Smartphone Trend and Evolution in Japan

MCPC / Impress R&D joint survey conducted in September 2010

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Mobile Computing Promotion Consortium
Smartphone Committee

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1.1.1 Smartphone Definition -MCPC-

MCPC defined the smartphone in the 2009 market forecast we published in March 2009. Smartphones have become more and more prevalent across the globe, and we believe that as defined the smartphone is a universal term that contributes to the promotion of open utilization.

"A mobile phone or PHS that incorporates a public general-purpose operating system, to which users can freely add applications, extend functionality, or customize"

Specifically, this means mobile phone and PHS devices that incorporate platforms such as Google's Android, Research In Motion's (RIM) Blackberry OS, Apple's iOS, Microsoft's Windows Phone OS, and Nokia's Symbian OS. The Symbian OS we refer to here does not include versions using the MOAP (Mobile Oriented Applications Platform) infrastructure software used in Japanese advanced-function mobile phones, but rather those based on the S60 Symbian OS application platform that is not currently available in Japan.

Aside from the above, other OSes that meet the definition of a smartphone have also been released to the global market or announced. One example is bada, with which Samsung took the approach of releasing an open mobile platform based on an open source version of the OS used in their devices up until now to expand use of their SDK and application market. Nokia, which has shifted to an open source approach like Android, has also merged the Linux-based Maemo they launched after Symbian with Intel's Moblin to create MeeGo OS. There are various reasons behind the development of these new OSes, but open source smartphone OSes share a focus on building an ecosystem for development platforms and application markets.

Reference 1.1.1 Functions and Services Often Used by Smartphone Purchasers
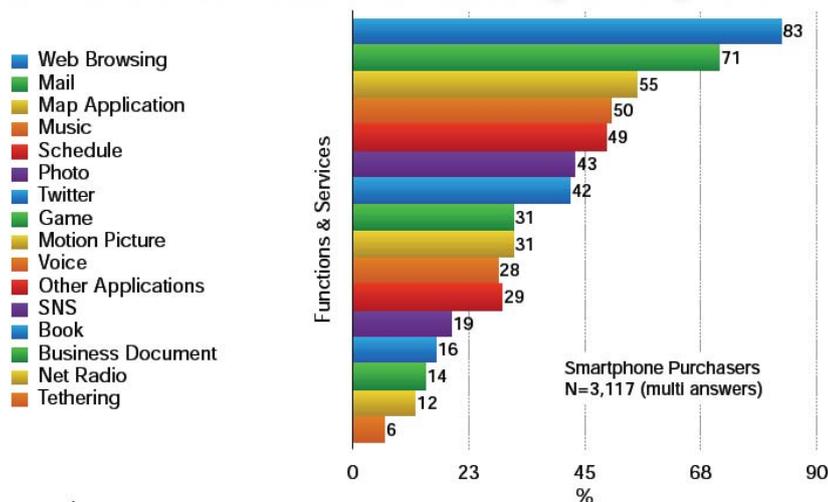
Source: MCPC / Impress R&D joint survey conducted in September 2010

1.1.2 Smartphone Recognition

Smartphone recognition has increased rapidly due to exposure via newspapers, magazines, and advertising media as well as the promotion of smartphones at mobile phone retailers, and the recognition rate, which was just 23% in October 2008, has climbed to 93% as of September 2010. As it stands most consumers have now heard of the term "smartphone."

Reference 1.1.2 Smartphone Recognition Rates
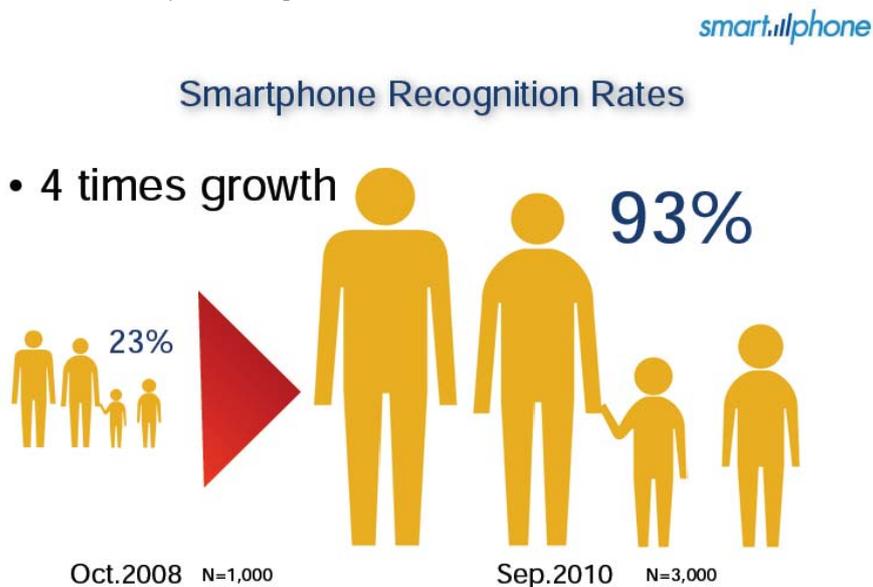
Source: MCPC / Impress R&D Joint survey conducted in September 2010

