

Sharing everyday experiences

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Players in the telecommunications industry can greatly improve person-to-person communication by paying attention to, and taking advantage of, known user behavior patterns and by taking steps to enrich voice communication and improve interaction between voice and data services.

Utility should be a key consideration when they plan and develop enriched communication services, such as Ericsson IMS weShare. How, for example, will the services be used and in what context? Which goals should be supported and what are the driving forces for enriched communication?

It is a known fact that usability helps determine the success or failure of mobile services. Poor usability is a significant barrier to diffusion. This was very evident for services such as the Mobile Internet (WAP) and picture messaging (MMS). At the time of their introduction, these services were simply too complicated: users had to configure the services manually, they were difficult to use, and their performance was lackluster.

For mobile services to succeed, users must find them easy to use and interact with. Therefore, a criterion for developing enriched communication services is coherent interaction and system design.

The authors describe research on consumer behavior as it relates to Ericsson IMS weShare Image and Motion; they explain how Ericsson has responded to issues raised by end users; and they describe how the Ericsson IMS weShare concepts fit into consumers' lives and in what situations they will want to use them.

Evolving communication culture

Mobile phones have had a tremendous impact on communication and lifestyles. Today it is no big deal for someone to own a mobile phone and carry it around in his or her pocket. In many parts of the world, this is actually the norm rather than the excep-

tion. Indeed, if anything, people now assume that everybody has a mobile phone.

"A mobile phone is like underwear. You can't go without it without noticing that something's missing." (Male, 19, China)

Mobile phones and the internet have had a tremendous impact on modern society. Young people, in particular, have enthusiastically embraced these technologies and consider them an important element in their lives.

"My phone is like a second skin. It contains all my pictures, my memories, my favorite music, and so on. It has what I want and helps define who I am. I carry it with me everywhere." (Female, 22, Korea)

Mobile phones have created a sense of need: the need to be available to friends at all times, and thus the need to always have a functioning device. In some circles, constant accessibility has become the rule. So much so, in fact, that turning off one's phone might require an explanation. In this sense a mobile phone that seldom rings might also generate feelings of loneliness and isolation.

"If you switch your phone off, you feel cut off, excluded, from the rest of the world." (Male, 31, Italy)

"One day I left my phone at home and I was just so lost without it. I was, like, what am I going to do? I was so worried I might miss out on something important and that I wouldn't be able to contact others if necessary." (Female, 23, Sweden)

A new communication culture has sprung up. Today's communication is about so much more than just making announcements. It has evolved into the sharing of everyday experiences. The use of mobile phones has introduced several new social aspects. Today, for example, the majority of communication is about

- micro-coordination (*Where are you and can we meet later on?*); and
- hyper-coordination – people use their phones to convey emotions and social signals, in particular, for cementing peer relationships.

Recent technological advancements have brought camera phones, MMS, video capabilities, and so on to market, triggering a need among consumers to add richer media to their communication. The good news is that present-day communication technology provides all the necessary tools for building the technical solutions behind new, rich services. With the IP Multimedia Subsystem (IMS), for instance, one can create these services today. Combinational ser-

BOX A, TERMS AND ABBREVIATIONS

3G	Third-generation mobile system	ISDN	Integrated services digital network
3GPP	Third Generation Partnership Project	ISUP	ISDN user part
AAC	Advanced audio coding	JCP	Java Community Process
AAC+	Enhanced AAC	MGC	Media gateway controller
ADC	Automatic device configuration	MIME	Multimedia internet message extensions
ALG	Application layer gateway	MMS	Multimedia messaging service
API	Application program interface	MRF	Media resource function
AMR	Adaptive multirate	MSRP	Message session relay protocol
CDMA	Code-division multiple access	NAT	Network address translation/translator
CSCF	Call session control function	OSA	Open system architecture
CSI	Combinational services	PDP	Packet data protocol
DTM	Dual transfer mode	QoS	Quality of service
EDGE	Enhanced data rates for GSM evolution	RTCP	RTP control protocol
GERAN	GSM/EDGE radio access network	RTP	Real-time protocol
GSM	Global system for mobile communication	SBG	Session boarder gateway
GSM A	GSM Association	S-CSCF	Service CSCF
ICP	IMS Client Platform	SDP	SIP data protocol
IETF	Internet Engineering Task Force	SIP	Session initiation protocol
IMS	IP Multimedia Subsystem	TCP	Transmission control protocol
IOT	Interoperability test	WAP	Wireless application protocol
		WCDMA	Wideband CDMA

vices, which Ericsson implements through Ericsson IMS weShare, are an important example. Ericsson provides a platform and toolbox called IMS Client Platform (ICP) for simplifying the process of creating new services and integrating them with handsets. Users can thus easily share their everyday experiences, the way they want, today.

