

# All-round performers

‘Any content, Anywhere, Anytime’ is an attractive slogan for the service provider, but a real challenge for content and transmission management. How is the aim of 360° media affecting the development of digital workflow systems? Colin Mann seeks the advice of some industry experts.

“To suggest that publishing premium video today is a simple endeavour is naïve,” asserts Marty Roberts, VP of sales and marketing, at online video management specialist thePlatform. “For example, we manage billions of video views annually for our customers, and each video comes with its own set of technical requirements and business policies that determine how, where, when, and to whom it can be presented. Our customers rely on thePlatform to help manage this complexity, which includes file formats, digital rights management, business policy enforcement, and various playback experiences across disparate screens.”

He adds that beyond the need to publish video to a myriad of new devices such as tablet computers, smart mobile phones, set-top-boxes, over-the-top platforms and gaming consoles, companies must also grapple with the vastness of their content libraries and the need to monetise effectively across all platforms.

“Digital workflow systems, like thePlatform’s mpx system, can provide scalable, flexible, and secure video publishing tools to content owners and distributors. The system can also manage business policies such as user authentication, advertising, geo- and

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MARTY ROBERTS,  
THEPLATFORM



date-restrictions, and much more. It also uses an easy Web-based interface for companies to add, manage, and publish video for end-user playback,” he says.

**HUMAN INTERVENTION.** While the central protagonists in the key elements of premium content remain predominantly human – sportsmen and women, TV/film stars; musical artistes and the like, the growing appetite for consumption of this content means that it is increasingly delivered across a range of platforms and devices. Does this require additional human intervention in the workflow process, or can a level of automation be achieved?

Jon Try, VP of technology at the Digital Media Centre, suggests that automation can be achieved in most of the processes, provided the information, content and metadata exists. “At the DMC, we have taken steps to unify the workflows for content for linear broadcast and non-linear applications,” he explains. “What this means in practice is that we have standardised as far as possible on a high-quality digital archive format for all content and have aligned our inbound process so that whether content is delivered on tape or digitally, it follows the same process.” According to Try, the metadata associated with the assets is held in separate databases, but the process for reading and extracting subsets of the data is relatively simple.

The result is an ordering process that allows content to be extracted from archive and transcoded to any one of a growing set of formats for delivery to third party platforms. These can be Cable, Internet or mobile operators. “One area it is difficult to automate is the final quality checking (QC) of content. Automated systems will give feedback on the

technical quality and even give a measure of the quality degradation that has occurred during a transcode, but only human eyes can verify that the content is actually what it says it is,” he admits.

**RICH MEDIA.** Rob Kernot at ColemSpice notes that media created, edited, processed in file form, whether it is video, pictures, or text, enables the cost effective handling of the content, and the ability to re-purpose the content for multiplatform presentation. “However, cost-effective creation means empowering the whole organisation, adopting common open standard processes and automated rules based workflows with access to a rich media repository and an IT infrastructure that meets and does not inhibit the demands of a broadcast market,” he advises.

Adam Powers, senior director of technology at Rovi suggests that from a technical perspective, automation of the ingest, management, and distribution of content can be nearly complete with very little manual intervention; but that business and especially legal restrictions typically break automated workflows.

“Issues like manual intervention around rights managements for the distribution of content are increasingly becoming a significant bottleneck. The culture of the organisations involved can be almost as significant, as major portions of studio and broadcast workflows are still based on paper and pencil and distributing physical goods — and not always for bad reasons. While some innovation in both technology and business models is required to overcome these issues, it should be seen as more of an eventuality than an unknown,” he advises.

**100%.** “I feel we can achieve one hundred per cent automation,” asserts Dave Travis, head of engineering and technology solutions, WRN Broadcast. “The key to making the automation successful is working with all content suppliers to ensure the delivery method is correctly set up at inception. At WRN Broadcast, we have created a new role that acts as a bridge between the technical automation and the non-technical content suppliers.”

Using a new client as an example, WRN plans to receive all new content from over 30 different content suppliers via delivery methods such as Aspera and Signiant. All files are pushed to WRN Broadcast and registered automatically with XML files that come with the media. The only human intervention is a three-point spot check to ensure the programme is the correct title. Following that the content proceeds through the workflow for an automated one hundred per cent QC. From there it goes onto playout and archive. And from there it is possible to transcode and deliver the content to an IPTV platform.



