Hello,

I participated at the 3GSM Congress 2006 held for the first time in Barcelona, Spain, during Feb 13-16, 2006. The new location as well as the increased accommodation capacity were the main reasons for attracting a record-breaking attendance, possibly over 50,000 people, with 962 companies exhibiting. Almost everybody was very happy with the new venue (Barcelona is a lovely place!), except when they needed to go from point A to point B in a hurry throughout the convention complex. Especially directions to Hall 3 were very difficult to find or understand ☺

Here are some of my observations and impressions on several key wireless topics:

Subscriber growth: The wireless industry growth is continuing with 2 Billion wireless subscribers around the world (1/3 world population) expected to grow to 3 Billion by 2010 (1/2 world population). Out of the 2 Billion today, about **1.68 Billion are GSM subscribers**! The four developing economies, Brazil, Russia, India and China (BRICs) will be where the majority of the growth will come from in the next few years.

Wireless Data Revenues: Percentage of the mobile operator revenues coming from non-voice applications has always been an important indicator for the success of "wireless data" penetration. My previous employer, O2 has been recognized as a leader in this space. Now, I have been told that **30% of O2's revenues are coming from wireless data apps**; this is impressive, even if it does include the SMS revenues!

China: Being the largest wireless market, China has added 42 Million subs in 2005, bringing the total to 246 Million subs. Chinese government is expected to issue **3G licenses** in the first half of this year and allow the launch of 3G networks in time for the **2008 Olympics**. It is expected that 3G launches in China would create significant economies of scale for 3G prices, thus we should see the 3G handset prices coming down. On a separate note, however, Chinese government insists on and promotes the **local TD-SCDMA standard**. Now it is pretty certain that TD-SCDMA will be available along side the W-CDMA and CDMA-2000 standards in China.

Africa: Africa received some significant attention during Barcelona, with pan-African operators such as Celtel making major news recently. Some new investments are being made in African operators, as the sub numbers are expected to grow from 135 Million to **400 Million in the next 5 years**. There are several innovative applications, beyond voice, as well.

3G / UMTS: By end of 2005, there are 100 3G / UMTS networks in service, with about **43.38 Million 3G/UMTS subscribers**. However, about 19 Million of them are in DoCoMo, while 8.45 Million in Italy, and 4.76 Million in the U.K. So, Italy becomes the #2 country after Japan, in terms of 3G/UMTS subscribers, and Hutchison 3G (or simply, Three) becomes the 2nd largest operator with 3G/UMTS subscribers in Italy and the U.K., after DoCoMo of Japan. Kudos to **Italy for being the 3G leader in Europe today**! It is estimated that the 3G subscribers will reach 60% in Europe by 2010.

HSDPA: HSDPA launches were one of the hot topics in Barcelona. There are now **56 HSDPA networks around the world**, 2 of them already in service, (i.e. Cingular and O2 Manx Telecom), and others in various deployment stages. I am told that there are several HSDPA hand sets available today (Samsung, BenQ, etc); Ericsson demoed in Barcelona 3.6 Mbps HSDPA with several data cards, and also claimed that software upgrades will be available shortly to increase the data rate to 14.4 Mbps. Dell and Vodafone announced plans for **HSDPA enabled laptops** being available by mid year 2006; Thus **this year seems to be the year of HSDPA**!

HSUPA: Nortel has tested HSUPA (High Speed Uplink Packet Access) with 1.4 Mb/s in Barcelona, and Ericsson announced HSUPA product availability by year-end 2006;

Mobile TV: Probably the biggest story for Barcelona was Mobile TV. Many companies were presenting infrastructure equipment, devices, applications and content, to enable increased deployment of mobile TV, not just in a unicast manner, but more interestingly in the **multicast and broadcast** manner, in time for the **World Cup in Europe in summer 2006**. There are a multitude of broadcast standards (DMB, ISDB-T, DVB-H, DAB-IP, TDtv etc) and lots of trials have been conducted around the world. O2 said they trialed DVB-H in Oxford, BT Movio trialed DAB-IP, and Orange has announced in Barcelona to trial TDtv, using the unpaired 3G spectrum they have in the U.K. Texas Instruments released their appropriately named "Hollywood" chip which is a **first single-chip solution for mobile TV standards DVB-H and ISDB-T**. Several other technologies and products are becoming available to offer possibly multitude of these broadcast standards in a seamless fashion, as well as with the **necessary interactivity through the cellular infrastructure**. I expect lots of exciting times ahead in this space.

