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| Minutes of the IEEE 802 Nendica Meeting of 2018-07-9/10 |
| **Date: Monday July 9-10, 2018** |
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## Abstract

Draft minutes of the 9-10 July 2018 IEEE 802 Network Evolution for the Next Decade Industry Connections (Nendica) meeting in San Diego, CA, USA.

Chair: Roger Marks

Recording Secretary: Jessy Rouyer

## July 9, 2018 Call to order

The Chair called the meeting to order at 7:40 PM on Monday July 9, 2018.

## July 9, 2018 Minutes

Jessy Rouyer volunteered to act as Recording Secretary.

The Chair presented *IEEE 802 “Network Enhancements for the Next Decade” Industry Connections Activity*

*(Nendica): Meeting Overview* <https://mentor.ieee.org/802.1/dcn/18/1-18-0036-00-ICne-nendica-meeting-overview-2018-07.pdf>, including *Guidelines for IEEE-SA Meetings* (slide 3), *Participation in IEEE 802 Meetings* (slide 4). In so doing, the Chair explained and requested meeting attendees register their attendance in IMAT and accessed IMAT, the Nendica page (<https://1.ieee802.org/802-nendica>) on the IEEE 802.1 website and the Mentor server for Nendica (<https://mentor.ieee.org/802.1/documents?is_group=ICne>).

The Chair reviewed the proposed agendas on the “Agenda, Day 1” and “Agenda, Day 2” worksheets as well as the two requirements at lines 5, 6 of the ICCOM Requirements worksheet in the spreadsheet at <https://tinyurl.com/yaszjwqe>. He noted that “Lossless Data Center Networks (LLDCN)” would be presented on day 2. The agenda was otherwise approved as presented.

The Chair presented the *Minutes of the IEEE 802 Nendica Meeting held on 2018-05-07* <https://mentor.ieee.org/802.1/dcn/18/1-18-0034-00.docx> and thanked James Gilb for taking these minutes. The Chair suggested a motion to approve these draft minutes; the minutes were approved without objection.

The Chair introduced János Farkas, Chair of the IEEE 802.1 TSN Task Group and editor of IEEE Std 802.1CM-2018, who presented *IEEE Std 802.1CM Time-Sensitive Networking for Fronthaul* <http://www.ieee802.org/1/files/public/docs2018/cm-farkas-overview-0718-v01.pdf>. During discussion, questions were received prompting clarifications that profiles A and B differ in that profile B supports frame preemption, that both classes 1 and 2 cover fronthaul traffic, that the CPRI frame structure combines user data, C&M data and synchronization, that synchronization and data flows are separate, that synchronization may be provided via wired (e.g. using a profile of the IEEE 1588 Precision Time Protocol) or wireless (e.g. using GPS) connections, that using a closed private network may be seen as less complex than using a MEF-specified Carrier Ethernet network, and that it may be preferable if the packet and radio domains belong to the same operator.

Nader Zein introduced the Nendica Work Item on the Flexible Factory IoT (FFIoT) white paper by beginning to present *FFIoT Status Report –IEEE 802 Nendica* <https://mentor.ieee.org/802.1/dcn/18/1-18-0038-00-ICne.docx> and briefly presenting *Wired/Wireless Use Cases and Communication Requirements for Flexible Factories IoT Bridged Network* <https://mentor.ieee.org/802.1/dcn/18/1-18-0025-04-ICne-Pre-draft-update.docx> before finishing to present the status report restarting at its slide 3. During discussion, the Chair clarified the review process (notification to the group and the reflector that a call for comments is planned on a specific version of the document, giving seven days for review before a vote is taken to allow this call for comments). It was clarified that review is sought and that was encouraged through outreach at prior meetings in Warsaw and Germany; supporters of the work were encouraged to notify the editor of their interest. A request for additional conference calls was received from the floor. The Chair noted that informal comments may be provided to the editor before the initial call for comments.

The Chair solicited input on potential new work items noting that there are no contributions for such items at this time: no input was provided during the meeting. He added that with completion of the FFIoT work and in the absence of new work item, an extension in November 2018 of Nendica may not be warranted. He indicated he intended however to have draft text for an extension available for review in September 2018.

The Chair noted a teleconference is planned August 15, 2018 and acknowledged the request for a further teleconference for which he solicited suggestions for a proposed date and indicated it would be further discussed on Tuesday, July 10, 2018.

