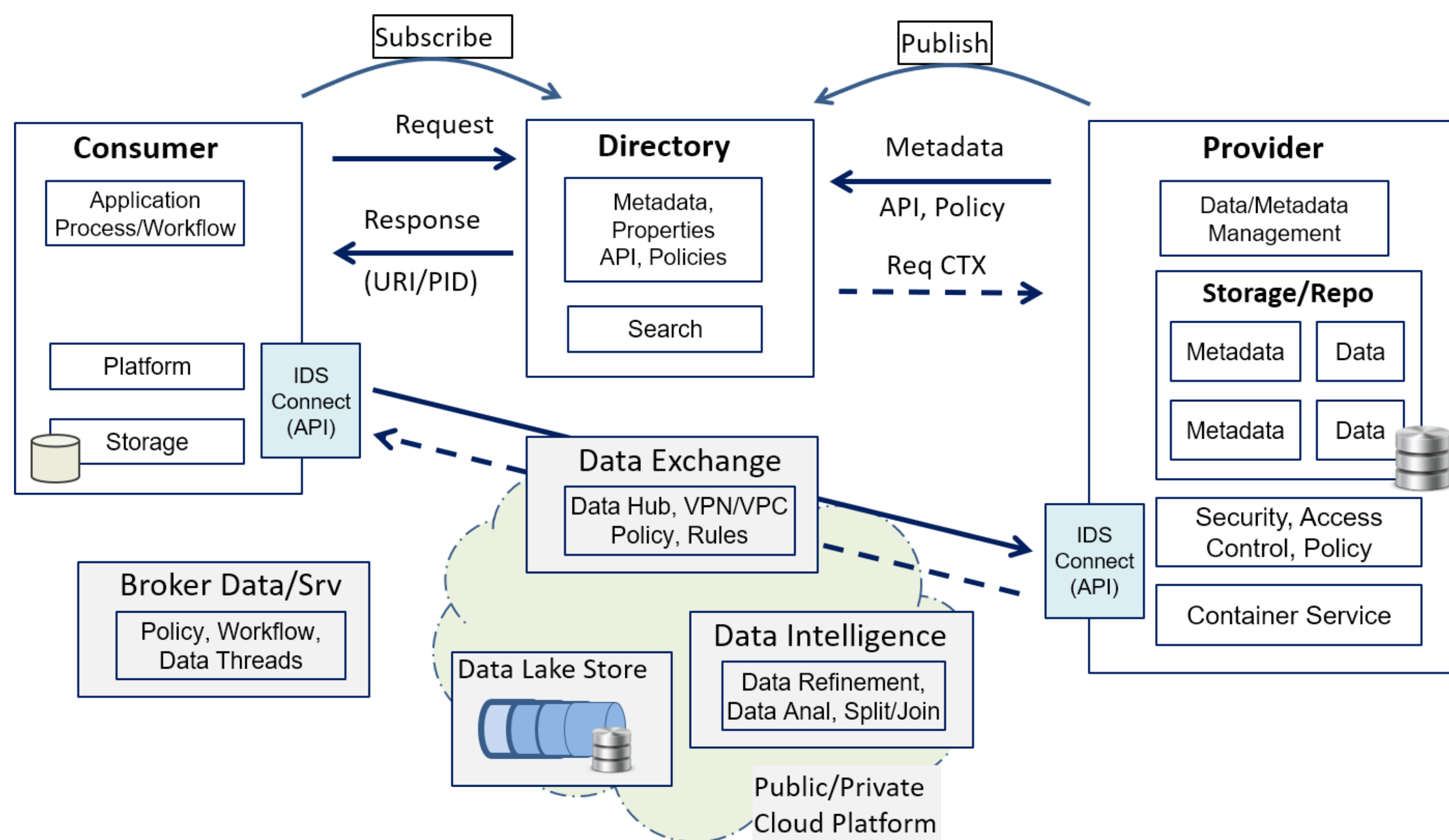# Open Data Market Architecture
and Functional Components for Trusted Data Exchange
## Technical feasibility study

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ODM Conceptual Model and Operational Scenarios

1 to 1 – individual contracts (including intermediaries)

1 to n – data webshop providing data services to many customers, e.g. IoT sensor data streaming; most common Biz&Ops model for data services subscription

n to 1 – one data consumer collecting data from many data sources/providers with the goal to drive own data-based applications or provide value added data services.

n to m – full data market mesh; can use VPDM instance for a group of cooperating organisations

