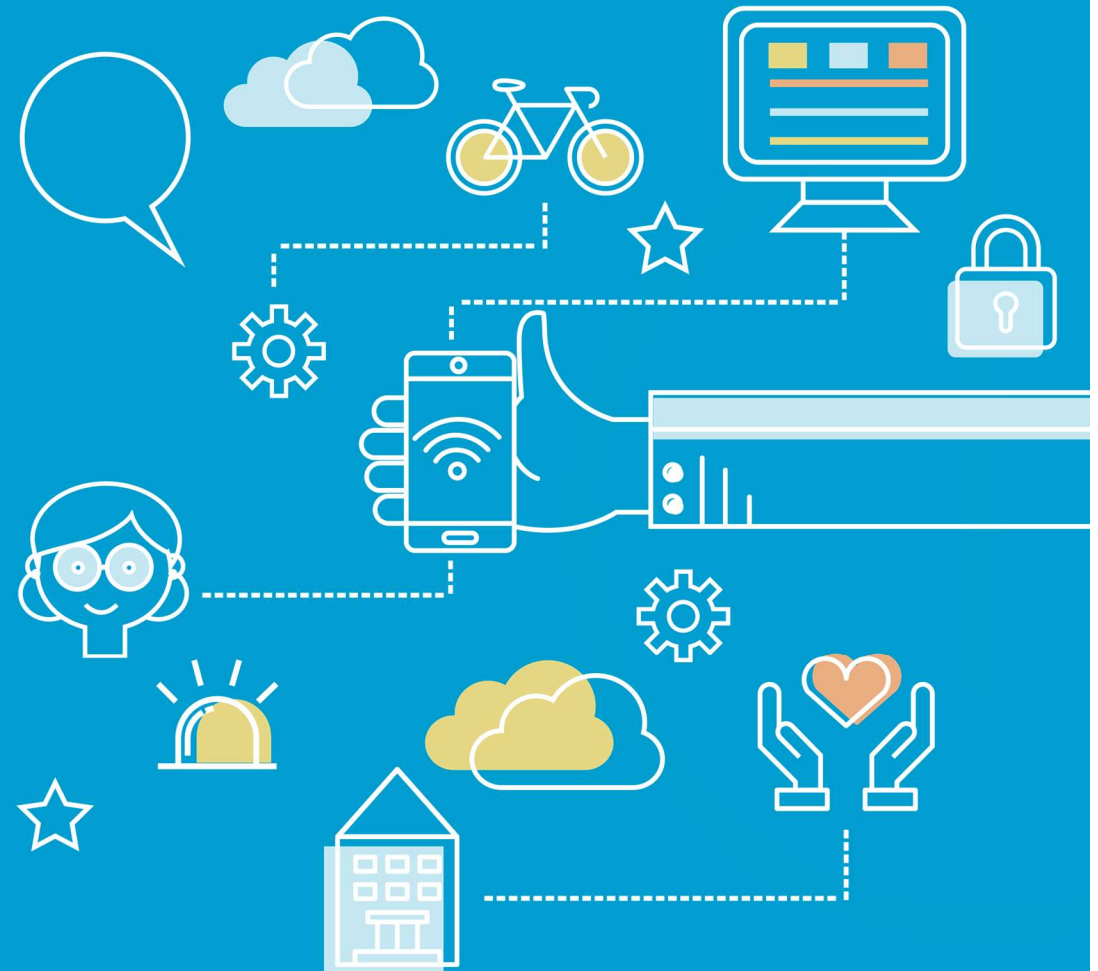# ACTIVAGE:
DATA QUALITY

Dr. Antonio J. Jara (jara@hopu.eu)
HOP Ubiquitous (HOPU)

ACTIVAGE STANDARDIZATION ACTIVITIES

Global mapping and allignment

ACTIVAGE
PROJECT

Data to Transfering Best Practices

Data Management & Quality to Data Exchange

Physical World to Data

Regulations/Processes | **Best Practice** | **GDPR Guidelines**

Data Management | Data Quality Validation | FIWARE Data Marketplace | AIOTES Data Exchange (SIL) | Reference Architecture / Platform

