

Towards Information Open Innovation

Future Internet design has been received attention as a heart of cyber social infrastructure. A group that includes Dr. Michihiro Koibuchi, an associate professor in the Information Systems Architecture Research Division, Dr. Hiroaki Nishi, an associate professor from the Faculty of Science and Technology at Keio University, and Mr. Koichi Inoue, a project researcher in the Information Systems Architecture Research Division, has discussed this theme since 2007, and now concludes that information open innovation is essential for the future Internet. NII Today arranged for a meeting of these three researchers, along with another principal member, Mr. Keisuke Iwasaki of Hitachi Information & Communication Engineering, Ltd., and asked them to talk about their commitment to the vision.

Not only protection but also safely opening is essential

Koibuchi We have had discussions in order to explore the potential innovation of the Internet 30 years in the future. We are now heading toward the vision of information open innovation.

Nishi This term was coined by Mr. Inoue to represent our aspiration to build an infrastructure for an open Internet; meaning an Internet accessible to anyone. The Internet has evolved into its current form in a short period of time. This is considered to be due to establishment of an environment open to any user and provision of many different services. However, the Internet is not completely open.

Koibuchi We are thinking of upgrading routers as the key to make the Internet truly open.

Nishi Routers comprise part of the devices that make up the Internet. They transfer data from the sender to the recipient. In other words, all information on the Internet passes through routers. If they collect and store information and provide it when needed, information availability will increase and eventually it will enhance further innovation on the Internet. We call these “service-oriented routers.” They are taboo in Japan, though.

Inoue I think “taboo” is a bit of an overstatement, but I understand you mean that they will not be accepted unless there is a change to the current common notion that information must be protected by security measures. I believe that this idea will be changed in line with the advancement of information technology, but until then it will be necessary to provide explanations and convince others that it is beneficial to

use information while being mindful of its security.

Active collaboration with different perspectives

Nishi I have studied routers for a long time. I am so fond of their speed that I’ve become absorbed in increasing their data transfer speeds. I’ve felt that raising the transfer speed is necessary for real-time data reception on the Internet. However, the time spent by the data-offering website on gathering the data is actually decisive with regard to the speed. Since realizing that, I am now interested in real-time data collection with routers through which information passes.

Iwasaki Routers have traditionally competed in terms of data transfer accuracy and speed. I find this idea interesting since I feel limitations with



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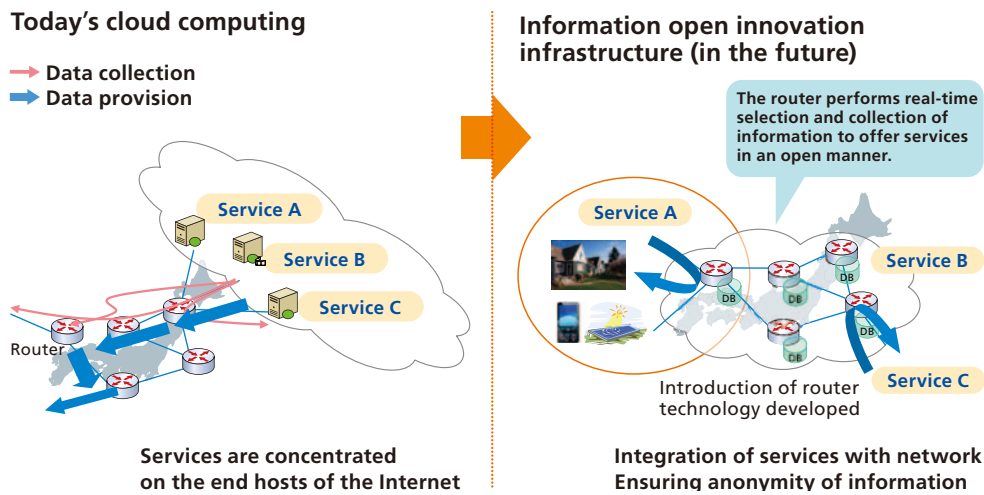
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What will the Internet be like after information open innovation?

The router currently being developed will open the way for information open innovation infrastructure that enables selection and collection of information passing through the router and for providing it according to users' needs. Unlike existing search engines, it is free from the process of connecting to other websites for gathering information. This means that it supports real-time data gathering and offering.

the current situation and I'm eager to create value-added ones. Businesses have strong motivation to introduce new ideas to society and they are now at the stage of putting the idea of such routers into a tangible form. We have created a hardware emulator on an FPGA* and a laboratory-level empirical study is underway.

Koibuchi Participation of people from the business sector is significant for us. We need to verify our own concepts in research at universities. We aspire to implement these in SINET, the network NII designed and operates. Given that this study will eventually substantially change the social information infrastructure, it is important to take a business perspective that focuses on introducing something new to society.

Iwasaki We are indeed aware that the likelihood of any such router being introduced in the future depends on the intent of the telecommunications carriers that construct the network infrastructure. Yet on the other hand, collaboration between industry and the academic community gives us opportunities to participate in new research. I have no idea whether the technology nurtured in this project will be practically implemented as is, but it has opened the potential for making large-scale proposals on innovation like this in the future.

Inoue In the collaboration, it is imp-

ortant for partners to see the common goal from their individual perspectives. In running a business venture, I am immersed in thinking about business models. Given the assumption that information open innovation occurs and changes the social information infrastructure, I always think about the viability of service providers taking advantage of it.

The world 30 years from now

Koibuchi If information open innovation is achieved, what will the world be like in 30 years?

Iwasaki ICT is incorporated in most products nowadays. Information gathered from them will be used for quickly answering customers' needs. And many other things will be possible. It is, however, very difficult to draw a concrete picture of the drastic change that the innovation would bring about.

Nishi Even though the study envisions circumstances in 30 years, ordinary projects have terms of a maximum of five years. Every study has produced results and specific applications are gradually coming into view. For example, routers can identify from where the data were sent, so they can detect malicious websites and mail and help prevent phishing fraud.

Inoue I think that this will tie in with

Japan's rebirth. After the infrastructure is made open, new services will emerge. This means transition from the age of consumption when goods were just sold without follow-up to an era that emphasizes customer retention. Services will incorporate Japanese hospitality, thereby increasing Japan's competitive advantage in the global market. I hope that this will be a formula for success for Japanese businesses. For starters, we should find even a small community that is willing to use it.

Koibuchi A study on a small change in the functions of routers that could trigger a drastic change in the world sounds very exciting to me. I wouldn't feel tired working until late at night if I was aspiring to see 30 years into the future.

Inoue Yes, this is our aspiration. The study on information open innovation is not only novel but also extremely ambitious and challenging. There are also big business opportunities surrounding it. This demanding vision gives us strength and it is key to a successful collaboration.

(Written by Akiko Ikeda)

* FPGA: stands for field-programmable gate array; an integrated circuit that can be configured after production by purchasers and designers to smoothly verify if it is ready for product updates and new protocol standards. In this trial it is employed for increasing the performance of routers.