WiMax Mobile: Alcatel became the first major manufacturer with a **WiMax Mobile base station product**, unveiled in Barcelona. It uses Intel chips, conforms to 802.16e standards and expected to become commercially available in mid 2006. Also noteworthy was the collaboration between Alcatel and Samsung to certify and trial end-to-end WiMax Mobile (WiBro in Korea) solutions, where Samsung provides the **WiMax Mobile handsets**. Are we witnessing the emergence of the potential competition to 3G?

IMS: Now that various IMS infrastructure elements such as CSCF, HSS, etc., are commercially available from several major manufacturers (e.g. Nortel), the attention in Barcelona was on **IMS applications**, being demoed by a large number of companies in their booths as well as in major suppliers' booths, such as IBM, SUN, etc. Few of the companies with IMS apps I have observed are Appium, Argela, Convedia, and jNetX. Also, there are several **IMS client companies** such as Ecrio, Openera (acquired by NMS last week!) and SIPquest targeting slightly different markets.

Convergence / Handoffs: Now that we have UMA and IMS based convergence solutions in place, the focus seems to be on **how good or how seamless the voice handoffs are**, (demoed at Bridgeport Networks, Kineto Wireless and other booths) and maybe more importantly, **when will the handsets be available** ☺ I have seen one UMA handset and one IMS handset, both dual mode (i.e. GSM and Wi-Fi) but we need a lot more! Also, to answer the security concerns in the UMA architecture, we see companies like Netrake, who has been in the Session Border Controller (SBC) space, moving into **UMA security market**, with products being rolled out later this year.

Wireless Networks: With the significant increase in the amount of data that need to be carried by the wireless networks, we see the trend to provide **major optimization at the cell sites, and throughout the Radio Access Networks (RANs)**. Companies like Eastern Research Inc. are offering various solutions to reduce the OPEX requirements of the operators as they roll-out new revenue generating high-speed data services. We will observe more IP based solutions, starting right from the cell sites.

Service Delivery & Content Delivery Platforms: There seems to be an **on-going evolution** taking place in this segment of the wireless value chain. It is mostly triggered by growing amount of IP-based services, emerging new architectures, as well as emerging new business models. Some subcategories are Messaging gateways (e.g. Airwide, Empower Interactive), content adaptations (e.g. Adamind, Mobixell), Service Delivery Platforms (SDP) (e.g. Aepona, Argela), Content Delivery Platforms (e.g. Mobilitec, Motricity, Volantis). Do I dare to say that this part of the value chain is due for some consolidation?

Content: Content might be the King, but in my view, the most valuable content is **user-generated content**, and there were several innovative solutions in Barcelona. For example, Cognima's ShoZu allows pictures taken with your handset to be uploaded to Flicr, as part of your "mobile-enabled" social networking ☺ Also Juice Wireless displayed solutions for creating, distributing and accessing similar user generated content. For the professionally created content, Barcelona had reserved large sections of the exhibit area, with most of it focused on sports related and adult related video content. It is predicted that by 2010, **$56.5 Billion revenues will come from mobile adult oriented content**, and some questions whether this qualifies it to be next "killer app"! It seems that we will **need some powerful content filtering capabilities** and there are a few companies focusing on this space, e.g. PureSight, Bytemobile, etc.

Multimedia Handsets: There were lots of new handsets announced from various manufacturers, some, like Samsung announcing several new handsets with mobile TV capabilities, with the support for different standards around the world. But the one that attracted my attention was the statement from Texas Instruments' Alain Mutricy, that we should expect, with the launch of OMAP 3, a leap in capabilities such as **12 Mega pixel cameras** (today's best is at 3.2 Mega pixel on handsets!) and **DVD quality camcorders** on mobile handsets. Imagine the possibilities ☺

LTE: Long Term Evolution (LTE) of 3GPP radio technology has been a recent standardization and research topic. The peak data rates targeted with LTE are **100 Mb/s downlink and 50 Mb/s uplink within a 20 MHz spectrum allocation**. Some of technologies considered are OFDM and MIMO smart antenna technologies. During Barcelona, Nortel, for example, announced peak speeds of 37 Mb/s downlink and 25 Mb/s uplink being reached at lab trial, and indicated that customer trials of LTE will be scheduled for 2007.

