

## Environment and Energy are the Key Words in the 21st Century

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The 21<sup>st</sup> century is being described as the environmental century. In our Laboratories, we undertake R&D in various fields involving environmental issues from three perspectives based on the key words “environment” and “energy”: R&D that considers the environment of the whole earth, metrics for estimating environmental effects such as CO<sub>2</sub> reduction in NTT, and products that create a good life and a safe and secure society.

Since one major problem is the huge amount of electrical power consumed by advanced IP (Internet protocol) technology, we are developing clean energy technology, EMC (electromagnetic compatibility) technology for evaluating the influence of electromagnetic radiation and interference between communication equipment, and a backup power technology for supplying continuous 48 V DC based on large-capacity nickel metal hydride (NiMH) batteries. In addition, we are developing micro-energy technology that enables ubiquitous communication to give people a good life, such as the photovoltaic generator called “pocket energy” that was commercialized by NTT-AT Corporation in July.

In studying environment issues, we believe that we must understand the present condition of the environment, disseminate this information to everyone, and provide information that matches the needs of individuals. For these purposes, we are developing technologies that supply environmental network services using sensors and IP networks, such as a networked pollen sensing system and a networked multi-sensing air environment monitoring system that can measure suspended particulate matter, nitrogen dioxide, and ozone. We are also developing system solutions such as disaster surveillance systems, food traceability systems, and systems for evaluating the effects of recycling in agriculture.

There are four different paths for identifying needs when selecting research themes: 1) creation of ubiquitous services, 2) smooth expansion of commercialization, 3) timely response to the needs of national and local governments, and 4) use of our technologies supporting communication networks. The first examines ubiquitous communication technology, which allows access to information at any time from anywhere, from the viewpoint of the environment and energy. The second identifies themes by extracting new needs in existing technologies from the viewpoint of “outside to inside” or “inside to outside”. The third is driven by the needs of local governments and business enterprises. The fourth covers research themes that are starting to consider services with NTT distinctive technologies. Thus, our main mission is promoting new market cultivation and new product commercialization.

Regarding future prospects, we are always very conscious of how our R&D results should be made available to society at large. Unless our results are turned into products that are accepted by the market, the value of our efforts is questionable. So an important guiding principle is to make the products, based on environment and energy technologies, developed from our R&D widely acceptable to a sustainable society in the 21<sup>st</sup> century.

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