# ac6

## I0 - 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.

### Course Environment

- Theoretical course
    - PDF course material (in English) supplemented by a printed version for face-to-face courses.
    - Online courses are dispensed using the Teams video-conferencing system.
    - The trainer answers trainees' questions during the training and provide technical and pedagogical assistance.
- At the start of each session the trainer will interact with the trainees to ensure the course fits their expectations and correct if needed

### Target Audience

- Any embedded systems engineer or technician with the above prerequisites.

### Evaluation modalities

- The prerequisites indicated above are assessed before the training by the technical supervision of the trainee in his company, or by the trainee himself in the exceptional case of an individual trainee.
- Trainee progress is assessed by quizzes offered at the end of various sections to verify that the trainees have assimilated the points presented
- At the end of the training, each trainee receives a certificate attesting that they have successfully completed the course.
    - In the event of a problem, discovered during the course, due to a lack of prerequisites by the trainee a different or additional training is offered to them, generally to reinforce their prerequisites,in agreement with their company manager if applicable.

## Plan

### 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

## Renseignements pratiques

**Inquiry :  1 day**