

**Source:** BT  
**Title:** Requirements For Release 5 IM Sub-system  
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## Introduction

The IM Subsystem (IMS) represents the major focus for 3GPP Release 5 specifications which are planned for completion in December 2001. Discussion during the last meeting of TSG SA (TSG#9) and at the SA Oxford Workshop on the IM Service Vision identified a number of scenarios for the development of the IMS specifications. These scenarios have been further developed in various adhoc and WG discussions since the Oxford Workshop. In order to progress the work on the IMS and to meet the already tight timescales, a number of key decisions need to be taken at this TSG SA meeting (TSG#10). This contribution aims to identify the key decisions that need to be taken as well as expressing BT's views and requirements.

## General

BT has reviewed the discussions at the recent SA Oxford Workshop on IM Service Vision and Scenarios, and also the table showing a comparison between the 5 different scenarios (see companion contribution).

**BT's vision** is for the IMS<sup>1</sup> to deliver a range of advanced interactive (conversational) multi-media services, based upon the use of Internet technology. Here the objective is to provide all of the IM user's real time services – including voice only services – in a seamless and coherent (virtual) IM environment.

This vision implies a major change in the way which services are delivered to, and controlled by the IM user – the use of SIP control instead of traditional “24.008” signalling, the use of IP instead of circuit switched technology for the conveyance of information. In order to provide a coherent and seamless set of services to the user, our view is that IM users should experience their services using only<sup>2</sup> IMS functionality (i.e. not a combination of IMS and CS Domain<sup>3</sup> functionality).

**In the long term** it is expected that all users will have their services provided via the IMS – i.e. the eventual all-IP scenario, without the need for the Circuit Switched (CS) Domain. BT believes that there is consensus for this long term view within 3GPP.

**In the short term** existing customers (2G and 3G Release 99) will continue have their services delivered via a combination of Circuit Switched (CS) and Packet Switched (PS) Domain functionality.

**In the medium term** “Release 5” represents the first opportunity to *evolve* towards the IP Multi-media vision. BT's view is that Release 5 should allow *release 5 IM users<sup>4</sup> to experience all of their services via the IMS*, without the need for legacy CS Domain technology. Here Release 5 users will clearly want to communicate with existing users, and operators will wish to exploit investment (both financial and technical) in legacy CS Domain infrastructure and service platforms. Additionally IM users will wish to experience service where they roam to non-IM areas. In the medium term, therefore, we require the CS Domain to support IM users when they roam to areas without IMS coverage. This implies that Release 5 terminals will be required to support both IM and CS signalling mechanisms – however, not simultaneously.

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<sup>1</sup> The IMS (IP Multi-media Subsystem) represents the network functionality required for the support of IM (IP Multi-media) Services

<sup>2</sup> Wherever IMS service is available. The CS Domain of course needs to be used in some roaming situations

<sup>3</sup> The CS Domain represents the network functionality required for the support of Circuit Switched Services

<sup>4</sup> This does not mean *all* users, but it does mean *some* users and the proportion of users should be entirely up to the operators to handle according to the needs of their market places.

**Key medium term requirements**, therefore, are to ensure that Release 5 provides a smooth evolution towards the longer-term vision by:

- providing interworking with existing CS networks;
- allowing the re-use of existing service platforms;
- supporting roaming from IMS to CS only networks;
- providing the capability to support new enhanced Multimedia services in cost efficient high quality manner;
  - ensuring that the use of the radio spectrum for IM services is comparable to that of equivalent CS services;
  - providing comparable services with the same quality and efficiency as existing CS solutions;
- developing solutions that allow competitive procurement against open standardised interfaces.

A major advantage of this approach is that, following the introduction of Release 5, the ongoing growth in voice traffic can be supported using the IMS<sup>5</sup> rather than continued investment in the legacy CS infrastructure (MSCs or MSC Servers).

Annex 1 to this document identifies BT's key requirements for the aspects identified in the table resulting from the Oxford meeting.

## Conclusions

This document has built upon the previous discussions within TSG SA and the results of the Oxford workshop. It has outlined some specific requirements for the IMS which BT believes will facilitate the rapid introduction of advanced multi-media services as an evolution from today's Circuit Switched technology.

We believe that TSG-SA has had sufficient background discussion in this area and should now be ready to make key decisions to enable the working groups to progress the development of the IMS as the major part of Release 5 specifications.

