DetNet – TSN Workshop

November 11, 2018
Bangkok, Thailand

DetNet WG

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TSN TG

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- Workshop online agenda and slides:

Live: http://ieee802.org/1/tsn/tsn-task-group-agenda/#Sunday_DetNet_8211_TSN_joint_session
Archive: https://1.ieee802.org/november-2018-plenary-meeting-in-bangkok-thailand-tsn-tg-agenda

Logistics

- Lunch is included: Sala Thai Ballroom

- WiFi
  - SSID: IEEE802
  - Password: ieeeieee

Guidelines for IEEE-SA Meetings

- **All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.**
  - **Don't discuss the interpretation, validity, or essentiality of patents/patent claims.**
  - **Don't discuss specific license rates, terms, or conditions.**
    - Relative costs of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
      - **Technical considerations remain the primary focus**
  - **Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.**
  - **Don't discuss the status or substance of ongoing or threatened litigation.**
  - **Don't be silent if inappropriate topics are discussed … do formally object.**

For more details, see *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at http://standards.ieee.org/develop/policies/antitrust.pdf

If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at patcom@ieee.org

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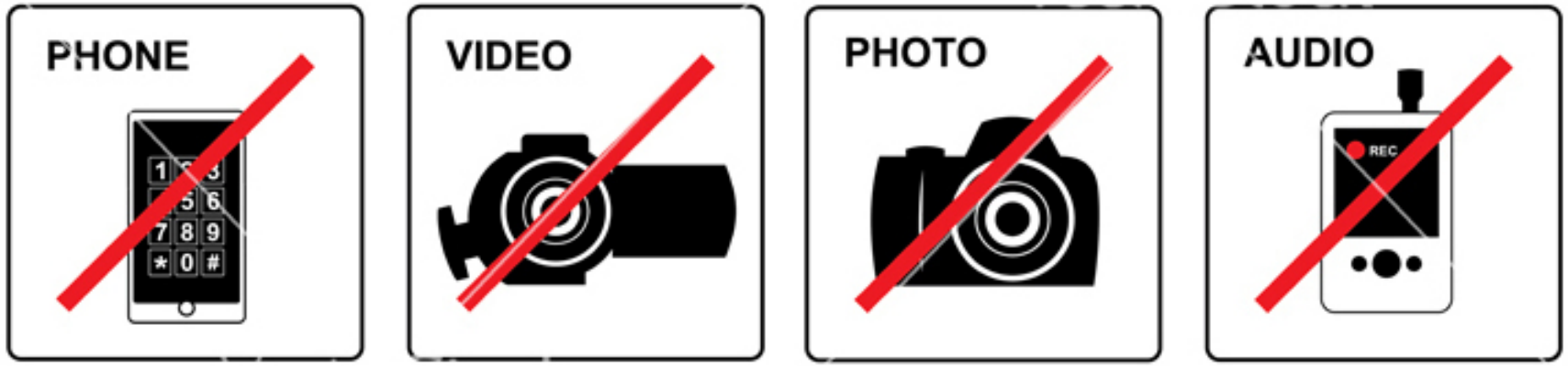
Participation in any IEEE 802 meeting (Sponsor, Sponsor subgroup, Working Group, Working Group subgroup, etc.) is on an individual basis

- **Participants in the IEEE standards development individual process shall act based on their qualifications and experience. (https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf section 5.2.1)**
- **IEEE 802 Working Group membership is by individual; "Working Group members shall participate in the consensus process in a manner consistent with their professional expert opinion as individuals, and not as organizational representatives". (subclause 4.2.1 "Establishment", of the IEEE 802 LMSC Working Group Policies and Procedures)**
- **Participants have an obligation to act and vote as an individual and not under the direction of any other individual or group. A Participant's obligation to act and vote as an individual applies in all cases, regardless of any external commitments, agreements, contracts, or orders.**
- **Participants shall not direct the actions or votes of any other member of an IEEE 802 Working Group or retaliate against any other member for their actions or votes within IEEE 802 Working Group meetings, see https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf section 5.2.1.3 and the IEEE 802 LMSC Working Group Policies and Procedures, subclause 3.4.1 "Chair", list item x.**

By participating in IEEE 802 meetings, you accept these requirements. If you do not agree to these policies then you shall not participate.

(Latest revision of IEEE 802 LMSC Working Group Policies and Procedures: http://www.ieee802.org/devdocs.shtml)

Decorum



- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (SASB Ops Manual 5.3.3.5)
- Photography or recording by permission only (SASB Ops Manual 5.3.3.4)
- Cell phone ringers off please

