

DoCoMo's R&D and Intellectual Assets

Anytime, anywhere, with anyone. These concepts convey more than the advantages of mobile multimedia; they are the very reason mobile multimedia exists. The importance of mobile multimedia will increase as the venues and means of exchanging information broaden. Above all, we believe this will improve the convenience of people's lives and work.

DoCoMo conducts R&D in a broad range of fields in an effort to further sophisticate the mobile communications functions as part of the IT infrastructure and, at the same time, to be a new type of mobile communications company that supports and enriches all facets of life and business.

DoCoMo must constantly create and provide new services and products to continue growing and developing as a company. We believe our ability to broaden and realize the possibilities of mobile communications services originates from our R&D and the intellectual assets that our R&D engenders.

DoCoMo's R&D Organization

R&D Drives Increases in Our Corporate Value

DoCoMo spent a total of ¥124.5 billion on R&D in fiscal 2003. Our approach to R&D is practical in the sense that we unearth the latent needs of our customers and then develop advanced products and services that meet these needs. In addition, to create innovative new technologies we engage in basic and fundamental R&D in a broad range of fields.

Globally Promoting Cutting-Edge R&D

DoCoMo is committed to building the optimal environment and organization for its R&D to keep pace with advances in technology and the changing themes of research. Our R&D organization consisted of three main facilities until fiscal 2003: the NTT DoCoMo R&D Center (Yokosuka, Japan), DoCoMo Communications Laboratories USA, Inc. (Silicon Valley), and DoCoMo Communications Laboratories Europe GmbH (Munich, Germany). These three facilities enabled us to develop cutting-edge technologies and conduct basic research from a global perspective. We established a fourth research facility in November 2003, DoCoMo Beijing Communications Laboratories Co., Ltd., and revised the organization of the R&D Division on March 1, 2004. Until now, our R&D has focused mainly on making 3G mobile communications services a reality. Our objective now is to shift our focus to R&D based on Internet protocol (IP) technologies. To clarify the roles of each department, we abolished four departments, including the Multimedia Development Department, and established four new departments, including two departments consolidating all development operations based on IP technologies.

Toward Further Advances in Mobile Communications

We believe mobile communications still have huge potential as part of the IT infrastructure. DoCoMo was the first company in the world to offer 3G mobile services based on W-CDMA technology. These services are now available in the United Kingdom, Germany, Italy, other European countries, and Hong Kong.

Based on our research on wireless access technology, network technology, and multimedia interface technology, we are now making 4G mobile services a reality and conducting R&D in a diverse range of fields for the future.

Wireless Access Technology

Wireless access technology is becoming increasingly important as mobile communications systems migrate to broadband and ubiquitous formats. For our FOMA services, we have decided to use a new transmission technology, called HSDPA (high-speed downlink packet access), and are now conducting development with the aim of providing an even faster and more economical communication environment. HSDPA triples the efficiency of data transmission without necessitating major changes in the current W-CDMA technology. Furthermore, we have already initiated R&D aimed at creating 4G mobile communications systems with even greater capabilities than our 3G FOMA systems.

In addition to the above, we conduct R&D on several other advanced technologies. These include broadband wireless access, which converts all signals within a given wireless service area into data packets, and technology that offers the mobility of cell phones, PDAs, and notebook PCs on an IP basis.

Network Technology

We expect IP traffic to increase as mobile multimedia services evolve and become ubiquitous. To channel the growing volume of traffic efficiently and provide an optimal environment, it is urgent that we establish IP-based mobile network technology that is both flexible and cost-effective. As part of our research on mobile communications networks for the future, we are conducting R&D on networks built wholly on IP architecture that combine elements of mobile communications networks and the Internet.

In addition to mobile communications networks, we are also conducting research aimed at creating seamless/ubiquitous networks that encompass the many computer networks that surround us. We are also working on various types of mobility management technologies that improve network performance, as well as transport network technologies that enhance IP backbones.

Multimedia Interface Technology

In the rapidly evolving world of mobile multimedia, we are conducting research on encoding technology that enables moving images and sound to be transmitted efficiently in a mobile environment, on ultrarealistic forms of communication, on platforms that test the possibilities of mobile multimedia, and on new mobile multimedia interface technologies, including wearable interfaces, that make maximum use of human information.



