

Development of the Windows2000 Host Swap Kit (HSK) for Compact PCI systems

Client

Pigeon Point Systems (“PPS”) is a privately held software and hardware development company founded in 1997. It focuses on products and services supporting the adoption of open modular platforms to replace proprietary architectures, with a primary focus on the telecommunications market and PICMG standards. Pigeon Point’s product portfolio includes world-class management components for modular platforms based on the AdvancedTCA® (ATCA), AdvancedMC™, and MicroTCA™ architectures, plus consulting and design services. Pigeon Point participates actively in defining the open modular architectures. An executive member of PICMG, Pigeon Point is a leader in the ATCA, AdvancedMC and MicroTCA subcommittees and is active in many other technical subcommittees. Pigeon Point is also a contributing member of the Service Availability™ Forum and active in its HPI Working Group. The company serves more than 140 customers, including 6 of the top 10 global communications OEMs. The list of its customers is headed by such industry authorities as Motorola Computer Group, Intel Corporation, Force Computers, Microsoft Corporation, Siemens Mobile, Texas Instruments, along with many others. PPS is headquartered among the redwoods in Scotts Valley, California.

In 2008 Pigeon point Systems was acquired by Actel Corporation and became a wholly owned subsidiary of Actel. Earlier this year, Actel and Pigeon Point announced a partnership to develop and market solutions based on the Actel Fusion® mixed-signal FPGAs to speed the design of AdvancedTCA blade and AdvancedMC carrier blade management controllers. By acquiring the leading provider of TCA management components, Actel now offers

a comprehensive solution for proprietary and standards-based system management implementations in the industrial, military, telecommunications, and medical markets.

Scope

Development of the Host Swap Kit—the software component, that operates mostly in Windows2000 kernel mode and allows inserting and extracting peripheral Compact PCI boards without shutting down the owner host.

Statistics

- Team size: up to 4 people in Auriga
- Client relationship duration: 10 years

Objectives

Full life-cycle development and maintenance of the complex software that allows users:

- to connect and disconnect the boards without rebooting
- to enable application monitoring of board insertions and removal requests
- to set PCI-to-PCI bridge windows for CompactPCI bus segments
- to inform Windows 2000/XP of the physical slot numbering on user’s system
- to configure alternate Hot Swap Control/Status Register (HS_CSR) miniport drivers
- to develop new platform drivers and alternate HS_CSR miniport drivers for any specific hardware

Results

A set of software components represented as device drivers were developed, implemented, verified and validated.

They are the following:

- **The filter driver for the CompactPCI bus**
 - filtering of the input-output request packages (IRPs) for the devices on the bus



- informs the system about advanced features of these devices (support for dynamic removal and ejection)
- traces the current status of devices from the perspective of the system and assigns resources specified by the system integrator to the PCI-PCI bridges
- **The Hot Swap System Driver**
 - performs tracing the population of the CompactPCI bus and status of devices on it, by polling the bus periodically or in response to the ENUM# signal
 - provides the interface to application programs, based on the device I/O control (IOCTL) functions and on the standard system mechanism of Plug-And-Play notifications.
- **The platform driver**
 - recognition of the ENUM# signal
 - availability with any supported platform due to conformation to the PICMG 2.x family of standards
- **The alternate HS-CSR drivers**
 - emulation of the standard HS_CSR register on a specific peripheral device with an alternate (non-standard) implementation of the HS-CSR

Customer's Quote

"The Auriga engineering teams have been highly competent, effective and disciplined."

Mark Overgaard
President