Open APIs for Open Minds

How to start into FIWARE: Technische Einführung

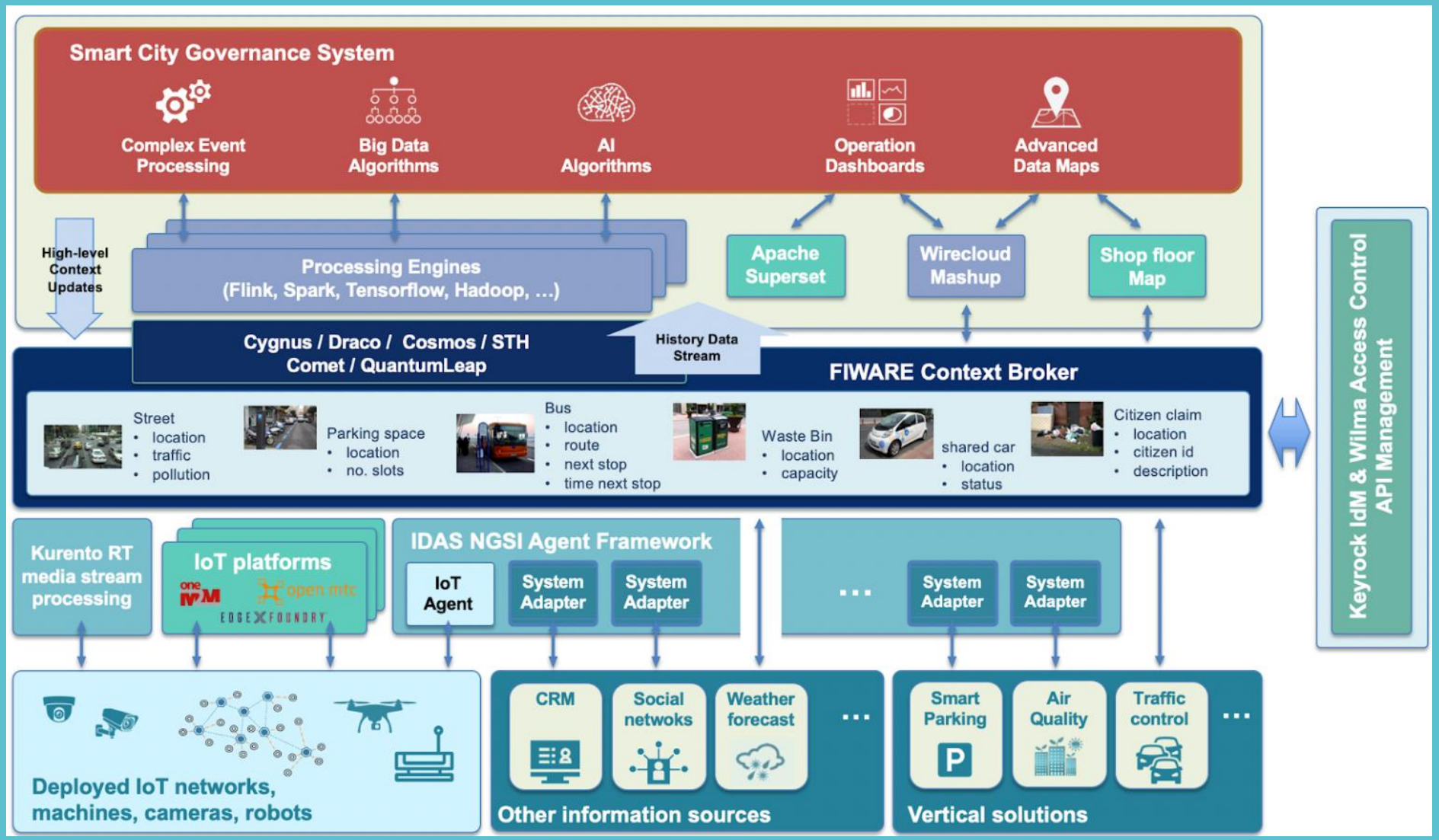
30.08.2022, ADV Tagung, Wien

Gernot Boege
FIWARE Solution Architect

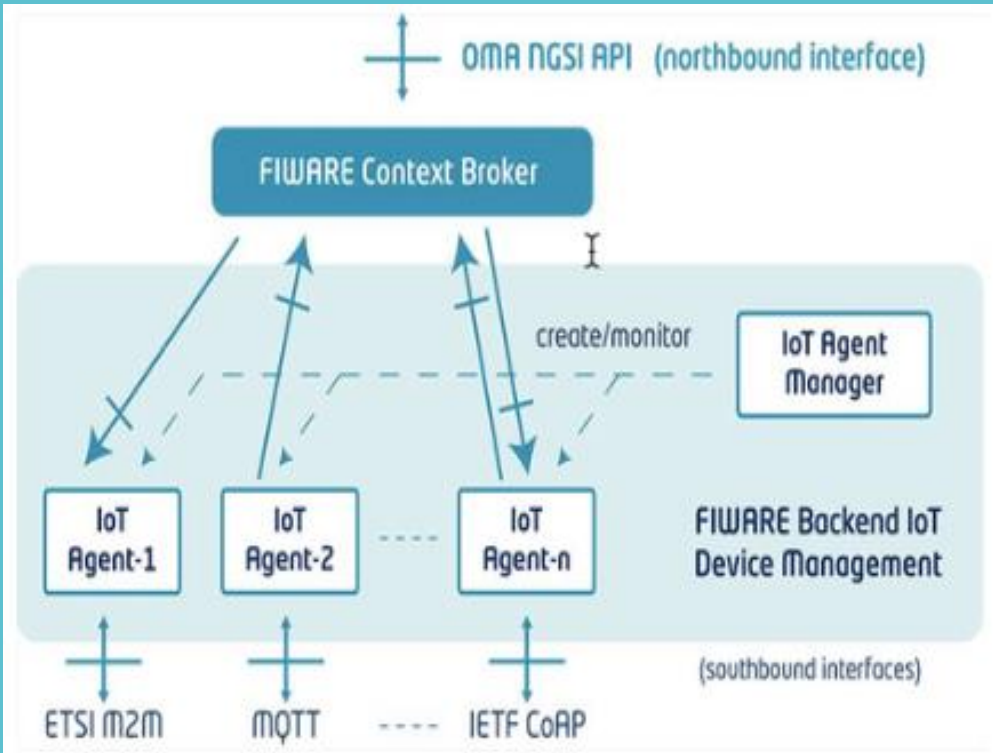
FIWARE

Das neue digitale Leben wird bestimmt durch Kontext-Informationen. Kontext-Informationen, die beschreiben was passiert, wo, wann, warum, …

