



# Technology Brief...

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## Palm's Last Chance, or Last Gasp?

### INSIDE THIS ISSUE

- 1 Palm's Last Chance, or Last Gasp?
- 2 Virtualization: Coming Soon to a Mobile Phone Near You?
- 3 Open Wireless: Are We There Yet?
- 4 Recent Research Reports

Palm is now at a critical crossroads in its existence. It is not yet clear whether it can survive, let alone regain its former luster. The company that previously defined the smart phone market has lost its way and its declining market share and lackluster financial performance indicates this clearly. Why did this happen and what can Palm do about it?

Palm has fallen well behind the market with its "geriatric" Palm OS driven systems and needs a good "kick in the phone" to get market share back. Even die hard Palm fans are choosing other, more modern platforms. To supplement its market presence, Palm has relied on Windows Mobile based devices to fill in the gap, with some success. But that only takes Palm so far and it has not produced a major differentiating product for Palm, especially in the consumer space. And although the Centro has been popular at the lower end of the market, it can not compete on features and functions with newer smart phone products. Palm needs a competitive high end product to compete with the next generation platforms from Symbian, Android, iPhone, BlackBerry, etc., and right now PalmOS does not deliver the user experience or feature set anything like those platforms do.

Palm has been working on a new Palm OS based on a Linux kernel for a long time. The new OS is at least 3 years late and has had multiple slips. Now rumors have it that it will be announced in January 2009. This really is Palm's last chance to come out with a compelling, competitive platform. If it doesn't, the market will continue to pass Palm by and it will be even more marginalized. That's sad for a company that virtually invented the smart phone, but it is the reality of the current market which has seen some highly compelling platforms offered and adopted by consumers and business users (e.g., Apple iPhone, Google Android, BlackBerry Storm). And Palm may not be able to rely on its shrinking base of loyal Treo fans to quickly adopt any new device OS. Palm faces the difficult task of providing an upgrade path for the goodly number of existing Palm OS apps. But the new operating system has a Linux core and is completely different than the previous OS. It will likely include a number of UI enhancements to be competitive in the market. It is unclear how backwards compatible it will be, so Palm may have to entice app vendors to develop new apps for its platform, which may be difficult with so many other platform choices.

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The fact that the new Palm OS is Linux based is not that important to many users or the general market, other than Palm might be able to use this fact as a lever - as Android did. The difference however is that the Palm OS will not be open

source but controlled by Palm (unless Palm changes course). In theory, it could incorporate Linux based apps, but Palm's UI will be unique so app creators will have to modify what they built for other Linux platforms. But some of the low level functions (drivers, utilities) could make it from Linux into the Palm OS, so that could be a leverage point for Palm.

**Bottom Line:** It is still unclear whether or not Pam will finally announce its new OS in January as predicted. But it is very clear that they have little time to waste. And if this OS is not a compelling alternative/competitor to the myriad of new generation platforms already in the market, it will become Palm's "Swan Song". That would be a sad ending to a pioneering company.

## Virtualization: Coming Soon to a Mobile Phone Near You?

Over the next 2-3 years, many more applications will be available for smart phones, which will become increasingly capable and complex. In fact, we expect smart phones commonly available in 2011/12 to incorporate many of the key subsystems available in the PC of today, including enhanced graphics processors, full multimedia subsystems, complete Internet access and application processing (e.g., AJAX, Dynamic XML, Java, Flash, Silverlight), and connection speeds approaching current broadband (e.g., cable modem). With all this capability and complexity, will we soon find ourselves in the same dilemma with our smart phone and internet access devices that we now face with the PC; trying to remain secure and prevent system crashes?

We believe that smart phones will undergo a fundamental change in philosophy going forward. We do not expect that the large, monolithic OS common in the PC environment will be duplicated in future smart phone designs. We expect a virtualized environment to evolve. Virtualization has many benefits in a smart phone device. It allows various subsystems to be abstracted and isolated from each other, preventing a potential crash in the graphics processor from bringing down the voice phone channel. It also isolates any applications that may be running from affecting key functions like email and SMS/MMS. It can also isolate mission critical data from access and corruption by errant applications or even malware. And it allows leverage of existing drivers and low level functions to be abstracted and utilized by many higher level functions.

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Although the installation of virtualization in most phones today is impractical due to resource limitations, newer generation devices should have more than enough processing power and memory to accomplish this. In fact, some current platforms have already moved in this direction, running their "trusted" apps in an isolated environment (e.g., BlackBerry, J2ME). Virtual devices could even have more than one phone instance running at the same time (i.e., having multiple SIMs installed) for isolating business and personal use/billing, or domestic and international needs.

