LAPP IPMC STATUS

Lar Week

23 September 2014

Guy Perrot on behalf of the LAPP Team

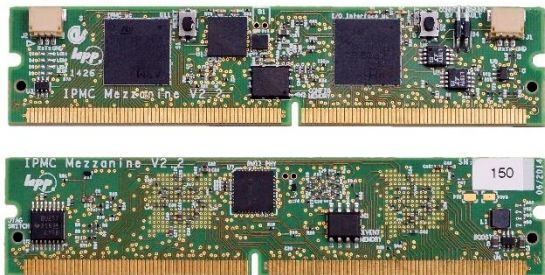F. Bellachia, S. Cap, J. Fragnaud, N.Letendre, G.Perrot, I. Wingerter-Seez

Outline

- **Hardware**
- **Firmware & Tools**
- **CERN approach**

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).**
  - Only one with pbs (MicroC replaced).
  - 24 have been configured (MAC address and firmware). Delivered or to be delivered.
- **Future productions: 60 in 2015 & 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
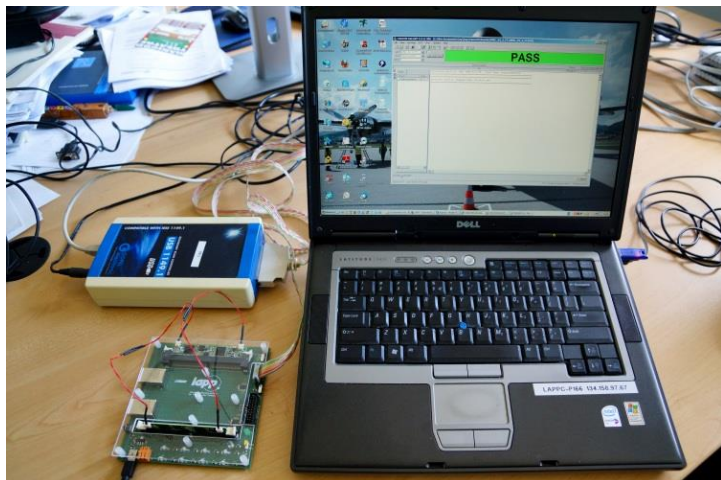
- **ICARE-00-00-06 available.**
  - tools for compiling, loading, debugging and executing the IPMC software.
  - source code (ICARE framework) for the IPMC.
  - Many examples for sensors, SDR/FRU…
- **Management of ATCA blade**
  - FRU/SDR, Sensors, Backplane E-Keying.
- **What is not integrated:**
  - AMC Management.
  - TCPIP on 10/100 MbE for IPMC firmware update.
  - JTAG Master.
- **Tools & Code available in chapter Software ATCA IPMC here:**
  http://lappwiki.in2p3.fr/twiki/bin/view/AtlasLapp/Informatique

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

CERN Approach

- **Firmware is late and it will take some time to be completed .**
- **CERN is investigating an IPMC solution with Pigeon Point. Discussions have started on a licence price for CERN. Many things need to be understood.**
  - Licence price.
  - What you get for that.
  - Should an IPMC board based on the Pigeon Point hardware implementation be designed.
- **CERN has agreed that, should another IPMC board be designed by them, it would use the same connector and pin-out as the one we have.**

Summary

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

- **Firmware (software) is late and will take time if we do not get help.**

- **CERN is investigating a solution in parallel using the Pigeon Point hardware and firmware implementation.**

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	63	43			10	032 --> 041	Delayed until Oct14
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	Ian Brawn ?							
ATLAS LAr	John Hobbs	4						
LHCB	Jean-Pierre Cachemiche	3						
BELLE	Igor Konorov	15				2	078, 147	
Total		**98**	**59**	**62**		25		

