

## 1. Background

The economic downturn in the mobile and Internet industry sectors and in the high technology markets in general have prompted new concerns about the commercial viability of mobile data services, including 3G. ***The purpose of this report is to re-examine the worldwide market demand for 3G services in light of these new market challenges, to provide updated regional and worldwide forecasts that reflect any needed changes in assumptions.***

The UMTS Forum Report No. 9 presented the first results from a market study investigating 3G service revenue opportunities and proposed a 3G service framework that characterises the market opportunity from the user's perspective. Report 13 completed that study. This current report maintains the same frameworks, methodology, and model structure used in Reports 9 and 13 while providing updated worldwide service forecasts that incorporate modifications to some assumptions based on current market conditions. In addition, it provides regional detail based on the updated worldwide forecasts.

A secondary purpose of this report is to further explain the assumptions and methodology underlying these forecasts so that individual industry players are more confident using this information to assess their individual opportunities.

### 1.1 Analysis Conclusion

The re-examination shows that due to the current negative market conditions, the short term revenue generated by 3G services will be reduced 17% through 2004 –a total reduction of \$10 billion. Over the long term, however, services enabled by 3G technology still represent a substantial market opportunity of \$320 billion in 2010, \$233 billion of which will be generated by new 3G services.<sup>1</sup> Using the conservative assumptions in this analysis, cumulative revenue of over one trillion dollars is still expected over this decade.<sup>2</sup>

### 1.2 Forecast Approach

Technology, economic and other market factors change rapidly, and often, perception is quite different than facts. The approach in Reports 9, 13 and in this updated forecast analysis is rigorous and based on as much fact as is available. The forecast approach avoids making changes based on mere speculation or simply increased uncertainty. This updated analysis makes changes in the baseline assumptions in those cases where there is evidence that such changes are warranted and backed by reasonable market evidence or fact-based rationale.

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<sup>1</sup> UMTS Report 13 shows total 3G revenue in 2010 of \$322 billion; \$234 billion from new 3G services.

<sup>2</sup> This report shows cumulative revenue, including Simple Voice at \$1.159 trillion. This is slightly lower than the \$1.164 trillion projected in UMTS Report 13, taking into account the revised assumptions explained in the later sections of this report.

### **1.3 Forecast Assumptions**

The following aspects of the 3G market were considered as part of this updated forecast:

- Propensity-to-buy (by service) - considers population demographics of age, occupation and industry that are most likely to use each service.
- Geogain Score (by service, by country, and by year) –considers a number of country specific factors for each service such as:
  - Country-level 3G network availability dates
  - Gross Domestic Product (GDP)
  - Internet penetration and PC usage
  - Media and TV Usage
  - Mobile penetration
  - Teledensity
- Worldwide Mobile Subscribers – the total potential subscribers for 3G services. Based on an adoption rate applied to world population.
- Worldwide Adoption Rate for 3G – the percentage of worldwide mobile subscribers that have access to 3G networks and services
- Worldwide 3G Services Demand – multiple service specific forecast inputs that determine total worldwide revenue and subscriptions for each service category.
- Willingness to Pay (by service and by year) – the average worldwide prices applied to service demand elements within each service category to determine total revenue for each service category.

### **1.4 Updated Assumptions**

Certain assumptions from UMTS Forum reports 9 and 13 were modified based on the following market changes in the last six months:

- General worldwide economic downturn
- Telecom sector-specific downturn
- Delays in infrastructure and mobile terminal availability
- Operator announced trials and launch dates

Based on these events, the following assumptions in the worldwide forecast have been changed:

