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Toward Ubiquitous Network Society

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1. What is “Ubiquitous” ?

A word "Ubiquitous" was used for the first time in the fields of information and communication by Dr. Mark Weiser of Xerox Corp. Palo Alto Research Institute, who proposed Ubiquitous Computing in 1988. We expand this general idea and name “Ubiquitous Network Society” which is easily connected by anyone in anything anywhere anytime in a network. The etymology of ubiquitous in Latin is “God rules everywhere”. The word has a religious meaning of “God is only existence”, in the world of one-god belief. The Japanese feels ubiquitous like the words that can be easily understood because it is our pantheism that divine nature dwells in things around us in the world of polytheism. However, an information and communication network constitutes autonomous and distributed system as social infrastructure for safety and security, and welfare. It may be said that the Ubiquitous Network Society which we depend on, and do our daily life exceeds one-god belief or polytheism and has a modern meaning because God rules the world autonomously and cooperatively.

2. u-Japan policy

The Ministry of Internal Affaires and Communications announced u - Japan policy in December, 2005, following to e - Japan strategy that was an IT policy of our country, to accelerate and to realize Ubiquitous Network Society in 2010. A basic idea of u - Japan consists of four “u”. First “u” means ubiquitous, and it is the idea which paid its attention to basic characteristics as infrastructure. Various networks are connected seamlessly without being conscious of distinction of wired or wireless, and it is expected to liberate various limitations, such as network risk, ability for communication, ability of terminals and variety of services and contents, by realization of a large-capacity distributed network. Three remaining “u” means “universal”, “user-oriented” and “unique”, and it is the general idea that paid its attention to “result” when Ubiquitous Network Society solves problems extracted from dweller needs.

Taking into account of thought of universal design, “universal” means that everyone including a senior citizen and a handicapped person can use it, and it is expected that everyone can receive the support of individual needs, and can participate society. As for “user-oriented”, user oneself can come to be a supplier by power of a network by being more strongly conscious of needs and convenience of a user, not based on an idea and technology of the supplier-oriented and seeds-oriented service. As for “unique”, it is expected that all have a dream, and a new challenge becomes easy, and vitality of individual is brought about, and new business, service, social system and sense of values are newly

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created , and the society in which individual can be activated arrives.

3. A tree of radio

Take a lesson from the past. A tree of radio of 100 years old starts from a study of a pioneer of ancient people. In 1864, Maxwell built an electromagnetic wave theory and foretold existence of an electric wave. In 1888, Hertz demonstrated existence of an electromagnetic wave by an experiment. It may be said that Maxwell who built an invisible thing as a theory is a genius and that Hertz who demonstrated test is a bright person of a hard worker. In 1895, Italian Marconi succeeded in practical use of radio as wireless telegraphy. A wired telegraph network was already built in Europe in those days. Therefore he applied wireless telegraph for maritime communication and undertook an enterprise in U.K. In 1909, Marconi won Nobel Prize in Physics in "a study of radio communication". Marconi who gained success as both an engineer and a researcher may be called as father of “ubiquitous”. The accident of Titanic of 1912 let the world recognize importance of emergency maritime communication. It is the illustration that how important is the technology development that captured social needs. A tree of radio grew up and become big through the efforts by many researchers and engineers, and our life becomes rich and convenient by the fruit of a tree of radio.

In fruit of a tree of radio, I mention specially about a mobile telephone. The number of Japanese mobile telephone contractors exceeded 62,000,000 number of fixed telephone contractors in 2000, and it amounts to 95,760,000 (as of the end of February, 07) and reached 75% at population diffusion rate. In addition, as a terminal of Internet use, a mobile telephone user surpassed 66,000,000 of a PC user in 2005 and became 69,000,000. The mobile telephone got possible to use an E-mail, Internet connection, a camera, two-dimensional bar code reading, GPS, a contact-less IC card, a game / a music reproduction function, infrared communication and wireless LAN connection ability as well as original telephone ability, and evolved to "Keitai". 87% of all terminals have an Internet connection function, and 84% with a camera, 61% are the third generation. It may be said that an available ubiquitous terminal is a mobile phone now.

4. A ubiquitous tree

What kind of tree will be a ubiquitous tree of the ubiquitous times in the 21st century? I am delightful what kind of flower blooms and whether fruit becomes because it is the tree which grows up from now on. Photosynthesis namely light, carbon dioxide and water are necessary to bring up this tree.

Water will be a young engineer / researcher. As for the carbon dioxide, funds for research and development, light will be a learned society, industry and administration. Human resource development is required to promote new research and development, and it is essential for research and development again to accelerate national / private investments. Furthermore, academic society, industry and administration put light on a field becoming an important domain and they are

responsible for creating consensus of society to let the nation understand significance of research and development. The Institute of Electronics, Information and Communication Engineers has a big role for supply of water and light. If light is insufficient in the shade and water is not given, the tree will die. We must light up the field of new study, and it is asked whether we can carry out accountability to the nation from children to senior citizen. A challenge to Ubiquitous Network Society may be a human being going to approach God. A researcher / an engineer will challenge it with humility and courage daringly.

