mipi® DEVCON

SreekanthVarma Dantuluri
Western Digital

Dynamic Reconfiguration of UniPort-M Compliance Host

2017 MIPI ALLIANCE DEVELOPERS CONFERENCE

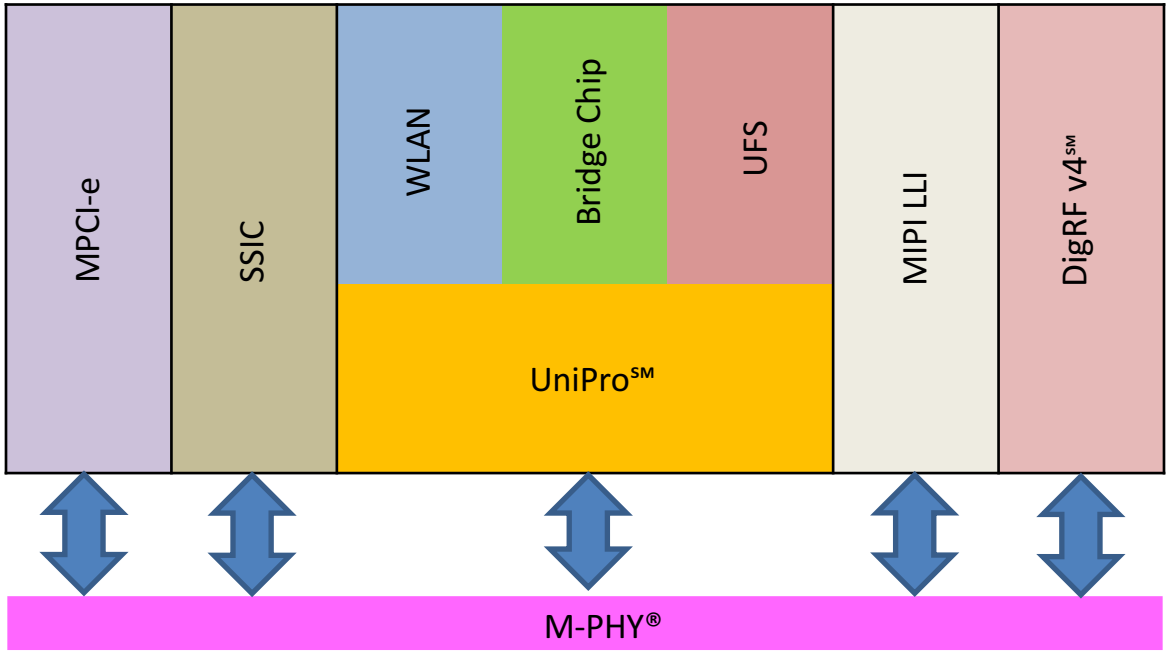
BANGALORE, INDIA
MIPI.ORG/DEVCON

Background

- Day by Day we are slowly moving through the process of MIPI Globalization in Mobile Industry by converting all the available interfaces.
- In this process we have few Peripherals with common Interface i.e. MIPI UniPort-M = MIPI UniPro℠+ MIPI M-PHY®

© 2017 MIPI Alliance, Inc.

Background



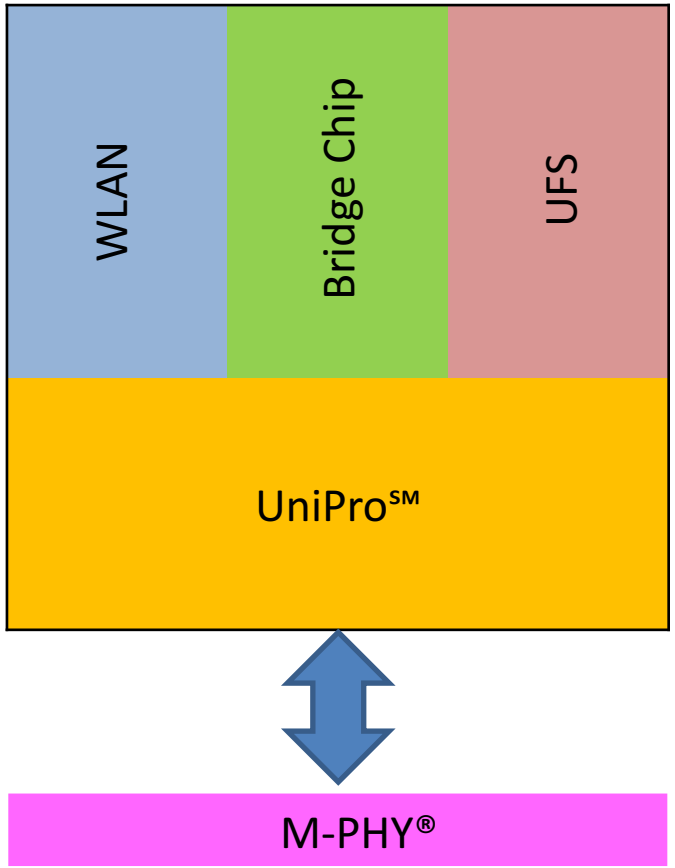
© 2017 MIPI Alliance, Inc.

