Standardization

Open Mobile Alliance (OMA) Establishment and its Activities
—Integration of WAP Forum and other Mobile Service/ Application Standardization Bodies—

The Open Mobile Alliance (OMA) stems from the WAP Forum, which had been engaged in standardization activities relating to protocols and browser specifications for mobile Internet access services. OMA was established in June 2002, taking over the concept of the Open Mobile Architecture initiative announced in November 2001 aimed at the collaborative development and standardization of mobile technologies and services. Furthermore, organizations engaged in standardization activities focusing on specific technical fields of mobile applications have been integrated into OMA, such as Location Interoperability Forum (LIF; on location information), SyncML (on data synchronization and mobile device management) and Wireless Village (on mobile instant messaging and presence). OMA finalized the public disclosure of the first Enabler Release in November, based on the specification deliverables by the aforementioned organizations now integrated into OMA. OMA's future plan is to carry out standardization activities for seamless, consistent end-to-end services based on its integrated approach to covering a wide range of technical fields.

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1. Inauguration Background and Standardization Forums Integration

In recent years, many standardization forums have emerged targeting mobile multimedia services, in addition to the International Telecommunication Union (ITU) and the 3rd Generation Partnership Project (3GPP), which have traditionally been involved in the standardization of radio and network systems.

The WAP Forum [1] had focused on the development of specifications for protocols on Internet access services exclusively for mobile, and various mobile applications centering browsers. At its Annual General Meeting in June 2002, changes to its articles of association and its organization were accepted, resulting in the establishment of the Open Mobile Alliance (OMA). The scope of OMA has been enlarged than the original WAP Forum, that it even focuses on the integration of all mobile IT applications, as sought by the Open Mobile Architecture initiative announced in November 2002, led by mobile telecommunication operators and vendors. By the general meeting in Hawaii in November, OMA finalized the integration of forums that have been engaged in the standardization of specific technologies in the mobile sector, namely, the Location Interoperability Forum (LIF)[2], SyncML, Wireless Village and MMS Interoperability Group (MMS-IOP; focused on verification of MMS interoperability).

The history of each body integrated into OMA is described below.

（1）WAP Forum

The WAP Forum was established in January 1998, with the aim to promote mobile Internet access systems opti-

mized with respect to the characteristics of mobile terminals and wireless communications, and to standardize related technologies centering their applications, based on the Wireless Application Protocol (WAP) architecture announced by Ericsson, Motorola, Nokia, Unwired Planet (now Openwave Systems) in September 1997. Its specifications include: WAP 1.x, consisting of simplified proprietary transport protocols, a markup language for microbrowsers called Wireless Markup Language (WML), transport data compression technology, etc. The 1st generation of WAP was primarily developed for the purpose to be applied to 2nd generation (2G) mobile communication systems such as Global System for Mobile Communications (GSM), IS-95 and Personal Digital Cellular (PDC); and WAP 2.0, which is the revised version aimed at converging with standard Internet technologies based on the introduction of the Transmission Control Protocol/Internet Protocol (TCP/IP), eXtensible HyperText Markup Language (XHTML), etc. which were profiled primarily for targeting broadband 3rd generation (3G) systems. NTT DoCoMo has been serving as a board member since 1998, and made substantial contributions to the development of WAP 2.0, backed by i-mode technologies.

(2) Location Interoperability Forum (LIF)

LIF was established by Ericsson, Motorola and Nokia in September 2000, with the aim to specify and promote a framework for providing services using common and ubiquitous location information that does not depend on protocols of mobile networks, radio interfaces, type of terminals or positioning method. NTT DoCoMo joined the forum in November 2001, and made substantial contributions to the development of the Le interface, the specifications of a protocol between the core network and xSP harmonized with 3GPP LCS (Release 5).

(3) SyncML Initiative

The SyncML Initiative was established by Ericsson, IBM, Motorola, Nokia, etc. in February 2000. Its scope includes the architecture for data synchronization in mobile terminals, protocols, XML-based description language specifications, and the development of specifications that realize the remote mobile device management functions based on the application of these technologies.

