

Concepts, Prototypes, and Products: Nuremburg 2008

At the end of February, the .NET Micro Framework team returned to Embedded World in Nuremburg, Germany to introduce .NET Micro Framework version 2.5. We brought along a few concept devices we built, along with prototypes and real products from some of our partners.

Concepts

Our team is always playing with the .NET Micro Framework to help show off what it can do. Here are some of the devices we created for Embedded World.

Point-of-Sale Kiosk We made this mini-kiosk by gutting a credit card terminal and replacing its brains with a version of the Tahoe development board from EmbeddedFusion.* We've actually showed this very device at previous trade shows, but for the release of .NET Micro Framework v2.5, we added an Ethernet port and installed software we developed in-house for a coffee shop scenario.

The guest taps her loyalty card against the near-field reader at the top of the device, and the kiosk greets her and displays her "usual," offering the opportunity to change or add to this order.

When the order is complete, the guest can swipe her credit card through the reader on the right side of the device. (If the loyalty card is a stored-value card, this step could be skipped.) The order is then sent over the network to PC back-end software, which might display the order to the barista and print a receipt.



Appliance Panel The appliance panel is a smart home concept developed to show off the Devices Profile for Web Services (DPWS) support in .NET Micro Framework v2.5. The panel itself was fabricated in-house using 3D printing technology. Behind the panel is a Tahoe* development board complete with portrait LCD; the board is mounted behind the panel so that the LCD can be seen through the panel's opening. The buttons on the panel rest against the buttons on the Tahoe board, pressing them directly. Four high-brightness LEDs are also mounted in the panel and connected to the Tahoe's GPIO outputs.



* The Tahoe board and the Meridian processor are now sold by Device Solutions. <http://www.device-solutions.net/>

The software for this concept is a dishwasher control application. The user can choose a cycle and other wash options using buttons on the panel. The application offers a DPWS interface, which can be discovered by a home automation application running on the Windows PC. In our concept, the PC monitors the cost of electricity from minute to minute and pauses the dishwasher's operation remotely until it falls to a preset level, so that the appliance runs when the power is cheapest—usually at night.



Point-of-Sale Printer This concept device was created by wedding a serial point-of-sale printer to a Freescale i.MXS development board, which serves as a gateway to network-enable the printer using Devices Profile for Web Services (DPWS) protocols. DPWS allows terminals to discover the printer on the network and promises wider compatibility with retail POS equipment from different vendors.

Prototypes

Some of our partners sent us prototypes of products they have in development. We don't know when they'll see production, but they are great examples of how the .NET Micro Framework is being used to innovate new products.

Chicony Digital Picture Frame This digital picture frame from Chicony Electronics, one of Taiwan's leading OEMs, is a desktop version of the Windows SideShow-capable displays found on some notebooks. At just a few inches tall and sporting a 3.2" QVGA LCD, it is a nice auxiliary display for your home or work PC. It displays your favorite pictures, of course, but also offers "at-a-glance" clock, calendar, e-mail, stock prices, weather, and more.

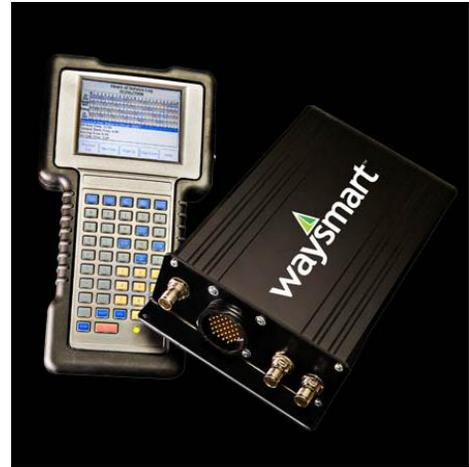


Ricavision MK140 FM Scribbler Magnetic in more than just the literal sense, the Scribbler prototype from Ricavision attracts people with its Window SideShow capabilities, which allow the display of traffic, weather, e-mail, and more. It can be stuck to the refrigerator or anywhere else convenient. Users can use the stylus to write short notes on the 3.5" QVGA LCD and optionally send them to a PC for filing or e-mailing.

Products

The following products are available for ordering now! Congratulations to these manufacturers on the release of their products built on the .NET Micro Framework.

Inthinc waySmart 820 RTS waySmart is a fleet safety system that creates immediate, dramatic changes in driving behavior, improving safety and reducing accident costs, by monitoring and mentoring drivers in real time based on zone-based safety parameters and reporting criteria. The waySmart system has been proven to reduce speeding violations and aggressive driving by over 80% in 90 days. The handheld unit that serves as the system's interface is built on the .NET Micro Framework. Get more information at www.inthinc.com.



Ricavision VAVE 100 Universal Remote

This universal remote not only controls all your A/V gear, it features a 2.4" QVGA screen that displays a program guide, the contents of your PC media library, and much more thanks to Windows SideShow. It has all the buttons you need to control Windows Media Center edition (and just about anything else you can imagine) and comes with remote codes built in for more than 1500 brands of equipment. It may very well be the ultimate home theater remote. \$350 from www.ricavision.com.

Development Kits

Want to get started developing your own .NET Micro Framework products? Check out the development kits available from Microsoft's partners. We'd especially like to welcome our latest development kit partners Atmel, Device Solutions, and GHI Electronics, to the fold.

Atmel [AT91SAM9261 and AT91SAM7X512 Evaluation Kits](#)

Now offering .NET Micro Framework compatible HAL for easy porting

Crossbow [iMote2.Builder Kit](#)

Complete sensor network development kit

Device Solutions [Tahoe Development Kit](#)

The new home of the Meridian CPU

Digi [ConnectME JumpStart Kit](#)

NET+ARM-based platform with networking

Freescale Semiconductor [i.MXS Development Kit](#)

ARM9-based SideShow platform

GHI Electronics [Embedded Master Development System](#)

Includes USB host and file system

SJJ Embedded Micro Solutions [Embedded Development Kit](#)

New EDK Plus includes two serial ports and real-time clock



Above: Atmel AT91SAM9261 and AT91SAM7X512 (top),
GHI Electronics Embedded Master Development System
Left: Device Solutions Tahoe Development Kit

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