# Brief Introduction to OmniRAN P802.1CF

## 2014-01-21

# There is Evidence to consider Commonalities of IEEE 802 Access Networks

- More (huge) networks are coming up by everything gets connected
  - e.g. SmartGrid, ITS, IoT, …
- New markets for IEEE 802 access technologies
  - e.g. factory automation, in-car communication, home automation, …
- IEEE 802 access is becoming more heterogeneous
  - multiple network interfaces
    - e.g. IEEE 802.3, IEEE 802.11, IEEE 802.15…
  - multiple access network topologies
    - e.g. IEEE802.11 in residential, corporate and public
  - multiple network subscriptions
    - e.g. multiple subscriptions for same interface
- New emerging techniques, like SDN and virtualization
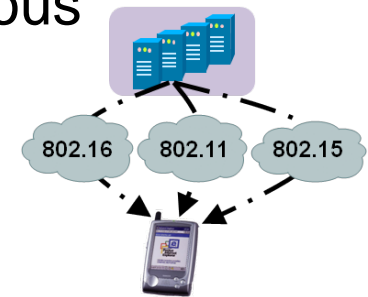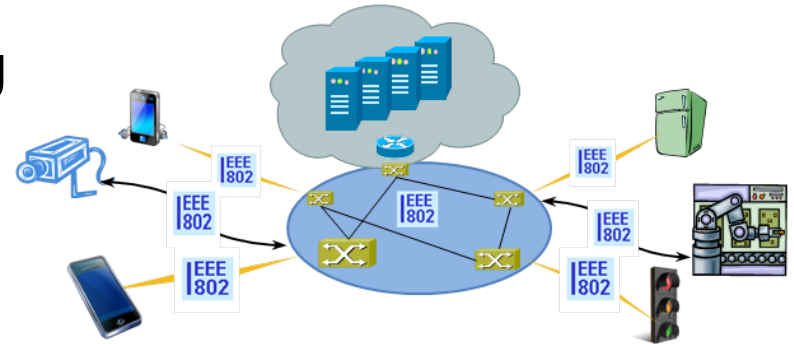
# Gap Analysis to define the standardization needs for a common IEEE 802 access network

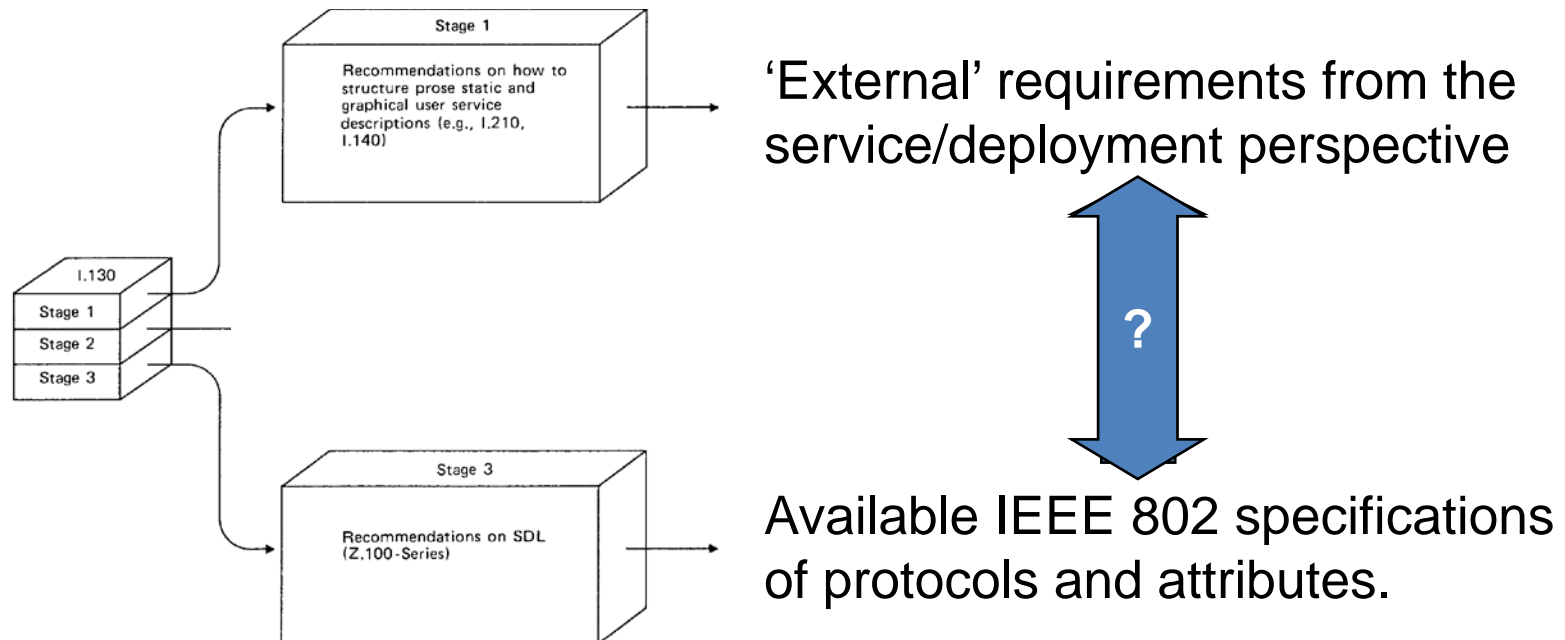- Defining a simplistic network reference model,
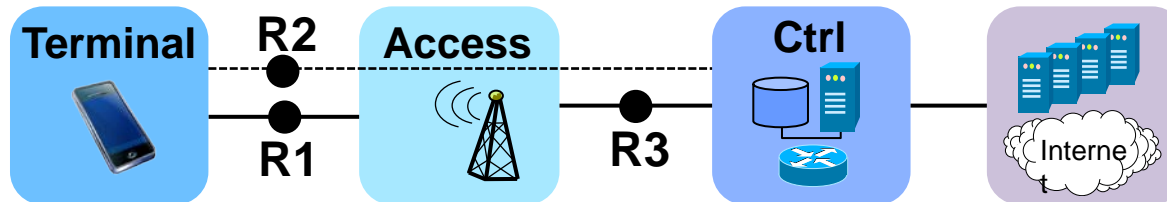