Cloud based Data Market Infrastructure Components

Operational Trusted DM Platform Component & Services
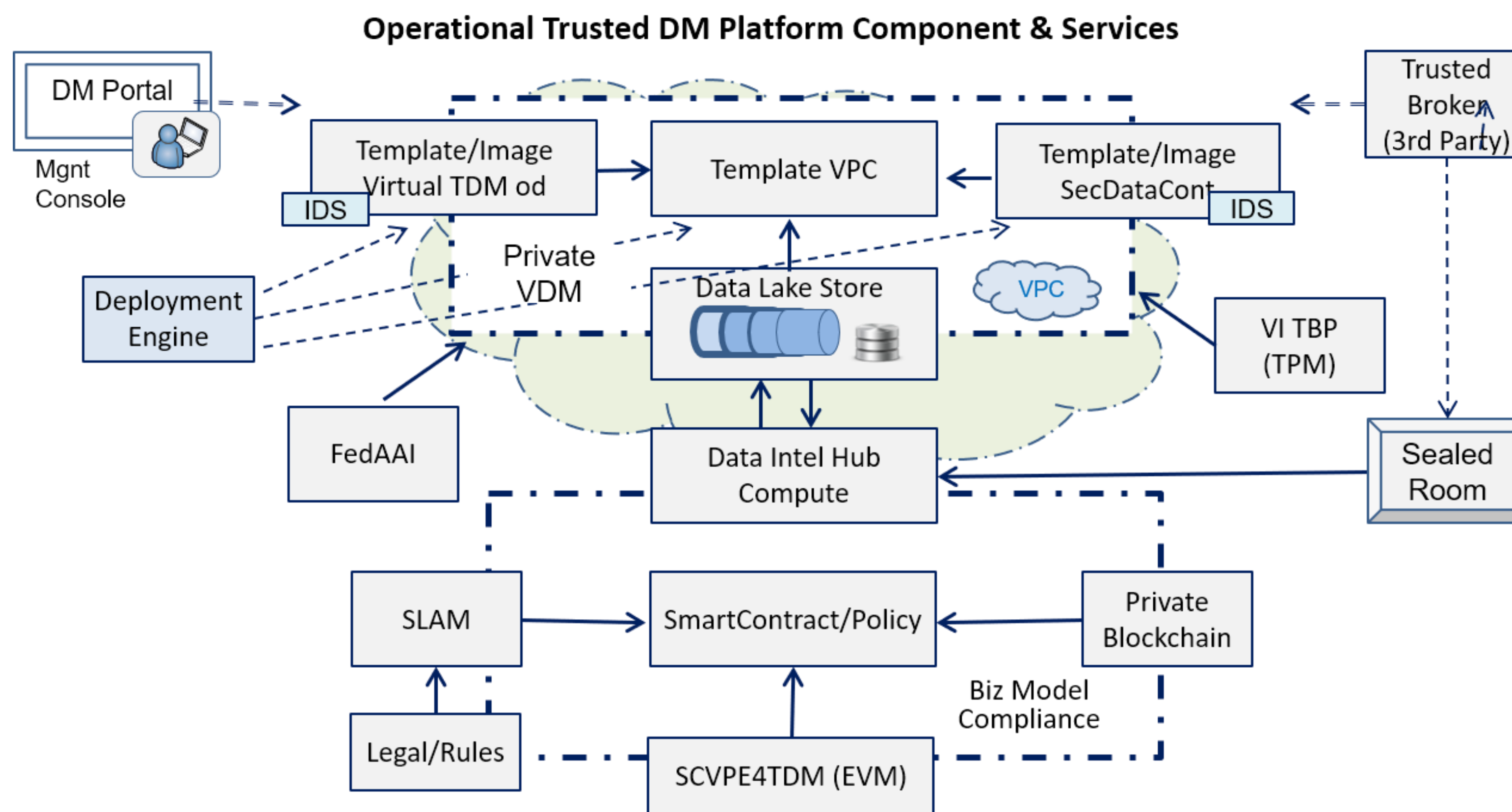
Data Market Infrastructure Components

Data Market Infrastructure to enable secure trusted data exchange and data services delivery.

- **Virtual Private Data Market (VPDM)** – Virtual Data Market infrastructure provisioned **on demand** for a **cooperating group of the data market entities**
- **Data Market Platform (DMP)** – Cloud based Trusted Data Market (TDM) platform to provision on demand VPDM using Virtual Private Cloud (VPC) templates
- **Data Exchange(s)** - the main component for Data Market actors interaction to exchange data
- **IDS – Secure Data Connectors** (Industrial Data Space Architecture compliant) to enable sovereign end-to-end data provider and consumer connection
- **Data (Intelligence) Hub** – Support generic services in data exchange, delivery, i.e. caching, containerised delivery, etc
- **Policy & Biz Rules Enforcement and Compliance** – Private Blockchain and Smart Contracts based DM service
  - **SCVPE4DM (EVM)** – Ethereum Virtual Machine for Solidity Smart Contracts processing
- **FedAAI and VI TrustBP -** Federated Access Control, Trust Management infrastructure and Trust Bootstrapping protocol

STREAM Properties of Data as Economic goods
[S]overeign – [T]rusted – [R]eusable – [E]xchangeable – [A]ctionable – [M]easurable
Leveraging FAIR (Findable – Accessible - Interoperable - Reusable) data principles for Data commoditisation
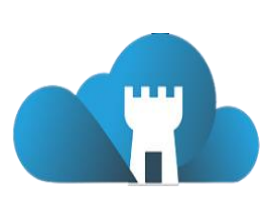
Sovereignty: Data sovereignty allows companies, data owners to remain control over their data. It is important for business to enter the data market with their proprietary business data

Trusted: Using data in decision making or in the processes control requires that data is trusted and verifiable. Trust in data is achieved by the whole process of data collection and by using verified models of the processes.

Reusability: Data reusability allow multiple uses of data, even if not for original purposes data created. Data re-suability can create multiple opportunities for data economy actors

Exchangeability: Data exchangeability ensures that data can be exchanged between data producer and data consumer in general and be used for target applications or intended purposes.

Actionability: Data must serve the business purposes and contain necessary information to derive actionable decisions about operations or processes optimisation

Measurability: Data measurability is used for data valuation and exchange as economic goods, and a part of data handling on the data infrastructure platforms.

Open Data Market Design Principles

- Enable STREAM data properties and comply with FAIR data principles
- Provide secure and trusted environment for contractual exchange of data and data processing services while preserving Data Sovereignty
- Enable data monetisation and data exchange policy enforcement
- Built on well defined rules, processes and protocols, supported by open API to enable anybody join and operate their legal business
- Adopting the Industrial Data Space Association (IDSA) Architecture 2.0

References
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