Background

- By using this common interface as a key element, am interested in developing the common host platform for validation of all the MIPI UniPort-M based peripherals.

© 2017 MIPI Alliance, Inc.

Background



© 2017 MIPI Alliance, Inc.

Known Limitation

- Based on this point, even though silicon vendors are ready with MIPI controllers (i.e. DUT's) its taking huge time to develop Host Platforms for Validation of millions of DUT's.

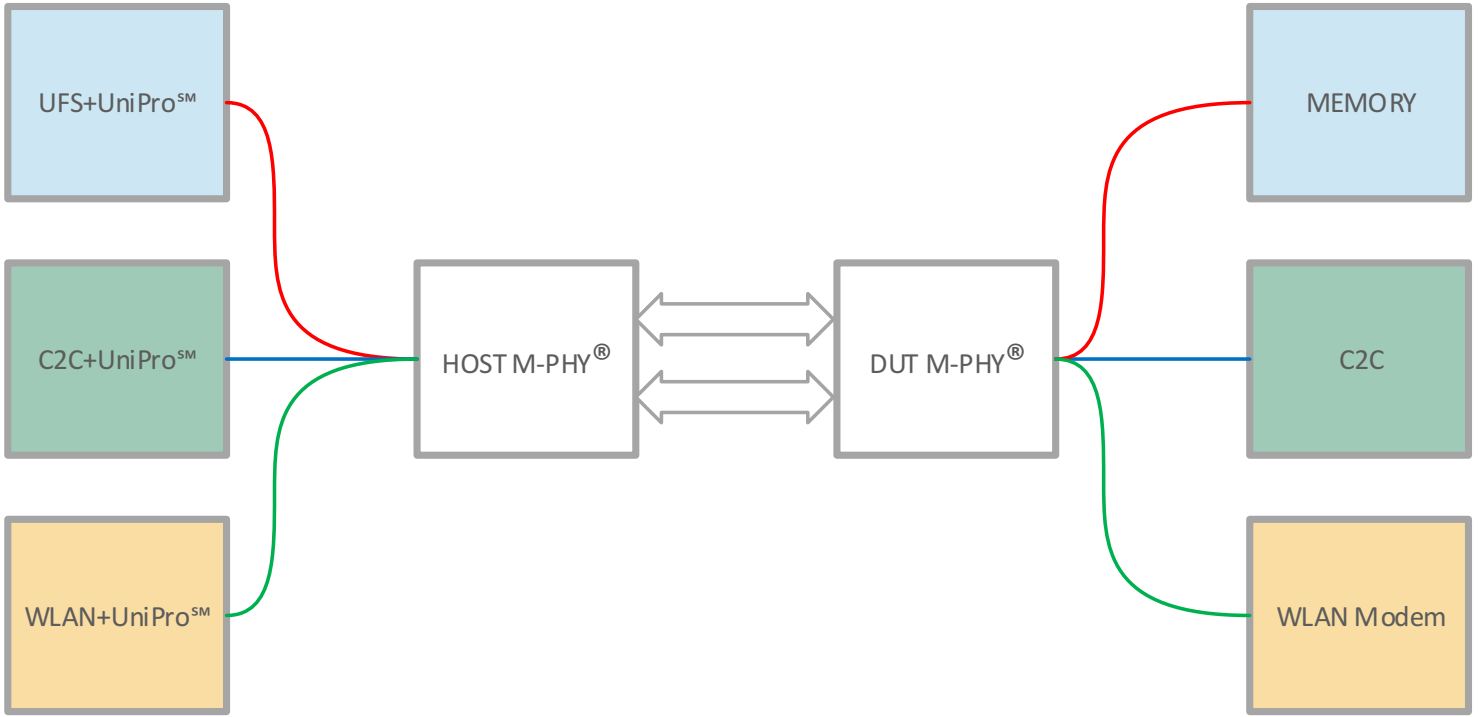
© 2017 MIPI Alliance, Inc.

