Windows Embedded
Customer Solution Case Study

Technology Company Reduces Time to Market, Product Costs by Up to 30 percent

Overview

Country or Region: India
Industry: Manufacturing – Consumer Electronics

Customer Profile

Based in Bangalore, India, Ittiam Systems (P) Ltd specializes in digital signal processing systems. With offices in the U.S., the U.K., and France, the company employs 200 people.

Business Situation

Ittiam Systems wanted a feature-rich development environment for its IP Videophone application that would lower costs and eliminate dependency on third party software.

Solution

The company opted to migrate to Windows® Embedded CE 6.0 for its embedded media functionality and software interoperability.

Benefits

- Embedded media support
- Built-In SIP stack
- Software interoperability
- Faster, cheaper development
- Powerful development resources

"With CE 6.0, it is now easy to integrate media related applications seamlessly into the product; this is highly advantageous in developing future messaging application support."

Sheela Prabhakar, Distinguished Member Technical Staff and Technologist, Media Streaming Business, Ittiam Systems (P) Ltd.

Founded in January 2001, Ittiam Systems (P) Ltd is a 200-strong technology company that develops digital signal processing (DSP) algorithms, applications, and reference designs for multimedia and wireless devices. Seeking to migrate its IP Videophone application to a feature-rich operating system that would lower costs and eliminate dependency on third party software, the company selected Windows® Embedded CE 6.0 as a platform for its future DSP reference designs. With its embedded multimedia functionality and applications, CE 6.0 offers Ittiam Systems a stable platform, PC-based application interoperability, standardized interface development, rapid enabling of features, a production cost reduction of 10 to 25 percent, and a 30 percent cut in development time.

Windows Embedded

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Situation

Headquartered in Bangalore, India, Ittiam Systems (P) Ltd is an engineering development house specializing in the digital signal processing (DSP) algorithm and systems. It has offices in the U.S., United Kingdom, and France, and authorized representatives in Israel, Japan, Korea, Singapore, Taiwan, and the U.S.

Ittiam Systems is a Windows Embedded Partner (WEP), specializing in developing Windows Embedded-powered hardware and software solutions. The company focuses on creating reference designs and software applications for devices such as Digital Camcorders, Video Conferencing Equipment, Video Security, Portable Media Players/Recorders, In-Flight Entertainment Systems, IP Video Phones, and Wireless LAN Access Points and Station Cards.

In late 2005, Ittiam Systems surveyed its market and noted increasing demand for support of converging applications such as media players and recorders, web browsing, video on demand (VOD) and Internet protocol TV (IPTV). As a result, the company looked at the possibility of migrating its IP Videophone solution from a Linux environment to a richer operating platform. "Although our Linux-based IP Videophone is highly regarded, there was a demand to support a richer user multimedia experience," notes Sheela Prabhakar, Distinguished Member Technical Staff and Technologist, Media Streaming Business, Ittiam Systems (P) Ltd.

The existing IP Videophone solution was based on a Linux variant and employed Session Initiation Protocol (SIP) stacks for call signaling, which is not a development focus for the company. Ittiam Systems worked around this by recommending third party SIP stacks to customers and helping to integrate them into the IP Videophone. "While this approach worked well, it meant our IP customers had to pay for both the operating system support as well as the SIP stack from different third party suppliers," recalls Prabhakar. "If customers required additional application support, such as web browsing or IPTV, they would have to purchase additional licenses, again from third parties. The net effect would increase the overall product costs significantly."

What Ittiam Systems wanted was a real-time operating system with comprehensive, embedded multimedia capabilities without additional licensing costs. This would eliminate dependency on multiple third-party software licenses and reduce the overall product cost. "If this meant faster development time and lower costs, it would be an attractive option for our IP customers," says Prabhakar.

Solution

To migrate the Ittiam IP Videophone solution to a richer operating system from the original Linux variant, Ittiam had to re-evaluate the existing development work in the current system. "We had an existing reference design and the Board Support Package (BSP) with full-fledged drivers for all the hardware devices and peripherals required for the application," adds Prabhakar. "So we needed to completely rework all of it to support a different operating system. We had a high degree of development expertise on the original Linux OS internals and Linux-based BSP but beyond this development environment, our experience was limited."

