



1st Invitational Workshop on
Body Area Network Technology and Applications
Future Directions, Technologies, Standards and Applications

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Worcester Polytechnic Institute

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sense **and** simplicity

Medical Body Area Networking (MBAN) IEEE 802.15.4j Standardization

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FCC Medical Body Area Networking

The US Federal Communications Commission is considering allocating 40 MHz of bandwidth, on a secondary basis, for Medical Body Area Network applications.



Agenda

1. FCC Rulemaking
2. MBAN Proposal
3. Standardization

MBAN FCC - Background

- Dec 2007: GE Healthcare petitioned the US Federal Communications Commission to use the 2.36 to 2.4 GHz band for Medical BAN
 - Band to be used only for medical applications*
 - This band is primarily allocated in various parts to aeronautical mobile telemetry and telecommand (AMT), radio astronomy and amateur
 - MBAN will use band on a secondary basis and must defer to primary users
- May 2008: FCC issued Notice of Inquiry
- Jun 2009: FCC published Notice of Proposed Rulemaking
- Oct 2009: NPRM responses from interested parties
- Nov 2009: NPRM reply comments from interested parties
 - 19 NPRM comments and 5 reply comments received.
 - GEHC, Philips, AFTRCC and Boeing provided comprehensive technical statements
 - Other comments narrower in scope
 - The primary difference between GEHC/Philips and AFTRCC/Boeing is coexistence between AMT and MBAN.

* Proposed eligibility & permissible communications: Licensed by rule operations by authorized health care professionals and by any other person, if such use is prescribed by a health care professional. Limited to transmission of data (no voice) used for monitoring, diagnosing or treating patients

FCC Process - Current Status

- Current Stage: Interested parties permitted to make additional presentations to FCC
- Representatives of AFTRCC, Philips and GE met with FCC on January 13, 2011 to present a joint proposal for MBANS service rules
 - Seen as a positive step since Philips and GEHC are major proponents and AFTRCC the major opponent to MBAN use of the band until this point
- Entire presentation and proposed service rules can be found on FCC filed comment server
 - Docket #08-59 (<http://fjallfoss.fcc.gov/ecfs/document/view?id=7021025926>)
 - The joint parties continue to work together to achieve a balanced outcome .
- Next Stage: FCC decision and rules
 - Currently expected early fall

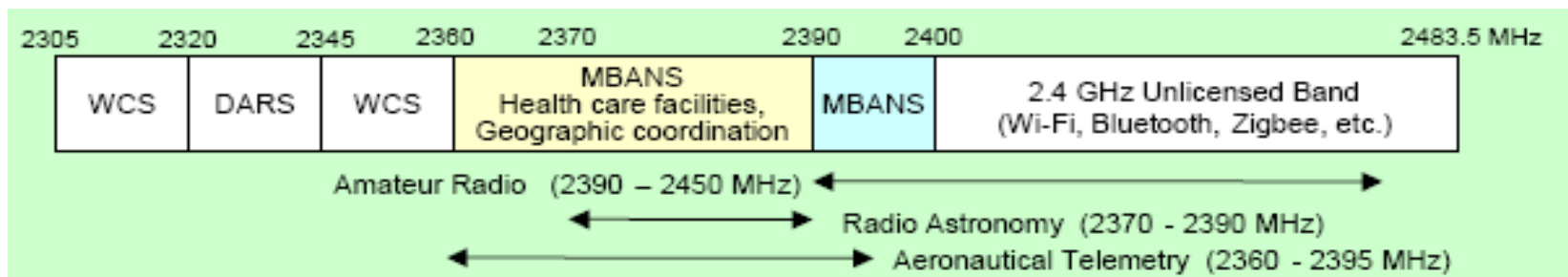
MBAN Proposal

Eligibility & Permissible Communications

- Limited to transmission of data (no voice) **used for monitoring, diagnosing or treating patients**. Licenses by rule operations by authorized health care professionals and by any other person, if such use is prescribed by a health care professional.

Frequencies & Authorized Locations

- **2360-2390 MHz** MBANS operations **limited to health care facilities (indoor use only, mobile ambulances and home deployment excluded)**
 - For in-hospital Patient Monitoring (PM) applications
 - MBANS coordinator will be selected to manage band use
- **2390-2400 MHz** MBANS operations permitted anywhere
 - For in-hospital PM applications, remote home healthcare monitoring, PM monitoring in ambulances, ...



•Note: copied in part from IEEE 802.15-08-0761-01-0006, Nov, 2008.

In-Hospital Use – Interference Resolution

- MBANs operation in 2360-2390 MHz only allowed if there is no interference with existing AMT sites (primary user)
 - Must register with MBANS coordinator
 - Electronic key/beacon system incorporated in MBANS system and managed by coordinator
 - Healthcare facilities with no radio Line-of-Site to an AMT location may use the band
 - Healthcare facilities with radio Line-of-Site to an AMT location will require analysis to determine if interference likely with primary user. If analysis is positive, then operation allowed
 - Provisions also made for time-limited access to unoccupied AMT channels where interference with primary user cannot be ruled out

•Standardization



- Technical solutions are needed to implement the FCC rules once they are issued.
- IEEE 802.15.4 is a good technical fit, but it will need to be modified to operate in the proposed band.