FTK/Pulsar2:
3 April
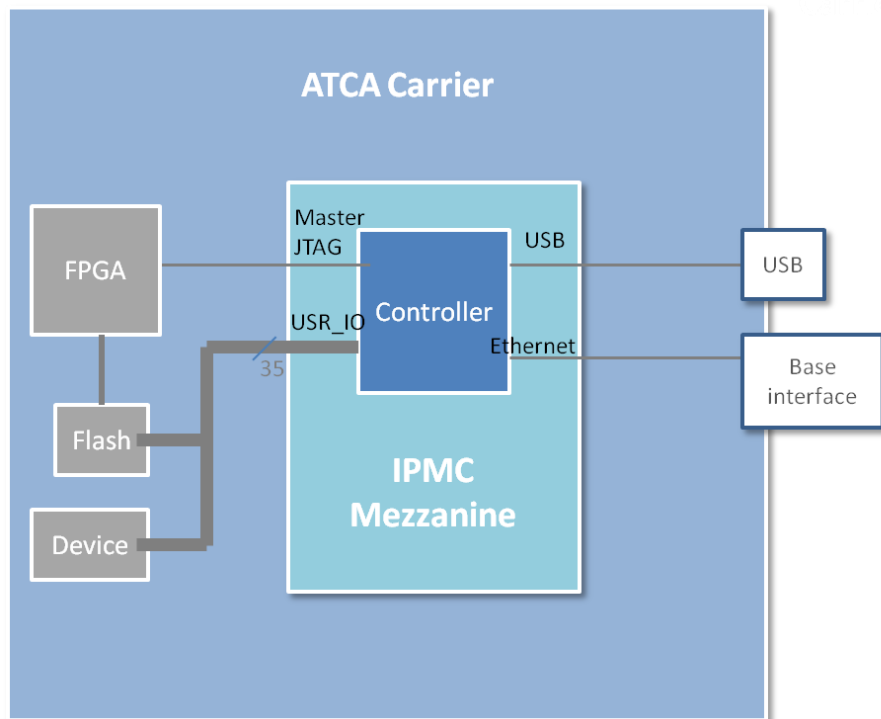7 June   FTK/Pulsar2:
53 Autumn   43 Summer
BELLE:
2 June
13 Autumn

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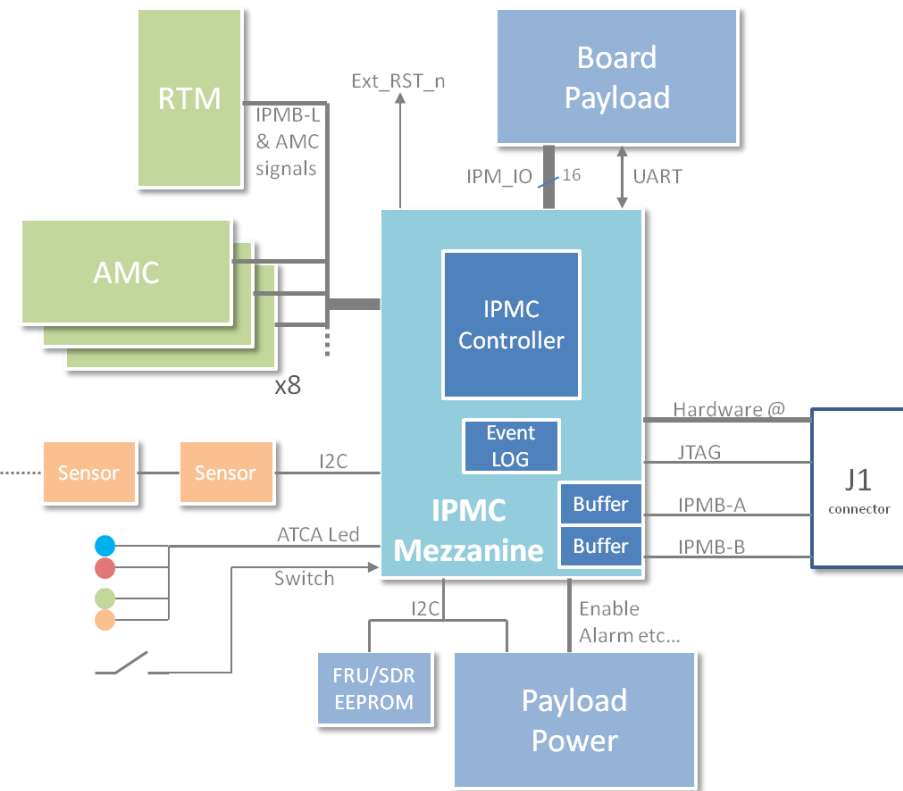
- ## IPMC features
  - IPMBus with on board buffers, Hardware address detection
  - Hot Swap management with ATCA Leds and front panel switch
  - Management of up to 8 AMC + RTM
  - On board Event LOG
  - FRU & SDR access via I2C
  - Access to ATCA board sensors via I2C
  - IPM_IO: Configurable User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