Security & Privacy

Physical | System | Devices | Wearables | Smart Home

ITU FG-DPM / SG20
ETSI ISG IP6
AIOTI / IERC
ENISA

Data Quality: IEEE PAR2510
Data Exchange (Semantic) | ETSI ISG CIM / NGSI-LD (FIWARE) / W3C / ETSI SAREF

oneM2M
IoT Agents
ETSI SMART BAN
OMA LwM2M

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)
    - o In particular, we have the block of objects reserved for vendors (32969 – 33009)
  - ETSI SmartBAN chaired (CSEM)
    - o 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)
    - o Contributed to all the ETSI ISG CIM documents: Architecture and Data Models, Context management and cross-domain by design
  - o ETSI SAREF – Semantics interoperability
    - o Cooperating with SAREF extensions as SAREF4CITY to explore opportunities for AHA domain.
    - o Exploring value from home appliances (refrigerators, etc.) for behavioural monitoring.
    - o 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)

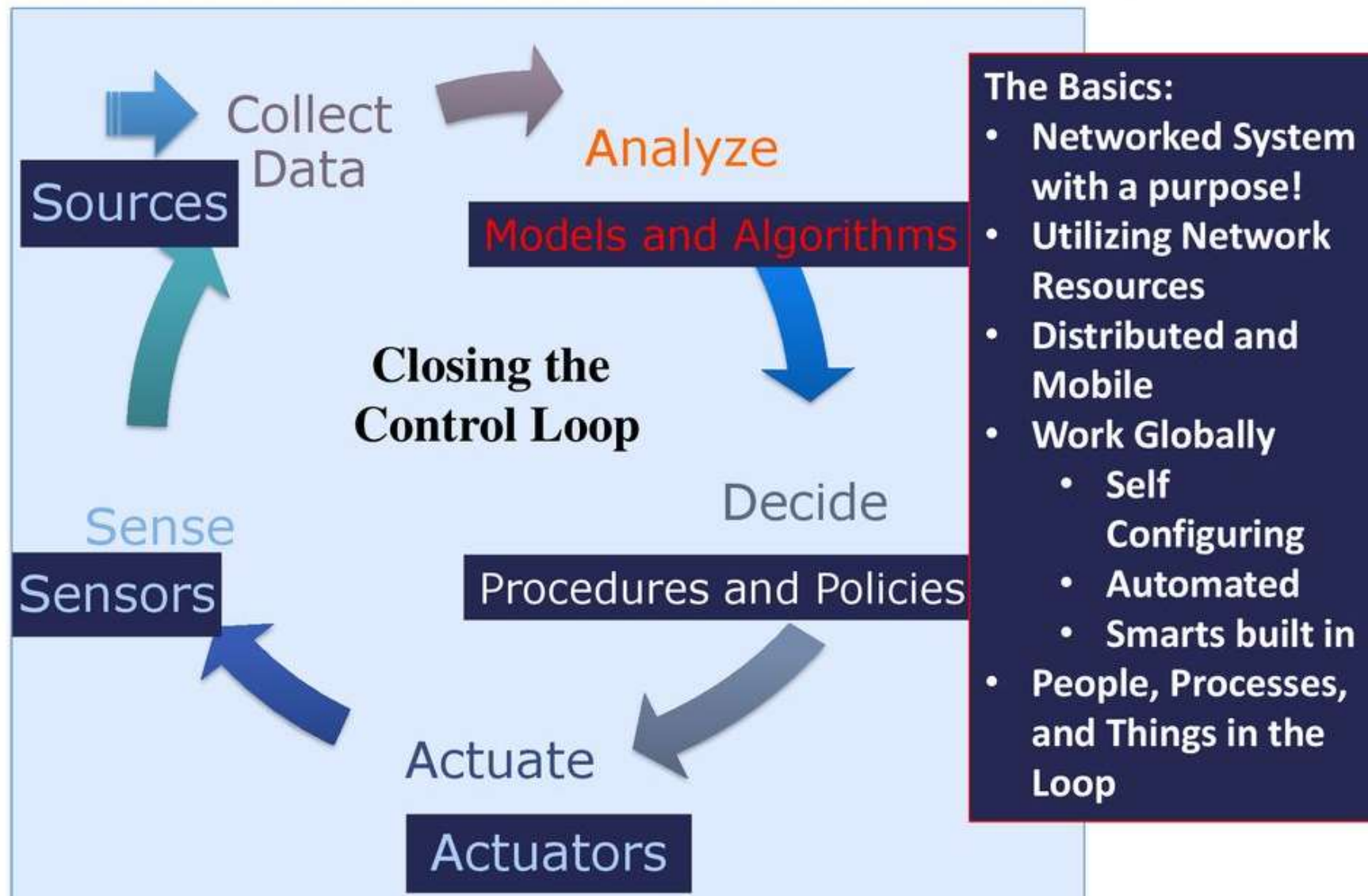   - SAREF4EHAW: SmartM2M; Extension to SAREF; Part 8: eHealth/Ageing-well Domain DTS/SmartM2M-103410-8-SRF4EHAW

