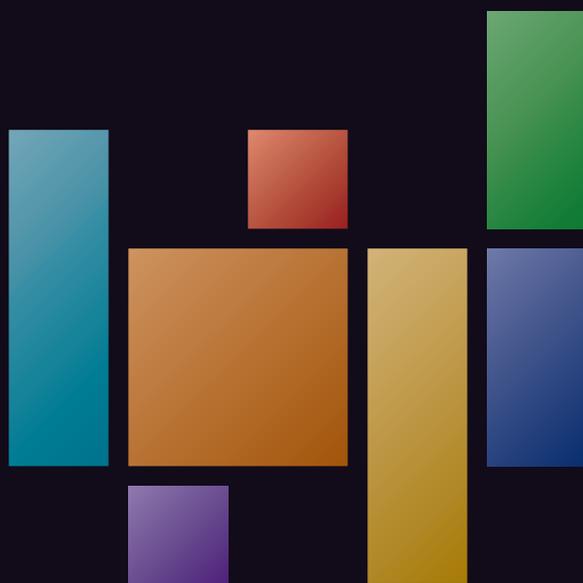


A Business Perspective, White Paper

Media Backbone Conductor
Media Workflow Management Software

Sony Professional



Workflow Management Solution

The challenges posed by file-based workflows

In recent decades, motion picture and television production has been transformed by the replacement of conventional film and tape with digital, file-based tools. Digital immediacy, efficiency and cost savings have irreversibly altered the production landscape. Acquisition, editing, finishing, distribution and archiving have all been revolutionised. The flexibility of working with digital files has liberated producers and directors to explore new creative horizons. And content creators now also ride the Information Technology wave as, following Moore's Law; computers continue to be produced with ever greater power at ever lower prices. Yet, despite indisputable gains, digital, file-based production has overpromised and under-delivered when it comes to workflow.

All too often, production tasks that should be smooth, seamless and automated are actually slow, disjointed and tie up creative people in drudge work. Instead of integration, you get separate digital islands from ingest to archive which communicate in a complex, tightly coupled "Point-to-Point" manner.

- Many of the digital islands don't talk to each other, don't share storage, and use incompatible file formats.
- The first step in getting anything done often involves the copying of assets onto physical media and moving them via sneakernet, which is time-consuming and an unwanted cost.
- Then people on the receiving end immediately begin copying the assets back onto the target system and retyping metadata, resulting in duplicated effort and more inefficiency.
- Even worse is finding that the file was never delivered, or that the recipient was unaware it had arrived – still more inefficiency.
- Point-to-Point solutions have evolved to solve specific

problems, proliferating until there are so many variations in the workflow that adding another creates unpredictable issues for existing processes.

- Managing the current environment and achieving compliance with policies and priorities is a major struggle.
- Billing and cost accounting are substantial challenges. It's often impossible to invoice accurately for valuable resources like storage.
- Finally, there's limited management visibility. It's very difficult to get a clear picture of how the business is operating and how it could be improved.

Overcoming these problems requires a fundamental change to how digital platforms are integrated and content creation workflows are orchestrated.

The Solution

Tired of the issues posed by file-based workflows, many content creators and distributors are looking for a new solution. They seek greater efficiency, lower cost and greater predictability. In effect, they want to bring the digital islands – separate workshops pursuing individual digital crafts – together into one, unified "content factory."

This content factory must remain flexible and adaptable to allow for changes in business direction, new opportunities and equipment replacement cycles. It must improve management visibility over the operation and help to enforce business rules and security procedures. And, of course, it has to make business sense, with a favourable return on investment. These goals are beyond the reach of current facility designs based on traditional integration.

An entirely new approach is required - one that leverages open standards, harnesses the latest IT architectures and focuses directly on improving enterprise workflow efficiency.

To meet these challenges, Sony, a

world leader in digital, file-based production tools, has devised a fresh approach: the Media Backbone™ Conductor. The system combines everything Sony knows about file-based content creation together with advanced off-the-shelf IT tools, to create an integrated platform which is perfectly designed for the media industry.

