



Bluewater Systems

NEWSLETTER

Welcome

Welcome to our Autumn 2005 newsletter. The big news this time is that Snapper is finally available. First customer shipments went out in January and we are actively looking for customers for Snapper.

Snapper is described in some detail in the following pages but I think you'll agree it offers a new approach to embedded design. With Snapper you can complete a complex hardware design in half the time, or less.

This year we plan to add more software and FPGA functionality to Snapper to make embedded design even faster. Please take a look and tell us what you think!

! RELEASED !



SNAPPER

Single Board Computer Module



See pages 2 and 3 for details

Tools Department

RVDS 2.2

ARM has released RVDS 2.2, which is a significant upgrade to its popular development suite.

Changes in RVDS 2.2 include:

- Updated documentation, including online help in HTML format
- Images built with gcc 3.2 and 3.4 are now fully supported
- Debugger menus have been rearranged for faster use
- Many GUI improvements including floating toolbars, repositioning of panes, font settings, etc.
- Support for building Linux applications and shared libraries
- CodeWarrior returns as an option for an easier project control interface (Windows only)
- A new Data Navigator speeds finding of functions or variables
- Code editing now supports various font and syntax colouring schemes
- RealMonitor is now supported with RealView ICE connections

This upgrade will be sent out automatically to customers with a current support and maintenance agreement.

www.bluewatersys.com/development/realview

New Application Notes

ARM has released three new Application Notes recently.

138 - Using Core Tiles Stand-Alone

This system is intended as a starting point for hardware developers to build a simple AHB system around a Core Tile.

139 - ARM RealView ETB Support

Describes how to design an ASIC with one or more Embedded Trace Buffers (ETB) and one or more ARM cores such that the RealView tools will support it.

142 - Generating and Using BCD files with RVD

How to create and use BCD files for your target. BCD files are generally used to perform two main tasks:

- 1) Provide an enumerated view of registers and peripherals on your target hardware: Extended Target Visibility (ETV).
- 2) Describe the memory map of your target and control how RVD behaves when accessing these different areas of memory.

www.arm.com/documentation

Snapper Single Board Computer Module

Bluewater Systems recently released Snapper, its “no compromise” ARM Single Board Computer module. With a number of customers already having started development using Snapper as their product system core the module looks like being a big hit.

Snapper is a revolutionary snap-in system module which delivers the core elements of an ARM based product on a compact, ready to use, microprocessor module. By using Snapper, an engineering team can develop products faster, focus on their unique features and deliver a lower overall development cost.

Snapper provides developers with a compact, “ready to use,” ARM based microprocessor module that combines the high-performance and low power consumption of an ARM processor with the flexibility of the Altera Cyclone FPGA. Designed to be the system core for a wide range of ARM based products and embedded solutions, Snapper also provides high-speed and flash memories, and a practical selection of peripherals. The inclusion of these along with the FPGA as standard gives users the ability to apply Snapper to a diverse range of applications.