References

[1] u-Japan Policy, MIC Japan
http://www.soumu.go.jp/menu_02/ict/u-japan/index2.html

[2]Information and Communications White Paper 2006, MIC Japan
http://www.johotsusintokei.soumu.go.jp/whitepaper/whitepaper01.html

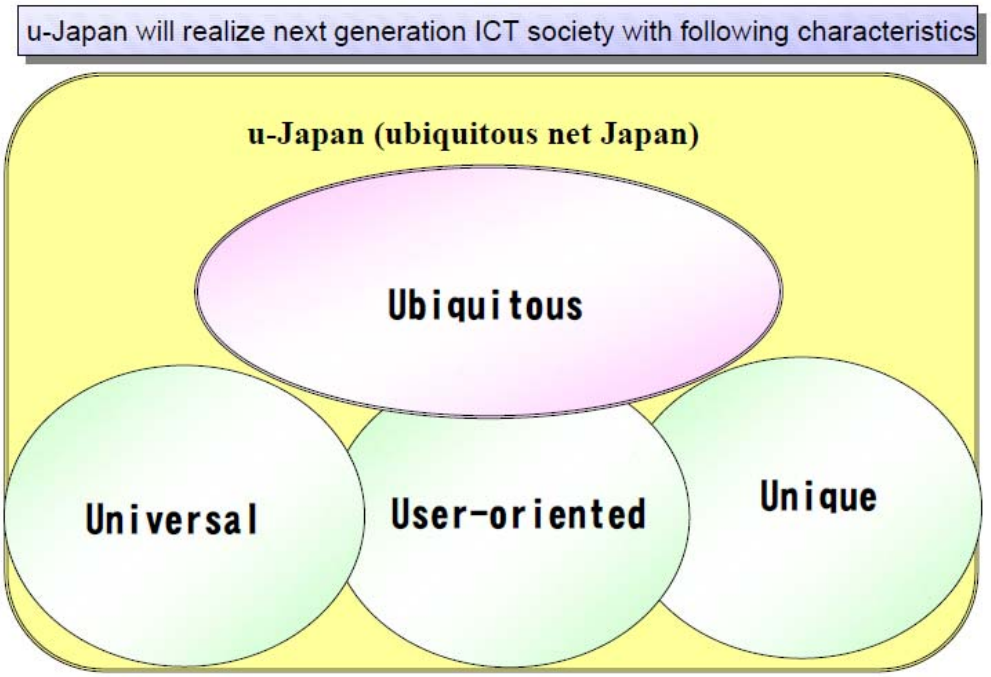

Fig 1 Concept of u-Japan

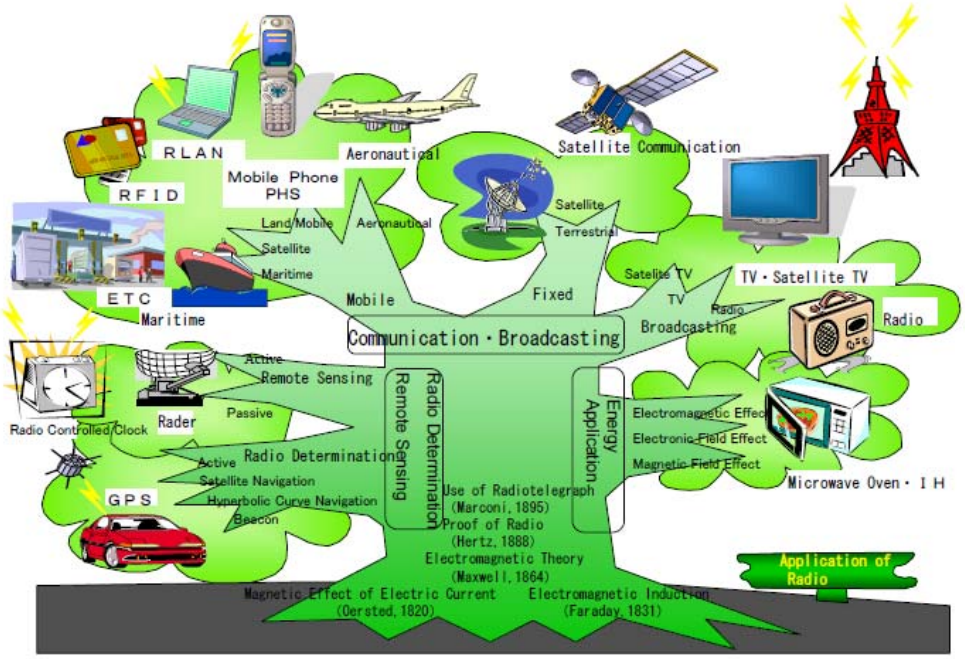

Fig2 Tree of Radio, 100 years old

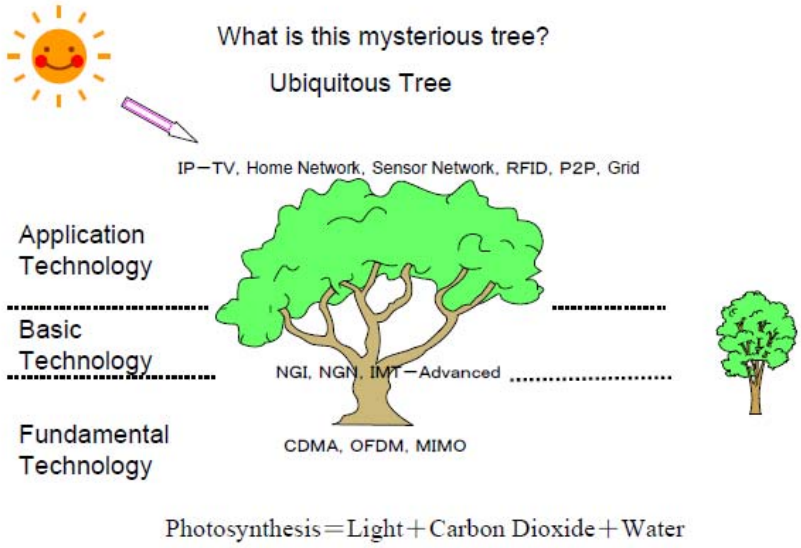

Fig3 Ubiquitous Tree