1.1.3 Intended Adoption of Smartphones

As smartphones have begun to garner attention and come into the media spotlight, the number of people intending to make the switch to one has reached high levels. Half of those who do not yet own a smartphone wish to own one at some point in the future, and we believe that the shift from mobile phones to smartphones will progress at a rapid pace.

Regarding corporate use, a quarter of all companies are planning to adopt smartphones, indicating that interest levels are lower than those of private individuals. Issues such as the clarification of cost-benefits and management of usage fees are barriers to smartphone adoption, and we believe that this has led to lower intended adoption numbers than private individuals.
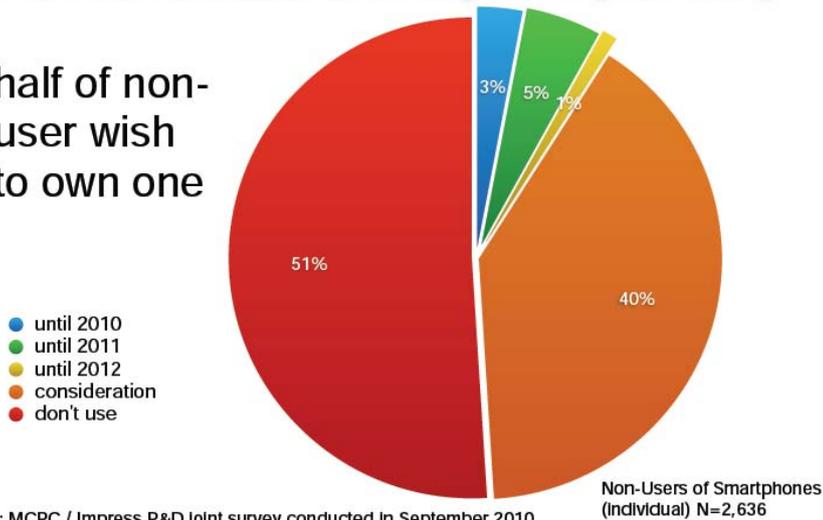
The awards held by MCPC annually recognize companies, schools, and organizations that have produced results through the adoption of mobile computing, and also introduce a wide variety of case studies. Recently there have been many examples of smartphone utilization that takes advantage of the distinctive characteristics of the industry sector or corporate culture of companies both large and small. We believe that the fact that consulting firms, think tanks, and system integrators are accumulating smartphone knowledge regarding business management performance analysis and synergistic effects with cloud computing in addition to the application of these user case studies will be a primary factor in raising interest levels in the future.

Reference 1.1.3 Planned Purchases of Smartphones (Non-Users of Smartphones)

Reference 1.1.4 Planned Corporate Adoption of Smartphones (Including New and Additional Contracts)

1.2 Medium-Term Smartphone Market Forecasts
1.2.1 Overview of Smartphone Market Forecasts

Based on a joint survey conducted by MCPC and Impress R&D, MCPC estimates that there were 4.97 million smartphone contracts (3.8 million individual contracts and 1.17 million corporate contracts) in place at the end of March 2010 (fiscal 2009). We forecast that this number will soar 63% to 8.1 million contracts (6.34 million individual contracts and 1.76 million corporate contracts) by the end of March 2011 (fiscal 2010). We believe this to be the result of the fiscal 2010 release of new models such as the iPhone 4 and smartphones incorporating Android, as well as the launch of services that promote a switch from previous models, such as allowing i-mode e-mail addresses to be used on smartphones. Growth in the smartphone market will continue, with 47.12 million contracts (41.64 million individual contracts and 5.48 million corporate contracts) forecast by the end of March 2016 (fiscal 2015).