    https://portal.etsi.org/webapp/WorkProgram/ReportWorkItem.asp?WKIID=51404

  - 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

  - 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

Collect Data

Sources

Analyze

Models and Algorithms

Closing the Control Loop

Decide

Procedures and Policies

Sense

Sensors

Actuate

Actuators

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**

Data Quality

- **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.

ACTIVAGE STANDARDIZATION ACTIVITIES

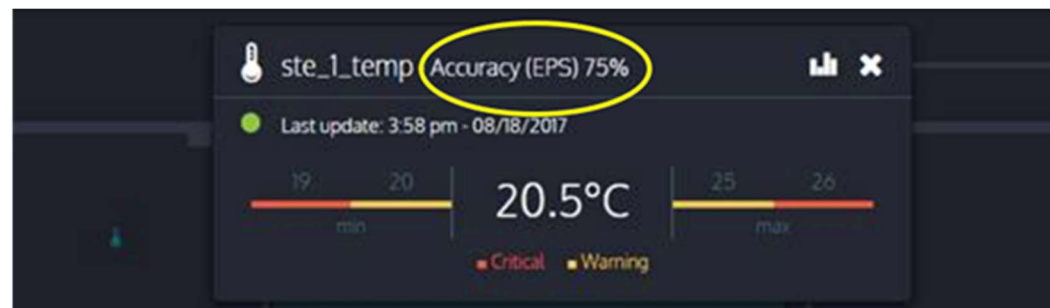## Data Quality

- ## 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.

ACTIVAGE STANDARDIZATION ACTIVITIES

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).

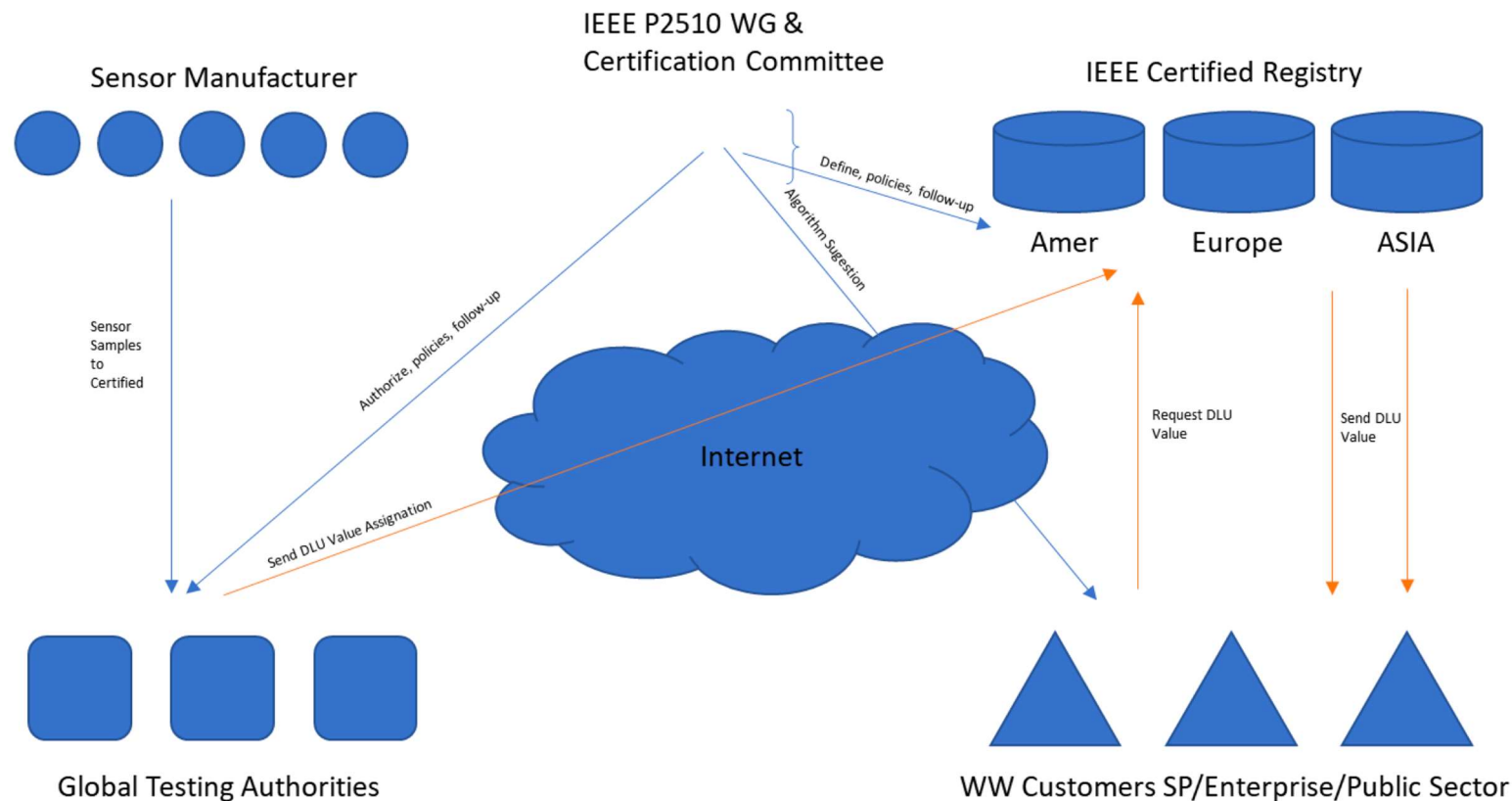 - Energy, Power and battery (Type and redundancy).

