IEEE 1904.2 Activation Proposal

Authors: **Hesham ElBakoury**
Version: 1.0

HUAWEI TECHNOLOGIES CO., LTD.

Supporters

- **Curtis Knittle (Cablelabs)**

Goal

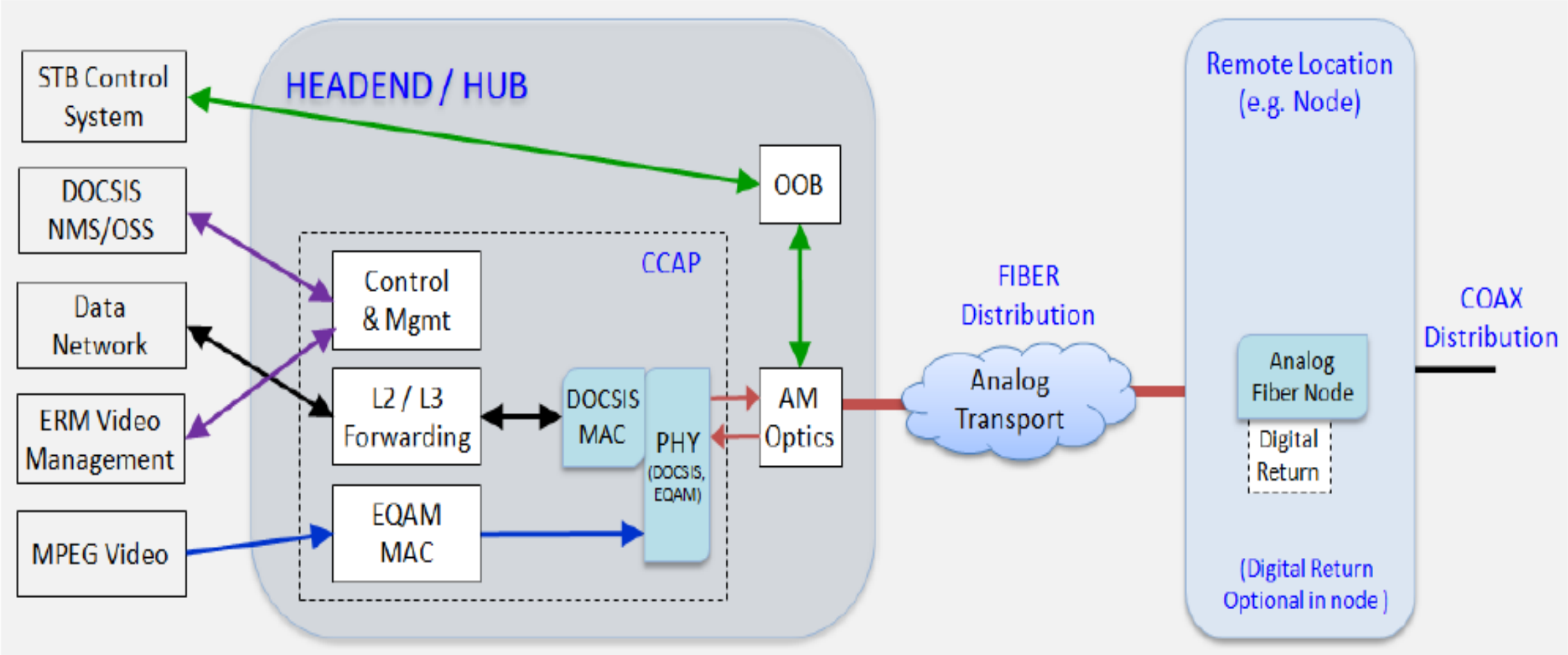
- **The Group voted to suspend IEEE 1904.2 in the April 2015 meeting until a clear demand and Use cases are needed for this project.**
- **The goal of this contribution is to describe a new use case for IEEE 1904.2 project and present a proposal to resume the activities of this project.**

