

The Age of Ubiquitous

“The Internet will swallow up everything including the real world—that is what has been happening since the nineties, and that will continue to be the trend from now on.” Nomura Research Institute Senior Fellow **Teruyasu Murakami**, an expert on Japan’s public- and private-sector IT strategies, discusses Japan’s ubiquitous network society.

Japan is trying to create a ubiquitous network society, where anyone and anything can easily connect to the network at any time and any place. This is a joint effort between the public and private sectors, which started in the 1990s at the beginning of the Internet age.

The rise of the Internet has produced a union of communications and information. These developments, such as the progress of e-commerce, were so incredible that they triggered an IT bubble. However, this bubble burst in the spring of 2000, leaving a paradigm vacuum in its wake. First, the paradigm of broadband Internet connections occurred and this led to “network ubiquitization,” which was centered on Japan and South Korea. Both Japan and South Korea were able to achieve world-class IT infrastructure, which they promoted strongly.

Towards the Ubiquitous Network Society

The union of communications and information that took place in the 1990s created a virtual world on the Internet, and facilitated the distribution of all kinds of information. Japan’s ubiquitous network is not limited to the online world but has also started to produce all kinds of innovations by linking the Internet to the real world. In terms of infrastructure, the development of a Next Generation Network (NGN) has allowed all kinds of information to link to the network, such as information appliances, mobile telephones and car navigation systems. This has resulted in developments such as networking of digital appliances, utilization of electronic tags, sensor networks, and network

robots—a process that is often referred to as “the union of communications and broadcasting.”

The government has supported these developments through trial projects, and from the potential categories the private sector has expanded them through practical applications into such fields as manufacturing, agriculture, distribution, retail, health care, finance and construction. The government has more than 500 projects related to highly advanced usage of IT technologies covering almost all conceivable applications of information and communications technology.

In actual fact, information and communications technology has been introduced in many areas, and technology such as electronic tags and sensor networks are spreading. In the distribution field, for example, the introduction of electronic tags has started to be used for the seamless management of all aspects of the product lifecycle, from production through to distribution, and then on to disposal and recycling.

The Evolution of Web 2.0

At the same time, the utilization of the Internet has entered a new phase under the paradigm of “Web 2.0” since the collapse of the IT bubble. The evolution of Web 2.0 can be considered in terms of four different types of media.

The first type of media is the mass media which will be developed by “the convergence of communications and broadcasting.” There is already an aspect of the mass media online, as seen with IPTV or “NHK on Demand,” for example (see the January edition of this publication). The second type is “micro media,” which refers to the

proliferation of individually generated media, such as blogs and the “home pages” of the early days of the Internet. The third type of media is “middle media” such as social networking services and Second Life, which create connections between mass media and micro media to create an intermediary community and act as intermediaries in the formation of new communities. The fourth type of media is “meta media” such as Google, Amazon and YouTube, which is trying to connect everything by forming the global platform. This is now leading to “cloud computing,” which provides controlled services in both data and software for users over networks.

Web 2.0 has evolved by creating an environment whereby these types of media can inter-relate as new businesses emerge freely. It is no longer possible to return to the old environment that only contained the mass media, and so a big challenge will be the question of how to create appropriate systems and industrial structures where the Internet is included as a fundamental assumption.

Information and communications technology is developing in Japan so as to strike an appropriate balance between this kind of progress in Web 2.0 and the evolution towards ubiquitous networks.

Infrastructure—Utilization and Challenges

As I said earlier, progress in the utilization of information and communications technology has been centered on industry. However, developments in public systems, such as health, education and e-government, have been less than impressive. There are still issues that remain to be addressed in all of these areas.

The challenge for industry lies with the final user. Japanese IT manufacturers have openly engaged with ubiquitous networks right from the beginning, and so it is unlikely that they will go into the issues of “Death Valley” or the “Darwinian Sea.” However, there is a huge chasm clearly between moving from the “early adopter” stage to the “early majority” stage. The administrations and industries—the

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suppliers of the new technology—are both fully aware of the importance of moving to ubiquitous networks, but this awareness is not necessarily shared by the final user. It is extremely important to make efforts to gain the understanding and awareness of final users.

There is also a chasm in public systems. On the one hand, for example, both the government and information technology companies recognize the need to advance remote health care using information and communications technology, but this recognition is lacking on the part of crucial health care providers. There is a need for a concerted push to change systems and industry practices.

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International Symbiosis

The globalization of industry requires modularization and the development of platforms. In the case of Japan’s mobile telephone business, the telecommunications carriers have the strong industrial initiative, and so mobile telephone manufacturers are

forced to concentrate on constantly bringing out new models and introducing more and more advanced functions in the domestic market because of the fierce competition to gain market share. This has resulted in a so-called Galapagos effect, whereby Japanese mobile telephones now have extremely advanced functions, but have almost completely failed to win acceptance anywhere outside of Japan.

Two responses are required to overcome this Galapagos effect. The first is improved international competitiveness by promoting Japan’s products and services overseas. It is crucial that effective brands are established by emphasizing the point that Japanese mobile telephones provide a “cool” lifestyle as well as advanced functions. There is no way that Japan can defeat the competition with a strategy for international competitiveness that only emphasizes advanced craftsmanship.

An even more important point from this perspective is “international symbiosis.” From now on, about thirty percent of the world economy may be a large market made up of the BRIC countries (Brazil, Russia, India and China) and surrounding countries. These are “mega-growth” countries with high growth and mega populations. Japan will need to produce systems of products and services that suit these new markets—it is more impor-



tant to be “appropriate” than “leading edge.” Both the government and industry have to work towards cultivating international symbiosis as well as international cooperation.

Japan’s Next Leadership Role

One feature of the financial crisis that the world is now facing is its speed of changing. The impact of the crisis has spread quickly, but the recovery is also expected to be fast.

When Japan recovered from its “lost decade,” it was the advanced digital devices produced by Japan’s electronics industry, such as flat-screen televisions, digital cameras, and DVD recorders, that led the way. Who will lead the way in the next round of recovery, as the world is released from this rapid financial crisis? I am sure that “ubiquitous” will be the next key word. We will enter a world where digital information and digital devices will be connected by networks, and contents and services will flow freely over these networks. The ubiquitous network society—where anyone and anything can easily connect to the network at any time and any place—cannot be too far away. [▶](#)

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