

Transforming the Cost and Efficiency of High Quality Media Production by Adopting Simplified and Non-Proprietary Technology

Foreword

The much trumpeted technology ‘convergence’ in broadcast and professional media of the last 15 years has to date yield uncomfortable hybrid solutions which are often far from sanitary in design, difficult to maintain / update and leave operators frustrated. This whitepaper contrasts the proprietary ‘digital islands’ which still dominate a broadcaster’s workflow with the adoption of open technology standards in other industries such as print / publishing and suggests that the time is right for taking a wholehearted approach to IT based production systems. The paper asserts that such an approach provides for a more satisfactory and predictable outcome for operators and support engineers alike.

A news producer recently observed that using the internet he can search several billion media items in 0.06 seconds, edit, personalise and republish the material to multiple platforms in a few minutes but it is so much more slow and painful on the expensive professional production system he uses daily. **Blue Lucy says – it doesn’t have to be like that.** This paper contextualizes the Blue Lucy ethos and the motivation behind the design of our software products.

Summary Context

Despite having better understanding of technologies such as Media Asset Management and File based Workflows broadcasters understandably find it difficult to select and deploy those systems. Some of the problems in deploying IT based systems in complex media environments emanate from the suppliers and the technology they propose but other problems can be attributed to the approach that the broadcasters take to implementing solutions

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This paper will show that with the use of the latest IT technologies and open standards in such systems mean that many of the perceived obstacles to creating file based workflows may be alleviated or even eliminated. Specifically, broadcasters need to move to products which use techniques that are common in other high technology sectors and to try to avoid partial or compromised solutions which will deliver proportionately less benefits than a whole hearted approach.

Philosophy

As high end media production and broadcast move inexorably to digital and file based working so new tools and systems will be required to take better advantage of the IT technology which has so benefited other industries. Experience has shown that merely dressing legacy systems with a layer of new technology is not sufficient to deliver the kind of interconnectivity and efficiency that are essential. Instead a whole new approach to workflow and consequent integration requirements is needed in order to satisfy the growing diversity and complexity of business deliverables in media.

Early attempts at deploying tapeless workflows where “must have” legacy systems have been retained have resulted in solutions in which a number of proprietary single function devices from multiple vendors are forced to communicate through an array of gateways and format converters in order for the workflow to be realised. Thanks to a uniform user interface the impression is created of a smooth operation whereas as in reality, like a duck hurrying across a pond, it is the furious paddling beneath the surface that keeps the system operating and failures and errors inevitably occur, making processes inefficient and unreliable.

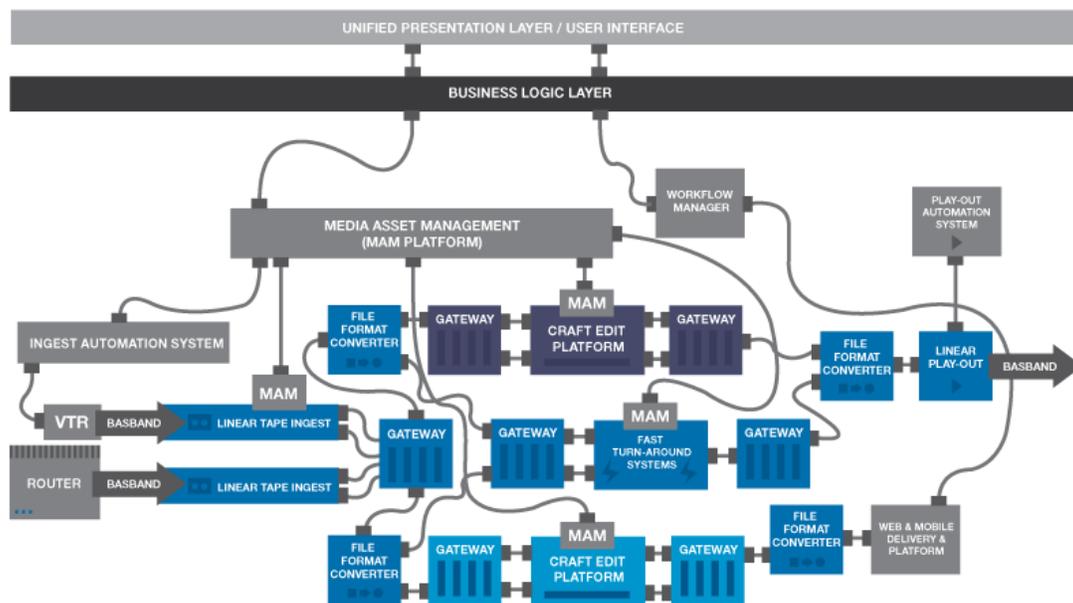


Fig 1. A slick and unified user interface creates the illusion of an efficient system whilst hiding a maze of proprietary single function devices that are expensive to integrate and an ongoing headache to maintain.