How to overcome this limitation?

- From this observation am coming up with a **Reconfigurable Host for all UniPort-M** based peripherals like Chip 2 Chip (i.e. IPC), WLAN, Storage (i.e. UFS).By using this platform we can switch between the host protocol's on the fly, between IPC , WLAN and UFS.

© 2017 MIPI Alliance, Inc.

System Level View



© 2017 MIPI Alliance, Inc.

Benefits of this Platform

- The major advantage of designing this kind of host platform was to reduce the HW development time for Protocol specific Host and cost as well.
- We can easily upgrade's the Host Protocol according to the latest changes in MIPI Specification.
- Easy to debug FPGA when compared with ASIC.

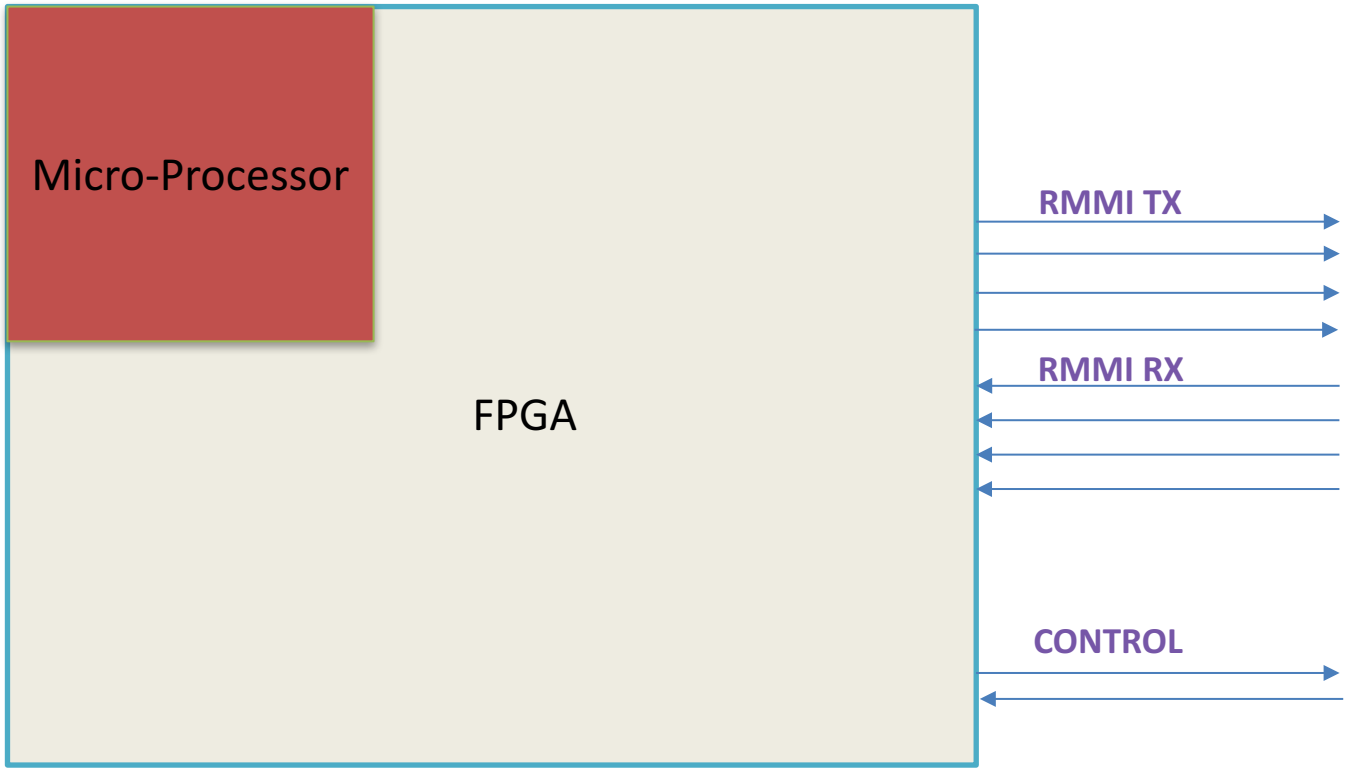
© 2017 MIPI Alliance, Inc.

Benefits of this Platform

- Can validate all the Power Saving Technique's described in MIPI specification.
- We can control and mount different Power Modules on this platform so as to support different voltage requirement's as per specification.

© 2017 MIPI Alliance, Inc.

