

# Professional Engineering Services

# Bsquare Profile

- Founded in 1994, IPO in 1999
- Worked with Microsoft to create Windows CE
- Recognized by leading OEMs and ODMs as Windows Embedded experts
- Acquired TestQuest products in November 2008
- Headquartered in Bellevue, WA
- Worldwide operations, 300+ headcount, including 200+ in Professional Engineering Services (PES)



# Bsquare Operating Locations



# What We Do

BSQUARE licenses Device Software and provides Software Engineering Services and Software Development Tools to OEMs, ODMs and Enterprises creating devices of all types.



Consumer Electronics



Handheld Data Collection



Universal Remote



Gaming Machines



Infotainment



Smartphone



Set-top Box



Thin client



Drink  
Dispenser



Kiosk and  
Point of  
Service



Medical Devices

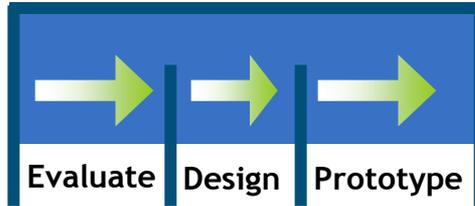
# Professional Engineering Services

- Device consulting
- Program management
- Platform software engineering
- Application engineering
- Multimedia engineering
- Adobe Flash development
- Hardware engineering
- Quality assurance
- Training and support



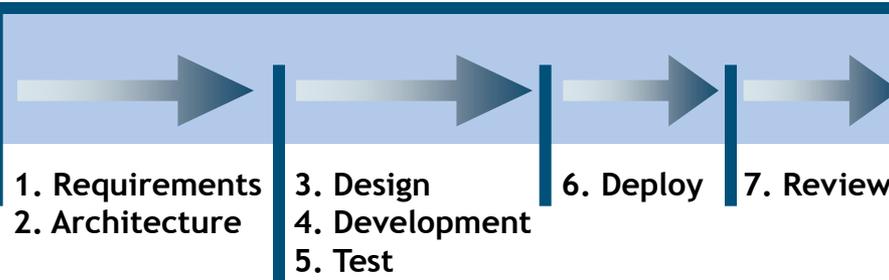
# Product Development Capabilities

## Device Product Planning



Evaluate | Design | Prototype

## Create Devices

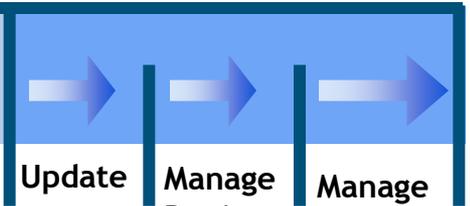


1. Requirements  
2. Architecture

3. Design  
4. Development  
5. Test

6. Deploy | 7. Review

## Manage Devices



Update | Manage Device | Manage User Experience

# Industry Affiliations



# Professional Training

- Learn From the Experts
  - Over 20 years of teaching experience
  - Microsoft certified trainers
  - Embedded courseware development with Microsoft
- Get the Skills You Need Fast
  - 3 and 5 day courses
  - Public and private sessions
  - Basic and advanced courses
- Training locations
  - Bellevue
  - Boston
  - Minneapolis
  - Dallas
  - On-site



Bsquare's Professional Training Center in Bellevue, WA



# Technical Support

- Technical support agreements for Microsoft Embedded Operating Systems, development tools & Bsquare products
- Online Technical Support Portal with knowledge base of FAQs
- Email and phone access to support engineers with years of real-world answers



# SpringBoard Retail Networks

## ■ Customer Reference

- “Bsquare is one of the top organizations in the market. They were pioneers in developing Windows CE, have expertise with Flash & wireless technology, plus they have close relationships with key players... They were clearly the right choice for the job.”

*Sylvain Perrier, Vice President of Technology, Springboard Retail Networks*

## ■ Solution

- The Bsquare team consulted on this MIPS-based hardware design, wrote Windows CE system software including power management features, developed a UI framework based on Adobe Flash Lite and managed QA testing. Bsquare also provided Windows Embedded licensing and provided ongoing technical support. These produces and services enabled the wireless, touchscreen-based Concierge device to work flawlessly.

## ■ Results

- Accelerated time to market—6 months vs. 18 months for in-house development
- Reduced development time by nearly 70%
- Increased battery life by 33%
- Extensive quality assurance testing accelerated Concierge Flash certification testing



# Palm Treo 700 (and 800) Handset

## ■ Customer Reference

- “We chose Bsquare for this project based on their deep expertise on the Windows CE platform and application development and on the Intel XScale Platform.”

*Michael Plasterer, Senior Director of Software Engineering, Palm, Inc.*

## ■ Solution

- Bsquare provided consulting and product planning services, platform and application software development services, and customized training.

## ■ Result

- Palm’s device made it to market on time and on budget.
- Set the new standard to beat



# RGIS Data Collection Unit

## ■ Customer Reference

- “We were very impressed.”

*Gary Labbe, RGIS*

## ■ Solution

- Bsquare provided consulting and product planning services, platform and application software development services, hardware development services and 3<sup>rd</sup> party management.
- Based on Bsquare’s IDP270 reference design and Schema.