To be sure, the move to virtualization is not a panacea, nor will it be easily accomplished. It will require a redesign of the phone architecture, which would require a Hypervisor running at the lowest level of the hardware (e.g., beneath the OS). Some mobile-targeted hypervisors already exist (e.g., VMWare), but have not yet been incorporated into shipping devices. Application would require

a custom design effort targeting specific processors (e.g., ARM, OMAP) and specific OSes (e.g., Symbian, Android, Windows Mobile, BlackBerry). However, once implemented, the manufacturer of the device would have the ability to essentially reconfigure a device with whatever OS and other environment they choose without doing a device redesign. This could have enormous implications for vendors that currently offer different OSes on essentially the same platform. Virtualization could also aid in device upgrades and management functions, making the devices more cost effective and decreasing the overall TCO for business users. Finally, truly isolating the applications could prevent the “blue screen” crash and re-boot scenario so prevalent in PCs, which is disastrous in a smart phone.

**Bottom Line:** We expect to see an increasing interest in virtualization technology for smart phone devices, following the same track as we are currently seeing in the PC environment. However, although the virtualization of smart phone devices is attractive, it will take a considerable effort to achieve. We expect a gradual uptake of virtualization, starting in high end devices over the next 3-4 years, and eventually making its way into the mid-tier device market. This will ultimately be of great benefit to users who will obtain better, more capable devices that operate more safely and more robustly.

## Open Wireless: Are We There Yet?

There has been a good deal of speculation and expectation over the past year about whether we can achieve truly open wireless. Announcements from AT&T, Verizon, Google and others notwithstanding, the question remains whether we are achieving, or even moving towards open wireless access. And for right now at least, the claim of openness is dubious at best.

In fact, open wireless still has a long way to go. Part of the issue is that carriers still heavily control their networks. A manufacturer can not just launch a new wireless product without carrier approval and extensive testing. While carriers say this limits any risk of network problems from badly designed products, it also significantly limits the ability of wireless vendors to innovate and offer compelling new products and/or services. The test and approval cycle is long and it has to be performed for each carrier, not just for GSM or CDMA in total. Imagine if vendors of PC hardware and software had to test and get approval for each brand of PC out there! It would drastically curtail the computing market. But this is exactly the current situation in wireless. The end result for the mobile market is that the launch cycle is long, and the time in market has to be relatively long as well to recover the added expenses, thereby extending product life spans and impacting upgrade/refresh cycles.

The other component affecting wireless openness is handsets. While Android, and eventually Symbian, offers an open source platform that in theory allow lots of openness and creativity, the reality of the situation is that such devices represent a very small share of the current market. App vendors still have the burden of designing apps for at least 3 primary platforms and possibly 5 or 6 if they want to cover the entire marketplace. So the handset world is far from commodity oriented, write once run anywhere, like the PC market is. We don't

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see any major consolidation happening for the next few years. It means there will be inequality for apps across the various handset platforms. Many of the app vendors will have to choose which platform to support as they probably can't cope with supporting all the popular platforms at once.

So what does all this diversity represent, or is it just chaos theory in action? The potential for chaos might be a bit overstated, but there certainly is a level of confusion for many consumers, and even for some business users. The fact is, most consumers do not pick a phone for its OS - they pick it for its features and "coolness" factors. Business users are a little different in that they pick a platform and not just a specific phone. They make a long term commitment just as they do in many other technology choices. But it certainly means the market will remain dispersed over many device and platform choices. And consumers will end up with only those apps they can get for their own device choice, and may not get something "hot" available on another device (e.g., Apple iPhone apps don't work on BlackBerry Storm or HTC G1).

**Bottom Line:** Market forces are pushing the carriers towards more openness (who would have thought 3-4 years ago that we would ever have carriers endorse the concept of open networks?). It's likely that the best chance we have for truly open networks will come in the next 3-5 years as LTE gets widely deployed. The advent of new device types (not just smart phones, but also Mobile Internet Devices and Netbooks) will require a re-evaluation of carrier testing and certification as well. More data capable devices being deployed, more data-based revenues being generated on carrier networks and more sources of data services will act as levers to open the wireless world. At the end of the day, carriers and equipment vendors are capitalists, and more openness will equate to greater revenues. That will drive openness far more effectively than corporate pronouncements and even regulatory intervention.

## Recent Research Reports

*Contact us if you would like to obtain any of the following research reports:*

### Major Market Studies

- Enterprise Mobile Applications: A Study of Strategies and Adoption Trends - September 2008 (Complete Report)
- Mobile Business Applications: A Study of Strategies and Adoption Trends - November 2008 (Executive Summary)

### Technology Insight Reports

- Can AMD Survive? - What Should Users Do? - Sept 4, 2008
- Intel: SOC it to CE - July 30, 2008
- Android or Sym-droid? - July 24, 2008
- Nokia Shakes Symbian to its Foundation - June 24, 2008
- iPhone 3G: Still coming Up Short for the Enterprise - June 12, 2008
- Securing Laptops Against Government's Prying Eyes - April 28, 2008

### Whitepapers

- Wireless Push Email for the Smaller Business: A Comparison - Aug 08
  - Choosing an Enterprise-Class Wireless Operating System - July 2008
  - 7 Steps to a Highly Effective Mobile Strategy for Your Business
- Others are available by request from our web site*



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