Ittiam considered retaining its Linux solution and improving the third party SIP stack and application integration. "We evaluated several middleware solutions for web browsing, Video-on-Demand, and IPTV as an alternative to porting all the development to a new environment," Prabhakar says.

"We have achieved savings of up to 30 percent in development time, and between 10 to 25 percent cost savings, thanks to fewer component licenses—savings which we can pass on to our customers."

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Eventually, Ittiam Systems decided to port the IP Videophone application to Windows® CE version 5.0, as the platform offered much better media application support and embedding within the operating system. From a development standpoint, the company would save a lot of time trying to integrate third party components, says Prabhakar. "The decision was not difficult. With Windows CE 5.0, there were no additional application licenses to buy, and we had rich, multimedia support right out of the box."

However, Ittiam Systems had limited experience with Windows CE. "Because of our lack of expertise with the environment, we had to work hard on our development," notes Prabhakar.

Starting in April 2006, Ittiam Systems deployed eight engineers with the goal of achieving the same IP Videophone performance on Windows CE as on Linux. To exploit new technologies and improved SIP stack capability, Ittiam Systems moved the development from Windows CE 5.0 to Windows® Embedded CE 6.0 in September 2006.

Though there were complex issues with developing device drivers, the designers were able to port many of the Linux-based drivers with the help of the local Microsoft support team. In addition, Microsoft was able to assist with other technologies such as DirectDraw and framework features supported by CE 6.0 for the multimedia applications, and with developing a complete user interface from scratch.

Ittiam completed a demonstrable version of the CE 6.0 IP Videophone in November 2006, and the beta edition was released in February 2007. The entire project is scheduled for completion by August 2007.

Benefits

Although the migration process seemed initially daunting to Ittiam Systems, the company was impressed with the support they received from Microsoft, and with the comprehensiveness of the CE 6.0 development environment. Combined with embedded components, application support, and easy interoperability, Ittiam Systems has benefited from a shorter development period and an overall reduction in product costs. "What is significant is that both our customers and subsequently, the end users, will benefit from the improved user experience and wide application and media support. This should make the IP Videophone a very attractive option," remarks Prabhakar.

Embedded media support

With embedded support for multimedia, Ittiam Systems found the Windows CE development environment productive and customizable. "With CE 6.0, it is now easy to integrate media related applications seamlessly into the product," says Prabhakar. "Additionally, our IP Videophone is also interoperable with other Windows-specific applications, such as Windows® Messenger version 5.0. From a call signaling perspective, this is highly advantageous in developing future messaging application support."

Built-in SIP Stack

The testing and integration of third party SIP stacks for its Linux-based hardware reference designs has always been a difficult process for Ittiam Systems. However, with the embedded SIP stack offered by the Windows CE environment (including advanced features such as NAT traversal capability), development resources can be deployed elsewhere. "It has allowed us greater room for optimization," adds Prabhakar.

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For more information about Ittiam Systems (P) Ltd products and services, call +91-80-66601000 or visit the Web site at: www.ittiam.com

PC-based Software Interoperability

Beyond media application support, Ittiam Systems discovered extensive support within CE 6.0 for other "standard" Windows applications. "An IP Videophone application built on CE 6.0 can support web browsing via Windows® Internet Explorer® 6" notes Prabhakar. "End users will also benefit from the interoperability with several standard PC-based VoIP/video communication software options, making it very attractive for the end user."

Faster and Cheaper Development

Without the need to procure and integrate third party components such as SIP stacks, and with embedded support for applications such as Web browsers, Ittiam Systems has realized real savings in development time and production costs. "We have achieved savings of up to 30 percent in development time, and between 10 to 25 percent cost savings, thanks to fewer component licenses—savings which we can pass on to our customers," says Prabhakar.

Powerful Development Resources

Though they lacked experience with Windows CE, Ittiam Systems found the development tools powerful and user friendly. The technical support through MSDN Library and newsgroups proved invaluable to the development team. "The BSP framework for Windows CE 6.0 was very developer friendly," adds Prabhakar. "Combined with MSDN Library support and reference driver source code for several industry standard devices, we were well-equipped to complete the job."

Windows Embedded

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