ACTIVAGE: DATA QUALITY

Dr. Antonio J. Jara (jara@hopu.eu)
HOP Ubiquitous (HOP-U)
ACTIVAGE STANDARDIZATION ACTIVITIES

Global mapping and alignment
ACTIVAGE STANDARDIZATION ACTIVITIES

Data Modelling towards Data Markets

- **Physical world to Data**
  - OMA LwM2M data Models and OMA LwM2M Objects range for ACTIVAGE in OMNA (HOPU)
    - In particular, we have the block of objects reserved for vendors (32969 – 33009)
  - ETSI SmartBAN chaired (CSEM)
    - Contributions to the current standards for Body Area Networks communications based on Bluetooth

- **Data Quality Validation**
  - IEEE PAR2510 Standard for data integration sensors integration in IoT

- **Data Exchange**
  - ETSI ISG CIM - FIWARE Data models contributions (HOPU)
    - Contributed to all the ETSI ISG CIM documents: Architecture and Data Models, Context management and cross-domain by design
  - ETSI SAREF – Semantics interoperability
    - Cooperating with SAREF extensions as SAREF4CITY to explore opportunities for AHA domain.
    - Exploring value from home appliances (refrigerators, etc.) for behavioural monitoring.
    - Additional analysis for integration with AIOTES Semantic in progress (NUIG)
ACTIVAGE STANDARDIZATION ACTIVITIES

Standardisation collaboration in SAREF

• **ETSI SAREF eHealth extension**
  - STF 566 (TS 103 410-8)
    - SAREF4EHAW: SmartM2M; Extension to SAREF; Part 8: eHealth/Ageing-well Domain DTS/SmartM2M-103410-8-SRF4EHAW

  • Definition of the extension being cooperated by HOPU on behalf of ACTIVAGE as part of SmartM2M action STF566 (Q2/Q3 2019)
    [https://portal.etsi.org/STF/STFs/STFHomePages/STF566#who](https://portal.etsi.org/STF/STFs/STFHomePages/STF566#who)

  • Implementation in progress of mapper / adapter from NGSI to NGSI-LD (including SAREF reference model) for Q3 2019
ACTIVAGE STANDARDIZATION ACTIVITIES

IEEE IoT Standards approach

The Basics:
- Networked System with a purpose!
- Utilizing Network Resources
- Distributed and Mobile
- Work Globally
  - Self Configuring
  - Automated
  - Smarts built in
- People, Processes, and Things in the Loop
IEEE P2510

- P2510 - Standard for Establishing **Quality of Data** Sensor Parameters in the Internet of Things Environment

- New Real Time Analytics need to know, not only the "data", if not also the "quality of the data that are receiving to proceed to "close O&G pipes, stop Cars, send alerts, etc".

- Every day is more common to have actuators with interaction with multiples IoT autonomous systems to take decisions in real time, for example, speed, localization, temperature, and other information that should be correlated before the actuator take an action, this is critical because before to take the decisions customers could understand the total probable percentage error for this decision.

- Parameters to understand the quality of the data is critical to improve the productivity in the business operation and enforce the industrial or homeland security in field operation environments.
DATA QUALITY

• IEEE P2510

• One of today the critical challenges of today is to understand the quality level of the “new” data coming from sensors and new applications, that could be used for critical decisions in everyday operations.

• Moreover, it is usual to work with organizations plagued by missing or low-quality data, multiple definitions of their data, and poorly integrated systems.

• Help with sensor upgrades, calibration, changes, security issues, and others, will affect the customer operation environment.

• Reduce possible mistakes, when customers take critical decisions in Operation Technology environments.

• Help with working with multiple brands, sensor types, models and prices, where a customer may not know about the quality of the data that sensors will generate.
Data Quality

• **IEEE P2510: Digital Logic Unit (DLU)**
  - Digital Logic Unit as the main reference value
  - EPS/Epsilon (floating-point relative accuracy)
  - Grade Level of Security for the Operating System.
  - Encryption support level and type.
  - Tamper level (Industry Standard compliance).
  - Calibration, mechanism and frequency (Vendor Recommendation).
  - Energy, Power and battery (Type and redundancy).
  - Others to be defined.
ACTIVAGE STANDARDIZATION ACTIVITIES

Data Quality

• **IEEE P2510: Digital Innovation Hubs (DIH) opportunity**
  - It’s not only a "PDF“ -> "Technical Architectural for Intelligent Interaction" to generate, store and interact between "Sensor Vendors", "Certificate Authorities", "IEEE Databases" and "Final Customers".

---

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement Nº 732679
ACTIVAGE STANDARDIZATION ACTIVITIES

Data Quality

• IEEE P2510: Digital Innovation Hubs (DIH) opportunity
  • It’s not only a "PDF“ -> "Technical Architectural for Intelligent Interaction" to generate, store and interact between "Sensor Vendors", "Certificate Authorities", "IEEE Databases" and "Final Customers".

A Proposed Structure for P2510 Certification

- ICAP-Sensors Conformity Assessment Steering Group
  - ICAP-Sensors Conformity Assessment Marketing Initiatives
    - Works on Marketing Initiatives for certification program
  - ICAP-Sensors Technical Initiatives & Test Plans
    - Works on technical direction, P&Ps

Certification Mark Defined

- A certification mark is any word, phrase, symbol or design, or a combination thereof owned by one party who certifies the goods and services of others when they meet certain standards. The owner of the mark exercises control over the use of the mark; however, because the sole purpose of a certification mark is to indicate that certain standards have been met, use of the mark is by others.

IEEE Certified
IEEE 1588™-2008
Telecom Profile

Customizable
Conclusions

• **Data Market**
  • Data Models and Semantics (ETSI NGSI-LD / ETSI SAREF)
  • Data Quality is crucial for Industry, Health, etc.
    • Metadata being defined by IEEE P2510
    • Certification Process & Vendors / Manufacturers being integrated

• **Data Economy**
  • Health sector is critical and highly sensitive
    • Financial services & Public/Private health organizations
    • Data marketplaces with auto-brokerings not feasible at this stage
    • Wearables and personal devices (IEEE 1073) target of Data Quality challenge

• **Next steps**
  • Started chairing of IEEE P2510 (CISCO / HOPU)
  • Follow-up the IEEE Process for labeling and CA validations -> DIHs / CA
  • AI needs data quality from IoT
Thank you!

More info:
Antonio Jara (jara@hopu.eu)

Cooperation space in:
StandICT.eu