IEEE P1900.7 Osaka Minutes, 26-28 March 2012

Oliver Holland and Xin Zhang, supported by other WG members

Monday 26 March

AM1

08:30: Stanislav opened the meeting.

08:40: Stanislav introduced the agenda quickly from a high level.

08:41: Stanislav took roll call.

9 voting members out of 15 were present—quorum established.

08:49: Stanislav highlighted that the current Secretary was not able to attend the meeting. He asked for volunteers to stand in as Secretary for this meeting. Oliver volunteered, but pointed out that he may have to miss a small number of sessions due to possible 1900.1a responsibilities as well as requirements to present/discuss in the 1900.6 WG. For these sessions, it was agreed that Xin Zhang would act as secretary. There were no objections to this arrangement.

08:53: Stanislav introduced the agenda as per DCN 07-12-0010-01.

Oliver requested DCN 07-12-0014-00 be removed as it will not be presented.

Dominique requested introduction of DCN 07-12-0016-00 to the agenda to be placed in the AM2 session.

The agenda was updated according to these comments.

MOTION to approve the Agenda DCN 07-12-0010-02. Moved Oliver, seconded Richard.

Approved by unanimous consent.

Mingtou then requested DCN 07-12-0018-00 to be added to the Agenda—Stanislav added in "Channel Model". This was added.

MOTION to approve updated Agenda DCN 07-12-0010-03: Moved Oliver, seconded Richard. The result was again unanimous approval.

09:06: Stanislav introduced call for essential patent claims. There were no essential patent claims.

09:10: Stanislav introduced minutes of previous teleconference, DCN 07-12-0009-00.

MOTION to approve the minutes of Feb 27 telco. Moved Richard, seconded Oliver. Motion approved unanimously.

09:12: Stanislav presented opening report, DCN 07-12-0017-00. Regarding the general requirements contributions, DCN 07-12-0014-00 was removed, and DCN 07-12-0016-00 was added. DCN 07-12-0018-00 was added to Channel Model contributions.

09:26: AM1 adjourned. AM2 will start 10:30.

AM2

10:30: Stanislav opens session.

10:31: Stanislav held roll call.

There was a request to add 2 presentations to the Agenda: DCN 07-12-0019-02 and DCN 07-12-0020-02.

This was added to an updated agenda DCN 07-12-0010-04 which was uploaded to mentor by Stanislav.

MOTION to approve updated agenda DCN 07-12-0010-04. Moved Hoang, seconded Xin. Motion passed unanimously.

10:47: Adrian Kliks presented DCN 07-12-0015-00.

There was a question about the chosen speed of mobility. It was confirmed by Adrian that the assumption is a collection of femto-cells or micro-cells within a particular (e.g., office type) indoor/outdoor coverage environment. This assumption can be flexible, dependent on the context.

There was a fair amount of discussion on the different handover scenarios. Adrian highlighted that the connections between the mobile terminal and two access points in the scenarios on slide 5 indicated a dual connection as a process of the handover.

11:07: Vinh-Hoang presented DCN 07-12-0006-03. This is a merged contribution from BT use case and the previously presented NICT use cases. The intention is to continue merging the use cases in this way. It is encouraged for all contributors on use cases to work together to merge the contributions.

11:25: Faouzi Bader presented DCN 07-12-0011-01.

It was mentioned that we should separate out the requirements from the presentation, and present the technical details in a later stage. It was mentioned that many of the detail on requirements can be extracted from this presentation in the General Requirements Merging session.

There was a fair amount of discussion about the complexity of FBMC. Although such consideration is for a later stage, it was accepted that FBMC implies higher complexity although this does not necessarily preclude this being used as an option.

11.55: Adrian Kliks presented DCN 07-12-0011-01.

It was again noted that this was interesting content, but the requirements should be separated out from this. The precise specification of the radio interface is something that is to be handled later in the work of 1900.7. It was also noted that the technical detail in this presentation from Adrian and the previous presentation from Faouzi were good in assisting us to understand what might be viable as general requirements, and in that regard it was useful to have some of the technical solutions presented and discussed. This is because we don't want to define general requirements for 1900.7 that are either not achievable technically, or are not ambitious enough for a new standard.

Adrian emphasised that this was indeed his intention: to highlight ways in which requirements could be technically feasible (and that they could be feasible), not to promote specific technologies.

12.10: Meeting recessed. Will reconvene in PM2 session.

PM2

15:15: Stanislav opened the meeting.

15:17: Stanislav roll call.

15:20: Oliver presented DCN 07-12-0013-00.

There was a question on adaptive pulse shaping, i.e., that it leads to a need for communication with the receiver of the pulse shape for matched filtering purposes. The presenter agreed.

15:36: Dominique presented DCN 07-12-0016-00.

