LAPP IPMC STATUS

9th xTCA IG Meeting
25 February 2015

Guy Perrot on behalf of the LAPP Team

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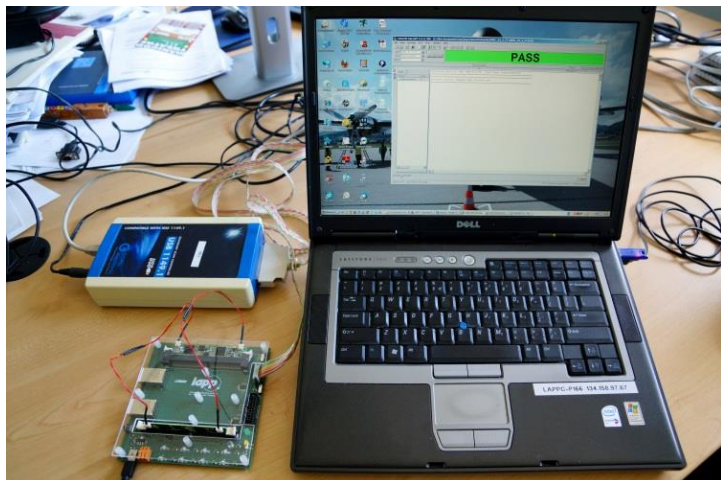
Outline

- **Hardware**
- **Firmware & Tools**

Hardware

- **Hardware is V2 Rev. 2**
- **Tests are done with Boundary Scan:** 90% of BS nets covered, 80% of all nets.
- **120 boards have been produced and tested (100 requested) in 2014.**
  - Only one with pbs (MicroC replaced).
  - 24 have been configured (MAC address and firmware) and 22 delivered.
- **Future productions: 60 in 2015 (on hold) & 60 in 2016 (as of today).**
- **Clients: ATLAS FTK, LAr & L1Calo (e/j/g/FEX, Topo); CMS, BELLE.**
- **Hardware documentation:** http://lappwiki.in2p3.fr/twiki/bin/view/AtlasLapp/ATCA

Firmware (Software) & Tools

- **ICARE-00-00-07 available very soon. (ICARE-00-00-06 online)**
  - tools for compiling, loading, debugging and executing the IPMC software.
  - source code (ICARE framework) for the IPMC.
  - Many examples for sensors, SDR/FRU…
- **IPMC firmware**
  - Management of ATCA blade
    - FRU/SDR, Sensors, Backplane E-Keying.
  - TCPIP on 10/100 MbE for IPMC firmware update (proprietary solution).   **New**
  - What is not yet integrated:
    - AMC Management.
    - JTAG Master.
- **Tools & Code will be available in chapter Software ATCA IPMC here:**
  http://lappwiki.in2p3.fr/twiki/bin/view/AtlasLapp/Informatique
- **Discussions on going to get help for completing the firmware.**

- **It will take sometime before missing features are implemented due to lack of human resources (six months?)**

Firmware Update

- **Factory Firmware will be initially stored in both the IPMC flash memory and micro-controllers internal flash memory.**

- **The factory firmware always remains available in the IPMC flash memory.**

- **The micro-controllers will revert to it after 3 failing consecutive attempts of upgrading the internal flash memory.**

- **Firmware update requires a new firmware in the IPMC CPLD.**
  - Version 5 soon to be available from the ICARE twiki page.
  - Requires the USB-JTAG Adaptor and openOCD tool for upgrading.
  - For those requiring it, IPMCs will be exchanged if you do not want to do the update yourselves.

Summary

- **The IPMC hardware is in production without any problem.**

- **Firmware (software) is late and will take time.**

- **Discussions are on going to get help.**

Backup Slides

REQUESTS

Experiment/Subdetector	Contact	June 2014	June 2015	June 2016	June 2017	Distribution Aug14 Number	Serial Nbs		
ATLAS FTK/ CMS L1 tracking trigger R&D	Jinlong Zhang/Tiehui Liu/Alberto Annovi	63	43			10	032 --> 041	5 (032-036) given to Jinlong 3rd Dec14	2 (037,038) given to Rex 3rd Jan15
ATLAS FEX ATCA Hub	Wade Fisher	1	7	18		1	31	Given to Yuri 11th Aug14	
ATLAS L1Calo eFEX	Ian Brawn	4	4	30		4	047 --> 050	Sent to Ian by DHL 8th Sept14	
ATLAS L1Calo FTM	Ian Brawn	3	5			3	051 --> 053	Sent to Ian by DHL 8th Sept14	
ATLAS L1Calo Topo	Ulrich Shaffer	5		4		5	042 --> 046	Given to Eduard 9th Sept14	
ATLAS L1Calo jFEX	Ulrich Shaffer	0		10					
ATLAS L1Calo gFEX	Michael Begel	2	2	4			55	One given to Hucheng 5th Nov14	
ATLAS LAr	John Hobbs	4					54	One given to John 5th Nov14	
LHCB	Jean-Pierre Cachemiche	3							
BELLE	Igor Konorov	15				2	078, 147	Given to Igor 7th Nov14	
Total		**100**	**61**	**66**		25			

