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The 3 GPP TSG SA Workshop on IM Vision and Scenarios in October 2000 produced a document identifying scenarios on how to handle the interworking between the IM subsystem and the CS domain.

The scenarios were refined by 3G.IP and several other companies and are available as Tdoc TSGS#10(00)609. The scenarios range from completely substituting the CS service offering by IM services (solution A) to keeping them radically distinct (Solution E). Both of these solutions are considered as too extreme and not suitable for adoption by 3GPP. With restrictions they could be viewed as long-term approaches regarding 3G's ultimate future, provided sound decisions are taken by 3GPP.

A short summary of comments on the different proposals is given below.

**Solution A:** The IMSubsystem (IMS) inherits all services from the CS domain, necessitating a total re-engineering of these services in the IMS, which would potentially require a great deal of effort. However, this means that the effort can no longer be recuperated as it adds nothing new to the service offering of the entire system.

It is also questionable whether it should really be unknown to the user on which type of network he is currently receiving service. There is, of course, no intention to make any changes in call-setup procedures but, for example, not all supplementary services of GSM need to be introduced. Only a few of the high-usage services such as Call Forwarding and Calling Line Identification could be available instead.

Bearing in mind the nature of the IM Subsystem not to specify any services at all, but to provide the platform for services, it might even be conceivable to leave the choice of providing CS look-alike services to the operator's service platform. This way, Call Forwarding administration could be really made user-friendly after all compared to GSM procedures.

**Solution B:** B still proposes re-engineering of CS services within the IMS. CAMEL is explicitly mentioned, again this would result in a great deal of "lost effort", especially when considering the all or nothing statement of the joint SA1 SA2 meeting in New Jersey. Even for the legacy CS services, an adaptation of CAMEL is needed.

The effort will be duplicated in the OSA/Parlay interfaces, because control needs to be available on this API as well, otherwise the access to Internet-style service generation will be severely hampered.

Let us now consider the other viewpoint, solutions E and D first:

**Solution E:** Proposes the other extreme, requesting voice calls to use the CS domain exclusively. Subscribers in the IMS thus cannot reach POTS phones, nor can POTS phones reach them easily because E requests two distinct identities.

**Solution D:** Still prohibits the IM-CS/PSTN interworking, but allows voice calls inside the IM subsystem. This still gives the operator a hard time to market and to explain why the dominant part of old services (POTS) cannot be addressed from inside the IM-SS at the beginning.

It is acknowledged that voice will not and should not be the major application in IMS, but it could be one stream of revenue that should not be ruled out from the start.

Both approaches widen the gap between CS and IM by setting unnecessary barriers between them. For example, to be reachable for POTS subscribers, an IM "subscriber" has to be attached to both domains, CS and IM. As a matter of fact voice telephony will never be a part of the IM-SS qualifying higher quality PS services to niche applications only. Subscribers never have the chance to play with the functions offered by IMS because they are confined in the CS Domain.

Even worse, due to this split, CS will be mandatory for a long time - we all agree that voice will be the dominant source

of revenue for quite some time – because one potential evolution path: the smooth migration of subscribers from CS to IM, will be ruled out. By proceeding according to scenario D, large investments in CS architecture will be made, because every voice phone call to the CS domain of course requires the CS domain equipment. Operators have to invest in CS and are not allowed to make a flexible decision at the time of the next network upgrade. This violates the initial concept of UMTS to have a converging network by eventually using the same technology and protocols.

Neither solution can dispense with the slow innovation cycle that is associated with the CS Domain, which is one of the reasons for requesting the (in)famous “All-IP” solution. Both unnecessarily limit the flexibility to adapt quickly to emerging market needs.

**Solution C:** This is the best compromise between the two “poles” discussed above. It does not request “re-inventing the wheel” as do solutions A or B nor does it limit the flexibility as do solutions E & D. It requires a lean voice service based on a multimedia service in a mono-media i.e. voice shape. Much if not all of the work is already covered for voice when it is used as a component in a dual or triple media call. And multimedia will lose much of its nimbus as the most flexible method of communication when the downgrade of a dual-media application to voice-only is not allowed, lacking sound and marketable reasoning. To a large extent, the gateway function required to bridge the gap between the PSTN and the IMS could make use of the functions already defined for the PSTN gateway between PSTN and the backbone of the mobile network. This also takes into consideration the fact that the average user uses the Internet 45 minutes a day whereas only 10 minutes’ worth of phone calls are made. This disproportion will increase in the future, calling for smooth, hassle-free interworking, which can be best provided by solution C.

Alcatel therefore proposes to choose solution C, as it offers maximum flexibility and thus provides a future-safe evolution of 3G networks.