"Services should be better integrated with communication. Today, they seem so separate. You can call your friends and ask, 'What are you doing tonight?' And you can send pictures. But you can't do both at the same time." (Male, 18, USA)

Richer communication

Many users are excited by the prospect of adding rich media elements to their communication. Others' reactions, however, are more reserved. Some consumers question the need for rich media services. To them, the mobile phone is merely a tool for voice communication. Still others believe that the cost of rich media services will be prohibitive. Notwithstanding, studies (Box B) indicate that every consumer group can conceive of situations where it would be beneficial to add video clips or a picture to a voice call.

The Ericsson IMS weShare application enables two users to share media, such as pictures or video (clips or live feed) during an ongoing mobile voice conversation. At present Ericsson IMS weShare includes four services:

- Image, for sharing snapshots;
- Motion, for sharing live video (Figure 1);
- Media File, for sharing a stored file, such as a picture or video clip; and
- Whiteboard, for sharing what is drawn on a picture or a black background.

To use Ericsson IMS weShare, a handset must have the application installed on it, it must contain a digital camera, and it must be used with "handsfree" equipment (a headset). The Ericsson IMS weShare services are based on the IMS architecture and comply with 3GPP standards for IMS and combinational services.

How the concepts fit in

Although voice communication is interactive, explaining complex concepts can be quite difficult when the participants in a conversation are limited to voice communication. The addition of visual media can go a long way toward helping users to convey



Figure 1
Even though Patrik Muller is out of town on business, he will, thanks to Ericsson IMS weShare Motion, still be able to watch his son hit a game-winning homerun. (Illustrations by Didier Chincholle)

feelings or to explain or describe an event, situation, or person.

Consumer categories

Early Adopter consumer groups will be the first to embrace Ericsson IMS weShare services. These consumers will be followed by the rest of the market. Research on consumer behavior shows that there are two basic areas

BOX B, CONSUMER RESEARCH

To ensure that the development process more fully addresses utility and usability, Ericsson has conducted consumer research regarding new mobile services and combinational services. The research, conducted in China, Italy, Japan, South Korea, Sweden, the UK and the USA, was based on

- 3-hour interviews with 334 focus-group participants;
- 1.5-hour, in-depth, one-on-one interviews with 105 participants; and
- a quantitative study of combinational ser-

vices based on a survey of 14,500 consumers (representative sample). The specific Ericsson IMS weShare study consisted of

- 7 focus groups with 56 consumers (Early Adopters) in Sweden and the UK;
- 20 in-depth interviews (Early Adopters) in Sweden and the UK;
- web survey of 500 participants (Early Adopters) in Sweden; and
- 10 pairs of consumers in a detailed usability test (Early Adopters) in Sweden.

of utility for Ericsson IMS weShare services. The services can

- be used for practical support (logical appeal); and
- provide social enrichment (emotional appeal).

Many consumers are enthusiastic about the prospect and see a clear benefit of using the Ericsson IMS weShare Image and Motion services to enhance established communication behavior. This is because seeing the person you are talking to and having the ability to share your immediate surroundings directly satisfies emotional triggers.

"This is great! Who among us has not thought 'I wish you were here,' or 'I wish I could show you.' Showing something to somebody as you speak to them is a lot better than taking a picture and sending it to them later." (Male, 26, USA)

The evolutionary aspect is a main trigger for video or picture functionality. But more importantly perhaps is the fact that the addition of visual elements helps satisfy very strong and basic human needs. In other words, virtually everybody – those people who are eager to try Ericsson IMS weShare services as well as those who are still undecided – will find that richer communication services add value, and as a result, usage will grow in proportion to the diffusion of IMS-capable devices.

The main benefit of sharing snapshots or live video is that it enables users to stay emotionally close to peer groups and family. Being part of an event or gathering, even when physical presence is not an option, carries great emotional value. When asked to view Ericsson IMS weShare services in terms of social enrichment, consumers can clearly see themselves using the services on a regular basis to share everyday experiences.

