R&D for the Future of NTT DoCoMo

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Fiscal year 2004 is positioned as the jumping-off point for FOMA*. The target for the number of subscribers by year-end is expected to be greatly exceeded, thanks to the launch of new enhanced terminals and an expansion of service areas. However, competition is heating up as growth of the mobile phone market has slowed down because more than 60% of the Japanese population already own at least one mobile phone. In addition, the monthly average revenue (average revenue per user (ARPU)) has fallen as the result of new rates and services being offered. This competition is expected to become even more intense after the introduction of mobile number portability (MNP), slated to start in FY2006.

With this situation in mind, the Research and Development Headquarters will step up its efforts to develop attractive services and terminals as well as an economical network infrastructure, looking ahead to the future. We will also accelerate R&D of elemental technology to support the infrastructure.

In the development of network infrastructure, we will raise transmission speeds and migrate to IP (Internet protocol) technology while improving the economy of services. For the existing FOMA, we will begin developing high-speed downlink packet access (HSDPA), which creates a high-speed telecommunications environment. In addition, we will develop fourth-generation mobile communication systems to provide full-scale services beyond 2010. What is important here is how to achieve the transition from the third-generation FOMA and HSDPA to the fourth-generation system economically and smoothly. In such a transition scenario, we believe it is extremely important to move forward while paying close attention to economical interconnection between radio access systems and network systems. On the network side, for example, we are considering a transition scenario in which the entire system, transport, signaling networks, and even routing will all be converted to IP.

Ubiquitous networks are a hot topic of discussion these days. They require not only mobile communications but co-existence with wireless local area networks, sensor networks, and non-IP networks. Therefore, R&D of service platforms to integrate all of these networks will be essential. Moreover, we have begun to consider fixed mobile convergence (FMC), which integrates mobile phones with fixed-phones. Thus, R&D requires multiple aspects and comprehensive knowledge. Needless to say, development will have to be conducted not by a single company independently but in cooperation with universities and group companies for it to be carried out efficiently and economically. Since originality is fundamental in R&D, system-formulation technology that integrates elemental technologies will become increasingly important in the future.

We will apply even greater efforts to strengthen our development of services and terminals. Specifically, we will cooperate with our business divisions and aggressively propose solutions that will secure a profit base. Moreover, we will expand the terminal line-ups to create such solutions. Basic research on next-generation terminals that are compatible with high-speed networks and media processing is also extremely important. There are two areas to focus on. One is communication with a high degree of realism enabled by high-speed transmission. This implies 3D images and sounds, as well as bio-communications in which human data is extracted and used. It represents long-term R&D that holds exciting possibilities, but we believe that keeping in mind strategic “cutouts of elemental technology” will be important as we proceed with the R&D. The other area to focus on is the importance of technology development to strengthen security, while enhanced terminal and services make everyday life convenient. There is a need to develop technology that performs automatic security checks without a customer being aware of it, and technology for automatic recovery in the event of an attack. We believe that such technologies will be recognized as “lifelines”.

* FOMA: NTT Docomo’s 3G mobile phone service that offers videophone and high-speed data communications (http://www.nttdocomo.co.jp/english/p_s/service/f/love.html)