Rino Petricola, SVP and GM, Front Porch Digital, accepts that in a perfect world, “automation would make everything happen as planned, no human intervention would be needed; and delivery of any content, anywhere, anytime would be achieved. Such is the myth of 360 degree media delivery,” he states. “Over the past decades, many attempts have been made to automate digital workflows. The result is that today’s end-to-end media delivery chain is made up of a number of silos. While each is almost fully automated, what’s lacking is integration. Examples of automated silos are content ingest, content migration, traffic, playout, news, digital archives, media asset management, and online video distribution. In theory, full and integrated automation can be achieved, but the reality depends on the market’s vision and its willingness to take advantage of automation’s potential,” he says. **FULLY AUTOMATED.** He explains that in considering how his company could best leverage its technology, expertise, and experience to support both existing and future customers, it identified the enormous potential of bringing content from videotape on the shelf through the digital archive and onward to online communities. The result of this consideration is that the company now offers fully automated solutions that migrate, manage, and market media content.

Tony Lapolito, VP marketing and product management, Signiant, points out that almost any manual business / content process can be

automated to eliminate human intervention. “This is predicated on moving from the tape / physical to the world of file-based workflows. Once you are working with files, then you really have the ability to automate the creation, management, distribution and archiving of content. The most common task that people want to automate is the repackaging of content for different distribution windows - this typically includes inserting ads and promos, transcoding into the right format, conforming the content, QCing the file, adding DRM and finally virus scanning before delivering it to the destination,” he says.

“This entire process can be done with absolutely no manual steps. These types of ‘transactions’ can be driven out of a typical MRP / Rights Management System – but typically today, there is human intervention required – either someone kicking off the process through a custom web app or someone ‘shopping’ on a self service portal. Other types of activities, like editing and special effects are a long way from automation, but that is where humans shine – in the creative, not the mundane repetitive acts where it is best to leave it to the machines and automation.”

**SMART PROFILES.** Roberts advises that digital workflow automation has been the focus of the product team for a decade at thePlatform. “Earlier this year we released mpx – a system that represents a marked departure from conventional approaches

“Business and legal restrictions typically break automated workflows.”

ADAM POWERS, ROVI



traditionally used by ‘white-label’ video service providers. mpx essentially reverses the linear process of publishing video clips that had been an industry standard for the last decade. By creating smart publishing profiles – customisable for each video publishing destination – we have allowed our customers to set these profiles up once and then publish videos with a few clicks.

“This set up allows editors, producers and other online publishing staff to then send any video or number of videos to a particular destination and the system can take care of everything else in an automated fashion. This includes converting the files to the correct type and resolution, applying the specified metadata fields, connecting the correct ad servers, *etcetera.*”

Ian Fletcher, CTO, OmniBus Systems, observes that the potential for automation and efficiency increases in direct proportion to the degree of integration and unification of the working environment. “If a service provider uses a lot of separate systems for managing

“Only human eyes can verify that the content is actually what it says it is.”

JON TRY, DMC



content and transmitting it, there are inevitable duplications of effort and maintenance built into the workflow, and these are multiplied when output to multiple platforms is required.”

**UNIFIED PROCESS.** For Fletcher, the key to managing this proliferation in workload is to introduce technology designed specifically for a multi-output environment, and if you have one system that unifies the entire production process from ingest, through media management, workflow management, asset management, to automation and multi-platform playout, you have complete transparency of access to content, wherever it is in the process. “The efficiencies and savings of this approach are enormous,” he states.

According to the Video Convergence Forum (VCF) – an industry body dedicated to the development and promotion of open interface specifications and consistent business models for the online delivery of video content – a great deal of automation can be achieved, and it believes that automation is essential for success. “Even today, before the market has started scaling up towards its long term potential, there is a great deal of repetitive and routine work involved in setting up and repurposing content for online delivery. A good example is in the area of quality control (QC). This work has traditionally been carried out manually in the linear channel and broadcast world where the number of output formats has been relatively limited.”

The VCF notes, however, that with the advent of online distribution of content, the number of output formats – better termed as output profiles – is growing exponentially. “Each output profile needs to be checked for quality in a wide range of aspects such as



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audio quality, language, continuity etc. Today, each piece of content goes through 10 or 11 iterations of QC during repurposing for a new market. This is obviously commercially unviable if this is done by expensive human resources for tens or hundreds or thousands of output profiles. Also, the QC performed manually in dull, repetitive tasks is often inferior to the quality achieved by machines,” says the Forum.

**MANUAL INTERACTION.** Mike Nann, director of marketing and communications at Digital Rapids, contends that a tremendous amount of automation can be achieved in transforming and delivering the content. This includes automated delivery from the origin to various aggregators and distribution points, including intelligent routing to find the most efficient distribution paths; transforming content to required compression and packaging formats either prior to delivery or upon receipt; conforming needed metadata and supporting resources (additional language tracks, packaging shots, thumbnails, proxies, etc).