(4) Wireless Village

The Wireless Village was established by Ericsson, Motorola and Nokia in April 2001 as a standardization body aimed at realizing instant messaging and presence services for mobile systems that are compatible with existing Internet-based instant messaging services. The Wireless Village Version 1.0 specification developed in February 2002 was updated to Ver.1.1, and released in July after a number of vendors introduced products and conducted an interoperability test called Village Fest.

(5) MMS Interoperability Group (MMS IOP)

MMS IOP was formed by eight companies, namely, CMG, Comverse, Ericsson, Logica, Motorola, Nokia, Siemens and Sony-Ericsson in February 2002, with the aim to promote end-to-end interoperability of MMS. Its main activities are to agree on a conformance document based on the subset of MMS specifications defined by 3GPP and the WAP Forum, to conduct MMS interoperability tests, to resolve problems, and to exchange technological information relating to the tests.

Figure 1 shows the inauguration of OMA and the integration of the standardization bodies on a timeline.

2. Scope and Characteristics

Figure 2 shows OMA's scope and examples of its concepts. Its aim is to standardize various factors of mobile services and applications shown in the horizontal direction considering end-to-end interactions in an integrated manner, led by the market from the end user's veiwpoint.

Its activities are as described below.

(1) Application Enabler Technologies

Shift standardization from specifications as individual components of application enabler technologies toward those as end-to-end services and applications with guaranteed interoperability according to market and user needs.