Reference 1.2.1 Smartphone Contract Number Forecasts
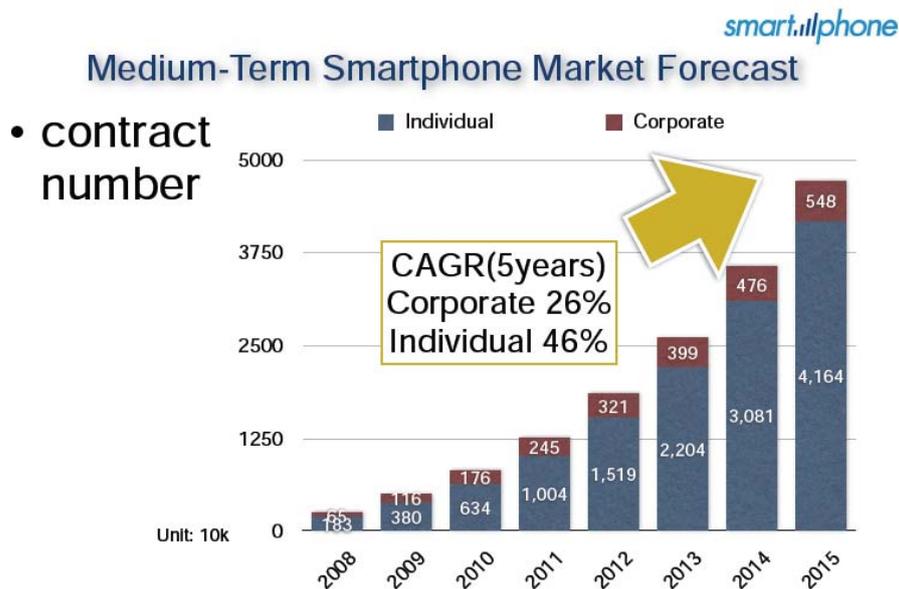
Source: MCPC / Impress R&D joint survey conducted in September 2010

Because contract numbers continue to increase at an average annual rate of over 40%, we also project rapid growth in the content distribution market for smartphone products such as applications, music, games, videos, and electronic books.

Regarding shipment volume, while 2.78 million units were shipped in fiscal 2009 (2.41 million individual purchases and 370,000 corporate purchases), we forecast this will rise 47% year-on-year to 4.1 million units in fiscal 2010 (3.37 individual purchases and 730,000 corporate purchases), and 50% year-on-year to 6.14 million units in fiscal 2011 (5.26 million individual purchases and 880,000 corporate purchases).

Individual contracts are increasing more rapidly than corporate contracts, and smartphone growth will continue to be focused on the individual market for the foreseeable future. We believe that corporate adoption numbers and contracts will grow through the promotion of adoption mentioned earlier.

Reference 1.2.2 Smartphone Shipment Volume Forecasts
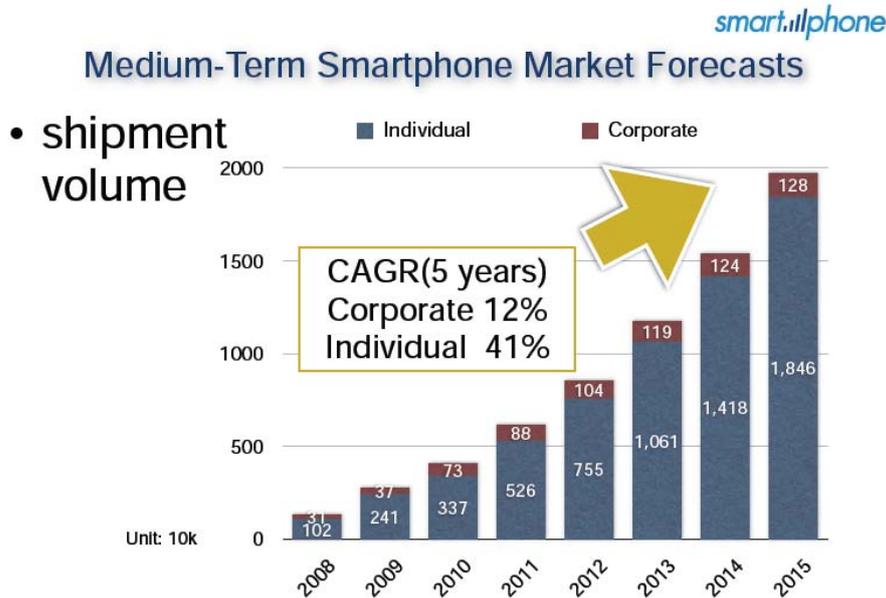
1.2.2 Tablet PC Market Forecasts

