



November 2007 witnessed the Writers Guild of America locked in combat with the Alliance of Motion Picture and TV producers in a dispute over earnings from TV and studio output.

Post Christmas the argument still rumbles on and is symptomatic of a shift taking place in the content industry which is seeing costs steadily increasing and realisable value steadily decreasing.

An increasing percentage of cellular operators and an increasing percentage of vendors supplying goods and services to the operator community have content as a major if not dominant part of their future added value proposition.

Nokia with OVI and their music store and Sony Ericsson with Universal Studios are two examples of vendors with content as a core component in their business model; Apple could be added to the list.

The recent announcement by Amdocs of their content management and billing platform is further evidence of a general belief that content is or will be king.

Royalty can of course be regarded as an asset or a liability, a subject on which the British have a range of views. Content similarly comes with significant liabilities and it is our contention that content may now have an overall negative value.

This negative value will increase rather than decrease over time, a trend that must call into question the validity of some if not most of the present content focussed business plans.

The hidden costs of content - Origination cost

The root cause of the Writers Guild dispute was cost escalation and declining margin on studio output. The declining margin seems counter intuitive but apart from a minority of blockbuster successes most content only has marginal and ephemeral value.

This value may of course increase in value in years to come. I Love Lucy in the US and Hancock's Half Hour in the UK are examples of longer term accumulative value though we would argue that these are exceptions that prove the general rule.

The hidden costs of content- storage cost

For example the assumption is that storage costs are decreasing over time, a function of the halving of memory costs on a 12 month cycle.

This would only be true if content was expanding at a lower rate than memory

bandwidth and this is presently not the case.

Content bandwidth inflation is being caused by the transition to high definition TV, a four fold bandwidth expansion. This is compounded by the move to higher fidelity audio, a composite of enhanced MP3 and five or 7 channel surround sound.

Still image content expansion is being driven by ever higher resolution image capture platforms, 44 mega pixel cameras being an extreme but relevant example.

This bandwidth expansion hits every stage of the content production chain from original capture through post production through to storage and distribution.

The hidden costs of user generated content- sorting cost

This includes User Generated Content. For example, the BBC has a programme called Autumn Watch , a study of how weather effects people and plants.

A request for viewers to send in their gardening photos generates several hundred e mails with attachments, a significant percentage of which contain uncompressed files.

Someone has the Herculean task of sorting through these pictures, deciding which ones to keep, which ones to use and how to describe them in the data base.

User generated content is therefore not free and indeed has a significant cost which is increasing over time.

The hidden cost of content- trigger moments

Broadcast content may also have trigger moments, voting for example in a talent show. Instead of an avalanche of photos the problem is now an avalanche of SMS messages or phone calls that have to arrive and be dealt with by a specified time in a specified way.

An organisation now exists to monitor and manage and regulate the operation of phone-in promotions.

Several producers have lost their jobs recently for failing to manage this process and participation revenues certainly in the UK are presently a fraction of their former value.

The hidden cost of content- delivery cost

Trigger moments can create loading issues that can only be fully addressed by over provisioning store and forward and onward delivery bandwidth.

Over provisioning store and forward and delivery bandwidth both over the air and through the network implies substantial under utilisation for most of the time.

Additionally content has different delivery requirements ranging from best effort (lowest delivery cost, highest buffer cost), streaming (audio and video downloading), interactive (gaming) and conversational (highest delivery cost, no buffer cost).

Supporting all four types of content simultaneously adds substantial load to the

network. The analogy would be running a postal system with four classes of postage using first class stamps, second class stamps, third class stamps and fourth class stamps.

The administrative effort counted in software clock cycles is significant and outweighs any benefits theoretically available from multiplexing best effort data into the mix.

The particular costs of delivering broadcast content over cellular networks

The DTV alliance analysed delivery costs and delivery revenues in a recent White Paper. The purpose of the White Paper was to illustrate the costs of delivering broadcast content either as unicast (eye watering expensive) or multi cast (less but still too expensive).

Vendors and operators might argue that broadcast over cellular standards will reduce these costs but until these standards are implemented the costs are real and actual and the comparisons in the White Paper are valid.

The thesis of the White Paper is that there is a pain threshold which is the point at which delivery costs exceed delivery revenues excluding spectral cost amortisation.

The pain threshold point was calculated to be a 6 minute low resolution video.

The bandwidth delivery cost of delivering a six minute high resolution TV programme would be \$2.76 or \$13.80 for a 30 minute programme. To achieve margins equivalent to voice the operator would need to charge \$13.80 for the six minute video and \$33.60 for the 30 minute programme.

This implies that the opportunity cost has to be factored in of any possible impact the audio and or video service might have on existing voice traffic.

A 3 G BTS was taken as an example with a busy hour capacity of 2,5 Mbps times 3600 seconds equivalent to 9 gigabits of delivery bandwidth.

If 5% of the subscribers watched two minute clips at 128 kbps then they will consume 4.8 Gigabits in an hour, half the capacity of the cell site. Double the data rate or number of users or length of the clip and the voice traffic completely disappears.

Now you might argue with some of these numbers but the essentially valid point is that rich content is expensive to deliver.

As we pointed out in last month's Technology Topic (Wireless data in a Jam?) rich content is particularly expensive to deliver if the user happens to be close to the edge of the cell.

Incidentally we would disagree with the DTV Alliance position on DVB H which is presented as the preferred solution

DVB H also has hidden costs particular when deployed into spectrum which is adjacent to cellular spectrum, essentially making any cellular handsets unusable in adjacent channel bandwidth and thereby reducing overall spectral utilisation.

The lowest cost delivery option for portable rather than mobile transceivers is DVB rather than DVB H and ATSC rather than Media FLO but more on that in a later topic.

Summary- cost and value transforms

Essentially we are saying that content has hidden costs and that these costs are increasing rather than decreasing over time.

Costs may be apparently reducing but may reappear in other areas. For example, the Quality of Service mechanisms needed in IP networks to handle rich media substantially increase the overall cost of delivery.

In parallel, value is decreasing including content with presently highly contested acquisition costs, premier league football for example. We should not assume that so called Premium content maintains that premium over time. As humans we have a finite absorption bandwidth and we must be close to the safe absorption limit particularly as far as football is concerned.

There is an argument that the value is still there but is realised in different ways. O2 Telfonica sponsor events at the Millenium Dome. This includes concerts by artists such as Prince, the Rolling Stones and Led Zeppelin

Some artists, for example Prince, give their music away for free or at a deep discount but the live concert grosses millions. The majority of this value goes to the artists (typically 110% of the ticket costs) and venue owner, the American Anschutz Entertainment Group.

These are examples of cost and value transforms.

Costs do not necessarily disappear but may reappear in other areas.

Value may be realised by third parties who may be the unintended though possibly deserving beneficiaries of the original investment process.

Cambridge Wireless event in January

Cambridge Wireless holds regular Special Interest Group meetings that provide a non commercial view of technology and engineering evolution.

The next meeting of the Future Wide Area Wireless Special Interest Group will be on the 22nd January and will address test and conformance issues.

The requirement to handle multi media content in user devices and to handle multi media traffic across cellular networks has introduced very specific test and measurement challenges.

The meeting will provide detailed insights into how present problems in the test and measurement of multi media devices and multi media networks may be resolved.

Content management methodologies represent just one area of present RTT research on the impact of technology and engineering change on spectral and corporate value.

If you would like more details of other study work presently under way or are interested in commissioning bespoke research or advice on technology, engineering, market or business issues then please contact;

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