

Prace związane z projektami akceleratorów liniowych

Agenda



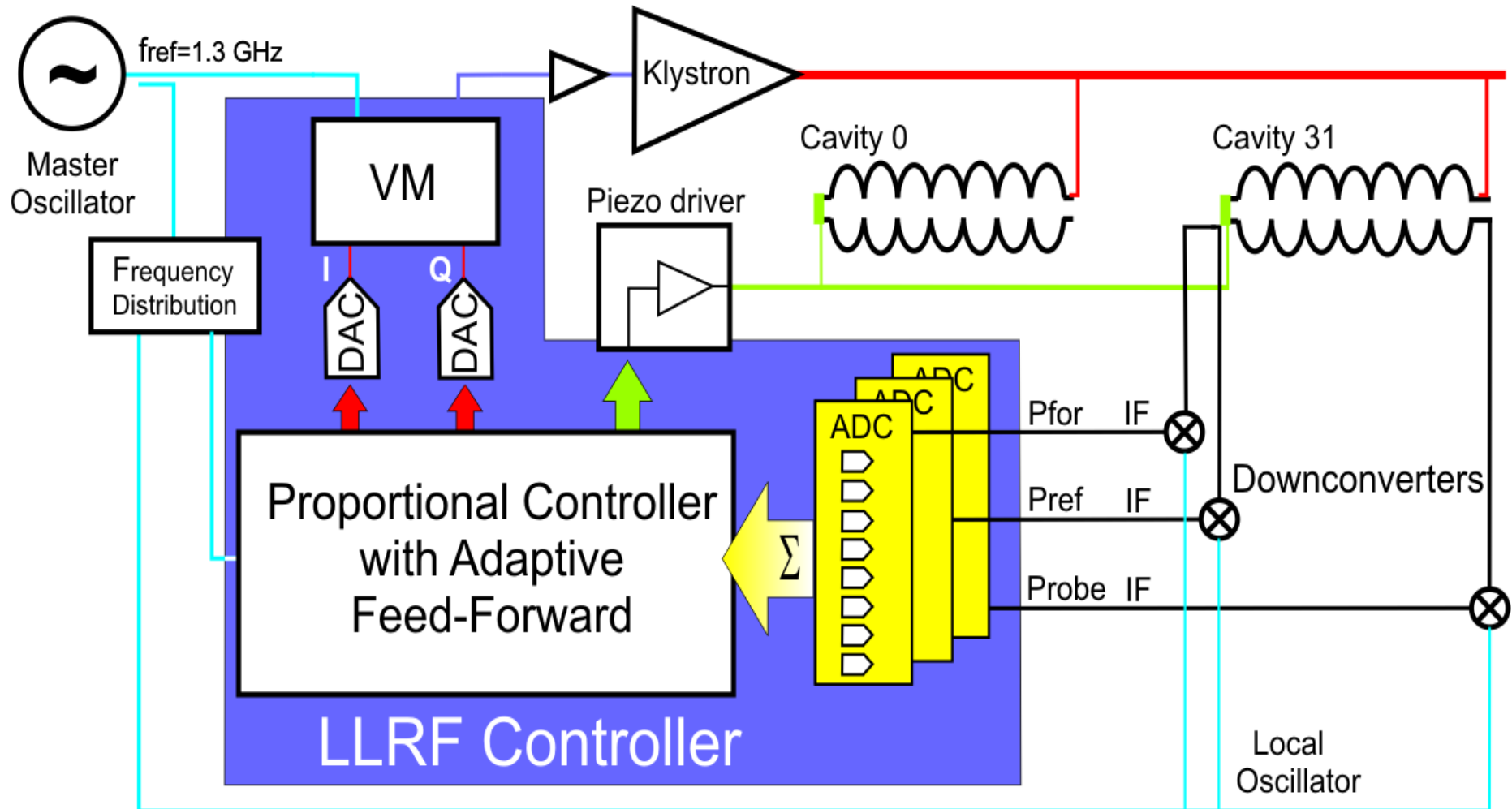
- ◆ Projekty związane z fizyką wysokich energii
- ◆ System sterowania akceleratorem FLASH/XFEL
- ◆ System diagnostyki i akwizycji danych tokamaka ITER

Projekty związane z fizyką wysokich energii



- ◆ Projekt CARE (CARE. Coordinated Accelerator Research in Europe),
- ◆ Projekt EUCARD (European Coordination for Accelerator Research and Development)
- ◆ Umowa bilateralna z DESY (FLASH/XFEL),
- ◆ Umowa z ITER,
- ◆ Współpraca z CERN i SLAC,
- ◆ Opracowanie nowych standardów PICMG xTCA for Physics.