MCPC has also conducted joint surveys with Impress R&D to forecast tablet PC shipment volumes. There is no concrete definition of a tablet PC, but they have a tablet-like appearance, a touch panel for display and input, and are operated much like a basic, compact PC. They are sometimes also capable of supplementary mobile phone functions such as making voice calls. Apple's iPad is a well-known example of a tablet PC product. The iPad was launched in the United States in April 2010, and in Japan the following month, with worldwide shipments of 7.46 million units by September 25. The iPad is now also being used by companies as well as individuals in Japan. Examining individual usage rates, 4% of the population have one of the devices for personal use, while 1% have been supplied one by their company, for a total usage rate of 5%. Recognition is also at the high level of 92%. These usage rates are higher than the tablet PC shipment numbers discussed below. We believe this to be due to the fact that, unlike smartphones, tablet PCs are often shared among several people. Smartphones are exclusively personal property, so a single user will represent a single smartphone. Meanwhile, tablet PCs are currently considered family property, with a single device often shared among a number of family members. It is thought that usage rates are higher because respondents indicated that their entire family use the device when one is owned by a household. Tablet PCs have also already been adopted at 7% of companies. We estimate that smartphone corporate adoption did not reach 7% until fiscal 2008, four years after their initial release (according to the MCPC smartphone survey conducted in October 2008). On the other hand, tablet PCs have reached the same level of penetration in just six months, indicating strong demand for their adoption at companies. We expect they will be even more widely adopted in the future.

MCPC estimates shipments of 1.01 million units in fiscal 2010, with 840,000 units being for individual use and 170,000 for corporate use. Shipments of 1.44 million units are forecast for fiscal 2011. Since late 2010, Samsung's GALAXY Tab and Sharp's GALAPAGOS media tablet have been launched, and in 2011 RIM's "PlayBook" BlackBerry tablet is scheduled to launch in the United States. It is expected that competition will heat up in the growing domestic market for tablet PCs such as these with increased media

recognition and new models becoming available. The medium-term forecast is for shipments of 7.38 million units in fiscal 2015, with a high average growth rate of 49% expected to continue until then.

Reference 1.2.3 Tablet PC Shipment Volume Forecasts
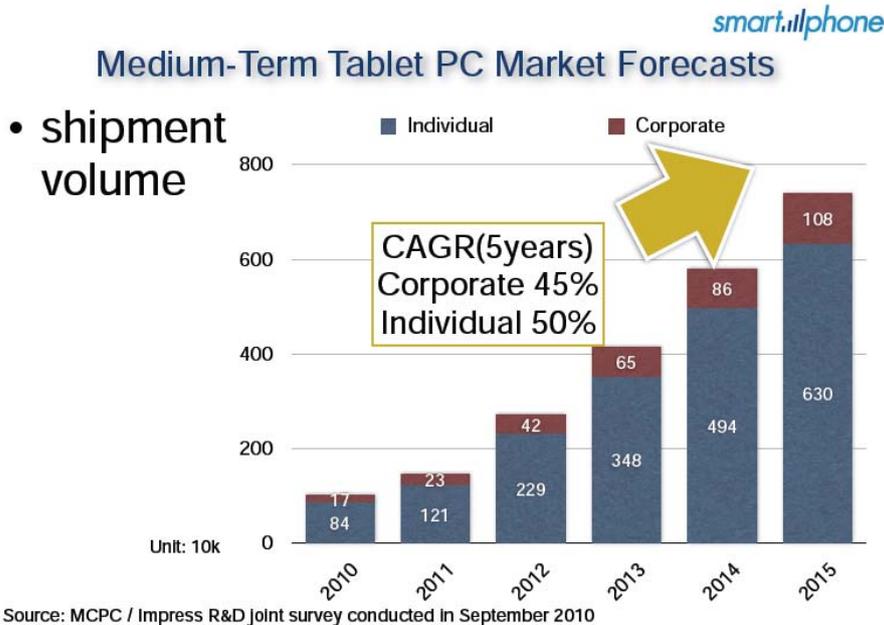
2. Smartphone Evolution and Future Prospects
2.1 Evolution toward Cloud Computing
2.1.1 Integration of 2nd Generation Smartphones and Cloud 2.0

