# Welcome to the World of Standards



SAREF4AGRI: AN EXTENSION OF SAREF TO THE AGRIFOOD DOMAIN Laura Daniele (TNO), Raúl García-Castro (UPM), María Poveda-Villalón (UPM)

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### SAREF ROADMAP











\*source: EC Rolling Plan for ICT Standardisation 2016/2017

#### **SAREF SPECIFICATIONS**

- SAREF version 2 Technical Specification: <u>TS 103 264 V2.1.1</u>
- SAREF extension investigation Technical Report: <u>TR 103 411</u>
- SAREF for Energy (SAREF4ENER) Technical Specification: <u>TS 103 410-1</u>
- SAREF for Environment (SAREF4ENVI) Technical Specification: <u>TS 103 410-2</u>
- SAREF for Buildings (SAREF4BLDG) Technical Specification: <u>TS 103 410-3</u>

#### ETSI TS 103 264 V2.1.1 (2017-03)







## DEMAND SIDE FLEXIBILITY DEMO: A CONCRETE EXAMPLE ON HOW TO USE SAREF WITH COMMERCIAL PRODUCTS<sup>I Class Standards</sup>







- A new Specialist Task Force (STF 534) funded by ETSI started in October 2017 to create 3 new SAREF extensions for Smart Cities, Smart Industry & Manufacturing, and Smart AgriFood
  - Timeline: October 2017- April 2019
  - Expert team: TNO (leader) and UPM
  - <u>https://portal.etsi.org/STF/STFs/STFHomePages/STF534.aspx</u>





- Task 1: determine the requirements from the domain of interest, collect use cases and identify available existing data models/standards
  - Timeline: October 2017- June 2018
  - Resulting in 3 ETSI Technical Reports (TRs)
- Task 2: specify the SAREF extension based on these requirements
  - Timeline: April 2018 April 2019
  - Resulting in 3 ETSI Technical Specifications (TSs)





- Collect the requirements to guide the implementation ad validation of the ontology
  - specifications, datasets, standards, API specifications, data formats, etc. from domain experts and existing initiatives in the industry and manufacturing domain
- Collect the use cases for which the ontology has to be used
  - use cases specified in natural language
- Oefine the purpose and scope of the ontology for the identified use cases

#### **SAREF4AGRI: USE CASE 1**



#### Livestock farming (on-farm precision farming)

- based on Smart Dairy Farming (SDF) project
- Collaboration of dairy industry organizations on better decision support for the dairy farmer on daily questions around feeding, insemination, calving and milk production processes
- Semantic interoperability problem in decision support information in a variety of big data sources containing static and dynamic sensor data of individual cows
  - Sensors measuring grazing activity, feed intake, weight, temperature and milk production of individual cows at 7 dairy farms in The Netherlands

#### SAREF4AGRI: USE CASE 2



#### Smart irrigation

- based on a pilot at AgroTechnoPole is in Montoldre, France
- Water is a critical resource threaten by climate change and weather conditions. Farmers need to reduce water consumption while keeping the culture and crop quality.
- Use case developed by means of a context-aware system, Deployment of 10 measurement stations, each containing three soil sensors at depths of 10, 20 and 30 cm
  - Pluviometer and sensors for ambient temperature, ambient humidity and light

#### **SAREF4AGRI: USE CASE 3**



#### Agricultural machines from the field on the road

- based on work in ETSI STF 542
- <u>https://portal.etsi.org/STF/STFs/STFHomePages/STF542.aspx</u>
- Oissemination of a warning message to vehicles passing-by as soon as an agriculture or forestry equipment from the fields has been detected to exit on the road
- The coordination between the detection of this event and the sending of the notification message is done using an oneM2M gateway in the tractor





- Generate a first version of the requirements
  - requirements specified in terms of Competency Questions
- Interactive validation of requirements with domain experts and stakeholders in order to assess whether they are correct and complete
- Finalize requirements and publish them as ETSI Technical Report (final draft planned for June 2018)





- Create the SAREF4AGRI extension based on the requirements
- Iterative and interactive validation of the extension with the stakeholders and domain experts
- Finalize ontology and publish it as ETSI Technical Specification (final draft planned for February 2019)





Collaboration with industrial stakeholders in the Agrifood domain is key for the work on SAREF4AGRI to have an impact e.g., AEF, AgGateway, AIOTI, H2020 Internet of Food and Farm

How to facilitate interaction and alignment of the STF534 with these initiatives for the creation of SAREF4AGRI?