

Toward Life-enhancing and Secure Services



General Manager of Service Design Department

Takaaki Sato

The Service Design Department is engaged in a wide range of activities, such as the development and implementation of diverse services and applications, the development and construction, maintenance and operation of i-mode, sp-mode, and other platform systems, the operation of security systems, and the provision of various types of technology support. These services and systems include “+ message” as an evolution of the existing Short Message Service (SMS), “my daiz” as an evolution of the existing i-concier and Shabette Concier personal information services using Artificial Intelligence (AI) technology, and a membership system to support the upgrading and evolution of the business infrastructure and expand commercial distribution of products and services. Such wide-ranging and integrated activities from service development to maintenance and operation is a strong point of the Service Design Department, which aims for speedy development applying the technical knowledge, experience, and strengths cultivated to date, agile development to meet customer needs as quickly as possible, and efficient construction, maintenance, and operation of safe and secure infrastructures making aggressive use of advanced technologies. As recent examples of the work being performed in the Service Design Department, I would like to introduce 1) efforts toward the practical use of “Mieru Denwa^{®*1}” and 2) large-scale introduction of a virtual platform for treasure Casket of i-mode service, high Reliability platform for CUSomer (CiRCUS)^{*2}/Multi Access Platform System (MAPS)^{*3}.

1) Efforts toward the Practical Use of Mieru Denwa
Mieru Denwa is a voice-call support service targeting hearing-impaired persons who have difficulty in using voice calls. It can convert the spoken words of the other party into text in real time and display them on a smartphone screen. The provisioning of convenient functions that can support the handling of calls and enhance the lives of hearing-impaired persons has been an issue of special concern for telephone operators.

This service has been made easy-to-use for hard-of-hearing persons by starting with “voice recognition technology” developed over many years by NTT DOCOMO and adding a “speech support function” that reads input text and conveys that content to the other party. Furthermore, to build a bridge between “text-based communication” and “voice-based communication” and

achieve smooth communication, Mieru Denwa adds special features such as displaying animation to indicate speaking by the other party and text display of the other party’s speech in real time.

A strong point of this service is that it can be connected to other services such as “Mieru Rusuden^{®*4}” that enables the user to check a voice message recorded by the call-answering function in text form and “Ohanashi Memo^{™*5}” that converts a phone conversation to text. Strong points like these can be accumulated and generalized for application to a variety of fields.

2) Large-scale Introduction of a Virtual Platform in CiRCUS/MAPS

OpenStack^{*6} has been introduced into NTT DOCOMO’s CiRCUS/MAPS large-scale, mission-critical^{*7} system with the aim of reducing infrastructure costs and improving response speed in service development. OpenStack is Open Source Software (OSS) that speeds up function development and enables the use of many functions at low cost. However, the characteristics of OSS can also make it difficult to maintain a stable level of quality. We therefore performed the following measures when setting out to adopt OpenStack: (1) conducted three Proof of Concept (PoC)^{*8} trials before function development and thoroughly extracted bugs, (2) adopted architecture that minimizes the impact of an OpenStack problem on services (excludes a Single Point of Failure (SPOF)^{*9}), and (3) rigorously limited the functions to be used while adopting more stable technologies. As a result of these efforts, CiRCUS/MAPS has been operating without any major problems up to the present.

In this way, we automated work using a virtual platform having extensive application program interfaces (APIs). For example, we have reduced manpower by about 50% and work time by more than 90% for night work associated with End of Life (EOL) migration that in the past extended over several days in a physical environment.

In recognition of this achievement of introducing a virtual platform to CiRCUS/MAPS on a large scale, we received a Red Hat Innovation Awards APAC 2017.

Going forward, the Service Design Department is committed to providing services that enhance our customers’ lives and to providing safe and secure network connections. We will expand “proposal-type” service development and technology support making use of accumulated strengths and work to provide a forward-looking service platform.

*1 Mieru Denwa[®]: A registered trademark of NTT DOCOMO.

*2 CiRCUS: A device that serves as an interface between the NTT DOCOMO core network and the Internet, provides i-mode mail, i-mode menu, ordinary Internet access, and other functions.

*3 MAPS: A platform providing Internet and business-system connections from FOMA, Xi, and other access circuits.

*4 Mieru Rusuden[®]: A registered trademark of NTT DOCOMO.

*5 Ohanashi Memo[™]: A trademark or registered trademark of NTT DOCOMO.

*6 OpenStack: Open source software for constructing an IaaS-type cloud-computing environment. It can be used to construct a virtual cloud environment for each user cloud service using physical resources such as servers, storage equipment, and networks.

*7 Mission critical: Refers to elements essential to the execution of businesses or services for which termination or interruption is not allowed.

*8 PoC: A relatively simple demonstration of the significance or feasibility of a new concept or idea.

*9 SPOF: A single point or element or that can cause an entire system to stop operating when failing in a certain part of the system.