

Ubiquitous Network Society

This briefing note is prepared as background information for the [Forum](#) at [ITU TELECOM WORLD 2006](#). This is part of a series of articles providing an analysis of some of the hot topics in the [Programme](#).

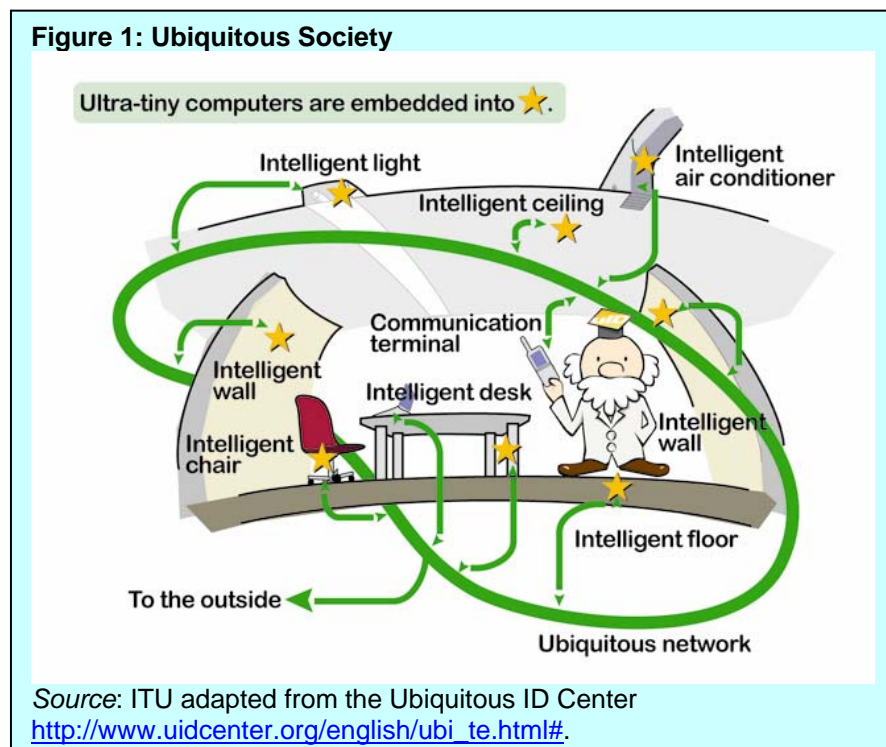


The vision of a “ubiquitous network society” suggests a world in which information can be accessed from anywhere, at anytime, by anyone and anything. New and exciting technologies are making this vision a reality. The word “ubiquitous” is derived from a Latin root and means “existing everywhere”. It has been used in conjunction with terms such as pervasive or ambient. Early forms of pervasive technologies can be seen in mobile telephony, and to some extent in the broadband internet. But in the future, ubiquitous networks will extend beyond person-to-person and person-to-object connectivity: connectivity will unite everyday things in one huge, ubiquitous communications network, the so-called [Internet of Things](#) (the topic of the 2005 edition of the ITU [Internet Reports](#)).

Marc Weiser noted “The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it”. He was the first to coin the term “ubiquitous computing” in 1991. The idea was that intelligent interfaces can make computers simple to use, while communication networks would connect devices for use, anywhere and anytime. Now, given rapid technological progress and the increasing number of internet and mobile phone users, reality is coming closer to his vision. Tomorrow’s ubiquitous network will map objects and activities in the real world onto objects and activities in the virtual world.

RFID: A Key Ubiquitous Network Society Enabler

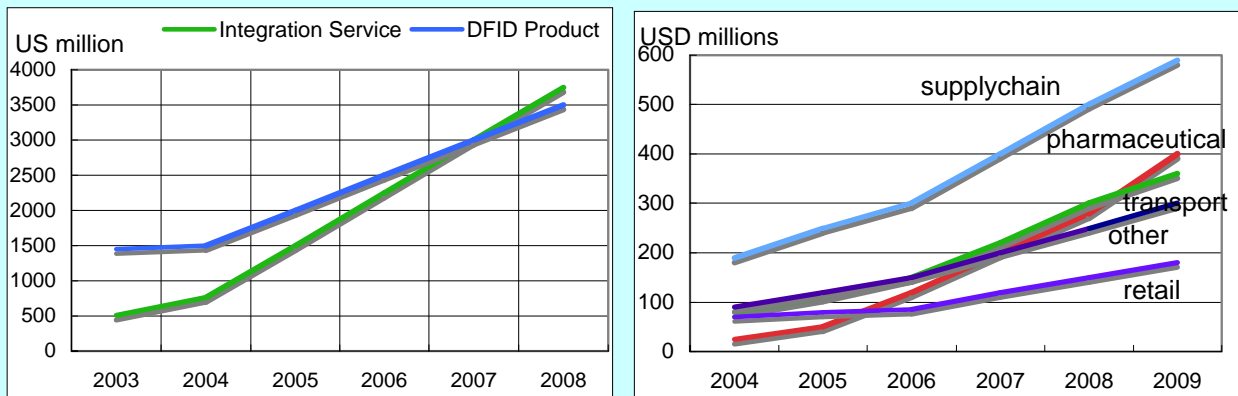
[Radio-frequency identification \(RFID\)](#) is one of the most important technologies in realizing the ubiquitous network society. As noted at the ITU Workshop on “[Ubiquitous Network Societies](#)”, RFID can be used to automatically identify and track individual items using radio waves. RFID holds great potential, even more so when used in conjunction with complementary technologies such as sensors and nanotechnology. Sensor technology enables RFID to track the status of objects, by monitoring temperature, pressure, movement or even the presence of bacteria. Nanotechnology can help make RFID smaller, so that it can be used more conveniently, for a wider range of applications.