"If I had to work during a holiday, it would mean a lot if someone at home called to show me what the rest of the family is doing – when everybody has gathered at the dinner table, for example. That way, I would still feel like I was part of the group." (Male, 23, USA)

The ability to see one another reaffirms social bonds and immediate relationships with important friends and relatives.

"I usually call my boyfriend in the morning to check his hairdo and say nice things to him. You know, the usual daft kind of behavior shared by couples." (Female, 23, Sweden)

One rationale for using Ericsson IMS weShare services might be to confirm an order: *Which item did you choose and is this the right color?* Professionals also value the ability to present objects to clients in an easy

and efficient way. In short, the Ericsson IMS weShare services add an element of practical consensus to everyday situations both in personal and professional contexts.

"You feel more confident about making decisions because friends can hear and see for themselves what is going on." (Female, 18, Japan)

"When I want to tell clients about an apartment I can send them a short video clip, or if I'm at the apartment, I can give them an in-depth tour." (Male, 31, Italy)

Taking this line of reasoning one step further, one might even say that the addition of video can have a positive influence on self-esteem. A person's self-esteem generally grows when he or she receives positive reinforcement from trusted family members and peers. The video feature of Ericsson IMS weShare is an enabler of this kind of reinforcement. Likewise, it enables consumers to share what they think is important. One's experiences (a journey, a concert, the baby's first steps) are more valuable when shared with someone else.

Delivering the user experience

About 20% of Ericsson IMS weShare development pertains to what the user sees (the user interface, icons, labels and progress bars); the other 80% focuses on the system between devices. The user experience, by contrast, is concerned entirely (100%) with what the user has in his or her hands. Mobile services are embodied in the limited space of the mobile phone. This is where the user experience begins. The quality of that experience, however, is dependent on the interaction with the underlying system and its performance.

Usability

When MMS was introduced, it was simply too complicated for most users – they had to visit a webpage or call their operator to obtain the right configuration for their phone. Ericsson is addressing this matter by introducing a technique called automatic device configuration (ADC). Ericsson IMS weShare reuses ADC to give consumers a high-quality, out-of-the-box experience. If the Ericsson IMS weShare application has been pre-installed on a phone, the configuration will be set up automatically.

The most interesting use-case for pervasive usage of Ericsson IMS weShare services calls for installing the application in phones already in use. Ericsson has developed a sim-

ple model for downloading applications and associated configuration parameters over the air. This method eliminates configuration-related hassle for users. Additional work is underway to complement this model with automatic downloading when a user powers on a phone the first time after having subscribed to Ericsson IMS weShare services. This is one way of ensuring that consumers have an immediate and positive out-of-the-box experience.

Interacting with services

Ericsson IMS weShare is about enriching communication, for example, when a user with an ongoing voice communication session wants to spice up his or her communication with a picture or live video. For the application to succeed, users must feel comfortable with the tasks of capturing and sending media during a call.

Research indicates that users are most likely to use Ericsson IMS weShare services outside the home, for instance, when they are purchasing something, when they are at an event, or simply when out and about (Figure 2). In many of these situations, the user will be in a demanding environment and must thus pay attention to his or her surroundings. Therefore, the service must be easy and quick to use (spontaneous usage).

The usability research indicates that users do not have a problem handling the camera or navigating file menus during a voice call, even in a stressful environment. Interaction with the Ericsson IMS weShare services is intuitive and supports existing user behavior. It seems natural for users to begin communication with a voice session and to augment it with visual content. This is more or less the same behavior that people exhibit when they meet in person.

The research also showed that users need appropriate feedback and error-handling messages. The main areas of feedback necessary to ensure a good user experience are

- confirmation that it is possible to send a picture or video;
- the current status of a transfer;
- confirmation that content has been delivered or received; and
- error reports and alternative fallback solutions (recovery, a prompt to send MMS instead, and so on).

