# Preparing the ISO/IEC 30141 IoT reference architecture edition 2 through a mindshare

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ISO/IEC 30141 Reference architecture

Edition 1 and Edition 2 Editor

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## Speaker Östen Franberg, Sweden

- 28 years IT- industry
- Swedish IoT-specialist and consultant on national Swedish IoT-strategy.
- Ericsson several positions as IT-manager. 7 years as Technical Director
- 10 years in academia and research
- Project leader, The Royal Swedish Academy of Engineering Sciences (IVA)
- Developed National agenda IoT, Luleå Tekniska Universitet
- Föreståndare and Director of IoT Sweden, Uppsala Universitet
- Chairman for IoT standards Sweden
- Editor IoT reference architecture and Liaison Artificial intelligence
- IoT specialist 1Akonsult



## Outline

- Context of ISO/IEC 30141 IoT Reference Architecture
- Cooperation: towards a common mindshare



## ISO/IEC 30141:2018 IoT Reference architecture

- Oct 2014 Aug 2018 (4 years) Developed in five stages
- **Reference Architecture** is used for build **Context Specific Architecture (CSA)**
- Context Specific Architectures are used to build IoT-Systems in domain



## ISO/IEC 30141 IoT Reference Architecture





## ISO/IEC 30141 IoT RA Conceptual Model





20/06/2019

IoT Systems: Architectures, Models, Guidelines

### ISO/IEC 30141 Reference Model and Views





### ISO/IEC 30141 Functional View





#### ISO/IEC 30141 IoT RA Trustworthiness



Trustworthiness describes how safety, security, privacy and personal identifiable information protection (PII), resilience and reliability apply to IoT systems in context of IoT Reference Architecture



### ISO/IEC 3141 Usage View





## Edition 2 for ISO/IEC JCT1 30141 IoT RA

- Edition 2 started in August 2018
  - Based on the experience of creating Edition 1
- Objectives for next version 2021/22
  - Improved quality,
  - Sharing a similar vision on IoT reference architecture (Mindshare)
    - Relevant parts, update, vocabulary, harmonisations
    - Customers needs, interview user
  - More guidance on integration
    - CSA (domaine specific architecture)
    - New technology, AI, Big data, Interoperability, Cloud, Blockchain etc



## Planning steps, 1<sup>st</sup> year

#### SC41 plenary meeting Yokohama Dec 2018

8 Tasks



WG3 meeting Frankfurt March 2019 14 Main Items

Ad-hoc	Resources
group	
IoT RA	<u>Editors</u>
Harmonize	<u>Wei Wei</u>
Mind share	<u>Östen</u>
	<u>Franberg</u>
Extended	Eric Simmon
CSA	<u>lvor Nissen</u>

CS41 Plenary meeting Chongqing May 2019 Progress, planning

Ad-hoc group	Status
	plan
IoT RA	On going
Harmonize	On going
Mind share	On going
Extended	On going
CSA	Pending



## Mind Share

Cooperation with standards organisations for share of minds on: key technology in IoT. This is done in Liaison realisation or participating in mirror groups at national bodies

- SC41/WG3 creates common mindshare and cooperation's with the goal of:
  - achieving alignment with other IoT organizations on key technology
  - creating a larger body of knowledge for use during the creation of IoT standards; and
  - increasing the strength of our liaison relationships
- Team
  - Osten franberg, Sweden, co-editor ISO/IEC JCT1 30141:2018 IoT RA
  - Antonio Kung, France, AIOTI, EC, Co-editor, Semantic interoperability
  - Christer Varan, Norway Manager Ecom, Alarm Systems, and IoT (NEK)
  - Norbert Bollow, Switzerland, mathematics and physics at ETH Zurich
  - Ken Crowder, INCOSE Consultant, User benefit, profiled documentation, etc





#### **Mindshare input: IoT SDOs and Alliances Landscape**



IoT Systems: Architectures, Models, Guidelines



#### Mind Share, progress

- Cooperation within ISO/IEC JTC1
  - Using SC7 420X0 standards
    - 42010 Architecture description
    - 42020 Architecture processes
    - 42030 Architecture evaluatation framework
  - JTC 1 study group: Meta Reference Architecture and Reference Architecture for Systems Integration
    - Deliverable 1: landscape
    - Deliverable 2: convergent Reference Architectures
    - Deliverable 3: roadmap for convergent reference architectures
- Cooperation with open groups
  - Example of AIOTI white papers on semantic interoperability
    - 2016 first white paper
      - Semantic Interoperability for the Web of Things (https://www.researchgate.net/publication/307122744\_Semantic\_Interoperability\_for\_th e\_Web\_of\_Things)
    - 2019 further white papers
      - Semantic IoT Solutions: A Developer Perspective
      - Towards semantic interoperability standards based on ontologies





## Examples of topic: integration of interoperability in RA

- AI-based interoperability
  - A huge value from Interoperability year 2015 = 2.7 T\$ and 2025 4,2T\$.
  - Number of links of connected IoT systems will grow exponentially
  - Using AI to achieve interoperability
    - Example of Martin Burns study on interoperability (NIST)





Can we Work together on a Reference Architecture MindShare?

- Rationale: sharing views on concepts and priorities, agreeing on commonalities
- Benefits
  - IoT community: a sense of convergence
  - Partners (e.g. AIOTI, other SDOs) and ISO: synergy through some commonalities (Win-Win)
- Approach
  - Interviews (Led by the mindshare team)
  - Open group approach (e.g. follow AIOTI Semantic Interoperability (SemIoP) subgroup approach)
    - Regular discussions
    - Group suggests topics
    - Sharing document (creative commons)

#### • Invitation: Who would be interested to participate?



## Thank you

#### **More information**

National Agenda for IoT in Sweden http://www.ltu.se/centres/cdt/IoT-Agenda-1.142290

Program Office IoT Sweden <a href="http://iotsverige.se/">http://iotsverige.se/</a>

National IoT Standards organization Sweden <a href="http://www.elstandard.se/">http://www.elstandard.se/</a>

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