While the technology underlying the commercial use of RFID is not new, it is only recently that novel and more commercially adaptable applications of RFID have been deployed. Supply-chain management, and the pharmaceutical, transport, and retail sectors are among the early adopters of this technology. Now, the availability of smaller and cheaper RFID systems (both tags and readers) is accelerating its practical use. The RFID market is growing fast, and different industries are eager to invest in RFID technology (see Figure 2). The market size of these ubiquitous network society enablers is estimated to grow to USD 7 billion for 2008, and by 2015, the market may reach USD 24 billion, according to some estimates.

Figure 2: RFID revenue opportunities

Worldwide sales of RFID products and integration services (2003-2008), and total western European RFID revenue by sector (2004-2009)



Source: [The Internet of Things](#), ITU, 2005, adapted from "RFID background paper", ITU, 2005, Juniper Research, 2005.

Several countries are taking the lead in developing ubiquitous network society. At the ITU's [Ubiquitous Network Societies Workshop](#), country case studies of [Italy](#), [Japan](#), [Republic of Korea](#), and [Singapore](#) were presented. For example, Japan is aiming to achieve a Ubiquitous Network: "u-Japan". While e-Japan (2001-05) was aimed at increasing the number of broadband users, u-Japan is aimed at addressing the issues of ubiquitous technologies, rather than the mere promotion of informatization. The Republic of Korea is also promoting a ubiquitous vision, in its so-called "IT 839 Strategy". This highlights the strong growth expected in eight communication broadcasting services, three advanced networks and nine new sectors.

Key Challenges

There are important technical, security, and privacy-related challenges for enabling technologies such as RFID and sensors. Interoperability and standardization are required to ensure secure and reliable technological platforms in developing a stable ubiquitous network society. While the opportunities are immense, the scope and magnitude of potential threats and misuse grow correspondingly. In light of technical developments in RFID, there is an increasing need to ensure data protection and privacy. Consumer boycotts have even been organized against companies planning the introduction of RFID, over concerns that such information tracking will infringe on personal privacy and civil liberties. Information can also be misused (for example, in the growing phenomenon of 'identity theft', the fastest-growing crime in the UK), while concepts such as "ubiquitous surveillance" and the tracking of workers are fast becoming reality.

Relevant Sessions on the “Ubiquitous Network Society” at ITU TELECOM WORLD 2006

Digital Lifestyles Theme Session B: [Anywhere, Anytime, By Anyone and Anything](#). Monday 4 December, 14.30-16.00

Digital Ecosystem Theme Session I: [Internet of Things](#). Tuesday 5 December, 14.30-16.00

Digital Society Theme Session 15: [Universal, Ubiquitous, Equitable, and Affordable](#). Thursday 7 December, 16.30-18.00.

Key speakers on relevant sessions on “Ubiquitous Network Society” include:

[Mr Yong Chang Baek](#), Director, [KT](#), Republic of Korea

[Mr Claudia Bermudez](#), Telecommunications General Manager, [ICE- Instituto Costarricense de Electricidad](#), Costa Rica

[Mr Gray Cohen](#), General Manager, Communications Sector, [IBM](#), United States

[Mr Kazuo Furukawa](#), President and Director, [Hitachi Ltd](#), Japan

[Dr Martin Hilbert](#), Information Society Programme, [United Nations Economic Commission for Latin America and the Caribbean \(ECLAC\)](#)

[Mr Darell Jordan-Smith](#), Vice President, Communications Industry Group, [Sun Microsystems Inc.](#), United States

[Dr Roger B. Marks](#), Chair of the IEEE 802.16 Working Group, Senior Vice President, [NextWave Broadband, Inc.](#), United States

[Professor Nicholas Negroponte](#), Chairman, [One Laptop per Child](#), United States

Note:

For more information, please see ITU (2005) [“Ubiquitous Network Societies”](#) an ITU New Initiatives Programme Publication, and ITU (2005) [The Internet of Things](#).