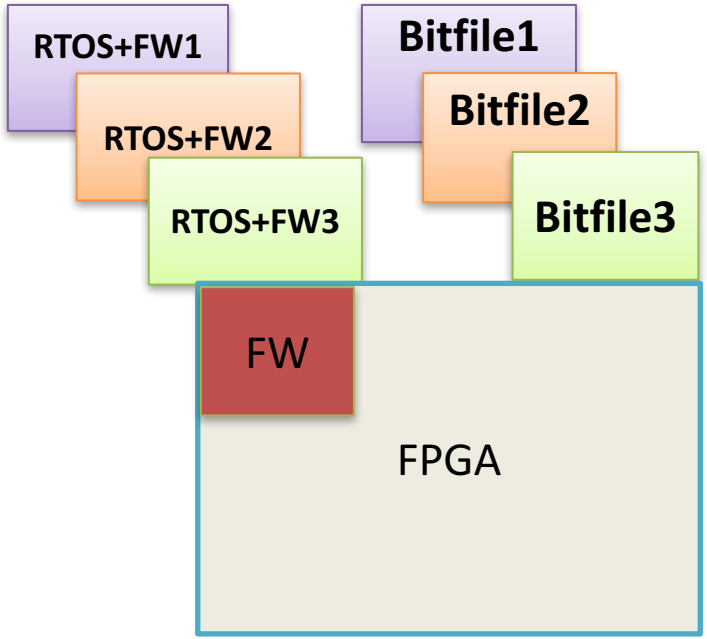
Reconfigurable Host Platform



© 2017 MIPI Alliance, Inc.

Reconfigurable Host implementation details

- All the protocol specific combinations will be pre-loaded in Flash.
- Host can re-configure from one protocol to other just by switching between the preloaded images.(i.e. RTOS/OS + FW + Bitfile)



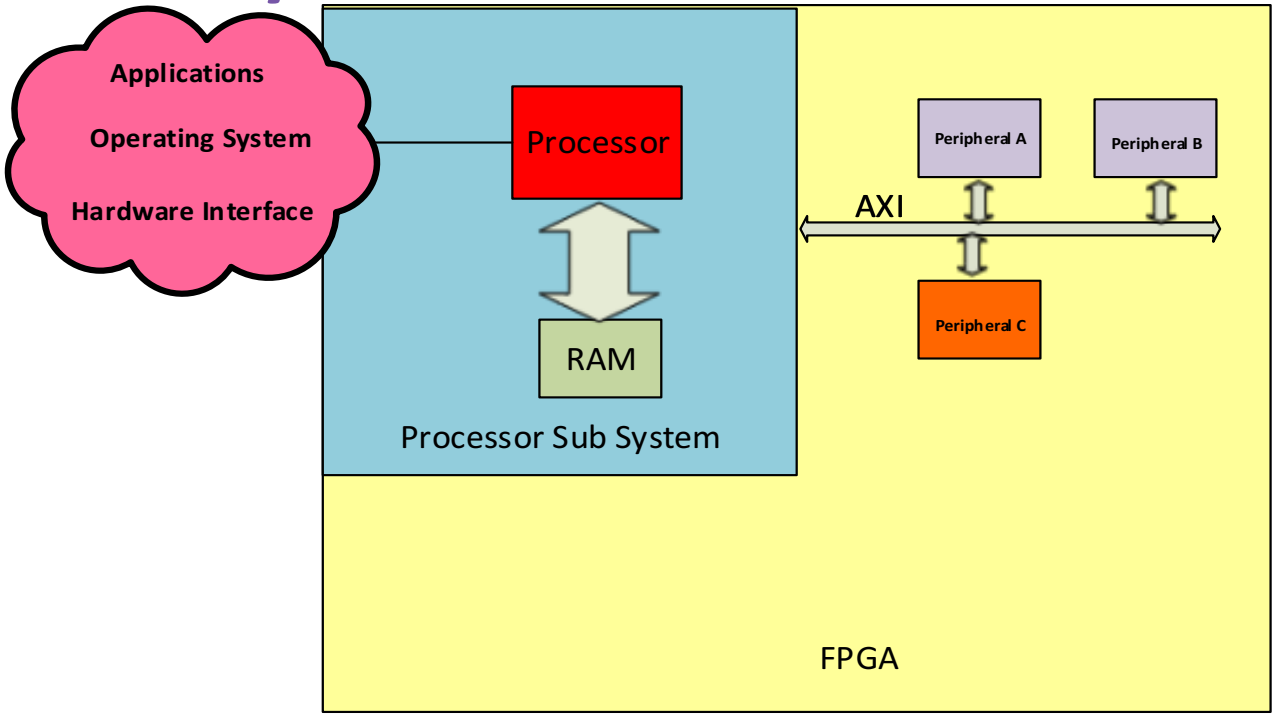
© 2017 MIPI Alliance, Inc.