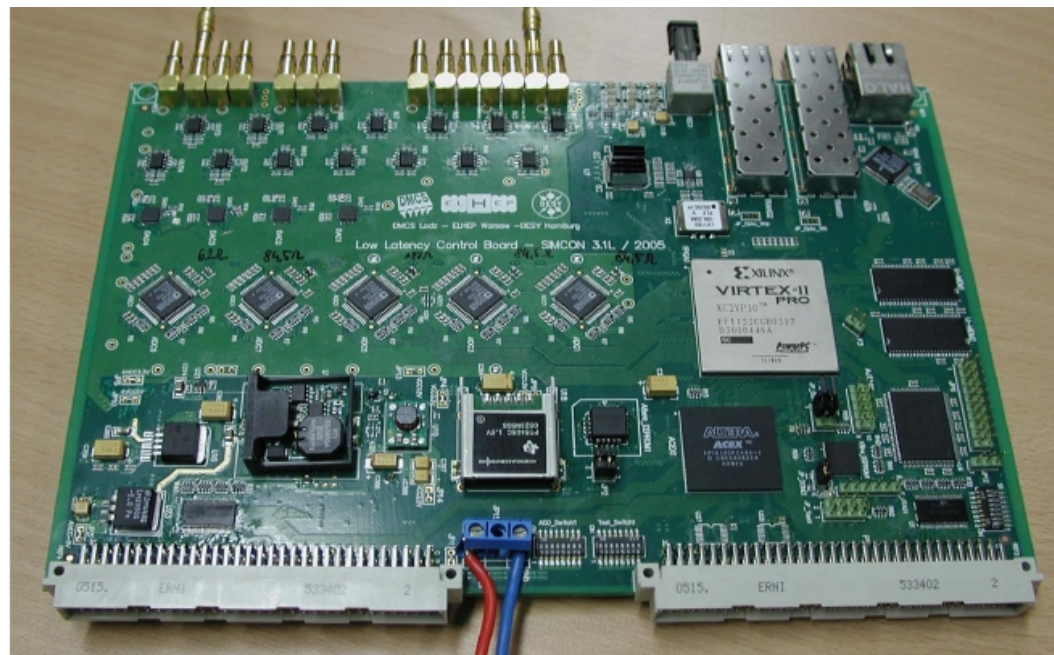
System sterowania LLRF akceleratorem



VME, czy xTCA ?



- ◆ System sterujący akceleratorem FLASH zbudowany jest w oparciu o architekturę VME.
- ◆ System LLRF akceleratora XFEL będzie zbudowany w oparciu o architekturę ATCA lub uTCA (MTCA).



Standard ATCA



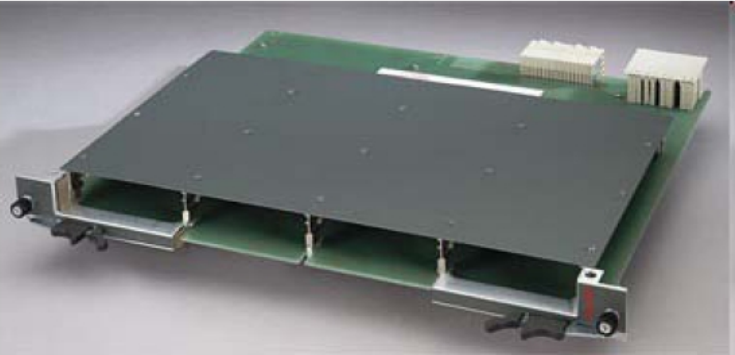
Open Modular
Computing Specifications

Advanced TCA[®]
Advanced MC[™]

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PICMG 3.0 – Advanced Telecommunications Computer Architecture

