Overview

Applied Sciences Group (ASG) was contracted by an electronics manufacturer to develop the board support package (BSP) for a Freescale Coldfire-based single board computer. The embedded Linux solution had to support multiple peripherals as well as a high-speed monitoring application running on top of the Linux operating system.

Customer's Challenge

Our client had developed an embedded single board computer based on the Freeescale Coldfire MCF5484 CPU. The board was to be utilized to support high-speed monitoring of data generated at semiconductor fabs during the manufacturing process.

The client needed to quickly develop a custom Linux-based board support package (BSP) for the single board computer.

Our Solution

Applied Sciences Group has extensive experience with both the Freescale Coldfire product line and embedded Linux. Development of the SBC was straightforward, beginning with setting up RAM, setting up flash memory and modifying the Coldfire Linux Loader (CoLILO) bootloader to fit the client's bootup requirements. Once the boot process was stable, additional device drivers were written to support all peripherals and the embedded application sitting on top of the operating system.

Non-trivial peripheral support included development and integration of Ethernet, FLEXBUS, USB (as a host), DeviceNet, digital I/O and SPI drivers.

ASG utilized the GNU Compiler (GCC) and Freescale Linux Target Image Builder (LTIB) tools to build the BusyBox Linux image. CoLILO was extensively upgraded to support field upgradeability, memory testing, Coldfire processor initialization and additional boot options.

Key Technologies

- Motorola Freescale Coldfire Processor
- Linux
- Board Support Packages
- Device Driver Development
- CoLILO, GCC, LTIB
- Serial, Ethernet, DeviceNet, SPI, FLEXBUS, USB Host