He admits that a certain level of manual interaction will continue to be required. “For example, you can have all the automation in the world, but that won’t detect errors such as where a content provider simply sends the wrong content – the right metadata, right package names, etc., but the content itself is wrong, such as a clip from the wrong sporting match, or a news programme instead of concert footage. A quick manual visual confirmation is needed for that.”

He points out that technology also can’t reliably detect a so-called ‘wardrobe malfunction’, so again, some manual review had to happen somewhere along the chain. “Manual interaction may also be needed when errors are automatically detected but can’t be automatically corrected – resolving those errors may require a manual process. But in all of these examples, the manual effort is signifi-

cantly reduced by the overall automation, and largely relates to handling exceptions.”

**COMPANY CULTURE.** Simon Kay, MD of digital content management specialist JCA feels that quite a lot of automation can be achieved, “but unfortunately not all can be. A lot depends on how involved the client wants to get in the process. There is always a need for tests. We’re involved with some sixty to seventy VoD platforms; not many are the same.

Dimitris Papavassiliou, head of digital workflows, Cisco European markets, suggests that such factors are often down to company culture. “It can depend on the level of ‘IP-ification’ in the business,” he observes. “You can take ‘best practices’ from the IT industry, look at systems and processes. We’ve enabled service providers to reduce network traffic by ninety per cent.”

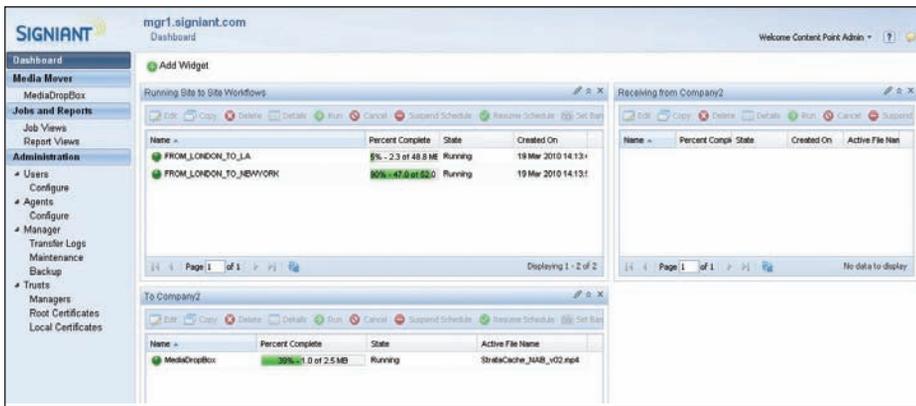
Joe French, CEO and president of Masstech Group, suggests that at this stage of the digital workflow evolution, much more can be achieved with automation. “With the consistent issues of formats and managing and moving content, broadcasters still have far too many manual processes that can be optimised with digital workflows. And as broadcasters become the aggregation point for local content as well as syndication, ad content processes can be complex and lengthy. Digital workflows can automate these processes and be customised to suit staffing requirements for maximum efficiency,” he says.

**SINGLE ASSET.** A mantra of recent times has been to ‘Create, Once, Publish

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JOE FRENCH, MASSTECH





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**RINO PETRICOLA,  
FRONT PORCH  
DIGITAL**



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Everywhere’. How achievable is this aim? What are the cost and workflow benefits of delivering assets in a single format as opposed to separate linear and on-demand? DMC’s Jonathan Try says that as far as content suppliers to the company are concerned, that is exactly what they are able to do. “A single asset delivered to us can be used on a variety of platforms; however we are unable to deliver onwards in a standard format. Whether it is the actual flavour of compression that is used, the number of language tracks or the subtitles, almost every operator requires a different standard for delivery. Our experience is that dealing with a new platform means going

through a specification and testing phase before we settle on a profile that we will deliver to. However once that has been done, the automated process can start and the efficiencies realised.”

ColemSpice’s Rob Kernot suggests that there is no one approach for a service provider to convert from tape-based operations to a Digital Workflow. “The size of the organisation, its market, and its sources of content, will impact the complexity, the approach, the time and the cost for the conversion. Non-linear editing and the ability to automatically handle sourced content in different SD and HD formats on the timeline are essential for

production of the item, elements of which could have been from own sources, e.g. field news gathering, bureau, archive, or from different content owners, e.g. news agencies.”

Rovi’s Adam Powers argues that as broadcasting systems are moving towards file-based workflows and trafficking and automation systems are becoming user friendly software packages, the difference between linear and on-demand is shrinking. “Consumers will likely continue to demand both linear and on-demand not only for the sake of tradition, but because video is consumed a number of different ways at different times and linear and on-demand fill different needs,” he predicts.

**KEY BENEFITS.** For WRN Broadcast’s Travis, the key benefits of delivering in one single format are: Easier file management; Reduced storage costs and simpler workflow. “There is one challenge on this approach,” he

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“Key to workflow and cost benefits is to handle the assets in a single system, using a single master format.”