PICMG AMC.0 – Advanced Mezzanine Card



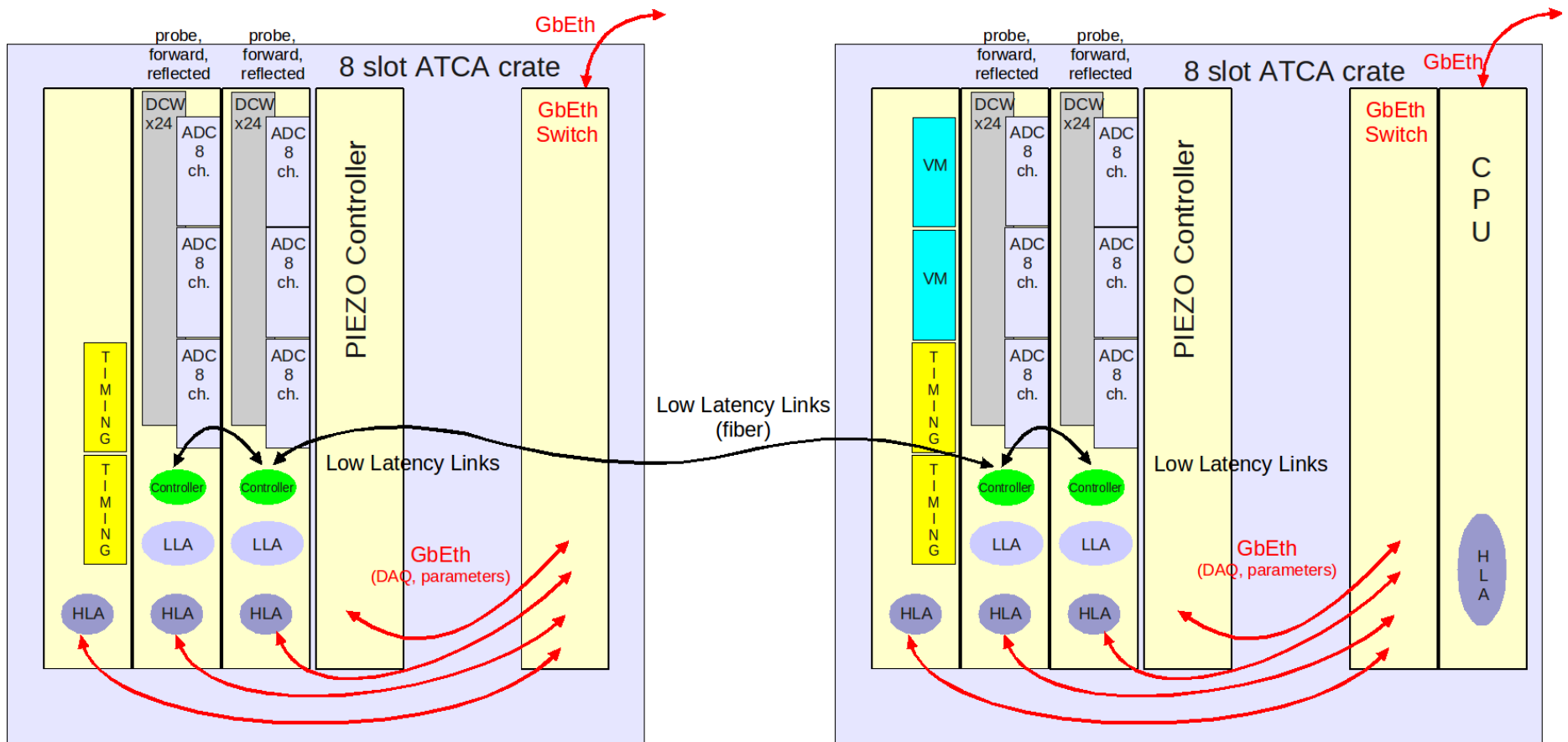
Standard ATCA vs uTCA



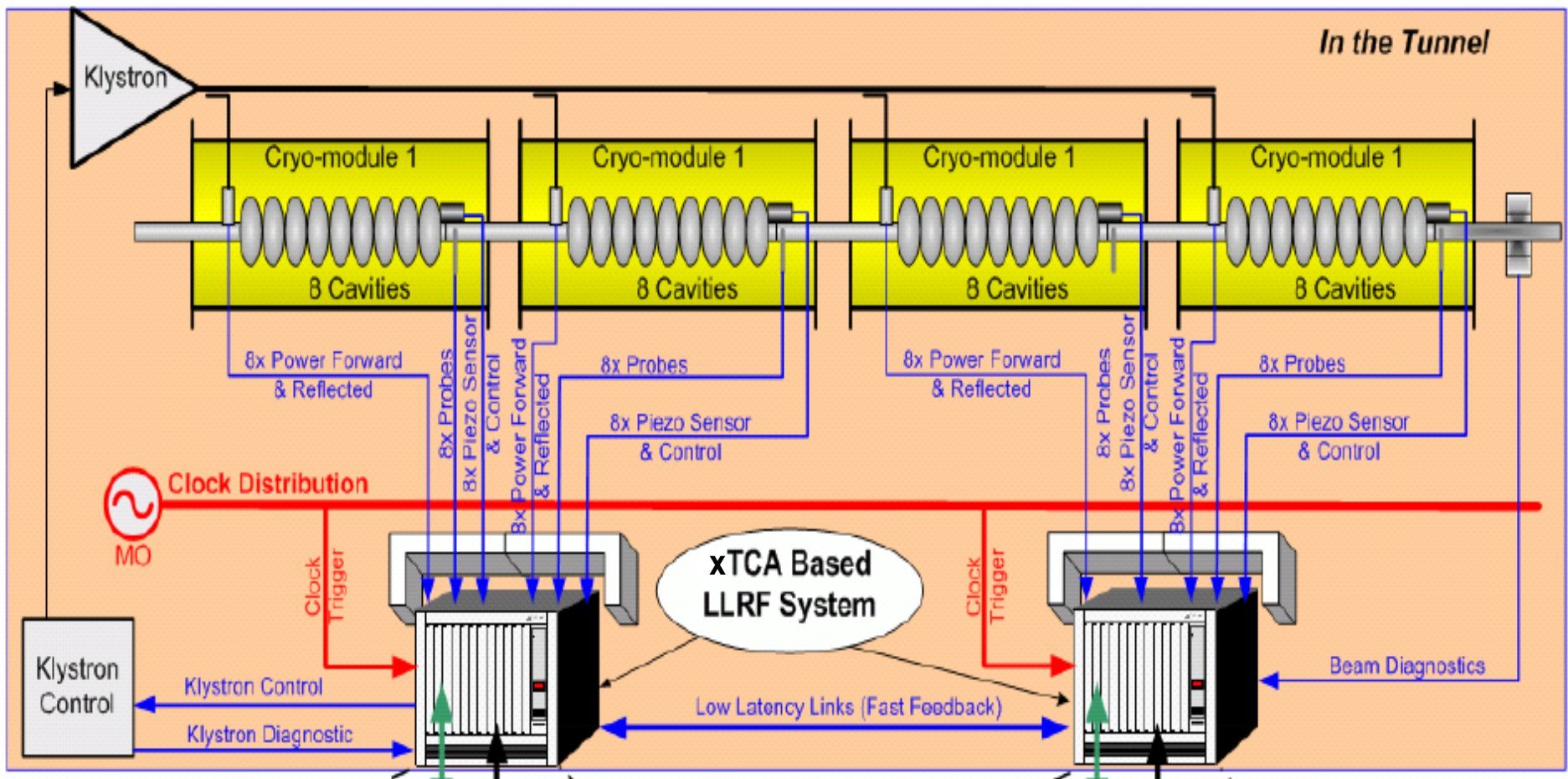
System LLRF zbudowany w oparciu o architekturę ATCA