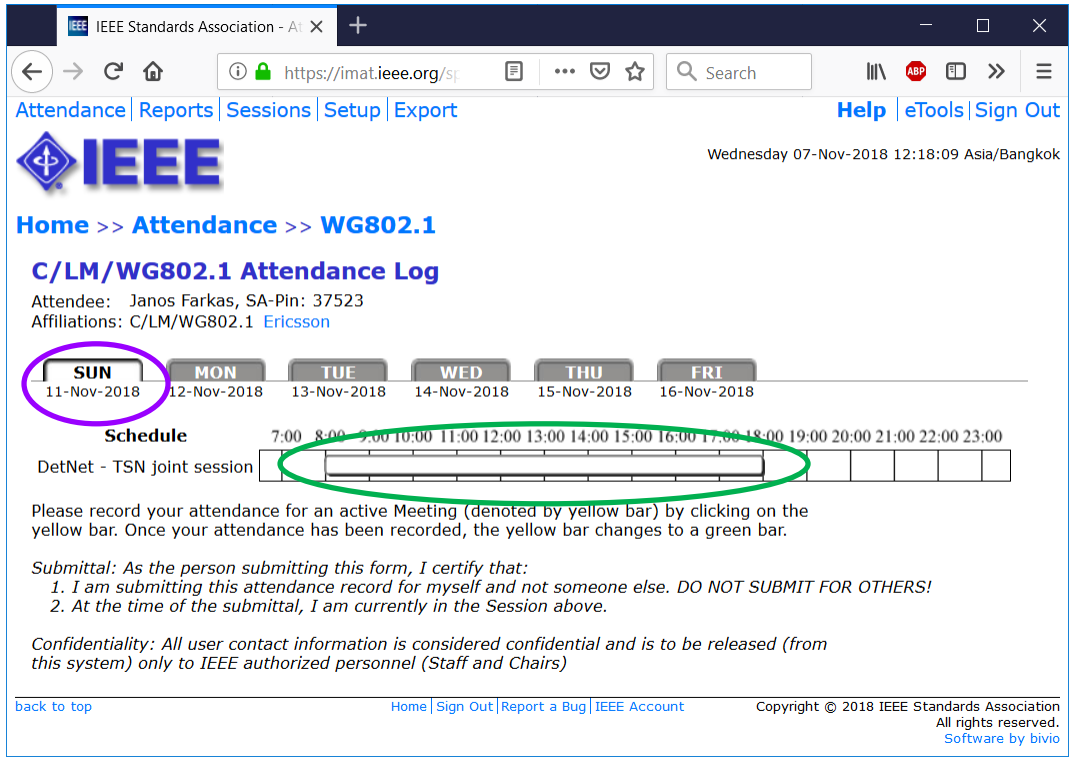
Security Issues

- **PCs HAVE BEEN STOLEN** at previous IEEE 802 meetings
- **DO NOT** assume that meeting areas are secure

Register your attendance please!

- Must be on the IEEE 802 WLAN: SSID: IEEE802 ; PWD: ieeeieee
- https://imat.ieee.org
- 802 Plenary Session - Nov 2018

  C/LM/WG802.1 Attendance --> SUN 11-Nov-2018



Meeting Objectives

- Discuss topics related to interactions between a DetNet layer and a TSN layer
- Ultimate goal:
  Architecture for TSN and DetNet fully aligned
  - Maximizing alignment and compatibility between TSN and DetNet → success of the technologies
  - Minimize duplication of work and mechanisms

Current Scope of Work

TSN TG

- Responsible for TSN technology and profiles

Defines:

- Base technology:
  - Data plane: Stream ID and traffic/QoS mechanisms
  - Control plane
- Configuration and Management
  - YANG for base technology
- Profiles
  - Architecture
  - TSN service definition
  - Applicability to specific use cases

DetNet WG

- Responsible for DetNet service delivery over routed topologies

Defines:

- Architecture
- Service model
- Routed data plane
  - IP and MPLS: flow ID, forwarding and traffic treatment requirements
  - Mapping to TSN
    - TSN as sublayer
  - Interconnected TSN domains
    - L2VPN-style (TSN over MPLS)
- Configuration and Management
  - YANG for service and routed data plane
- FFS: Control plane

Alignment of Work

- TSN TG: Responsible for TSN technology and profiles
- DetNet WG: Responsible for DetNet service delivery over routed topologies
- Important objective:
  - Aim is to minimize duplication of mechanisms while meeting these objectives:
  - **DetNet can operate over different subnetwork technologies – TSN is first**
  - **TSN can operate without DetNet**
  - Some redundancy is necessitated by objectives
- Areas to be aligned:
  - Mapping of DetNet Flows to TSN Streams
    - Identifiers and service
  - Configuration and Management
    - Standalone YANG models with appropriate linkages
      - Both sets of models must be able to operate when the other is not present
      - When both used, should avoid duplication of configuration and operational information
        - » Expectation is that DetNet modules will reference TSN models for subnetwork specific information

Key Takeaways and Next Steps

- Some general agreements
  - Each technology should stand on its own within its scope
  - When used together/concurrently, duplicate mechanisms should be minimized (where it makes sense)
    - While maximizing alignment and compatibility
  - When possible, should leverage each other's efforts even when not used together
  - Both are working in parallel -- optimization may not be possible, but remains an objective
- To be documented and discussed in the short term
  - Document DetNet over TSN operation for routers and end-stations [DetNet WG]
  - Mapping DetNet traffic markings to TSN Stream ID [DetNet WG]
  - Mapping DetNet service parameters to TSN queuing mechanisms [DetNet WG]
    - N:1 stream aggregation (network calculus for bounded latency, and queuing) [Joint]
  - Alignment of YANG models [Joint]
  - IEC/IEEE 60802 DetNet requirements [Joint]

  Question: How do we coordinate joint work?
- Longer term topics
  - Document optimized TSN aware DetNet end-station
  - DetNet/TSN control plane interworking