The Chair noted the next face-to-face meeting is planned for September 11, 2018 7:30 PM-21:30 PM Hawaii time during the 802.11 meeting in Waikoloa, HI, USA with group teleconference to the OmniRAN TG room at the 802.1 session in Oslo, Norway on September 12, 2018 at 7:30 AM Oslo time.

The Chair noted there had been consultations about a half-day workshop covering data center networking to be held on November 10, 2018 in Bangkok that is the Saturday after the collocated IETF meeting and before a joint session between IETF and IEEE on DetNet on Sunday November 11, 2018 also in Bangkok where IEEE 802 will be meeting. He indicated that a half-day coordination event will also be held as part of the ongoing process between IEEE 802 and IETF on the same day as the data center networking workshop that is being coordinated by himself on behalf of Nendica and Paul Congdon on behalf of IEEE 802.1.

The Chair briefly discussed the plan for Tuesday July 10, 2018, indicating in particular that an entire hour would be dedicated to the TIA Smart Buildings Program and that interested parties may approach Limor Schafman and preview her presentation, which was made available on the Nendica webpage.

The Chair called for recess at 8:50 PM.

## July 10, 2018 Call to order

The Chair called the meeting to order at 7:35 PM on Tuesday July 10, 2018.

## July 10, 2018 Minutes

Jessy Rouyer continued acting as Recording Secretary.

The Chair showed the approved “Agenda, Day 2” worksheet in the spreadsheet at <https://tinyurl.com/yaszjwqe>, and reminded this Nendica meeting is operating under the *Guidelines for IEEE-SA Meetings* (slide 3 of *IEEE 802 “Network Enhancements for the Next Decade” Industry Connections Activity*

*(Nendica): Meeting Overview* <https://mentor.ieee.org/802.1/dcn/18/1-18-0036-00-ICne-nendica-meeting-overview-2018-07.pdf>) as well as those for *Participation in IEEE 802 Meetings* (slide 4 of the same presentation), and is following ICCOM Requirements in the worksheet of the same name in this spreadsheet. He also reminded attendees to register their attendance in IMAT. He introduced the agenda that was approved as presented. He demonstrated how to use IMAT by registering his attendance.

Paul Congdon presented *NEND-Report Update The Lossless Network for Data Centers* <https://mentor.ieee.org/802.1/dcn/17/1-18-0019-02-ICne.pdf> then walked through the modifications he made in *IEEE 802 Nendica Report: The Lossless Network for Data Centers* <https://mentor.ieee.org/802.1/dcn/17/1-18-0007-06-ICne.pdf> (a version of the draft professionally edited by IEEE with Congdon’s modifications shown as tracked changes). The Chair thanked Catherine Berger for her professional editing of the latter draft and proposed to ask her to prepare it for publication, which was not objected. The Chair noted that this draft will be posted on the Nendica webpage, will be announced as available on Mentor, the Nendica will encourage IEEE to make it available as a link on the industry connections webpage, an eBlast will be considered and maybe IEEE-SA will put a reference in their monthly standards update. The Chair added that there will be a need to have a system in place to collect comments on the draft once it is distributed, and that the editor has to inform the Nendica of any comments received.

Nader Zein presented changes in the latest update of the FFIoT white paper *in Wired/Wireless Use Cases and Communication Requirements for Flexible Factories IoT Bridged Network* <https://mentor.ieee.org/802.1/dcn/18/1-18-0025-05-ICne-pre-draft-wired-wireless-use-cases-and-communication-requirements-for-flexible-factories-iot-bridged-network.pdf>. Zein then discussed next steps by presenting slide 7 of *FFIoT Status Report –IEEE 802 Nendica* <https://mentor.ieee.org/802.1/dcn/18/1-18-0038-00-ICne-ffiot-status-report-ieee-802-nendica.pdf>. The Chair clarified that seven days is the minimum duration of a call for comments though a longer duration is allowed and encouraged. Comments were received that the draft’s version, page numbers, and citations need to be verified for correctness, which the editor agreed to do.