History

Broadcast technology has been continuously changing since its inception and until relatively recently was dependent on systems designed exclusively for its evolving requirements. Many of the major broadcasters around the world have been themselves instrumental in the conception of these new developments and have called in technology partners to build the systems that they envisaged. This process made the TV companies and their specialist suppliers strongly inter-dependent and they formed an exclusive club that was difficult for new suppliers to join. Even so, whilst the technology requirements for television were unique and had little use in other industries this worked on the whole quite well. However, one of the downsides to this arrangement was that there was often little connectivity between different suppliers' systems and that meant that the TV companies fell into a situation of "Vendor Lock-in" and were pretty well forced to stay with existing providers, even where there was newer improved technology available elsewhere.

In the 1990s the ability to 'digitise' video became available and was quickly adopted - partly because of its ability to make media copies with little or no loss in quality. Many of the systems designed to achieve this were based on evolving IT innovations but something was missing from the perspective of the wider solution requirements. Whereas by that time the world of commercial computing had been forced by users and even governments to standardise their products so that solutions provided by different manufacturers could connect relatively easily, broadcast technology saw little meaningful progress in that area. Even new components such as video servers, although built utilising standard IT components and creating files, offered very limited interconnectivity options between other vendors' components and so would-be file-based workflows were often interrupted by transfers back to tape making the concept of file based workflows seemed a long way off. From the outside the impression gained was of an industry moving to tapeless technology but in reality the operation of most workflows necessitated hopping from one digital island to another with few common interface options to make life easier.

A New Generation

More recently some broadcast supply companies including Blue Lucy have introduced products and tools such as *Miura* which are able to utilise the latest and best of IT technology whilst offering functionality that is at par or better than can be achieved using legacy systems. In this new world it is a primary objective to make sure that any tool is able to communicate with any other using simple open protocols such as Web Services (e.g. SOAP and /or REST). In many cases this approach ultimately leads to the creation of a simple Service Oriented Architecture (SOA) but without the cost or complexity associated with larger deployments. This approach enables the kind of connectivity and flexibility that characterise mainstream computing and extends the choice of available systems or modules for broadcasters to choose from. Furthermore, these techniques will be easily adaptable in the future as systems and protocols evolve and are well suited to working in the non-linear workflow environment that is currently challenging broadcasters and others; a far cry from the situation pertaining historically in TV production. The new technology also affects the development of software so that the applications can be built using a series of modules that communicate with each other using standard protocols. This means for instance that the Graphical User Interface (GUI) can be easily replaced if required either for improving the user experience or branding applications.

In practice Blue Lucy's products are designed to utilise standard IT conventions as well as conforming to open broadcast standards for the processing, movement and storage of audio and video material. As a system Miura utilises video processing that is carried out entirely in software making the applications inherently more flexible, easy to update and highly scalable. As an example a recent request to support the AVCi100 CODEC in an environment that was running DVCPRO100 was delivered to the client within hours at minimal cost as the Miura architecture enables such modifications to be made in minutes - and remotely if required. Traditional systems might have required the deployment of a complete new ingest component or at the very least a circuit board swap, the potential costs to the customer being over £1,000 per port.

Non-linear workflows

The adoption of more predictable technology will enable media enterprises such as broadcaster to focus on business process and workflow rather than on technical issues. In the past media workflows tended to be compromised by the inability of the diverse systems in a typical workflow to easily exchange essential information and content. In the future technology needs to be seen as the slave to workflow requirements rather than the other way around. Historically media workflows have been largely static and linear in that they mimicked the manual processes of acquiring, processing and delivering content, normally to no more than three variations of playout. *Fig 2* is a typical example:

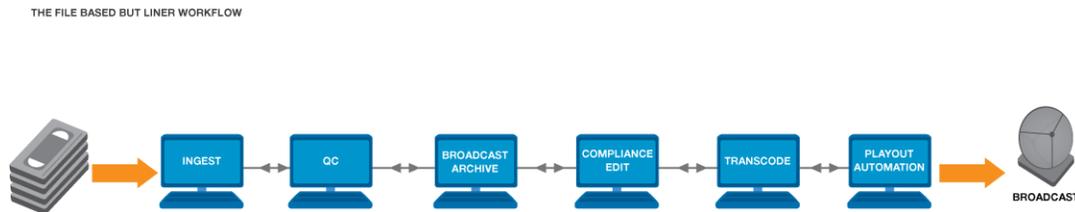


Fig 2. The file based but linear workflow.

