Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services	WT Docket No. 07-71

COMMENTS OF 3G AMERICAS

3G Americas, the leading industry association representing the Global System for Mobile ("GSM") family of technologies[1] in the Americas, submits these comments in response to the Commission's *Notice* for the *Twelfth Annual CMRS Competition Report* regarding the state of competition in the wireless industry.[2] 3G Americas has a broad membership of leading wireless operators and vendors facilitating the seamless deployment throughout the Americas of the GSM evolution to 3G and beyond.[3]

The GSM family of technologies has significant stakeholder ownership from leading handset, chipset and software provider companies in the United States. Open standards have made GSM a worldwide success. 3G Americas member AT&T is one of the world's largest purchasers of GSM network equipment. Motorola, also a 3G Americas

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[1] These technologies include GSM, Enhanced Data Rates for Global Evolution ("EDGE"), Universal Mobile Telecommunications System/High Speed Data Packet Access ("UMTS/HSDPA"), and Long Term Evolution ("LTE").

[2] *See* WTB Seeks Comment on CMRS Market Competition, WT Docket No. 07-71, rel. April 6, 2007, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-07-1652A1.pdf (hereafter "Notice").

[3] 3G Americas' members include Alcatel-Lucent, Andrew Corporation, AT&T, Cable & Wireless, Ericsson, Gemalto, Hewlett-Packard, Motorola, Nokia, Nortel, Openwave, Research In Motion, Rogers Wireless, Telcel, Telefónica, Texas Instruments, and T-Mobile.

member, is one of the largest holders of essential GSM intellectual property rights. Texas Instruments – a member of 3G Americas -- is the leading global GSM/EDGE/WCDMA chipset vendor for mobile handsets. TI earns a substantial portion of its $14 billion in gross revenue from the sale of such chipsets. TI operates eight manufacturing sites in the U.S. and derives 80% of its revenues from overseas sales.

GSM is the most deployed wireless technology in the Western Hemisphere, adding more customers globally in one year than exist in the entire customer base of any other cellular technology. GSM is also the most deployed wireless technology in the world, with over 2.4 billion subscribers, thanks in part to the research and development of leading U.S. companies. In the U.S., GSM-based carriers have over 40% of the overall commercial mobile radio service market.

3G Americas supports government technology neutrality. When the government does not mandate the technology carriers must deploy or otherwise favor a particular technology, there is a greater chance that competition can develop between technologies and services, to the benefit of consumers.

The GSM family of technologies provides many benefits for wireless operators, including open standards. Open standards allow broad, international input on evolution, economies of scale and scope, worldwide research and development, international roaming, elegant and simple migration to third generation and beyond, and a growing wireless data application ecosystem. This ecosystem includes numerous infrastructure and device manufacturers, which add to the technology's competitiveness. In addition, GSM facilitates competitive entry because of open source evolutionary architecture and

backwards compatibility. All of these factors benefit consumers through innovative and economically priced handsets and services.

3G Americas' comments specifically address the Wireless Telecommunications Bureau's request for information regarding "Service Availability and Deployment"[4] and "Technology Deployment and Upgrades".[5]

Service Availability and Deployment

In its *Notice*, under Market Structure, Service Availability and Deployment, the Commission asked for data about new technologies. To supplement the specific information GSM carriers will file, 3G Americas provides the following data.

In the United States, GSM operators have been very successful in building their wireless data networks. Enhanced Data Rates for Global Evolution ("EDGE") provides subscribers with wireless data average throughput speeds of 100-130 Kbps, and is available through numerous U.S. operators with nationwide coverage in the United States. EDGE technology theoretically is capable of downlink speeds up to 473 Kbps. The largest national EDGE footprints in the United States are offered by AT&T and T-Mobile. However, there are more than 60 GSM operators in the United States and most have upgraded to EDGE technology. Worldwide, there are 209 operators in 110 countries that have deployed EDGE technology, to the benefit of U.S. stakeholders. U.S. GSM users also benefit, through access to a global network that facilitates international roaming while on travel from the U.S.