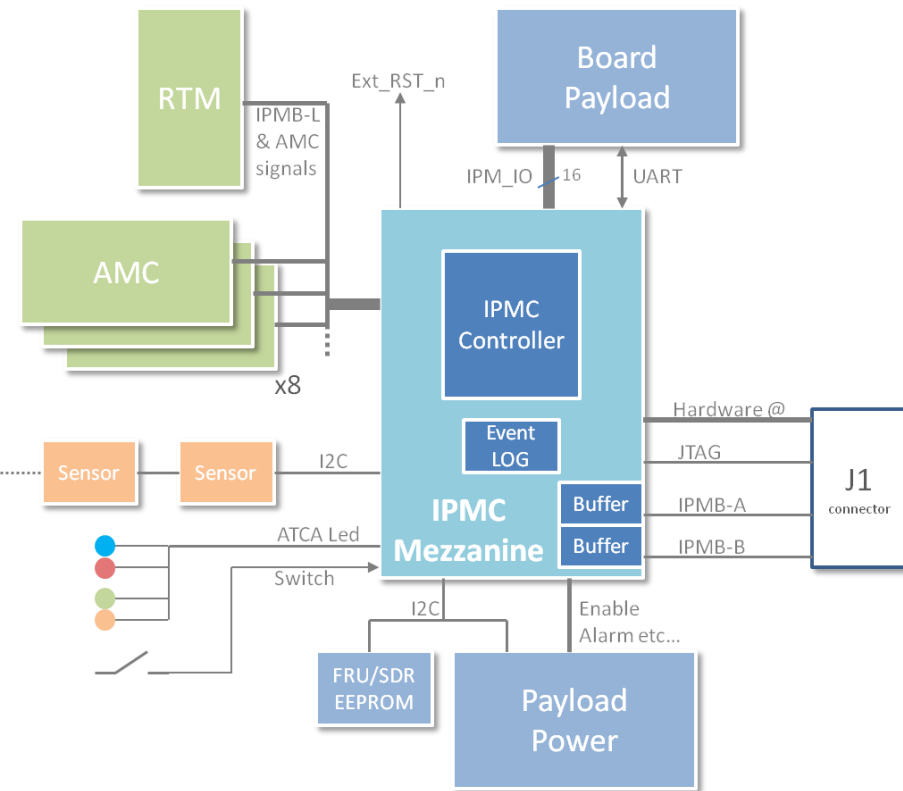FTK/Pulsar2:   gFEX: +1 ?
43 Summer

FTK/Pulsar2:
3 April
7 June
53 Autumn

BELLE:
2 June
13 Autumn

Table produced 18/3/2014 updated 31/7/2014 (BELLE) updated 11/8/14 for distribution August 14
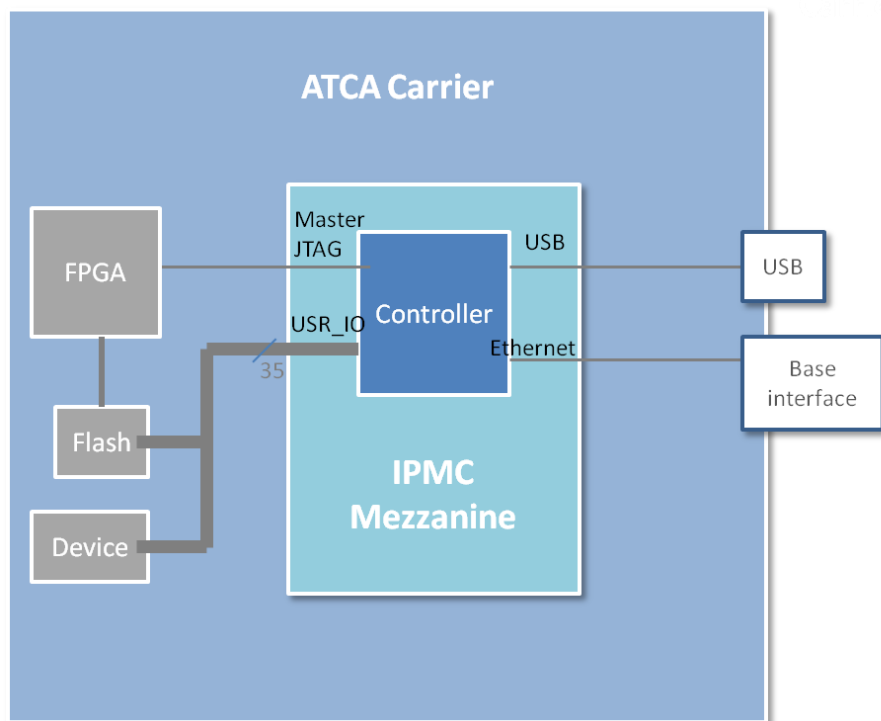
Updated 24/9/14 for gFEX and modified 5/11/2014 for sharing between gFEX and LAr