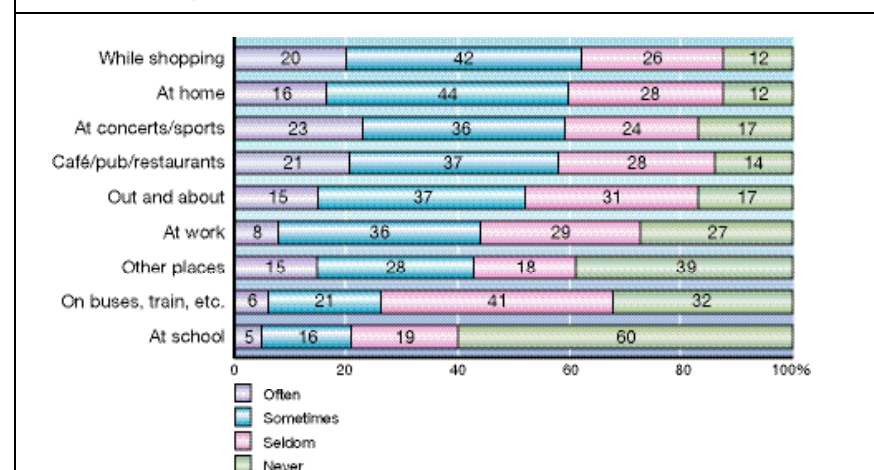
The Ericsson IMS weShare handset client addresses each of these areas. Every service available to the sender is displayed on his or her screen. Of these, some services might be unavailable to the recipient, in which case

they are dimmed out on the sender's screen. The sender can thus only initiate services that are available to each party. This eliminates all trial-and-error scenarios. As soon as the media transfer begins, a pop-up window appears on each user's screen showing the status of the transfer. The window vanishes again as soon as the transfer is complete. Should the transfer fail for some reason, an alert box is displayed on each screen.

Many new mobile services, such as video telephony, mobile TV, and music services, cannot be used without handsfree equipment. Note: The term *handsfree* refers to a headset – either a headset with a jack that can be plugged into the mobile phone or a wireless (Bluetooth) headset – that enables the user to converse without holding the handset up to his or her ear. Ericsson IMS weShare usability tests showed that consumers who tried to solve a task without the use of handsfree equipment ran into severe problems, primarily because they could not simultaneously see and hear important information. Handsfree equipment must thus be promoted and provided with all mobile phones. The main reasons why consumers do not currently use handsfree equipment are

- cost – if the handsfree unit is not included with the phone, then the consumer must purchase it separately;
- inferior quality – many handsfree units included with mobile phones are poorly made and have a short lifespan; and
- inconvenience – handsfree cords catch and snag, become tangled, and are difficult to manage.

Figure 2
Who is most likely to use Ericsson IMS weShare services? When and how often?



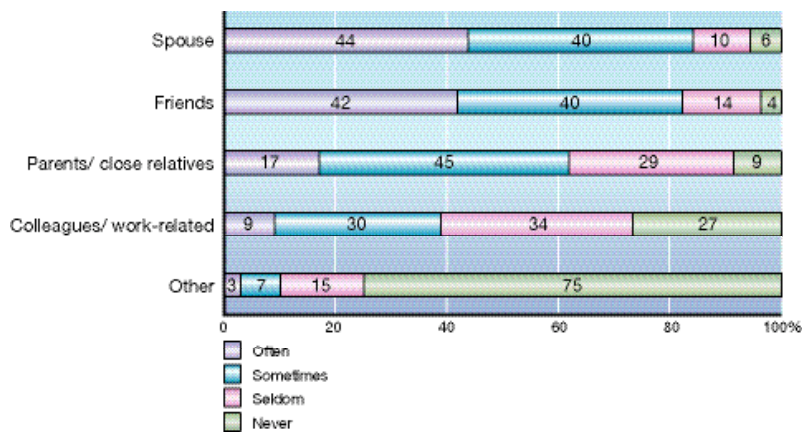


Figure 3
Who is most likely to send a picture during a conversation?

The industry can encourage consumers to begin using handsfree solutions by appealing to their logic (they can immediately begin taking part of new, rich multimedia services) and emotions (design, health, and safety).

Performance

The word *convenience* recurs in all research on consumer mobile services. Consumers are impatient. They want mobile services that are easy to access and fast to use. Media delivery during a voice call must be fast and reliable. Consumers also demand quality. They will not continue to use a service that is complicated, slow, or poorly designed or executed.

Delay

Twenty of the consumers who participated in the usability tests were recruited in pairs, to give researchers a chance to study communication behavior between people who already know each other. The idea was to facilitate natural conversation between friends, to see how the perception of time (delay) influenced their interaction (Figure 3). By delay we mean duration, in seconds, it takes for the calling party to send a picture and the called party to receive it.

During the studies, none of the participants was bothered by a delay of 6 seconds or less, and only one in four participants reacted to a delay of 7-11 seconds. But three of five participants became impatient with a delay of 12-21 seconds, and began asking

for feedback (*Do you have it?*). When the delay reached 27 seconds or more, the participants assumed the transmission had failed, and attempted to resend.