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[4] *See Notice* at 2, § I.A.

[5] *Id.* at 7, § II.C.

The next step for GSM operators beyond EDGE is Universal Mobile Telecommunications System/High Speed Data Packet Access ("UMTS/HSDPA"). 3G Americas' recent performance analysis with Rysavy Research in September of 2006 showed that UMTS/HSDPA is providing downlink wireless data throughput speeds averaging 550-800 Kbps and up to 1 Mbps under favorable conditions. In December of 2005, Cingular, now the new AT&T, was the first operator in the world to broadly deploy UMTS/HSDPA. Currently, UMTS/HSDPA is available in over 165 cities throughout the United States. T-Mobile has announced deployment plans of UMTS/HSDPA equipment through its 1700/2100 Advanced Wireless Spectrum licenses, beginning with expected commercial rollout of UMTS service commencing mid-year 2007. Worldwide, GSM is available through 700 operators in over 220 countries. 3G Americas expects that most all of these GSM operators will someday upgrade to UMTS/HSDPA. Currently, there are 165 UMTS operators worldwide in more than 70 countries.

Technology Deployment and Upgrades

In its *Notice*, under Carrier Conduct in the Mobile Telecommunications Market,[6] the Commission asked to what extent GSM-based carriers have upgraded their systems to more advanced technologies, such as EDGE, WCDMA, and HSDPA. The Commission also asked what are the relevant advantages or disadvantages of WCDMA/HSDPA versus CDMA/EV-DO and what has been the impact of such difference on competition between GSM-based carriers and CDMA-based carriers.

[6] *See Notice* at 7, § II.C.

GSM customers utilize a nationwide footprint covering 273 million people in the United States. As noted above, most GSM handsets provide U.S. customers the ability to roam globally in over 190 countries throughout the world. National and international roaming are a significant advantage of GSM over other technologies, providing customers with the ability to stay connected through their own wireless devices almost anywhere in the world.

For GSM operators, the progression to high speed wireless data typically occurs in phases, first to General Packet Radio Service ("GPRS"), then EDGE, and then to UMTS/HSDPA. GSM operators first enhanced their networks to support data capabilities through the addition of GPRS/EDGE infrastructure. This stage of digital evolution allows GSM operators to use existing cell sites, transceivers, and interconnection facilities. Most UMTS/HSDPA cell sites can be collocated in GSM cell sites enabled by multi-radio cabinets that can accommodate GSM/EDGE as well as UMTS/HSDPA equipment. Secondly, much of the GSM/GPRS core network can be re-used, which provides efficiencies to the benefit of customers. Although the Serving GPRS Support Node ("SGSN") needs to be upgraded for UMTS, the mobile switching center ("MSC") requires only a simple upgrade and the Gateway GPRS Support Node ("GGSN") can continue to be used for high-speed service.

Once UMTS is deployed, GSM operators will be able to minimize the costs of managing GSM/EDGE and UMTS/HSDPA networks, as these networks share many of the same aspects, including packet-data architecture, Quality of Service ("QoS") architecture, mobility management, and subscriber account management.

Deployment of UMTS/HSDPA will typically occur in several stages, beginning with the GSM operator upgrading a portion of its coverage area to UMTS/HSDPA, progressing through continuous UMTS/HSDPA coverage, and then reaching highly integrated multi-radio operation. GSM operators will likely employ a similar strategy for deployment of Long Term Evolution ("LTE") which is a very-high speed, high-capacity, wireless broadband technology that utilizes Orthogonal Frequency Division Multiple Access ("OFDMA").

