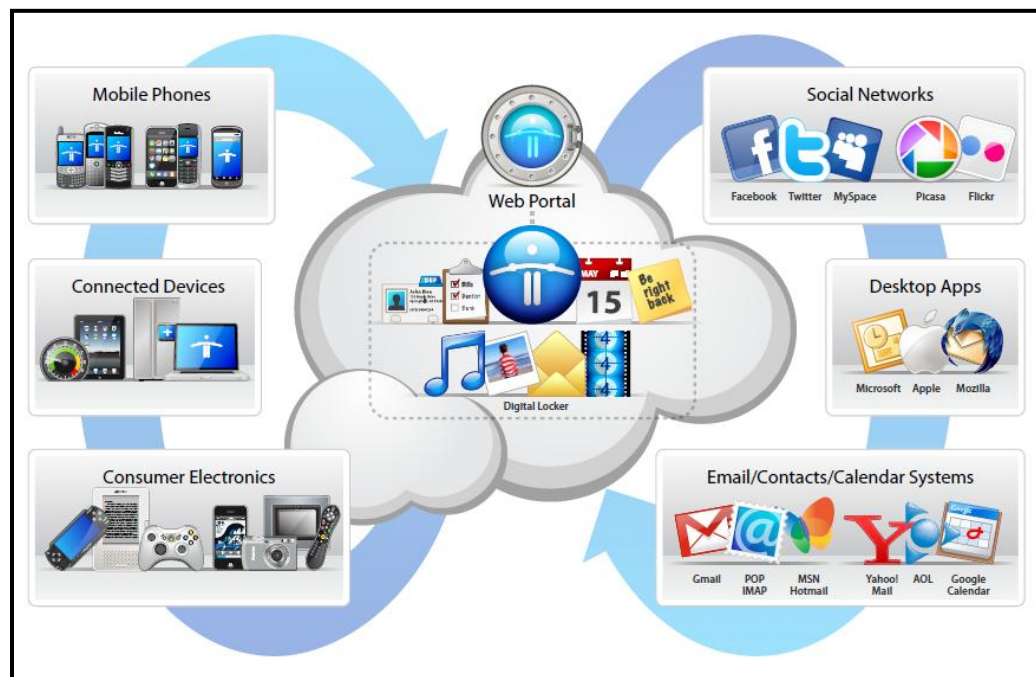


## A Brave New World: The Internet of Things



### Open Source Mobile Cloud Sync for Billions of Connected Devices

With apologies to Aldous Huxley, the way that people access information and communicate is radically changing, right before our eyes, in many ways that are not yet readily apparent.

Wireless devices are infiltrating all aspects of our lives. While today's most common mobile device is the cell phone, with five billion smart and feature phones expected worldwide by the end of 2010, there are many others. Consider the following, many of which are rapidly adapting for wireless networks:

- Laptops, netbooks and dongles (for remote PC connectivity)
- Tablet PCs e.g. iPad and other tablets hitting the market
- e-book readers, such as Kindle and Nook
- Portable multi-function MP3, video & game players, such as the iPod Touch
- Digital picture frames
- GPS navigation systems
- Digital cameras and mobile printers
- In-vehicle info displays, such as BMW iDrive
- Set-top boxes for downloading movies and games over-the-air
- Wireless utility meters
- Home appliances with integrated touchscreens, such as refrigerators, washers and dryers
- Wifi enabled VoIP phones, alarm clocks and internet devices such as the Chumby



These devices can be grouped into the three categories of mobile phones, connected devices and consumer electronics. As the cost to mobilize these devices continues to drop, and as wireless networks become faster, ubiquitous and cheaper, it is easy to see a near future where almost everything and everyone are wirelessly online, 24x7. A harbinger of things to come are people who are cutting the cord to their landlines in favor of their cell phones. Research indicates that whereas many people today use two or three wireless devices, within a few years, this will increase by one or two orders of magnitude.

It is evident that the wireless universe of things will rapidly accelerate. This raises many questions as well as opportunities, especially for businesses that offer communications equipment and services, consumer electronics and other connected devices. Here are some important trends that businesses should be aware of as the internet of mobile things comes of age.