IPMC Features

- **IPMC features**
  - IPMBus with on board buffers, Hardware address detection
  - Hot Swap management with ATCA Leds and front panel switch
  - Management of up to 8 AMC + RTM
  - On board Event LOG
  - FRU & SDR access via I2C
  - Access to ATCA board sensors via I2C
  - IPM_IO: Configurable User Signals for Payload management, ekeying …

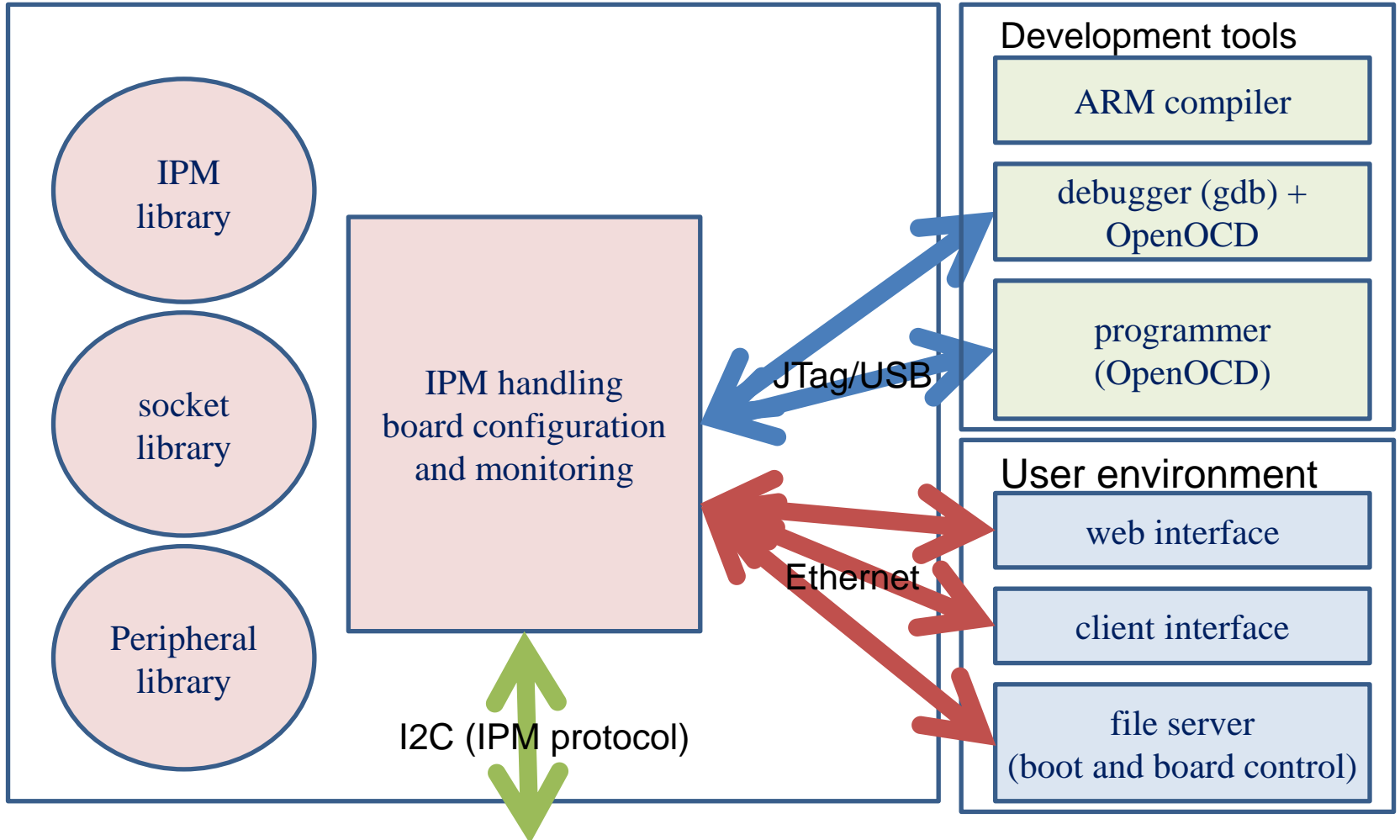⇒**Reduce number of devices and save time for ATCA carrier designers**

Non-IPMC Features

- ## NON-IPMC features
  - **Ethernet**
  - **JTAG Master**
  - **Custom interface**
    – Up to 35 user IO
  - **USB port**
  - **IPMC firmware upgrade**
    ⟶auto back to Factory Firmware if core freezes

⟹**Applications:**
- **Carrier FPGA or µC firmware upgrade via Ethernet**
- **Interface between Ethernet / USB and user defined bus**
- **Etc… (user ideas)**

Software

- **Only Open Source Software.**