

FIWARE Standard Context Broker and System-of-Systems Approach

November 19th 2020



ICT-AGRI-FOOD | Fast Track to Innovation Forum

ICT-AGRI-FOOD knowledge exchange forum on "Bringing research results to market"

Panel 2: "Learn about tools and platforms" - 11:45 - 13:00 CET

Harald Sundmaeker

Vice-chair FIWARE Smart Agri-Food Mission Support Committee



Institute for Applied Systems Technology Bremen GmbH

FIWARE provides the basis for development of smart solutions in multiple sectors



Smart Solutions "powered by FIWARE" gather data from many different sources to build a "digital twin representation" of the real world (also referred as "context representation") which is constantly analyzed and processed in order to automate processes or bring support to smart decisions



What are we referring to as Digital Twin?

Digital Twin = Digital representation of an asset

Characterized by attributes

□ Properties

- \Box Relationships $\leftarrow \rightarrow$ Linked Data
- Values of attributes may change over time (or not)
- Typically have a location (but it is not a must requirement)

(digital representation of) **Context** = Digital Twins Collection





Modeling Context using Digital Twins for Agri-Food ...





What are we referring to as Digital Twin?

Digital Twin = Digital representation of an asset

Characterized by attributes

□ Properties

 \Box Relationships $\leftarrow \rightarrow$ Linked Data

- Values of attributes may change over time (or not)
- Typically have a location (but it is not a must requirement)

(digital representation of) **Context** = Digital Twins Collection

- **Basis for the development** of interoperable and replicable (portable) Smart Solutions:
 - **Standard API** for getting access to Digital Twin data (context)
 - Common Data Models associated to Digital Twin classes





FIWARE driving key standards: Digital Twin Data API



FIWARE driving key standards: Smart Data Models

- FIWARE Foundation is collaborating with relevant organizations towards definition of common data models for multiple application domains
 - Smart Cities
 - Smart Agrifood
 - Smart Energy
 - Smart Environment
 - Smart Manufacturing
 - •

. . .

Defined data models rely on well-established "de-facto" standards (e.g., schema.org, SAREF or IEC CIM in Energy)



SMART AgriFood Mission Support Committee Success stories

Consolidating activities of different groups in terms of:

- · reference architecture,
- · data models,
- · data access,
- monetization and
- context-broker based implementations
- joint catalogue of solutions <u>www.iot-catalogue.com</u>





Reference Architecture for Farm Management System



FIWARE for the creation of the System of Systems



10

Conclusions

- FIWARE brings response to existing challenges regarding interoperability and replicability of smart solutions in multiple sectors including Agri-Food
- An approach that works cross-domain paving the way for the connection of systems across domains, enabling innovative data value chains

And don't forget ...



Many thanks for input to:



JUANJO HIERRO FF POSITION CTO COMPANY FIWARE Foundation

FIWARE is open, for all, forever !!



