

NEWS
IN BRIEF**Cherry converts HD**

TCube is launching an HDV to HD/SD-SDI decoder on its platform Cherry for a variety of production functions. HDV-Pass features HDV to HD-SDI/SD-SDI with embedded audio and TC. It offers a large number of format conversions to the end-user. It supports 720p and 1080i input/output, is compatible with 50Hz and 59.94Hz.

The device also supports 16:9, 14:9, 4:3 aspect ratio outs for PAL and NTSC. Cherry can provide a composite output when SD-SDI is selected. A RS422 port is available for VTR control specially dedicated for NLE applications. There is a bidirectional interfacing between RS422 VTR controls and IEEE1394 tape transport controls.

www.tcube.tv

More Light for Spirit

In a move designed to improve post production workflow, Thomson's Grass Valley and FilmLight have agreed to enable FilmLight's BaseLight colour grading system to directly control the film transport, primary and secondary colour, focus, resize and rotate, sharpness filter and de grain on Grass Valley's video Spirit Datacine and Shadow system.

This means that Baselight colourists would be able to replicate a traditional film-to-tape process, plus exploit the creative opportunities offered by software systems. "A lot of colourists have intense [video] workflows; this allows them a hybrid workflow... the best of both worlds," said FilmLight's Andrew Johnston.

www.thomsongrassvalley.com

The landscape of future TV

Jon Folland, co-founder of Nativ, discusses how TV evolution will progress over the coming years by analysing how three key technological advancements – ubiquitous bandwidth, improved video compression and cheaper storage – are affecting the TV marketplace

It wasn't so long ago that the only means of transmitting TV to the masses was through broadcast. This 'one size fits all' linear content delivery was the only viable option due to significant technology constraints. Gradual technical advancements have certainly improved our broadcast experience, but over a relatively long period, from basic prototypes in the early 1900s to colour TV in the 1950s and, more recently, plasma and LCD TV.

However, it's the recent and rapid advancement of digital technologies that has resulted in a video ecosystem where broadcast is now one of many paradigms for delivering TV. This new ecosystem is based on personalisation, on-demand access and portability and offers many new opportunities for generating revenue from TV content. Furthermore, these opportunities now stretch far beyond the broadcast sector, to telcos, ISPs, distributors and even to the humble viewer.

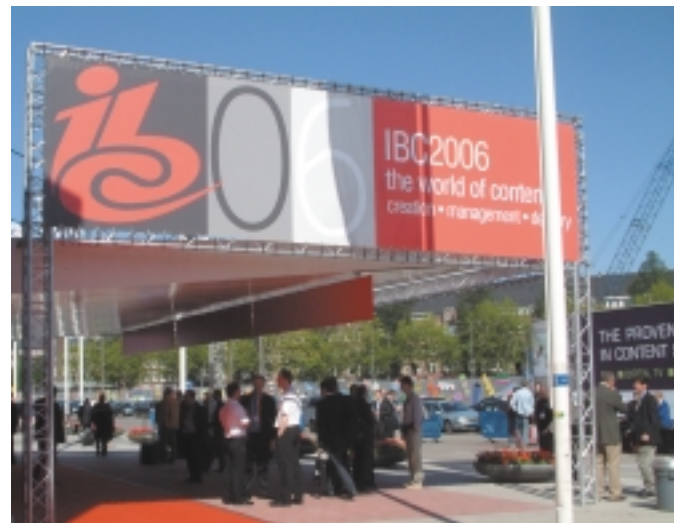
But what are the technical advancements that have spawned this new digital video ecosystem? There are three main areas of technology that are progressively enabling video to roam more

freely than ever before. None of these are very revolutionary; but their combined power is creating significant disruptive trends and is driving enormous and rapid market change. These are summarised below (also see figure 1, below):

1. Bandwidth: Not only is bandwidth increasing, it is becoming far more pervasive: From ADSL and cable to GPRS and Wi-Fi, we now have access from the home and on the move. Network agnostic access is just around the corner where we will simply expect IP network access everywhere and on any device; and bandwidth will no longer be a limiting factor where TV content is concerned.

