

MARKET4.0

CONNECT & PRODUCE

A Multi-Sided Business Platform for Plug and Produce Industrial Product Service Systems

IDS Concept

29 April 2021, 11:30 CEST

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no° 822064.



IDS Concept – Introduction

IDSA defines a reference architecture, which supports sovereign exchange and sharing of data between partners independent from their size and financial power.

“Data sovereignty can be defined as a natural person’s or corporate entity’s capability of being entirely self-determined with regard to its data”

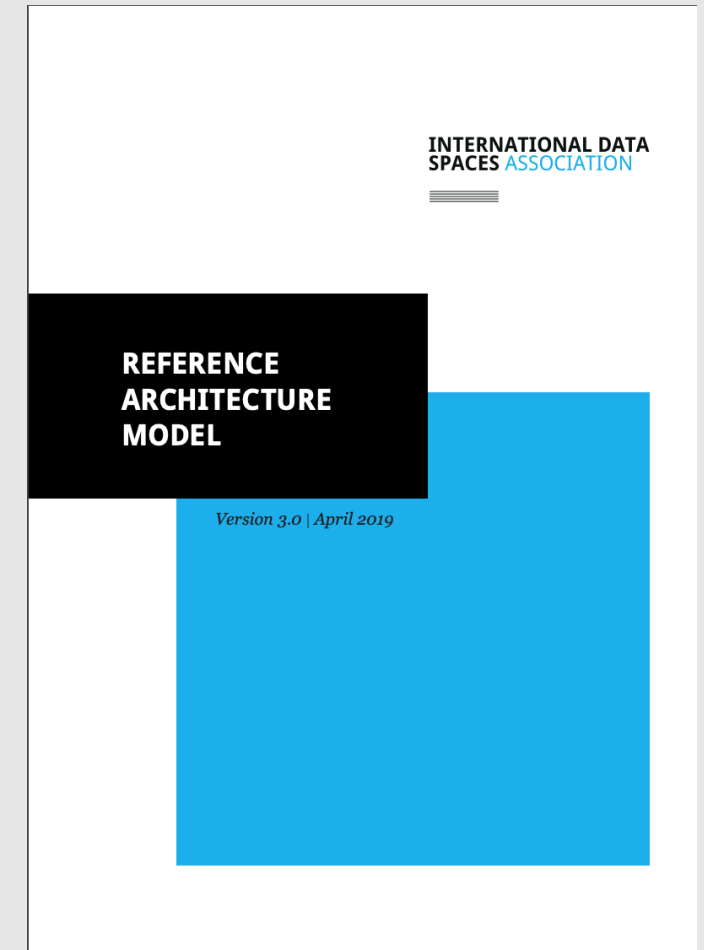
The IDSA aims at providing the standard for sharing data between different endpoints while ensuring data sovereignty.