Objectives

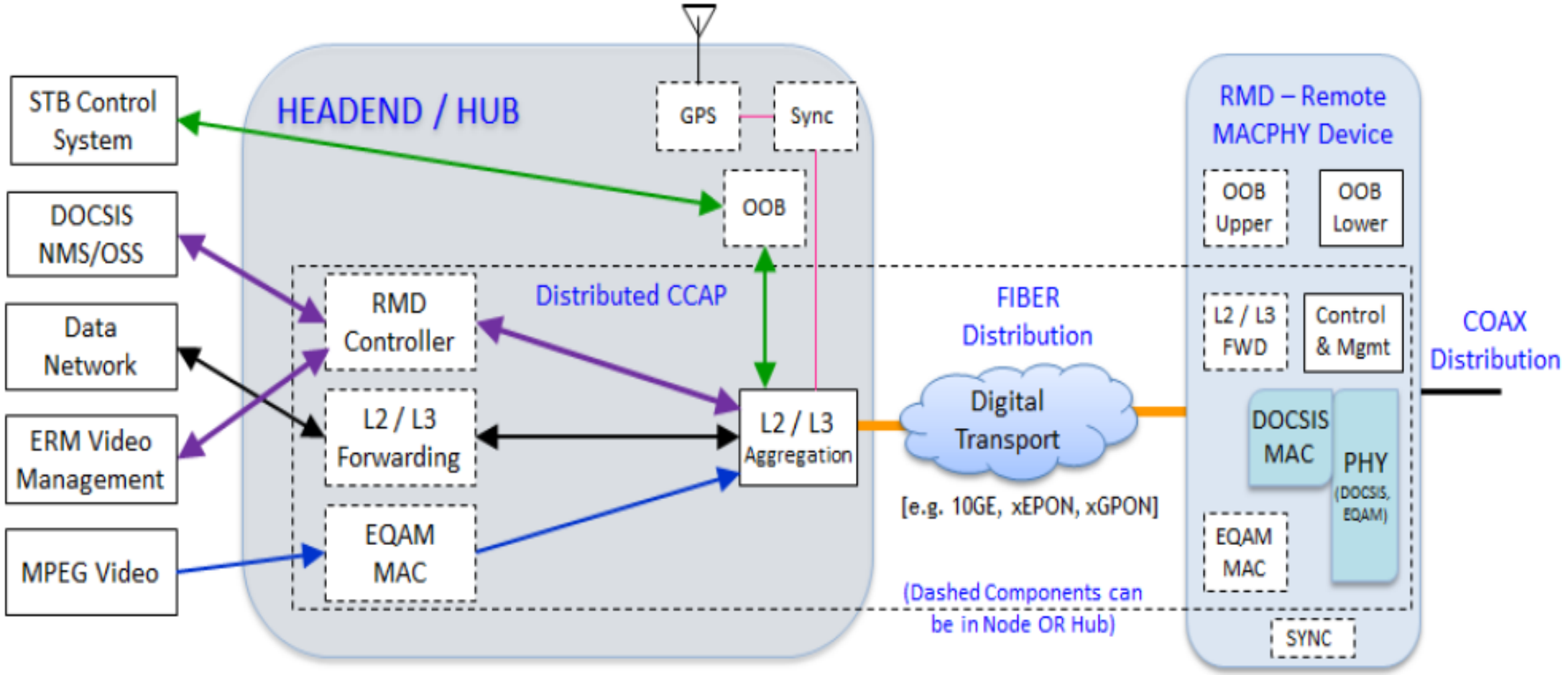
- **Present R-MACPHY an as another use case for IEEE 1904.2**
- **Discuss a proposal to bring IEEE 1904.2 out of hibernation.**

1 R-MACPHY Use Case

Traditional CCAP Functional Components



Remote MAC & PHY System Architecture



R-MACPHY Device Management

- **The RMD Controller exists to provide CCAP Management Abstraction beween the R-MACPHY Device and the OSS/NMS as well as to configure, manage and monitor R-MACPHY-specific parameters across the dispersed population of R-MACPHY devices.**
- **The interface between Controller and RMD(s) may use a variety of protocols (eOAM, SNMP, NETCONF, vendor-specific), with management based on L2 protocols or L3 protocols.**

L2 Management of R-MACPHY Device (1)

- When R-MACPHY device is managed using L2 protocols, it does not need to have an IP address for management. In this case, the controller intercepts OSS/NMS messages and converts them to the L2 messages that R-MACPHY device can handle.
- Most of the deployments in China use proprietary L2 management protocols between the controller which runs in the headend/hub and R-MACPHY device.
- The main reason behind using proprietary protocols is that the CDMM messages as defined in C-DOCSIS spec are not sufficient to handle the requirements of all deployment scenarios, in addition there is lack of interest from Chinese MSO to extend CDMM to support these requirements.

