

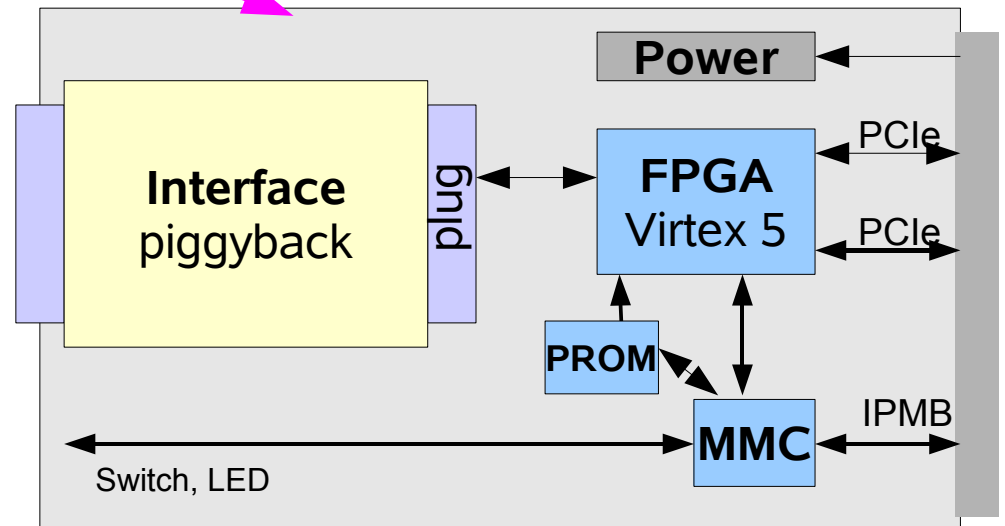
ATCA family as a new electronics standard
and **High Availability**
for **XFEL**
near future plans

Kay Rehlich, DESY

- Running a complete system in 2007
 - ➔ ATCA and μ TCA: crate, switch hub, CPU, IO
- Is ATCA the right choice for XFEL?
 - ➔ Enough modules available?
 - ➔ Industrial support ok?
 - ➔ Can we build most of the system with this standard?
 - ➔ Right features for the XFEL?
 - ➔ Will the required software be available?
- Define a system design
 - ➔ What to implement in ATCA or μ TCA?

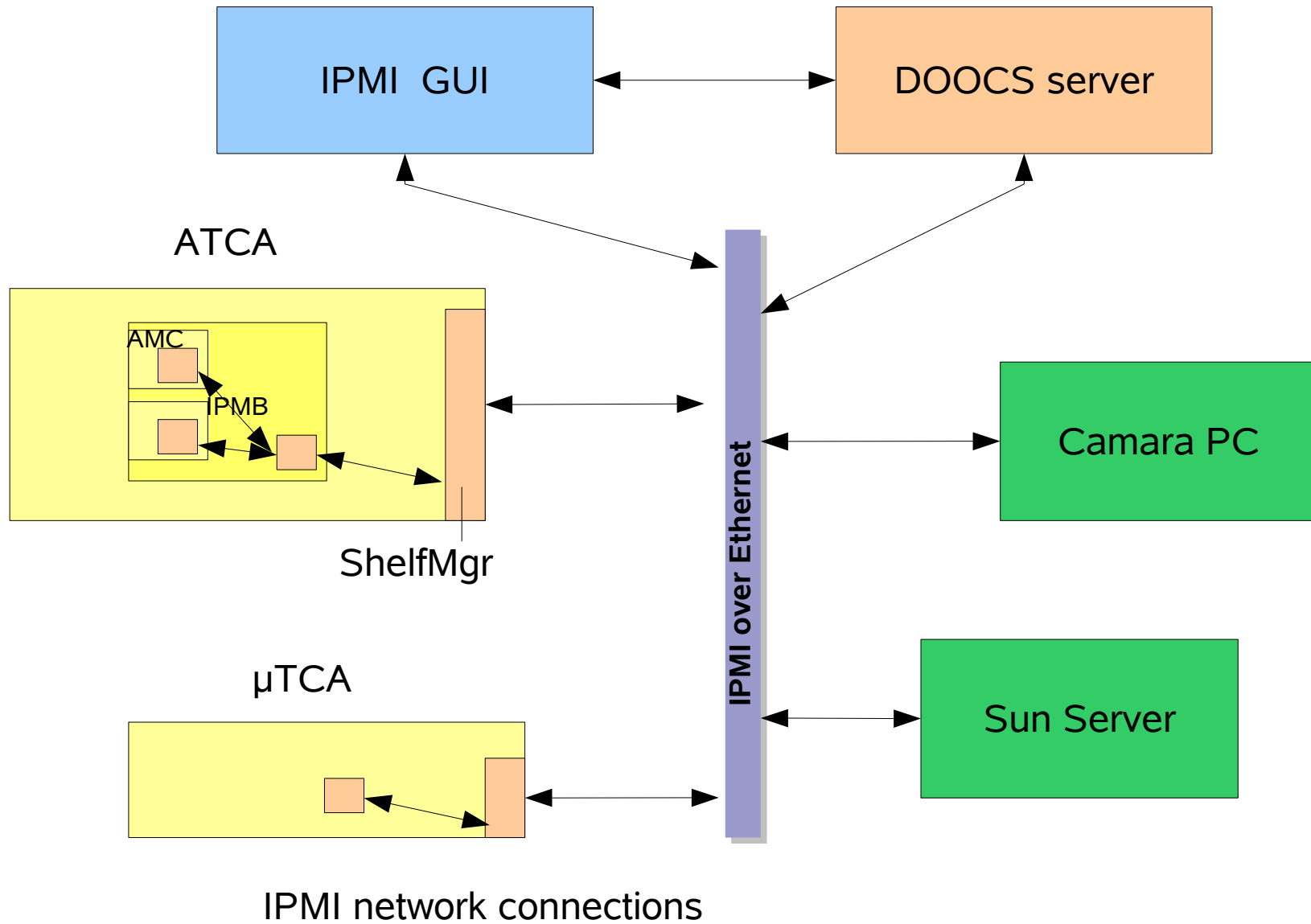
- Redundancy, when required
 - ➔ For parts with low MTBF: Power supplies, fans, ...
 - ➔ No single point of failures
- Single event upset handling
- Automatic failover
 - ➔ Test with Injector lasers of FLASH
- Remote management
 - ➔ Detection of faults or insane modules
 - ➔ Configuration management
 - ➔ Remote reset, reload, ...