IDS Concept – Reference Architecture

IDS Reference Architecture Model 3.0

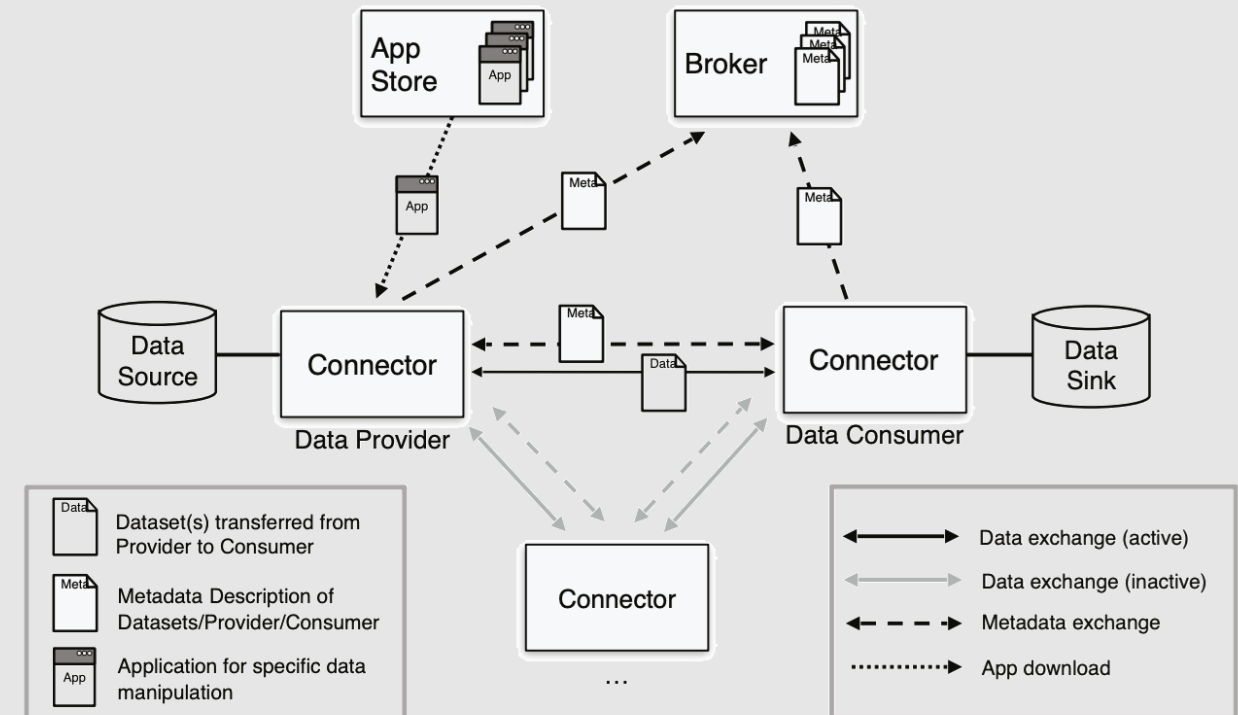
<https://www.internationaldataspaces.org/wp-content/uploads/2019/03/IDS-Reference-Architecture-Model-3.0.pdf>

“The Reference Architecture Model of the International Data Spaces (IDS-RAM) constitutes the basis for a variety of software implementations, and thus for a variety of commercial software and service offerings.”

