

Mobile Video Testing – How to Nurture the New ‘Killer Application’

a report by

Ascom (Switzerland) Ltd

As third-generation mobile phone networks finally start to take off worldwide, there are increasingly clear signs that the industry has discovered its new ‘killer application’. After some initial market wobbles, the mobile phone is now developing its full potential – almost as a digital equivalent to the Swiss army knife, capable of additional functions ranging from games and music through messaging and digital photography to mobile TV services.

So what has persuaded initially cautious mobile operators that the move to 3G networks and services is an investment that will pay off? The answer is simple – video telephony services. The majority of operators increasingly see video telephony services as the ‘killer application’ that will differentiate new 3G services from existing 2G and 2.5G and persuade customers to follow them on their adventure into the brave new world of mobile broadband.

While it is possible to have a limited range of video-based services with 2.5G, for instance picture and video clip delivery, these applications still run over traditional packet-based wireless networks and therefore remain hypersensitive to transmission delays. This is where 3G will really make a difference, by ensuring that customers enjoy the same transmission and reception quality standards they have come to expect for standard voice and data services.

At last, all that extra bandwidth can offer a genuine justification for its existence. The new cellular video services offer video multimedia messaging service (MMS), live TV, video clips (anything from downloads lasting a few seconds through to complete video streaming lasting up to several minutes) and video telephony.

The Eyes Have It

The appeal of the new offerings is evident. Whether for private or business customers, the ‘eyes have it’ and with video telephony, callers can see the person at the other end live on their display at the touch of a button. No longer any need to guess what sort of mood your opposite number is in, how he or she is dressed or where he or she is – video telephony

removes the metaphorical distance between people by allowing them to see for themselves.

The real question mark to date has not been whether customers would be interested in the new technical possibilities; it has been whether operators would take the gamble on what is still a very new technology. Many are all too aware that much will ride on initial customer perceptions of whether they are actually able to deliver on their promises in particular, whether networks can meet the demands of the new high-bandwidth functionalities.

That they have now decided to do so is thanks to a company that has led the field in opening new mobile markets for well over a decade. With its market-leading QVoice family of mobile network testing and monitoring equipment, Ascom of Switzerland is once again offering mobile network operators worldwide the necessary ‘ring of confidence’ to take a bet on a volatile but exciting new technology.

From Voice to Video

QVoice first hit the market in 1993 and assumed the position of market leader for assessing quality of service (QoS) and benchmarking on mobile networks virtually overnight, thanks to its unique technological ability to mimic real-life subscriber perceptions. It has maintained that position ever since, despite a bewildering pace of technological change that has seen mobile telephony develop from a primarily voice-based sector to a mass market method of transmitting data, before taking its first steps into the coming age of mobile video services.

From the early days of voice testing, via the first phases of data testing and the recent switch to general packet radio service (GPRS) to the current ‘age of revolution’, operators have always known they can rely on QVoice to protect their revenue by providing unequalled technical support and equipment performance to meet whatever happens to be the latest market demand.

When it comes to the new 3G networks, Ascom has made some considerable technical changes –



including a shift in underlying technologies – although the basic principles of success remain the same as ever. Firstly, as with every preceding technology, QVoice testing for 3G is based on recognised key performance indicators (KPIs), which refer clearly to internationally accepted standards wherever they are available.

Ascom's use of a comprehensive list of parameters defined as standards means that the QVoice 3G testing approach is easy to evaluate. It is based on comprehensive video and audio quality mean opinion scores (MOS), which enable operators to benchmark or measure each network the same way – an approach proved over time to be the only reliable way to compare or evaluate network performance.

The technological superiority of the QVoice approach to video and audio testing is no fluke; it is the concrete reflection of Ascom's many years of experience as a market leader in the area of perceptual quality measurements, spanning a range of technologies.

Seeing What They See

Video content can be downloaded or streamed. Video streaming is a method for transferring video content so the recipient can start viewing pictures before the entire contents have been transmitted; with video downloading, all the content is transferred to the customer's device prior to viewing.

From the testing perspective, they therefore pose different problem sets. Downloading will give perfect reproduction but requires time and storage capacity; streaming is virtually realtime, but is susceptible to quality impairment because of its minimum bandwidth and transmission quality requirements.

Video streaming tests (video quality and KPIs) can be carried out by QVoice on any live streaming content – in other words, the streams that subscribers really see. This is important for technical reasons, because different contents put different demands on network performance, meaning that real live content as subscribers see it is the sole genuinely realistic test. The use of real-life streams is also important in commercial terms; testing with an artificial stream does not make sense for the simple reason that it does not reflect real experience.

So how does the QVoice video streaming test provide the user with real subscriber visual experiences? Quite simply, by applying a unique video MOS that evaluates overall customer satisfaction, relating output to human visual parameters such as 'blockiness' and 'blur' and thus help to pinpoint possible video problems.

QVoice's use of real live video content also results in other advantages, for instance the detection of possible network problems – not only in the air interface, but along the whole route between the streaming server and the subscriber.

Another key advantage is that QVoice streaming tests do not need a reference stream signal. This means that a cellular operator can benchmark his/her own and competitors' streaming performance, without the need to install a reference stream into a competitor network's streaming server – an achievement that would require more than a modicum of luck or ingenuity. However, should the user nonetheless wish to use a reference stream, for whatever reason, QVoice can also oblige with accurate results.

Testing Telephony

For video telephony, as for streaming, QVoice tests use KPI measurements derived from international standards and specific customer requirements. These include tests on service access, service set-up/cut-off, set-up time, etc. Video and speech quality can also be measured using MOS values.

The QVoice offer comprises two types of tests – video service bearer and full video telephony measurements. The former checks where, when and if the connection used for video telephony service can be accessed and/or successfully held to completion.

Resulting reports can show the performance of the user's own network and benchmarking results compared with other networks, in addition to highlighting any problem areas on the map background. The latter, in addition to the bearer tests, actually sends audio/video signals via the connection and hence can provide measurements such as video and speech MOS.

Transmission error tests are another optional feature, giving network engineers precise information on the condition of the WCDMA bearer functionality. The full video telephony test will show the subscribers' experience in terms of video and audio quality.

Last but not least, as with other QVoice measurements, air interface engineering data (i.e. layer three messages) are always available with both streaming and video telephony tests. This feature offers the user the added advantage of being able to pinpoint the exact problem (assuming there is one) as well as providing a good guide to possible causes and solutions. Message exchanges are also end-to-end (thanks to the integrated video telephony stack), meaning that any problems during exchanges can be detected immediately.

Any overview of the QVoice Absolute Perceptual Video Quality Metrics Measurement Solution would be incomplete without a mention of Ascom’s world leading partner, Genista. The company, based in Tokyo, provides the perfect complement to Ascom’s technological and market expertise, with its focus on software solutions to measure the perceptual quality of electronic media, including desktop video, media streams, digital audio and still images. Together, the two companies can proudly boast that they have filled in the missing bits of the ‘quality puzzle’. ■

Contact Information

*Ascom (Switzerland) Ltd
Carrier Products
Glutzblotzheimstrasse 3
CH-4503 Solothurn
Tel: 0041 32 624 2893
Fax: 0041 32 624 2143
E-mail: odile.nizon@ascom.ch
www.qvoice.com*