The features of the 2nd generation smartphones currently in widespread use include smart user interfaces and the online distribution and sales of applications via entities known as marketplaces. Of particular note is the shift to user interfaces that use sensory touch panel controls. Another feature is the online sales of applications. In addition to marketplaces provided by OS vendors, such as Apple's App Store, Google's Android Market, Nokia's Ovi Store, Microsoft's Windows Marketplace for Mobile, and Research In Motion's BlackBerry App World, there are also those provided by device vendors such as Samsung, as well as others tailored to existing users of mobile carriers such as NTT DOCOMO and KDDI, and this diversification is expected to continue in the future.
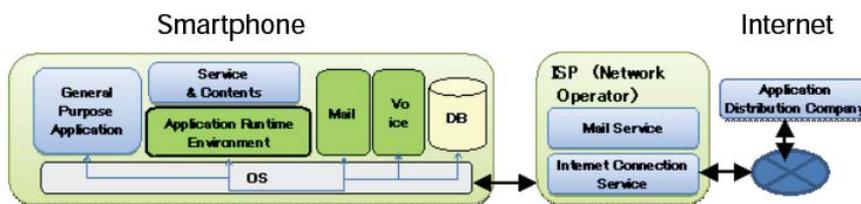
Another evolution of the smartphone that should be mentioned is the integration of cloud computing. SaaS (Software as a Service) is a form of cloud computing that offers ease of adoption due to the fact that service fees are based on the period or amount of usage. Additionally, because the latest software can be used on an on-demand basis, many PC business applications have been adapted for SaaS use, and its corporate adoption has begun to pick up rapidly. Cloud services and cloud technology such as these have also been integrated into smartphone UI to create solutions that provide high operational efficiency, and these have begun to be used extensively. The smartphone applications Evernote and Dropbox used by many business people are two perfect examples.
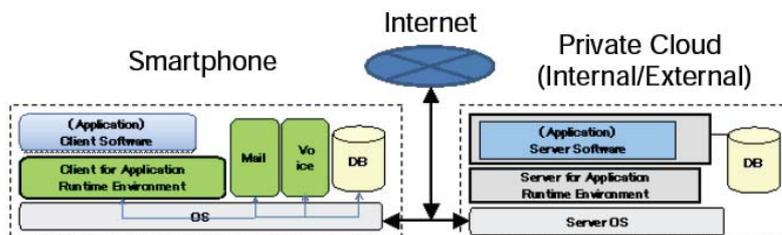
Reference 2.1.1 Using General-Purpose Smartphone Applications on the Cloud

Source: MCPC / Impress R&D joint survey conducted in September 2010

Reference 2.1.2 Using Full-Fledged Business Smartphone Applications on a Private Cloud

Source: MCPC / Impress R&D joint survey conducted in September 2010

Cloud computing is also shifting toward cloud 2.0. Cloud 2.0 introduces coordination between clouds and bolstered security, in addition to performance assurance of the quality and specifications (such as communications line speed and latency, and CPU processing time) that were best-effort based in cloud 1.0. Through integration with cloud 2.0, 2nd generation smartphones are allowing IT tasks that were

thought only possible on an office PC to be carried out anywhere, and at anytime. In particular, business solutions for small-to-midsize companies that previously required the deployment of servers can now be utilized through simply deploying smartphones, meaning that services that once required significant deployment costs can be rolled out at extremely reasonable cost.