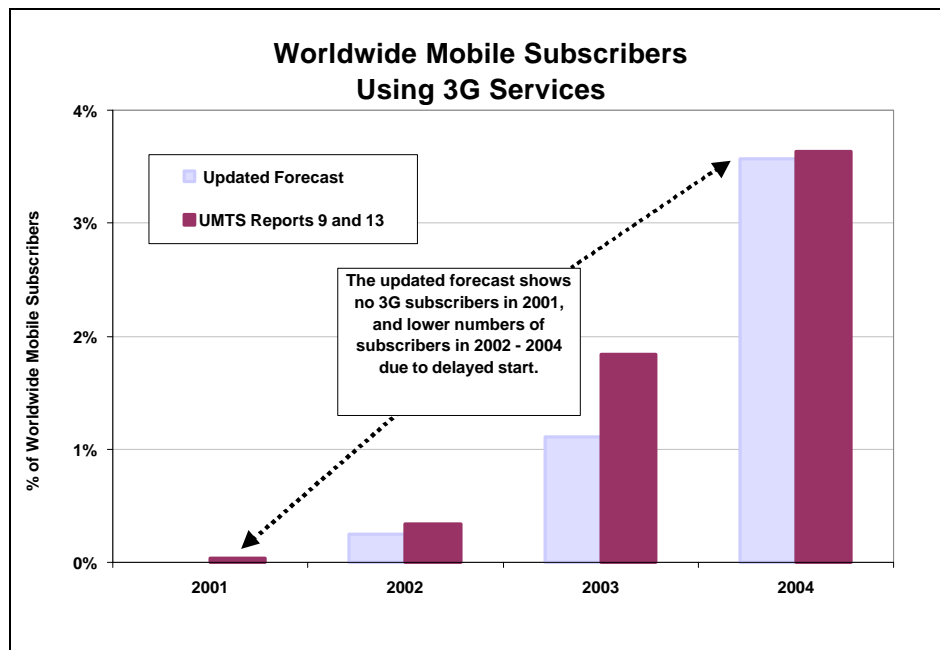
- Worldwide adoption rate for 3G<sup>3</sup> (See Figure 1)

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<sup>3</sup> The worldwide 3G adoption rate is an exponential curve that determines the worldwide percentage of mobile subscribers that use 3G networks and services.

- The shape of the 3G adoption curve was modified to account for slower start up in earlier years. The year 2010 adoption rate at 28% of worldwide mobile subscribers remains unchanged from Reports 9 and 13.4
- 3G adoption rate lowered between 2001 – 2004, with no 3G available in 2001.
- 3G adoption rate lowered between 2006 – 2008 to allow for more gradual ramp-up of countries just introducing 3G services in 2006-2008

Figure 1. Worldwide 3G adoption rate comparison.



Source: UMTS Forum and Telecompetition Inc., August 2001.

- Country-level 3G network availability dates<sup>5</sup>
  - Japan moved to 2002 (from 2001)<sup>6</sup>
  - UK moved to 2002 and 2003 (from 2001)
  - All other Western European countries moved to 2003 (from 2002)
  - Several Eastern European and Rest of World countries moved to 2005 (from 2004)
  - United States unchanged with a 2004 availability date.

<sup>4</sup> The rationale behind this is that lower start up (due to supply constraints) in earlier years does not necessarily result in lower adoption ten years out (a factor of demand, not supply). Telecompetition analysis shows that, over the long term, there will be sufficient pent-up demand with adequate network build-out to reach 28% of mobile users by 2010.

<sup>5</sup> Telecompetition assigns a country specific 3G network availability date for full service commercialisation. Full 3G commercialisation is defined beginning 12-24 months after the licence has been awarded and excludes the first six months or so of service, which typically consists of limited market trials.

<sup>6</sup> Some operators in the UK and Japan have maintained that they will offer 3G services in the first half of 2002, justifying some minimal, partial 2002 revenues for this forecast. Operators in other parts of Western Europe have announced initial launch of 3G services in the latter half of 2002, making the full service commercialisation start date of 2003, for a full year.

- Worldwide Mobile Subscribers - updated to reflect higher than expected EOY 2001 subscribers<sup>7</sup>
- Worldwide 3G Services Demand
  - The commercialisation date for video related services within the Rich Voice, and Multimedia Messaging Service categories moved to start one year later, reflecting the technical complexity in commercialising these services.
  - The addressable 3G market for Location-Based Services reduced slightly, reflecting the technical and market complexity in commercialising these services.

The remaining forecast assumptions are unchanged. Willingness-to-pay in Reports 9 and 13 used worldwide average prices for analogous services that change over time. Prices were reviewed, but no changes in the assumed prices or price trends were deemed necessary.

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<sup>7</sup> As 3G network availability begins in 2002, this change does not affect the forecasts for 3G services.