(2) Standardization Forums

Integrate standardization forums that have specialized in applications separately, eliminate overlapping efforts and inconsistencies between forums, and provide open, stable specifications to the market. Also, differentiate the standardization activities from those in different fields including 3GPP, 3GPP2, the Internet Engineering Task Force (IETF), and the World Wide Web Consortium (W3C), in order to eliminate overlapping tasks and resolve
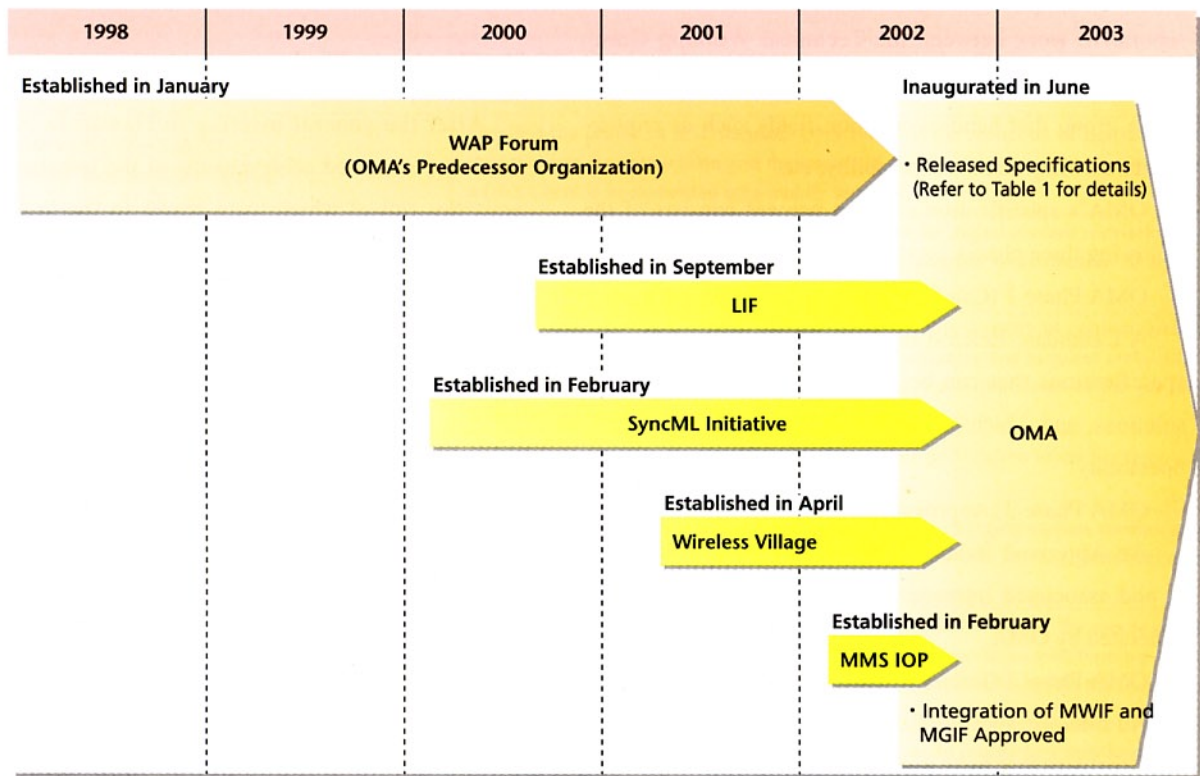
Figure 1 OMA Inauguration and History of Standardization Bodies Integration
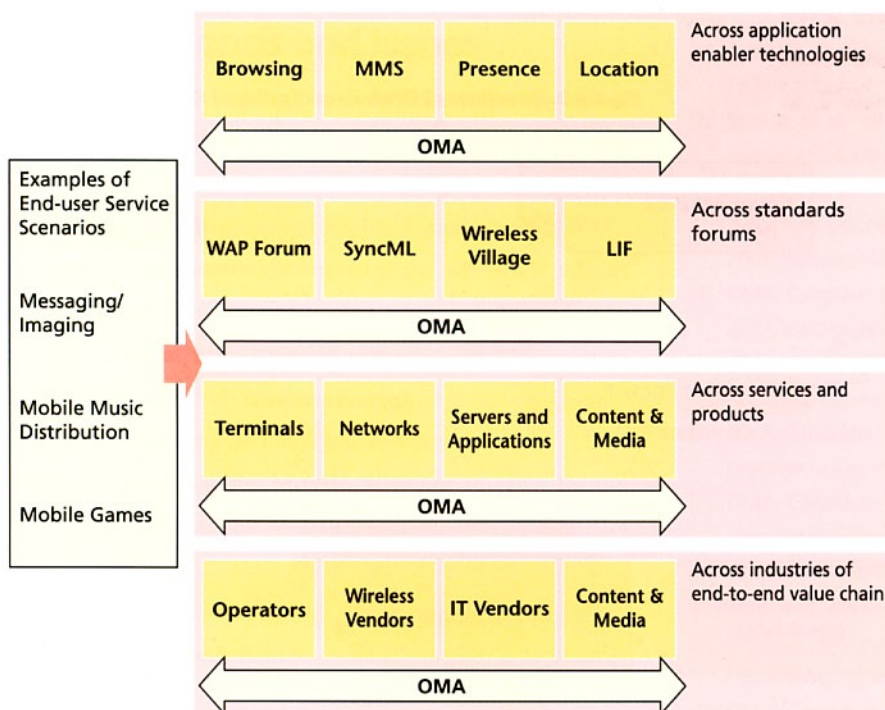

Figure 2 Example of OMA's Scope Diagram

ucts, vendors and operators by focusing on specifications of services and products relating to end-to-end mobile applications.

(4) Expansion towards Industries in the Whole Value Chain

Create values for all industries relating to the whole value chain for mobile applications.

3. Organizational Structure and Activities

Figure 3 shows the organizational structure of OMA. NTT DoCoMo participates in the Board of Directors as a Sponsor Member, with administrative and managerial authority over the organization as a whole. The Technical Plenary (TP) is given full executive authority for developing technological specifications and the processes, and is administered based on the consensus of the whole organization.

unaddressed fields.

(3) Services and Products

Provide seamless, standardized specifications across prod-

Each Enabler specification is drafted based on the collaborative work between the Technical Working Group (WG), each of which handles a different technical field, and a group that handles common fields such as requirements, architecture, interoperability, etc.