  a couple of use cases were investigated:
  - 3GPP Trusted WLAN Access to EPC
    - TS 23.402 V11.6.0 (2013-03)
  - ZigBee SEP2 Smart Grid Use Case
    - ZigBee docs-09-5449-33-0zse
  - SDN-based OmniRAN Use Case
- Initial investigations show missing functionalities in some IEEE 802 specifications regards the investigated use cases.
  - Sharing of findings in progress with the related working group and investigations will continue directly together with working groups.
- Main issue was, that it was less than obvious how the pieces of IEEE 802 are fitting together
  - There is need for better documentation how IEEE 802 protocols work together to create access networks for particular deployments
  - There is no consistent way how IEEE 802 handles the IEEE 802 information elements going over IP protocols (external control interfaces)

3

# IEEE 802 demands a kind of 'Stage 2'
## *Network Specification in 3 Stages*

- For the specification of the Integrated Services Digital Network the ITU-T defined in its Rec. I.130 a sequential 3 stage process,.
- This process is nowadays commonly used in most telecommunication network standardization activities.

**Stage 1**

Recommendations on how to structure prose static and graphical user service descriptions (e.g., I.210, I.140)

I.130
Stage 1
Stage 2
Stage 3

**Stage 3**

Recommendations on SDL (Z.100-Series)

'External' requirements from the service/deployment perspective

**?**

Available IEEE 802 specifications of protocols and attributes.

More Information:  ETSI: *Making Better Standards*
http://docbox.etsi.org/MTS/MTS/10-PromotionalMaterial/MBS-20111118/protocolStandards/stagedApproach.htm

