

Technology Trends in Multimedia Messaging

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The recent expansion of PC and mobile phone ownership has produced a sudden wealth of special communications and information-related tools. In particular, there has been a rapid conversion to use of multimedia content, and without realizing it, users have become accustomed to a world of communications which includes video and voice messages. These communications tools have been supported by the spread of IP networks and conversion to broadband IPs, as well as the advances made in multimedia messaging technology ¹⁾.

This essay reviews the trends in multimedia messaging technology, looking at the individual elements of this technology, and discusses future directions, taking account of likely changes in network configuration.

What is "Multimedia Messaging"?

If we focus on the communications direction and format, multimedia messaging technology can be defined as follows.

"A term for technology which performs cooperative tasks (collaboration), such as person-to-person transmission of information (messaging), bi-directional communications, information sharing, and the like, by means of multiple media, such as text, voice, images, and so on." (See Fig. 1)

In other words, we could call it "Information

communications technology which promotes better mutual understanding between people."

We will now look at some of the essential technologies which go to make up "multimedia messaging", giving examples of specific tools and protocols, as well as discussing the latest tendencies in this field.

Trends in messaging technology

Messaging technology transmits information in one direction, for example, e-mail or fax messages. Web technology used in Internet home pages is also unidirectional, in the sense that information is either posted or read, and it can also be regarded as messaging technology in the broad scope of the term. (See Table 1).

In the past, separate mail systems have been developed using different protocols depending on the type of media used. However, recent advances in e-mail technology mean that voice messages, images, and faxes can now all be sent by e-mail. We have also seen the appearance of "unified messaging" technology, which allows media to be converted so that different media can be used when writing and reading messages. In this way, it is possible, for example, to check the contents of a text mail by telephone, or to print a mail by fax, thus opening up a whole range of new messaging applications.

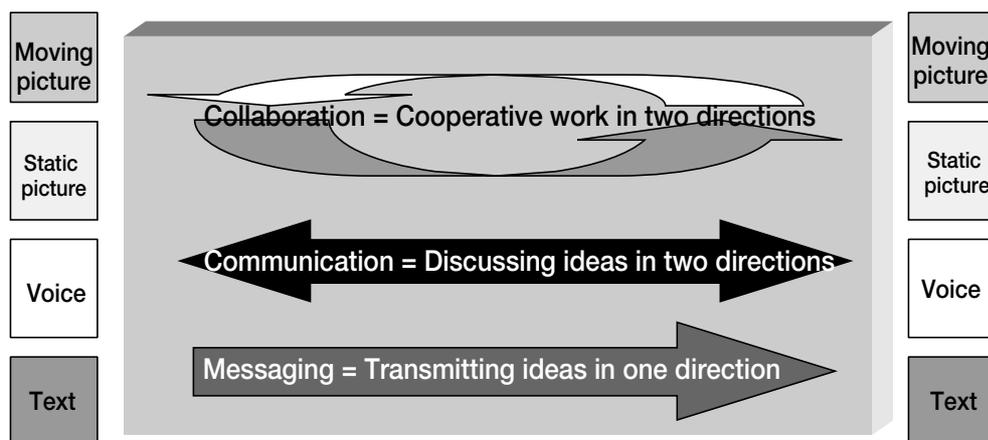


Fig. 1 Conceptual diagram of multimedia messaging technology

Table 1 Specific applications in messaging technology

Transmission method Media	Mail	Fax	Web
Voice	Voice mail e-mail	—	Voice link
Text	e-mail	Fax	Information link
Static picture	Fax mail e-mail	Fax	Information link
Moving picture	Video mail e-mail	—	VoD

VoD: Video on Demand

Trends in communications technology

In real-time person-to-person communications, the most commonly used tool is the telephone. The telephone has been developed on the basis of circuit-switched networks. In recent years, the spread of mobile phones and network IPs, as well as broadband communications, has led to the introduction of new applications, such as chat (Internet messaging), TV conferencing, data conferencing, and so on.

VoIP (Voice over Internet Protocol) is the technology used to support real-time applications over IP networks. The purpose of this technology is to provide bi-directional communications of voice, video images, and more, on IP networks. In order that VoIP can provide telephony services over these networks, protocols such as H.323 and MGCP/Megaco (Media Gateway Control Protocol) have been developed.²⁾ The latest research has been looking into services which combine voice and images in data applications other than telephony. One

example of this concept is the “Web contact service” based on Oki’s CTstage, which allows users to hear home page information as a voice communication, via their PC or PDA (portable information terminal), or to converse with someone else via voice and video images, whilst viewing the same home page. Although new communication network services of this kind can be set up using H.323 or other existing protocols used in VoIP, the markup language protocol, SIP (Session Initiation Protocol), which is used to display home pages, and the like, is thought to provide the best compatibility with data applications (see Fig. 2) 3) 4).

