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Title: Analysis of design criteria for IMS in R5.
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Agenda Item: 5

1 Introduction

At the Oxford meeting, 3GPP SA has produced an initial analysis of different design scenarios and BT/Siemens have provided additional interpretation of this document. This section provides Ericsson understanding of how IP multimedia design principles should be driven to suit different needs of operators and end users for release 5.

2 Analysis of design criteria's for R5

2.1 Observations and prerequisites for R5

- IP MM terminals intended for voice communications will also support CS services. Global roaming requirements will mandate such requirement.
- IP multimedia services will be introduced into a service-rich environment where e.g. CS MM, Streaming and Multi-applications would already be deployed on top of existing CS voice, PS domain and SMS services.
- Call and bearer separation in the CS domain will enable efficient IP transport of CS services.
- SIP and extensions already provides some of the most basic services that operators have available today. For example, Session Forwarding could be easily provided via SIP standard mechanisms without additional standardisation work. 3GPP should take full advantage of the work already done in IETF to enable services in the 3GPP IP MM environment.
- IP MM voice will not be more spectrum efficient compared to CS voice

2.2 Key Factors to consider

New & rich end-user experience

End user experience should be consistent. Therefore the multimedia service paradigm should always be based on the IMS. In addition, the user should have a choice of keeping the same services as today when it comes to CS voice only paradigm. No transition mechanism is required from an end user point of view as he/she will be fully aware of the capabilities of his/her selection and would migrate to the IMS environment, as it becomes more global and general. This provides a smoother migration/transition both for the operator and the end users, being given a richer experience. At the same time, it immediately creates new revenue generating opportunities for the operators.

New and additional revenue for the operators

IP multimedia investment should enable new revenue generating opportunities rather than provide old services with new protocols. It would be up to the operators to add value for their customers by taking advantage of the opportunities provided through the IP based applications being created everyday.

Also, it would have to be more geared towards an open architecture for applications development. Operators will have opportunities to add value for their customers/end-users by taking advantage of the opportunities provided through the IP based applications being created. Right architecture choices and appropriate design principles will provide the enablers. APIs and network service capabilities should be utilised in realising services that may be similar in concept but rich and varied in the IP multimedia environment taking full advantage of the Internet standards and focused on not just one medium but all the benefits of multimedia.

Mature and excellent CS Domain services

CS domain services are the result of years of development based on end-user and operator's experiences as well as innovation in order to enrich simple voice communications between people. The CS services were developed in a circuit switched environment, suitable for a single medium (i.e. voice) and very high in quality and reliability.

It should be noted that the CS domain is even further developed for cost efficient provisioning of CS services with the introduction of call and bearer separation and IP transport in release 4.

User experience in combination with both CS and Multimedia

Roaming is the key to the GSM and will be for UMTS, this seamless behaviour is experienced in most of the countries in the world and very attractive to the mature end users. Terminals will have to be dual (CS/PS-IM) capable from the beginning in order for support of UMTS and GSM global roaming.

Introduction of IP MM will bring in new end user experience. Users will expect new services, these would be expected to be different which would enable additional revenue sources for the operators.

Add-ons to a terminal (such as cameras, screens) would drastically change an end user experience of IP multimedia. When an end user expects to use voice only, e.g. calling a PSTN user, he/she may make a conscious decision to use the CS services. Thus the end user experience comes from a combination of CS and IM services.

Cost of re-implementation

IP MM introduction in 3GPP must ensure generation of new revenues. The only way to achieve this would be through providing new services. If the focus of IMS is to re-implement or mimic CS services, the additional cost for such direction can not really be justified from neither an operators nor vendors point of view

Note that a redevelopment of CS domain services would take substantial time (i.e. not ready in R5) and it would limit the possibilities to develop new services and hence delaying operators from receiving new revenues.

Consistent end user experience

In order to achieve a consistent end user experience for routing of a call/session, the following basic principle should be maintained:

- Calls arriving from the CS domain/PSTN should be routed to the CS domain, if user is registered in the CS domain,
- Sessions arriving from the IP multimedia should be routed to the IMS, if user is registered in the IP MM
- Sessions arriving from CS domain/PSTN and the user is not available in CS (a very unlikely situation), the operator may choose to provide a single medium (voice) connection via inter-working or reject the session with appropriate service interaction message
- Sessions arriving from the IMS but the user is only available in the CS domain/PSTN should be treated as a service interaction by the originating party being notified via appropriate means

2.3 Inter-working considerations

Ericsson believes that a basic communication between IMS and CS/PSTN is possible via inter-working functions if the operators choose to do so as an option within their networks. In such cases, it is an operator and end user decision to downgrade an IP multimedia application to a single medium (i.e. voice only) forward the call to a CS/PSTN. The definition of IM services should not be limited by interworking considerations.

However the preferred solution should be to allow service interaction based on end user/terminal involvement.

2.4 Additional considerations/Issues

- Services, which require cross-domain interactions such as Multiparty, would require further analysis both from requirements point of view, as well as service behaviour point of view.
- Emergency calls may be better suited to be handled within the CS domain since today's Emergency Centres are in the PSTN only. There could be additional security and safety considerations that need to be taken into account before starting to provide this service in the IMS. Until the Emergency centres are capable of handling IP MM, it may be risky since end user expectations in an IP MM environment would be different and could lead to failure in providing the appropriate service and meet the legal requirements.

3 Conclusion

- Subscribers will have both CS and IMS service, as global roaming would be a key enabler for wireless systems.
- CS Services and IP MM services should be complementary to each other.
- The introduction of IP MM services should from the start generate new revenue to the operator.

Therefore release 5 for IMS focus should be to create new services and not redevelop CS domain services. Interworking with CS domain services should not limit the IMS development.

Furthermore, as end users become more and more experienced in the IP MM services, use of this environment will continuously increase. At the same time, the services would be developed catered for this new service environment and create a much richer experience for the end users. CS services will eventually get reduced end user usage and the migration to the IP MM would be accomplished. Such a migration would also create demands for new services tailored for a MM experience of the users as well as operators and vendors as well as application developers.