2. Compression: Compressed video (and audio) content is more easily distributable and we can store more of it. Removing redundant information from video content can have an enormous impact on the size of a video file and the bandwidth required for carrying it. Through better understanding the physiology of the sensory organs we are shrinking the size of media files whilst at the same time ensuring little or no perceptive degradation in picture or audio quality. In addition, processing power means more complex compression algorithms can be used.

3. Storage: Improvements in storage technologies mean that not only can we cost-effectively store enormous amounts of video on our home computers and PVRs but we can also make our TV content portable. Such improvements in storage should not be undervalued. We have progressed from



As IBC2006 so clearly showed, the recent and rapid advancement of digital technologies has resulted in a video ecosystem where broadcast is now one of many paradigms for delivering TV

carrying a few documents on a floppy disk to gigabytes of video storage on a lightweight pocket video player in under a decade.

Market change

So how are these trends affecting the incumbents and new entrants in the TV and video distribution markets, and how are they responding?

Broadcasters: Increased availability of bandwidth and improvements in video compression may mean more channels but it also means viewer fragmentation and decreased advertising revenues. More worryingly, such technology trends also mean that broadcast is no longer the only means of distributing TV content. Suddenly, broadcasters have a real problem on their hands — broadcast seems somewhat archaic with little individual choice and loosely targeted advertising. In short, broadcasters are losing their monopoly over TV.

Broadcasters are facing up to these challenges on two fronts. Firstly, they are repackaging their branded TV content and selling it through other major content distribution networks as well as creating their own mobile and broadband propositions. As consumers begin to adopt the internet as their primary source of entertainment,

the broadcasters are following. Secondly, on home turf, they are rolling out HDTV and PVR-enabled time shifting to give viewers a unique reason to stay with them (at least for the time being).

Telcos: Fixed-line telcos are gradually seeing their older telephony business models evaporate. The increased availability of cheap bandwidth and compression improvements mean that VOIP is becoming less experimental and more robust. In the same way that the internet has enabled free global mail services, it is also enabling free telephony. Consequently, the old per-minute billing model will be a thing of the past in an increasingly converged world. One only has to look at the recent shakeouts at major telcos such as France Telecom to see these forces in action.

ISPs (and LLUs): These sectors aren't faring much better as they face an increasingly competitive market where broadband is commoditised and price versus bandwidth offers the only competitive edge. As demand for bandwidth-hungry rich media content is increasing, ISPs and network operators are investing heavily in infrastructure but the rampant competition means it is

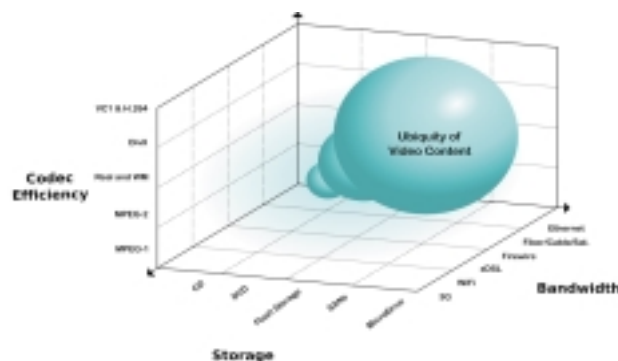


Figure 1

increasingly difficult to secure significant financial returns.

To retain customers and bolster revenues, telcos and ISPs are getting into content provision through developing their own TV services. They are exploiting the aforementioned technology advancements that have been making their existing business models less lucrative or completely obsolete and creating their own integrated TV (IPTV, VoD and PVR) platforms.

Mobile Operators: Again, mobile telephony is becoming heavily commoditised and markets are becoming increasingly saturated. It is also possible that VOIP combined with Wi-Fi and other mobile access networks might pose an additional threat to mobile operators, forcing them to revisit their business models.