ATCA based system for XFEL (distributed)



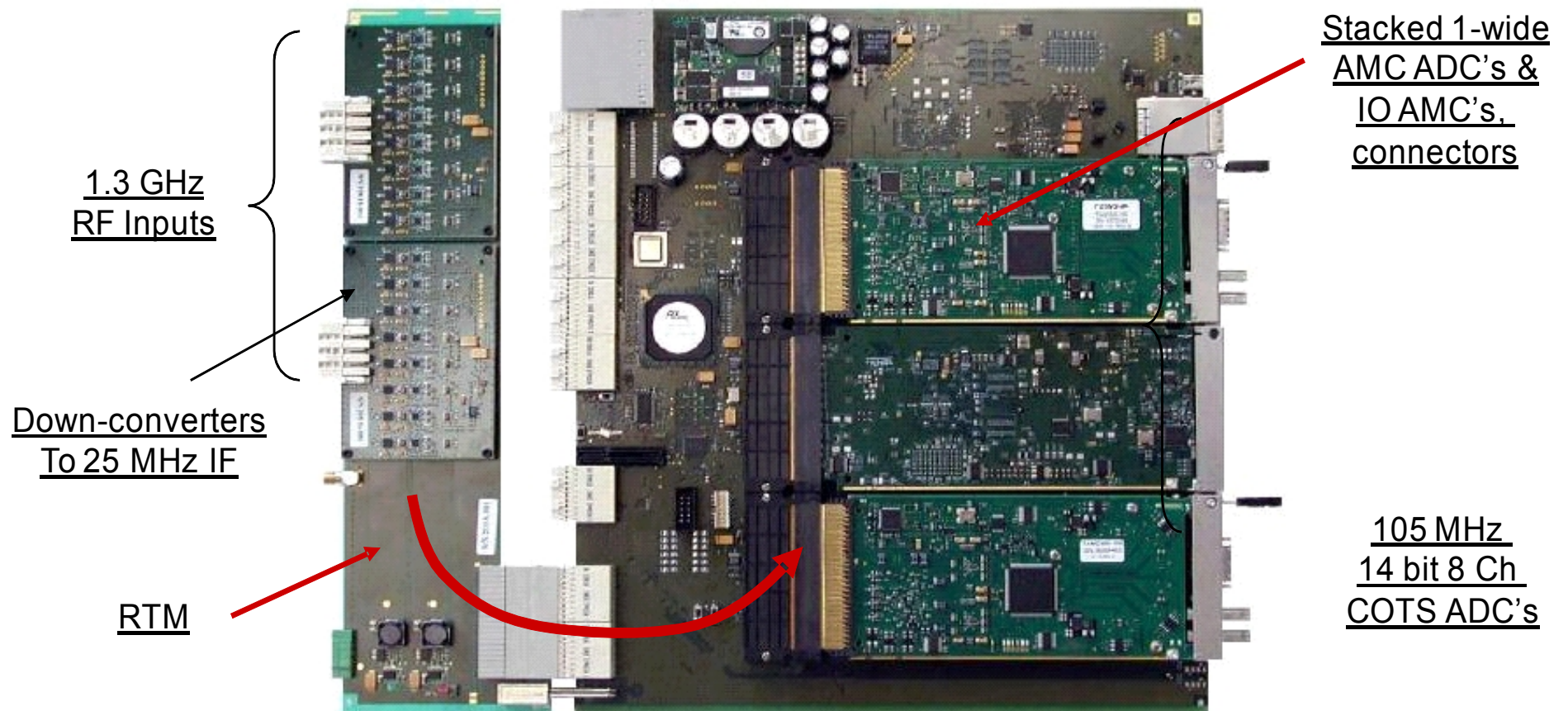
System LLRF zbudowany w oparciu o architekturę ATCA