L2 Management of R-MACPHY Device (2)

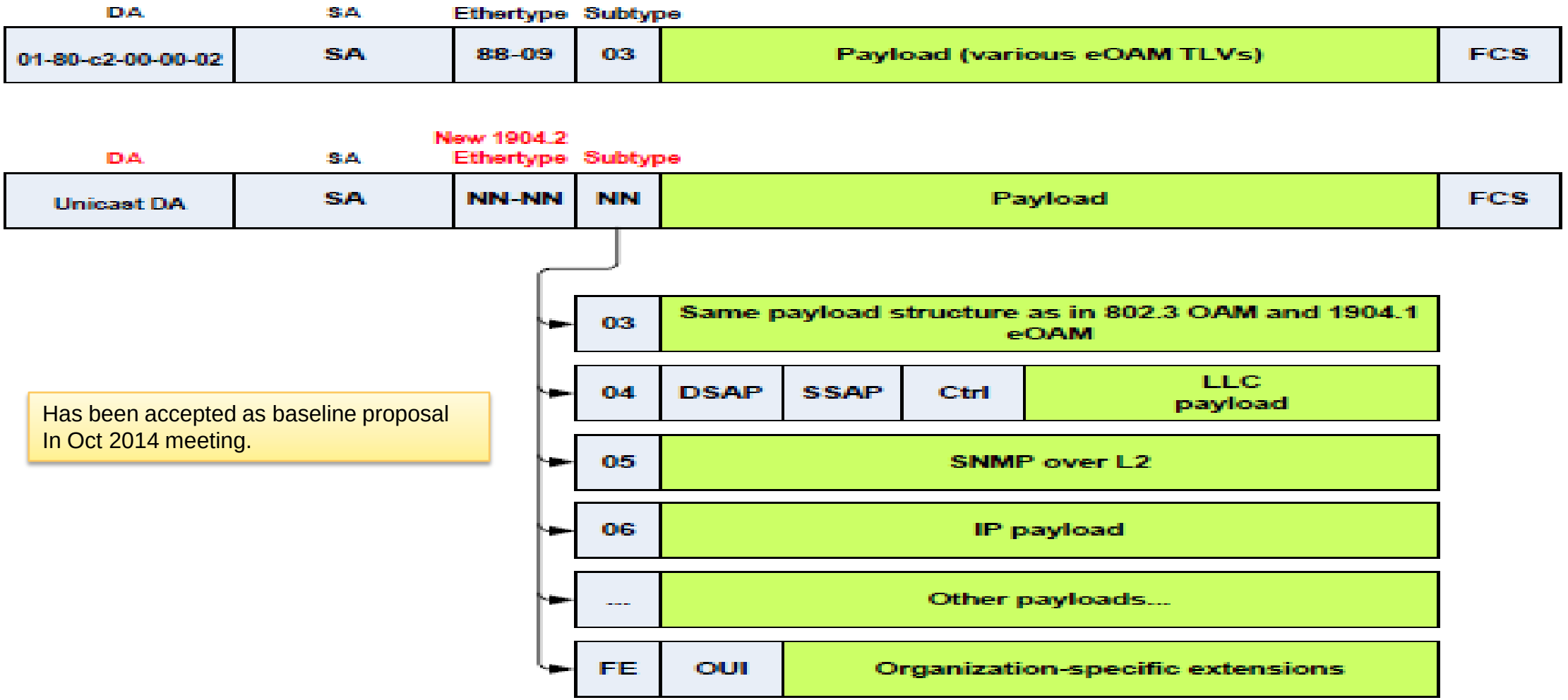
- **The other problem with CDMM is that it uses the OAM protocol which as currently defined in Clause 57 of IEEE 802.3, does not span across multiple hops (i.e. OAM messages can't go across more than one L2 link to reach its destination).**
- **This does not work in deployment scenarios where the controller is multiple L2 hops away from R-MACPHY device.**
- **The C-DOCSIS spec provides an option to run CDMM messages over TCP/IP, which does not work in these deployment scenarios because it requires the R-MACPHY device to have an IP address for management.**

L2 Management of R-MACPHY Device (3)

- IEEE 1904.2 fixes this problem by using a L2 management channel which carries OAM messages across multiple L2 hops.
- IEEE 1904.2 places OAM message in a L2 frame that uses a unicast destination address instead of the multicast address used by the OAM messages.
- Using IEEE 1904.2 also allows L2-only devices to identify and exclude the management and control traffic from subscriber's SLA quotas.
- In addition, moving management and control traffic in the access network out of the "user channel" avoids impact to user traffic statistics.
- If the controller uses proper extensions to OAM messages to manage R-MACPHY device, then using IEEE 1904.2 management channel is an option to provide a standard L2 management for R-MACPHY device that is multiple L2 hops away from the controller.