The length and cause of delay can be attributed to several factors, such as access network, handset capabilities, file size, and so on. The Ericsson IMS weShare handset client keeps consumers apprised of the situation, providing visual feedback on the status of the current transfer. This helps reduce the perceived delay.

Compared to transfers between consumers who do not know one another, the natural context of a phone call and conversation between friends helps cover up part of the delay. By contrast, users who do not know one another tend to be much more impatient and are frustrated by moments of silence while waiting for content to be transferred.

Image quality

The quality of pictures or video streams must also meet consumer expectations. When the Mobile Internet was introduced, mobile phones could only display black-and-white images. When MMS was introduced, phones had evolved to include low-resolution color screens. Notwithstanding, the gap between what had been promised and what users experienced was quite large.

The perception of quality varies to a large extent depending on a person's previous experience of cameras. Consumers who have used high-quality digital cameras tend to be critical of the quality provided by mobile phones. Consumers are also often disappointed by the quality of photos taken in settings with poor lighting.

"The quality should at least match that of the inexpensive disposable cameras you see at parties." (Female, 35, Sweden)

"All too often it's dark when you want to take a picture, and that means you can't see what's in the picture." (Male, 24, Sweden)

Conditions for diffusion

An important factor affecting new person-to-person communication services is critical mass of users. In a personal context, the Ericsson IMS weShare services will mainly be used between close relatives and friends. Therefore, from the individual's standpoint (micro perspective) several members of his or her social network must use or have the means to use the service. From a market perspective (macro perspective) a 15% to 20% critical mass or penetration level is required

before the service can really take off (Figure 4). To successfully create a market, operators must thus work together, addressing the business-related barriers to service take-off.

The most critical barrier in this context is interoperability. Interoperability standardization is a necessity. A lack of interoperability between networks and systems is a problem for new communication services because all users do not belong to the same operator and are not always in the same country.

Another potential barrier to combinational services is a lack of standards that stipulate how pictures and video streams should be presented during an ongoing voice session.

Standardization and interoperability

Ericsson is working with standardization bodies and performing interoperability tests in an effort to help build support for a coordinated takeoff and diffusion of new communication services. Ericsson is also the initiator of combinational services and serves as one of the main drivers of combinational services (CSI) standardization within 3GPP. The Ericsson IMS weShare solution is fully compliant with this standard.

Likewise, to stimulate user interest in entering the communication paradigm of multimedia services, Ericsson urges the industry to simplify the process of developing and deploying new, rich and innovative services. Development and deployment can easily be realized using Java technology. Sun Microsystems has established the Java Community Process (JCP) to standardize new functionality in device platforms. Here again, we see how crucial it is for device vendors to use standardized APIs, both to ensure easy deployment of new applications on handsets and to guarantee interoperability between handsets. Ericsson is an active member of JCP and a leader of the Expert Group in charge of standardizing the IMS Services API in JSR-281. This work will expose the functionality that developers need to create IMS services – the functionality is already available in the Ericsson IMS Client Platform on which the Ericsson IMS weShare solution is based.

The GSM Association (GSMA) is putting its full weight behind *VideoShare* (GSMA's name for combined, live, one-way video and mobile voice service. Ericsson calls this *Ericsson IMS weShare Motion*). To help rid operator concerns about the interoperability of

combinational services and to build mass handset support, the GSMA kicked off a marketing campaign at 3GSM World Congress at Barcelona (February 2006) and scheduled VideoShare interoperability tests (IOT) throughout Q1 2006. Several European, Asian and American operators and all major vendors participated in this test campaign.

