IEEE P802.11
Wireless LANs

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| July 2015 NGP SG Kona Meeting Minutes |
| Date: 2015-07-13 to 2015-07-16 |
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Abstract

This document contains the meeting minutes for the 802.11 NGP SG meeting in IEEE F2F Kona Hawaii, July 13-16 2015.

# Meeting Minutes – NGP-SG Session 1, July 13, 2015

## IEEE IPR Notice

Chair: Jonathan Segev/Intel, Secretary: James Wang (standing in for Gabor Bajko), Mediatek

## MINUTES

* The July 13 Meeting slides contain the agenda and discussion slides, which is summarized here:

* Patent policy
* Approve previous meeting minutes ([11-15-0675-ngp](https://mentor.ieee.org/802.11/dcn/15/11-15-0675-00-0ngp-vancouver-meeting-minutes.docx)).
* Resolve PAR and CSD comments.
* Approve modified PAR and CSD for WG motion.
* Presentations to inform the SG:
	+ Continued development of the use case documents.
	+ Problems statements
	+ Scope and purpose
	+ Review TG process
* Study group extension.
* Schedule teleconference times as needed.
* Chair went through the Patent and Antitrust policy, IEEE 802 SA rules and procedure, and proposed agenda and showed the submissions for the week so far. Chair asked if time slot allocated is fine and if any request for agenda change.

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| **Document No.**  | **Presenter**  | **Title**  | **Topic**  |
| 11-15/0752  | Jonathan Segev  | NGP July 2015 Agenda  | Agenda Deck  |
| 11-15/0030  | Brian Hart  | NGP PAR Comments | PAR  |
| 11-15/0262 | Brian Hart | NGP CSD Comments  | CSD  |
|  | Juan Carlos | Privacy ECSG overview  | Privacy  |
| 11-15/0561  | Thomas Handte  | Use case  | Use cases  |
| 11-15/0834  | Thomas Handte  | Further Use Cases for Next Generation Positioning  | Use cases  |

* Dang Meimei asked to add a submission (11-15-820) regarding to “Smartphone use cases” to the agenda. Chair took note of that and added to the agenda.
* For current session, three submissions: “privacy” by Juan Carlos and two “selected use cases (DCN: 561r2 and 834r0)” by Thomas Handte would be discussed. Chair asked if the group approve the agenda for the session. There was no objection.
* Chair ran the motion to approve minutes from previous (may F2F) meeting. Moved by Steve Pope and seconded by Allan Zhu. The motion was approved by unanimous consent. There were 34 members present.
* Juan Carlos presented the Privacy Overview and also showed the group where the privacy documents in mentor server (https://mentor.ieee.org/privecsg/documents). Chair asked if associated and unassociated modes were included ? Juan said both modes were included. Peter Ecclesine of Cisco commented that system such as open whisper system could use 911 call to get a one time key at higher layer and encrypted the whole thing. Juan said that they did not address specific thing like this, only provided recommended practices.
* Thomas Handte presented DCN 561r2. He incorporated some comments and feedbacks into prior presentation. Dong from LG asked in Scenario 2 how many APs were needed and he believed more APs were needed. A member from Spirent communications asked why in scenario 2 only the 1000 number of users were expected. He indicated that it should be a larger number. Thomas said that 1000 was covered by a single AP. But user could see multiple APs. Thomas said that he liked to run strawpoll to include the two use cases into the NGP working draft. Peter Ecclesine of Cisco asked to have two strawpolls instead of one. Thomas was OK with splitting to two strawpolls.

Thomas ran two separate strawpolls: Strawpoll 1 “home Audio” to be added to NGP working draft. Results: 17 yes, 1 no, and 5 abstain and Strawpoll 2 “navigation in public building” to be added NGP working draft. Results: 14 yes, 1 no, and 7 abstain. Following that, Thosmas ran the corresponding motions to adopt two use cases into working draft: Motion 1: Mover was Thomas and the seconder was Bill Carney. Results: 16 yes, 1 No, and 5 abstain. Motion 2: Mover was Thomas and seconder was Bill Carney. Results: 16 yes, 0 no, 7 abstain.