Instant Messaging (IM): Top mobile operators, Vodafone, China Mobile, Orange, TIM, Telefonica, T-Mobile, Turkcell, and Bharti came together under GSMA to initiate an Instant Messaging campaign. The plan is to create **interoperability** which could lead to 700 Million mobile IM users. It is interesting that it would rely on SIM authentication rather than user id / password.

Advertising: Lots of emphasis on the need for and the ways to incorporate advertising as part of mobile services. Some content providers are pushing for advertising based business models and urging operators to focus on **Average Revenue from Others (ARFO)**, as oppose to ARPU! **Inserting ads into content delivery** will require some innovative technologies as well. I observed some of that at the Adamind booth.

Mobile Search: There were two major announcements that attracted my attention. First Vodafone signed an agreement with **Google to develop mobile search services for its customers, including its Vodafone Live! suite**, thus giving a major victory to Google in penetrating into the mobile search market. The second was that **Microsoft acquired Motionbridge**, a mobile search company that has been working with O2, T-Mobile, Sprint, TeliaSonera, Orange, etc., thus allowing Microsoft to get into the mobile search market. There are some new players such as JumpTap. This is becoming a hot market!

Pricing/Rating/Charging/Billing: With the high speed data rates coming, we observed that mobile operators are moving toward flat-rate data pricing. However, there are various products and capabilities in the market (e.g. from Comverse, Highdeal and others) so that **flexibility** can be injected into the process and thus we can evolve to **value-based pricing / billing** in the future.

Mobile Device Management: Today firmware over the Air (FOTA) solutions are being deployed across the industry. The innovation is now moving beyond bug fixing, into feature delivery. For example, I saw demonstration of **Embedded Feature Delivery (EFD)** technology at Red Bend, which can ultimately decouple the life-cycle of services from the handset.

Some Key announcements that caught my attention:

- Vodafone signed an agreement with Nokia that Symbian based **Series 60 Operating System to become the global standard for all Vodafone divisions**. Vodafone's goal is to reduce time to market for new services. It looks like close collaboration between Vodafone and Nokia will also allow Vodafone leverage their scale and create sufficient differentiation!
- **Skype made a major announcement with Hutchison Telecom**, which owns 3G-only operators, 3 UK, 3 Italy and 3 Sweden in Europe, that these mobile operators will bundle Skype's new client for Microsoft Windows Mobile 5.0 with a range of smartphones and flat-rate data tariffs. This means that, in addition to e-Plus in Germany, we now have 3 additional mobile operators recognizing that voice may ultimately become "free" and it is necessary to take steps not to loose the customers! Skype also announced that their client for Symbian OS is under development and will be released soon.
- **Intervoice announced a rather interesting mobile "video community networks" service** which is to enable rich video experience with several consumer & corporate applications, from chatting, dating, commerce & other community services.
- Some **UMA infrastructure announcement from Nokia** as well as a UMA handset 6136 from Nokia. I wonder whether this is a bit too little too late!
- **Motorola and Microsoft** announced collaboration on Windows Media Player and Motorola handsets to **download and synchronize music files**. Motorola will have new handsets in the future with built-in Windows Media Player.

Some Award Winners that I consider noteworthy:

- **SpinVox** for the Mobile Innovation Award (converting voicemail to SMS, I saw the demo for this; Great stuff! When can I have it?)
- **Cognima (ShoZu)** for the Best Mobile Messaging Service,
- **iPass** for the Best Enterprise Product or Service
- **Hi3G Access AB** for the Best Made for Mobile Music Service
- **Motricity** for Best Service Delivery Platform
- **Motorola RAZR V3x** as the Best 3G Handset

The next 3GSM Congress 2007 is scheduled for Feb 12-15th, and will also be held in Barcelona. See you there ☺

Best regards,

Mehmet Unsoy