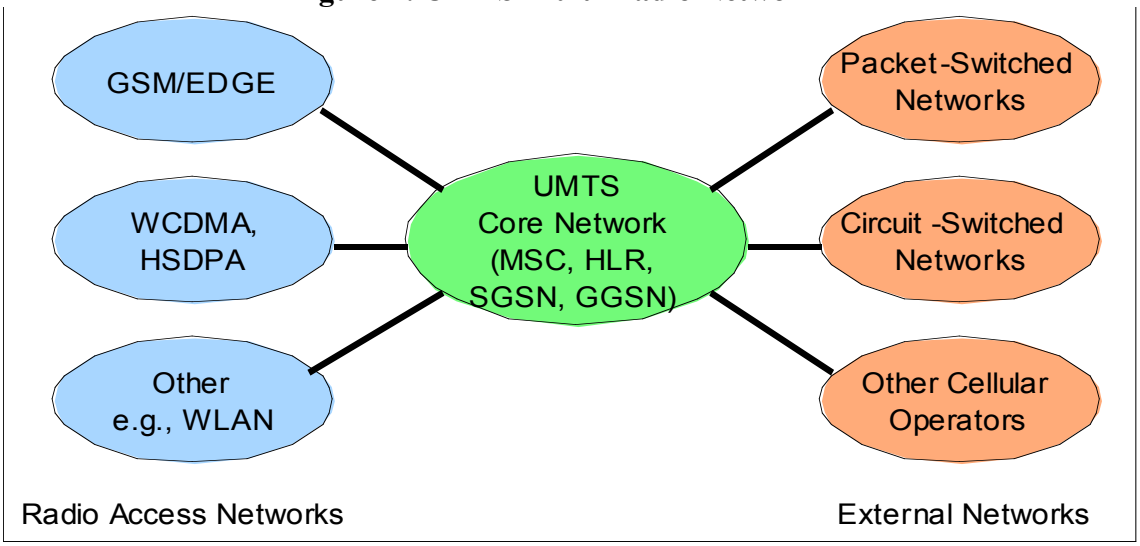
UMTS/HSDPA has earned the support of leading wireless carriers throughout the world, with more than 165 UMTS commercial networks already in operation. Compared to emerging wireless technologies, UMTS/HSDPA technology benefits from research and development that began in the early 1990s. It has been thoroughly trialed, tested, and commercially deployed.

UMTS/HSDPA employs a Wideband Code Division Multiple Access radio technology ("WCDMA"). The primary benefits of UMTS/HSDPA include high spectral efficiency for voice and data, simultaneous voice and data capability for users, high user densities that can be supported with low infrastructure cost, support for high-bandwidth data applications, and a future migration to Voice Over IP ("VoIP"). Operators can also use their entire available spectrum for both voice and high-speed data services.

Additionally, operators will be able to use a common core network that supports multiple radio-access networks, including GSM, GPRS, EDGE, UMTS/HSDPA, and evolutions of these technologies. This common core network can use the same network elements for GPRS and high-speed technologies, including elements such as the SGSN, GGSN, MSC, and Home Location Registration ("HLR"). The UMTS multi-radio

network gives operators maximum flexibility in providing different services across their coverage areas. This flexibility allows GSM operators to be more responsive to customer preferences.[7] The UMTS multi-radio network is portrayed in Figure 1, below.

Figure 1: UMTS Multi-Radio Network



When both GSM and WCDMA access networks are available, the network can hand over users between these networks. This hand-off allows GSM operators to manage capacity and provide a seamless service in areas where the operator has continuous GSM coverage but has only deployed UMTS/HSDPA in some locations.

Whereas GSM can effectively operate like a spread-spectrum system based on time division in combination with frequency hopping, UMTS/HSDPA is a direct-sequence spread-spectrum system. UMTS/HSDPA is more spectrally efficient than GSM, but it is the wideband nature of UMTS/HSDPA that provides its greatest advantage—the

[7] The UMTS radio-access network consists of base stations referred to as a Node B (corresponding to GSM base transceiver systems) that connect to radio network controllers (corresponding to GSM base station controllers). The Radio Network Controllers ("RNC") connect to the core network, as do the Base Station Controllers ("BSC").

ability to translate the available spectrum into high data rates.[8] This wideband technology approach results in the flexibility to manage multiple traffic types, including voice, narrowband data, and wideband data. Packet data users can share the same codes as other users, or the network can assign users dedicated channels.

