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| Minutes of IC NEND meeting at Berlin IEEE 802 plenary |
| **Date: July 14th, 2017** |
| **Author(s):** |
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| Max Riegel | Nokia |  |  | maximilian.riegel@nokia.com |

## Abstract

Minutes of the initial meeting of Industry Connections Activity ‘IEEE 802 Network Enhancements for the Next Decade’

Chair: Glenn Parsons

Recording secretary: Max Riegel

Documents: <https://mentor.ieee.org/802.1/documents>

## Call to order

* Meeting called to order by chair at 19:00.
* The meeting was guided through the chair’s slide set.
* <https://mentor.ieee.org/802.1/dcn/17/1-17-0001-01-ICne-july-2017-agenda.pdf>

## Minutes

* Max Riegel volunteered to take notes.

## Attendance

* Participation was recorded through IMAT under the 802.1 WG.

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| Name | Affiliation |
| Parsons, Glenn | Ericsson |
| Assmann, Ralf | Marvell Semiconductor, Inc. |
| Bakas, Tancer | University Istanbul |
| Bao, Shenghua | HUAWEI |
| Bennet, Kathrin | IEEE |
| Boiger, Christian | b-plus GmbH |
| Brand, Hermann | IEEE STAFF |
| Cheng, Weiying | Coriant |
| Congdon, Paul | Tallac Networks |
| Cummings, Rodney | National Instruments Corporation |
| EMMELMANN, MARC | Self |
| Fan, Xiaojing | Fujitsu Research & Development Center |
| Fang, Yonggang | ZTE TX |
| Farkas, Janos | Ericsson |
| Godfrey, Tim | Chair 802.24 |
| Goldberg, Jonathan | IEEE |
| Heile, Bob | WiSun Alliance |
| Hiertz, Guido | Ericsson |
| Itaya, Satoko | NICT |
| Jeffries, Timothy | Huawei R&D USA |
| Katasaka, Len | NEC Cooperation |
| Kojima, Fumihide |  NICT |
| Laubach, Mark | Broadcom Corporation |
| Levy, Joseph | Interdigital |
| Li, Yizhou | Huawei Technologies Co. Ltd |
| Marks, Roger | EthAirNet |
| Maruhashi, Kenichi | NEC Corporation |
| McIntosh, James | Microsemi Corporation |
| Moskowitz, Robert | HTT Consultant |
| Myles, Andrew | Cisco Systems, Inc. |
| Nikolich, Paul | Chair IEEE 802 |
| Ohsawa, Tomoki | NICT |
| Perkins, Charlie | Futurewei |
| Pienciak, Walter | IEEE |
| Poletti, Mark | Marvell |
| QIU, WEI | Huawei Technologies Co., Ltd |
| Riegel, Maximilian | Nokia Networks |
| Sakata, Ren | TOSHIBA Corporation |
| Sato, Atsushi | Yokogawa Electric Corporation |
| Sambasivan, Sam | AT&T |
| Schwarz, Patrick | IEEE SA |
| Shen, Li | Huawei Technologies Co., Ltd |
| Stanley, Dorothy | HPE |
| Sun, Liyang | HUAWEI |
| Thaler, Pat | Broadcom |
| Thubert, Pascal | Cisco Systems, Inc. |
| Turner, Michelle | IEEE |
| Ulmann, Dart | TU Dresden |
| Wang, Hao | Fujitsu |
| Wang, Lei | Huawei R&D USA |
| Weber, Karl | Beckhoff |
| Yamaura, Takahiro | Toshiba |
| Yin, Yue | Huawei Technologies Co., Ltd |
| YU, XIANG | Huawei Technologies Co., Ltd |
| Zain, Tomokio | NEC Japan |
| Zein, Nader | NEC Corporation |

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## IEEE WG Guidelines

* The chair presented the mandatory IEEE SA guideline slide for pre-PAR activities.

