



Where Change Come from

Noriaki Hirota

Deputy Director - General,
Research Institute of Innovative Technology for the Earth (RITE)

I am Hirota, who has been appointed as a director and deputy director of RITE.

Founded in 1990, RITE is celebrating its 35th anniversary this year. During this time, thanks to the guidance and efforts of many stakeholders and predecessors, we have become a research organization that plays a leading role in global warming countermeasures. We would like to ask for your continued support and cooperation in the future.

At the time RITE was established, the communication speed of wired lines that could be used in ordinary households in Japan was about 14.4 kbps. Today, it can reach 10 Gbps, which is about 5 million times faster. In addition, the communication speed of mobile phones has also become incomparably faster than it was back then due to the evolution from 2G to 5G. In terms of information processing capacity, CPU performance has improved by more than 10,000 times from tens of MIPS to hundreds of thousands of MIPS, and conversely, the unit price of memory has decreased from about \$50/MB to about \$0.1/GB for DRAM, which is 1/500,000. It can be said that it is an amazing change in both performance and cost, and with the benefit of this, we are bringing about major changes in services and lifestyles that were unimaginable 35 years ago.

On the other hand, if we think about it in the context of "the present that was unimaginable 35 years ago," we are surprised by the foresight and high perspective of the RITE founding concept. The concept included the following as an outline of the institute.

"In order to solve global environmental problems and to build an industrial technology system that integrates and harmonizes with the general circulation of nature, we will integrate a wide range of industrial technologies utilizing chemical engineering, biotechnology, system engineering, etc., have researchers on secondment from national laboratories, private companies, etc., conduct comprehensive and intensive research, and accumulate technical information, etc., thereby becoming a core research institute for international research exchange."

Today, the RITE Systems Analysis Group makes a significant contribution to national policy decisions, including the Basic Energy Plan and the Global Warming Countermeasures Plan, through detailed scenario analysis. The Chemical Research Group accelerated the development of CO₂ separation and capture technology, conducted a demonstration test of DAC (Direct Air Capture), which captures CO₂ directly from the atmosphere, at the Osaka-Kansai Expo site, and established the RITE Carbon Capture Center, which serves as a common platform for standard evaluation of separated materials. The CO₂ Storage Research Group is studying the practical application of injection and evaluation technologies and is accelerating support and collaboration for CCS projects in Japan in response to the enactment of the CCS Business Act. With the aim of contributing to the commercialization of bio-manufacturing that contributes to global warming countermeasures, the Molecular Microbiology and Biotechnology Group has begun to develop a strain development platform, including the construction of a dedicated research building, the Biotechnology Manufacturing Laboratory Building. After 35 years, I feel that tenacious and steady efforts to solve global

environmental problems are moving forward.

When I look at RITE's efforts from a bird's-eye view, I am often reminded of what someone once taught me about **"where change come from."** He said: **"Change comes from three directions. One is politics, the other is social, and the other is technology."**

For example, the explosive spread of mobile phones in the 1990s due to the liberalization of mobile phones led to a combination of the politics of establishing and introducing systems, a society with a need to communicate anytime, anywhere, and technologies that made it smaller, lighter, and faster.

RITE has played a major role at the very intersection of politics, society and technology. We will continue to pursue results in a wide range of fields as an entity that creates innovative changes on the issue of global warming.

We will continue to work together in the future, and we look forward to your continued support.