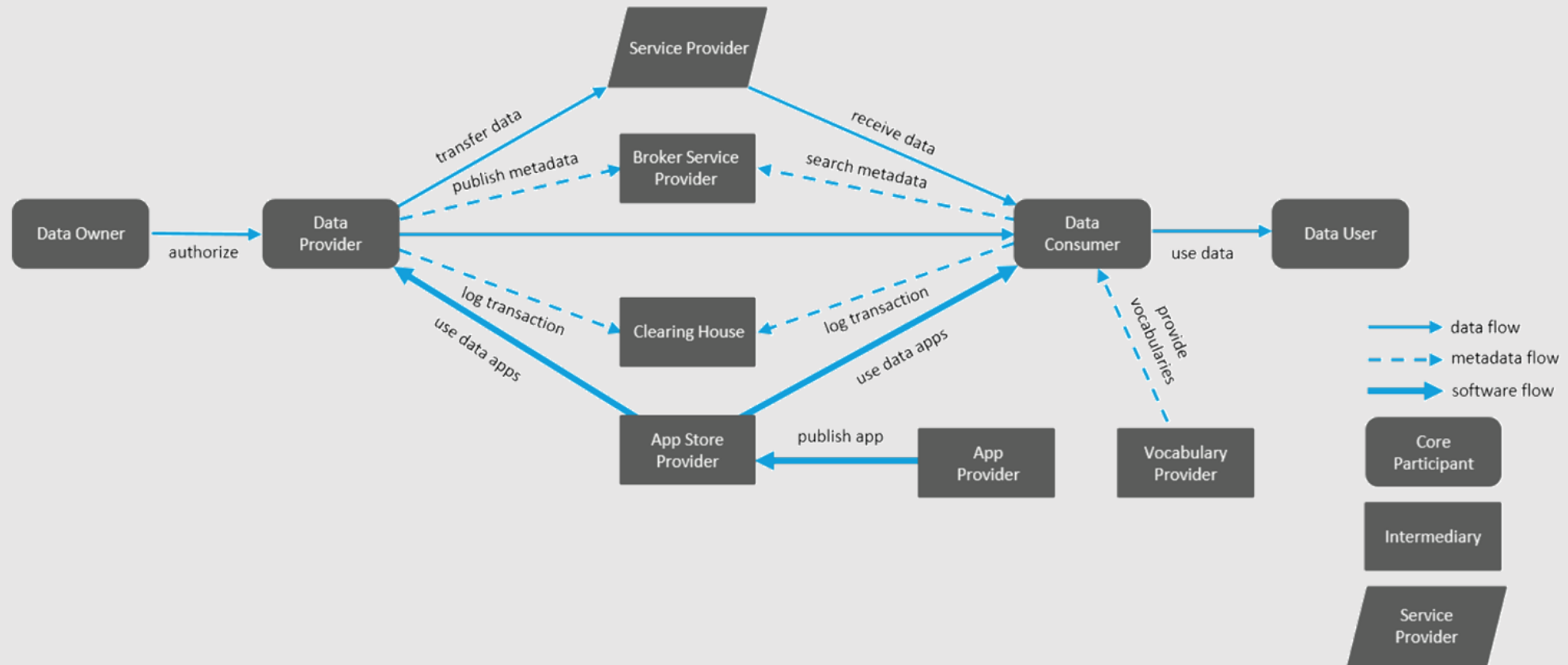


IDS Concept – Profiles and Interactions

	Base Free	Base	Trust	Trust+
Development	Developed as Open Source	Developed in the IDSA Community	Developed in the IDSA Community	Developed in the IDSA Community and bound to strong SLA regarding security updates.
IDS Roles supported	Not certified, therefore the public IDS infrastructure is not available	All IDS Roles (section 3.1.1) supported, but support for Clearing House is optional	All IDS Roles (section 3.1.1) supported,	All IDS Roles (section 3.1.1) supported,
Communication abilities supported	Cannot connect to public IDS services or connectors.	Can connect to other connectors and exchange data.	Can connect to other connectors and exchange data. Can refuse a connection with a Connector with Base Profile.	Can connect to other connectors and exchange data. Can refuse a connection with a Connector with Base Profile.
Higher security features	Security level not defined	Standard security level	Extended security level	High security level



IDS Concept – Roles and Interactions



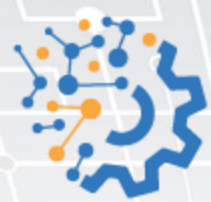
IDS Concept – Usage Control

Usage Control in the International Data Space

<https://internationaldataspaces.org/wp-content/uploads/IDSA-Position-Paper-Usage-Control-in-the-IDS-V3.0.pdf>

“Data usage control and data provenance as conceptual and technical solution to cope with data sovereignty.”