FIWARE Architekturen sind vielfältig



Integration von IoT Daten

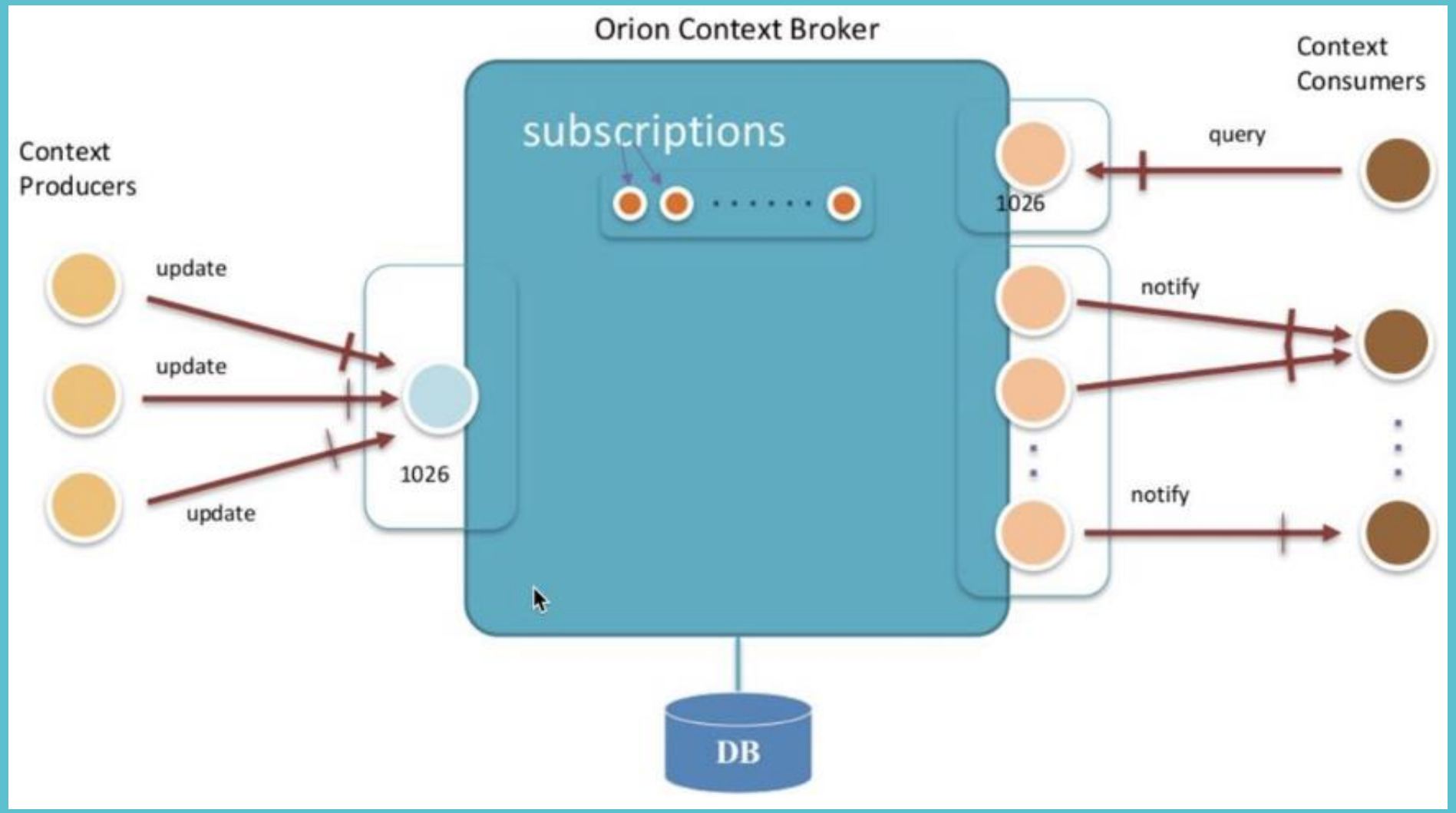


Neu: OPC-UA

LoRa LoWPAN sigfox

FIWARE

FIWARE Context Broker als zentrale Datendrehscheibe



ETSI NGSI-LD als Kommunikationsstandard

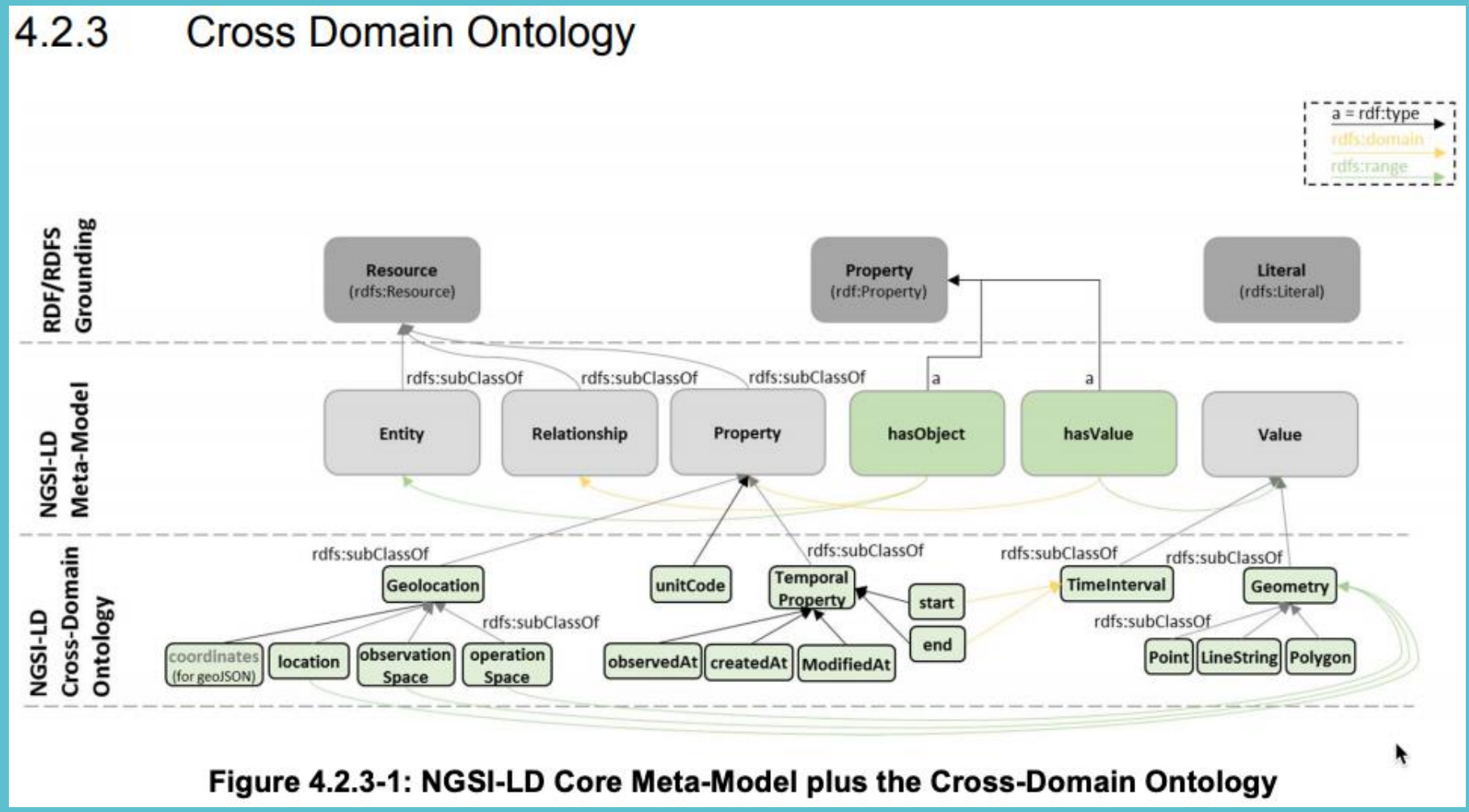
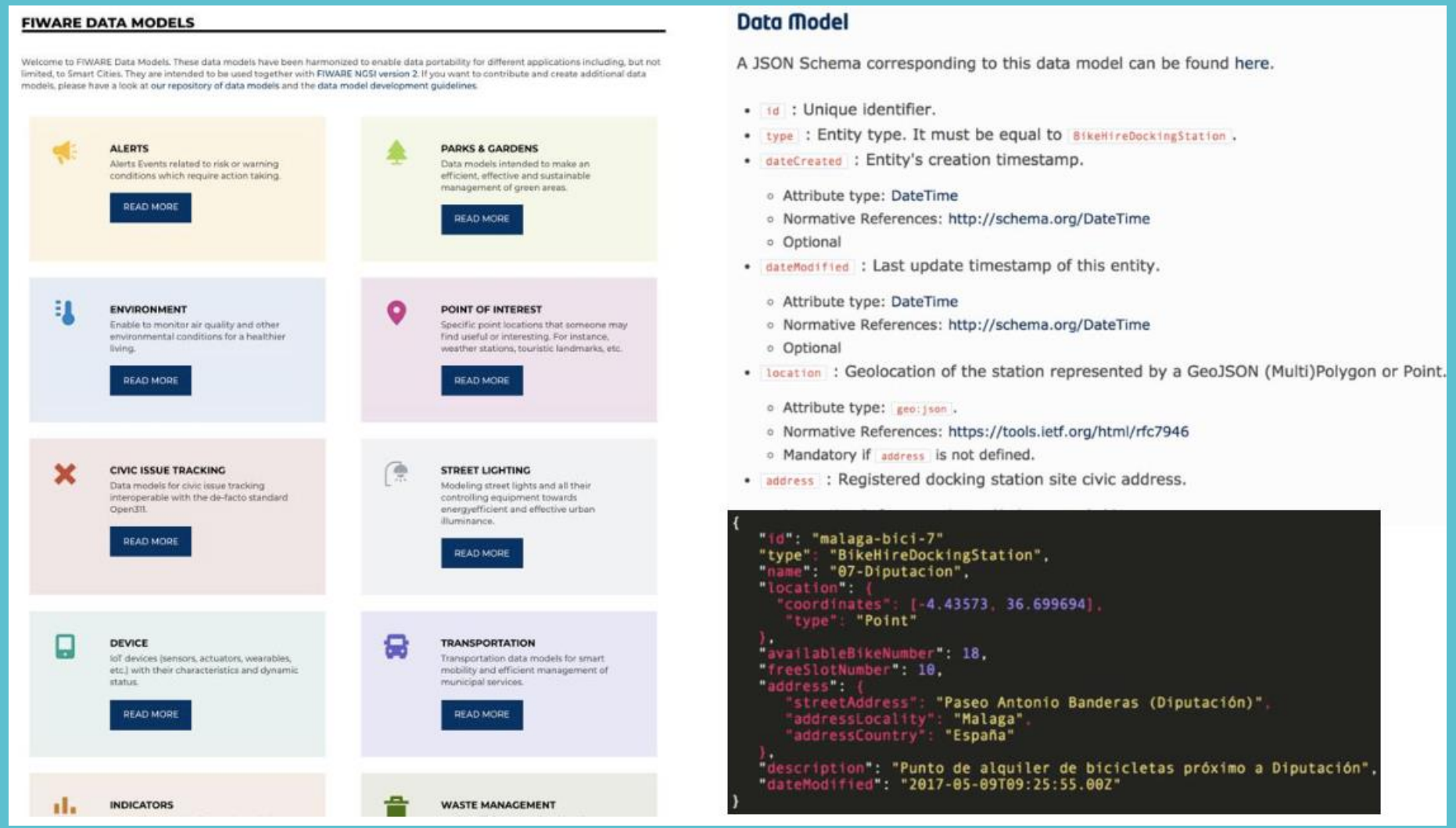


Figure 4.2.3-1: NGSI-LD Core Meta-Model plus the Cross-Domain Ontology

FIWARE data models als Datenstandard



FIWARE DATA MODELS

Welcome to FIWARE Data Models. These data models have been harmonized to enable data portability for different applications including, but not limited, to Smart Cities. They are intended to be used together with FIWARE NGSI version 2. If you want to contribute and create additional data models, please have a look at our repository of data models and the data model development guidelines.