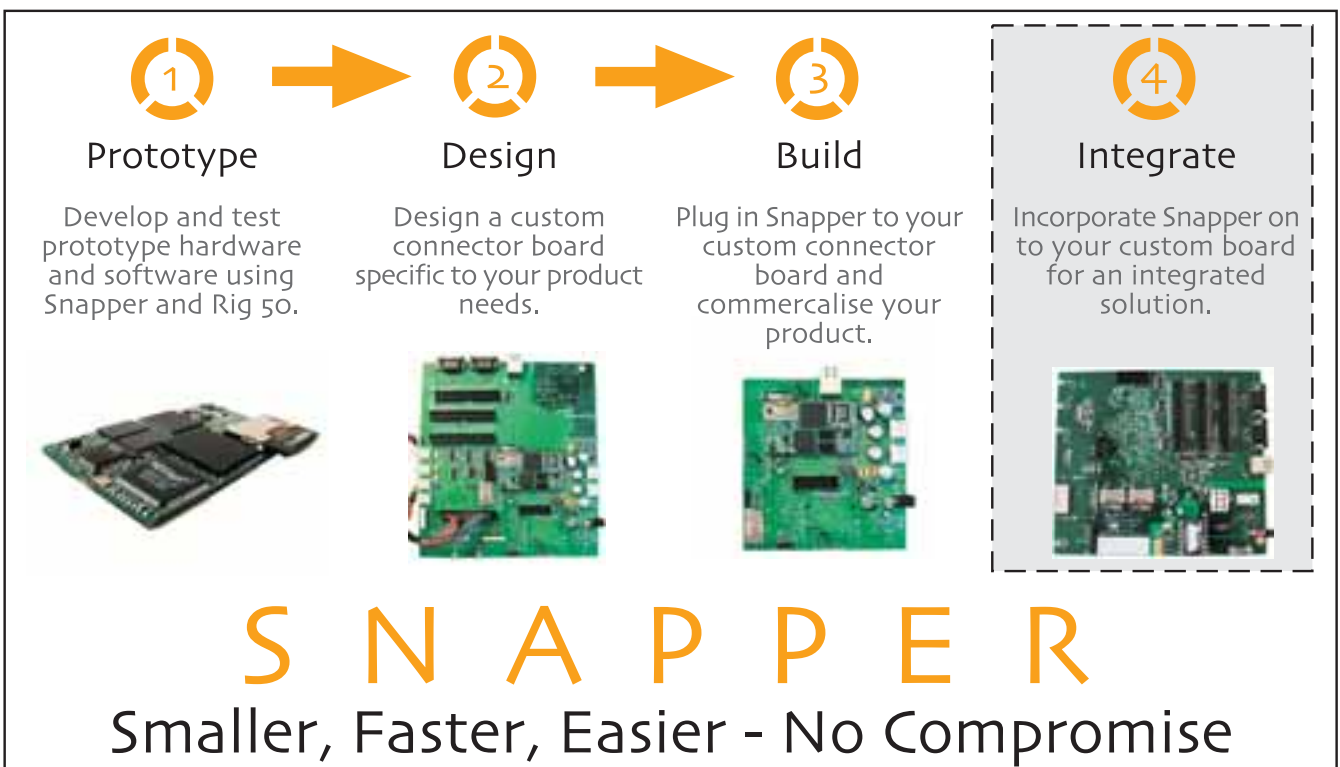
Snapper incorporates a high-performance Intel XScale PXA255 ARM based microcontroller, a selection of three Altera FPGAs (EP1C4, EP1C12 or EP1C20), a stereo audio codec and touch-screen controller, a versatile LCD controller, SDRAM, NAND Flash memory, 10/100T Ethernet MAC & PHY, 2x USB 2.0 OTG Host, USB 1.1 Device Ports and Serial UARTs.

A buffered 32-bit ARM System Bus is also brought out to external pins, allowing it to be directly interfaced to other high-performance devices (e.g. a DSP).



Feature	Specification
Microcontroller	Intel XScale up to 400 MHz
Memory	- 64MB SDRAM - 1MB Boot Flash - Up to 512MB Storage via xD card
FPGA	- Altera EP1C4,12 or 20
User I/O	- 17 CPU - up to 123 FPGA
Ethernet Interface	10/100 Mbit
USB Interface	1 x USB 1.1 Device Port 2 x USB OTG/Host Ports
UARTS	1 x full function 1 x standard
Bluetooth	1 x Bluetooth UART
IR	1 x IRDA
Audio	20-bit stereo codec
Touchscreen	Phillips touchscreen controller
LCD	Active / Passive Matrix LCD support up to 800 x 600
ADC input	4-channel
PCMCIA	Up to 2 PCMCIA slots
SD Card	1-bit SIDO
Serial	SPI - SSP
Power	3V3 input
Power Consumption	1400 mW (FPGA dependant)
Board Size	40mm x 70mm x 12mm
Weight	20g

www.bluewatersys.com/snapper



Three Good Reasons to Develop With Snapper

Dramatically Reduce Development Costs

- ✓ Development hours cut by up to 60% - 80%
- ✓ Use a single system core across multiple products
- ✓ Seamless transition from prototype to finished product
- ✓ Minimise production costs

No Limits Form and Function

- ✓ Ultra high performance with FPGA hardware flexibility
- ✓ Unparalleled peripheral and expansion options
- ✓ Optimised form factor for extremely small devices
- ✓ Lower power consumption

Accelerate Time to Market

- ✓ Proven design provides reliability
- ✓ Focus development resources on unique product features
- ✓ Developed and supported by leading ARM specialists.

