

11 KEY FINDINGS

Delivering the 3G Future	UMTS/Third Generation delivers inherent capabilities for the effective use of advanced services and applications (Interactivity, Mobility, Broadband and Positioning) and therefore a unique and future-proof platform.
	Content, a wide variety of mobile devices to access content, and ubiquitous seamless mobile access are key elements of the ICT vision, each of which forms an essential part of the overall picture.
	Critical success factors for creating a mobile data mass market include access to all types of information in a format appropriate to each type of terminal and the right diversity of products (including terminals) to accommodate all types of users and usage.
	A multitude of cross-industry actors will participate in the value chain to implement a wide variety of services and applications for customers, operators and manufacturers.
User Expectations	To fulfil user expectations in the long term, applications and services must be able to take advantage of all UMTS/Third Generation capabilities such as QoS, bandwidth-on-demand, security and privacy.
	Transparency/visibility of service charges allows users to control costs; this will have an impact on billing and signalling within the network.
	The development of 3G services and applications must take into account users' communications habits and handle situations where ubiquitous access may not be available initially. However, 2G+ services could also be made available on 3G networks (with better performance) to ensure consistent and seamless availability of such services.
Application Development	M-commerce will become a leading driver for the successful roll-out of UMTS/Third Generation systems and will influence the relations between existing and emerging players.
	E-/m-commerce falls outside the well-understood legal and regulatory frameworks for telecommunication providers within which trading has traditionally taken place. One example is taxation, which is currently an open issue.
	UMTS/Third Generation will eventually provide the capacity (bandwidth) necessary for fast delivery of messages, while terminals will allow for the display of picture-style content (e.g. fax as a TIFF file).
	VoIP will become an important enabler of convergence for services in fixed and mobile networks (2G+/3G).
	Any satellite-based location system requires a GPS receiver to be implemented at the mobile terminal, increasing the cost and complexity of the device.
	In order to ensure maximum levels of interoperability and global roaming, the industry should agree on a common standard for position determination, which should be focused on combining application requirements and minimising system complexity.
	The UMTS/Third Generation approach will be a key enabler for new forms of education on a global basis and thus should help improve the success rate of educational systems.

Service Implications	UMTS/Third Generation systems will help improve the management of the relationship between the customer and the enterprise.
	Mobile access to the corporate network (Intranet) will be a major driver for the introduction of enhanced business services within a UMTS/Third Generation system environment.
	3G systems must offer a similar level of security to that available on existing fixed networks, including encryption, authentication, user identity (digital signatures) and non-repudiation.
	UMTS/Third Generation services can be lifesaving.
	The impact of roaming will need to be explored fully when dealing with a content world. The demands for localisation and personalisation will need to be balanced and existing standards for data transfer will need to be enhanced.
	Operators must agree on the deployment of common IP protocols that impact roaming (i.e. the interfaces between core networks) and the communications between terminals and networks in order to achieve maximum interoperability.
Internet Protocol Trends	The convergence of the cellular worlds with the mobile IP world must ensure that addressing schemes are mutually compatible.
	Special consideration must be given to backward compatibility for terminals that have not implemented Mobile IP.
	Mobile networks that are based on IP will have the same requirements for high reliability that exist in today's public cellular networks.
	The rapid wide-scale introduction of IPv6 should be the basis for overcoming problems relating to numbering, addressing, naming and QoS for real-time applications and services.
	When selling differentiated services to the user, the actual "product" (e.g. content) takes the form of a service level agreement (SLA). SLAs will be required between content/service providers and network operators, where the SLA parameters and their values will be defined by the content provider.
Quality of Service	QoS in the public environment is an open issue, especially where multiple networks owned by different operators are involved.
	Within the context of interactive real-time applications, QoS support in 3GPP Release 99 specifications is focused only on traditional voice. It is expected that Release 2000 (or version 5) will be most likely based on IETF specifications and definitions of QoS to support real-time packet-switched domain-based services.
	Quality of Service will be a major feature of billing in UMTS/Third Generation. It is imperative that the interfaces between network elements and mediation/rating are as seamless as possible. Information will be collected from a wide range of network elements, increasing the need for this accuracy.

Billing issues	At a charging level, QoS parameters are well understood. However, a dialogue needs to be formalised between the billing vendors, mediation suppliers and network equipment manufacturers in order to ensure that the relevant information can be passed from network device to billing engine in a timely fashion.
	Operators/players need to think carefully about the complexities of the service delivery channel while balancing the requirements for charging simplicity and clarity from the customer.
	The current access standards do not support wireless broadband extensions such as HIPERLAN/2. Specification of such extensions is under consideration.
Non-Public Environment	3G technologies for the Non-Public Environment have the potential to reduce the cost of the terminal for services and applications that operate both in public and non-public environments.
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