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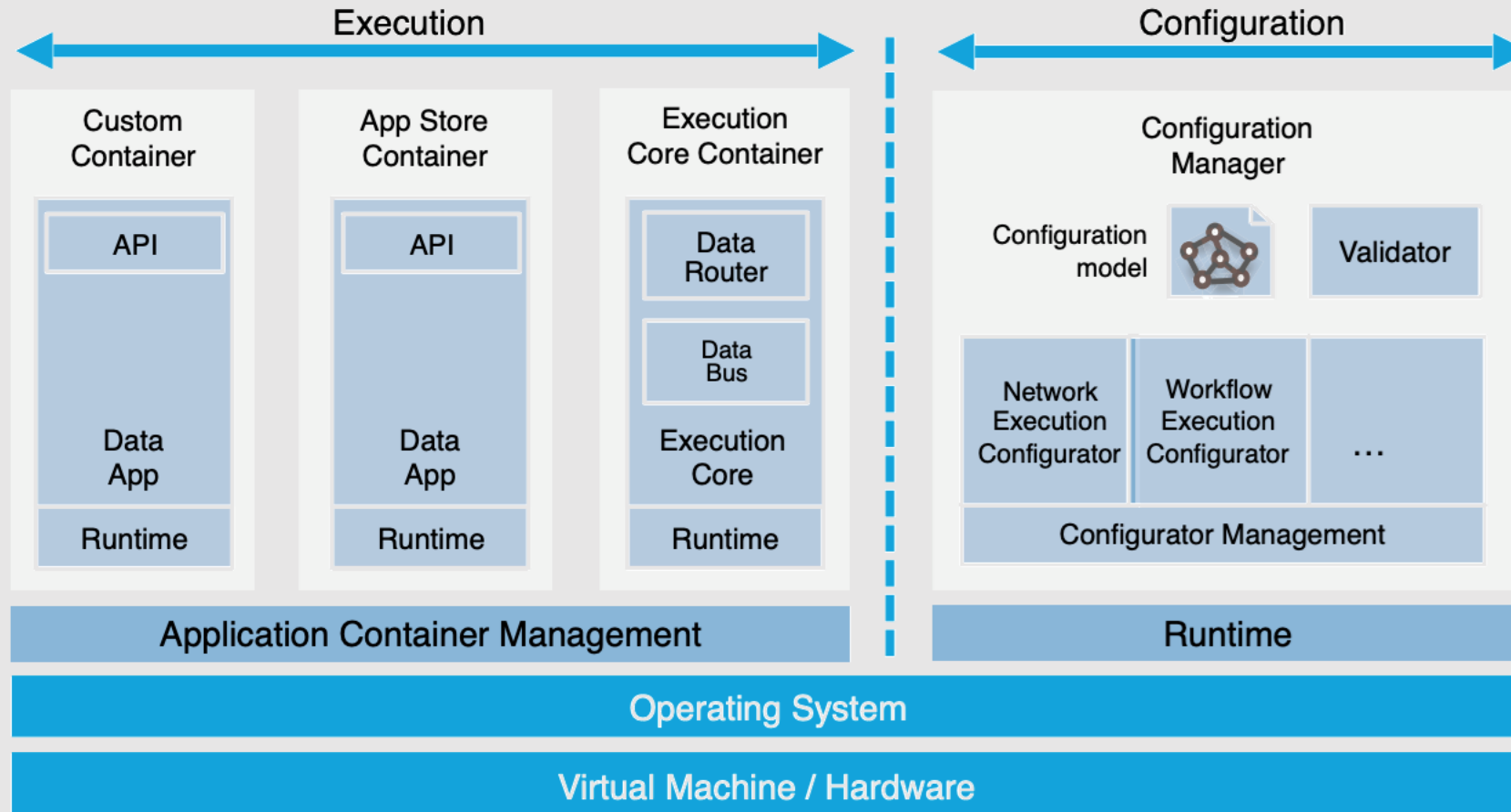
IDS Connector

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IDS Connector – From Theory



IDS Connector – To Practice

TRUE (TRUsted Engineering) Connector

- Base Security Profile
- Based on Apache Camel/Spring Boot
- Info Model alignment 4.0.0
- Tested the integration with other HTTP/HTTPS connectors (GEC, FIWARE) during the Integration Camp events
- Main focus on the **Execution Core Container**, a foreground of the Market4.0 project
- Trivial Data APP

IDS Connector – Data Flow

TRUE Connector

IDS Trusted Environment

TRUE Connector

Open Source

MultiProtocol

MultiFormat

Extendible

Configurable

Integrable

Sender Route

- Get Message from Data APP
- Add Token received from DAPS
- Send Message to Receiver ECC
- Register Transaction to CH

Receiver Route

- Get Message from Sender ECC
- Validate Token with DAPS
- Send Message to Data APP
- Send Response to Sender ECC
- Register Transaction to CH