Standardization at IEEE - History

- Mar 2010
 - Philips proposes the creation of an IEEE Study Group
 - Group is created at March Plenary meeting
 - Explore the possibility of an amendment to IEEE 802.15.4 to support new proposed band
- Sep 2010
 - Study Group submits Project Authorization Request to IEEE asking to become a Task Group
- Dec 2010
 - Study Group promoted to Task Group to begin drafting specification
- Jan 2011
 - First Task Group meeting
 - Issuance of Call for Applications

Scope of IEEE MBAN Task Group

- Draft an amendment of 802.15.4 for MBAN
 - This amendment defines a physical layer for IEEE 802.15.4 in the 2360 to 2400 MHz band which complies with Federal Communications Commission (FCC) MBAN rules. This amendment defines modifications to the MAC needed to support this new physical layer.

Standardization at IEEE – Current Progress

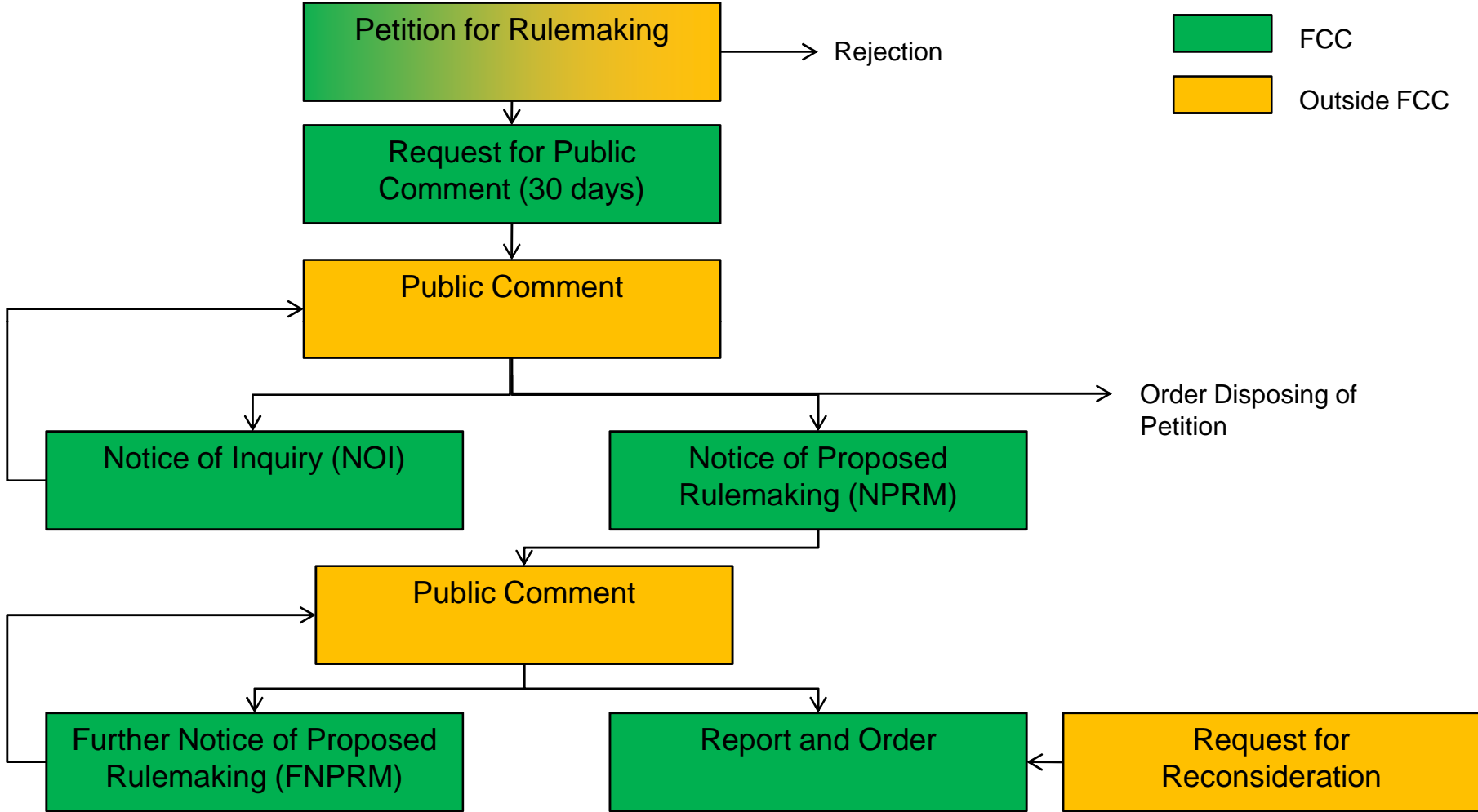
- Mar 2011
 - Issuance of Call for Proposals
- May 2011
 - 3 preliminary proposals received
 - Philips, Samsung and LG
- Jul 2011
 - Will hear final proposals
 - Begin discussions on acceptance/merger of proposals

Planned completion of standardization: Summer, 2012

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FCC Basic Rulemaking Procedure



Background

- The NPRM can be found on the FCC website:-
http://www.fcc.gov/Daily_Releases/Daily_Business/2009/db0629/FCC-09-57A1.pdf
- Filings in response to the NPRM can be found at:-
<http://fjallfoss.fcc.gov/ecfs/proceeding/view?z=ms66y&name=08-59>
- For more details on the FCC Rulemaking process see “Radio’s Regulatory Roadblocks” by Mitchell Lazarus, IEEE Spectrum, September 2009