AURIGA

Elite Software R&D Services
Since 1990

Linux and Embedded Systems

Expertise Overview

AURIGA'S CORE EXPERTISE includes Linux and embedded systems (including embedded Linux, of course). Auriga started working with Linux back in 1995, and in 1996 Auriga performed the first port of Linux to a platform based on the Alpha processor. Since that time Auriga has had many projects in all areas of Linux development including:

- Kernel and board support packages
- Device drivers
- Various system level services
- Development tools
- Various applications, including
  - Networking services, tools, and applications
  - GUI applications (based on Qt, X/Motif, Tcl/Tk)

Moreover, Linux is a popular platform for our J2EE projects—developing and supporting complex J2EE applications running within IBM WebSphere, BEA WebLogic, or other application servers on the Linux platform is our usual practice. It should be noted that we can leverage our system level Linux expertise even in Java based product development—we have had cases when tuning performance of large scale Java based internet applications required good understanding of how the Linux kernel operates.

Auriga's expertise in the nuts and bolts of the GNU toolchain is deep and likely rare, for instance, Auriga has created a code generator for the ColdFire processor that works as a part of the GNU compiler. Furthermore, Auriga develops different development and testing tools in various programming languages (C/C++, Java, scripting languages) and create complex Eclipse based tools and solutions.

Starting 1999, Auriga has been developing a complete embedded Linux distribution called BlueCat Linux for LynuxWorks, one of the oldest customers. The product includes custom development tools and utilities, libraries, device drives, kernel extensions, platform and board support packages. The fact that Auriga developed the product from scratch and that BlueCat won the award of the Best Embedded Product of the Year in 2000 immediately after its first release, demonstrate that Auriga engineers can handle development projects of any level of complexity both on the application/user space level and on the kernel/driver level.

Other projects for which Auriga performed Linux-based software development include:

- **Porting of the data protection system** from Windows to Linux. This project performed for Verdasys includes installing complex hooks at the system level to monitor and control all ways of data exchange—from starting the applications and copying files, to network exchange, e-mail and IM tools, and clipboard copy-paste operations in GUI applications.
- **Porting of the medical central patient monitoring station** from AIX/PowerPC to Linux/Intel. The project was performed for Draeger Medical. The central station displays and stores alphanumerical and graphical information from several patient monitors connected through the local network in real time.
- **Development of the Open Multi-Computing Kit** that emulates for applications conventional Ethernet while transferring data over industrial backplanes. The product was developed for Pigeon Point Systems and supported a list of hardware platforms and operating systems, includ-

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ing Linux, Windows, LynxOS, VxWorks, and others. The project included development of system-level components and various configuration tools, and performance optimization of the solution.

- **Development of the IPM Sentry Shelf Manager** for managing industrial systems according to the AdvancedTCA standard. The product was developed for Pigeon Point Systems and runs on a low-profile embedded Linux system. The solution allows controlling various aspects of the shelf operation—supplying power and cooling for individual boards, boards' inter-connection, etc—and provides rich external interfaces, including SNMP, Web, command-line at the shelf manager's console, and special interfaces required by AdvancedTCA.
- **Development of the Hot Swap Kit** for Linux and Windows—a system-level framework that allows removal, insertion and configuration of use boards into a hot system without the need to reboot. Support of High Availability operation, including failover of the host processor board, on one of the special systems designed by Motorola.

Auriga has developed a special Linux kernel training course. This course has been successfully used for training Auriga engineers, as well as for delivering it outside Auriga. In November 2006, the course has been successfully taught at I2IT institute, Pune, India for developers from several companies, including IBM and MindTree. Auriga has been invited to repeat the training in India this Spring.

Auriga's embedded expertise, it is not limited to embedded Linux only. Auriga engineers developed embedded and real-time software based on several major operating systems, including VxWorks, LynxOS, OSE, QNX, Windows CE, and Windows XP Embedded. Auriga engineers have in-depth expertise in development of software for multiple processor architectures—x86, PowerPC, ARM/XScale, MIPS, SuperH, Sparc, and several others, PowerPC being number one target. Auriga has unique experience with several hardware platforms and technologies, including:

- Ethernet
- FibreChannel
- PCI and VME buses
- CompactPCI
- AdvancedTCA
- Switching fabrics—StarFabric, PCI Express AS

Speaking of AdvancedTCA, Auriga is probably the most knowledgeable outsourcing company in the world in this area, as the company actively participates in the development of the AdvancedTCA specification as a part of a PICMG standardization committee. Auriga has developed several core AdvancedTCA products for Pigeon Point Systems that now work as the building blocks of AdvancedTCA solutions shipped by many major OEMs.