## Agenda approval

* Agenda as proposed in the chair’s meeting slides:
* Introductions
* Participant Expectations
* Role of the IC activity
* Background (the origins of this IC Activity)
* Project Objectives/Scope/Deliverables
* Contributions
* Plan - Automotive, Industry Automation, etc.
* Proposals
* Communications Plan
* (information sharing, meetings, schedule, etc.)
* Actions/Next Steps
* Agenda approved without further requests.

## Introductions

* The chair asked for a roll call of all participants to state their name, affiliation, and their expectations for the IC NEND.
* In the roll call about 56 participants from about 35 companies mentioned the following topics to become presented and discussed within the IC activity:
* IOT
* Factory automation
* Requirements of various operators
* Greater connections with customers of IEEE 802 technologies
* Future wireless networks
* Smart grid IOT
* Learning possibilities
* High performance communications
* Cable industry requirements and evolution
* Mobile and constrained devices
* New user domains
* Data Centre networking
* Tactile networks

## Role of the IC activity

* The chair provided an introduction of the Industry Connections activity pointing to the ICAID available by <http://standards.ieee.org/about/sasb/iccom/IC17-001-01_IE.pdf>
* Background (the origins of this IC Activity)
* The chair explained that the origin of the IC is one of the outcomes of the 5G SC, which took place in early 2016. Idea was to address the emerging requirements of the non-cellular domain.
* Furthermore, the chair provided an introduction into the aim and operation of IEEE SA Industry Connections activity, which provides a structured approach to determine and grow emerging ideas for new standardization topics.
* Project Objectives/Scope/Deliverables
* Through slides 9, 10, 11, and 12, the chair introduced and explained the objectives, the operating practice, the potentials markets to be considered, and the deliverables, which the IC activity has at least to produce.
* Q&A:
* Discussions came up whether the Industry Connections activity would include all IEEE 802 working groups. The chair confirmed that the IC addresses all IEEE 802 working groups and is positioned operationally under 802.1 since 802 wide topics are in scope of the 802.1 WG
* A participant wondered whether the whitepaper, which was discussed during the establishment of the ICAID proposal, is still in scope. The chair responded that the idea of a whitepaper has not been dropped, but the ICAID would only list the mandatory deliverables to the sponsor, and the idea of a whitepaper for the benefits of all participants could be developed further as an additional outcome of the activity.

