

April 30, 2008

GSM/3G MARKET/TECHNOLOGY UPDATE

Dual Transfer Mode - DTM

Dual Transfer Mode (DTM) is a feature standardized by 3GPP within Release 99 that enables simultaneous voice and data communications using GSM/GPRS or GSM/EDGE devices, so that users can do two things at once. This is done by "associating" one or more packet-switched timeslot(s) to the circuit-switched timeslot, or by sending packet-switched data and circuit-switched voice in the same timeslot, i.e. when half-rate speech is used. DTM makes it possible to perform functions such as receiving a call or sending an SMS while receiving e-mails. During a voice call, users can download e-mails, perform multimedia messaging, Web browse, and take part in Internet conferencing. This is very useful e.g. when DTM-enabled phones are connected (via cable or Bluetooth™) to notebooks and used as modems.

3G/UMTS networks by design support simultaneous data and voice connection. DTM can therefore be considered as a new 3G feature in GSM (similar to the 3G multi RAB "Radio Access Bearer" feature) which enables new applications like video sharing, while providing service continuity and the best user experience of 3G services enabled by WCDMA-HSPA.

Dual Transfer Mode allows developers to add voice communication to their applications, and helps to enhance application attractiveness for mobile operators.

Supporting UMTS (WCDMA, HSPA) and GSM/EDGE DTM capability within the mobile phone is a huge advantage for 3G operators and users. DTM is a key revenue generator for mobile operators by offering 3G-like services on a GSM/EDGE network, e.g. "see what I see". As the user moves beyond 3G coverage, the user can switch to GSM/EDGE, maintaining the same level of services, e.g. continue talking and sharing data with work colleagues, friends or family, without losing the connection, while maintaining a reasonable data rate. This increases satisfaction levels, improves service for users, and secures revenues for operators.

The majority of WCDMA and HSPA operators have also launched GSM/EDGE. This strategy ensures that users will receive a good experience of most 3G services. There is also a strong trend towards combined 3G/WCDMA-HSPA and GSM/EDGE user devices. According to GSA's HSPA Devices Survey (April 3, 2008), the majority of HSPA operators have installed GSM/EDGE for service continuity and the best user

experience. Device manufacturers are also supporting this requirement, with the survey showing that over 70% of HSPA devices also support GSM/EDGE.

See HSPA Devices Survey (April 3, 2008) key findings www.gsacom.com/gsm_3g/wcdma_databank.php4

Press release

http://www.gsacom.com/news/gsa_244.php4

User cases with DTM

- **Video Sharing:** Video Sharing (VS) with circuit-switched voice and packet switched data video connection requires DTM. VS is not possible without DTM, i.e. VS is a new service enabled with DTM, according to specific user device capabilities.
- **GPS locationing (map download) during phone call:** Without DTM you must locate yourself or where you are heading either before or after the voice call, as it would not be possible during the voice call.
- **User experience with IP clients:** End user experience with IP clients is very likely to suffer if DTM is not available. Many IP clients, for example Instant Messaging (IM), require "always on" type instant access to Internet servers. In the case of IM, if the data connection is temporarily not available due to an incoming circuit voice call, some clients go offline, which may mean the end user needing to manually re-activate the client to the "online" state. Note also that some IM clients cannot indicate to the end user that they have gone offline. DTM greatly improves the user experience.

DTM network implementation

A DTM-capable mobile may use simultaneous voice and packet data, with the network coordinating to ensure that it is not required to transmit on two different frequencies at the same time. Typically, a DTM end-to-end solution requires only a software upgrade to the GSM/EDGE radio base station system (BSS).

The world's first end-to-end DTM network solution was launched and demonstrated over GSM/EDGE in 2005, followed by the first DTM network trial in 2006. DTM has been tested in several networks in Europe, North America, Latin America and Africa; several GSM/EDGE networks are expected to upgrade with the DTM feature.

34 DTM-capable user devices launched

Research by GSA confirms that at least 34 DTM capable user devices have been announced to the market, as listed here:

Nokia	E50
	E51
	E60
	E61
	E61i
	E65
	E70
	E90
	N70
	N71
	N73
	N75
	N76
	N77
	N78
	N80
	N82
	N90
	N91
	N92
	N93
	N93i
	N95
	N95 8GB
	N96
	5700 XpressMusic
6110 Navigator	
6120 Classic	
6121 Classic	
6290	
6600 fold	
Sony Ericsson	K770
	T650
	W880

Please check with the manufacturer for details about device availability for your particular market

DTM-capable chipsets and designs

- Comneon: 3G Dual Mode Protocol Stack Family
- Comsys: Ueware™ multimode baseband solution
- Freescale: MXC275-30 (DTM Class 5-11)
- Freescale: TCS3500 (DTM Class 5-11)
- Infineon PMB 8877 (S-GOLD3™) (DTM Class 11)
- InterDigital: R6 Dual Mode Modem
- NXP: Nexperia™ cellular system solution 7210
- Qualcomm: MSM 7200; Qualcomm: MSM 7600
- Texas Instruments: OMAPV1035 (DTM Class 11)

DTM-capable test systems

- Aeroflex: 6103 AIME/CT
- Agilent E6701E
- Anritsu MD8480C
- Rohde & Schwarz CMU200

About GSA

GSA (Global mobile Suppliers Association) represents mobile suppliers worldwide, engaged in infrastructure, support, semiconductors, devices, services and applications. The website www.gsacom.com is used by over 40,000 professionals from 188 countries providing a single information resource targeted for the industry, including surveys, market/technology/subscriptions updates, information papers, GSM/EDGE-WCDMA/HSPA network deployments, devices availability, applications/services, case studies, success stories, HSPA+ and LTE/SAE. We advise governments/administrations and policy-makers on optimum conditions for market development. Briefings are given to media and analysts.

Additional resources and opportunities are available for member companies.

The New Ventures Program assists start-up wireless application developers to ease access to the global market.

Fixed and mobile network operators are supported in the Operators Zone and by the GSA Mobile Broadband Forum.

GSA is a Market Representation Partner in 3GPP and co-operates with other key organizations including COAI, ETSI, GSM Association, ICU and ITU.

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