## Proposal

**It is proposed that** the requirements outlined in this document are discussed and endorsed by TSG SA at this meeting (#10) with a view to enabling work within the TSG WGs to progress towards the completion of Release 5 specifications by December 2001.

**Additionally BT proposes** that the following specific questions are addressed and decided:

1. Should IMS be able to connect calls through to PSTN and CS (i.e. do we include the CSCF/MGCF/MGW interfaces)?
2. Should IMS service control interfaces to the CSCF be standardised?
3. Should the relevant parts of the IMS service control enable the re-use of existing service platforms (i.e. those covered in today's CS world)?

**BT believes that the answers to all 3 questions should be "YES".**

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<sup>5</sup> In proportions matching the desires of the network operator

**Annex 1**

**Release 5 Design Objectives**

Discussion following the Oxford workshop has resulted in a table which compares the aspects for the different Release 5 scenarios, in terms of the use of IMS and CS capabilities for service delivery (see companion contribution). The following outlines BT's requirement for the key aspects:  
(the numbering reflects that of the table)

**3. How much of CS functionality is developed in IMS?**

BT's requirement is to support mass market services with similar (not identical) look and feel to those available from the CS domain. Here the objective is to transfer some of the growth in (principally voice) traffic rapidly from the CS domain to the IMS. This will provide a sound basis for investment in IMS and the introduction of mass market advanced multi-media services.

This also implies that the IMS will be required to provide QoS no worse than existing CS domain, specifically in terms of end/end delay, speech quality and call set-up delay.

**4. Which domain supports the user?**

In the medium term BT's requirement is that the IMS should be capable of delivering all of the Release 5 users' real-time services. In circumstances where the IMS cannot be accessed (e.g. roaming to a 2G network) there is a requirement to provide a sub-set of his services using 2G or 3G CS capabilities. Specifically we want to avoid the *simultaneous* use of CS and IMS based call and service control functionality as this implies parallel networks to support a single user.

In the medium term, therefore, we require the CS domain to support IMS users when they roam to areas without IMS coverage. Additionally there may be users who, for one reason or another, need to continue to use CS for some services.

BT believes that in the long term we will see a complete service support for the mobile user on the IM Subsystem, and that ultimately this will result in a mobile network without any MSCs or MSC servers. We believe that this view is generally accepted in the industry and that the major differences of opinion are on what should happen in the short to medium term and how best to focus our standards activity to achieve steps towards this ultimate goal and maximise the value of 3G.

**5. To where can CSCF create connections?**

BT's requirement is for the IMS to support inter-working between IMS users and users of the CS domain, PSTN, ISDN and other IM Systems (including Internet-based IM systems). Here we want to be able to support a range of addressing techniques - including MSISDN numbers for calls from PSTN and CS users;

**6. Investment for current operator in CS and IMS technology**

Here BT wishes to minimise investment in CS (MSCs and MSC servers) technology with a view to maximising investment for the early realisation of the IMS vision. MSCs and MSC servers will continue to serve a part of the market, although this part will get smaller as we approach the all-IP vision..

We must be able to start to build out IMS based networks which can immediately generate tangible revenue, as well as trial new advanced services. This is not to say that we wish to clone the CS domain. We already have IP transport and Media Gateways from the MSC server architecture, so to re-use these in support of CSCF-based communications should not require significant effort (indeed, this is the way most fixed network VOIP solutions work).

We therefore believe that the development of the more basic services on the IM Subsystem, including voice calls to PSTN, is essential.

**7. Greenfield investment requirements**

Here we want the specifications for Release 5 to allow the deployment of an IP based network without MSCs or MSC servers. We accept that this means that such a network could not accept roaming CS terminals.

**8. Standards generation to support CSCF to PSTN etc.?**

BT's requirement is that the service control interface to the CSCF needs to be standardised. This is not to say that anyone is prevented from offering proprietary solutions on this interface should this be desired in a particular situation, but that operators should be free to procure the service control platforms separately from the CSCF if this is desired.

*9. Standards generation to support IP multimedia services*

*10. Standards generation to maintain CS technology*

*11. Cross domain supplementary service support e.g. Multiparty*

*12. Standards focus for IMS*

**13. Transition approaches for operator**

BT believes that the most important thing for operators is flexibility in deploying solutions which are appropriate to a given market place. This means enabling a range of possibilities for volumes of users using IMS only, from very few to very many.

*14. Transition experience for user*

*16. Emergency call capability required in IMS in short to medium term?*

End