* Thomas presented the document (DCN834r0). Peter asked about Slide 3 that a more reasonable number should be one AP per 100 mm^2 instead of 400 m^2. Ganesh from Intel commented about Scenario 2 that AoA should be a parameter in the requirements. A member from FP Consulting asked that more critical issues in hospital (scenario 1) was to monitor the location of equipment instead of just patients. It would be a nice extension of this use case. Jonathan said that this was covered by asset tracking that refresh rate was much lower. Peter ask about Scenario 3 that if Thomas really consider if one camera for 400 m^2 was reasonable. Thomas said that he would check with his colleague. Thomas did not run any strawpoll or motion.

* NGP SG Meeting recessed at 3:00 pm 7/13/’15.

# Meeting Minutes – NGP-SG Session 2, July 14, 2015

* Chair announced IEEE attendance, meeting rules and IEEE SA rules, guideline, and patent policy.
* The July 14 Meeting slides contain the agenda and discussion slides, which is summarized here:

* + Patent policy and logistic
	+ Review of PAR modifications
	+ Review of PAR and CSD documents
	+ AOB
* Brian from Cisco together with Jon from CSR resolved multiple comments from Jon Rosdahl on PAR draft r8 document. Other members also involved in the discussion.

* Brian motioned the revised PAR document (DCN 030r9) to be forwarded to EC for approval to be submitted to Nescom. Ke Yao from ZTE asked why there was no accuracy requirement in the scope. Brian replied that different environment/conditions will have different accuracies. Jonathan further explained the difference between using throughput as a metric for communications while for positioning the metric is hard to define since it depends on the environment and the conditions.

Motion was moved by Ganesh and seconded by Allan Zhu. Results: 20Y, 0N, 0 Abstain. Total members in the room are 20.

* Brian motioned document 928 as the response to comments. Moved by Jon and seconded by Brian Hart. Results: 20Y, 0N, 0 Abstain.
* Brian Motioned CSD document to be forward to EC for approval. Moved by Brian Hat and seconded by Ganesh Venkatesan . Results 20Y, 0N 0 Abstain
* Jon reminded Jonathan that he had to bring a motion to the working group before 6;30pm tomorrow.
* Session recessed at 9pm.