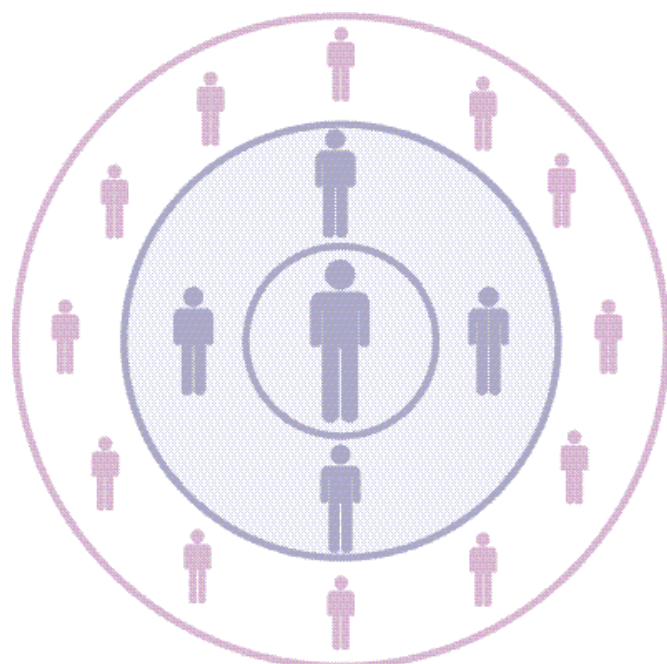
Ericsson had a leading role in drafting the initial IOT specification. Therefore, it should come as no surprise that its commercial Ericsson IMS weShare product is fully aligned with the GSMA VideoShare IOT specification. This means it is interoperable with other vendors' VideoShare solutions and handsets. In addition to VideoShare, the Ericsson IMS weShare solution offers Image, Media File, and Whiteboard.

Ericsson IMS weShare technology

Technical foundation

Ericsson IMS weShare 4.0 can simultaneously handle circuit-switched and packet-switched traffic as defined in 3GPP CSI and

Figure 4
The communication circle: The individual (center ring), members of his or her family and close friends (second ring), and other acquaintances and contacts (outside ring).



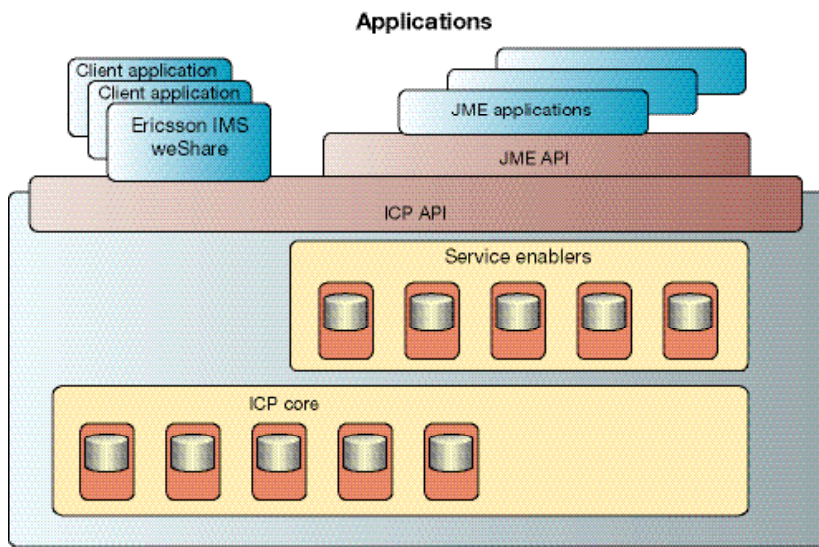


Figure 5
Ericsson IMS client solution: weShare client application together with other IMS applications running simultaneously on top of the IMS Client Platform (ICP).

GSMA VideoShare. End users may thus talk and spontaneously send various kinds of multimedia content to one another. Voice signals are sent over a circuit bearer and visual media is sent over a packet bearer. The Ericsson IMS weShare products offer a rich set of services for enriching voice calls.

Client architecture

Ericsson's IMS Client Platform, a horizontal client platform for IMS services, takes care of all standardized behavior on behalf of the client application, at both the protocol and service levels. It thus decouples clients from IMS technology, allowing client developers to focus more completely on the service-specific user interface and other areas of interaction with users. A high-level API that exposes ICP functionality to the application makes this possible.

ICP also makes IMS functionality available to all IMS client applications, ensuring interoperability between clients and eliminating redundant implementations in the client application. Figure 5 illustrates this solution and depicts the architecture of the ICP together with client applications. For simplicity sake, all subsequent references to the Ericsson IMS weShare client will en-

compass the client application and ICP together.

Network architecture

The Ericsson IMS weShare 4.0 solution uses the same IMS peer-to-peer architecture for end-user IMS handset reachability and media transfer as was implemented in previous deployments. GSMA VideoShare and 3GPP CSI each support this architecture. This approach enables operators to start up new Ericsson IMS weShare service with relatively small IMS network investments while retaining the rich flora of Ericsson IMS weShare services, including online charging.

Session initiation protocol (SIP) procedures are invoked via the radio and packet-core networks. The two main SIP procedures are *capability query* and *session setup*. Ericsson IMS weShare employs each of these procedures, which have been adopted by GSMA and 3GPP.