Alter-ego Interface Technology

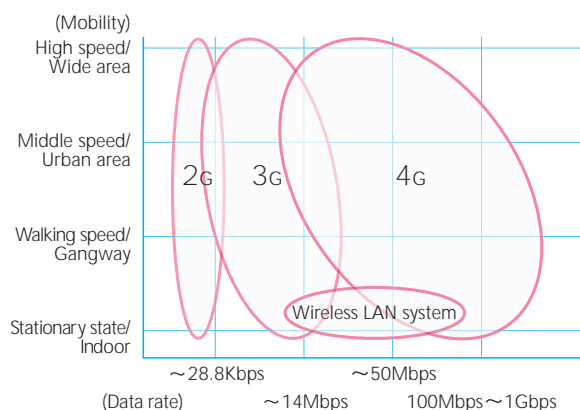
Examples include technologies that enable communication that approaches the feeling of speaking in person, and research on intelligent agents that assist the information processing and physical capabilities of humans. Our research into human interface includes mime speech recognition technology, which can recognize speech even without sound by reading the movement of muscles surrounding the mouth, and research aimed at ascertaining human intent by measuring signals from peripheral nerves to derive sensory and physical information. We are also conducting R&D on alter-ego interface technology, in which robots act as human proxies in remote communication applications.

Improving the Quality of Intellectual Assets

DoCoMo's Intellectual Assets

DoCoMo's broad range of intellectual assets encompass patents and other industrial property rights, software, technical know-how, and academic papers on a variety of subjects. We are highly active in applying for patents on the results of its R&D, as witnessed by the fact that the number of patent applications filed by DoCoMo has quadrupled over the past five years. In fiscal 2002, DoCoMo had a patent registration rate of 71.8%, ranking the company 20th among the 200 Japanese companies that filed the most applications that

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year. This attests to the high quality of our R&D. (Source: 2003 Annual Report of the Patent Office, based on data collected by the Japan Patent Office and published by the Japan Institute of Invention and Innovation).

Major Activities and Achievements

DoCoMo's major activities and achievements in the area of intellectual assets are listed below.

- Obtaining and utilizing patents related to 3G and 4G mobile communications systems
- Providing i-mode licenses to overseas operators
- Providing technical support regarding W-CDMA to overseas operators
- Forming technical development alliances related to FOMA handsets with external business partners

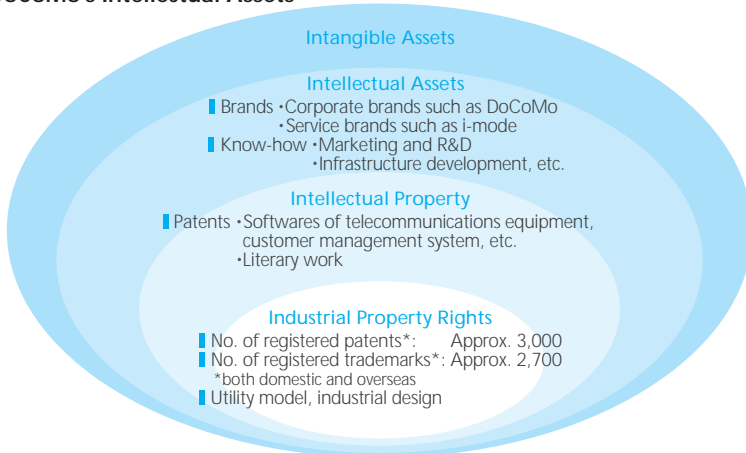
At present, DoCoMo is mainly conducting research related to 3G and 4G mobile communications systems. The Intellectual Property Department actively obtains and utilizes related patents, which play an important role in the process of standardization.

We engage in commercial i-mode services overseas by supplying licenses to overseas operators. Our number of overseas i-mode subscribers exceeded three million at the end of June 2004.

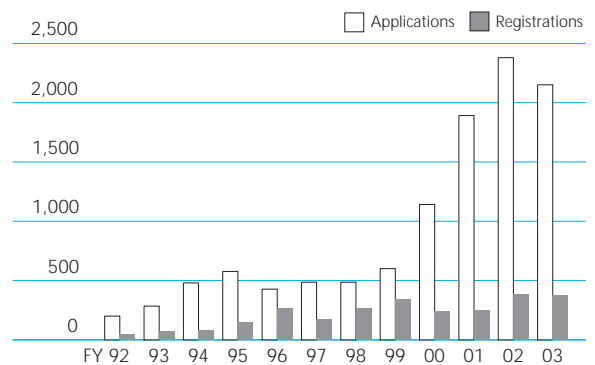
In an effort to establish commercial W-CDMA services overseas, we provide technical support that assists network construction and the smooth rollout of services.

In addition to the above activities, DoCoMo invests in companies developing handsets as a means of promoting the advancement of handset functions and the development of new functions. Sharing the rights to new technologies and know-how derived from the development process with these companies results in more efficient development. At present, we are sharing new technologies and know-how related to the development of application software for advanced operating systems (Linux and Symbian) and HSDPA technology, used in FOMA services. We are also forming alliances to develop e-commerce platforms that make use of contactless IC cards and infrared communications.

DoCoMo's Intellectual Assets



Number of DoCoMo Patent Applications and Registrations (Domestic and Overseas Total)



For patent applications outside Japan, each patent application in each country is counted separately.