



## 10 - New digital buses

*This 1-day seminar aims to describe and compare new digital interconnect standards*

### Objectives

- Packet switching benefits compared to shared busses are highlighted.
- The course details the operation of new busses and the consequences on system architecture.
- This workshop has been designed for project managers who intend to understand the operation of new buses without fully describing their protocol.
- Many references to exerciser providers and component manufacturers are done in order to explain not only the features of new buses but also their ecosystem.
- Ac6-training offers trainings covering in depth buses such as PCI-X, PCI-Express, RapidIO, IEEE1394a/b, USB2.0, HyperTransport, VME VXS.

A more detailed course description is available on request at [training@ac6-training.com](mailto:training@ac6-training.com)

### Prerequisites

- Experience of a digital bus like PCI or VME is recommended.

### Environnement du cours

- Cours théorique
  - Support de cours au format PDF (en anglais) et une version imprimée lors des sessions en présentiel
  - Cours dispensé via le système de visioconférence Teams (si à distance)
  - Le formateur répond aux questions des stagiaires en direct pendant la formation et fournit une assistance technique et pédagogique
- Au début de chaque demi-journée une période est réservée à une interaction avec les stagiaires pour s'assurer que le cours répond à leurs attentes et l'adapter si nécessaire

### Audience visée

- Tout ingénieur ou technicien en systèmes embarqués possédant les prérequis ci-dessus.

## Plan du cours

### TRANSITIONNING FROM SHARED BUSES TO POINT-TO-POINT BUSES

- Limitations of the PCI
- Parallel vs serial transfers
- Differential mode
- Packet switching
- Convergence to a common physical layer

### ENHANCEMENTS OF EXISTING BUSES

- Intel Hub Link solution
- PCI-X
- VME Renaissance : 2eVME + 2eSST

## **NEW COMPONENT INTERCONNECT BUSES**

- Hypertransport
- Parallel RapidIO
- PCI Express

## **NEW CALCULATORS INTERCONNECT BUSES**

- Infiniband
- Gigabit Ethernet
- Serial RapidIO

## **NEW BUSES ENABLING CONNECTION TO REMOTE PERIPHERALS**

- S-ATA
- IEEE1394b
- USB2.0, USB3.0
- Serial FPDP

## **Summary**

- Detailed comparison between Gigabit Ethernet, Serial RapidIO and PCI Express
- Various criterions are studied in order to clearly indicate the benefits and the disadvantages of these high speed interconnects