



PlayMedia Systems*: Leading the Way in Audiovisual Content Delivery

SOLUTION SUMMARY

Challenge

An expert in consulting to some of the most prominent names in the audiovisual content industry, PlayMedia Systems* is a low-cost, high-quality developer of codecs and multimedia frameworks. Headquartered in Los Angeles, Calif, PlayMedia has audio and video research and development labs in Europe.

As PlayMedia products began to push the capacity of existing processors, they realized that a more powerful processor—sufficient to meet the demands of multimedia processing—was needed to enable the capabilities in PlayMedia products.

Solution

With the introduction of the Intel® PXA27x processor family with Intel® Wireless MMX™ technology, PlayMedia engineers realized they had a solution with the significant speed boosts needed for their codecs. The Intel PXA27x processor family allows PlayMedia to expand their market penetration and broaden their line of customized codec products.

Key Features

- Intel Wireless MMX technology enables decoding of MPEG-4 VGA movies in real time.
- Wireless Intel SpeedStep® Power Manager technology helps save battery life while supporting fast video, high-quality audio, and other robust benefits.
- Enhanced memory and higher core speeds help deliver better performance on compute-intensive video algorithms.
- The Intel PXA27x processor family is compatible with multiple OS, including the Linux* and Pocket PC* used by PlayMedia.

Business Objectives

PlayMedia is a market leader in the design and development of standards-based audiovisual rendering software. Founded in 1998, PlayMedia develops and licenses core audiovisual technologies, which can also be integrated into custom media players. This gives customers the ability to extend their brands with user-friendly interfaces and experience enhancing, user-effects. To achieve their business goals and grow their markets, PlayMedia focuses on development of highly scalable solutions for multiple OS/processor combinations utilizing the MPEG-4 standard and other popular codecs for fixed and mobile multimedia.

“In developing video algorithms, we optimized for the Intel XScale® technology,” said Kresimir Duracic, director of Video Engineering. “We put considerable effort into these algorithms and, while the results were promising, we found ourselves bordering on the limits of these architectures.”

PlayMedia management believes that one of the most critical needs in handheld devices is quality audiovisual rendering. The company’s business vision is to enable efficient, feature-laden media playback to drive sales of mobile devices.

“What we really needed,” added CEO Brian Litman “was a general-purpose processor that had the horsepower to deal more efficiently with the complex demands of multimedia processing.”

Business Solution

PlayMedia engineers worked closely with Intel consultants to optimize the Intel PXA27x processor family features and take full advantage of the benefits the processor offered. Developed to reduce design complexity, provide maximum performance, and extend battery life for the wireless market, the Intel PXA27x processor family optimizes memory, media and communication components.

“The Intel PXA27x processor family is delivering very high CPU power and saving power,” said Duracic. “Development tools and additional libraries help shorten development time, and having a variety of hardware platforms available for testing the Intel PXA27x processor family-based software make this a well-rounded solution for companies like ours.”

Intel Wireless MMX technology is one feature that offered significant benefits to PlayMedia. Using the Intel Wireless MMX technology instruction sets, they achieved very high levels of speed optimization for their MPEG-4 algorithms. This is vital to PlayMedia's ability to decode MPEG-4 VGA movies in real time.

"At the moment, our 4Play MPEG-4 decoder can decode VGA clips at 25–30 frames per second, depending on clip properties such as bitrate, number of I and P frames, and so on," said Duracic. "We did some optimizations, but we have not completed all of them. At the current level of optimization, 4Play can decode up to 100 frames per second at QVGA and up to 30 frames per second at VGA. For encoding, our current (but unfinished) level of optimization is achieving speeds up to 80 frames per second at QCIF."

Higher core speeds and enhanced memory subsystems in the Intel PXA27x processor family are important during video decoding, as PlayMedia products have very intensive CPU calculations and high memory bus traffic. The improved features in the Intel PXA27x processor family provide better performance on video algorithms.

"Optimizing our algorithms for specific CPU architectures and finding bottlenecks would be impossible without a precise tool for algorithm profiling," said Duracic. "The Intel® VTune™ analyzer, which profiles applications for hotspots of activity, offers excellent features and supports profiling different CPUs running on different operating systems."

Intel® Integrated Performance Primitives (Intel® IPP) allowed PlayMedia to optimize video algorithms without rewriting critical CPU-specific assembly instruction sets. Using Intel IPPs, PlayMedia was able to move forward in a matter of weeks instead of months.

As a member of the Intel® Personal Internet Client Architecture (Intel® PCA) Developer Network, PlayMedia worked closely with Intel's technical staff to solve problems without creating delays in development time.

"Intel has traditionally been very responsive both in hardware/software support and intellectual support," said Litman. "Their availability, whether by phone or teleconference, together with the quality of Intel silicon and user-friendly organization for ISVs has been of tremendous benefit to PlayMedia with each generation of our products."

"Thanks to the Intel PXA27x processor family, this advanced platform will allow us to expand our market, broaden our line of optimized codecs, and provide our customers with extremely flexible solutions and faster delivery."

The Intel Advantage

- **Power and performance**—the Intel PXA27x processor family delivers the speed and robust features PlayMedia needs, without compromising on the important power savings that wireless devices demand.
- **Technical support**—as a member of the Intel® PCA Developer Network, PlayMedia has full access to Intel technical representatives who were able to guide them through the development process.
- **Faster time-to-market**—because the Intel PXA27x processor family is standardized on multiple OS, PlayMedia is able to get design approvals faster and move their products to market more quickly.
- **Intel® Trusted Platform**—hardware and software components that provide security services such as trusted boot, secure storage of private information, and support for leading-edge security protocols.
- **Software**—Intel offers software development tools to enable system and application developers to take full advantage of the Intel PXA27x processor family. Intel offers several versions of its Intel® C++ Compiler, Intel Integrated Performance Primitives and the Intel VTune Performance Analyzer.

For more Information

www.intel.com/go/wirelessmobility

Intel Access

Developer Web Site

developer.intel.com

Intel® PCA Processors Home Page

developer.intel.com/design/pca/applicationsprocessors/index.htm

Intel® Technical Documentation Center

intel.com/go/techdoc

800 548-4725 7 am–7 pm CST (USA and Canada)

General Information Hotline

800 628-8686 or 916 356-3104 5 am–5 pm PST

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The Intel® PXA27x processor family may contain design defects or errors known as errata, which may cause the product to deviate from published specifications. Current characterized errata are available upon request.

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