OMA's specification creating process consists of the following three phases, as shown in **Figure 4**.

① OMA Phase 1 (Candidate Release)

A Candidate Release is a TP-approved set of Enabler specifications that can be implemented in products and solutions, and which can be tested for interoperability.

② OMA Phase 2 (Approved Release)

An Approved Release has passed Phase 1, and associated interoperability test cases generated by OMA.

③ OMA Phase 3 (Interoperable Release)

An Interoperability Release includes multiple enablers that have passed Phase 2 with end-to-end interoperability test reports, and information about use cases.

In November 2002, there were seven Enabler specifications in OMA Phase 1, one Enabler specification in OMA Phase 2, as shown in Figure 4.

4. Latest Release

After the general meeting in Hawaii in November 2002, the sustained achievements of the integrated Forum activities (all of which were based on the WAP Forum except for the Instant Messaging and Presence Services (IMPS) specification from the Wireless Village in the present release) were released to the public as the first OMA release. **Table 1** shows the outline of each one.
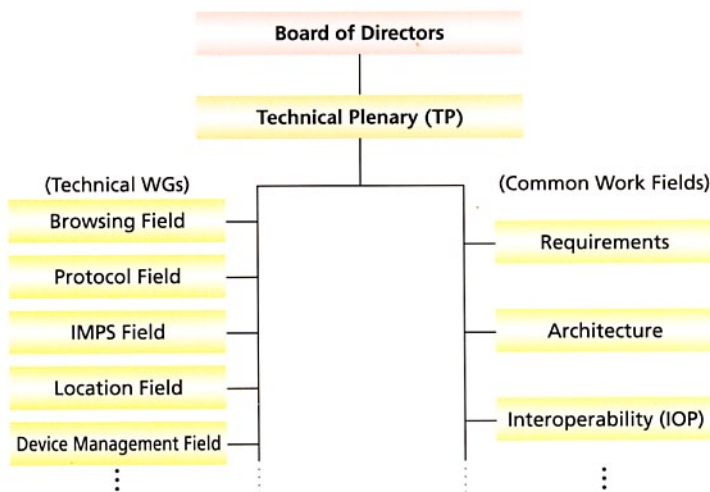
Figure 3 Overview of OMA Organizational Structure
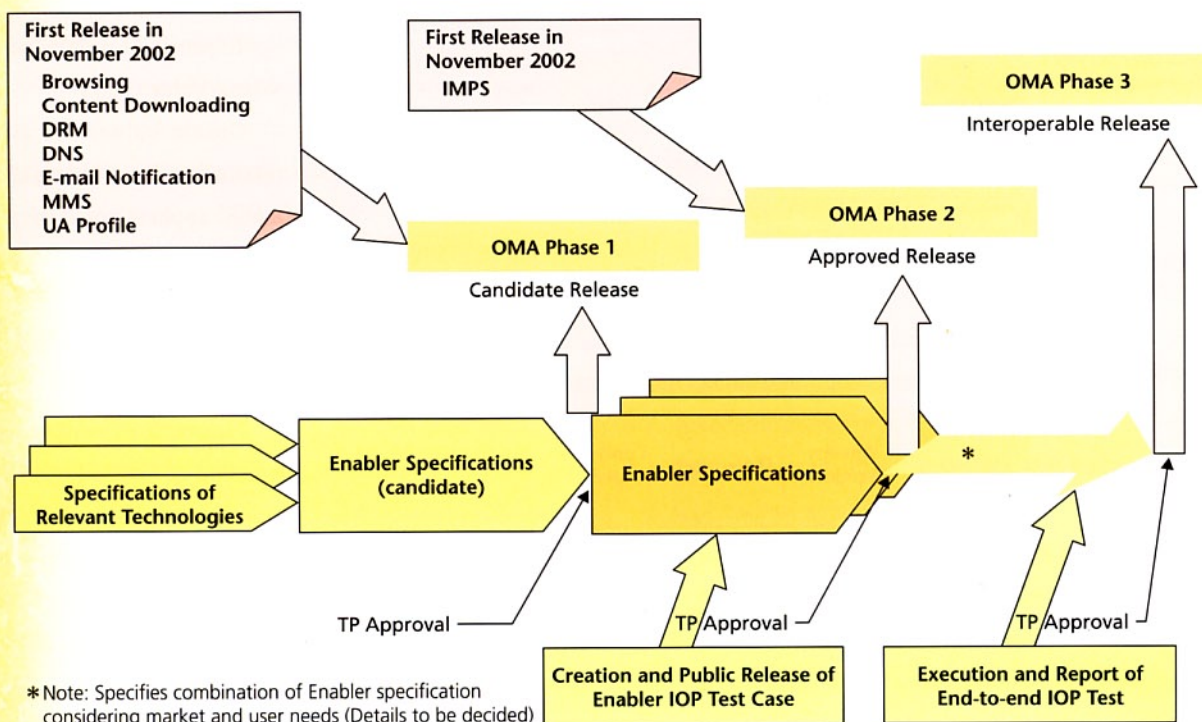
Figure 4 Abstract Illustration of OMA's Specification Development Process