ALERTS
Alerts Events related to risk or warning conditions which require action taking.
READ MORE

PARKS & GARDENS
Data models intended to make an efficient, effective and sustainable management of green areas.
READ MORE

ENVIRONMENT
Enable to monitor air quality and other environmental conditions for a healthier living.
READ MORE

POINT OF INTEREST
Specific point locations that someone may find useful or interesting. For instance, weather stations, touristic landmarks, etc.
READ MORE

CIVIC ISSUE TRACKING
Data models for civic issue tracking interoperable with the de-facto standard Open311.
READ MORE

STREET LIGHTING
Modeling street lights and all their controlling equipment towards energyefficient and effective urban illuminance.
READ MORE

DEVICE
IoT devices (sensors, actuators, wearables, etc.) with their characteristics and dynamic status.
READ MORE

TRANSPORTATION
Transportation data models for smart mobility and efficient management of municipal services.
READ MORE

INDICATORS

WASTE MANAGEMENT

Data Model

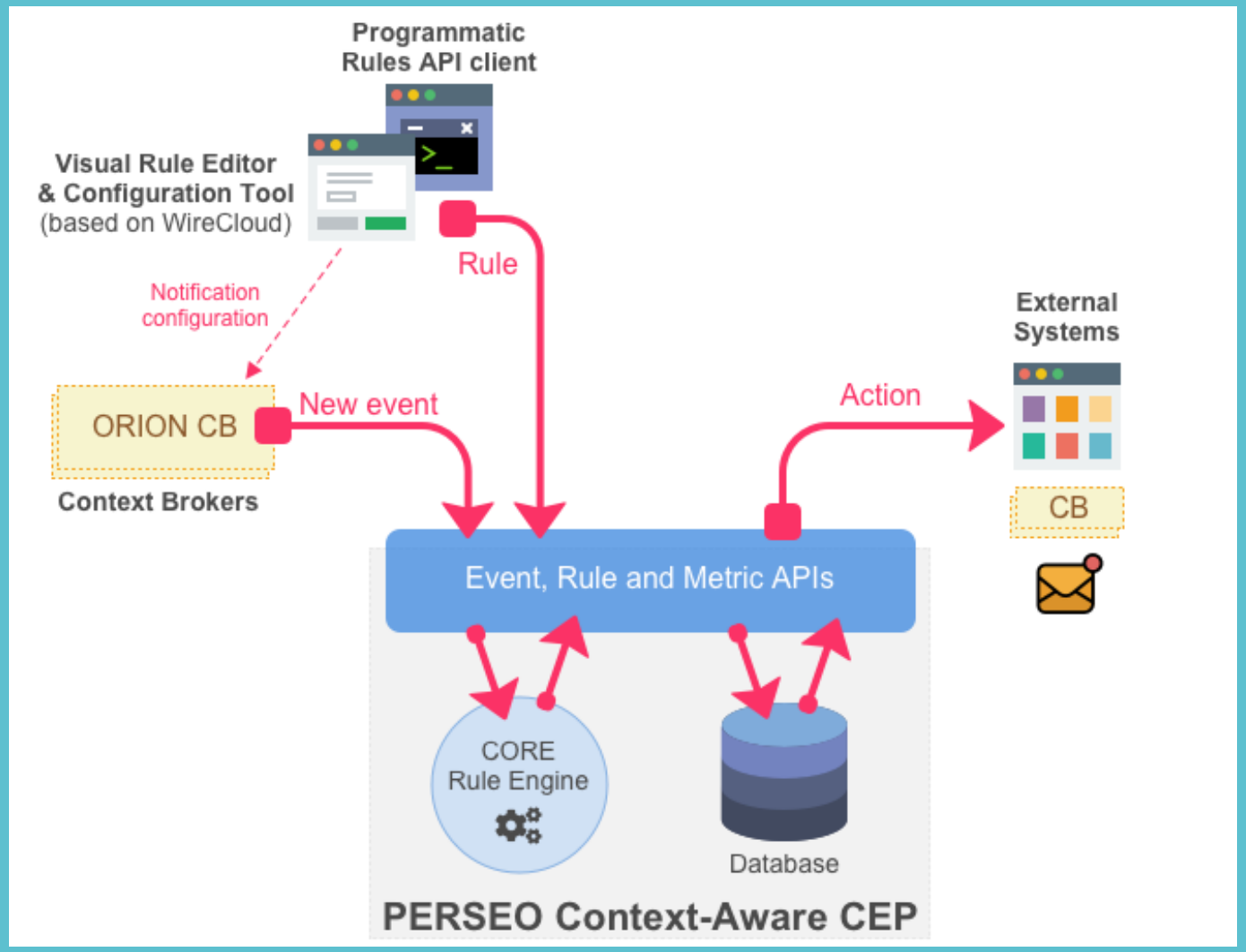
A JSON Schema corresponding to this data model can be found here.

- `id` : Unique identifier.
- `type` : Entity type. It must be equal to `BikeHireDockingStation`.
- `dateCreated` : Entity's creation timestamp.
  - Attribute type: DateTime
  - Normative References: http://schema.org/DateTime
  - Optional
- `dateModified` : Last update timestamp of this entity.
  - Attribute type: DateTime
  - Normative References: http://schema.org/DateTime
  - Optional
- `location` : Geolocation of the station represented by a GeoJSON (Multi)Polygon or Point.
  - Attribute type: `geo:json`.
  - Normative References: https://tools.ietf.org/html/rfc7946
  - Mandatory if `address` is not defined.
- `address` : Registered docking station site civic address.

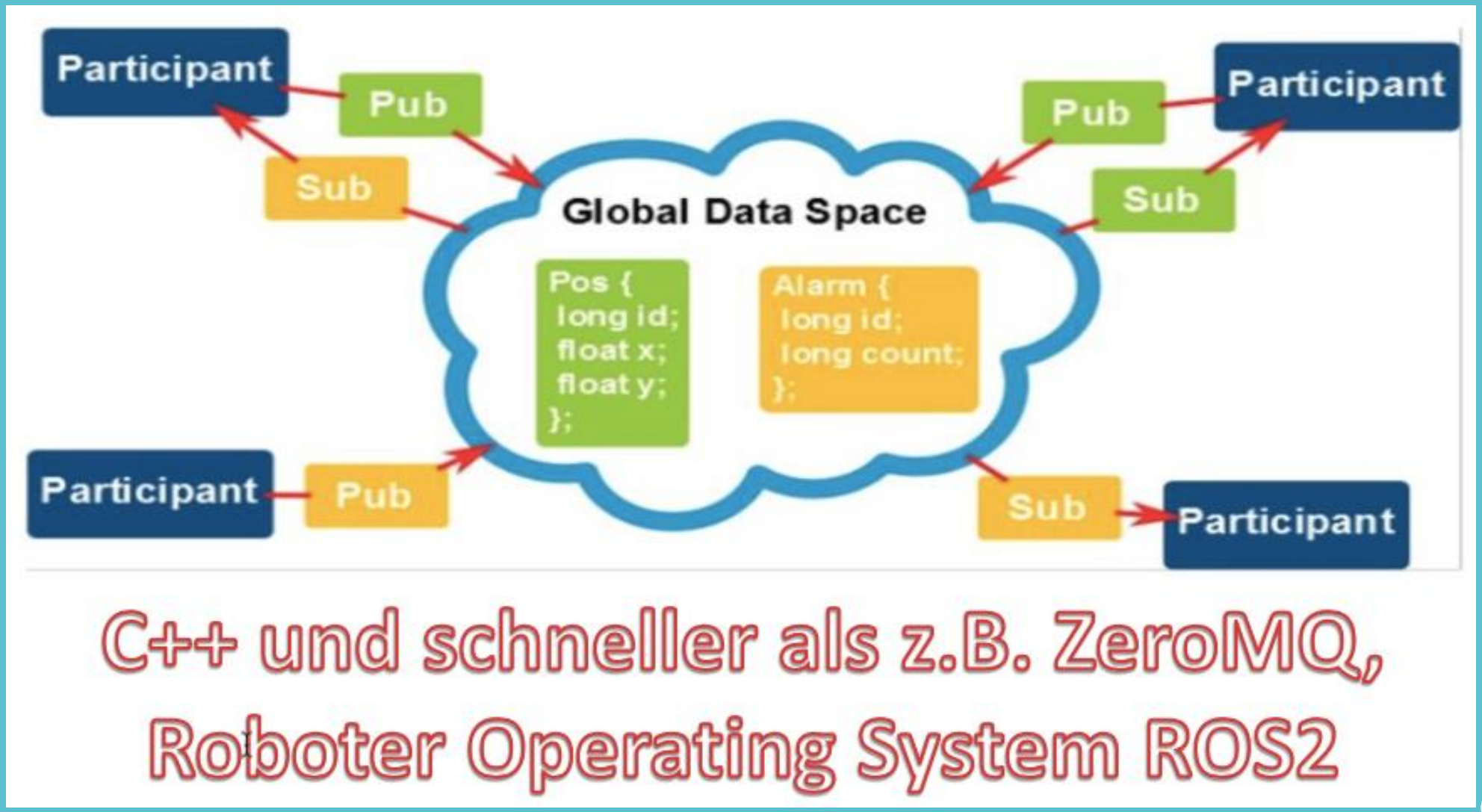
```
{
  "id": "malaga-bici-7"
  "type": "BikeHireDockingStation",
  "name": "07-Diputacion",
  "location": {
    "coordinates": [-4.43573, 36.699694],
    "type": "Point"
  },
  "availableBikeNumber": 18,
  "freeSlotNumber": 10,
  "address": {
    "streetAddress": "Paseo Antonio Banderas (Diputación)",
    "addressLocality": "Malaga",
    "addressCountry": "España"
  },
  "description": "Punto de alquiler de bicicletas próximo a Diputación",
  "dateModified": "2017-05-09T09:25:55.00Z"
}
```