Once the SIP procedures have been invoked, a media plane is established over the IMS core between #1 and #2 (Figure 6).

Where packet data protocol (PDP) context activation is concerned, some operators prefer *PDP always-on mode*; others prefer *PDP per-call mode*. The GSMA VideoShare definition supports each of these modes, which is to say Ericsson IMS weShare 4.0 is also compliant with each. If PDP is activated on a per-call basis (when a circuit-switched voice call is answered), then the client performs SIP registration on a per-call basis.

Capability query

The capability-query mechanism in Ericsson IMS weShare 4.0 (the same as that used by GSMA and 3GPP) highlights service icons in the handset, showing end users which services they can invoke during a voice call. Ericsson IMS weShare uses the SIP *OPTIONS query/response* method. To help the terminating IMS core network to route the *OPTIONS* message to a circuit-switched voice phone, the Ericsson IMS weShare client sets a feature tag (+g.3gpp-cs-voice) in the accept-contact header of the message.

Terminating handsets that support the SIP *OPTIONS* method respond to the received message with a *200 OK* message, which includes a session data protocol (SDP) part that describes its capabilities. The querying Ericsson IMS weShare client analyzes these capabilities and highlights the appropriate icons in the client handset.

tion node at the edge of the network. This functionality is implemented through a session boarder gateway (SBG). Ericsson's SBG is MSRP-aware in order to cater for these kinds of circumstances. The SBG functions much like an MSRP application layer gateway (ALG), modifying the IP address-related headers of MSRP messages so that they match the IP address-related fields of SDP from SIP signaling. Without this modification, the remote client would reject MSRP messages.

When the TCP connection has been established, the handset attaches an image within an MSRP *SEND* message. When the receiving handset has successfully extracted and displayed the image, it replies with an MSRP *200 OK* message.

Whiteboard

Ericsson IMS weShare offers a whiteboard service that displays, on a remote handset, what the sender has written or drawn with a stylus on the display of his or her own smartphone. One might, for instance, send a picture or map and then draw lines on it to identify an object or pinpoint a location. The Ericsson IMS weShare Whiteboard service also makes use of MSRP. Each stroke of the stylus is transferred to the remote handset by means of multiple MSRP *SEND* messages that consist of plain MIME text.

Future version

Future versions of Ericsson IMS weShare will offer even more value-added services. For example, users will be able to use it

- to exchange music and web content;
- to send personal visual greetings;
- to interwork with fixed all-IP handsets; and
- to manage supplementary services-like features, such as whitelisting/blacklisting incoming or outgoing media types.

Ericsson IMS weShare will also support enhanced charging. To realize these services, an application server and media resource function (MRF) must be added to the architecture.

As seen in Figure 7, content media will no longer bypass the IMS core. Instead, the content will pass the MRF. This gives operators full control over charging and policing.

Policing

The system can detect situations where two end users attempt to exchange a media type that differs from the negotiated (via SIP/SDP session signaling) media type. Also, as a system-protection safeguard, op-

erators can set upper size limits of images in the MRF, in which case the MRF will reject images or files that exceed this limit.

Charging

End users can send many kinds of content during an SIP session. Thanks to the MRF, operators do not miss any chargeable event. What is more, the MRF eliminates setup delay associated with adding new media elements.

Music sharing

The music-sharing service enables one end user to stream music to another end user during an ongoing circuit-switched call. The first end user, for example, might have downloaded a music clip encoded in the advanced audio coding (ACC+) format, which is suitable for streaming at 64kbps. By pressing the Share Music icon, he or she can stream the music clip to the other user's handset via RTP over a 64kbps packet-switched bearer (streaming or interactive QoS). Another possibility is to set up a new SIP session for the newly added media. DRM issues aside, it is technically possible to send the entire music clip via MSRP.

Personal greeting

The personal-greeting service enables users to define personal visual greetings made up of text, images, or video clips. The personal greeting is sent to the caller during setup of the circuit-switched voice call. End users can select greeting content from an operator gallery on a per-calling-line basis. The circuit network notifies the application server via OSA/Parlay when a call arrives. The application server then handles all necessary SIP signaling and delivers the greeting content to the caller. Note: This solution does not preclude having the Ericsson IMS weShare client of the called end user send a locally stored greeting directly. In either case, the MRF intercepts the greeting, allowing operators to charge for the service.