# Meeting Minutes – NGP-SG Session 3, July 15, 2015

* Chair announced IEEE attendance, meeting rules and IEEE SA rules, guideline, and patent policy.
* The July 15 Meeting slides contain the agenda and discussion slides, which is summarized here:
* Chair discussed the agenda for the session and asked if there was any objection. The agenda was approved.
* Sabita Nahata (CSR) presented simulation results for accuracy of AoA using 11n (DCN784)
* Mark from Samsung asked about why 20x improvement from AoA. Sabita explained that angle reduced the uncertainties of FTM. James from Mediatek asked about Slide 8 figure was too sensitive to bearing angles and that the receiver should try to remove NLOS components. Sabita said simulation of 11n channel model showed sensitivity to bearing angles and that bandwidth at 2.4GHz was not enough for multipath removal. James said that with high bandwidth in 5GHz could increase the multipath resolution but even with 20MHz, one could still remove NLOS components to improve accuracy. Joonsuk from Apple said that a new channel model might be required for the NGP use case. Joonsuk said that it would be better to define the use case and worked on the new channel model. Santosh from Cisco said that the conclusion was not a directly deduced from the submission. The fact that a single algorithm (or a set of algorithms) fails with the existing channel model does not directly indicated the channel model is inadequate. The goal should be try to get the group to derive a channel model based on use case and can reliably predict the expected performance. Santosh said that we had not done investigation to see if reality matches the observed simulation results using the 11n channel model for AoA. A member from Huawei that they had done similar work with similar conclusions that AoA was sensitive to NLOS taps. It has to do with the ratio of NLOS and LOS components and the K factor. Chair suggested to discuss offline and to investigate whether 11n channel model is appropriate for the use case which might be dominated by LOS component.
* Chaochun Wang from Mediatek presented a use case document (DCN848r0). For use case 1, Naveen asked if the use case was more about asset tracking. He was not sure the refresh rate, might be too high. Chaochun said that in some cases such as emergency room high refresh rate could be needed. A consultant said that in some cases such as intensive care there was high interference. He asked if there was any data about this. Due to this, the use could be limited to other part of hospital. Santosh said that for stationary, the refresh rate can be lower (such as once every 5 minutes) and for moving equipment the refresh rate can be higher. Santosh said that we did not agree to include this in the last meeting. Chaochun presented the third use case “Smart Push Notification/Payment”. Naveen of CSR asked how proximity should defined based on user profile and range. Chaochun said that the issue is more related to others such as security. For use case 4 indoor parking for automatic driving car. Mark from Samsung said that in UK this almost guaranteed to cause problem since only limited and tight parking spaces were available. A member said that 11p-based ITS system in car might be better suited for this use case. He said that this scenario was heavily discussed in Europe. Chaochun said that the two can be complimentary.
* Yasantha from Mediatek presented another NGP AoA use case document. Yasantha showed that multiple AoA, ToF, or combination of AoA and ToF could be used to improve the accuracy. Four use cases are presented. Mark from Samsung asked about Slide 2. He said that 20 degree accuracy was achieved in previous discussion. Yasantha said for in LOS situation. Chair said that previous presentation by Sabita considered 11n channel model. Yasantha said that AP could be mounted on the ceiling and the multipath could be improved. Naveen from CSR asked about Slide 3 if there is any number describing how antennas should be and how the angle affects the results. Carlos from Qualcomm asked about Slide 8. How to model the accuracy of +/-2 degree. Yasantha said that it was uniformly distributed. Carlos asked if it matches Gaussian model. Yasanthsa said that he liked to see some AoD and AoA use cases in NGP.

* Yasantha strawpoll to include reference to angular measurement in the NGP use cases. Ganesh said that use cases need to be classified first. He suggested to change straw poll text to include some use cases into use case document. Santosh said that use case should focus on problem, not solution and the presentation mixed problems and solutions. Yasantha modified the text and arun the strawpoll. Results: 26Y, 1N, 5 Abstain
* Meimei Dang from CATR presented the use case (DCN820). Alan from Huawei asked about if smartphone phone was lost. The AP might know about it but how a user could find it. User would need another device to find it. Meimei agreed with it.
* Ganesh presented additional use case update DCN 634r4. Santosh said that position is based on multiple APs. The parameter should be position accuracy rather than AoA accuracy. In the second and third use cases, it seemed that it was tracking the user. Santosh also asked why the vertical accuracy matters ? Ganesh said that where user was looking would be important. Santosh said that for inventory management vertical accuracy would matter. Yasantha said that it is OK to have vertical accuracy.
* Session recessed.