Open Source

MultiProtocol

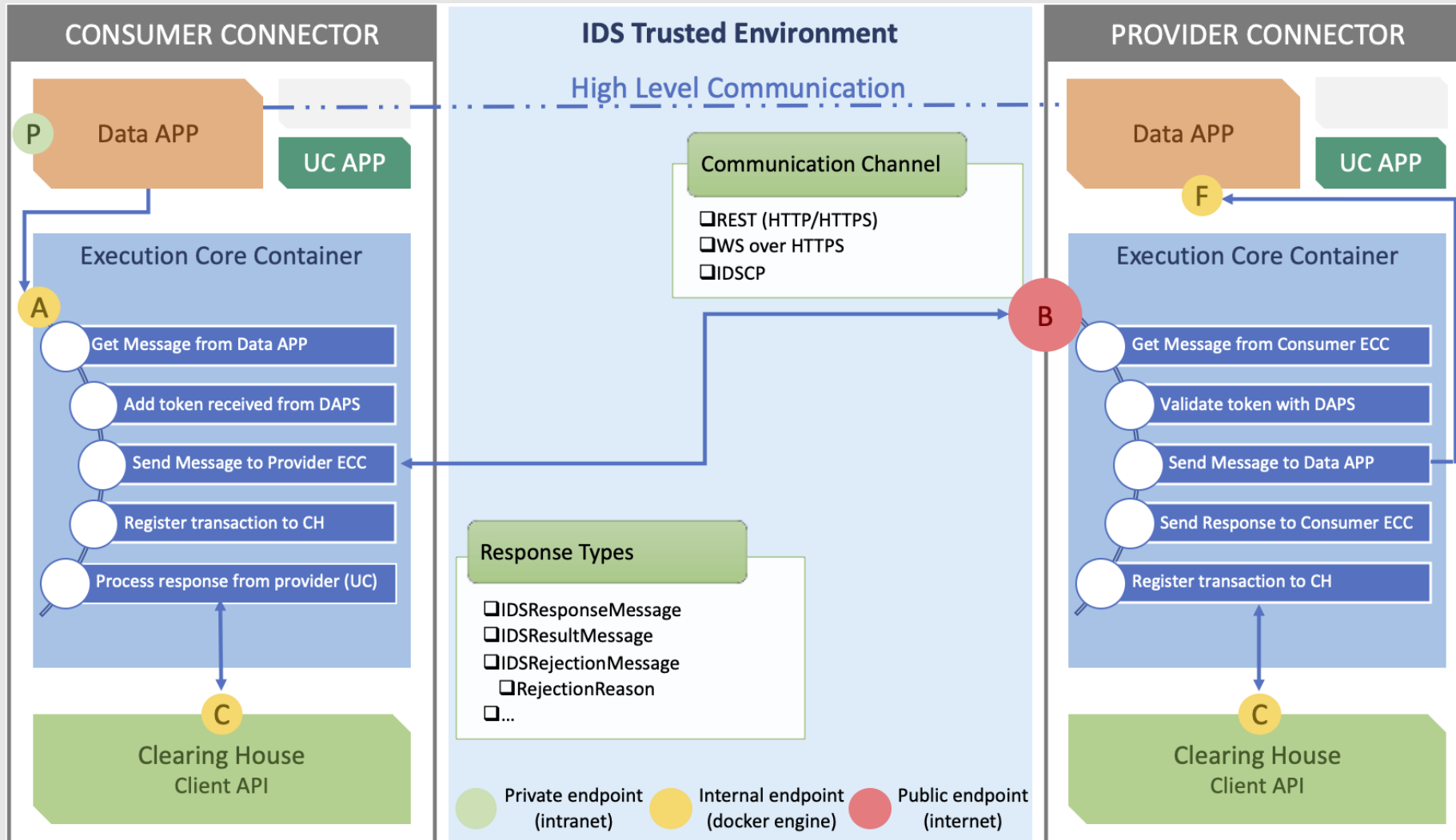
MultiFormat

Extendible

Configurable

Integrable

IDS Connector – Architecture



IDS Connector – Tech Position

Supported Data Formats

Multipart/mixed

Multipart/form

Http-header

Supported Protocols

HTTP

HTTPS

WS

IDSCPv2

Supported Brokers

Fraunhofer EIS

Intrasoft Broker

Supported Identity Providers

Fraunhofer
