

**Towards LTE and Beyond**

**14 October 2009**

**AWTG London Seminar**

**[www.awtg.co.uk](http://www.awtg.co.uk)**

**Royal Garden Hotel**

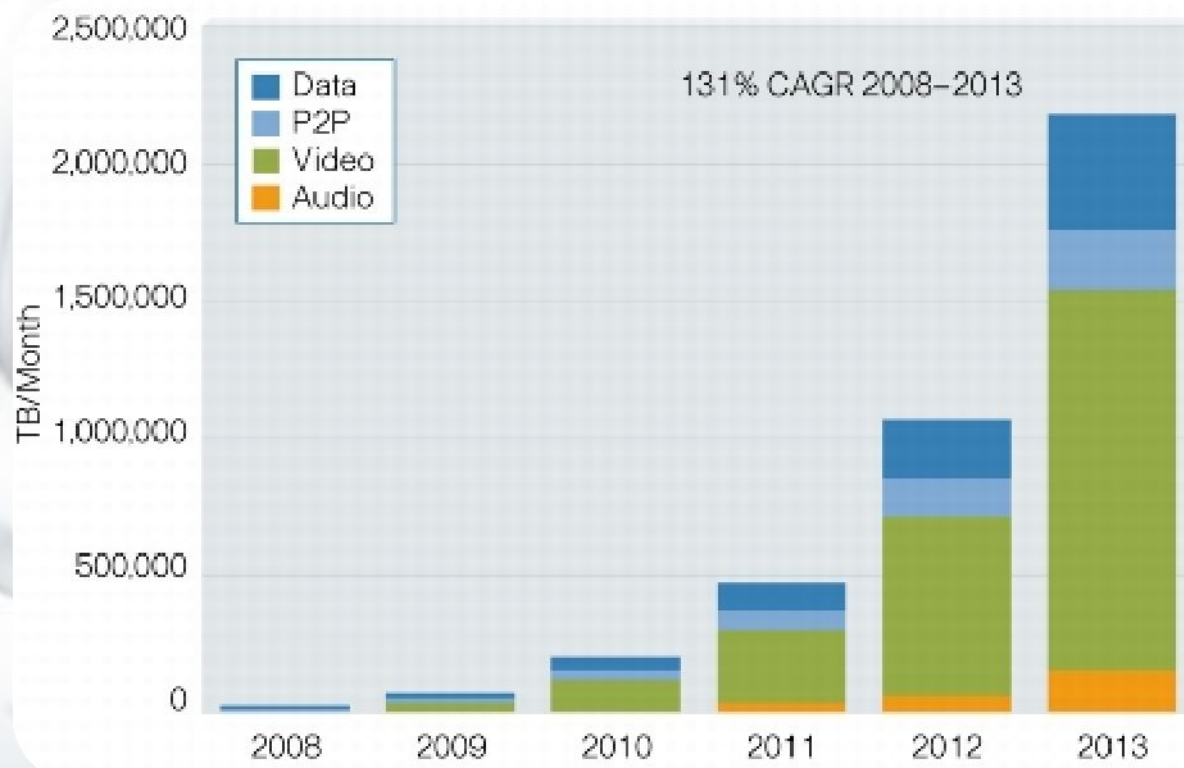
<b>AWTG Towards LTE and Beyond</b>		
<b>Time</b>	<b>Title</b>	<b>Presenter</b>
9:00	Welcome	Prof. Hamid Aghvami (Company Chairman)
9:15	Introduction	Dr. Ian Groves (Business Development Director, AWTG, EU)
9:30	Mobile Internet - an unfolding story. (keynote talk)	Prof. Mike Walker (Group R&D Director, )
10:30	Coffee Break	
11:00	Deployments and evolutions of Mobile Broadband networks and services – LTE EPC in the France Telecom Orange Strategy (keynote talk)	Remi Thomas (Director NGMN, )
12:00	Lunch Break	
14:00	Harmonised spectrum for LTE communication networks in : Band-plans and technical conditions (Invited talk)	Dr. Reza Karimi, (Spectrum Policy Director, Ofcom)
14:30	Quality of Experience	Dr. (Director Application & Services, AWTG)
15:30	Tea break	
16:00	LTE Challenges (invited talk)	Dr. Michael Lemke (Senior Solution Marking Manager, Huawei, EU)

# The Internet Data Traffic

- YouTube announced on 17 July 2006 that it serves 100 million videos per day.
- If we assume each video is 5 minutes long, then YouTube is simultaneously transmitting an average of nearly 350,000 videos at a time.
- At MPEG-4 data rates of 0.5 Mb/s for low resolution (320x240-pixel), we estimate an average data rate of 170 Gb/s or an average peak rate of over 500 Gb/s.

# Mobile Data Traffic

- Mobile data traffic over the Internet is drastically increasing.



Source: [Cisco Forecasts 2 Exabytes per Month of Mobile Data Traffic in 2013.](#)

# Broadband Data Traffic on Mobile Networks

Revenue increase is not in line with traffic growth\*

Average increase in traffic: 400% (September 2007)

Average increase in revenue: 23%

Average pricing below market: 20%

- With the launch of HSDPA and the introduction of flat-rate pricing, data traffic is increasing.
- Traffic is growing faster than revenue is increasing.
- According to AT&T, The traffic growth rate in its networks has increased by 5,000% over the past three years. AT&T plans to deploy an additional 2,000 cell sites in its networks to support this growth in 2009.

\* Source: Stanley Chia, Workshop on “As the Internet takes to the air, do mobile revenue go sky high?,” IEEE Wireless Communications and Networking Conference, April 2008.

## Data traffic (Challenge)

- Since 2006, the growth rate of data traffic on mobile networks has been approximately 400%. It is expected to grow at least the same rate in coming years.
- This growth demands much higher energy consumption than today.
- The challenge is how to design future mobile networks to be more bandwidth and energy efficient and accommodate the extra traffic.

## Quality of user Experience (Challenge)

Network performance must not be measured only in terms of network KPIs, but should also be evaluated in terms of the degree to which the network satisfies the application requirements of each user (Quality of user Experience (QoE)).

# Operator Commitments to LTE



France Orange	2011-12	Germany T-Mobile	2011	Ireland Hutchison 3	2011
Italy Telecom Italia	Not Known	Spain Telefonica O2	2011	Sweden Tele2 Sweden	2010
Sweden Telenor Sweden	2010	Sweden Teltenor Sweden	2010	Various Vodafone	Not known
Australia Telstra	Not Known	Canada Telus	2010	Canada Bell Canada	2010
Canada Rogers Wireless	2010-11	China China Mobile	201i	China China Telecom	2010-11
Hong Kong SmarTone-Vodafone	Not Known	Hong Kong HK CSL	Not known	Hong Kong PCCW	Not known
Japan NTT DoCoMo	2010	Japan KDDI	2010	New Zealand Telecom	2011-12
Norway TeliaSonera	2010	Philippines Piltel	Not known	SK Telecom	Not known
South Korea KTF	Not Known	USA Verizon	2010	USA Metro PCS	2010
USA Century Tel	2010	USA Aircell	2011	USA Cox	2011

Source: Global mobile Suppliers Association, April 2009