

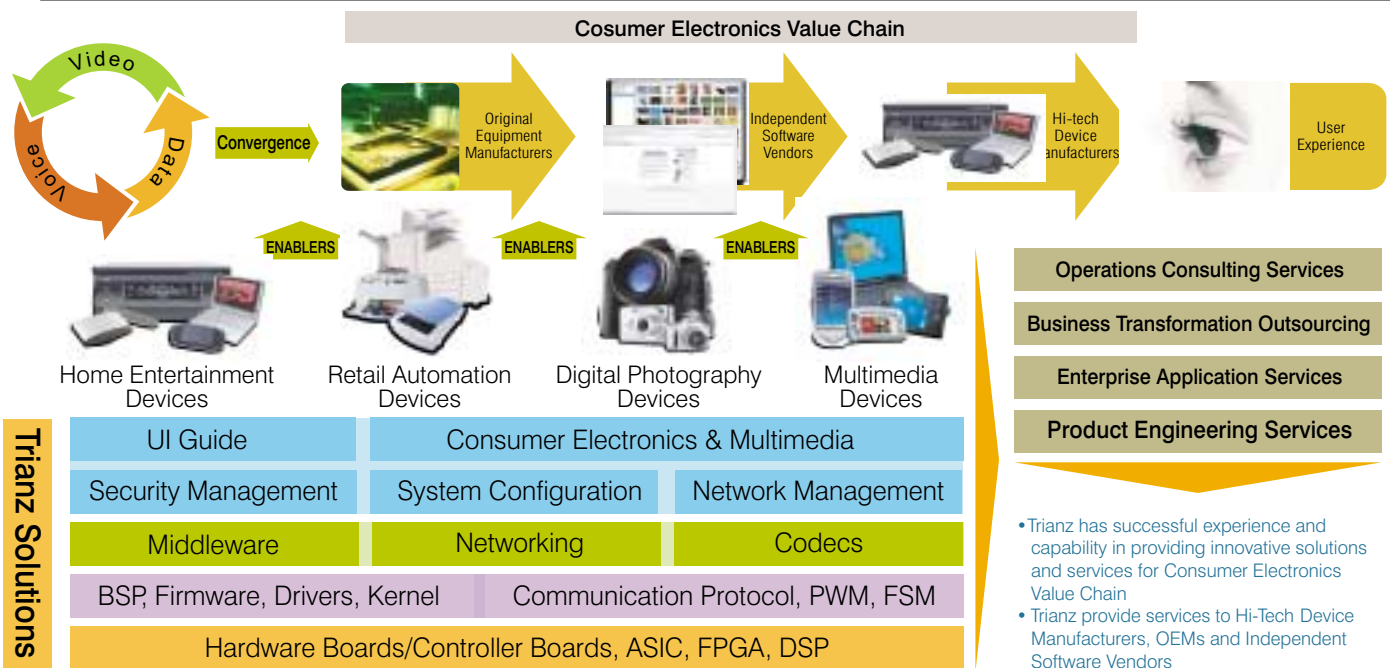


Embedded Systems – Consumer Electronics and Multimedia

The growth and development of digital technologies and the advent of new business models are compelling firms to constantly innovate and realign their focus and initiatives. The convergence of various domains and technologies is challenging the Consumer Electronics and Multimedia industries like never before. Companies must seamlessly integrate new technologies, hardware/software interfaces, digital-analog interoperability solutions and silicon-board packaging and quickly deliver appealing products in a competitive market.

Trianz deploys multiple technologies in the areas of embedded systems and software across the entire product life cycle. Our technology and domain expertise in the areas of silicon/FPGA, board design, firmware, processors, RTOS, drivers, multimedia and streaming allows us to support high-tech device manufacturers, OEMs and ISVs with world-class solutions across several different product categories.

Solution Capabilities



Original Equipment Manufacturers (OEMs)

- ASIC/FPGA/board design
- Firmware and BSP development
- Device drivers for interfaces including MMI controls, LCD displays, storage devices, and network interfaces like USB, IEEE-1394, Bluetooth, WLAN, SCSI and Ethernet
- DSP software development and optimization for wireless baseband processing, audio/video encoding/decoding, imaging and communication for cameras, mobile phones and home networking devices
- Hardware abstraction layers for interoperability

Independent Software Vendors (ISVs)

- Device driver development
- Firmware development and diagnostics
- Networking protocol stack development
- Middleware development and applications
- Wireless solutions
- Universal plug-and-play interfaces
- Network management interfaces
- Conditional access system interfaces
- Multimedia codec development and optimization
- Graphics engine development and optimization
- Content management development
- Networking utility development
- Digital media controllers (discover, events, user interface and browser development)
- Video conferencing suite development
- Video recording, image capturing and digital broadcast viewing development
- E-commerce enablement
- Electronic program guide integration
- Phone suite features development

High-Tech Device Manufacturers (Product Manufacturers)

- Embedded application product development of consumer electronics for home entertainment, retail automation, photography and mobile TV devices
- Firmware development for HAL and application-specific kits
- Media controllers, media servers and media players design, development and porting
- DSP algorithm development and porting
- Embedded software development for system control, MMI, application development, application tuning and optimization, browsers/players, management and configuration
- Middleware development and implementation of standards-based device functionality for embedded GUIs, MMS/EMS clients, multimedia, audio/video processing layers, image/file handling utilities and storage file systems
- Electronic Program Guides (EPGs) integration

Client: A Leading Research and Development Organization

Background: Trianz and the client established a virtual product engineering partnership; the client focuses on core market-facing activities while Trianz executes all engineering aspects of product realization for core research and development activities.

Engagement Highlights:

- Full life-cycle ownership, from concept to release
- Integration of MPEG4 Video Streaming application with the existing VOIP over the 802.11b WLAN.
- Developing and demonstrating the streaming of videos at two sizes (QVGA and QCIF) at 4 bit-rates (128, 256, 384, and 512 kbps).

Business Results: Technology demonstration for streaming in a wireless LAN environment and seamless integration into a mobile service provider environment with a dynamic bit rate implementation

Demonstration of a handheld PDA that is capable of switching VoIP and streaming video data between WLAN and 3G networks, on the fly

Client: A Leading Research and Development Organization

Background: The client sought to develop multimedia APIs for the Sharp Zaurus, as specified in JSR135.

Engagement Highlights:

- Full life-cycle ownership, from concept to release
- Implementation as per JSR135 standards
- User interface development
- Open-source encoder/decoder solutions implementation on Sharp Zaurus
- Proof-of-concept deployment

Business Results: The technology demonstration on the Sharp Zaurus helped the client influence various OEMs to implement standards based reference design.

Client: Product Organization in Japan

Background: The client wanted to develop a kiosk so people could rent DVDs from various locations. The system also needed to provide previews of movies and subsequently synchronize rental data with the central server and payment gateways.

Engagement Highlights:

- Full life-cycle ownership, from concept to release
- Development of server and client applications using custom embedded hardware
- Complete hardware and software development
- Program management with various device and component manufacturers
- Proof-of-concept deployment and simultaneous hardware-software co-development
- Demonstration of technology to users

Business Results: Market launch of the DVD kiosk

Trianz Value Proposition

- Unparalleled commitment to high standards that drive client value and success.
- Delivery excellence and experience in execution of large product engineering engagements through well proven methodologies and tools.
- Understanding of challenges in consumer electronics and multimedia industry product development and business offerings.
- Trianz value based engineering model (Virtual Engineering Model) ensures optimization of engineering costs and product profitability.

For more information
please write to spe@trianz.com