Table 1 Outline of Specifications released in November 2002

Name of Specification (Version)	Outline
OMA Browsing (Ver.2.1) [4]	Specifies the Mobile Profile of ECMA Script as a functional extension of the XHTML Mobile Profile browser specification set forth in WAP 2.0.
OMA DNS (Ver.1.0) [5] DNS：Domain Name System	Specifies the profile of IETF-standard DNS aimed at the reduction of signal volume over wireless communication and the impact of mobile phone implementation when a DNS Client is implemented on a mobile terminal.
OMA DRM (Ver.1.0) [6] DRM：Digital Rights Management	Specifies the basic copyright protection mechanism for digital content restricting the preview of downloadable Web content by users and the redistribution of down-loaded content.
OMA Download (Ver.1.0) [7]	Specifies the content download mechanism presuming support to content billing, copyright management, etc. Distinctive in that it separates and acquires meta-information of Web content and makes it possible to report the status of the content downloading back to the Website.
OMA e-mail Notification (Ver.1.0) [8]	Specifies a mechanism that enables e-mail reception notification to mobile terminals using WAP Push [3], etc.
OMA MMS (Ver.1.1) [9] MMS: Multimedia Messaging Service	Specifies a store-and-forward messaging system for exchanging various media types of content between mobile terminals. Can interoperate with existing protocols such as SMS, e-mail, etc.
OMA UA Profile (Ver.1.1) [10] UA: User Agent	Specifies the information format and transport protocol to inform the server of the functional capabilities, settings, etc. of the User Agent on the mobile terminal (User Agent: a program such as the browser to reflect the user's behavior on the terminal).
OMA IMPS (Ver.1.1) [11]	Specifies protocols that enable, via the Wireless Village Server, the interaction with instant messaging services on the existing Internet (with proprietary solutions), presence information on the state of the mobile terminal and its user, the exchange of messages and contents specified by the user between groups.

5. Future Trends and Issues

The next release is expected to include the respective specifications developed lately by the WAP Forum, LIF and SyncML. This is expected to be followed by specifications in fields such as enhanced Digital Rights Management (DRM), Device Management with integration of WAP Client Provisioning and SyncML and further taking possible consolidation into account with 3GPP User Equipment Management (UEM), and Mobile Web Services.

Issues in the immediate future are as follows:

① The integration of the Mobile Wireless Internet Forum (MWIF) [12] and the Mobile Gaming Interoperability Forum (MGIF)[13] into OMA has been approved. How should the merits of integrating the application standardization activities in each field be characterized?

② How should Enabler specifications constituting the Interoperable Release (OMA Phase 3) be combined?

③ What are the concrete policies and measures to differentiate OMA's scope from that of 3GPP, 3GPP2, W3C, IETF, Liberty Alliance and other standardization bodies and to eliminate overlapping efforts with them?

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