

Executive Summary

IJJ recently announced its AI business strategy. Up to now, we have been building a track record of results through internal proof-of-concept work on AI utilization and the application of AI to some business operations. Having moved beyond that stage, we have now entered a phase in which AI is becoming embedded across the company as a foundation of our business, and it is in this light that we formulated and announced our company-wide AI strategy.

Since its founding, IJJ has fulfilled its role of providing social infrastructure centered on the Internet, with its business underpinned by the advanced technical and operational capabilities of its talented engineers. This is one of our great strengths and lies at the very core of the value we provide. Our aim is to use AI to convert the tacit knowledge of individuals, the experience and judgment of those working on the front lines, into explicit knowledge, build it into a corporate asset, and enable each and every employee to perform to their full potential. We plan to share details of specific initiatives as opportunities arise.

This issue of the IIR focuses on the evolution of core technologies underpinning the Internet, presenting IJJ's initiatives from three perspectives: home networks, server infrastructure, and data spaces.

Chapter 1 looks at the basic reference model for home networks based on international standard IEC 62608. With the increasing number and diversity of connected devices, home networks have reached the point at which we need to go beyond simply connecting individual devices and instead look at managing the network as a whole system. Moving beyond conventional device-to-device interoperability, the article lays out a framework for monitoring and managing the entire network in a unified manner, discusses the background to standardization, and lays out a future direction for home network management.

Chapter 2 discusses the evolution of IJJ's server infrastructure, looking at how IJJ came to deploy servers based on the Open Compute Project (OCP), the key considerations in its evaluation of Open Rack v3 (ORv3), and the configuration used in its production environment. In the course of moving from conventional enterprise servers to more scalable and efficient OCP-based configurations, IJJ's procurement model and design philosophy have also changed substantially. Building on the lessons learned from ORv2, and after repeated rounds of testing on factors such as power efficiency, rack utilization, and operability, IJJ moved ahead with the deployment of ORv3. As part of the infrastructure underpinning IJJ's services, OCP servers have become an important option in terms of both procurement and system building.

Chapter 3 examines the potential of decentralized data collaboration platforms through a proof of concept (PoC) on data space technology. Unlike conventional centralized platforms, a data space is a framework for secure data collaboration that preserves data sovereignty, a concept that has been championed primarily in Europe. The article explains the concept in concrete terms based on the results of IJJ's PoC. The PoC took the strengthening of cyber resilience in telecommunications infrastructure as its use case, confirming the effectiveness of attribute-based access control and policy-based data distribution. The article also sets out the challenges that lie ahead, including the standardization of semantics and the advancement of trust models, as well as the importance of building ecosystems founded on the distribution of data.

Guided by our mission of supporting society through technology, we will continue to advance the infrastructure technologies covered in this issue—networks, server infrastructure, and data—while also working to appropriately incorporate AI into our operations as we pursue the ongoing evolution of our services.



Junichi Shimagami

Mr. Shimagami is a Director and Executive Vice President and the CTO of IJJ. His interest in the Internet led to him joining IJJ in September 1996. After engaging in the design and construction of the A-Bone Asia region network spearheaded by IJJ, as well as IJJ's backbone network, he was put in charge of IJJ network services. Since 2015, he has been responsible for network, cloud, and security technology across the board as CTO. In April 2017, he became chairman of the Telecom Services Association of Japan's MVNO Council, stepping down from that post in May 2023. In June 2021, he also became a vice-chairman of the association.