There was some discussion on the achievable rate: Richard commented that the basic requirements, as presented in DCN 07-12-0006-03, are misleading and that is why Dominique found such high spectral efficiency requirements. One parameter shown in DCN 07-12-0006-03 is the expected data rate; however, this is actually supposed to be the maximum data rate that a terminal may be expected to achieve. The other parameter is the expected number of devices. Again, this was ambiguous. The meaning was supposed to be the number of connected devices (active and idle). Richard mentioned that he had already discussed these issues on these two parameters with Junyi previously, and he had added an explanation below the first table in DCN 07-12-0006-03. When Dominique read the requirements from these tables he made the understandable assumption that we were expecting that all connected devices could be expected to achieve this expected data rate at the same time.

Based on the above, Dominique suggested that we add a new parameter in the tables of DCN 07-12-0006-03 to state the expected aggregate data rate of base stations. Richard agreed that this would remove some of the ambiguity in the tables of DCN 07-12-0006-03. Richard then also suggested that we should rename the "expected data rate per terminal" as "peak data rate per terminal" to add more clarity.

Xin had a question on carrier aggregation compared with spectrum pooling: what is the difference? Dominique confirmed that carrier aggregation implies the use of separate RF front ends accessing

different channels. Spectrum pooling is the same front end accessing non-continuous bands. However, spectrum pooling implies more complexity on the digital side.

Stanislav has a question on whether it is possible to satisfy out-of-band emissions requirements through switching on/off subcarriers in spectrum pooling. The answer was broadly that results are given on slide 15.

Xin question about parameters of the filtering, etc. Dominique provided some detail but referred to the references in DCN 07-12-0016-00 that give detailed information on parameters.

16:12: Vinh-Dien presented DCN 07-12-0019-02.

Oliver comments to add 802.15.4m to the list of inter-system requirements. Accepted.

Dominique raised a question on the methodology for creating the document and the need to take into account future requirements. The response was that this is just a draft and can be updated.

Xin asked if the relay requirements in section 4.6 were optional. The response was that it is optional, although 1900.7 should provision for that possibility.

Stanislav had a question about text in section 6.3 that he didn't understand. The presenter indicated that he would need to check with a colleague who provided content.

There was discussion on the purpose of the document. The response was that it was for the purpose of collecting information. Dominique highlighted that we will need to decide what we keep or don't keep, at some stage, or the standard will become too complicated and expensive to build.

Prasad asked why we need to include the exact parameter of spectral efficiency. The answer was that this comment will be considered and the presenter asked what value he would suggest.

The answer is with the use of Spectrum reuse, spectrum efficiency is expected to be improved.

There was a brief discussion on the possible clash in time schedule with 1900.6.

Stanislav decided to postpone radio regulation and channel model discussion until Tuesday PM1 session. The agenda was updated.

MOTION to approve March 26-28 agenda as contain in DCN 7-12-0010-05. Richard moved, Xin seconded. The motion was passed by unanimous consensus.

The revised agenda is uploaded to the mentor.

16:57: Meeting recessed. 1900.7 will reconvene on Tuesday PM1.

Tuesday 27 March

PM1

13:40: Meeting called to order slightly late due to internet problem

13:41: Stanislav takes roll call.

13:45: Review of the agenda: DCN 7-12-0020-01 updated. Agenda is revised and uploaded to mentor as revision 6.

MOTION to approve March 26-28 meeting agenda DCN 7-12-0010-06. Richard moved, Xin seconded. Motion is approved by unanimous consent

14:00: DCN 7-12-0020-01 was presented.

The following comments were received:

- On slide 16, where the table is updated for channel 49-60, it should be marked in a different color
- The document number needs to be consistent with the previous versions to show regular updates on the regulation
- It is noted that Australia is also doing a TVWS related study. The differences should be highlighted.

14:35: DCN 7-12-0018-00 was presented.

It was mentioned that the choice of parameters should be explained. The answer was given: Antenna height was already explained in the presentation. The center frequency is within the VHF band, BW 64 MHz is about 8 TV channel. This value is decided by Singapore IDA to do the experiment. to save the fading property in the frequency domain. Antenna is monopole type. this type of antenna is simple, the gain is 2..15dBi which is a fixed number for our antenna type. Cable loss is fixed. 23 dBm is around 2W, is acceptable for 4W.

An attendee mentioned that they have concern over the bandwidth. In the presented experiment, the channel bandwidth is 64 MHz, this leads to very small rms delay as shown in the result. With such small rms value, how do you extract the ray?

The answer was given that the peak detection method is used to extract the rays, and we use calibrated path, i.e., we subtract the pulse from the delay pulse. Then we normalized with the delay pulse, and subtract again. In slide 12, the ray delay 37ns, by using this method, we separate the rays

PM2

15:30: Stanislav called the meeting to order.

15:31: Roll call was taken.

15:40: The previously presented use cases document was displayed and discussed.

There was a comment on the wireless access backbone network to add in the expected base station capacity, one possible value for which is 60 Mbps. It was mentioned that it may be better to leave this open/TBD.

There was a comment on the rural broadband network to add in the expected base station capacity, the value for which is not finalized yet. Discussion was ongoing.