## ■ Result

- Product was released to field inside of 10 months.
- 50,000 units were produce within 13 months.
- Built additional units in 2008.





# Thank You

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# Notes

# Fast Facts

- Worldwide PES team totals 195 (as of August 2009)
- 7 worldwide development centers
  - Locations include US, Canada, Taiwan, UK, India
- Core OS competencies
  - Windows Embedded
  - Windows Mobile
  - Microsoft Auto
  - Android
  - Linux
- Processor architecture competencies
  - ARM, MIPS, x86, SH
- Strategic alliances
  - Adobe
  - Freescale
  - Intel
  - Microsoft
  - RMI
  - Texas Instruments

# Consulting & Product Planning

- System architecture and product definition – power management, audio subsystem, communications subsystem, device update scheme, security
- Turn-key device development – software, hardware and manufacturing
- Hardware design and prototype
- Code base review for completeness and risk assessment
- Schematic review
- Project management consulting services
- Platform roadmap planning

# Platform Software Engineering

## ■ **Baseline CPU / Memory / Peripherals**

- Bootloader development (CPU initialization, Ethernet, USB-RNDIS download, XIP NOR, NAND)
- Kernel adaptation – OEM Adaption Layer (OAL)
- LCD Display Controller
- Keypad, Keyboard, Touch Input Drivers
- Busses /IO – SDIO, USB, PCMCIA/CF, Serial, SPI, I2C, Ethernet, CAN BUS, etc
- Audio driver, Mixing, muxing, connection logic, DTMF tone generation, headset, microphone, speakerphone, car kit
- Memory management
- Power management
- Device management – update scheme implementation (in-cradle, SD, etc.)

# Platform Software Engineering (cont.)

## ■ Multimedia/Advanced Graphics

- Multimedia DSHOW Filters
  - Source Filters, Splitters, Multiplexers, Encoding, Decoding
  - Leverage Hardware Acceleration of SOC
- Video / Camera Drivers
- GDI, Direct Draw, 2D, 3D Advanced Graphic Controller Drivers

## ■ Wireless Technologies

- Wi-Fi 802.11 Drivers
- WiMAX Drivers
- Cellular - RIL Drivers – GSM / CDMA
- Bluetooth Integration
- GPS Integration
- IRDA Drivers

# Application/Middleware Development

- Cross-platform applications for devices
  - Windows Embedded CE
  - Windows Mobile
  - Linux
  - Symbian
  - Android
- User interface framework
- Third party applications
- Integrate connected services
  - Facebook
  - Twitter
- Deployment strategy
- Security

# Application/Middleware Development (cont.)

## ■ User Interface

- For consumer electronics, the traditional Windows look-and-feel is no longer “good enough”--create a powerful user experience with Adobe Flash Lite

## ■ Device Management

- Having an efficient device management strategy and tool is cost effective and will prevent risk in device maintenance

## ■ Data Management

- Having a database on your device can help you effectively manage your data--especially when server synchronization is required

## ■ Security

- Ensure device is compliant with HIPPA, PCI, etc. A solid security plan is critical for addressing any threats



# Adobe Flash Development

- Flash Lite Players
  - Windows CE 5.0 and 6.0 for ARM, x86, SH4, and MIPs
  - Linux 2.6
  - Android
- Standalone Flash Lite Application and Flash Lite Browser Plug-in
- Custom Flash Lite Porting
  - Performance optimization and tuning
- Custom Flash Application Development and Enhancement
  - Player integration into applications
  - Standard and custom APIs and interfaces
  - Flash user interface design and development
- Adobe Player/Device Certification



# Hardware Engineering

- Early-stage engineering services for product planning – feasibility, requirements, architecture, and component/platform selection
- Schematic design and PCB layout
- Mechanical design and engineering
- Prototype fabrication and assembly
- Product qualification (FCC, CE, UL, environmental testing)
- Industry-specific requirements for military and automotive designs
- Coordination with industrial design firms
- Coordination with production contract manufacturers
- Wireless technologies (Wi-Fi, Bluetooth, 3G)
- Incorporation of Bsquare reference designs where appropriate
- Cross-functional approach (HW and SW) for rapid resolution of integration issues

# QA, Testing and Pre-certification

- Proven QA test methodology – requirements-driven, test plans, nightly builds, BVT, defect tracking, regression testing, summary report (IEEE 829)
- Bsquare proprietary automated & manual test software with library of 10,000+ test cases
- CE & WM Platform & Application validation & test case automation development
- CE & WM Stress & Performance testing
- Microsoft Windows CE Test Kit (CETK) QA testing
- Microsoft Windows Mobile Logo Test Kit (LTK) logo testing
- Microsoft WMTF UI automation for Windows Mobile
- Device Validation Test Suite offering
- WHQL/DTM and desktop driver testing
- USB-IF pre-certification

# TestQuest Engineering

- Countdown Mentoring Jumpstart
  - CD-PESMNTR-440
- Develop device, application & UI QA automation strategy
- Implementation of device, application, UI QA automation strategy
- Execution & regression of QA automation strategy
- Development of automated certification programs
- Porting test cases to new platforms
- TestQuest Testcase/IP Library



**Thank You**