# Meeting Minutes – NGP-SG Session 4, July 16, 2015

* The July 16 Meeting slides contain the agenda and discussion slides. Chair asked if anyone object to the agenda. There was no objection. There were 21 attendants in the room.
* Chair announced IEEE attendance, meeting rules and IEEE SA rules, guideline, and patent policy.
* Chittabrata of Intel presented the use case Agriculture IOT DCN919r1. James asked about where the AP (how high and density) was placed and if the sensors needed positioning information. If the distance between AP and sensor is large, the ground reflection could affect the accuracy if AP height was limited. Dong from LG asks about this is similar use case for 11ah. Chitto said this is about location, not data. Chitto said that sensors are randomly distributed. Yungsong Yang from Huawa said about refresh rate is related to location or not. Chitto said yes. Yungsong asked if the location of sensors were not changed. Chitto said that location was used to identify the sensor. The member said that one could use the ID of the sensor to identify the location. Chitto said that these are cheap sensors and they could be replaced and it would be hard to manage with ID. Yasantha from Mediatek asked about refresh rate was high. Chitto said the refresh rate could be changed. Yasantha asked which frequency to use if the ground was wet. Chitto said that maybe 2.4 GHz maybe more suitable. Yasantha said that 900 MHz could be more suitable for this use. Another member asked GPS would be more accurate. We need to check those products to see if our numbers are better. Chitto said that we need to consider both data and positioning. Chitto ran the strawpoll to adopt the use case to draft. Results: 19Y 0N, 3A. Santosh from Cisco asked if this use case is for 11ah. Jonathan said that 11ah is not in the PAR. Chitto ran the motion under conditions that parameters would be updated. Mover: Chittabrata Ghosh, Seconder: Ganesh Venkatesan, Results: 17Y, 0N, 3A
* Chair discussed the Study Group extension in case extra time is needed for Nescom approval. Chair motioned the SG extension. Mover: Ganesh, Seconder: Santosh Pandey. Results: 20Y, 0N, 1A. Chair said that he would it bring to closing planery for approval.
* Chenchen Liu of Huawei presented NGP Use Case (DCN902r0). Ganesh suggested some changes. When a user device provided some inputs for its intended use, the AP would direct the user device which AP to use. SK from Apple asked to use positioning to enhance spectrum management, it might be tied to Ganesh question, a device might be running a specific application which dictates which AP to use. Chenchen said the use case just uses NGP to do load balance and handover. SK said if these APs were coordinated. Chenchen said yes. SK asked what was the difference between NGP use case and some other IEEE standards which are available. Chenchen said that these are proprietary solutions. Dong asked if AP to AP has link between them or device simultaneously associated with more than APs. Chenchen said that NGP can be done without association with any AP. Yasantha said that RSSI might be better measure than position, Chenchen said that RSSI was not stable, it changed with direction and other factors. Position would be a better measure. Chenchen strawpolled to adopt the use case results:11Y, 0N, 11A. Chenchen motioned to adopt the use case (Slide 2 and 3) into working draft. Mover: Chenchen, Seconder: Yunsong Yang, SK asked what was the relationship of the working draft and that of the working group. Chair said that the working draft would be carried over to working group. Monish asked if this use case requires PHY/MAC has other requirements on top of this. Monish said that there were too many use cases. Monish said what was the difference of this use case. Chenchen said that this involved how the position is used. Chair said that how this information was used is out of scope. Santosh said that this was use case, this did not dictate anything. Santosh said use case document is an exhaustive collection. It does not mean all use case needs to evaluate in simulation. Motion results: 10Y, 0N, 13A. Motion passes.
* Alan Zhu presented the use case UAV Positioning document DCN 907r1. James from Mediatek asked if the angular accuracy should be added since it seems to be the key advantage comparing to a GPS solution. Alan ran a strawpoll to adopt the use case (Slides 16-18) into working draft. SK asked about the requirements: horizontal and vertical accuracies. Alan said that it is the position accuracy for the UAV control. Straw poll results: 20Y, 0N, 4A. Allan said he would modify parameters based on feedbacks before running motion.
* Ganesh presented the use case Additional Use Cases DCN634r4. Yasantha said the mac refresh rate should be < 1 location/sec. SK asked whether the metric of 1 location/second is number of measurements per second or number of fixes or reports to upper layers per second. Ganesh responded it is one location report per sec. SK also asked AoA is 3D or it is Azimuth or elevation. Yasantha said maybe longitude can be used. Ganesh changed AoA to anular measurement. James suggested to add the angular accuracy to the key requirements. Ganesh said he would motion this in the upcoming teleconference call.
* Jonathan discussed the conference call schedule (Sep 2nd 10am ET). Strawpoll: 13Y, 0N, 0A Motion: Mover: Allan, Seconder: Ganesh. 15Y, 0N, 0A
* Session adjourned.