Beyond telephony, messaging, data services and personalisation, mobile operators have been trialling video and mobile TV services as a viable option for bolstering revenues and remaining profitable. After the enormous investments in 3G spectrum licences, mobile TV may come to the rescue although there are still questions over consumer demand. Again, this has only been made possible through greater bandwidth availability and improved video compression.

MSOs: Of course the market is far more complex and there are increasing numbers of multi-service operators offering double and triple play. Bundling telephony, broadband and TV supposedly offers consumer benefits in terms of integrated billing and more recently, converged services.

Triple play has led to the term 'quadruple play', where wireless communications is introduced as another medium to deliver TV, internet and voice services. Again the three technology trends alluded to earlier are allowing a deeper level of integration between the triple play services as well as making content more on-demand, personalised and mobile.

These market trends can be summarised in the diagram below (see Figure 2, above):

It seems that the three key technology trends are not only threatening businesses, they are also offering new opportunities. As VOIP kills the old telco models, as broadband is increasingly commoditised and as broadcast TV becomes fragmented, next generation TV services will offer the most long-term value to these players.

The new players

Now that TV is becoming increasingly ubiquitous and the internet is becoming synonymous with TV delivery, who else stands to gain from these new trends?

If we look at players in the wider video ecosystem as it continues to grow and diversify there is one clear threat to the incumbents.

Google, MSN, Amazon, Apple and others are using the public internet to offer an on-demand TV experience with business mod-

els ranging from subscription-based to pay-per-download. These 'content aggregators' are directly benefiting from the three technology trends alluded to earlier and using them as a means of securing a foothold in the TV market.

What are their strengths and weaknesses?

Strengths:

- Large subscriber base and

rich communities

- An open, worldwide distribution network (AKA the internet)
- The internet by its nature offers personalised, on demand opportunities
- Web 2.0 and long tail paradigms
- Targeted advertising



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Figure 2

The landscape of future TV

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Weaknesses:

- Download is the only way to ensure a 'broadcast-quality' experience

- Limited bandwidth availability currently offers poorer quality 'live' TV
- At the peril of tiered network operators 'gatekeepers'
- Limited experience in content packaging and channel creation
- Limited cross-platform DRM and conditional access options
- Some rights owners are nervous about rights protection

The move of the content aggregators into the TV space poses some interesting questions about walled garden versus open access as well as triple play and quad play, and in my opinion marks the beginning of the end of the TV convergence process.

The market land grab

Assuming these business models find traction and such companies take maximum advantage of the interactive, on-demand nature of the medium, it could spell disaster for the incumbents.

IPTV, VoD and PVR may seem like exciting and trailblazing technologies to the incumbents, but offer TV content on the world wide web and you have these services available on a global level; not to mention of course the much hyped long-tail effect of virtually unlimited niche content and the associated targeted advertising.

What will the ISPs have to sell apart from network access? Who will tolerate limited, walled garden TV from the platform operators when there will be unlimited, on-demand, personalised TV on the web?

Hype aside, this market trend certainly doesn't signal the end for the incumbents. It merely marks the beginning of a seismic shift and the winners may not necessarily be the content aggregators. For example, one possible spanner in the works for the new content aggregators may halt them in their tracks:

As demand for TV content over the public internet increases, demand for bandwidth is also significantly increasing. Although network operators will be forced to invest in their infrastructures to remain competitive, the aggregators will be mopping up all the revenue. To combat this threat, network operators are already hinting at a tiered model where they charge a premium for delivery of more time-critical or bandwidth hungry data such as rich-media content.

Tiered access

Assuming this behaviour becomes widespread, network owners such as telcos and ISPs may in fact be in a position of considerable strength. As network 'gatekeepers', they may have the ability to shut out such content aggregators altogether thus denying them a customer base. By offering their own content services through their own networks, they will ensure a sizeable revenue share from the associated content models.

Such services will range from a gatekeeper model — charging a premium for download of TV and video over the public internet — to a walled garden approach where only approved content partners' TV services are accessible.