Trends in collaboration technology

Within the ambit of multimedia messaging technology, it is collaborative applications that are really expected to lift off in the future. Collaboration involves generic technology which allows separate individuals to work in cooperation, using messaging and

Communication AP	Telephone	Chat	Telephone Display caller ID	Chat	Chat	Trunk AP	Mail	Telephone	Telephone	Telephone	Data TV conference system	Telephone	• TV conf. • Mail • Multimedia chat • Web contact				
Terminal	Analog call	Portable	PC (modem)	ISDN call	Portable	PC (TA)	Dedicated terminal	Router	GW	GW / TA	IP telephony	GW / TA	IP telephony	Con-ference System	GW / TA	IP telephony	PC
Switching	Analog		Digital			X.25/SNA	Frame relay	VoFR	MGCP	H.323		SIP					
								VoIP									
								IP									
Circuit switching							Packet switching										

Fig. 2 Trends in communications technology

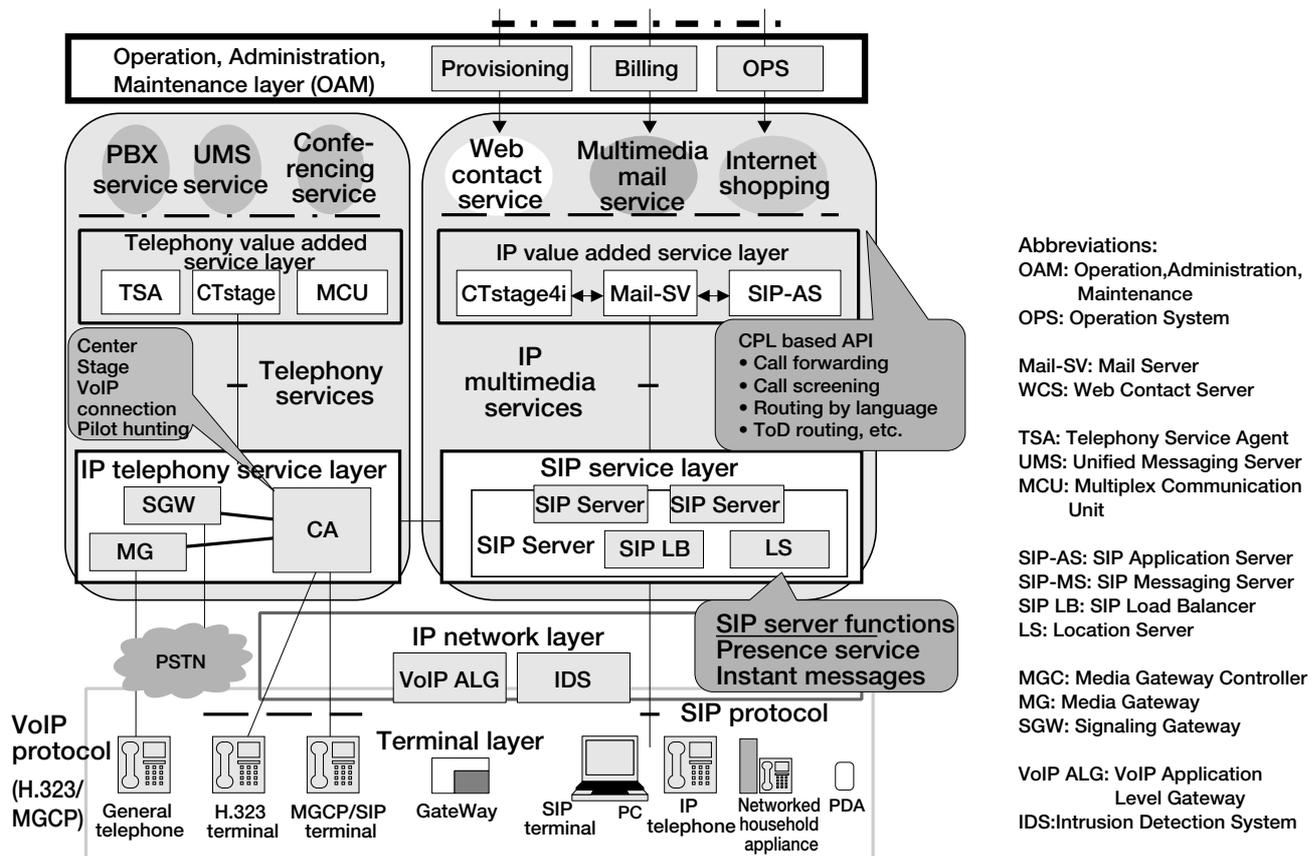


Fig. 3 Example of multimedia messaging system

communications technologies. One specific example of an application of this type is multimedia conferencing, which allows participants to hold a conference via voice and video images, whilst sharing the same data. Standards are provided by the ITU recommendations T.120 on data conferencing and T.140 on multimedia conferencing.

In collaborative working of this kind, it is vital to have technology which allows sessions to be set up as and when required, to aid smooth and unobstructed interchange of ideas.

Changes in network structure

Conventionally, different types of exchange have been used for voice communications and data communications, namely, circuit-switched systems for voice and packet-switched systems, such as IP, for data. However, from here on, switching systems are set to shift increasingly towards IP-based packet exchanges as the main type of exchange. This will mean that voice communications will be handled as just another type of media in data applications.

Issues and a vision of the future

Transmitting voice and image information over IP networks requires technologies, such as guaranteed bandwidth, congestion control, and security assurance.

It is also necessary that the required application services are distributed over the network. Therefore, Oki Electric has been developing a multimedia messaging system based on distributed architecture, such as that shown in Fig. 3. Specific products of ours in this field include CenterStage in the network service layer, and CTstage 4i in the application service layer. CenterStage allows connection between a variety of different VoIP protocols, such as H.323, MGCP and SIP, whilst also providing seamless connection to circuit-switched networks. CTstage 4i uses SIP to connect to CenterStage, thereby providing a whole range of different multimedia messaging applications.

Through this combination, flexible and adaptable services, such as IP telephony services, and new collaboration services, can be set up easily. ◆◆

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