The SAREF4WATR semantic model

Webinar: Data models for water management

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For: Water projects webinars

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Research lines (among others)

• Ontological engineering
• Ontology-based data and application integration

Standardising IoT ontologies since 2009

• W3C Semantic Sensor Network ontology
• W3C OGC SSN/SOSA ontology
• W3C Web of Things ontology
• ETSI SAREF v2 & v3; extensions for building, environment, smart city, agriculture, industry, water, wearable

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SAREF roadmap

SMART 2013/0077 study launched by European Commission and ETSI TC SmartM2M

2013

Publication of SAREF (v1) as ETSI TS 103 264

2015

Publication of
- SAREF v2
- ETSI STF 513
  - SAREF4ENER
  - SAREF4ENVI
  - SAREF4BLDG

2017

ETSI STF 534
- SAREF4CITY
- SAREF4INMA
- SAREF4AGRI

2019

ETSI STF 556
- SAREF consolidation
- SAREF portal requirements
- SAREF4SYST

2019

ETSI/EC STF 566
- Requirements for
  - SAREF4AUTO
  - SAREF4EHAW
  - SAREF4WEAR
  - SAREF4WATR

2020

Publication of
- SAREF v3
- ETSI/EC STF 566
  - SAREF4AUTO
  - SAREF4EHAW
  - SAREF4WEAR
  - SAREF4WATR
- SAREF portal
STF 566 (January 2019 - June 2020)

✓ ETSI Specialist Task Force funded by the EC to create 4 new SAREF extensions for Automotive, eHealth/Ageing-well, Wearables and Water

✓ STF web page: https://portal.etsi.org/STF/STFs/STFHomePages/STF566
## STF 566 Roadmap

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<td>Task 2: SAREF requirements gathering</td>
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### Technical Reports
- Requirements for the 4 extensions

### Technical Specifications
- Ontologies for the 4 extensions (stable drafts)
- Ontologies for the 4 extensions (publication)
Published in October 2019

https://www.etsi.org/deliver/etsi_tr/103500_103599/103547/01.01.01_60/tr_103547v010101p.pdf

Includes:

• Related initiatives
• Use cases
• Requirements
SAREF4WATR – Related initiatives

Standardisation
- CEN/CENELEC/ETSI. Smart Meters Coordination Group
- CEN/TC 164. Water supply
- CEN/TC 230. Water analysis
- CEN/TC 294. Communication systems for meters
- OGC WaterML, CityGML
- ISO TC 224, TC 282, TC 30
- ISO/IEC 30128
- WITS WITS-DNP3, WITS-IoT
- ITU-T F.744

Ontologies
- hydrOntology
- InWaterSense
- OS Hydrology
- SemantAQUA
- SWEET
- SWQP Water
- Water Nexus
- WaWO+
- WEFNexus

Data repositories
- European Environmental Agency
- WISE
- GEOSS
- Copernicus
- IWO

European projects
- STOP-IT
- SIM4NEXUS
- iBATHWATER
- iFishIENCi
- IMPAQI
- Fiware4Water
- Aqua3S

Directives
- INSPIRE
- EU Water Framework Directive
- EU Floods Directive

Associations
- ICT4Water Cluster
- AIOTI
- WssTP
- EIP Water
- Water JPI
- IWA
SAREF4WATR – Use cases

Remote reading of metrological registers
- 1-way
- 1,5-way

Advanced meter reading and configuration
- Precise Billing
- Quality Monitoring
- Asset Monitoring
- Water Network efficiency
- Remote configuration/monitoring

Risk management over water critical infrastructure
- Strategic and tactical risk management
- Entire water infrastructure

Interrelation of cross-domain variables and models for policy-making
- Water, energy, food, land use and climate change
SAREF4WATR – Requirements

Water infrastructure

Water meter

Indicators

Tariff

Water measurements

Meter measurements

Infrastructure measurements
SAREF4WATR Requirements Validation Workshop

Held at the ICT4Water Cluster annual event (11th June 2019)

7 Participants:

- Cousin, Philippe (Easy Global Market)
- Domingo, Xavier (Eurecat)
- Evans, Barry (University of Exeter)
- Mehdi, Ahmadi (SINTEF)
- Mihaylov, Svetoslav (EC)
- Rubión Soler, Edgar (Eurecat)
- Soininen, Juha-Pekka (VTT)

Representing 9 projects: LOTUS, Fiware4Water, SIM4Nexus, DWC, SCOREWATER, SWAMP, AQUA3S, STOP-IT, RESCUE
SAREF4WATR development

https://forge.etsi.org/rep/stf/stf-566/saref4watr

- First version ready
- Reusing existing ontologies and data models
- Pending:
  - Document
  - Create examples
  - Validate!
Water meter

Based on EN 13757
Communication systems for meters (M-Bus)
Water flow

Based on EN 13757 Communication systems for meters (M-Bus)
Based on CEN TR 17167
Communication systems for meters
Water types

saref:FeatureOfInterest

s4watr:Water

s4watr:RawWater
s4watr:StormWater
s4watr:DrinkingWater
s4watr:WasteWater
Based on Guidelines for drinking-water quality 4th edition 2017 World Health Organization

SAREF4WATR overview (II)
Conclusions

We are in the middle of the implementation...

...which is open to your contributions!

• Take a look to the requirements
  • Does our proposal satisfy your scenarios?
  • Give us feedback

• Participate in validation activities
  • Are you interested in hosting or in participating?
Questions?