IAN FLETCHER,  
OMNIBUS SYSTEMS



admits, “the network infrastructure has to be designed to handle high levels of throughput.”

Front Porch Digital’s Petricola sees many benefits to delivering assets from one single format. “First of all, storing content in a single format as opposed to many reduces the need for storage space. Likewise, the use of a single format throughout the workflow (prior to final distribution) facilitates integration, interoperability, automation and exchange while also reducing the need for format-specific equipment. Because the single format is the master format, it is more easily protected, secured, and quality checked throughout the process. From it, multiple formats can be generated depending on usage and destination. Overall, the use of a single format reduces the capex budget, and simplifies management and administration of the end-to-end workflow,” he concludes.

OmniBus Systems’ Fletcher suggests that the key to workflow and cost benefits is to handle the assets in a single system, using a single master format. “The real economies come from working with a single content-handling infrastructure, and using a single master format, from which each output format is spawned automatically for each platform.” OmniBus Systems’ Enterprise Suite ingests content once into its master format, then produces different versions automatically within the same system. “These are different versions in the sense of resolution and bitrates, but also in the sense of being 4:3, widescreen, 1080p24, 780i, and so on. The system will also automatically produce a version of each piece of content customised according to the rules set up by the user: so a version could be produced with promos at either end, or with ads in the middle – whatever the user has set up in the workflow automation module.”

**ECONOMIC VALUE.** Signiant’s Lapolito notes that ‘manufacturing’ one asset as opposed to two makes things twice as expensive and complex. “The reality is that it is not practical for many reasons,” he states. “Broadcast and VOD files are different; Complexity is going up – in addition to linear

and VOD – there is also HD / SD, on-line, mobile – not to mention all the other distribution windows you need to service. Delivering the same asset for linear and VOD eliminates the one big VOD benefit – insertion of promos into the asset. Without the promos, the economic value of distributing VOD files is greatly diminished,” he advises.

thePlatform’s Roberts contends that it is really up to the service provider to determine whether content is delivered via linear delivery or on-demand. “It is far less of a technical issue. From thePlatform’s perspective, we are capable of delivering both. Given that companies need to deliver different versions of the same video to multiple places, the simplest pattern we see emerging is that companies are providing us with very high-resolution mezzanine files.”

transcode should be reduced to a manageable level with the content packaging process becoming the significant factor. Because the packaging process is typically very fast and requires relatively few resources, a reduction by a factor of three to five of overall coding service costs per media item may be achieved.

Digital Rapids’ Nann points out that the ability to deliver assets in a single format significantly reduces the load on network transmission infrastructures between providers and distributors (or between distribution points, such as primary and secondary headends), because the amount of data transfer to deliver the content is significantly less than transmitting multiple variants to accommodate varying formats. “Far more efficient from both a transit cost, timeliness and network requirement standpoint,” he notes.

“The ability to conform to specific format requirements at the receiving end of the B2B distribution chain, as offered by our MediaMesh content delivery system, also eliminates a possible source of errors – the content provider sending the ‘wrong’ format to the distribution point. It also frees the content provider from the



The MediaMesh content delivery system aims to eliminate sources of errors.

“In thePlatform’s management system a mezzanine file can then be easily converted into the multiple formats required to support a variety of devices. Because of our service-oriented-architecture model, we have the ability to deliver video in a robust, reliable and secure manner.”

**DELIVERY CHAIN.** According to the Video Convergence Forum, at some point in the delivery chain the delivery format needs to be matched to the receiver, and there are many considerations as to where is the optimum place to make that format conversion. It suggests that the solution for multiple sources and multiple outputs is a single most common core file base with the largest common set of characteristics that are optimised for performance and video quality playback. The need to

burden of managing lists of all of their recipients’ specific formatting requirements – if a recipient changes their requirements, that can often be handled at the receiving end with little to no effort by the provider.”

**MEDIA LANDSCAPE.** Raoul Cospen, Dalet’s director of marketing, highlights the fact that even though an asset may only have one video track, it may need several different audio and graphic versions. “What we try to do is not only take the metadata and produce for different formats, but use this as a template for our ‘wheel’ approach. This allows different kinds of metadata, such as web links, and multimedia elements to be carried in any video.”

Cisco’s Papavassiliou highlights a reduction in the need for transcoding as a key benefit. “But with device proliferation, there are storage issues which need to be addressed. You have to decide how you optimise the process,” he advises.

“Single format stations can create workflows that convert those formats to the target application without the need to manually record, or process as with a linear feed or on demand,” adds Masstech’s Joe French.

“Network infrastructure has to be designed to handle high levels of throughput.”

DAVE TRAVIS, WRN  
BROADCAST