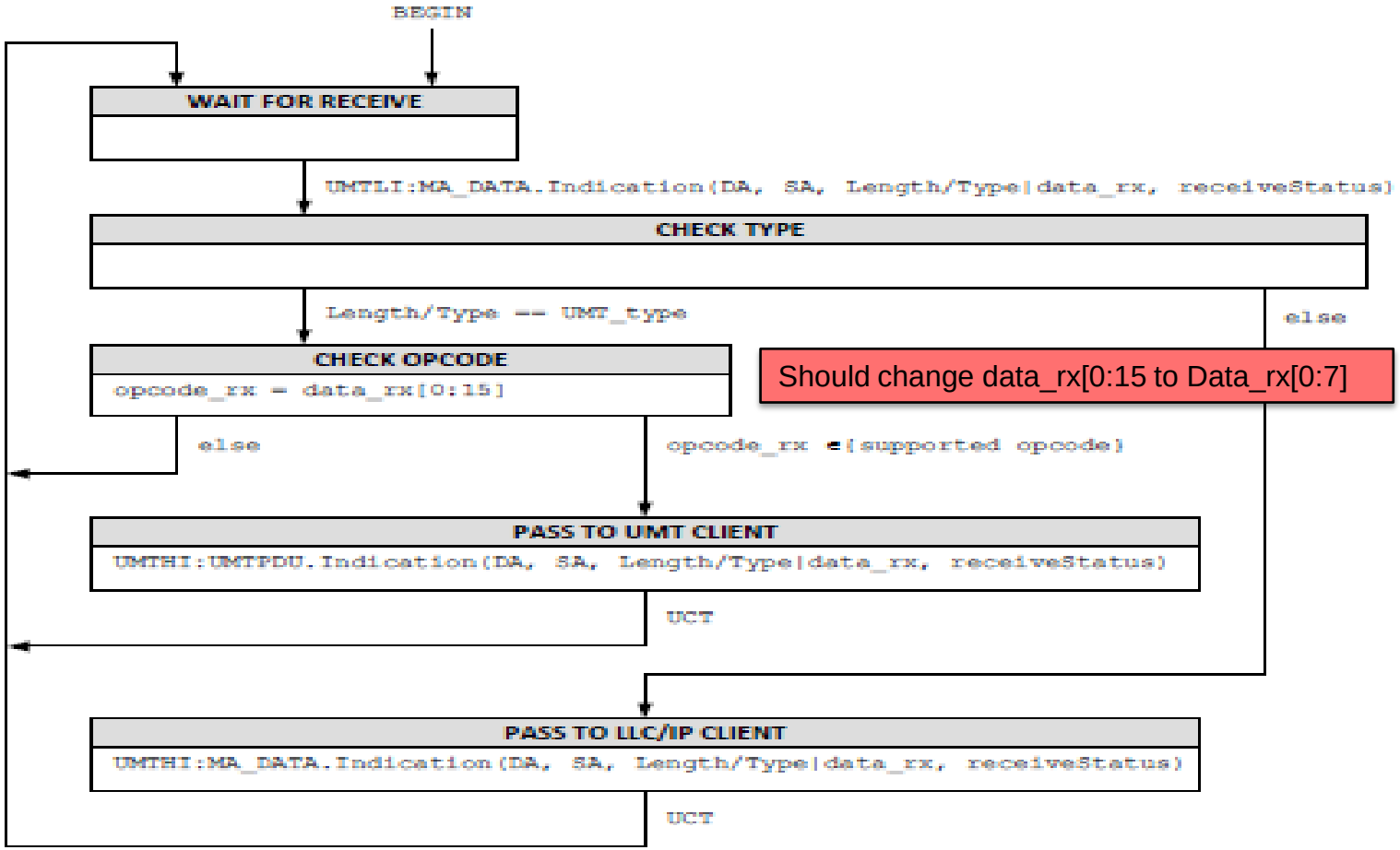
2 IEEE 1904.2 Activation Proposal

IEEE 1904.2 Frame Format



Has been accepted as baseline proposal
In Oct 2014 meeting.

