Beyond technology

*Design of the smart digital future*

IoT Week 2019 Aarhus
Is this at the core of a „smart“ city?

Source: Korea Example: Green Trust
Eindhoven (Netherlands): Privacy App

Crowd-sourced repository of all sensors supporting the data-economy while gaining transparency.
Utrecht (Netherlands)

FIWARE Lab NL is initiated by a consortium consisting of Deloitte, Civility, Elba Rec, Onetrail and Xcellent. The Province of Utrecht supports this investment in the innovation infrastructure. FIWARE Lab NL is located in Utrecht and Amersfoort.

Contact: Tom Willebrands
INTEROPERABILITY
as QUALITY CHARACTERISTICS

Federation
Comparability
Replaceability
Transparency
Open Source
Portability

Modularity
Scalability
Replicability
Reuseability
Non-Functional requirements

- Time to market
- Collaboration
- New Market
- Global Scalability
- Federation
- Sustainability
- Standard based
- Implementation driven
- Low implementation risk
- accountable
DATA ECONOMY
“SUPPORT”

DATA
INFORMATION
KNOWLEDGE
WISDOM

Edge & Fog computing
Collaboration
Breaking Data Silos
Cross Domain
Platform Agnostic
Community Driven
Open Innovation
Agile & lean
Common Datamodels
Context Aware
Procurement Process in 4 steps
Funnel Approach

1. Publication of challenge
   - Expression of Interest
   - 4 weeks

2. Application
   - Apply with proposal
   - 2 weeks

3. Selection
   - 30-min elevator pitch followed by selection
   - MVP/IPR
   - 2 weeks

4. Kick-off
   - Contract Awarding
   - Offer Followed by contract awarding
Consensus Framework

PCP
Pre-Commercial Procurement

PPIs
Public Procurement of Innovative solutions

PPI
Pivotal points of interoperability

MIM
Minimum Interoperability Mechanism

MIOS
Minimum Information interoperability standards
SynchroniCity
Antwerp (BE), Eindhoven (NL), Helsinki (FI), Manchester (UK), Milan (IT), Porto (PT), Santander (ES), Carouge (CH) …

Harmonized ecosystem for IoT-enabled smart city solutions

Reference architecture for the envisioned IoT-enabled city market place

Identify interoperability points and interfaces and data models

Martin Brynskov, Aarhus, https://synchronicity-iot.eu
DISCOVER THE REFERENCE ARCHITECTURE FOR THE DATA ECONOMY
FIND OUR USE CASES AND DEMONSTRATORS AT THE IDSA AND FIWARE BOOTH IN HALL 8, C31

ABOUT INTERNATIONAL DATA SPACES ASSOCIATION
The International Data Spaces (IDSAS) approach addresses a key topic in the evolution of Industry 4.0: how companies that generate data can build a secure and trusted platform where data is shared in a decentralized manner so that each organization can use the data to improve their performance as well as gain new and innovative services derived from the data. For this reason, the International Data Spaces Association (IDSA) is creating a reference architecture to implement secure and trustworthy data exchanges where data providers can control access to their data ("data sovereignty"). It also addresses interoperability with many different data types used in global supply chains.

ABOUT FIWARE
FIWARE is an open-source initiative whose mission is to build an open-source infrastructure to foster the development of Smart Applications in multiple sectors. One of the strategic areas is Industrial IoT, covering the whole lifecycle of Industry 4.0 objects, data, and processes. FIWARE is an open-source ecosystem of application frameworks and APIs, and also constitutes a community enabling the connection of the Internet of Things with Context Information Management and Big Data services on the Cloud.

ACTIVE PART IN DESIGNING THE ARCHITECTURE OF THE IDS
In the establishment of the International Data Spaces Association, FIWARE is already an active participant in shaping the architecture of the IDS model. FIWARE contributes on a cross-section of computer science projects from 16 countries and 150 companies are members of the association. The International Data Spaces Association (IDSA) follows the requirements of IDS, adapting the knowledge exchange between research and business and developing guidelines for the certification, standardization and utilization of the results emerging from the different Industry 4.0-related research projects on the European and national level.

