

Moving from a Mobile Infrastructure to a Co-creation Platform Network



DOCOMO Communications Laboratories
Europe GmbH
Managing Director, President & CEO
Takatoshi Okagawa

DOCOMO Communications Laboratories Europe GmbH (DOCOMO Euro-Labs) was established in 2000 in Munich, Germany. Today, we are actively involved in studying specifications for the next-generation core network and in consolidating resources for international standardization activities.

Specifically, we are participating in the work of various standardization bodies with a focus on 3rd Generation Partnership Project Service and System Aspects 2 (3GPP SA2), which formulates standards and specifications for the core network in the 5G era, and European Telecommunications Standards Institute Industry Specification Group Network Functions Virtualisation (ETSI ISG NFV), which formulates standards and specifications for network virtualization technologies. As part of this effort, we are linking up with NTT DOCOMO's Research Laboratories and development departments and collaborating with European vendors in conducting technology studies while endeavoring to formulate specifications for related standardization bodies.

The 5G system aims to accommodate many and varied requirements including high-speed and high-capacity communications, low-latency, and massive connectivity (for IoT devices, etc.). It is expected to introduce technical innovations not only in the conventional wireless network but also in the core network.

In addition, by creating new industries through co-creation with a variety of industries, we can think of 5G as a system that can help solve pressing social problems and contribute to regional revitalization. We are therefore participating in standardization activities for the automation of operations in plants and factories in diverse industries including the automobile industry (spanning automobile manufacturers, parts manufacturers, etc.) and forming alliances with individual industry

groups such as the 5G Automotive Association (5GAA) and the 5G Alliance for Connected Industries and Automation (5G-ACIA). These types of activities were not previously seen in the LTE era.

In the conventional LTE-based core network, we constructed a single network for general consumers and achieved a low-cost and high-function solution while guaranteeing a level of reliability fitting a mobile carrier. In contrast, the core network in the 5G era will require diverse functions required by different industries, the ability to add functions quickly, a flexible billing system, and depending on the field, a higher level of reliability. This, in turn, will require major changes in network design and development techniques and in maintenance methods too.

Technically speaking, this means the application of microservices that can make conventional network functions even smaller in scope to enhance versatility, reusability, and convenience, network slicing technology that can flexibly arrange network functions specific to multiple domains, technology for automating the generation and maintenance of such network slices, state-discrete architecture for simplifying state management and achieving efficient deployment on cloud platforms for mobile telecom companies, and various types of container-based virtualization technologies. In this way, integration and restructuring with new technologies will also be needed in the study of international standards and specifications for the 5G network.

In June 2018, the specifications for 5G New Radio (NR) were completed at 3GPP as Release 15. This should accelerate the commercialization of 5G in various regions around the world. However, in the sense of creating a platform to enable co-creation with industry as mentioned above, specifications are still incomplete, and a variety of challenging issues have already arisen in formulating specifications for Release 16.

Furthermore, as NTT DOCOMO and other operators are beginning to commercialize network virtualization technologies, it was decided to extend the work of ETSI NFV up to 2020 as a fourth phase. This work includes the formulation of specifications that incorporate automated operations and innovative technologies from the IT industry as a platform supporting 5G network functions. All in all, international standardization activities in this area continue with increasing enthusiasm with a view to further evolution.

Amid these developments, research and development at DOCOMO Euro-Labs is focused on elemental technologies that can support the business evolution of NTT DOCOMO in the coming 5G era and on the construction of a platform network for achieving co-creation. I would like to contribute to lasting happiness in the world and a meaningful life for everyone through international standardization activities that take advantage of the benefits (knowledge) of the European region. We will move forward under the slogan "Know your customer, know the world, and think on one's own. Establish your direction, declare it to the world, and form strategic partnerships to make NTT DOCOMO into a global industry leader."