FIWARE

Reaktives Complex Event Processing CEP

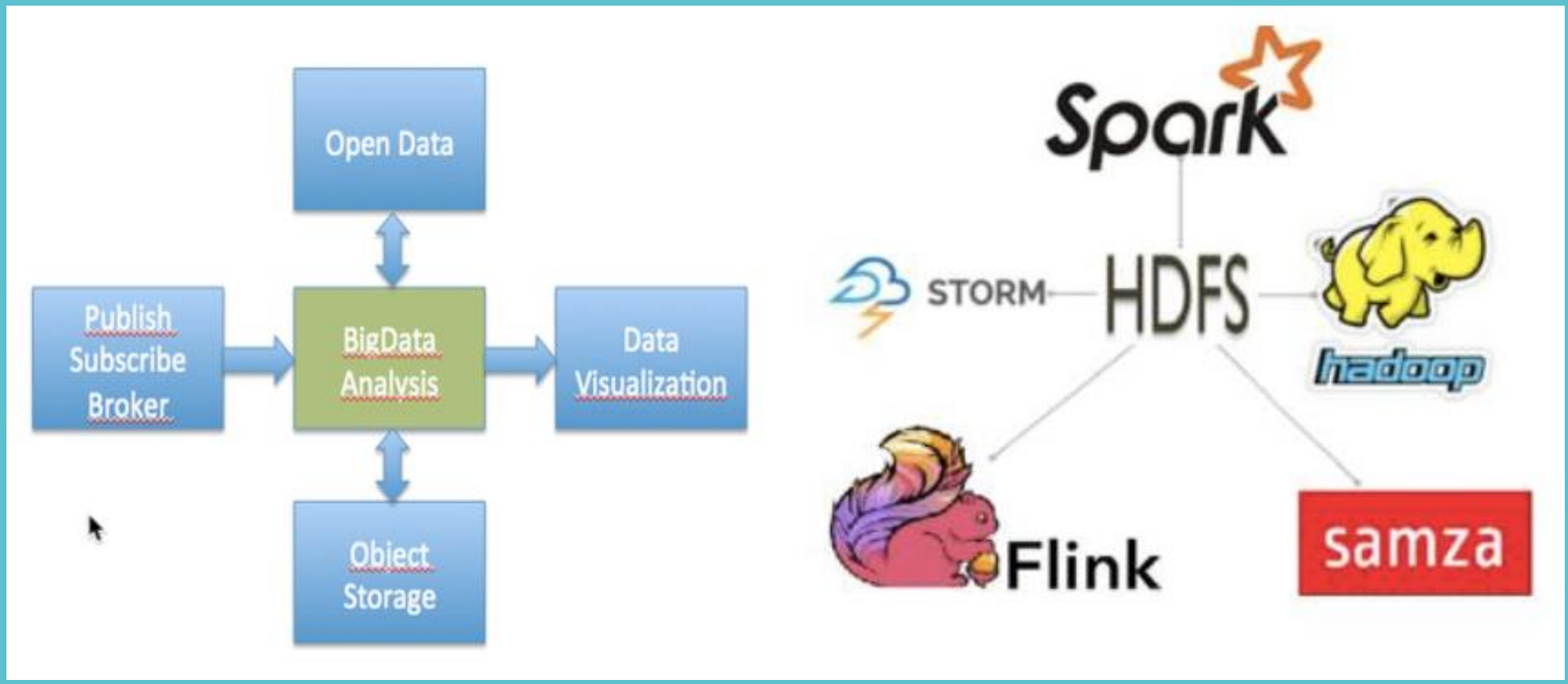


Anbindung von Roboter Daten



FIWARE

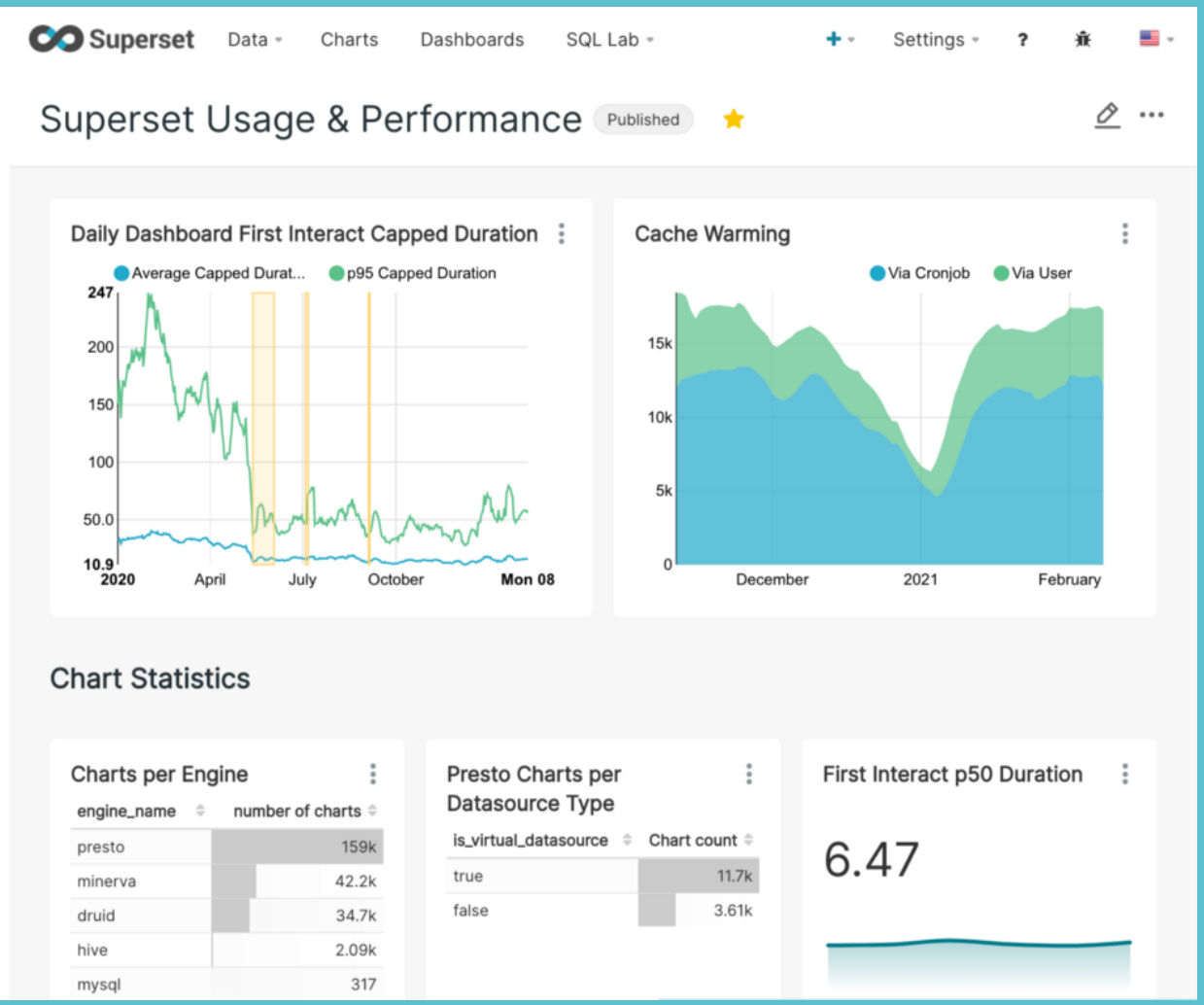
Anbindung von BigData Systemen und Streaming Frameworks