Sony understands the huge investment in time, money and training that you've devoted to your current media applications, so the Conductor doesn't replace your existing applications; rather it helps these applications to work together more efficiently.

The Media Backbone Conductor streamlines your workflow thanks to five major components:

1. WebMethods; a powerful Service-Oriented Architecture (SOA) middleware for a robust integration platform, provided by the market leader; Software AG of Germany.
2. Interface Adaptors for the devices and applications that make up the content factory.
3. A rule-based workflow engine that orchestrates and optimises all factory processes.
4. A specialised media bus to automate the movement and storage of large media files using a combination of new and existing infrastructures.
5. An optional content management system that keeps track of all elements in the operation.

Informed readers will know that several applications already offer a "workflow management system" in combination with some other primary activities (MAM, transcoding, file acceleration, facility scheduling). However, their functionality is necessarily limited and often focused on just a portion of the required workflow. This typically leads to compromises and workflow fragmentation, with the attendant lack of flexibility, visibility and efficiency.

The Media Backbone Conductor is different. It's designed from the ground up to be a dedicated, comprehensive, enterprise-wide integration and workflow system. By its very nature, the Conductor is open, providing a long list of third-party application interfaces. And, because no two facilities are identical, the Conductor is flexible – allowing you to tailor the solution to your exact needs with far less cost, development time and risk. While the Conductor does include pre-built workflow elements, user interface screens and templates; the best way to describe it is as a comprehensive toolkit.

The genius of SOA

At the heart of the Conductor is Service-Oriented Architecture (SOA). Originally developed by the IT industry to integrate disparate software applications into flexible, adaptable workflow systems, SOA plays a key role in the business operations of most medium and large enterprises. SOA remains popular because it is a clever architectural solution to the problem of integrating dissimilar technologies.

Traditional "tight" integration typically requires each software application to communicate directly with every other application. In the media business, for example, a transcoder may need to interface with central storage, asset management and an editing platform. These multiple connections may also be required for all the other platforms functioning within the enterprise.

When – not if – you need to change an application, you'll need to modify a number of connections – a process which requires careful planning in order to reduce the impact on your business. Customers have told Sony that they routinely spend nearly as much money changing a workflow as they did when creating it – and that they can no longer afford this approach.

In dramatic contrast, the "loose" integration of SOA enables each

application to interact with a single, common middleware layer or broker called the Enterprise Service Bus (ESB). An application does not have to know how to communicate with the other applications. In fact, it doesn't even have to know that the others exist. Each application interfaces only with the Conductor. The Conductor handles the orchestration, approvals and asset management updates, and interfaces with storage and networking. Managing change becomes much easier, greatly reducing cost, time and risk.

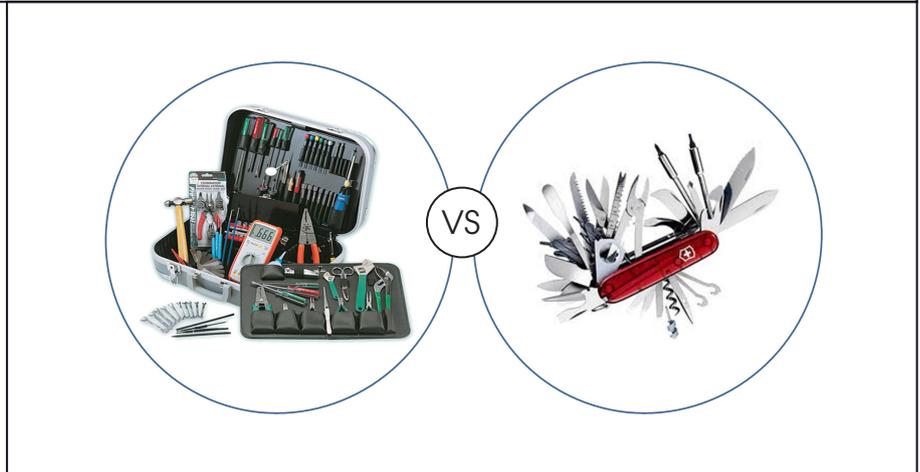
Not only does SOA accommodate each application within a single interface, it operates that interface on an abstraction level to eliminate absolute reliance on a single vendor's equipment. Service Oriented Architecture is built at the "service" level – meaning that instead of calling a specific model of transcoder, the workflow calls the transcoding "service". If you later replace existing transcoders or add transcoders from another vendor, you will not need to rebuild the workflow. You will only need to add adaptors for the new devices and change the business rules – and all your workflows will be updated automatically.