So what seems to be a critical success factor for companies offering future TV services is having a stake in both network access and content. It comes as no surprise then that this seems to be happening in the case of Google — one of the larger content aggregators. They appear to

be building their own private content network, thus theoretically allowing them to lock out their competition altogether.

Will such a strategy ensure these new 'double-players' gain market share and eventually dominate the TV market? Will it make the older broadcast models obsolete and will distributors and advertisers favour these new entrants?

Not necessarily. Selling fixed line bandwidth may keep consumers within the walled garden when accessing TV services at home, but there are other access methods onto the public internet and into the arms of the competition. I may subscribe to BT Vision (BT's new UK digital TV service) but I can also access internet-based TV services through a wireless hotspot in a café or through the data services on my 3G phone.

The move of the content aggregators into the TV space poses some interesting questions about walled garden versus open access as well as triple play and quad play, and marks the beginning of the end of the TV convergence

This is going to become an increasingly important means of accessing and storing TV content when we consider next generation portable devices such as Apple's new Video iPod (which may in the future support wireless access to the iTunes Music Store). So in order to get a larger cut, a TV distributor should have a stake in all network access points. And in order to do this, they also need to hold a stake in all access devices to ensure they are only configured to connect to their preferred networks.

Defining a new model

To date analysts have put much of the future of TV into the hands of the MSOs. But where do these paradigms fit in when we consider the new players — the content aggregators?

As mentioned, the general idea of an MSO model is that a network operator bundles together several digital services to offer benefits such as converged services, competitive pricing and consolidated billing. The current Holy Grail appears to be quad play, where an operator also offers a mobile phone combined with new opportunities such as:

- Mobile EPG access and home PVR controls (time shift TV)
- Mobile TV (place shift TV)
- Combined home VOIP and remote cell phone telephony
- Unified mailboxes
- Integrated email and web access at home and on the move

In fact this growing nomenclature, particularly quad play, represents a misnomer. The fourth service, mobile, is not a service at all; it's merely a device that provides mobile access to the three triple play services. As operators start to offer other means of accessing TV through the PSP,

XBox and other devices, the nomenclature will break completely — we can hardly progress to quintuple-play and sextuple-play without smirking. We need a more accurate way of mapping how the TV market is evolving which accounts for the MSO and the content aggregator models.

The future TV landscape

We can better explore the future of TV distribution in terms of a 'Stack' model as seen below. In summary, in order to lock out competition the TV distributor needs to have a stake in each layer.

Carrier: The Carrier layer constitutes the physical network over which content is accessed. Clearly, our TV services should be accessible over every carrier; so the TV distributor needs to hold a stake in all of these network types and ensure they are universally acces-

sible. By doing this, they can lock out access to competing TV distributors at the lowest level.

Network: The Network layer represents a private network in which the TV distributor is a stakeholder. Regardless of the underlying Carrier, whether it is satellite, cable, ADSL, wireless or 3G, the universal network protocol is IP. This network layer allows limited access to the public internet and is predominantly walled garden by nature. Clearly the services delivered over this network are tailored to the end device, but the IP protocol will maximise the opportunity for converged services.

Device: The Device layer represents all physical devices through which TV can be accessed. This ranges from set top boxes, PVRs and games consoles to mobile phones, portable entertainment devices (e.g. PSP) and video players (e.g. video iPod). Again it is important that to some degree the TV distributor has control over these devices — perhaps through branding them and subsidising the cost of their purchase. This will ensure that in the same way your mobile phone only connects to one network and defaults to your network's content portal, all your content devices will connect to the same network too — that of your TV distributor.

Services: The most important layer is the top Services layer. It is these TV services (VoD, PVR, HDTV, mobile TV, download, etc) and the way in which they are converged, personalised and priced that will ensure the TV distributor maximises its subscriber base and ARPU.

Hence, with the Stack model we ensure ubiquitous access to a range of converged services tailored to the properties of each

device. Through retaining a sizeable stake in each layer of the stack the TV distributor will retain a foothold in the market. And of course, the killer app where revenue generation is concerned is ubiquitous, on-demand, personalised TV.