# IEEE 802 demands a kind of 'Stage 2'
## *Network Specification in 3 Stages*

- For the specification of the Integrated Services Digital Network the ITU-T defined in its Rec. I.130 a sequential 3 stage process,.
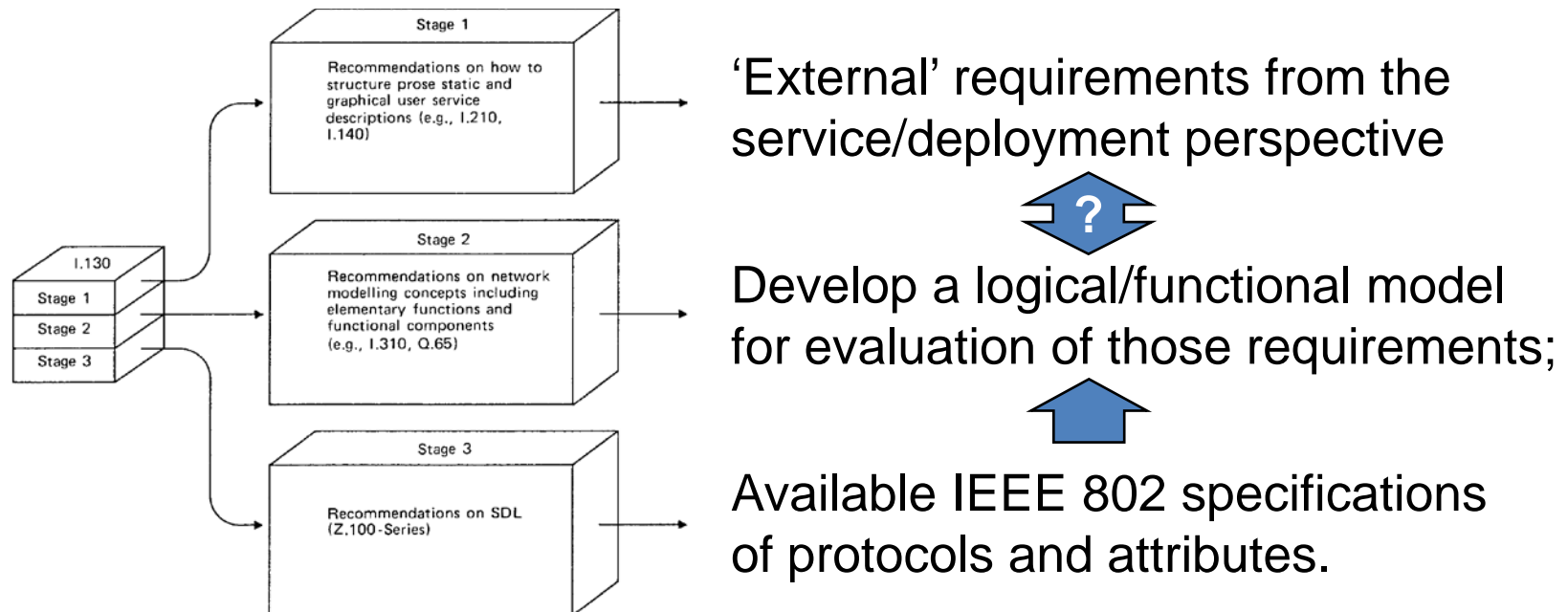- This process is nowadays commonly used in most telecommunication network standardization activities.

'External' requirements from the service/deployment perspective

**?**

Develop a logical/functional model for evaluation of those requirements;

Available IEEE 802 specifications of protocols and attributes.

- A 'Stage 2' specification would provide a mapping of the existing IEEE 802 protocols to a functional network model, which facilitates easier evaluation and better understanding of end-to-end behavior.

5

# P802.1CF Project Authorization Request

- **Project Title:**
  Network Reference Model and Functional Description of IEEE 802 Access Network

- **Scope:**
  This Recommended Practice specifies an access network, which connects terminals to their access routers, utilizing technologies based on the family of IEEE 802 Standards by providing an access network reference model, including entities and reference points along with behavioral and functional descriptions of communications among those entities.

- **Purpose:**
  Heterogeneous networks may include multiple network interfaces, multiple network access technologies, and multiple network subscriptions. In some cases such heterogeneous functionality must be supported in a single user terminal.

  This Recommended Practice supports the design and deployment of access networks based on IEEE 802 technologies, guides the developers of extensions to the existing standards in support of a heterogeneous access network, and enables the use of IEEE 802 standards in new network deployments by specifying the functions of the IEEE 802 technologies when deployed in access networks.

# Potential ToC of the proposed specification

- Introduction and Scope
- Acronyms, Definitions, and Conventions
- References
- Identifiers
- Tenets
- Network Reference Model
  - Overview
  - Reference Points
  - Access Network Control Architecture
    - Multiple deployment scenarios
- Functional Design and Decomposition
  - Network Discovery and Selection
  - Association
  - Authentication
  - Datapath establishment
  - QoS and policy control
  - Datapath relocation
  - Datapath teardown
  - Disassociation
  - Accounting

7