AISECv1

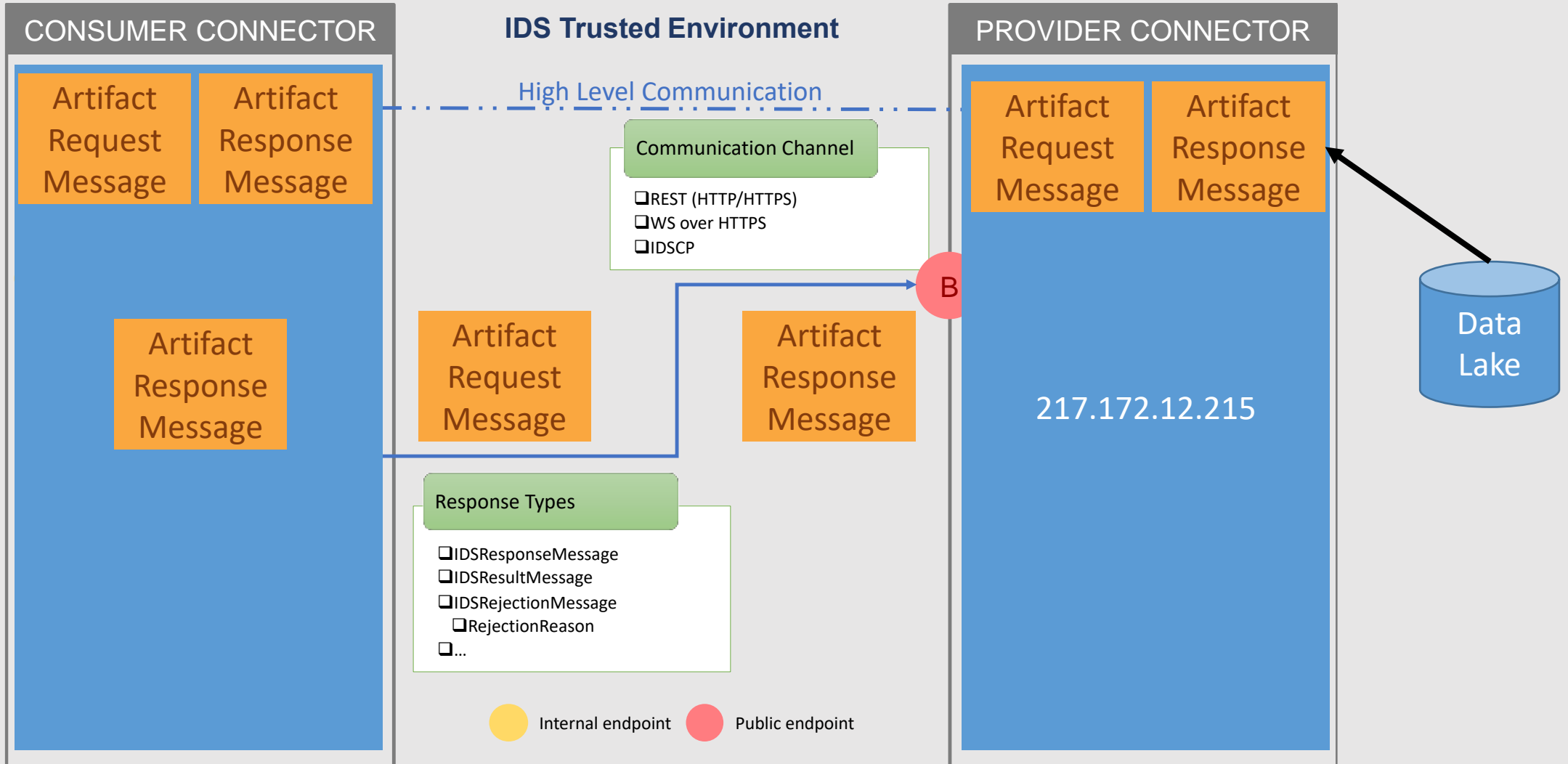
Fraunhofer
AISECv2

Orbiter

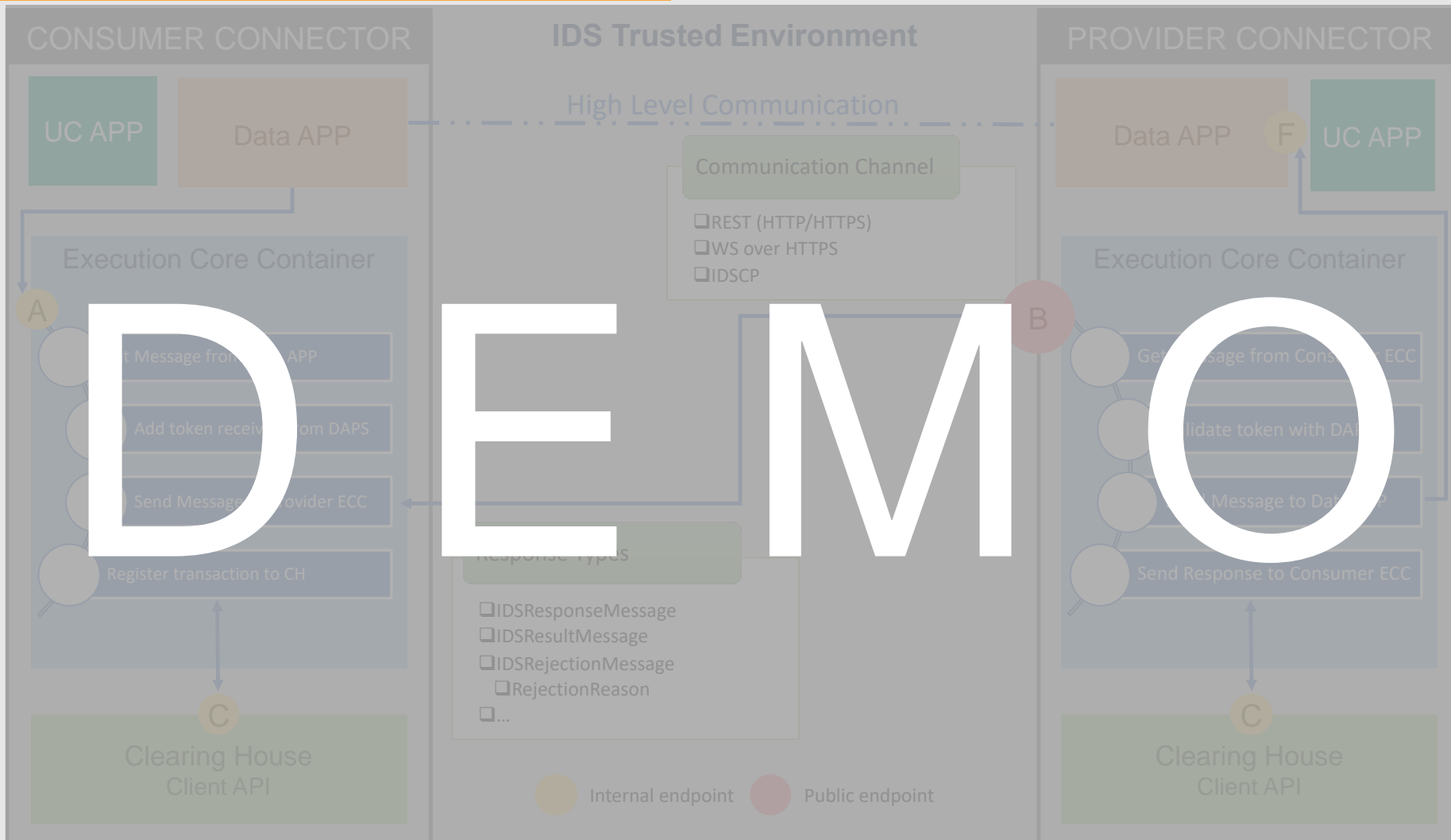
Supported Clearing House

ENG (TBC)

IDS Connector – Demo Scenario



IDS Connector – Demo



IDS Connector – References

TRUE Connector – Dockerized

<https://github.com/Engineering-Research-and-Development/true-connector>

TRUE Connector – Execution Core Container Source Code

https://github.com/Engineering-Research-and-Development/market4.0-execution_core_container_business_logic

TRUE Connector – Data APP Source Code

https://github.com/Engineering-Research-and-Development/market4.0-data_app_test_BE

IDS Connector – Contacts



www.eng.it



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THANK YOU



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