Reference 2.1.3 Smarttphone Applications on the Cloud
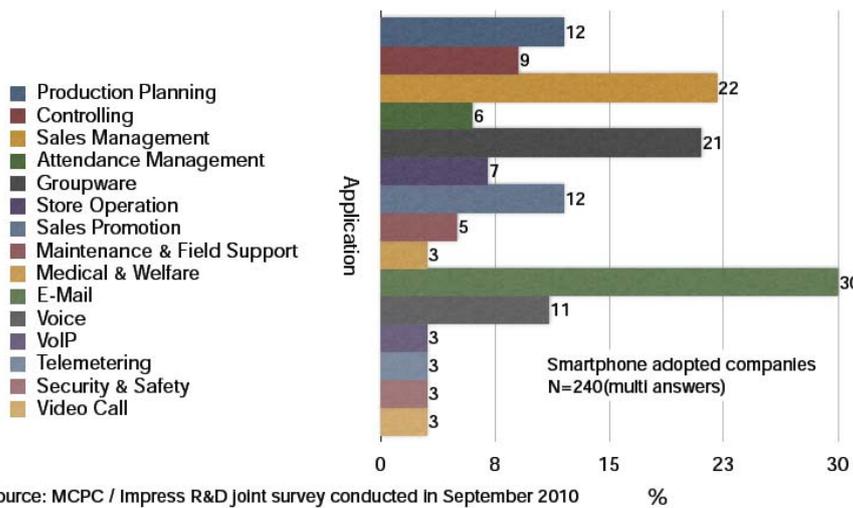
Reference 2.1.4 Expecting Smartphone Applications on the Cloud
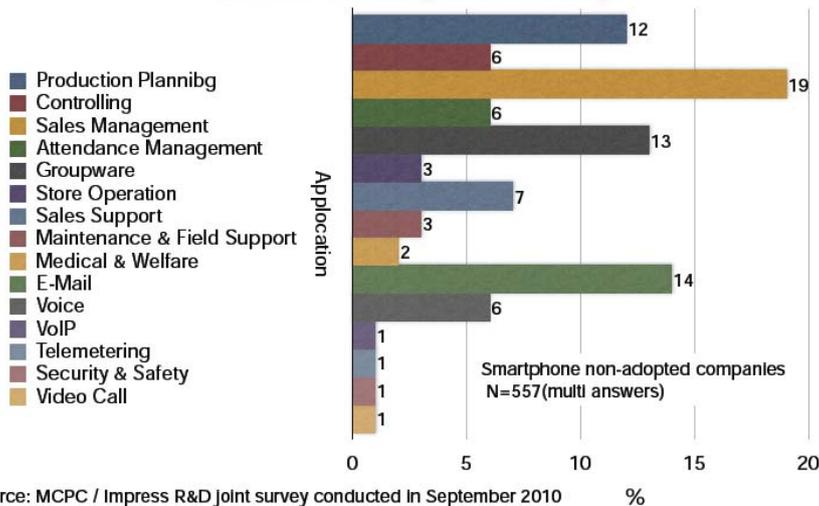
2.2 Smartphone Technology Developments
2.2.1 Web Technology Issues and the Shift toward HTML5

Although the iPhone made full-scale Web browsing possible, according to this survey a comparatively large number of users are dissatisfied with its browser. We believe this to be because the iPhone's Safari browser does not support Flash video. Flash video playback has begun to be supported via smartphone Internet browser software such as Skyfire, but Flash video is supported as standard on Android v2.2 and later and Windows Mobile 6.5.3 and later, and this may become a factor in the selection of which smartphone to purchase.

Meanwhile, the HTML5 feature set will continue to be enhanced in the future, and we are particularly interested in the three areas detailed below. HTML5 is a next generation HTML specification being drawn up as a replacement for HTML4 by WHATWG (Web Hypertext Application Technology Working Group) and W3C (World Wide Web Consortium).

First of all, we would like to focus on HTML5 as a replacement technology for rich Internet applications such as Flash. HTML5 makes it possible to provide image and audio content as browser applications without the use of plug-ins.

Secondly, technology that makes audio visual devices controllable via smartphone and set-top boxes and televisions integrating this technology have been announced, and we believe that the shift towards these devices will accelerate further in line with multi-device trends. The HTML5 incorporated into smartphones makes it possible to operate web applications without relying on network connections or servers. In addition to smartphones, it is expected that HTML5 technology will be integrated into home electronics, allowing household appliances and office devices to interface with user-friendly smartphones.

Thirdly, HTML5 enables the offline operation of Web applications. Services are not interrupted even when the network is disconnected, and data can be saved and updated on the smartphone's local memory, and this updated data synchronized with the server after reconnection to the network.

Because most domestic electronics manufacturers are working on the development of both home electronics and smartphones, we hope that having them take the lead in this growing field will invigorate both domestic and international economies, as well as lifestyle and culture.