FIWARE

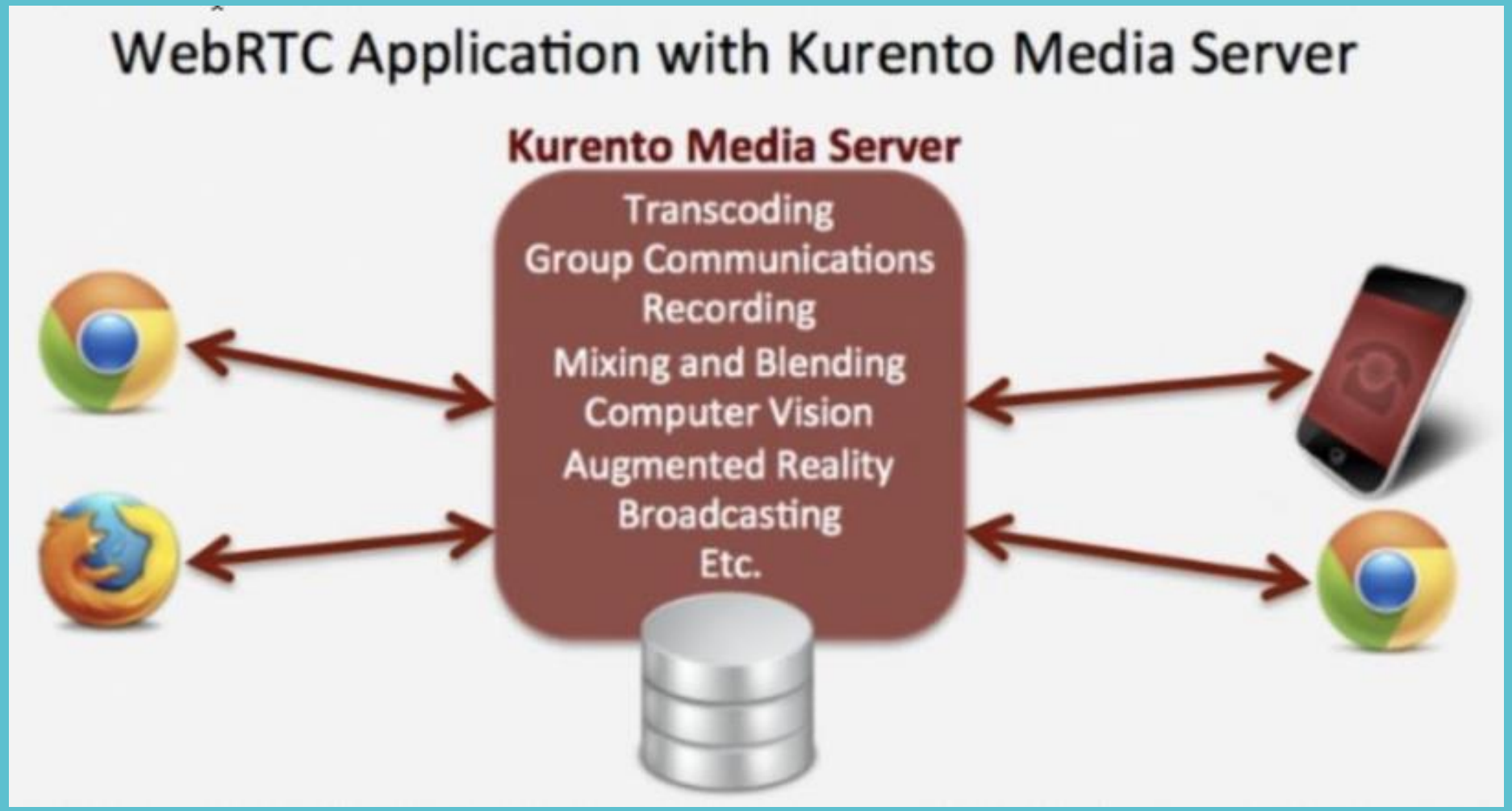
Business Intelligence, Reporting und Dashboarding Lösungen

