Mobility Solutions

OVERVIEW

X86 is taking the mobile world by storm, introducing new device categories that will drive more and more capabilities into the hands of mobile users on a global scale. Six years ago, the Notebook led to the Tablet PC. Three years ago, the introduction of the Ultra-Mobile PC by OQO and Vulcan, both Phoenix Technologies (PT) customers, created focus for the entire industry—people want mobile computing devices on their person—on vacation, business trips, in the office, in the car, at the local coffee shop, and anywhere else they go.

Mobile computing is more than just carrying around your files. It's access to information, content and people anywhere, anytime, with the ability to not just look up that information, but to act on it in ways that leave a positive impression of your presence—whether it's making a reservation, finding your location, enjoying a game, or reaching out to others.

The traditional PC, its BIOS, operating system, and desktop applications aren't generally suited for mobile computing because they were designed to meet the needs of a general-purpose user sitting at a desk with a large display monitor, full IBM-style keyboard, and hard drive loaded with programs and isolated data. Today, Phoenix is changing all that, enabling users to leverage PC building blocks without burdening them with the limitations of the desktop-style computing paradigm.

Phoenix has brought many of its technologies to bear on the shrink and transformation of the Mobility space, including:

- **Quickboot and resume** — Sub second POST eliminates "booting" and "rebooting" of devices, outperforming fixed function devices with hard-coded firmware like iPod and the early Palms.
- **Power, thermal, and battery management** — A solution addressing the needs of these three interrelated problems with opposing goals.
- **Custom design** — Differentiation that places the focus on the value of the device relative to the sea of others in the market.
- **Integration** — Solving high integration problems involving embedded controllers, part virtualization, and more.

APPLICATIONS

Mobile Internet Device (MID)

The new generation of mobile devices based on the PC architecture no longer looks anything like a desktop PC. In 1996, General Software (now part of Phoenix Technologies) partnered with Nokia Mobile Phones to deliver the industry's first MID—the N9000, and later more models—the N9000il, N9010, and N9010i. These devices coupled Nokia's leadership in GSM technology with General Software's expertise in firmware, including BIOS, DOS, and Flash file systems, to produce a mobile connected device that could access the internet anywhere a GSM network was available.

A few years later, a wide spectrum of mobile internet devices is available, from many manufacturers. A whole ecosystem of suppliers, ODMs, OEMs, and mainstream users, has reached critical mass transforming this device class from a device for early adopters to one for the masses.

Whereas Nokia's early entry into the market used X86 processors from Intel and AMD (both using Phoenix firmware stacks), the real power saving and performance gains were owned by other architectures, such as ARM, until recently. Today, AMD, Intel, and VIA are making big investments in this market, transporting the X86 architecture into the MID power/performance envelope. Phoenix has programs with these vendors to develop the firmware that ODM and OEM customers need to get their MIDs to market quickly.

APPLICATIONS

Ultra Mobile PC (UMPC)

Phoenix is the leader in enabling firmware for UMPC devices today, supplying such industry leaders as OQO and Vulcan with solutions that solve the challenge of fitting the functionality of a desktop PC into the palm of the end user's hands. Phoenix facilitates while adding the functionality necessary to interact with UMPCs not as a tiny PC, but as a mobile version of a PC with new ways of interacting with the user.

UMPCs are compelling to Laptop users because of their reduced size and increased mobility, taking the laptop idea to the next plane, leapfrogging minor improvements in size, performance, and battery life with a new paradigm. The new devices also improve on laptops with increased connectivity, offering built-in broadband, Bluetooth, and 802.11 network access, so that the device is always connected. This device class doesn't need plugging-in unless it's to support a "legacy" wired network.

Mobile Internet Device (MID) users buy UMPCs because of their ability to provide full PC functionality in a conveniently mobile package and in a traditional desktop environment in a docked mode. Instead of using Windows Mobile or a Palm operating system, the user has the full capabilities of a shrink-wrap operating system like Windows Vista, or a generic operating system like Linux.

With UMPCs drawing the attention of two markets toward a convergence, in the same way that telecom/datacom drew two industries together to create a new class of devices, firmware support is key to the success of these products in the market. Shrink-wrap and generic operating systems expect full-featured desktop PC BIOS support, whereas desktop PC BIOSes don't have the mobility support UMPCs require to be so compelling.

Notebook PC

Notebooks represent a mature and evolving market consumed by business and personal users of desktop computers who need to carry their desktop around. Characterized by battery life, performance, and screen size, notebook PCs are a major market segment.

It's not surprising then, that notebook ODMs have battery life, performance, and video performance problems to solve. Even more important is the need to tie-together all of the special buttons and lid switch inputs available on laptops into the system with an embedded controller that becomes exposed to the OS through ACPI, the Advanced Configuration and Power Interface.

ODMs select Phoenix Technologies for its ability to address all these problems, and push past them to work on usability of the device. This includes supplying the industry's fastest boot time, measured in milliseconds, not minutes.

Tablet PC

An evolution of the notebook PC concept, tablet PCs add new user interaction models with special hardware to support drawing directly on the screen, and mechanicals that allow screens to swivel.

With significant experience in both the notebook PC category and the UMPC arena, Phoenix Technologies should be a first choice in tablet PC development.

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