COMMON MISSION
International Data Spaces Association and FIWARE Foundation are working together on the first open-source implementation of the IDS Reference Architecture. Its main component is the DS Connector which, based on the FIWARE Orchestration Broker and other components, FIWARE technologies, manages all requests related to the publication of and access to data, both the IDS and the FIWARE platforms and allows seamless and flexible collaboration among the different data providers.

FIWARE

Jointly paving the way for a Data Driven Digitization of European industry
Saving Children Lives: The data way

Adapting information technology in healthcare services…

Errors in manually plotting the parameters in growth charts results in missed opportunities for early detection of growth disorders in children

http://inicucloud.com/publications.html
Reducing flooding in rice paddies with data

11.3 gigatons of carbon dioxide emissions can be reduced,

Farmers could realize $519 billion in additional profits

and can dramatically reduce greenhouse gas emissions,

and conserve water and boost yields.

Source: drawdown.org

Photo: WRI.ORG by IRRI.

https://www.drawdown.org/solutions/food/improved-rice-cultivation
Architecture / Topologie
Atomic Microservices (GE / SE)
Minimum Interoperability Mechanism (MIM)

The Broker is in the heart of every information based platform and solution

orion  NGSI v2

2  STH Comet  KeyRock  Wilma

FIWARE
Architecture / Topologie
Atomic Microservices (GE / SE)
Minimum Interoperability Mechanism (MIM)

The Broker is in the heart of every information based platform and solution
SynchroniCity: Technical resources: Architecture and MIMs

Architecture / Topologe
Atomic Microservices (GE / SE)

Minimum Interoperability Mechanism (MIM)
Architecture / Topologie Atomic Microservices (GE / SE)  
Minimum Interoperability Mechanism (MIM)
Architecture / Topologie Atomic Microservices (GE / SE) Minimum Interoperability Mechanism (MIM) in Mobility
Mapping of FIWARE components, API’s and new advancements

- Real-time processing of context events (Perseo/Flink CEP)
- Cloud Edge (FogFlow)
- IoT management (OpenTosca, Ashwin)
- Connection to the Internet of Things (IDAS, OpenMTC)
- Connection to robots (Fast RTPS)
- Documents exchange (Domibus)
- Business Intelligence (Knowage)
- BigData Context Analysis (Cosmos)
- Real-time Processing of media streams (Kurento)
- Handling authorization and access control to APIs (Keyrock, Wilma, AuthZForce)
- Development of Context-aware applications (Orion, STH-Comet, Cygnus, QuantumLeap)
- Publication and Monetization of Context Information (CKAN extensions, Data/API Biz Framework)

Deployment tools

Core Context Management (Context Broker)

Context Processing, Analysis, Visualization

Data/API Management Publication Monetization

Interface to IoT, Robotics and 3rd-party systems
China’s New Strategy for Tech Domination: China Standards 2035

To dominate cutting-edge technologies like artificial intelligence (AI), cloud computing, IoT (internet of things), and big data, China intends to accelerate efforts to develop technical standards, eventually exporting them to the international market, the report said.

While global technical standards for these technologies have not yet been established, “this is the golden opportunity for our country’s industries and standards to realize the goal of ‘overtaking by changing lanes,’” the report quoted an official from China’s national technical committee, the Standardization Administration, as saying.

„overtaking by changing lanes…“
China`s New Strategy 2035: Standards

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China`s New Strategy for Tech Development Standards 2035

In the trade dispute with China, the United States has repeated the Chinese regime for its state-sponsored development of advanced technology — accusing Beijing of undermining fair competition and justifying the theft of foreign technology to serve national interest in becoming a high-tech manufacturing powerhouse.

The industrial plan “Made in China 2025”— which proposes steps toward achieving self-sufficiency in 10 tech sectors by the year 2025 — is cited repeatedly as evidence of Beijing’s aggressive ambition.
FIWARE-NGSI v2 Specification

This specification defines the FIWARE-NGSI version 2 API. FIWARE-NGSI v2 is intended to manage the entire lifecycle of context information, including updates, queries, registrations, and subscriptions.