Apache Superset™



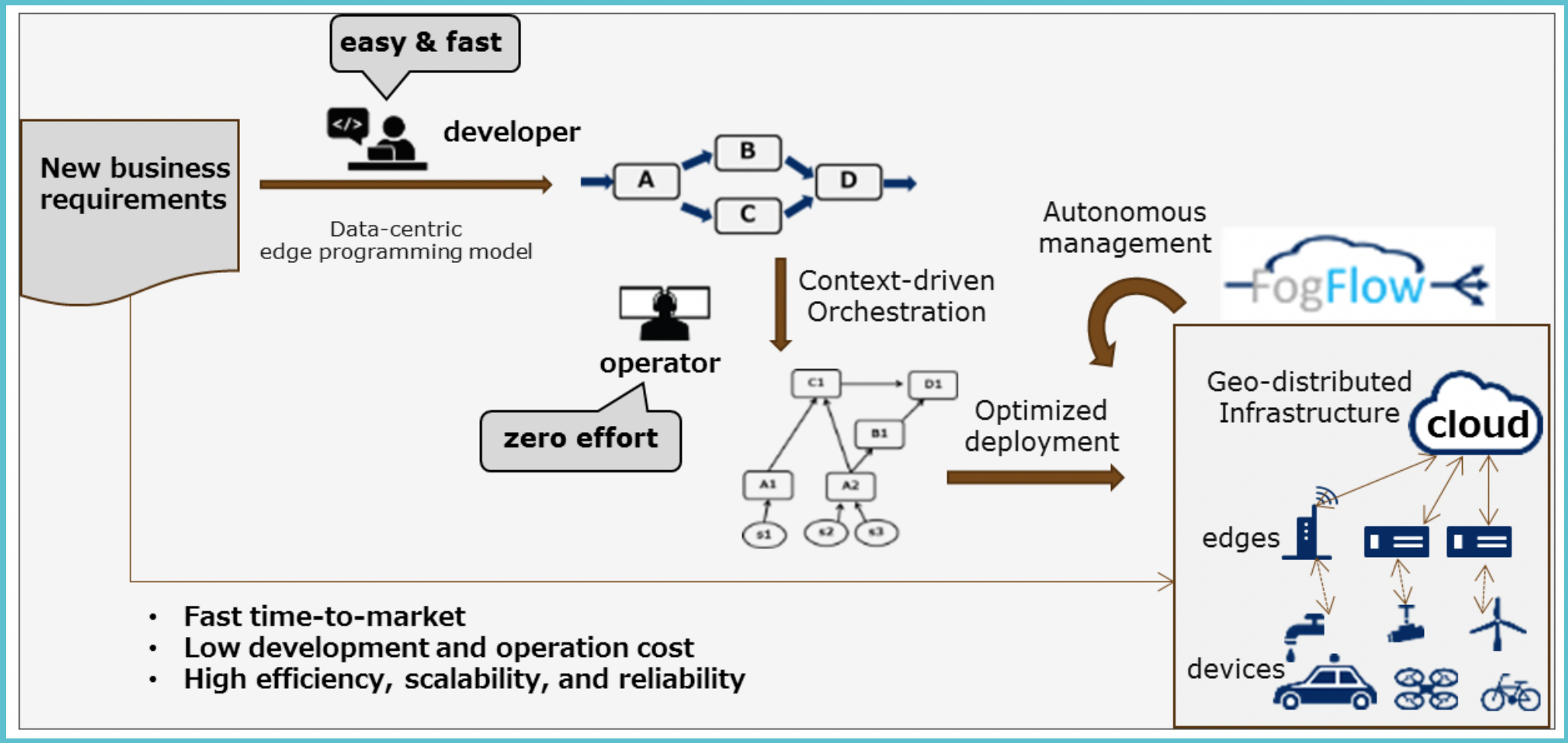
FIWARE

Streaming Media Processing

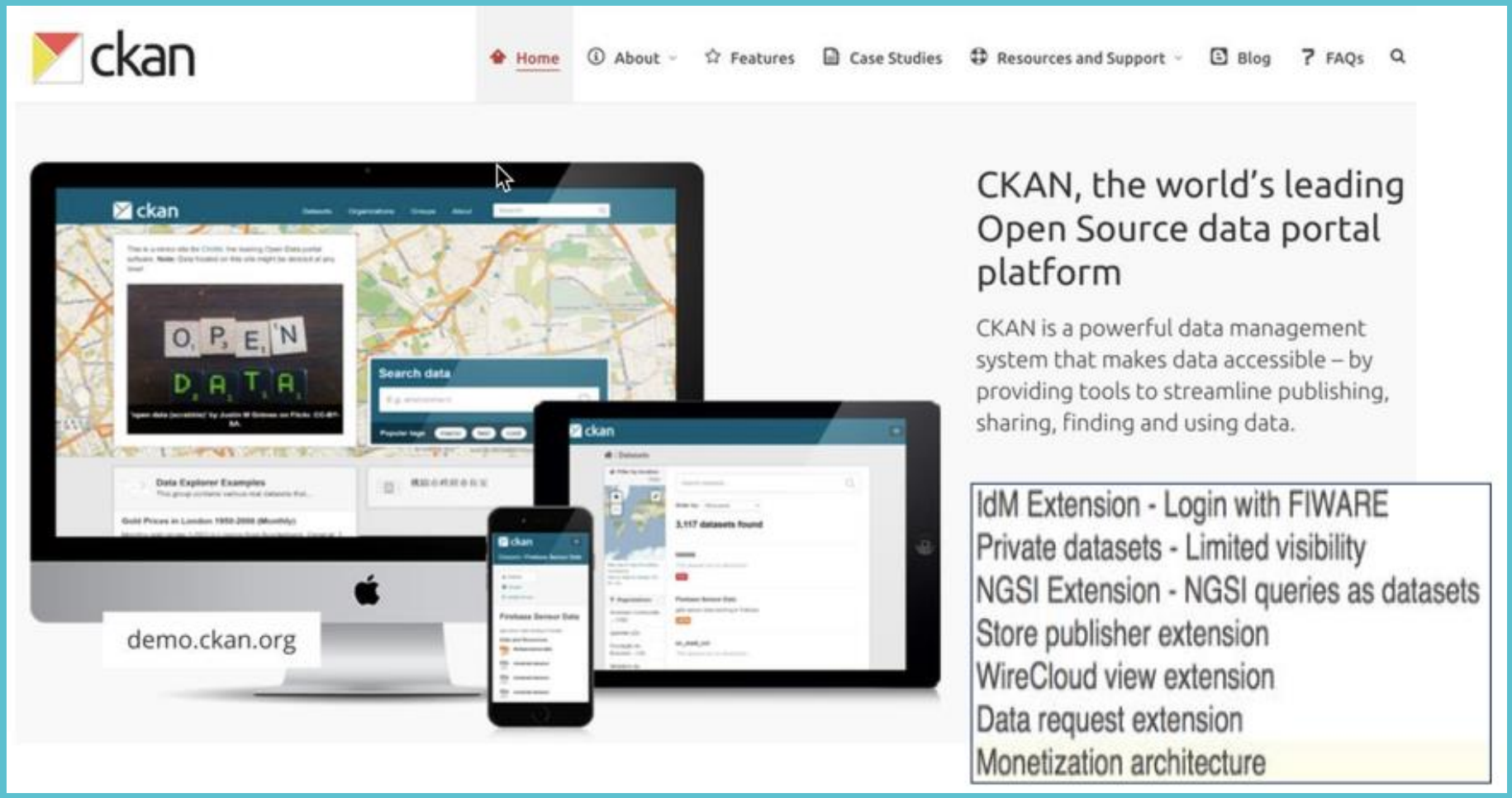


FIWARE

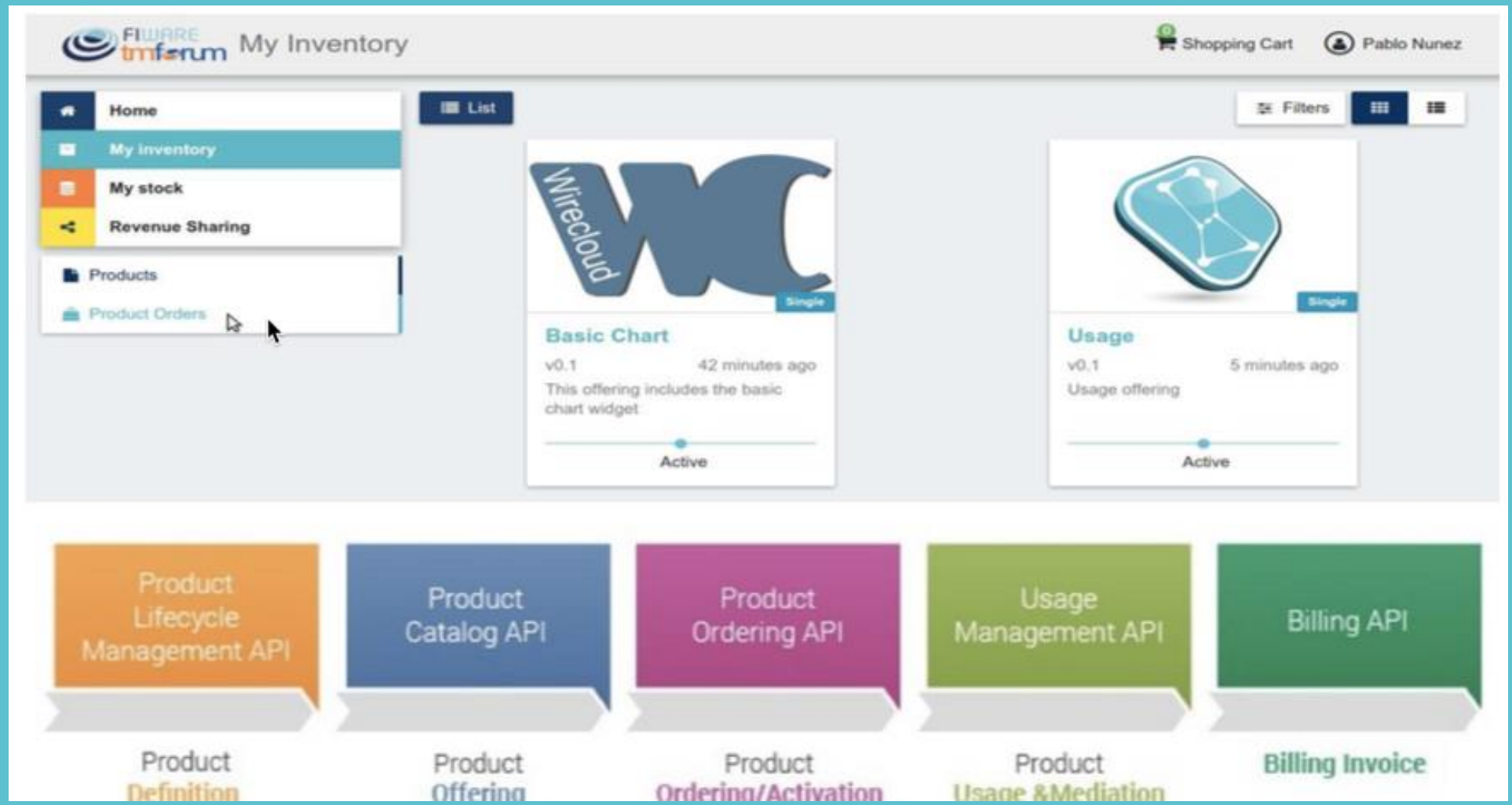
Cloud-Edge processing mit FogFlow



Integration bekannter Open Data Portale

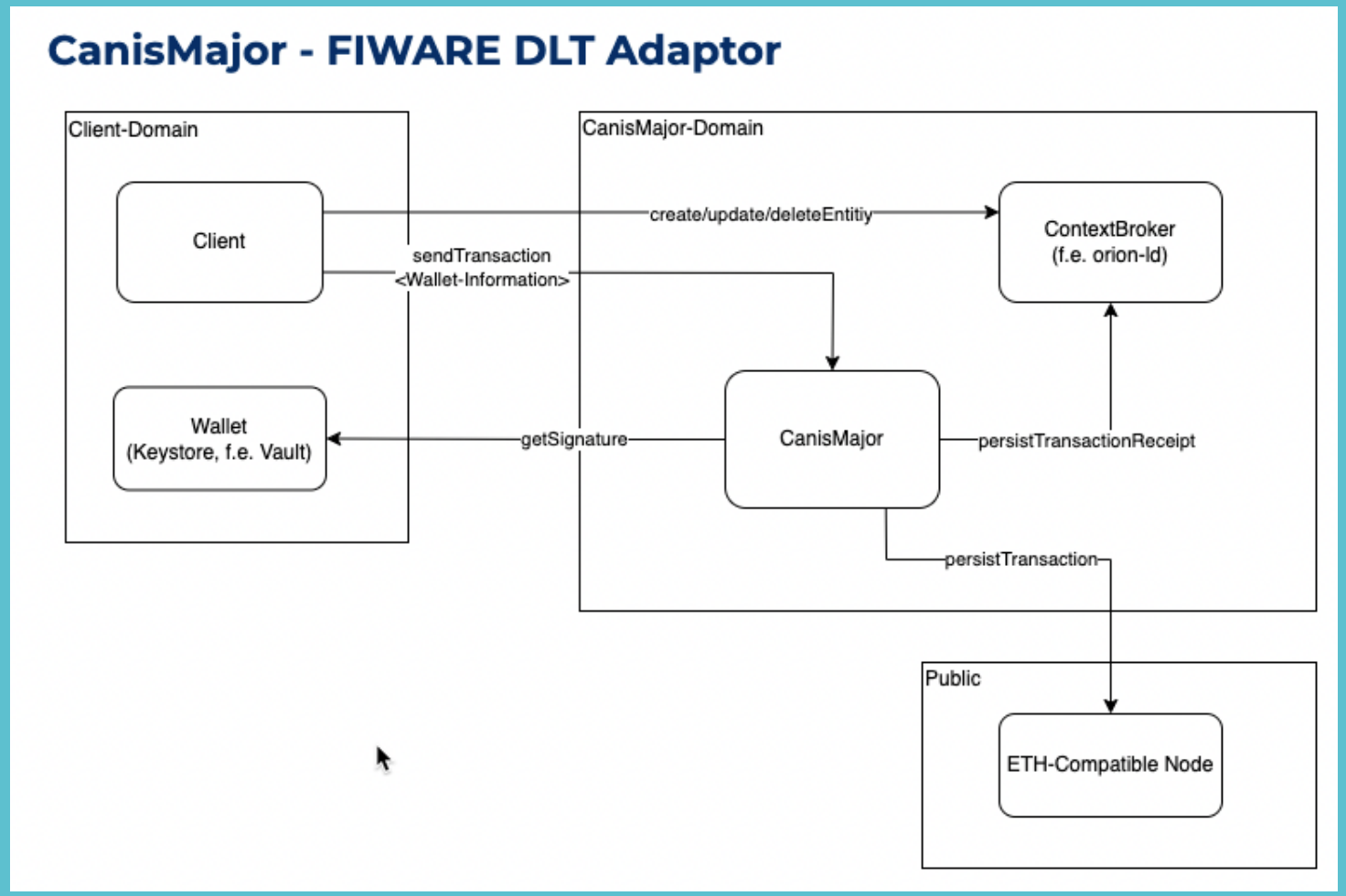


Monetarisierung von Daten

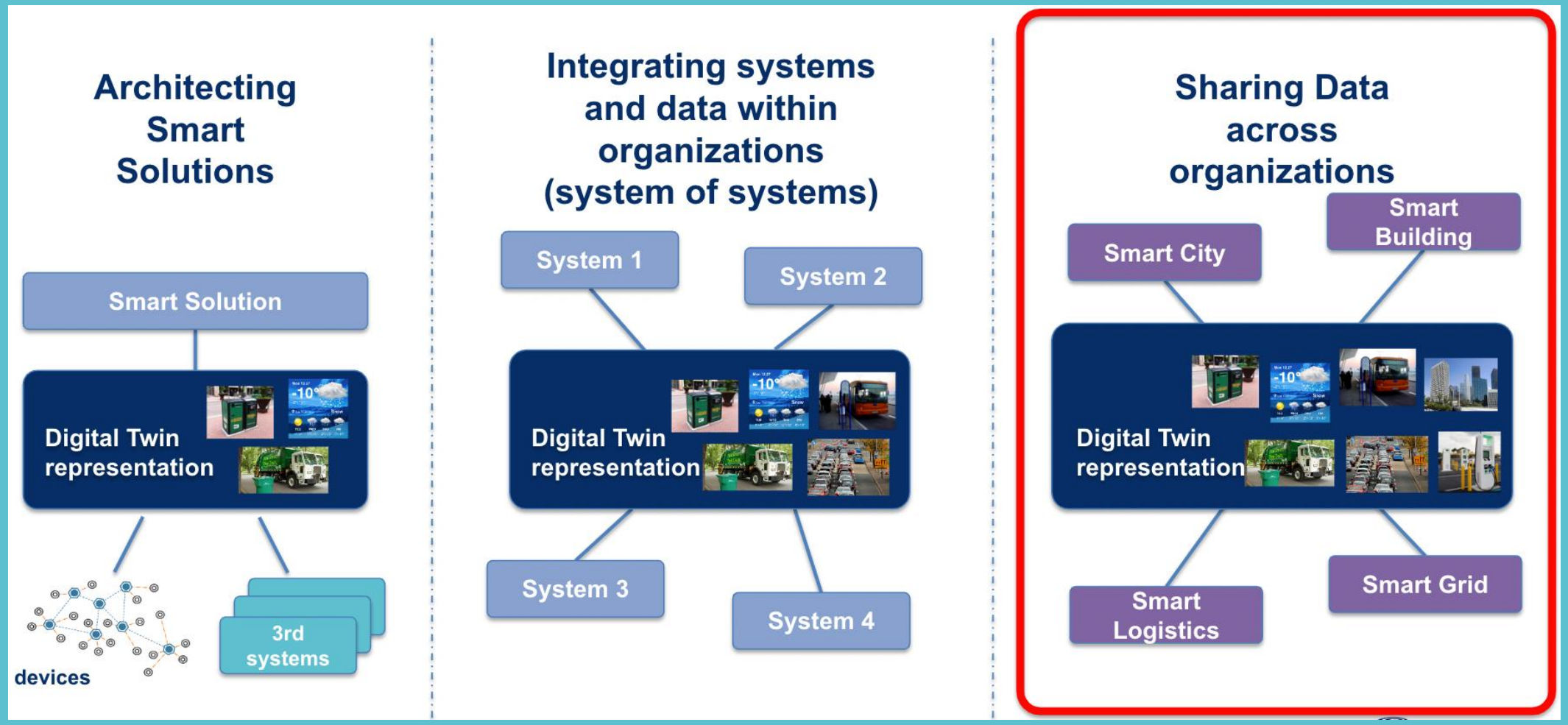


Eine komplette Single-Sign-On SSO Security Lösung

Blockchain Integration



Data spaces Integration



FIWARE: Digitale Transformation zu Smart Cities

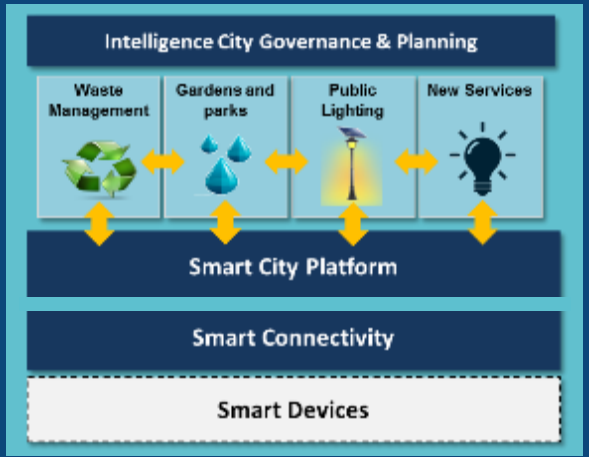
1 2 3 4

Effizient und Offen

- Vertikale Lösungen (einige IoT basiert) erzeugen Nutzen in ‘Silos’
- Historische Daten als ‘Open Data’
- Informationen weiter in ‘Silos’

Wirklich ‘Smart’

- Horizontale Plattform für den Zugriff auf ‘right-time’ Kontext Informationen
- Gemeinsames Datenmodell
- Smart City Governance Lösung



Nutzbarmachung von ‘right-time’ Open Data

- Bereitstellung von ‘right-time’ Kontext Informationen
- Authorisierung und Zugriffskontrolle (API-Management)
- Offenes Ecosystem

Realisierung der Data Economy

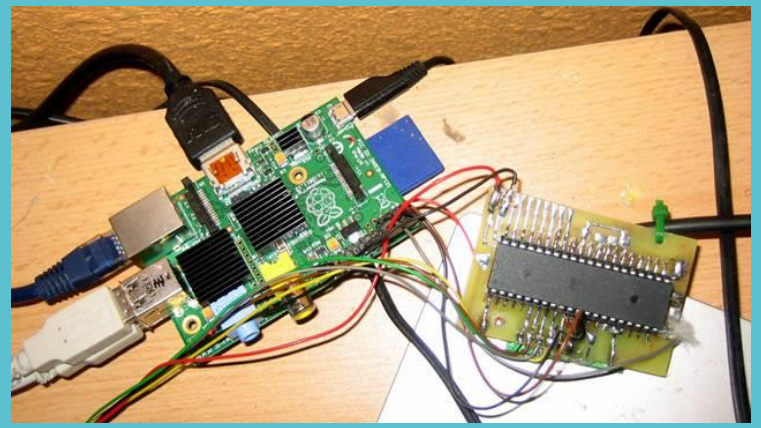
- City als Plattform inklusive Daten von Drittanbietern für innovative Geschäftsmodelle
- Errichtung von ‘multi-sided markets’

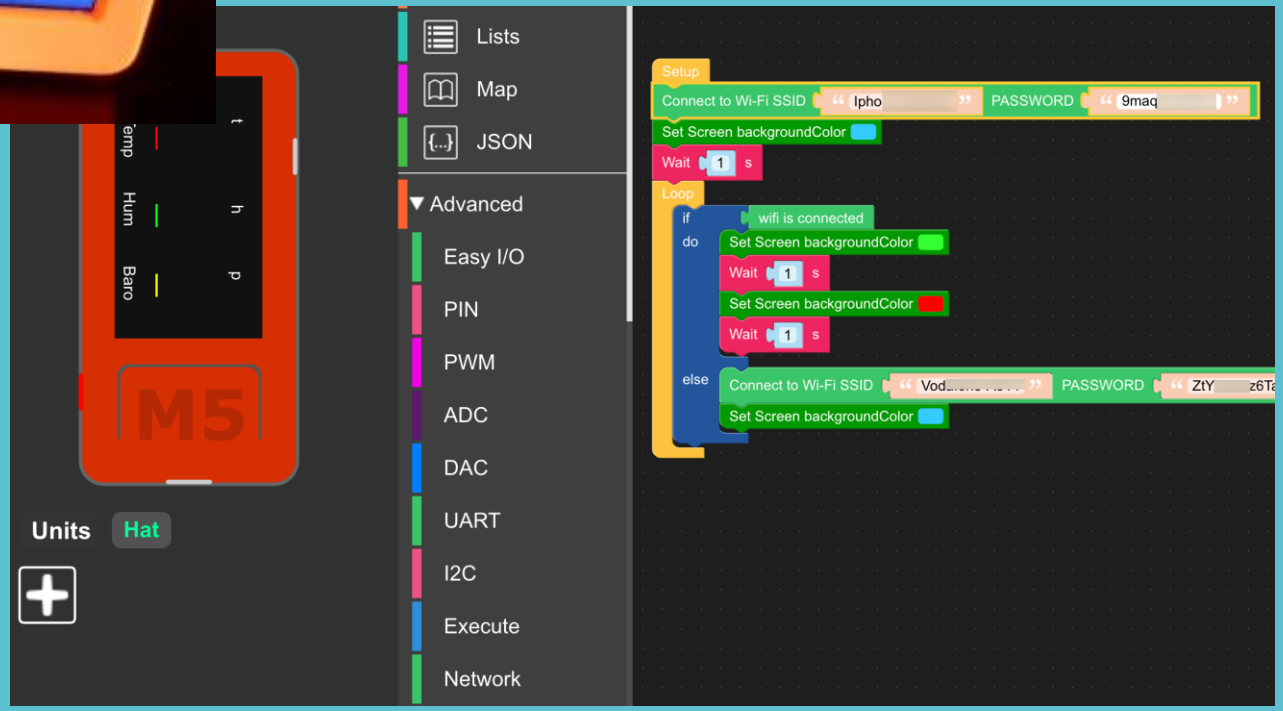
FIWARE

Ein Projekt starten

FIWARE Lab zum Ausprobieren oder BYOD

Vom kleinen Feierabend/Schüler Projekt …





… bis zum Einsatz in professionellen Umgebungen

README.md

FIWARE Helm Repository for Generic Enablers

FIWARE Deployment Tools | license MIT | tag fiware | Artifact Hub fiware | Chart Test passing | downloads 9.2k

Repository for providing HELM Charts of Generic Enablers from the FIWARE Catalogue. The charts can be install into Kubernetes with helm3.

FIWARE is a curated framework of open source platform components which can be assembled together and with other third-party platform components to accelerate the development of Smart Solutions. The main and only mandatory component of any "Powered by FIWARE" platform or solution is a FIWARE Context Broker Generic Enabler, bringing a cornerstone function in any smart solution: the need to manage context information, enabling to perform updates and bring access to context.

Note that FIWARE is not about take it all or nothing. With the exception of a mandatory FIWARE Context Broker you should feel fre -party platform components to Broker technology to " and other solutions can b vices and commercial "P

Loadtest for FIWARE Components

FIWARE Core | license MIT

Gatling load tests to run against FIWARE Components that implement the NGSI-LD Api. The repository also includes test-reports for various setups of different FIWARE Components.