The Chair introduced the next topic as a liaison presentation related to activity in TIA on smart buildings that could have potential relevance across IEEE 802 and could be in scope of Nendica. Limor Schafman thanked IEEE for inviting her to participate and for facilitating this connection. Schafman presented revision 1 of document 37 (<https://mentor.ieee.org/802.1/dcn/18/1-18-0037-01-ICne.pdf> in the agenda, updated post-meeting as <https://mentor.ieee.org/802.1/dcn/18/1-18-0037-02-ICne-liaison-communication-from-tia-to-ieee-802-nendica-re-smart-building-program.pdf>) after asking how many people knew TIA. The Recording Secretary raised a concern about copyright notices in the presentation. The Chair allowed the presentation to continue as the Recording Secretary deferred to his judgment. (After the meeting, it was clarified that the presentation was a liaison: see <https://mentor.ieee.org/802.1/dcn/18/1-18-0037-02-ICne.pdf>.) Following the presentation, Schafman called for a brainstorming session on what IEEE and TIA could do together on the presented topic. A discussion ensued; among the questions asked were:

* Whether buildings have relationships: they do as they do not stand alone and can interconnect using wired and wireless connectivity to other buildings and to their environment for example on campuses;
* Whether the Smart Buildings Program has real cases of deployment: the program launched in December 2017 and is working on a level assessment program hoped to launch mid-2018;
* Whether existing building owners and technology companies in the current ecosystem are involved: yes, building owners, members of e.g. the telecommunications or building management systems communities, and universities are involved and are among a number of stakeholders in the marketplace (see slide 15);
* Whether there are any requirements for the networks that IEEE focuses on: yes, as building owners do not necessarily understand what they need to do (e.g. beyond Wi-Fi) and tend to rely on a single provider (if any); interoperability is crucial, of which there is none currently in building management systems;
* Whether level assessment is some kind of a rating system applied to a building to gauge how smart the building is: yes, the level assessment is comparable to LEED or Energy Star programs that assess the sustainability of buildings by levels;
* Whether networking aspects will be part of this rating system: yes, connectivity will be part of it;
* Whether connectivity rating will be a specific element of the rating system: yes, connectivity will be among eight characteristics but the kind of technology to use will not be specified as it changes all the time; instead, functionality will be key, the type of experience regarding connectivity that is desired in a building (such as download/upload speed) will serve as a guide for recommendations and assessments, and building developers, architects or others can use them as needed;
* Whether there potentially is a role for an IEEE 802 community to have input into how that assessment is made on networking-related issues where 802 has some views: some of the ways we assess connectivity will rely on 802 connectivity, specifically re wireless and Wi-Fi; for example, it will be about: are there issues in terms of conflicts between networks, how efficient, sustainable, redundant are communications?
* Whether there could be organized input from 802 into these requirements: sure, that would be great!
* Whether such program could help understand what the requirements are: that is the hope to broaden the market place as there aren’t many smart buildings today;
* Whether TIA, that historically has been closer to ANSI, has a roadmap for growing from regional to national to international when the smart building industry today is very segmented and regionalized, and how TIA sees complying with international regulations (for example, GDPR is hard to comply to today): in terms of a roadmap, yes, TIA wants to keep things simple enough for the levels assessment to cut through across as much as possible for example in terms of public safety via the creation of guidelines that can be applied nationally (the Safer Buildings Coalition being part of this to ensure applicability throughout the United States) before they can be applied in other market places (localizations will become important);
* How to incent providers in the context of Building as a Service (BaaS) in large buildings where there is a desire to “slice this building up” between multiple tenants to provide 802 technologies in similar fashion as services such as water, sewer, electricity are already provided: the market place will have to drive this; for example, smart appliances, security systems, etc. will require e.g. 802.11 technologies to communicate; BaaS is a new concept for building developers who can be provided with business cases addressing demonstrating their needs and wants can be better satisfied; the market will drive demand.

The Chair thanked Schafman for her presentation and for recommending this interaction, and highlighted how Nendica not only develops reports that represent pre-standard consensus thinking but also tries to ensure other parts of 802 are aware of such activity. It was also observed that smart buildings have ramifications to data centers and central offices in terms of networking. Schafman received a round of applause as she thanked Nendica.

The Chair presented a Small Cell Forum report about making buildings small cell ready after indicating that the report may be retrieved with personal credentials at <https://www.scf.io/en/get_email.php?doc=214>. The Recording Secretary raised a concern about presenting material that had not been uploaded. (After the meeting, the Small Cell Forum transmitted detailed information to Nendica via liaison communication 802.1-18-0040 <https://mentor.ieee.org/802.1/dcn/18/1-18-0040-00-ICne.zip>.) He noted Nendica could discuss how 802 similarly could develop a document about making buildings 802 ready. He invited comments, questions in the hope of stimulating future Nendica work.

The Chair reminded that Nendica ends in March 2019 and a request for extension (if any) would be needed in November 2018. He invited feedback on this possible extension.