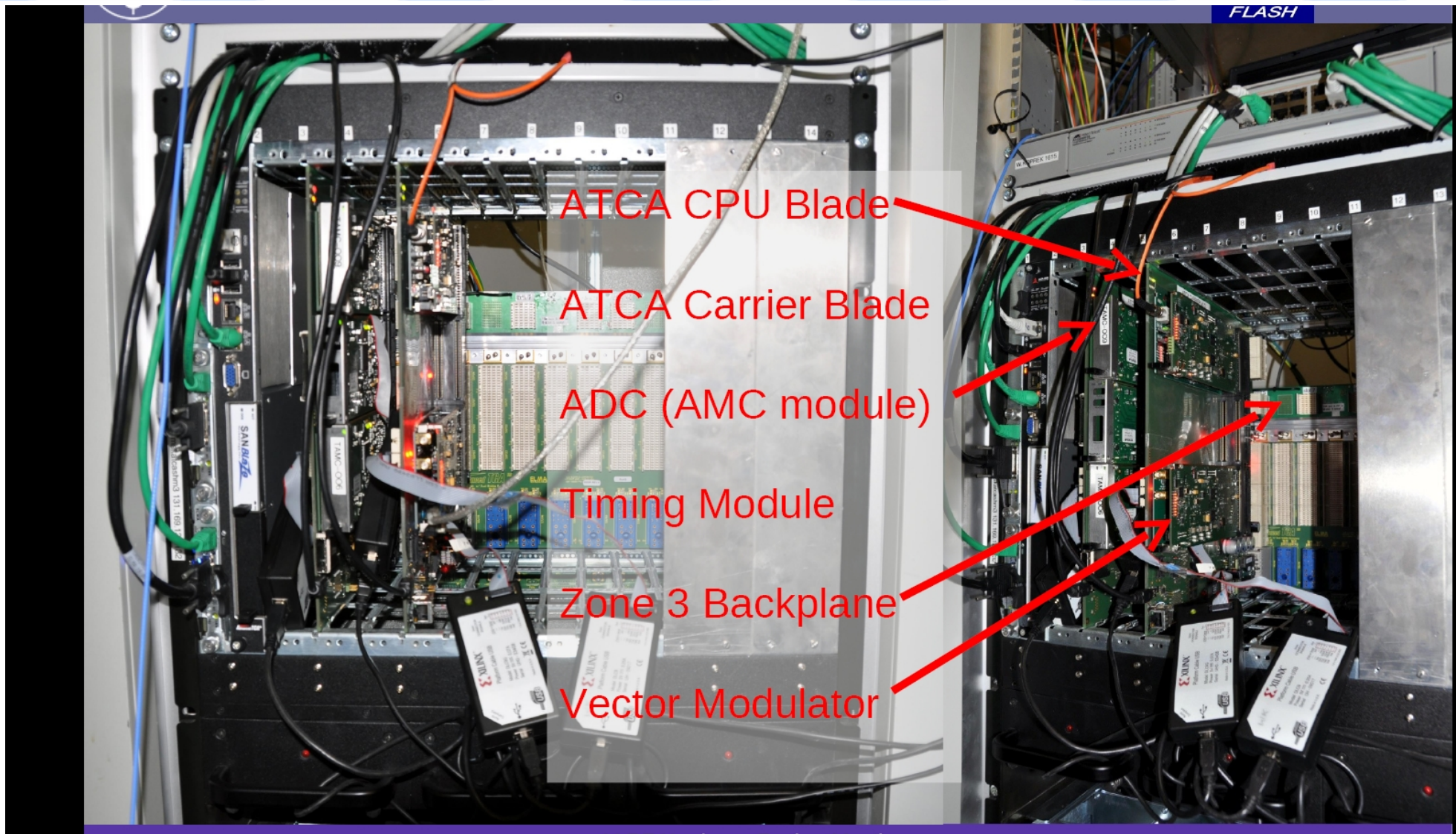
Płyta sterująca systemu LLRF



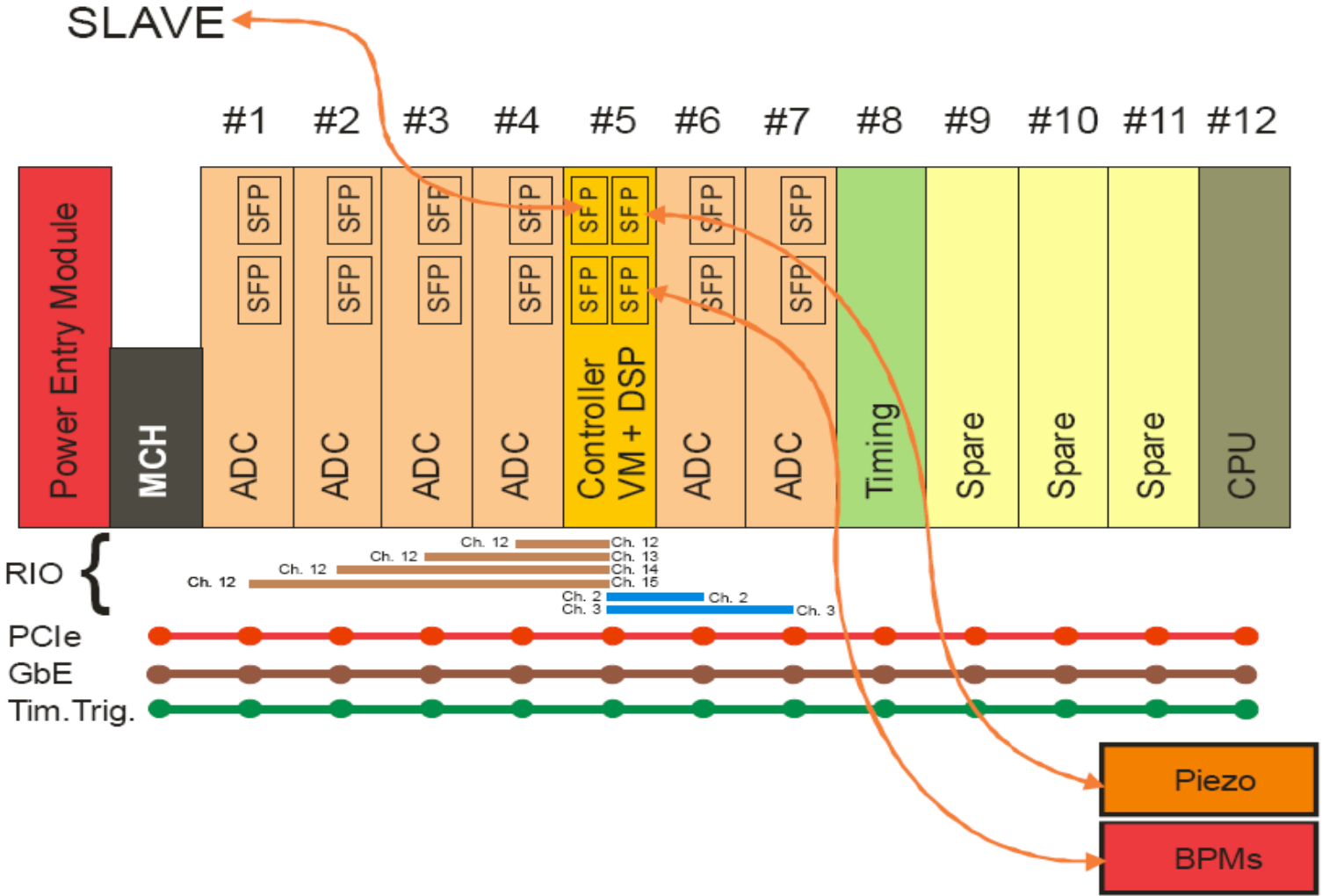
ATCA-based LLRF control system



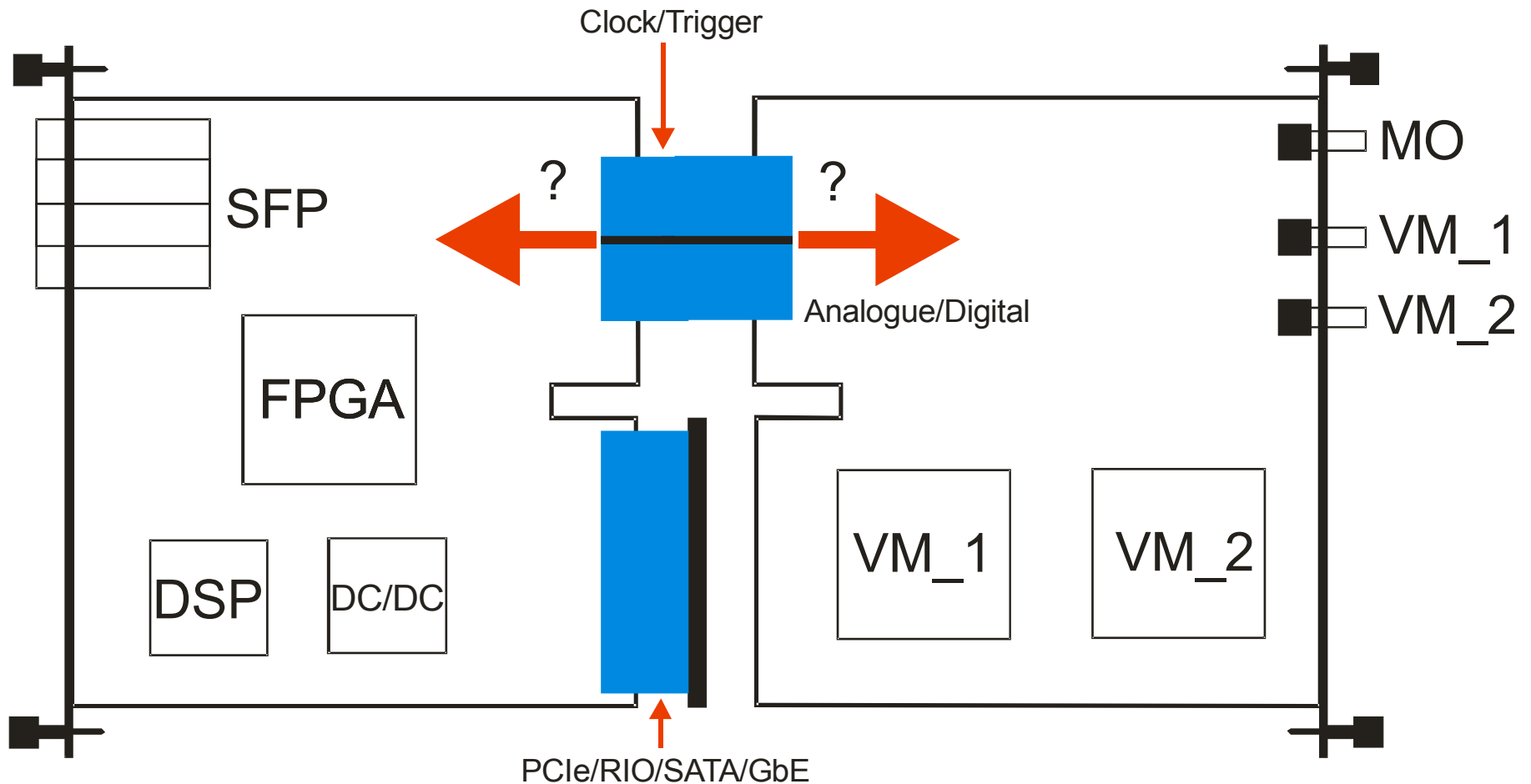
System LLRF podczas testów



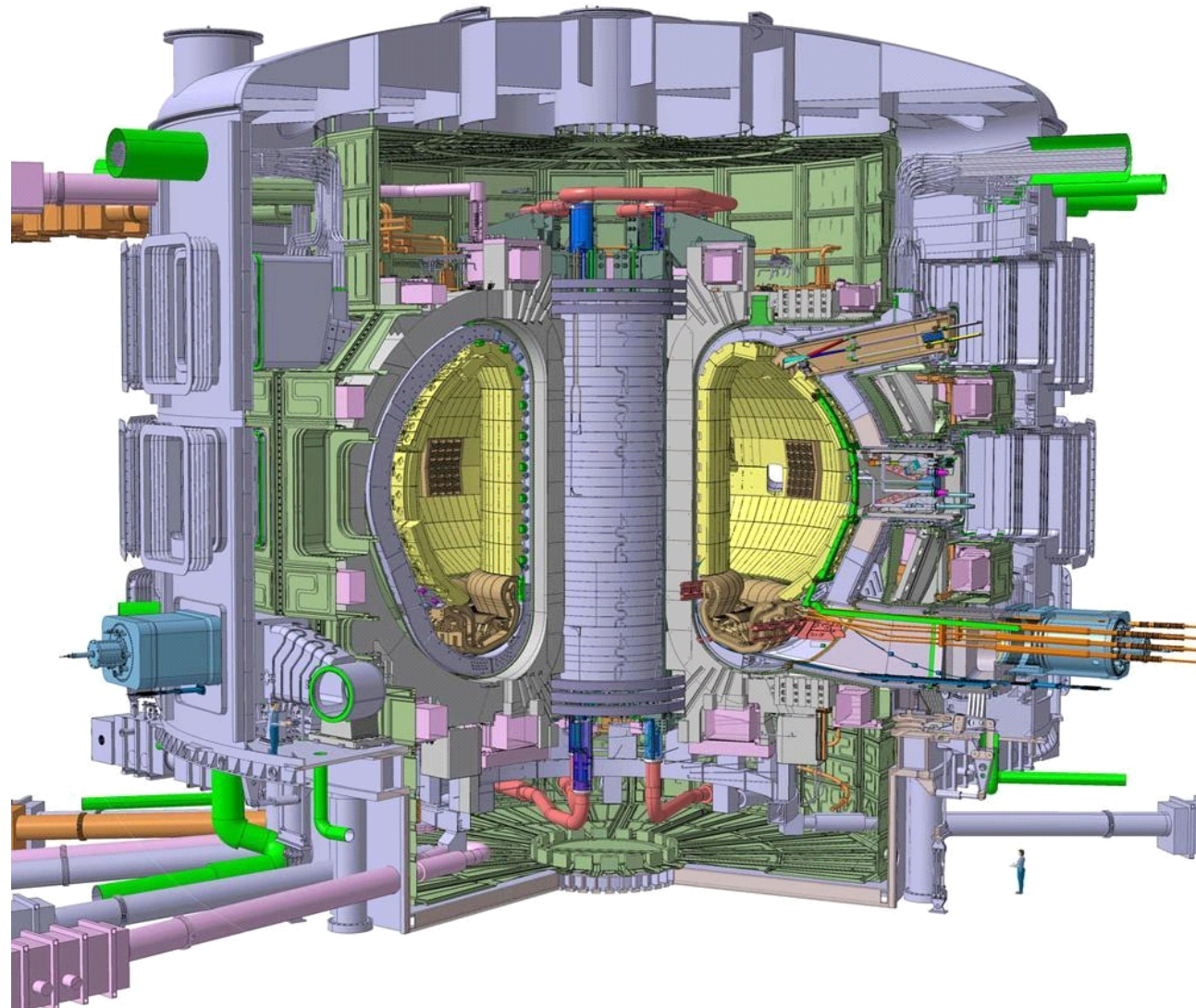
Zastosowanie technologii uTCA



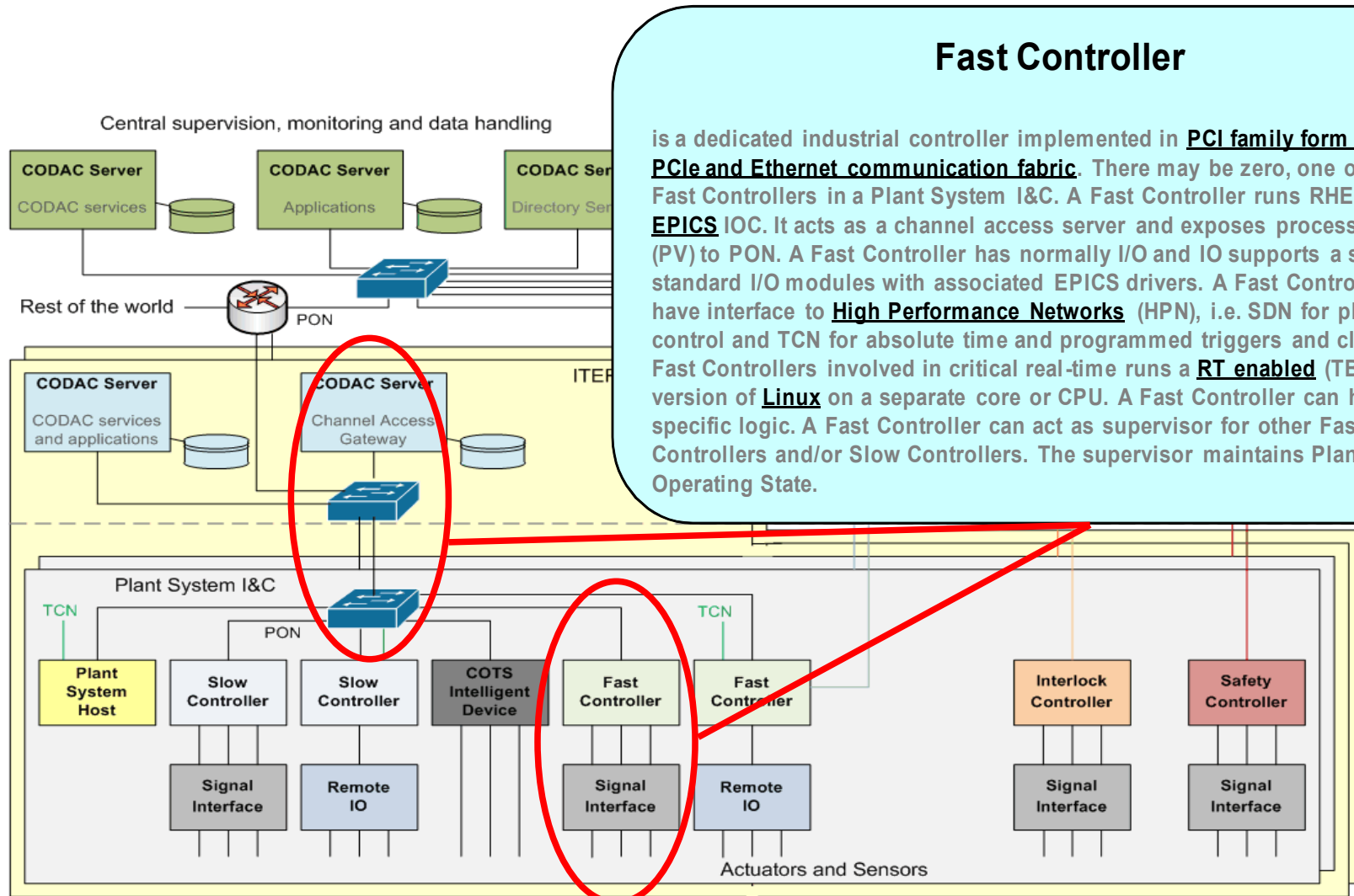
Zastosowanie technologii uTCA



Projekt ITER



System sterowania i diagnostyki



Fast Controller

is a dedicated industrial controller implemented in PCI family form factor and PCIe and Ethernet communication fabric. There may be zero, one or many Fast Controllers in a Plant System I&C. A Fast Controller runs RHEL and EPICS IOC. It acts as a channel access server and exposes process variables (PV) to PON. A Fast Controller has normally I/O and IO supports a set of standard I/O modules with associated EPICS drivers. A Fast Controller may have interface to High Performance Networks (HPN), i.e. SDN for plasma control and TCN for absolute time and programmed triggers and clocks. Fast Controllers involved in critical real-time runs a RT enabled (TBD) version of Linux on a separate core or CPU. A Fast Controller can have plant specific logic. A Fast Controller can act as supervisor for other Fast Controllers and/or Slow Controllers. The supervisor maintains Plant System Operating State.

xTCA for Physics