There is one fundamental difference between our industry and those who have already embraced SOA, and that is that we are dealing with very

large files which entail very long transactional times. Sony has design "tuned" the embedded Software AG webMethods platform to better suit media-centric environments. The design includes features such as dynamic resource allocation combined with queue management and job prioritisation. Additionally, the staging and movement of files takes place on the dedicated "media bus" which works in harmony with the orchestration engine and is independent of the file types and storage technologies used.

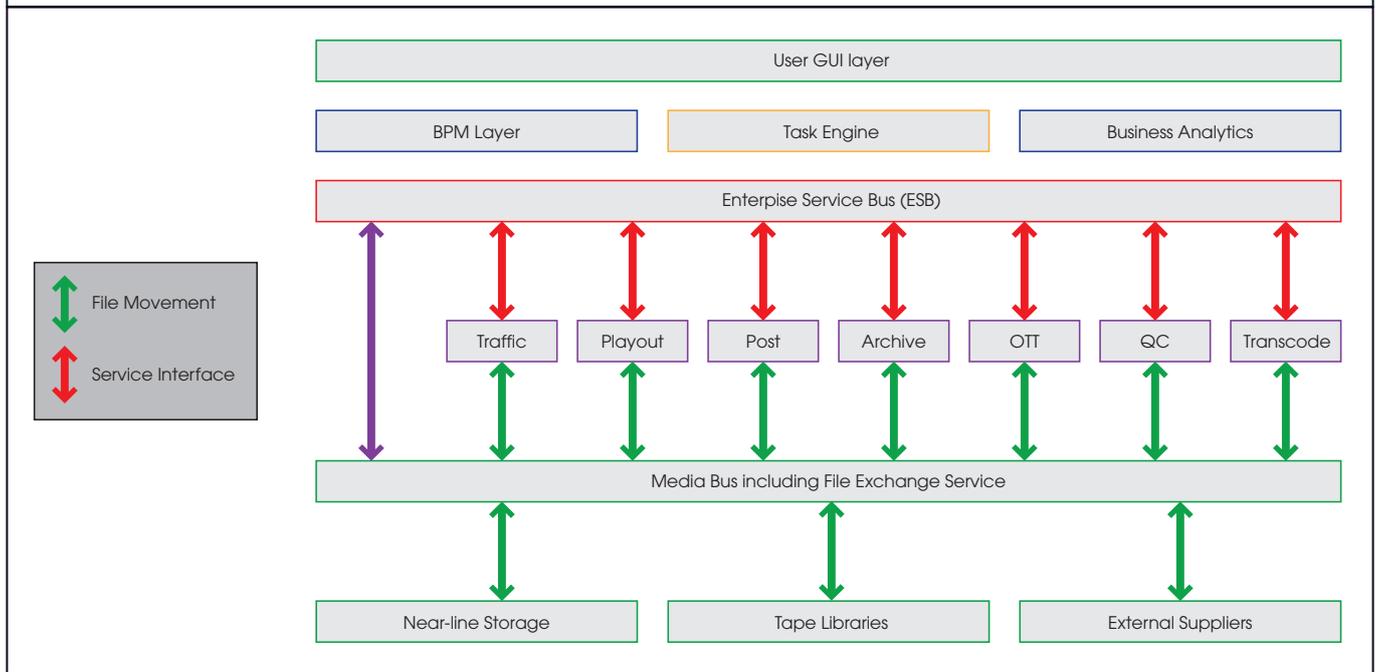
A few brave media companies have pioneered the use of SOA in content creation and distribution – literally building their own solution from scratch on top of commercial SOA software. But this has proven very costly, time-consuming and difficult to support as they are unable to leverage the knowledge that a traditional supplier in this space can offer or capitalise on developments across the wider broadcast industry.