Table of contents

Reports

Reports of executed tests and the used config can be found in the testReports-folder. You can find all the information about how to setup the tested instances and how to rerun those tests there.

FIWARE

Selber machen, inspirieren lassen oder machen lassen

FIWARE

FIWARE Core | license MIT | tag fiware | NGSI v2 | docs passing

This is an Introductory Tutorial to the FIWARE Platform. We will start with the data from a supermarket chain's store finder and create a very simple *"Powered by FIWARE"* application by passing in the address and location of each store as context data to the FIWARE context broker.

The tutorial uses cUrl commands throughout, but is also available as Postman documentation

▶ Run in Postman

このチュートリアルは日本語でもご覧いただけます。
Este tutorial também está disponível em português

Contents

▶ **Details**

Architecture

Our demo application will only make use of one FIWARE component - the Orion Context Broker. Usage of the Orion Context Broker is sufficient for an application to qualify as *"Powered by FIWARE"*.

Currently, the Orion Context Broker relies on open source MongoDB technology to keep persistence of the context data it holds. Therefore, the architecture will consist of two elements:

- The Orion Context Broker which will receive requests using NGSI
- The underlying MongoDB database :
  - Used by the Orion Context Broker to hold context data information such as data entities, subscriptions and registrations

Since all interactions between the two elements are initiated by HTTP requests, the entities can be containerized and run from exposed ports.

101. Getting Started
102. Entity Relationships
103. CRUD Operations
104. Context Providers
105. Altering the Context Programmatically
106. Subscribing to Changes in Context

201. Introduction to IoT Sensors
202. Provisioning an IoT Agent
203. IoT over MQTT
250. Introduction to Fast-RTPS and Micro-RTPS

101. Getting Started
102. Entity Relationships
103. CRUD Operations
104. Context Providers
105. Altering the Context Programmatically
106. Subscribing to Changes in Context

201. Introduction to IoT Sensors
202. Provisioning an IoT Agent
203. IoT over MQTT
204. Using an alternative IoT Agent
205. Creating a Custom IoT Agent
250. Introduction to Fast-RTPS and Micro-RTPS

301. Persisting Context Data using Apache Flume (MongoDB, MySQL, PostgreSQL)
302. Persisting Context Data using Apache NIFI (MongoDB, MySQL, PostgreSQL)
303. Querying Time Series Data (MongoDB)
304. Querying Time Series Data (CrateDB)

401. Managing Users and Organizations
402. Roles and Permissions
403. Securing Application Access
404. Securing Microservices with a PEP Proxy
405. XACML Rules-based Permissions
406. Administrating XACML via a PAP

501. Creating Application Mashups
503. Introduction to Media Streams
505. Big Data Analysis (Flink)

601. Introduction to Linked Data
602. Linked Data Relationships and Data Models
603. Traversing Linked Data Programmatically

Projektdokumentation: Zentrale Open Data Plattform der Stadt Paderborn

Inhaltsverzeichnis

Allgemeines

Herzlich Willkommen auf der Startseite der technischen Projektdokument des Förderprojektes Zentrale Open Data Plattform der Stadt Paderborn. Weitere generelle Informationen zum Projekt finden Sie auf der Seite der Digitalen Heimat Paderborn.

Diese Seite dient Ihnen als erster zentraler Einstiegspunkt für die technische Projektdokumentation. Auf den folgenden Seiten finden Sie die aktuellen Arbeitsstände der Plattformkomponenten und den entsprechenden, unter einer jeweiligen Open Source Lizenz veröffentlichten, Quellcode der Software.

Bitte beachten Sie, dass es sich bei den Inhalten der ersten Veröffentlichung im Juni 2021 um einen frühen prototypischen Zwischenstand der Datenplattform handelt.

Die zweite Veröffentlichung gegen Ende Juli 2022 spiegelt den Stand der Entwicklung zu Projektende wieder.

Mithilfe der folgenden Links gelangen Sie direkt zu jeweiligen Repositories der einzelnen Komponenten:

Atos aws ENGINEERING THE DIGITAL TRANSFORMATION COMPANY NEC Red Hat Telefónica

FIWARE

Die Vorteile einer Open-Source-Plattform wie FIWARE

- Die Basissoftware (Plattform und Generic Enablers) ist für jedermann kostenlos und für immer verfügbar – teilweise sind sogar die Endprodukte lizenzkostenfrei
- Eine große Open-Source-Entwickler-Community wartet und entwickelt die grundlegenden Softwarekomponenten weiter
- Eine große Gruppe von globalen Unternehmen und Start-ups bietet Plattformen und Smart Solutions basierend auf der Open-Source-Technologie an
- Niedrigste Betriebskosten für die Endbenutzer
- Standard Datenmodelle und Standard Schnittstellen (APIs) vermeiden einen ‚Vendor-Lock-In-Effekt‘

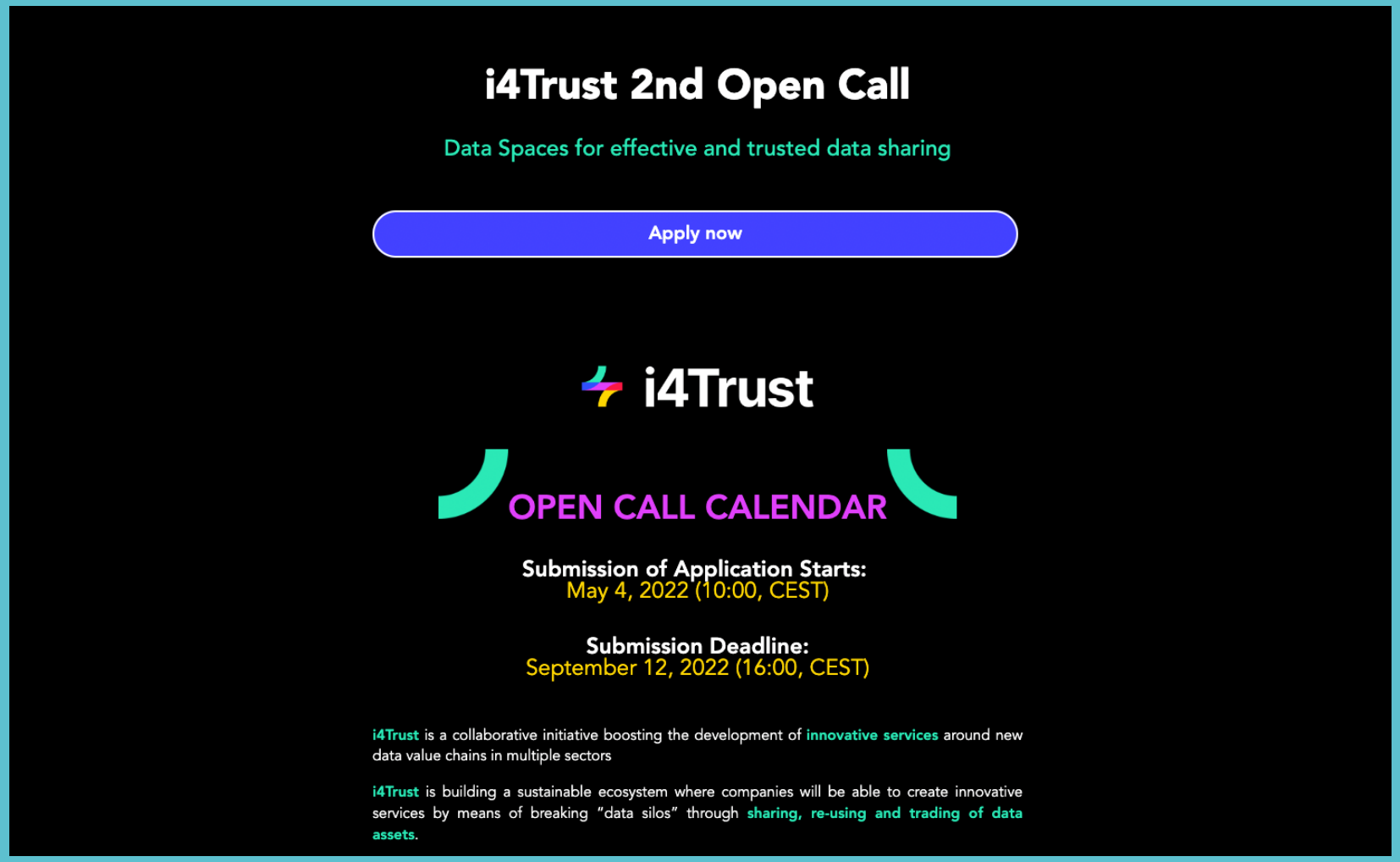
FIWARE

Öffentlich verfügbare Ressourcen I

- FIWARE Datenmodelle:
  https://github.com/smart-data-models
- FIWARE Industrie Referenz Architecture:
  https://www.fiware.org/community/smart-industry/
- Katalog der Komponenten:
  https://www.fiware.org/developers/catalogue/
- Tutorials (Inhaltsverzeichnis aller derzeit verfügbaren (wird kontinuierlich erweitert):
  https://github.com/Fiware/tutorials.Getting-Started
- FIWARE Marketplace:
  https://www.fiware.org/marketplace/

FIWARE

i4Trust 2nd Open Call



FIWARE Summit 2022 Gran Canaria

FIWARE

Das ist FIWARE

The open source platform for our smart digital future!

Thank you!

Gernot Boege
FIWARE Solution Architect

www.fiware.org
Follow @FIWARE on Twitter