## Contributions

* Potential contribution topic areas
* The chair introduced the scope of presentations and contributions, which could cover industrial automation networks, automotive networks, IoT networks, non-traditional operator networks, but also further topics not listed here. All participants are encouraged to come up with proposals and presentations on enhancements to IEEE 802 technologies.
* Wireless Communications in the Manufacturing Fields
* Satoko Itaya (NICT) presented the proposal of a group of people researching into communications issues in manufacturing.
* Slides: <https://mentor.ieee.org/802.1/dcn/17/1-17-0003-00-ICne-wireless-communications-in-the-manufacturing-fields.pdf>
* The proposal asks for coordination among various wireless and wired communication system to avoid congestion for important transmissions in factory floors. The system should ensure, that important information transmitted over one system is not delayed by less important information transmitted over another wireless system in the same spectrum at the same location.
* Q&A:
* It was expressed that not only priority would be important in factories, but more important would be timely delivery of important messages. A further important aspect in factories would be the reliability of transmissions, i.e. important messages should never be lost. Satoko confirmed, that the comments are valid and should be considered for the design of the system.
* It was pointed out that the statement in the presentation that communication should be separated from power supply has limited scope. Deployment of Power over Ethernet, in particular PoE over 100BT, which allows to provide redundant power over the same cable, has been proven to be very beneficial.
* When being asked whether there is a change of the 802.11e QoS methods considered, Satoko responded that details of potential solutions have not been considered yet.
* It was questioned whether coordination between internal APs belonging to the factory and external APs causing interference to communications in factories should be considered. Satoko responded that such coordination between internal and external APs is not considered as it is hardly possible in real world scenarios.
* When being asked about availability of implementations showing the feasibility of the proposal, it was responded that there is an ongoing project working on a demonstration of the feasibility of the approach.
* It was remarked that the issue could also be handled on a higher layer above PHY and MAC through setting the expectations for the capacity of the transmission channel in the application. Coordination among the wireless systems may help to faster perform the evaluation of the channel capacity.
* When being asked about the thinking of the presenter about the communication layer, at which coordination should happen, Satoko responded, that the upper link layer seems to be preferable for the coordination protocol.
* When being asked about usage of the same approach beyond manufacturing, Satoko declared that the solution would have wider deployment possibilities, with extension into other industries well in scope of the presenters.
* Overall, more information about potential technical solutions for the coordination protocol was wanted. Satoko offered to come back with a more technical presentation at a later meeting.
* Layer 2 network virtualization
* Max Riegel (Nokia Bell Labs) presented the idea to establish a data model of a virtualized IEEE 802 local area network for industrial use.
* Slides: <https://mentor.ieee.org/802.1/dcn/17/1-17-0002-00-ICne-layer-2-network-virtualization.pptx>
* The proposal shows growing demand for virtualized IEEE 802 local area networks in industry and proposes to develop a template for the service offering through a data model based on P802.1CF to foster the market evolution of virtualized networks in industrial networking.
* Q&A:
* Participants expressed their support for the idea explaining that virtualized LANs are feasible and are offered through a few suppliers. Indeed, establishing a common template of a virtualized LAN may help to evolve the market.
* When being asked whether the proposal addresses the standardization of LAN virtualization, or the standardization of a template to describe the service of a virtualized LAN, Max emphasized that the proposal is for the development of a template.
* It was brought up that MEF would work on similar concepts of creating templates for offering Ethernet services, Max explained that MEF would address the wide area interconnection between customer interfaces, but would not provide the means for indoor networks in the industrial domain.
* It was pointed out that the mobile industry would work on network slicing, which would address similar ideas, Max explained that the discussions in 3GPP and other organizations dealing with the cellular market would address a much bigger scope for deployments in cellular operator networks. The proposal is aimed for plain layer 2 networking in a smaller scale suited for industrial usage. Such limited scale deployments would not be considered in the network slicing discussions.
* Max asked for further feedback on the proposal and offered to come back at a later meeting with a more concrete proposal.

## Communications Plan

* Next meeting
* The chair asked the group about the expectations for meetings of the Industry Connections activity and offered to meet at least at all IEEE 802 plenaries and potentially at interim meetings.
* A number of commenter raised concerns that interim meetings are not collocated among all IEEE 802 working groups and would restrict participation in the activity. It was also proposed that there would be other possibilities to get in touch with potential stakeholders when reaching out to other organizations dealing with communications in the industrial domain.
* Glenn brought up slide 17 of the chair’s slide set listing a number of possibilities for future meetings. A straw poll was carried through applying Chicago rules, i.e. participants could vote multiple times.
* The result of the straw poll was:
* 802.1 interims: 13
* Wireless interims: 8
* Conference calls: 46
* at some IEEE Conference: 5
* at some industry conference: 17
* Based on the overwhelming support for conference calls, Glenn promised to set up conference calls between the September interim meetings and the November plenary to allow for further discussions. He declared that F2F meetings at interims would not be considered to allow all to participate.
* Paul Nikolich raised the question regards chair of the industry connections. Glenn explained that he has not yet found a volunteer for chairing the activity, and he would be willing to continue to run the meetings until a chair has been found.

## Actions/Next Steps

* Glenn solicited more contributions and want to reach out to more customers. In particular, he is looking for evangelists, who are able to step into various industries and can promote the Industry Connections activity. He asked to be contacted, if someone would be able to help.
* Glenn has requested staff to create a mailing list and web page for the IC activity
* Glenn will arrange for one or more conference calls of the industry connections activity in the September/October timeframe.

## Adjourn

As no other topics were brought up, the chair adjourned the meeting at 21:00.