1. People will increasingly expect to access a wide range of data and rich content on many devices. Today, the most common mobile data types include voice, contacts (address books) and SMS (text messages). Soon, people will expect to wirelessly access email, social network messaging, calendars, photos, videos, files, music, games, apps and web pages. The metaphor of the digital locker in the cloud, as illustrated in the preceding diagram, will become well known. People will expect to easily put things in and take things out of their digital locker, regardless of the wireless device accessing it. A simple example is using a unified address book on a wifi phone or digital camera (e.g. to email someone a photo), which draws from contact information in multiple places such as Gmail, Facebook and a phone.
2. It will become increasingly important to easily manage and filter this avalanche of mobile data. This includes functions such as syncing, deduping, sharing, searching, transferring, archiving, deleting and caching. This means making it seamless to share mobile data and rich content with other devices, people, groups, businesses, schools, public agencies, systems, etc.
3. It will be paramount for device manufacturers and service providers to remotely manage mobile devices by performing operations such as setup, provisioning, monitoring, troubleshooting, updating, locking, erasing and billing. It has not been technically feasible to perform these functions remotely because devices were offline, but soon, these functions will not only be possible, they will be expected.

The net result (pun intended) is that there are profound technical, economic and ecosystem changes in the works that will dramatically alter the products and services that we use every day. At Funambol, we have been enmeshed in the mobile world for several years and we can see the wireless writing on the wall. Its possibilities and opportunities to fundamentally change the way we live and work are endless.

During this time, we have learned some important lessons about mobilizing the internet of things. For example, although it may seem trivial to connect a device to a wireless network (e.g. how hard is it to connect a laptop to wifi, but how easy is it for a home consumer user to set up a home network for file and printer sharing), basic wireless connectivity is usually not the hard part. The real challenge is managing wireless devices and allowing them to easily share data and content in a way that meets user expectations, and that performs reliably and securely. This has been difficult to achieve in the past, but now, armed with new approaches and software, it is easier. Here's why.



First, you must expect the unexpected. Nobody knows how the internet of things will unfold on a large scale. It is a matter of smarts and survival to employ an approach that offers the greatest flexibility for building and delivering a new generation of mobile products and services. Failure to be nimble means betting your future on a specific course that nobody can accurately foresee.

Second, open source is the best and only viable approach to enable billions of connected devices. Consider the explosion of the fixed Internet. It was due in large part to open standards and open source, used by countless developers. The mobile internet stands to quickly dwarf the fixed internet, in terms of users and devices. Similarly, the best and only scalable approach to thriving in the hyper growth phase of the internet of things is open source. Put simply, closed, proprietary software results in vendor lock-in to a specific technology, which inevitably stunts growth. Open source not only provides full access to source code, for maximum flexibility, but also to a large community of like-minded developers that share code and knowledge. This environment of open code and knowledge fosters a dynamic that uniquely results in the broadest device compatibility.

Third, to enable the unfettered data access and communication proffered by the internet of things, the mobile cloud is the ideal architecture to sync any data with any device and system. The mobile cloud provides infrastructure such as syncing, Web 2.0 portal, device management, data adapters, push notifications, aggregation, conflict resolution, core apps, privacy management and rapid development. There are early mobile cloud point solutions that sync limited data with limited devices and systems, yet there are numerous reasons to believe that the mobile cloud is the optimal approach. For more information, see the article, "The Open Source Mobile Cloud: Delivering Next-Gen Apps and Systems" (Open Source Business Resource, <http://www.osbr.ca/ojs/index.php/osbr/article/view/1055/1014>).

In summary, the internet of things will be upon us more quickly and pervasively than people realize. If you want to thrive in this brave, new world, your next mobile device or service must sync a wide variety of data and rich media, with many other devices and systems, via the cloud, and perform remote device management. Only the combination of open source and the mobile cloud provides the requisite flexibility and crowd-sourcing knowledge for billions of connected devices. To learn more about how to harness open source mobile cloud sync to realize your business objectives, please contact Funambol.

#### About Funambol

Funambol is the leading provider of open source mobile cloud sync for billions of connected devices. It is also the leading mobile open source project in the world that has been downloaded four million times by 50,000 developers in 200 countries. The commercial version of Funambol has been deployed by top device manufacturers, mobile operators, internet companies, service providers and software firms, including AOL, 1&1, EarthLink and CA, Inc. Funambol is headquartered in Redwood City, CA, with R&D in Europe. For more information, please visit <http://www.funambol.com>. You can also follow Funambol on Twitter at <http://twitter.com/funambol>.