1 Introduction

This Annex to UMTS Forum Report 20: *IMS Service Vision for 3G Markets* discusses aspects of the technology for the IP Multimedia Subsystem (IMS) from a high level strategic viewpoint. It identifies Technology Enablers necessary for IMS services in general and for the services specifically examined in UMTS Forum Report 20 and correlates them with the 3GPP work-plan. It also identifies potential delays to the feasibility of IMS deployment due to technical limitations and delays in the availability of necessary underlying technology or technical standards. It also identifies and lists issues relating to the technology, which have to be resolved by the industry.

Today, there is no commonly agreed definition of IMS. However, IMS is now understood to be an evolution of Third Generation (3G) mobile technology that brings the ability to deliver IP-based real-time person-to-person multimedia communication (including IP voice). This means that telephony services can now be fully integrated with other information and data services (including non-real-time and person-to-machine). IMS also has the capability for different services and applications to interact and also the capability for the user to very easily set up multiple services in a single session as well as multiple simultaneous synchronised sessions.

In particular, IMS moves real-time services, such as voice telephony, from the Circuit Switched (CS) Domain to the Packet Switched (PS) Domain, supported by Internet Protocols (IP) rather than the GSM MAP protocols which have their origins in ISDN. It means that all services will eventually be delivered via one integrated network rather than two overlaid networks and this is also expected to bring cost savings in equipment, customer care and network management.

There are three major technology components being developed to enable or support this understanding of IMS and which are the subjects of standardisation work, mainly by 3GPP and IETF. These are:

- The “all-IP” core network including the packet (GPRS) core.
- Multimedia call control (3GPP has chosen SIP).
- The “IP-based” Radio Access Network (RAN) – possibly optional.

What each of these entails is outlined in the following sections as well as the implications of not deploying one or more of these components (work-arounds and limitations). An examination of the service scenarios reveals that certain other technology features will also be needed, not necessarily the subject for standardisation, and these are also outlined in this Annex. Specific technology enablers are identified in the text in **bold print**.

IMS is terminology which has been adopted by 3GPP and is applicable to the IP-based core network architecture which supports the UMTS Terrestrial Radio Access Network (UTRAN) in its Wideband CDMA (WCDMA) and Time Division Duplex (TDD) variants as well as the GSM EDGE Radio Access Network (GERAN). IMS could, in principle, be applied to the 2.5G GPRS packet access network, but it is unlikely that GPRS networks will have sufficient capacity to make it worthwhile. 3GPP2 also has an “all-IP” project for its core network and cdma2000 radio access network, which also includes a multimedia call model and IP-based RAN.