2.2.2 FeliCa and NFC (Near Field Communication)

Although mobile wallet functions based on FeliCa were launched on the domestic market in 2006, smartphone OS support has arrived only recently. Starting with the 2010 winter and spring models, a number of smartphones incorporating Android provide support for FeliCa, and these are expected to become more prevalent in the future.

As support for FeliCa progresses the barriers for users of existing mobile phones (feature phones) switching to newer phones are lowered, and there is a strong possibility of this leading to growth in the smartphone user base. Meanwhile, from a global perspective the next version of Android (Gingerbread) provides support for NFC, and interest in future iPhone support for NFC is increasing.

NFC is a highly versatile specification that supports the MIFARE standard used mainly in Europe and the United States and the FeliCa standard used in Asia, including Japan. Because of the low cost of deployment compared to FeliCa and the ability for devices to communicate with each other, we believe it will be used extensively. As the number of devices supporting NFC increases, it is expected that businesses will begin utilizing NFC in Japan as well.

2.3 Future Prospects
2.3.1 2011 Market Overview

In 2010 (as of the end of November) 14 smartphone models were released by operators (4 Windows Mobile devices, 1 BlackBerry device, 1 iPhone device, and 8 Android devices), and when those still to be released are included, this number rises to 21 models, more than double the 8 models that were released in 2009. 8 Android models have already been announced for 2011, and are expected to be released by spring. Future trends in the number of models are not clear, but interest in smartphones and user numbers are expected to rise rapidly in line with market forecasts.

As the smartphone market grows, competition between both operators and device manufacturers is becoming fierce. Following the forerunning Sony Ericsson Xperia, Japanese device manufacturers such as Sharp, Toshiba, Fujitsu, NEC CASIO Mobile Communications, and Panasonic have launched smartphones, but each of the recent smartphone megahits such as Apple's iPhone and Samsung's GALAXY have all been from overseas manufacturers, and it is possible that manufacturer share in the Japanese market will become extremely fluid.

Regarding OS platform developments, the battle between Android and iPhone for market share is likely to continue in 2011. The key will be how many mobile phone (feature phone) users will be compelled to migrate to smartphones by Apple, with its focus on unit sales of individual models, and Google, which supports domestic operator services with the variety of Android device models and its business model. Additionally, the anticipated launch of Windows Phone 7 on the Japanese market is expected to serve as a bold challenge for gaining market share, featuring a refined Windows Mobile UI design, seamless integration of social media such as Facebook and Twitter and instant messaging, the Zune HD mobile audio player media player UI, and support for Xbox Live.

With annual mobile phone sales of approximately 35 million units in Japan, smartphones still only account for a small percentage of the whole. However, if as a result of OS platform competition new experiences and value can be provided to users, we expect that rapid growth can be achieved among both individual and corporate users.

(end)

MCPC
http://www.mcpc-jp.org/
Established in 1997, the goal of the MCPC is to promote the expansion of mobile computing. The organization is engaged in efforts for standardization (terminal interface guidelines, Bluetooth devices, etc.), to publish guidelines for security measures, to sponsor awards and technology fairs in the mobile solutions segment.
About fostering of human resources with a rapid expansion of the mobile computing system market, there is a great demand for the ICT engineers who meet a desirable technical level necessary to plan, design, configure, operate, and improve the mobile operating system by optimizing the components (technologies) of such systems. In order to meet this urgent need, MCPC is organizing the "MCPC Mobile System Technologies Certificate Program" which will provide active support for human resources development.
The MCPC approaches the promotion of mobile solutions adoption and support among small- and mid-sized companies from a position of neutrality beyond the framework of any particular corporate interest, uncovering best practices to publish through booklets and web pages. We have also set up a mobile solutions consulting desk for IT coordinators as another way to strengthen ties with other cooperative organizations.
Through these activities, we intend to contribute to the development and market expansion in the mobile computing industry. As of January 2011, we have 172 member firms.
Impress R&D
http://www.impressRD.jp/
Impress R&D operates a cross-media business to enable wireless broadband technicians, businesspeople using ICT, and people involved in Web businesses, the fusion of broadcasting and telecommunications, digital consumer electronics on innovations in a variety of fields based on Internet technology, so that they can contribute to future industrial and societal development.
The company's wide range of business activities includes operating a Web site loaded with highly specialized content and related print publishing.