

Service Platforms That Support FMC (Fixed-Mobile Convergence)

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Abstract

The progress of FMC has diversified market needs and has made it necessary to prepare service platforms to enable the provision of new businesses. This paper introduces the services infrastructures provided by NEC for supporting the newly emerging services and describes as an example, the Network Storage architecture. This product enables users to uniformly handle various kinds of data and can serve as a platform for supporting many kinds of businesses in the all-IP networks to come.

Keywords

FMC, Network Storage, service platform

1. Introduction

FMC (Fixed-Mobile Convergence) is recently being proposed both inside and outside Japan. The expectations for FMC are particularly high among terrestrial network operators because it would create new business opportunities by solving their current problems. These include the subscriber saturation and the decrease in the ARPU (Average Revenue per User) that has followed the introduction of IP-based voice communications. The development of new business domains is also an urgent need for the mobile network operators who are troubled by a drop in the subscriber increase rate and ARPU stagnation. Under these circumstances, FMC is regarded as having a significant influence in assisting the development of new businesses at the same time as reducing the operating costs by enabling construction of shared platforms.

On the other hand, when FMC is considered from the business perspective, it is necessary to consider the differences between the value chains of terrestrial and mobile network operators. The value chain for delivering services to users is usually composed of a flow sequence thus; terminal → transport access → service provider → application. Many terrestrial network operators often procure the services related to terminals, transport, access, service providers and applications from different enterprises, while most of the Japanese mobile network operators procure these services from a single company. In the world of FMC, it is expected that service providers will be diversified more than ever as well as the service value chains. It is also expected that the roles of the network operators supporting the value chains will diversify as shown in **Fig. 1**.

Convergence with other business domain will become an im-

portant issue for the future of business infrastructures under FMC. The examples of such convergences and linkages will include collaborations with broadcasting companies in the terrestrial digital broadcasting services, those with logistics enterprises or railway companies in the non-contact IC services such as the “*Osaiifu Keitai*” service (mobile phones with wallet functions), and those with financial enterprises in network banking, etc. (**Fig. 2**). These trends can be regarded as indicating that we are now in a changeover period in which new business fields are going to be created from existing business fields. Future businesses should be developed by bearing in mind the need to realize and advance the changeover period and we at NEC are also being asked about what we are able to offer to society in the future.

2. New Platforms to Support Services

As described in Section 1, the functions of network operators may be utilized in many ways in order that various service providers can participate in collaborative business ventures. At the same time service providers that are interested in the possibility of linkage with network operators may want to use some of the functions provided by the communications carrier's platforms. Network operators need therefore to have access to a function for handling information related to the above so that they can implement new businesses. The network operators of the future need to prepare various APIs (Applications Programming Interfaces) according to the service providers that collaborate with them. For this purpose, the network operators are required to build platforms that are equipped

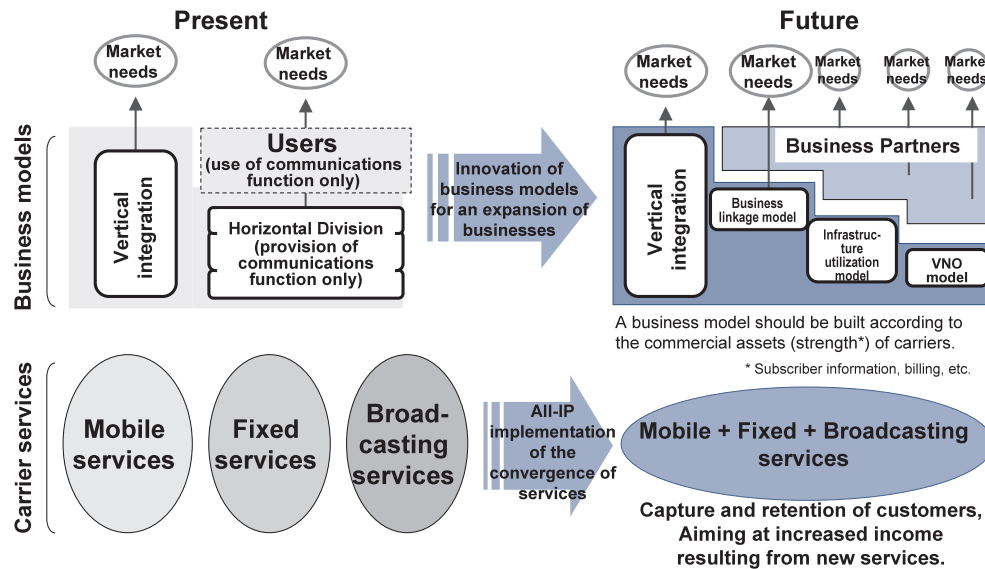


Fig. 1 Changes in the service value chain expected in future.