There was a mentioned of the possibility of add in explanation for the expected base station capacity as maximum number of terminals, and change to incorporate the maximum achievable data rate per terminal. Peak data rate is preferred.

There was a comment to change “expected base station capacity” to “expected base station aggregated data rate”.

it was decided that the 30 Mbps value will be kept the same; later it can be said that to achieve this value we may need more channels.

There was more discussion on the expected base station aggregated data rate, 30 Mbps, or 60Mbps? Finally, it is decided that 30Mbps is appropriate. It was discussed to add that the expectation is for a 6 MHz channel achieve 30 Mbps. if more data is required, we need to do more than one channel.

It was decided to add this row of data to each table for each use case except inter-ship mesh network and set the expected data rate equal to the peak data rate.

To resolve a comment from Dominique and his contribution, and update some values, Hoang will upload a new version before AM2 tomorrow. It was emphasised that areas highlighted in red are not merged yet. Once the merged use cases are created, an email will be sent to the reflector. All use cases should follow the same format as in the latest revision of DCN 7-12-0006.

An updated merged use cases document will be presented at the next teleconference.

It was highlighted that discussion in the next session will include the possible venue and time for the September meeting.

17:00: The meeting was recessed to continue on Wednesday AM2 session.

Wednesday 28 March

AM 2

10:30: Stanislav opens the meeting.

10:31: Roll call is taken.

10:35: Stanislav overviews the purpose of this session.

10:36: Stanislav overviews the Channel Model content, and the contributions that have been presented.

10:37: Stanislav reviews the general requirement and presentations from Monday.

It was decided to merge new requirements resulting from these presentations into DCN 07-12-0019-02, with Hoang acting as an editor to merge in the requirements to his contributions.

The rest of the session included extensive discussion on merging in to the general requirements of detail resulting from DCNs 07-12-0011, 07-12-0012, 07-12-0013. Discussion surrounded consideration of the added information in DCNs 07-12-0011, 07-12-0012, 07-12-0013 compared with what is already in DCN 07-12-0019-02. Particular aspects included the consideration of support for notching out narrow-band signals, and out-of-band emissions characteristics. An updated version of DCN 07-12-0019-02 reflecting what was discussed to be uploaded as DCN 07-12-0021-00.

12:00: The meeting was recessed.

PM 1

13:30: Stanislav resumed the meeting of 1900.7.

13:31: Stanislav takes roll call.

13:40: Discussion on the "General Requirements" was continued.

Session was entirely consumed with discussion on the merged general requirements, with the addition of a number of requirements. There was extensive discussion about several aspects, including the variance of requirements based on use cases, expectations in terms of spectral efficiency and the meaning of that. Another point discussed is whether a requirements for achieved data rate should be added, i.e., if coverage is specified up to a certain distance, then a minimum data rate achievable at the coverage edge should be specified. It was decided not to add this as it is highly dependent on specific use cases (e.g., it is not appropriate for low-power modes of operation) and of course achievable capacity, at least, is implied by a given spectrum efficiency and transmission bandwidth.

A finalised version reflecting what was decided was uploaded as DCN 07-12-0021-00.

14:55: The meeting was recessed.

PM 2

15:15: Stanislav called the meeting to order.

15:17: The roll call was taken.

15:20: Stanislav reviews the agenda once more. The current status is summarised:

- Regarding radio regulation, revised version of document is now uploaded to mentor as DCN 7-12-20-02. The plan is to keep updating this document based on changes in radio regulations.

- Regarding use case, a revised combined version of the use cases is now uploaded to mentor as DCN 7-12-0006-04. The plan is to continue to input the individual contribution into the merged document with the target to present the updated/finalized document in the next teleconference.
- For general requirements, a revised combined version is uploaded to the mentor as DCN 7-12-0021-00. The plan is to distribute to the working group members for comments and updates.
- Regarding the channel model, we have several channel models defined. The plan is to wait for more potential contributions.

15:40: Stanislav opens discussion of future meetings.

It was agreed to schedule two teleconferences:

- April 23, 2012, 10am-12am UTC
- May 21, 2012, 10am-12am UTC

The group was reminded of the June 26-29, face-to-face meeting in Grenoble, France, co-located with the DySPAN-SC plenary meeting.

Moreover, the group was reminded of the possibility of holding a face-to-face meeting co-located with other WGs in the September – October timeframe, with the location and exact dates TBD.

MOTION to approve the following schedule for the next meeting of the IEEE 1900.7 WG

- April 23, 2012, 10am-12am UTC
- May 21, 2012, 10am-12am UTC

Richard moved. Xin seconded. Motion approved by unanimous consensus.

MOTION to approve to have a face-to-face meeting of the IEEE 1900.7WG co-located with the DySPAN-SC plenary within the week of June 25-29 in Grenoble, France. Richard moved. Hoang seconded. Motion approved by unanimous consensus.

STRAW POLL Do we need to have an interim meeting around September-October 2012?

Result was 9 voting yes, 0 voting no.

16:00: Stanislav adjourned the meeting.