As a part of making this workflow "Tapeless" some kind of integration or connectivity between each module must be created. However, increasingly a greater degree of flexibility is required to satisfy ever expanding demands of television for novel formats and delivery mechanisms. Today digital content may be worked on by different teams for different applications making the workflows anything but linear. This in turn has an impact on the technical platforms used, and specifically on how the various applications need to interact with one another. One-to-one integrations work well with linear workflows but limit the flexibility for operators to create new workflows as and when required as application A might be integrated to application B but not to C, D or F. Using universal web services interfaces can make it possible, with little or no customisation, to make communication between any number of applications relatively simple. An illustration of this is shown in Fig. 3 below:

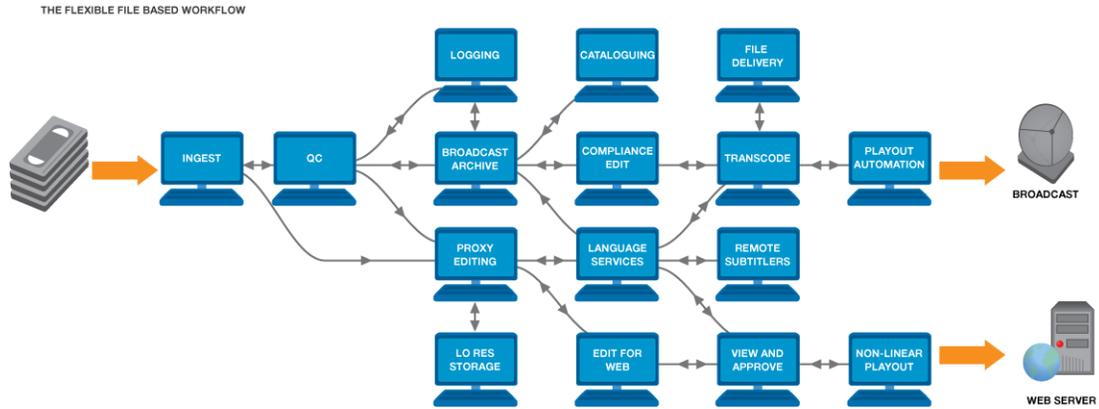


Fig 3. The flexible file based workflow.

One of the major differences shown here is that integration must be provided both horizontally but also vertically in order to allow workflows to be freely adapted to new and changing business deliverables. It is also likely that over time new services will require new or modified workflows and these should be able to be implemented using configuration rather than software customisation which is inevitably expensive and time consuming.

In that context all of the Blue Lucy video processing tools and components are software based, require no proprietary hardware and use completely open standards for video processing and messaging standards. Building a broadcast or professional video production system within a standard IT environment has never been easier, lower cost and low risk. This leads logically to the creation systems such as in the following diagram:



User Experience

As the commercial requirements become more complex so there are more demands placed on operators to adapt to changing workflows highlighting the requirement for more user friendly applications. The solution adopted by Blue Lucy is to provide, as part of the Miura system, a structure that ensures that the user interface is entirely separate to the signal processing application so that the user experience via the GUI is easily customised to suit local conditions or priorities. Access to the core video processing capabilities is through a rich API which uses open standards for messaging. The emphasis for those deploying Blue Lucy solutions can therefore be placed on making the user experience for operators as effective as possible which will in turn help in maximising the efficiency of workflows. In Miura Acquisition Client, shown here, the individual elements of the screen may be customised if the need arises either by Blue Lucy or by third parties who will only need to have web services or high level development capabilities. This user interface follows common trends in interface and operational design; offering a Google style search as well as a tabbed interface as is common for this type of application. All this contrasts with 'traditional' broadcast tools which even now hark back to the technical laboratory ethos and may be inaccessible to all but highly trained operators or engineers.

Conclusion

Modern media enterprises, including broadcasters are under increasing pressure to provide a high degree of flexibility and efficiency in their operations and at a realistic cost. In order to achieve this it is a mandatory requirement to adopt many of the working practices and technologies currently available and delivering such benefits to other industries. This goal is challenging both for users such as broadcasters as well as technology supply companies and involves both technology changes and the re-evaluation of working practices in the light of a changing media landscape. Other industries such as printing and publishing have shown the way and the time is now right for video media enterprises to do the same. If such organisations fail to take up this challenge they are in danger of being substituted by other organisations currently operating in the internet world; these currently have less knowledge of the complexities of high end video media operations but may learn very quickly if a gap in the media market opens up.