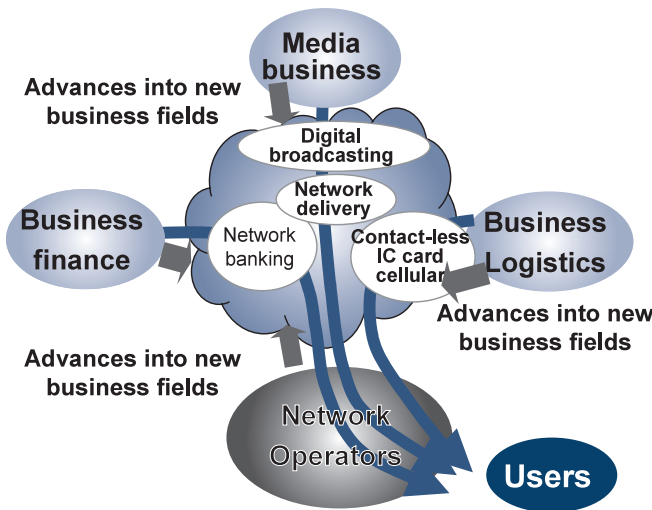


Fig. 2 New business domains of the future.

with various APIs (Fig. 3).

These platforms should be layered hierarchically and their functions classified according to their mode of service delivery.

The names of the three layers are as follows.

VSA: Valued Service Applications.

BEE: Business Enabling Environment.

SDC: Service Delivery Core.

The core services are provided based on communications infrastructures and operational management and business management systems are used in their control. The interfaces pro-

vided by each layer for other enterprises are as follows.

(1) VSA

This layer is intended to provide end users with plentiful service lines. The services are delivered directly by enterprises such as multimedia service providers. The main functions of this layer are as follows;

- Applications and contents for implementing each of the specific end user-oriented services;
- APIs and stubs for allowing applications programs to execute the functions of the lower-level layers (BEE and SDC).

(2) BEE

This layer is used to provide other service providers with functions for use in implementing various business models. It allows various functions and information possessed by the network operators to be utilized for other service providers. The main functions of this layer are as follows;

- AAA (Authentication, Authorization and Accounting);
- Value-added functions platforms (position information, presence, etc.);
- functions for use by other service providers to deliver contents and services (portal, content management, copyright protection, etc.);
- Content delivery and media/call session control functions;
- User privacy control and 3rd party access control.

(3) SDC

This layer is used to provide the communications platforms required for service delivery. It offers the functions required

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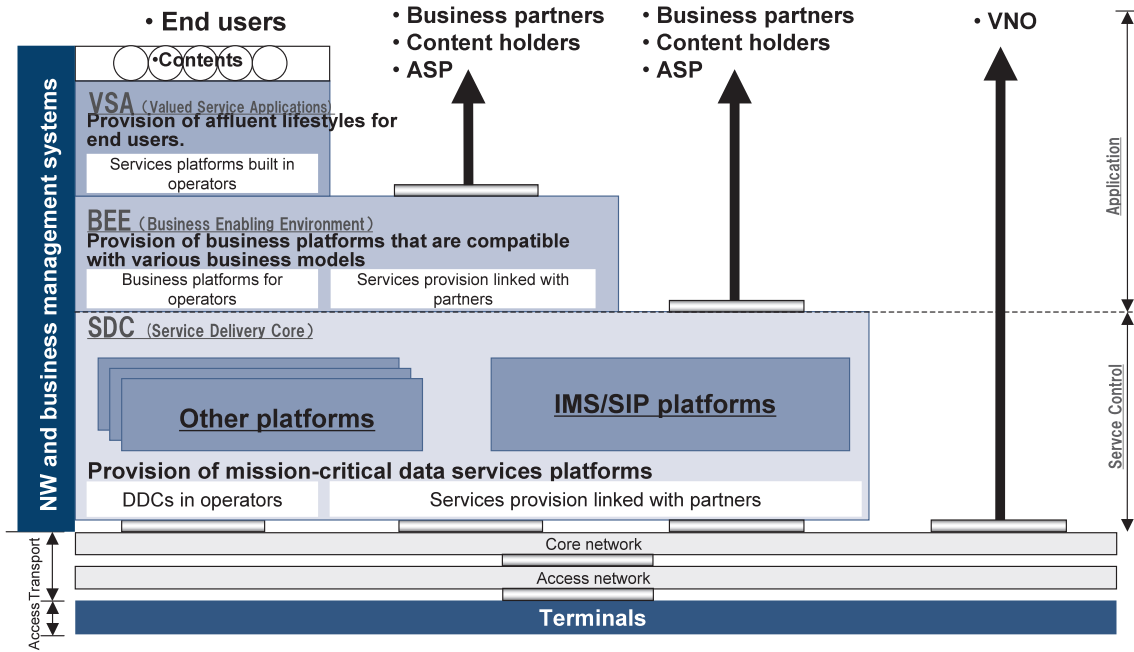


Fig. 3 Service platforms in FMC.

for communications such as VoIP and data gateways. The main functions of this layer are as follows;

- Session services;
- push functions;
- downloading functions.

