

Network Service Systems Laboratories 40 Years after Their Inception

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This year marks the 40th anniversary of the creation of the predecessors of NTT Network Service Systems Laboratories, namely the Switching Department and Transmission Department, which were established in 1966 within the Electrical Communication Laboratories of Nippon Telegraph and Telephone Public Corporation (now NTT). We are proud that, in the course of these 40 years, our Laboratories (including our predecessors) have produced core network technologies, centering on switching and transmission, that have continued to provide the key driving force in the eras of analog telephony, digital telephony, ISDN/ATM* networks, and today's Internet. The history of our success is also the history of our former researchers, who have broken through numerous barriers and made outstanding achievements, and of a large number of people in telecommunications carriers, academia, and vendor partners, who have worked with us to drive our R&D in various endeavors, such as activities in engineering societies, international standardization, and joint R&D projects. I would like to take this opportunity to extend our sincere appreciation to all those who have labored with us to make this great history possible.

Today, as simple telephony makes way for ubiquitous broadband services, NTT Network Service Systems Laboratories is vigorously pushing forward R&D on the next-generation network (NGN) to provide a versatile communications environment that permits users to have high-speed, safe, and secure connections anytime and with anything. I believe there are two major objectives in building the NGN:

- (1) The first is to build a new super-high-speed carrier-grade network that will replace the rapidly aging fixed-line telephone network. Although it will be based on IP (Internet protocol) technology, this new network must be made safe and secure, as well as free of the security shortcomings of the current Internet, by fully exploiting the carrier network technologies we have developed and accumulated over a long period.
- (2) The second is to build an open network service platform that permits the flexible application of new business models that transcend the current business framework—business models that may

arise from fixed-mobile convergence, telecommunications-broadcasting convergence, the convergence of Internet services and carrier network services, and so on.

My understanding of the network service platform may be summarized as follows. The Service Oriented Architecture (SOA) is now becoming realistic, particularly in the field of enterprise business. In SOA, a system is regarded as an aggregate of components called "services" so that various components can be combined in any way appropriate to make up a system. SOA reminds me of the Telecommunication Information Networking Architecture (TINA), an endeavor embarked on about a decade ago by worldwide carriers, telecommunications vendors, and computer vendors, which was based on the novel idea of assembling telecommunications services from components in a manner similar to today's SOA. Unfortunately, the Internet and software technologies available at that time were not mature enough to meet the requirements of TINA. However, ten years further on, the time is now ripe to realize the TINA concept in the NGN in the form of "Telecom SOA".

I have a vision of what we will aim at after Telecom SOA. Being an ardent member of a choral society, I have called it "Harmonization of Telecom SOA and Internet SOA". I am happy to see that R&D on the NGN is full of dreams and I look forward to seeing them brought to reality.

* ISDN: integrated digital services networks; ATM: asynchronous transfer mode