The Chair discussed future Nendica meetings. Comments were received and it was agreed the next teleconference would be held August 2, 2018 at 8:00 PM ET (9:00 AM in Japan, 8:00 AM in China). The dates and time of the Waikoloa and Oslo meetings discussed on July 9, 2018 remained unchanged. For information, the Chair noted the possibility of a November 10, 2018 joint IEEE 802/IETF data center workshop; he noted that John Rosdahl is in charge of reserving space for this.

There was no other business to discuss and the Chair adjourned the meeting at 9:18 PM.

## Attendance

51 individuals registered on IMAT.

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| **Last name** | **First name** | **Affiliation** | **Monday** | **Tuesday** |
| Adachi | Tomoko | TOSHIBA Corporation | ● |  |
| Assmann | Ralf | Marvell Semiconductor, Inc. | ● | ● |
| Baykas | Tuncer | Istanbul Medipol University | ● |  |
| Bottorff | Paul | Hewlett-Packard Development Company, L.P. | ● |  |
| Brillhart | Theodore | Fluke Corporation | ● |  |
| Canchi | Radhakrishna | Kyocera International Inc. | ● | ● |
| Chang | Xin | Huawei Technologies Co. Ltd | ● |  |
| Chou | Vincent | Marvell Semiconductor, Inc. | ● | ● |
| Congdon | Paul | Tallac Networks; Huawei |  | ● |
| DeLaOlivaDelgado | Antonio | Universidad Carlos III Madrid |  | ● |
| Ellegaard | Lars | Microsemi Corporation | ● | ● |
| Escudero-Sahuquillo | Jesus | University of Castilla-La Mancha |  | ● |
| Fan | Xiaojing | Fujitsu Research & Development Center | ● | ● |
| Farkas | Janos | Ericsson | ● |  |
| Godfrey | Tim | Electric Power Research Institute, Inc. (EPRI) |  | ● |
| Gravel | Mark | Hewlett Packard Enterprise | ● |  |
| Guo | Jianlin | Mitsubishi Electric Research Labs (MERL) | ● |  |
| Han | Ruibo | China Mobile Communications Corporation (CMCC) | ● |  |
| Hiertz | Guido | Ericsson AB | ● |  |
| Ishizu | Kentaro | National Institute of Information and Communications Technology (NICT) | ● |  |
| Itaya | Satoko | National Institute of Information and Communications Technology (NICT) |  | ● |
| Kabra | Lokesh | Synopsys, Inc. | ● | ● |
| Kondo | Yoshihisa | Advanced Telecommunications Research Institute International (ATR) | ● | ● |
| KOTO | Hajime | National Institute of Information and Communications Technology (NICT) | ● | ● |
| Lee | Hyeong Ho | Electronics and Telecommunications Research Institute (ETRI) | ● |  |
| Levy | Joseph | InterDigital, Inc. | ● |  |
| Lv | Lily | Huawei Technologies Co. Ltd | ● |  |
| Marks | Roger | EthAirNet Associates; Huawei | ● | ● |
| Maruhashi | Kenichi | NEC Corporation | ● | ● |
| McMillan | Larry | Western Digital Corporation | ● | ● |
| Myers | Roy | INDEPENDENT |  | ● |
| Ohsawa | Tomoki | NICT | ● | ● |
| Prakash | Rajat | Qualcomm Incorporated | ● |  |
| QIU | WEI | Huawei Technologies Co., Ltd | ● | ● |
| Randall | Karen | INDEPENDENT |  | ● |
| Reilly | Denis | Spectracom (Orolia USA) | ● |  |
| Riegel | Maximilian | Nokia Networks | ● | ● |
| Rouyer | Jessy | Nokia | ● | ● |
| Sakata | Ren | TOSHIBA Corporation | ● | ● |
| Schafman | Limor | Telecommunications Industry Association (TIA) |  | ● |
| Schewe | Frank | Phoenix Contact | ● |  |
| Sun | Wenhao | Huawei Technologies Co., Ltd | ● | ● |
| Valentino | Liva | EuramNet, LLC | ● |  |
| Wang | Hao | Fujitsu Research & Development Center | ● | ● |
| wang | haifei | Huawei Technologies Co. Ltd | ● | ● |
| Weis | Brian | Cisco Systems, Inc. |  | ● |
| Xu | Dayin | Rockwell Automation | ● | ● |
| Yamaura | Takahiro | Toshiba | ● |  |
| Yano | Kazuto | Advanced Telecommunications Research Institute International (ATR) | ● | ● |
| YU | XIANG | Huawei Technologies Co., Ltd | ● | ● |
| Zein | Nader | NEC Europe (NLE) | ● | ● |