UMT Parser and Multiplexer State Diagram

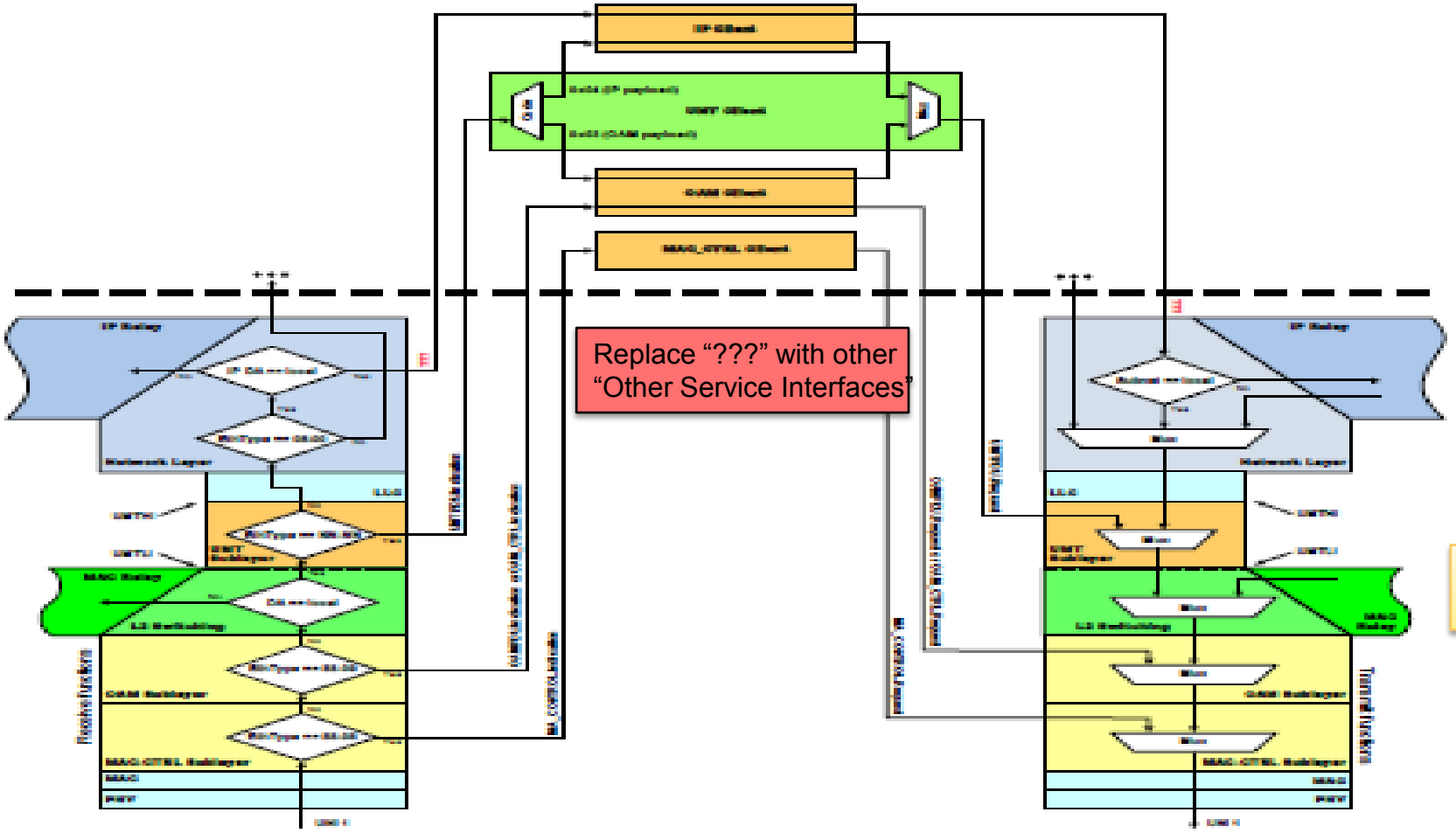


Should change data_rx[0:15 to Data_rx[0:7]

This diagram has been accepted as a baseline proposal in Feb 2015 Meeting.

UMTLI – UMT Lower Layer Interface
UMTHI – UMT Higher Layer Interface

UMT Layering Diagram



Accepted as Baseline Proposal in Feb 2015b Meeting.

IEEE 1904.2 Draft

- **Initial Draft 0.2 is created in Dec 2014.**
- **Clause 4 “UMT Architecture” latest version was provided by Raz in June 2015.**
- **Virtualization use cases was provided and reviewed by Raz.**

Moving Forward ….

- **Only focus on Frame format for the first release of IEEE 1904.2 specification.**
  - This will satisfy all known use cases.
- **Discovery protocol can be deferred to next release of this standard, once the requirements are finalized.**
  - Given the requirements of the discovery protocol, we need to explore using IEEE 802.1AB perhaps with some extensions or new TLVs.
- **Update IEEE 1904.2 PAR to address the use cases we have.**
- **Create Next IEEE 1904.2 Draft which captures all use cases, the baseline proposals and UMT architecture.**

MOTION

Resume the operation of IEEE 1904.2 with focus on frame format in the first revision of the standard. The 1904.2 discovery protocol will be deferred to next revision of the standard.

- **Moved:**
- **Seconded:**
- **(Technical , > 2/3)**

THANK YOU