Interworking with fixed clients

When an Ericsson IMS weShare mobile user sets up the voice call to an all-IP terminal (for example, a fixed PC) the media gateway controller (MGC) converts ISUP signaling into SIP signaling to the fixed client. Voice is transcoded from, say, AMR on the mobile side to G.711 or G.729 on the IP client side. If the mobile user activates Ericsson IMS weShare video during the voice session, the mobile terminal sends SIP signaling that may

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be intercepted by the application server. If this SIP session is to be merged with the first one, the application server issues a SIP session re-invitation, expanding the number of media to the all-IP user from audio to audio and video. However, if the SIP signaling from the mobile terminal is to be passed on as a standalone SIP session, the application server does not issue a re-invitation but instead adjusts some SIP session data to make it more compatible with the fixed side. In this way, a mobile terminal can do voice and spontaneously add packet-streamed video to the all-IP side. The 3GPP is currently working to standardize interworking between CSI and all-IP devices.

Blacklist/whitelist

In cases where the owner of a subscription (a parent, for instance) wants to block users from receiving external video content, the application server can be set up to reject all attempts to establish an incoming SIP session with an SDP portion (video). This is just one example of how the application server introduces extensive and flexible operator and end-user control.

Conclusion

Mobile communication has had a fundamental impact on the way we communicate, organize our lives, and consume and interact with media. Many consumers can no longer remember how they managed to organize their lives before the advent of mobile phones and the internet. The impact of these technologies has changed personal and professional conditions for literally billions of people. A new communication culture has sprung up, putting new demands on the future. Voice communication is still a fundamental element, but by itself it is not always enough in today's fragmented society. Rich and spontaneous communication, on the other hand, adds tremendous value when physical presence is not an option. Looking ahead, rich media elements will have an important role in helping people to stay in touch with their family and peers.

Ericsson understands that meeting the expectations of the future (consumer requirements regarding mobile services) means working with clear and understandable concepts that are easy to use and deliver quality and consensus.

Understanding consumers, the context of usage, and what goals need to be supported is fundamental to developing new services.

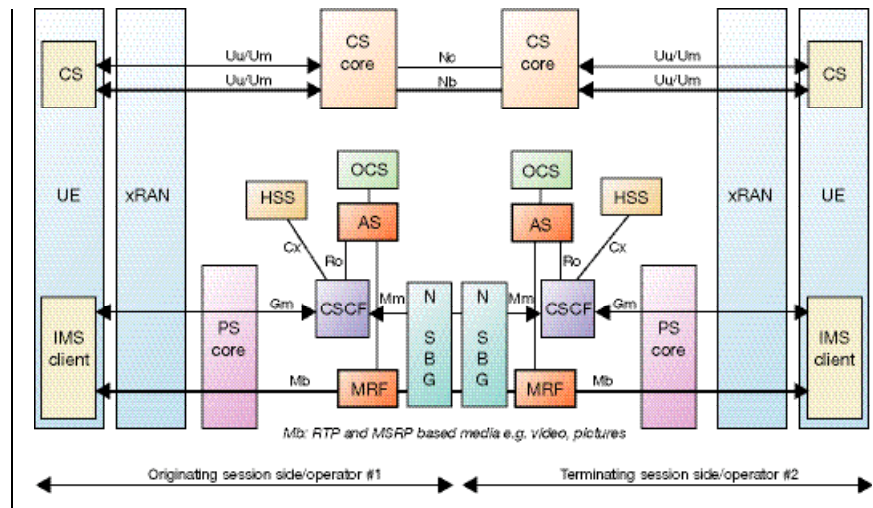


Figure 7
High-level architecture with weShare application server.

And from the outset, this has been Ericsson's focus. And it has been the most important part of Ericsson IMS weShare system development.

Ericsson IMS weShare is an important part of Ericsson's IMS strategy. Over time, it will include more and more features – with it, consumers will be able to share music, play games, and interactively share web content. As communication networks converge, a parallel convergence will occur in the user domain. The borders between fixed and mobile services will gradually disappear. Ericsson IMS weShare will be part of this change, enabling consumers to share their daily experiences without regard for network connection or device. Ericsson sees IMS as an enabler of a new communication style with horizontally integrated services. This communication style gives consumers greater flexibility, allowing them

- to switch between communication modes;
- to add and drop media components during a communication session; and
- to invite or drop participants from communication sessions.

The consumer experience will be optimized according to device and access technology. To this end, Ericsson will continue studying user behavior, support and drive standardization, and push for greater interoperability.