  - Others to be defined.

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".

ACTIVAGE STANDARDIZATION ACTIVITIES

Data Quality

- ## IEEE P2510: Digital Innovation Hubs (DIH) opportunity

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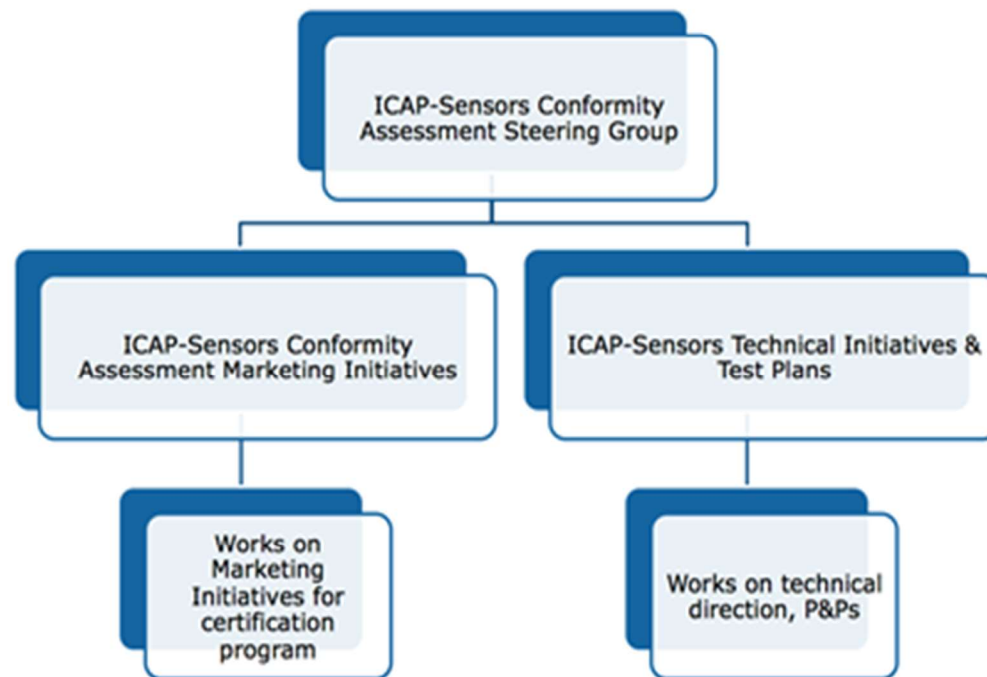
A Proposed Structure for P2510 Certification

ICAP-Sensors Conformity Assessment Steering Group

ICAP-Sensors Conformity Assessment Marketing Initiatives

ICAP-Sensors Technical Initiatives & Test Plans

Works on Marketing Initiatives for certification program

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

ACTIVAGE STANDARDIZATION ACTIVITIES
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 criticial 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

ACTIVAGE
PROJECT

Thank you!

More info:

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Cooperation space in:

StandICT.eu