

BittWare Application-Specific Products

"One clear advantage with using BittWare's PC/104 SHARC product was the company's willingness and ability to make customized modifications to meet USA Digital Radio's unique needs."

Rick Martinson
USA Digital Radio

"By choosing BittWare, Continental Electronics significantly reduced our time to market and gained the competitive advantage of being the first company to introduce a product that used a general purpose DSP to generate the 'on air' signal for broadcast radio stations."

Daniel Dickey
Continental Electronics Corporation

"BittWare's DSP and I/O experience lowered our costs and reduced our risk by giving us proven technology backed by solid customer references."

Trent Mills
Lockheed Martin

Timely and Cost-Effective Custom Solutions

In today's fast-paced and highly competitive electronics industry, time is critical. Companies must work faster, use company resources more efficiently, and stay abreast of increasingly complex technology in order to beat their competition to market with a new product. To do so, many of these companies have stopped designing boards and systems in-house and have turned to embedded solutions experts like BittWare for application-specific products. Outsourcing their design work enables these companies to focus on their core business competencies, while shortening their product development cycle and reducing engineering expenses.

BittWare's Commitment to Rapid Solutions

BittWare is actively engaged in application-specific product design and software for Analog Devices' SHARC® family of DSP chips. The flexibility of our Application-specific Products Division (APD) allows us to modify an existing design from our extensive off-the-shelf product line or build a product to meet your exact specifications. Our business model for APD is to rapidly customize solutions for OEM customers. Our commitment to fast turnaround is backed by a solid team of DSP experts, who will handle a project from prototype through production or licensing arrangements.

BittWare's DSP Expertise

BittWare's SHARC DSP expertise can both shorten your time-to-market and decrease your engineering expenses. With experience in developing DSP products for Analog Devices' SHARC family of processors across an array of form-factors and applications, BittWare is on the cutting edge of SHARC DSP technology. BittWare's expertise includes:

- All SHARCs (ADSP-21160, 21060, 21062, 21065L, 21020, MCM)
- Designing to specification with ADSP-TS001 (TigerSHARC) and successive generations of SHARC processors
- Real-time processing architectures
- High-speed, high-bandwidth buses
- Industrial temperature design
- Miniaturization and low power
- Tightly coupled I/O:
 - A/Ds and D/As up to 100 MHz
 - Analog and digital audio, video, and imaging
 - High-speed serial ports
 - Telecom (T1/E1, MVIP)
 - Standard digital interfaces
- Standard buses: cPCI (3U and 6U), PCI, PMC, PMC+, PC/104, PC/104-Plus, ISA
- All form-factors and sizes – custom and standalone
- Software development tools:
 - Host interfacing and control
 - SHARC drivers and utilities
 - Algorithm implementation and optimization
 - Runtime debugging
 - Interrupt handlers



Application-Specific Product Success Story

AssistWare Technology SafeTRAC™ Drowsy Driver Warning System

The Challenge: Keeping Truck Drivers Awake

Many accidents result each year from drivers falling asleep at the wheel, and with seemingly endless hours on the road, truck drivers are especially at risk. Truck fleets are constantly looking for technologies to improve the safety of truck drivers. AssistWare Technology took on the challenge of finding a way to identify in real time when the driver is drifting off to sleep and to alert them before an accident occurs. Together with BittWare's Application-specific Products Division (APD), they implemented a solution.

The Solution: SafeTRAC

AssistWare developed a sophisticated lane-monitoring system that warns the driver when the vehicle weaves or drifts off the road. The product, SafeTRAC, is a SHARC DSP-based unit that uses a micro video camera to monitor the road using cues such as road lines, signs, and road curvatures to determine whether the driver is staying within the lane. It then gives real-time warning signals if the vehicle strays outside the lane.

The original SafeTRAC design functioned well but was not portable and was too expensive. To make the product marketable, AssistWare still needed to satisfy all the design requirements, including performance, small unit size, and low cost. Design specifications demanded that they satisfy all three criteria equally and as quickly as possible to meet market demands.

The Technology: SHARC® and BittWare

Before approaching BittWare, Inc., AssistWare had ported and tested the algorithm on three competing processors. They chose the Analog Devices SHARC ADSP-21065L DSP based on its 60 MIPS performance, low cost, and ability to handle video data and processing rates. After deciding on the ADSP-21065L, AssistWare still needed to get over the size hurdle; the final board could be no bigger than 2"x 3", and it needed to handle real-time uncompressed video. They approached BittWare's APD because of BittWare's experience in both SHARC technology and video processing on the SHARC.

The resulting solution from BittWare cut several months off AssistWare's delivery schedule. BittWare's APD custom designed a two-board set that included an I/O board and a processor board called the Pocket Video Processor (PVP), a low-cost 60 MIPS board that fits in a radar-detector sized box and performs all the processing functions for the application.

The PVP features:

- Analog Devices ADSP-21065L 60 MIPS DSP
- 12 digital I/O lines
- 1 MB FLASH memory and 4 MB SDRAM
- NTSC video input
- Real-time clock

The I/O board features:

- Dual RS-232 UART that supports up to 230k Baud
- Eight-character LED display
- I/O connections

"BittWare has been a valuable partner, helping us achieve many milestones throughout product development. We are impressed by BittWare's SHARC expertise and commitment to AssistWare's success."

Todd Jochem

AssistWare Technology,
Vice President for Technology