Snapper's Flexibility Leads the Way

Snapper proved its value in a recent project completed by Bluewater Systems. Given the task to develop a solid state alternative to a magnetic tape backup unit, Bluewater Systems was faced with the need to design a single product that could work with multiple communication interfaces. By designing the product to use Snapper's FPGA technology allowed Bluewater to completely change its interface configuration even after production, by simply loading different FPGA code into the Snapper.

This proved invaluable, as after production had been given the green light, it was discovered that one of the interface variants was in fact different to that specified and measured. If a simple CPLD-based single-purpose design had been implemented then the product would not have been able to deliver the required functionality in time and a board re-design would have been required. Thankfully Snapper's FPGA technology saved the day as we were able to devise and make a very simple connector board to cope with the new interface and code up a different variant in the FPGA. No hardware changes were needed.

The project also proved the flexibility of Snapper in terms of it being integrated into an overall product design. Initially the product hardware was developed and tested by Bluewater using Snapper and a customised base board. However information gained in the design and development of Snapper showed that it was possible to embed the Snapper technology directly into a PCB design to make a single fully customised board.

To make the single PCB for the product in question, the original connector board design was used as a base and the Snapper socket replaced with the actual Snapper design. Some components that were not required were removed and we selected the 200 MHz variant of Snapper's Intel XScale processor as the standard 400MHz version was not required.



Snapper integrated onto a single PCB

The single PCB board was able to be produced very quickly and worked first time, leaving Bluewater in the fortunate position of being able to choose between two hardware options for the final project.

Product Features

ARM powers the Mobile Market

The Sony Ericsson P910i smartphone runs on a 156MHz ARM9 processor with 64MB RAM. It is halfway between a phone and a PDA. It has more functionality than just about anything on the market, including tri-band, GPRS, video record and playback, push email, excellent SyncML PC synchronisation, VGA camera, easy to use handwriting recognition, Bluetooth, USB, infrared and even a tiny QWERTY keyboard.

The 262k colour screen (208 x 320 pixels) is about the best display on any mobile currently available and is used to good effect with the integrated Symbian OS. Applications include contact manager with PIM sync, calendar, tasks, call list and email with viewing of common attachment

formats (Word, PDF, etc.). It also has very high quality MP3 playback. With a 1 GB memory stick due, it gives the ARM7-based iPod a run for its money.



Sony Ericsson P910i

In addition ARM and Symbian Ltd continue to drive the development of the next generation mobile phones that will be hitting the shops during 2005. With the release of Symbian OS v9 earlier this year and its support for the latest ARM9 and ARM11 cores, mobile phones will soon be sporting multimedia features such as multi-mega pixel camera phones, bluetooth stereo headsets and increased screen sizes and orientation.

Symbian 9 phones are expected to be launched in the second half of 2005.

Company News

Good bye Brad!

Unfortunately for Bluewater Systems, Brad Beveridge, one of our software engineers has decided to leave New Zealand and to seek fame and fortune in the United States.



Over the past year Brad has been a valuable member of the Bluewater team and added new skills and enthusiasm to our software group. We wish him well for the future and hope that he finds success on his travels abroad.

ARM Kit Proves Popular

Last newsletter we outlined our new entry-level ARM development kit based around low cost Ethernet router with a ARM7TDMI core. This product has proved popular with a number of organisations and students wanting to explore ARM but unable to purchase an expensive solution.



At only \$180 the kit offers an excellent way to get introduced to ARM. Contact us for more details.

www.bluewatersys.com/corporate/uni/



**Bluewater
Systems**

Bluewater Systems Ltd
PO Box 13889
Christchurch 8001
New Zealand

Ph: +64 3 377 9127
Fax: +64 3 377 9135
info@bluewatersys.com

Australia Sales
68 - 72 York Street
S. Melbourne 3205
Australia

Free Call 1 800 148 751
Fax: (03) 9699 7249
sales@bluewatersys.com

New Zealand Sales
Level 17, 119 Armagh St
Christchurch 8001
New Zealand

Ph: 03 377 9127
Fax: 03 377 9135

www.bluewatersys.com