These platforms make it possible to delivery various services and conduct businesses in collaboration with other enterprises.

3. Examples of Services in FMC

3.1 Concept of Network Storage

When FMC is considered from the perspective of services, it is important to provide a multi-modal function (the possibility of handling information in the same way from anywhere). In addition, considering the recent rise in security needs from the standpoint of personal information protection, data handling is required to be more vigilant than formerly. These requirements have made it more important that all information on a network is managed in a centralized manner. Data handled in this case will include the PIM (Personal Information Manager) data including addresses and schedules, e-mail data and entertainment data including images, video and audio.

At this time, information can be organized in three layers

including the service layer that includes interfaces for enabling access from both fixed and mobile networks, the functions layer that provides common functions for the information, and the storage layer that saves common data. The storage layer is required to store and manage user data in an integrated and centralized manner.

Services can produce new values by monitoring user data and integrating it appropriately and we believe that the critical issue lies in how to build linkages rapidly and effectively between the various services.

At NEC, we provide Network Storage as a business platform. This platform is provided as one of the functions of BEE, and features the capability of providing various services and APIs in forms that are usable by the service providers (Fig. 4). It centralizes the control of user data and information and offers common functions so that each service system can build up a service without being influenced by the potential effects of storage resources, terminals and access routes.

3.2 Network Storage Portal

The Network Storage portal is implemented by dividing it into a shared part and a part that is customized according to each means of access. For example, the service order and portal functions are prepared according to the means of access, while

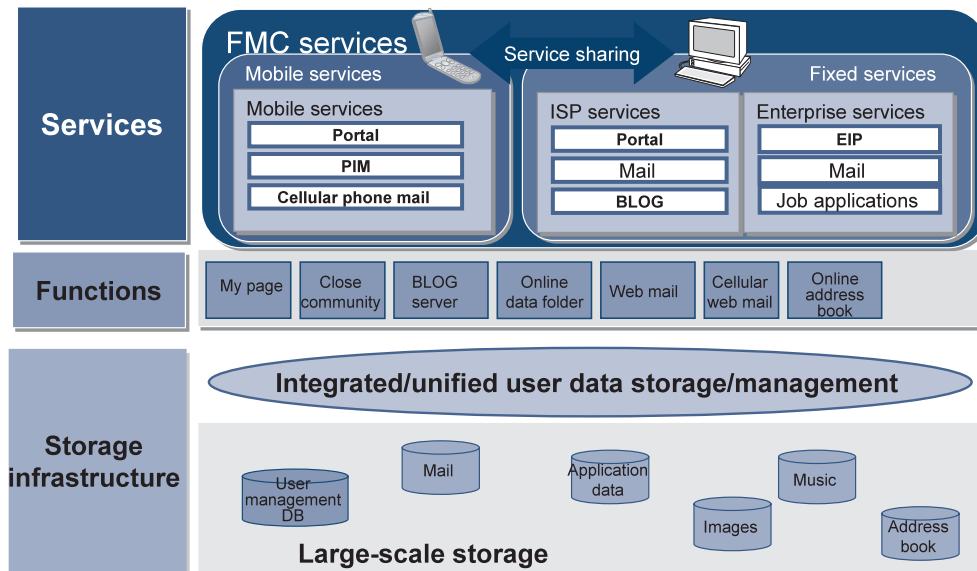


Fig. 4 Storage architecture.

the portal and service order layers should be provided in an integrated configuration. For this purpose, NEC's storage platform provides APIs for use in configuring the portal and service reception layers using an integrated architecture.

3.3 Data Synchronization

Centralized data management necessitates synchronization of the information gathered by the terminals (cellular phones and PCs) on the network. For the PIM information, data is synchronized using the SyncML as standardized by the OMA¹⁾ (Open Mobile Alliance). Additionally, for information other than the PIM information, interfaces are also provided for use in data uploading from the users.

4. Conclusion

We have described the concept of service platforms based on FMC. These platforms will make possible various APIs that will support the business infrastructures that will continue to diversify in the future. We have also mentioned the FMC-based service platform using Network Storage as an example enabling service diversity.

At NEC, we aim at building and offering platforms that are optimized for delivering various services to meet the paradigm shift which is taking place in the concept of communications

and is brought about by FMC. We will continue to research methods of service building and provide platforms that will enable new businesses by utilizing the all-IP platforms available in the IMS (IP Multimedia Subsystem)²⁾ and the MMD (Multi Media Domain)³⁾.

* "Osaiifu Keitai" is a registered trademark of NTT DoCoMo, Inc.

References

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