The FIWARE NGSI (Next Generation Service Interface) API defines
- a data model for context information, based on a simple information model using the notion of context entities
- a context data interface for exchanging information by means of query, subscription, and update operations
- a context availability interface for exchanging information on how to obtain context information (whether to separate the two interfaces is currently under discussion).


CEF supports multiple digital infrastructure projects, which contribute to improvements in the daily lives of Europeans through digital inclusion, the connectivity and interoperability of European digital services, and the development of a Digital Single Market.

The CEF Context Broker is composed by two major software components: the Orion Context Broker component which implements the core Context Broker functionality itself and the Cygnus component which complements Orion. Cygnus captures updates on context information managed by the Orion Context Broker and produces a stream of context data history which can then be stored into a specific persistent data sink storage, such as MySQL, MongoDB, Flink or HDFS for further processing or CKAN for Open Data publication.

The goal of ISG CIM was to develop technical specifications and reports to enable multiple organisations to develop interoperable software implementations of a cross-cutting Context Information Management (CIM) Layer. It is about bridging the gap between abstract standards and concrete implementations.

The CIM Layer enables applications to update, manage, and access context information from many different sources, as well as publishing that information through interoperable data publication platforms.

The work of ISG CIM will is done in a phased manner. The initial phase will be purely informative and result in an ISG CIM Group Report (GR). It will be followed by a second normative phase resulting in several ISG CIM Group Specifications (GS).

FIWARE-NGSI as GSMA Standard

Big Data services based on the Internet of Things identifies the key functions and interfaces that enable IoT Big Data services to be delivered, and makes selections and recommendations particularly in the area of interfaces that support the creation of the IoT Big Data ecosystem. The framework outlines a logical architecture and it should be noted that operators may make different implementation decisions. In addition, not all mobile operators will implement exactly the same IoT Big Data services and this framework provides flexibility for them to approach the market according to their own strategy.

Towards Open Platform technologies for materializing the Society 5.0

To realize Society 5.0 at the city level, we aim to create

- the smart city coalition of cities with system interoperability,
- data governance framework that ensures data portability for citizens

Schedule of International Meetings in 2019

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<th>January</th>
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<td>IoT Forum @Dehli</td>
<td>OASC Annual</td>
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<td>GCTC Meeting</td>
<td>B20 Summit</td>
<td>G20 @Osaka</td>
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<td>14.-15.1</td>
<td>Conference @Brussels</td>
<td>Meeting @Davos</td>
<td>@Washington</td>
<td>@Tokyo</td>
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<td>16.-17.1</td>
<td>22.-25.1</td>
<td>19.-22.2</td>
<td>Japan</td>
<td>Japan 28.-29.6</td>
<td>Summit 17.9.</td>
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B20 summits are summits of business leaders from the G20 countries. For 2019, it would be organized by Keidanren (a comprehensive economic organization of Japanese major corporations) whose chairman is Mr. Nakanishi, who is also the chairman of Hitachi.
Gaining for **sustainable global marketplace** where solutions are **interoperable and replicable** thus **investments of the cities are protected** and (**vendor lock-in**) (**lock-out**)
Towards Open Platform technologies for materializing the Society 5.0

The governance, architecture and topology of adopted open platform technologies as implicit and inseparable quality should also be considered, as should the purely functional features of digital products and services.

Considering a driven-by-implementation approach as opposed to a design-by-committee approach is required to ensure an agile adoption.
Shortcomings in the "right" management of digitization have had negative effects worldwide and led to distortions.

Non-functional qualities such as **interoperability**, **openness**, **transparency**, **replicability**, **portability** or **modularity** are suitable for significantly enhancing and promoting the purely technical advantages of a digital product or service.
What would Greta have been done?
Thank you!

http://fiware.org
Follow @FIWARE on Twitter

Olaf-Gerd Gemein

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Advisor VC Fund Future State Foundery
Initiator of „Smart Mobility as a Service Platform“, Germany