To further expand the number of effectively operating applications, the UMTS/HSDPA standard allows for a sophisticated QoS architecture for data that provides four fundamental traffic classes, including: *Conversational* - Real-time interactive data with controlled bandwidth and minimum delay, such as VoIP or video conferencing; *Streaming* - Continuous data with controlled bandwidth and some delay, such as music or video; *Interactive* - Back-and-forth data without bandwidth control and some delay, such as Web browsing; and *Background* - Lower priority data that is non-real-time, such as batch transfers.

This QoS architecture involves negotiation and prioritization of traffic in the radio-access network, the core network, and the interfaces to external networks such as the Internet. Consequently, applications can negotiate QoS parameters on an end-to-end basis between a mobile terminal and a fixed-end system across the Internet or private intranets. This capability is essential for expanding the scope of supported applications, particularly multimedia applications, including packetized video telephony and VoIP.

UMTS/HSDPA provides tremendous performance for operators and their subscribers for packet data and delivers peak theoretical downlink rates of 14 Mbps. Peak

[8] UMTS/HSDPA's Wideband Code Division Multiple Access radio technology allocates different codes for different channels, whether for voice or data, and it can adjust the amount of capacity, or code space, of each channel every 10 milliseconds with WCDMA 3GPP Release 99 and every 2 milliseconds with HSDPA. UMTS/HSDPA creates high-bandwidth traffic channels by reducing the amount of spreading (using a shorter code) and higher-order modulation schemes for HSPA.

user-achievable throughput rates in initial deployments are well over 1 Mbps under favorable conditions with average rates of 550-800 Kbps, and will increase over time with enhanced terminals and network capabilities.[9] The simultaneous voice and data service possible with UMTS is presently a critical advantage over other 3G technologies currently commercially deployed.

The higher spectral efficiency and higher data rates of UMTS/HSDPA not only enable new classes of broadband applications but also support a greater number of users accessing the network.[10] The result is UMTS/HSDPA provides the highest theoretical wireless data peak throughput rate of any ITU IMT-2000 third generation cellular technology commercially deployed.

Barriers to Entry

In its *Notice*, regarding the Mobile Telecommunications Structure, the Commission asked whether its 700 MHz auction rules will provide carriers with sufficient spectrum to expand their services.[11] With regard to the 700 MHz auction rules, 3G Americas urges the Commission to first implement a flexible band plan for the 700 MHz public safety wideband spectrum that accommodates 5 MHz broadband technologies, so that public safety entities will be able to incorporate broadband into their

[9] UMTS/HSDPA achieves its high speeds through techniques such as higher order modulation, variable coding, and soft combining, as well as through the addition of powerful new features such as fast scheduling.

[10] UMTS/HSDPA achieves its performance gains from the following radio features: High-speed channels shared in both the code and time domains, short TTI, fast scheduling and user diversity, higher order modulation, fast link adaptation, Fast Hybrid Automatic Repeat Request.

[11] *See* Notice at 6, § I.E.

networks. Second, the Commission should consolidate the narrowband channels at the upper end of the 700 MHz public safety spectrum to increase spectrum efficiency, to decrease interference concerns, and to permit the use of a wider range of technologies for public safety communications. Third, the Commission should not mandate the use of any single broadband technology in this spectrum, but should remain neutral among competing technologies. The Commission should consider encouraging public safety to evaluate using existing commercial networks to meet their communications and interoperability needs. Allowing public safety entities to choose which technology best assists in meeting their local demands could provide cost-savings and innovation, thereby possibly increasing the safety of the public at large.

CONCLUSION

GSM is a global, open standards technology with leading stakeholders from the United States. There are over 60 GSM operators in the United States, and over 700 worldwide. Global GSM deployment benefits both the U.S. entities that have invested in this technology and their customers who can seamlessly roam around the world. Operators in the United States and worldwide are currently upgrading their networks to EDGE and UMTS/HSDPA technology, which will further benefit U.S. customers by delivering efficient broadband applications, accessible on their own handsets regardless of location. 3G Americas submits these comments to assist the Commission in preparing its *Twelfth Annual CMRS Competition Report*.

Respectfully submitted,

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