When will this model be realised?

The realisation of this model may mark the end game for TV convergence, but when will it happen?

At the beginning of this article I discussed how three technology trends where re-shaping the TV landscape and how they were simultaneously making older business models obsolete while creating new opportunities. Assuming that technology is still driving these new trends, then the market will only evolve at the rate of advancement of the slowest technology area. So where does the technology bottleneck lie and how is it affecting the market?

Storage: At this point in time, viewers can already store huge amounts of TV content cost-effectively and storage technology will continue to march onwards at an impressive rate. Storage is not the bottleneck.

Compression: We may be pushing the limits of current video compression theory, but people tend to say this prior to a major breakthrough. Video compression will continue to

improve and thanks to Moore's Law we can even decode new advanced video formats on handheld devices. Again, video compression is not the primary bottleneck.

Bandwidth: However, although TV content is roaming more freely, it is still inhibited by bandwidth more than anything else and all networks are not made equal. For example, there simply isn't enough bandwidth available across the public internet or most mobile networks to allow mass consumption of high quality, broadcast and streaming TV. The internet wasn't designed for the timely delivery of media-rich content and many 3G networks simply can't scale to meet demand.

A good case in point is the UK ADSL market. Bandwidth is increasing all the time, but its aggressive marketing hides a key problem — quality of service. Most ADSL bandwidth is contented at the exchange, such that during busy times, some TV distribution models, such as live TV, are severely hindered or unfeasible. Although buffering and advanced streaming protocols prevail — the results can be variable at best. It's certainly not broadcast quality TV and won't be for a long time. In fact the last mile is still a major problem even when considering download and catch-up TV services.

Although many new entrants into the TV market are addressing the bandwidth problem, the solu-

tions may prove to be less than satisfactory. In the UK, telcos and ISPs are offering IPTV services that comprise a hybrid digital terrestrial and an IPTV VoD service, but it's a more complex, less integrated and possibly more expensive to implement. Mobile operators are trialling DAB, DMB and DVB-T networks to broadcast direct to mobiles rather than over 3G networks but there are questions about spectrum allocation in many territories.

The key difference with bandwidth availability is that it is no longer hindered by technological constraints — there are in fact new network technologies that guarantee much faster fixed-line and wireless access that will fulfil the Stack model and make TV truly ubiquitous.

The problem is that providing adequate bandwidth and network quality of service to ensure all TV consumption methods are viable on all devices will take huge investments in network infrastructure. This comes at a time when previous investments in 3G networks and cable have damaged confidence in some territories — customer demand remains unclear or the promise hasn't been delivered.

Jon Folland is co-founder and a director of Nativ (<http://nativ.tv>). Founded in 2001, Nativ is a consulting, technology and outsourcing company specialising in the delivery of video-centric solutions.

Strong IBC growth: Forward Link Only

By George Jarrett

Set up as a mirror image of what the DVB infrastructure looks like, the FLO Forum now boasts the membership support of 63 organisations.

Celebrating the recent standardisation of the FLO Air Interface by the Telecommunications Industry Association (as TIA-1099), CFO MaryBeth Selby (pictured) revealed at IBC last month that the next work phase — performance specs for device and transmitters — is already with the TR-47.1 subcommittee.

"Our mission is to promote the international standardisation of FLO. We are all focussed on developing products and services," said Selby.

"We have ratified the system into our spec, which is basically the service guide. We have also begun to work on the video codec spec, and we are busy forming liaisons with bodies like the ITU," she added. "We foresee taking the upper layer specs before other global standards bodies, and we have internal plans on how we are going to achieve that."



Some 15 of her members are based in Europe, and the 63 names were only 10 back in July last year. "We are becoming very strong in the European community, and the latest boost to our efforts is Newport's announcement that it will build FLO chip sets," said Selby.

"Our membership covers the whole value chain, but by design we are a contribution driven organisation. We receive proposals and work on those in our own subcommittee structure," she added. "We are currently doing work on conditional access."

www.floforum.org