

FACT SHEET#5

Ontology-driven Interfaces

Objectives

- **Specify and implement ontology-driven interfaces for semantic data exchange:** The main objective is to develop a system that allows for semantic interoperability, enabling data to be exchanged in a meaningful way across various platforms and applications. Ontology-driven interfaces ensure that data can be understood uniformly by all participants, regardless of the system or application they use.
- **Develop a common language for data and service interoperability:** By creating a common ontology or language, the project aims to standardize how data and services interact. This ensures that different systems can easily share and use data, removing barriers caused by proprietary formats or mismatched data structures.
- **Create connectors, APIs, and ecosystem components for seamless integration:** The project will develop the technical infrastructure, such as connectors and APIs, to ensure that different platforms can integrate seamlessly with the DOME 4.0 ecosystem. This will allow for easier data exchange and collaboration between businesses, industries, and research institutes.

Key features

- **Semantic Data Exchange Ontology:** A lightweight ontology will be developed, using established standards like IDS (International Data Spaces) and EMMO (European Materials Modelling Ontology). This ontology will define the rules for how data should be represented and exchanged, ensuring that it can be understood and used across different platforms. This feature is crucial for enabling semantic data exchange between various parties in the ecosystem.
- **Ecosystem Information Model:** This model will provide a structure for data sovereignty, identity, and brokering. It will act as the backbone of the data exchange system, allowing for the secure and traceable transfer of data. By integrating this model, the platform ensures that data exchanges are governed properly, maintaining the integrity and ownership of data.
- **Semantic Broker Service:** A broker service will be implemented to facilitate semantic matching between data consumers, providers, and service providers. This service will automate the process of finding compatible data or services, making it easier for users to discover resources and partners in the ecosystem. The semantic broker service acts as a key component for efficient data exchange.

- **Ecosystem Connectors:** Connectors will be developed to link the DOME 4.0 platform with external data and service platforms. This will extend the platform's reach and allow users to interact with other marketplaces or data platforms. The connectors will enable seamless data flow between different ecosystems, enhancing the platform's interoperability.
- **Reference Data Connector:** This connector will support the B2B showcases by enabling semantic data exchange. It provides a standardized way to connect various data sources and consumers, ensuring smooth data flow within the business use cases being demonstrated by DOME 4.0. The reference data connector is key to ensuring that the project's outcomes can be replicated and scaled across industries.

Benefits

- **Enhanced semantic interoperability across the ecosystem:** The ontology-driven approach ensures that all data exchanges within the ecosystem are semantically interoperable, meaning that data can be easily understood and used by different platforms and systems. This significantly improves collaboration and reduces the time spent on data translation or conversion.
- **Robust architecture for data and service integration:** With features like blockchain for data sovereignty, the platform offers high levels of security and traceability. Users can be confident that their data is being used appropriately, and data ownership is always clear, which is crucial in industrial environments where data confidentiality is key.
- **Streamlined data exchange and brokering capabilities:** With the semantic broker service, data exchanges become more efficient, allowing users to quickly find compatible data sources or services. This improves the overall usability of the platform and enables faster collaboration between different participants in the ecosystem.
- **Improved collaboration and data sharing across diverse platforms:** By creating a common language and developing the necessary connectors, the platform enhances collaboration across different industries and sectors. This leads to better data sharing practices, fostering innovation and enabling more complex, cross-domain projects.

