

3G and Global Terminal Circulation

a report by

Dr Bernd Eylert

Chairman, UMTS Forum



Dr Bernd Eylert is Chairman of the UMTS Forum, a position to which he was elected in December 1998, and also Vice President at Deutsche Telekom's subsidiary, DeTeMobil Deutsche Telekom MobilNet GmbH. He has represented Deutsche Telekom in several organisations, such as in the European Telecommunication Standards Institute (ETSI), the International Telecommunication Union (ITU) and the UMTS Forum. He was a member of the European Commission's Task Force on UMTS, a founding member of the UMTS Forum and a former Chairman of the UMTS Forum's operators. Dr Eylert holds a doctorate degree in engineering and university diplomas in mathematics and physics.

Introduction

Global circulation of mobile terminals is crucial to the successful market uptake of 3G. With confirmation from the International Telecommunication Union (ITU) of a technical framework that will streamline the circulation of International Mobile Telecommunications (IMT)-2000 terminals, the future of 3G as a truly global system is ensured.

It may seem obvious that mobile users can take their handsets with them anywhere in the world and use them wherever they wish, network availability and roaming agreements between operators permitting. With GSM™, international roaming has played a major part in ensuring the standard's incredible success. Indeed, roaming is such an integral part of today's GSM customer experience that it is difficult to remember a time when a mobile phone would not automatically be taken when travelling overseas. With GSM, this ability grew out of a single standard with three frequency bands and with operators controlling circulation through roaming agreements.

Similarly, in the context of UMTS™, global circulation can be defined as:

"The ability for users to carry their IMT-2000 terminal with them anywhere in the world and to use it wherever transmission is authorised."

This is a major factor in the 3G vision of ubiquitous services that can be accessed anywhere and anytime and users of IMT-2000 terminals will expect no less from them than they have experienced with GSM. In addition to the obvious utility that global circulation offers end-users – as already demonstrated with the strong market appeal of roaming with GSM – global circulation will generate additional revenue for operators, as well as helping governments to allow their countries take part in the growing market for mobile multimedia that 3G promises. Unhindered global circulation is thus an important issue for governments and UMTS operators and the industry is taking steps to make this a reality.

As the mobile component of tomorrow's information society, 3G will mean an explosion in terminal device types, form factors and functionalities to support an enormous range of services and applications. With product development cycles becoming ever shorter, 3G will herald a new generation of personal information devices that will blur the boundaries of 'traditional' telephony and Internet access. There are those who suggest that network performance may be downgraded with a flood of different terminals from many manufacturers – the concern here is that models that are not formally approved for use with a particular network may exceed prescribed emission limits and disturb other radio traffic. In 3G, new players and new countries will be joining the roaming experience, some of which have claimed that new regulation is needed in order to 'guarantee' the performance and integrity of their new offerings. As has already been learned from GSM, with 3G it will be the commercial interests of all industry players that provides the market with the regulation it needs.

GSM grew to become a de facto standard by organic adoption by individual countries within and outside of Europe; however, with 3G the picture is subtly different. First and foremost, IMT-2000 is, in its very essence, a global project and, as such, is being introduced more or less simultaneously in many countries that lie outside the GSM 'footprint'. Secondly, IMT-2000 gives the operators several technological options and will deliver a service portfolio increasingly more complex than that which GSM can deliver. This means that the circulation of 3G terminals could be more complex than with GSM and, facing the complexity of IMT-2000's global deployment, a first reaction might be to introduce stringent regulations that inhibit the carriage of 3G terminals to protect network operators and end-users. This response, however, is inappropriate and does not address the core of the problem, but instead threatens to stifle innovation and natural market growth.

It is important that the chosen regulatory approach does not imply extra administrative burdens when compared with technologies such as GSM or wide

Box 1: The Five Recommendations From the UMTS Forum Statement on Global Circulation of UMTS/IMT-2000 Terminals

1. The circulation of UMTS/IMT-2000 terminals intended for personal use should be exempt from all customs duties or other official charges.
2. The personal use of UMTS/IMT-2000 terminals should require no individual licence or any other form of individual formal regulatory procedure.
3. Terminals shall not cause unacceptable interference in any country in which they circulate. One way of achieving this is the application of the receive-before-transmit principle.
4. Terminals shall comply with unwanted emission limits.
5. Authorities should co-operate in order to enable global circulation of such terminals in all parts of the world.

local area network. With undue regulation comes the risk of damaging the market opportunity for new, exciting products and services that 3G will stimulate.

It is the view of the UMTS Forum that avoidance of the creation of new regulations in areas where commercial players can handle the issues by themselves is paramount. In the case of global circulation, 'visiting' terminals will not create any new problems that may not have already been experienced with 'local' terminals. Many UMTS/IMT-2000 terminals will include a number of operational modes, adapted to various frequency bands and air interfaces that are not supported in all countries. It is crucial that the various modes of the terminal do not give rise to unwanted radio frequency interference when it is switched on in other countries. A simple solution to this is adoption of the 'receive-before-transmit' principle, ensuring that the handset does not 'chatter' until it has received a validation signal from the network that it is visiting.

Each operator must solve the problems of interference already present when designing and deploying the network. The operators will then chose roaming partners among other operators whose networks are performing well. Against this background it is reasonable to expect that the operators themselves can deal with all problems relating to their own terminals as well as visiting terminals.

Recognising its importance as a key market enabler, global circulation has always been high on the agenda of the UMTS Forum. The UMTS Forum issued a high-level statement as in June 1999 that set out a set of fundamental principles for national administrations and world trade and customs bodies (see *Box 1*).

Within the last year, significant accord has been reached within the ITU that finally clears the way towards an effective and practical blueprint for global circulation.

In October 2001, a major milestone was reached at a meeting in Tokyo hosted by ITU Radio-communications sector (ITU-R) Working Party 8F, whereby governments worldwide, supported by standards development organisations and other industry bodies, agreed on the details of a regulatory framework ensuring that people can travel with their 3G terminal and use it anywhere in the world, free of regulatory and administrative hurdles. Building on this decision, a special ITU task force continues to discuss the implementation of global circulation with political bodies at the highest level.

Conclusion

In conclusion, governments now have an effective 'toolkit' of guidelines, courtesy of the ITU, that can help the smooth realisation of 3G global terminal circulation. Operators do not want or need the imposition of onerous regulatory restrictions. It is they who are taking the commercial risk and, as such, there is sufficient incentive to provide their customers with an excellent roaming experience.

By the same token, it is the manufacturing community that stands to lose most from any substandard performance of their terminal products. Building on the enormous success of 2G, all players in the 3G market are poised to deploy systems and services that offer end-users seamless access to an exciting new world of mobile multimedia – a world that even now is becoming a reality. ■