# This course covers the PCI-X bus version 2.0

## Objectives

- The course explains the architecture of PCI-X based systems.
- The reset sequence used to select the mode (PCI or PCI-X) and the frequency is detailed.
- The course explains split transactions.
- Transfer protocol is described in details with the assistance of the Lecroy analyser.

*A more detailed course description is available on request at formation@ac6-formation.com*

### *Prerequisites*

- Knowledge of PCI 3.0: see our course reference IC1 - PCI 3.0course

### *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 traineein 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

### *INTRODUCTION TO PCI-X*

- PCI restrictions : data rate is not sufficient for Fibre Channel, Ultra SCSI or Gigabit Ethernet applications
- PCI-X technology overview
- Segments and switched fabric
- Relationship between the number of slots and the operation frequency

## ELECTRICAL SPECIFICATION

- Register / register approach, effect on the performance
- Current / voltage curves
- Decoupling rules

## PCI-X DEVICE HARDWARE CONFIGURATION AT RESET

- PCIXCOMP pin utility
- Behavior of a PCI-X motherboard when a PCI board is present
- Behavior of a PCI-X expansion board when it is plugged in a PCI motherboard

## TRANSFER PROTOCOL

- New commands
- Alignment rules
- PCI MEM space address decoding
- Attribute phase
- Split transactions
- Sequence numbering
- Data cachability indication
- Exclusive access
- Arbitration, bus parking

## CONFIGURATION REGISTERS

- Capability list PCI-X structure
- New registers description
- Bus error management

## Renseignements pratiques

**Inquiry : 2 days**