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Paper Reference:	TABASC_78_1606_04
Action:	For Discussion

MP082: 2.4GHz Channel Management - Business Requirements

1. Purpose

This paper presents the business requirements for Modification Proposal [MP082 '2.4GHz Channel Management'](#). We seek the Technical Architecture and Business Architecture Sub-Committee's (TABASC) views on whether the business requirements are clear and unambiguous and therefore suitable for a Data Communications Company (DCC) Preliminary Assessment.

We appreciate that there are questions around the business case but performing the Preliminary Assessment will allow us to understand how much the solution is likely to cost to assist in assessing the business case. In addition, should this issue become a bigger problem in future the preliminary work will already be in place to provide a solution.

2. Summary of the proposal

What is the issue?

As the Smart Metering rollout progresses, more and more Devices will be installed and will be operating simultaneously on the same 2.4 Gigahertz (GHz) Channel. Other Devices may be co-located and compete for access on the license free Industrial, Scientific and Medical (ISM) bands. The ZigBee 2.4GHz Channel used by the Communications Hub is selected at install and set for the life of the Smart Metering System unless the system is subject to external intervention. This would be via a site visit involving a Communications Hub exchange and a migration of the existing Home Area Network (HAN), with no guarantee a better channel will be selected.

There are a number of HAN stability issues, defined as issues in which Devices abruptly drop off the HAN for a sustained period of time. A variety of Device combinations may be involved. At present, the main issue appears to be Electricity Smart Metering Equipment (ESME) and Communications Hub related. However, HAN stability issues may also concern other Devices (e.g. In Home Display (IHD), Prepayment Meter Interface Device (PPMID)), individual pairings, or a particular combination of Devices on the HAN.

Impact

- Some Suppliers have reported some performance issues noted by customers including
 - Smart Metering Devices losing connectivity (e.g., IHD not displaying data)

- Interference
- Inability to read smart data

MP082 proposes to develop a mechanism to allow the Communications Hub to change the radio channel remotely after installation. This modification will provide an additional tool to attempt to resolve the possible impacts of poor HAN performance.

3. This Request for Information (RFI) outcome

SECAS understands and recognises that it may not be possible for SEC Parties and Suppliers to ascertain the root cause of such issues due to the limited amount of HAN performance data that is available to them. An RFI was sent out to encourage any anecdotal evidence or indicators which could be shared which may be attributable to the issue. Two responses were received. One respondent confirmed it had not experienced any issues during its testing to date. It tested 50 Single Band HANs (note band here refers to the general frequency band that the Device operates on) in a single meter room with each HAN supporting three PPMIDs each requesting 10second updates. No other 2.4GHz band interferes such as Wi-Fi or Bluetooth were present. No issues were found that could be attributed to 2.4GHz Channel saturation.

The second response provided historical data which could be attributed to the issue but also acknowledged diagnosing the issue to be very difficult and time consuming for consumers. The respondent highlighted that all its examples were historical. It had noticed some problems its customers had experienced in the past related to Sky Tivo boxes, but no further details were provided. It added that when trying to pair a meter to an intended Communications Hub, if there were enough HANs on that same channel, the meter would spend so long trying them all that it would fail to join any. It noticed a general latency issue on those congested channels which it tested by 'sniffing' the ZigBee traffic and monitoring the time taken for messages to be sent successfully over the HAN.

4. Business requirements

Business Requirements	
Requirement 1	Where interference is deemed to be a cause for Home Area Network (HAN) Devices to go "dark", a channel frequency change shall be enabled and allow the ability to trigger channel change remotely, or to allow automatic recovery (avoid site visit).
Requirement 2	To preserve the battery life of battery powered HAN Devices, the absolute number of channel changes shall be limited.
Requirement 3	Any changes would need to consider pre-existing HAN Devices to limit Devices from being stranded and inoperable.
Requirement 4	To detect if nodes on the edge of a mesh network are having poor HAN connectivity and trigger a channel change accordingly.

The detailed business requirements can be found in Appendix A.

5. Questions for the TABASC

We seek the TABASC's view on the following questions to feed into the business requirements before we request a Preliminary Assessment:

- Are the detailed business requirements clear and unambiguous?
- Do TABASC members have any concerns over the business requirements?

6. Next steps

MP082 will be presented to the TABASC on 16 June 2022 before requesting the DCC Preliminary Assessment.

Timetable	
Event/Action	Date
Modification discussed with TABASC	16 Jun 2022
DCC Preliminary Assessment	17 Jun 2022 – 08 Jul 2022
Present to Working Group meeting	3 Aug 2022
Refinement Consultation	8 Aug 2022 - 2 Sep 2022
Present to Change Sub-Committee	20 Sept 2022
Present to Change Board	21 Sep 2022
Impact Assessment	26 Sep 2022 – 28 Nov 2022
Present to Working Group meeting	4 Jan 2023

7. Recommendations

The TABASC is asked to:

- **PROVIDE** views on the suitability of the business requirements to proceed to Preliminary Assessment.

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SECAS Team

9 June 2022

Attachments:

- **Appendix A:** MP082 business requirements v0.4