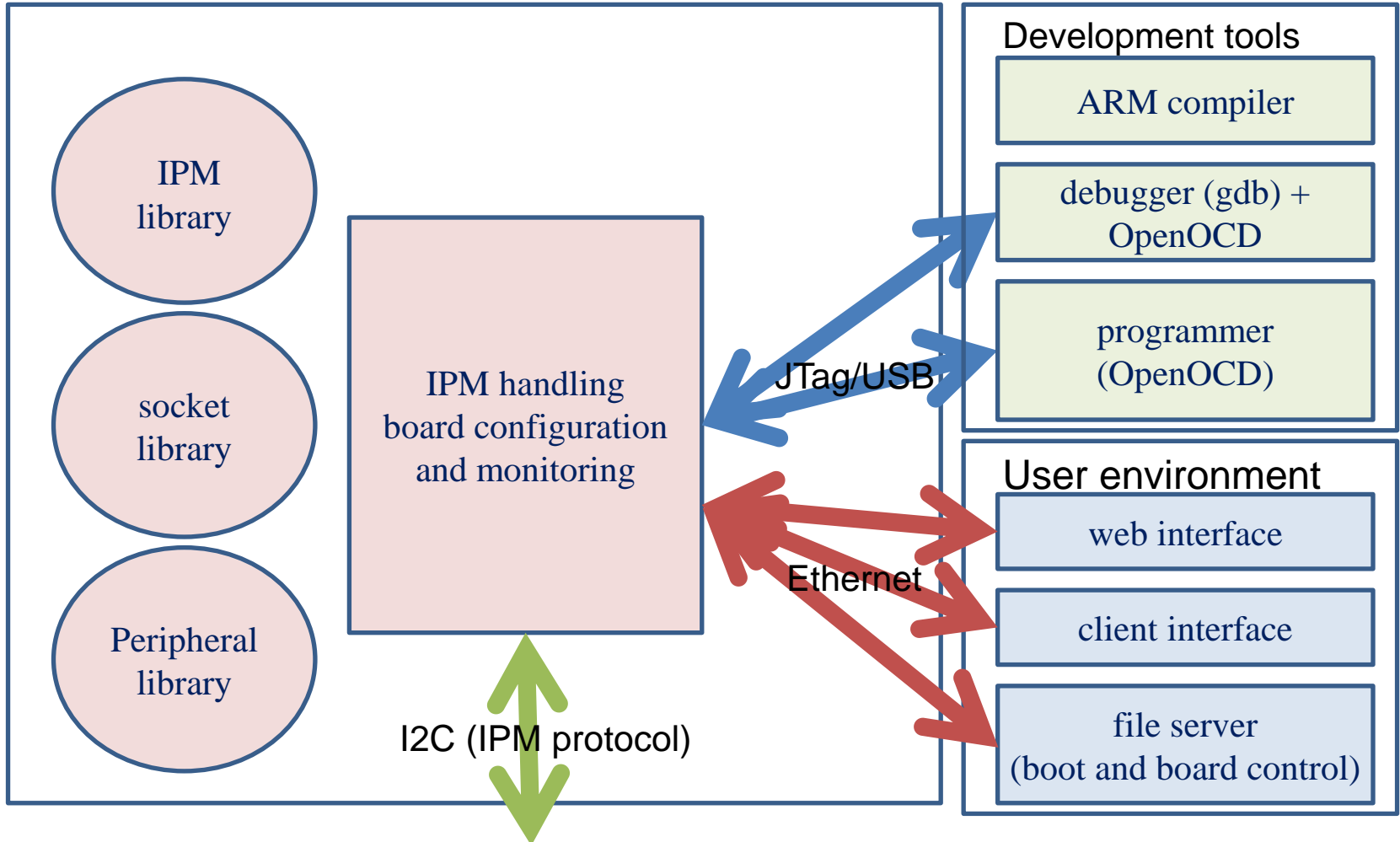⇒**Reduce number of devices and save time for ATCA carrier designers**

Non-IPMC Features

ATCA Carrier

FPGA — Master JTAG — Controller — USB — USB

USR_IO — 35 — Ethernet — Base interface

Flash

Device

IPMC Mezzanine

- ## 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

Development tools
- ARM compiler
- debugger (gdb) + OpenOCD
- programmer (OpenOCD)

IPM library

socket library

Peripheral library

IPM handling board configuration and monitoring

JTag/USB

Ethernet

I2C (IPM protocol)

User environment
- web interface
- client interface
- file server (boot and board control)

• **Only Open Source Software.**