- ATCA/ μ TCA COTS crates, CPU, hubs,..
- ADC from industry: 8ch, 100MHz, 14bit
- DESY AMC module developments
 - ➔ 'Universal' prototype board
 - ➔ ps Timing
 - ➔ Machine protection



- DOOCS servers for ATCA/ μ TCA
- System management interfaces and tools
 - ➔ IPMI software in MMC (is ready, needs to be tested)
 - ➔ Management GUI for the whole system
 - ➔ SAF: complex system management
- FPGA code
 - ➔ Standard control system interfaces for
 - Data processing
 - Commands and parameters
 - Timing and clocks

IPMI Software Plans

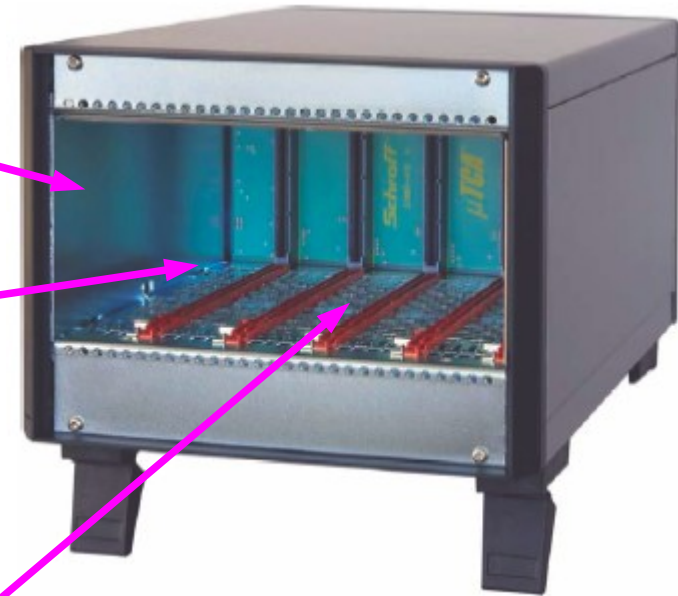


Frist Parts Mid June

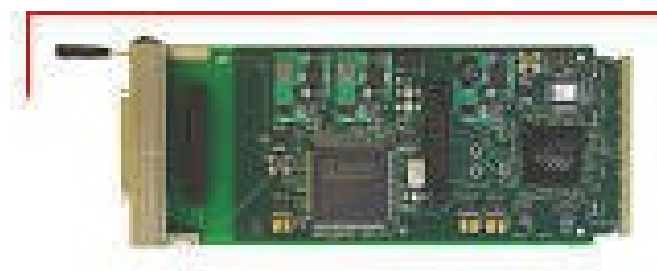
MCH (switch hub)



CPU



I/O (IP carrier, ADC)

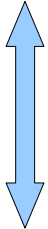


- Selection of
 - ➔ ATCA/ μ TCA options
 - ➔ Used protocols (GbE, PCIe, ...)
 - ➔ Usage of ports
 - ➔ AMC board size
 - ➔ IO connections
 - Front / rear
 - ➔ Connectors
 - ➔ Clock / Trigger
 - ➔ ...

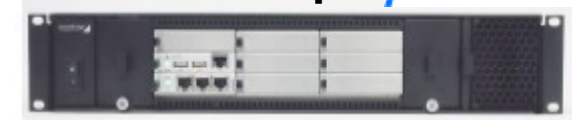


Advanced TCA

Application range



Simple μ TCA™



Port	Group	Signal	Application
Clk1	Clocks		
Clk2			
Clk3			ADC clock
0	Common	GbE	
1			
2		SAS/SATA	
3		SAS/SATA	
4	Fat Pipes	PCIe	
5		PCIe	
6		PCIe	
7		PCIe	
8			Local direct links
9			Local direct links
10			Local direct links
11			Local direct links
12	Extended		
13			
14			
15			
16			
17			
18			
19			
20			

- Hardware:

- ➔ Platform decision for the XFEL this year
 - VME --> ATCA / μ TCA
- ➔ AMC module development in progress

- Software

- ➔ Failover implementation and tests in DOOCS
- ➔ Remote System Management (IPMI) development
 - From module to Graphical User Interface
- ➔ FPGA code:
 - Interface to the control system
 - Download of FPGA code