Advantages of this Solution

- Single HW resource can be used to Validate multiple protocols.
- Different BSP can be developed, specific to the different OS or RTOS according to the requirement from Architecture.
- Parallel FW Teams can work on different peripheral interfaces.

© 2017 MIPI Alliance, Inc.

Internals of System



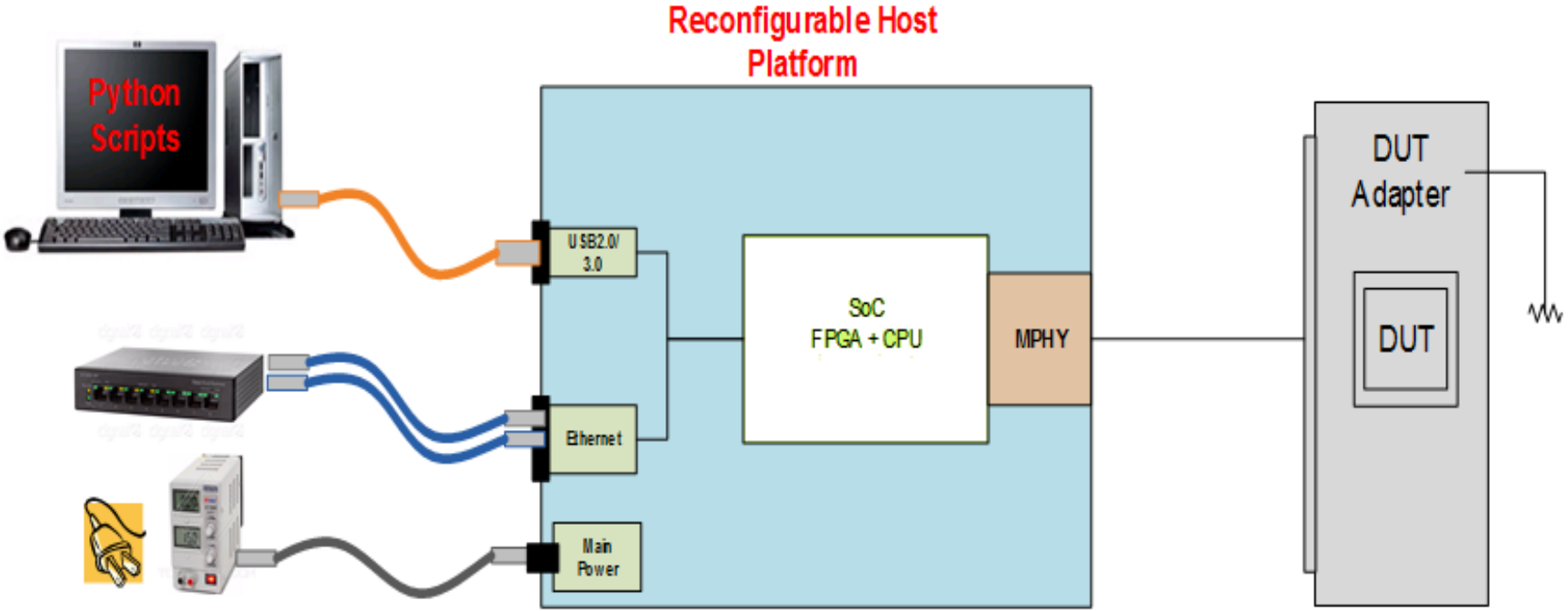
© 2017 MIPI Alliance, Inc.

Internals of System

- The SW-HW interface can be varied from Protocol to Protocol requirement like AXI, APB, AHB…etc
- As of now we can handle all these kinds of BUS interface by using bridges.

© 2017 MIPI Alliance, Inc.

Complete System Level View



© 2017 MIPI Alliance, Inc.

Complete System Level View

- By using Reconfiguration Technique we can reduce the HW cost and do the Effective utilization of HW resources.
- We can maintain the Host Platform Form Factor so that chambers can also be common for different protocols.

© 2017 MIPI Alliance, Inc.

Q&A

© 2017 MIPI Alliance, Inc.

mipi®
DEVCON

THANK YOU

2017
MIPI ALLIANCE
DEVELOPERS
CONFERENCE

BANGALORE, INDIA

MIPI.ORG/DEVCON