Anyway, let's be honest, most media companies aren't really interested in a move into the software business! With the Media Backbone Conductor, you get the benefits of a robust SOA platform together with the content creation savvy and industry commitment of Sony. It's a combination without equal.



Existing Integration Platforms are "tightly coupled" environments which are hard to modify and update. MBC simplifies integration and existing platforms are "loosely coupled" to deliver greater flexibility and agility.

Media Backbone Conductor: A Business Perspective



Stack view of how the system is connected and orchestrated. Existing digital islands are connected to a common ESB. The workflow engine orchestrates the business processes and works in tandem with the "media bus" to ensure that content is made available to the right people and resources at the right time.

The Business Benefits

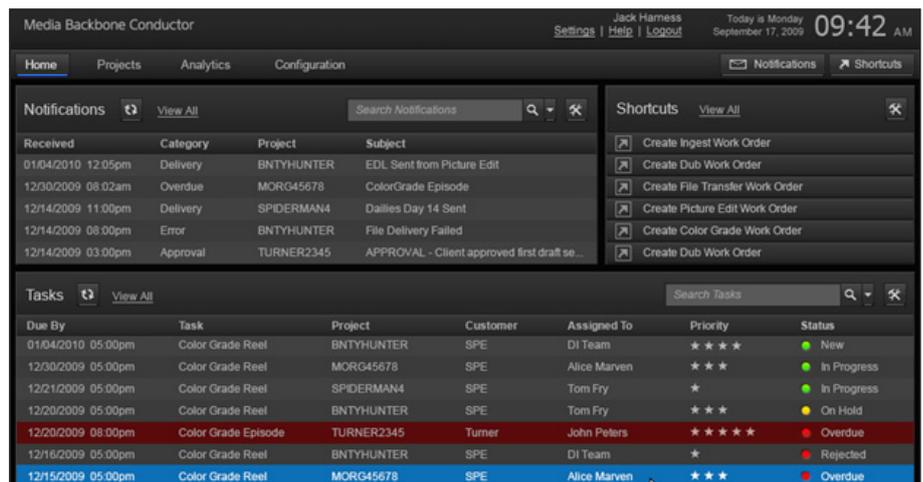
The Media Backbone Conductor has the potential to transform content creation; integrating digital islands and streamlining processes as never before. It takes separate, painstaking craft processes and combines them into a true content factory.

Fast, networked and efficient

in many facilities, a surprising amount of skilled labour is currently devoted to soul-destroying drudge work: copying assets onto physical media every time one application exports content, and later re-copying those assets into the native file format of the next application. That's not only bad for morale; it's a waste of manpower and money that should drop to the bottom line or be devoted to making a better product. The Media Backbone Conductor automates transcoding and facilitates network file transfer for even the most data-intensive media files. So your creative people can get back to what they do best: being creative.

Better communication

As a networked system, the Media Backbone Conductor takes care of the mechanics involved in getting the right file, in the right format, to the right place, at the right time, and letting the right people know about it.



Notifications and task screens keep your staff informed.

Each piece of content is fully documented and arrives at the target workstation with a detailed metadata work order describing what needs to be done, as well as when and how to do it.

Smarter facility management

What's the status of the job? What's the delay? What is your excess capacity? And where are you running short? Traditional, highly fragmented workflows provide little or no visibility into the operation. Without this visibility, it is difficult to know how efficient the operation is, or where

potential bottlenecks or unnecessary steps may occur. Without this information, you're stuck trying to justify costly remedies based on gut feeling alone.

In contrast, the Media Backbone Conductor offers tremendous visibility into operations. Data collection agents and activity logs automatically feed dashboards and data visualisation tools. With Sony's dashboard option or other third-party business intelligence products, dashboards appropriate to each manager can be created, empowering managers to monitor

operations in near real time – and detect trends over days, weeks or months. With this newfound visibility, facilities can refine processes to save time, optimise resource usage and cut costs. With the Conductor, it is easy to simulate new workflows using historical data – then modify existing workflows and deploy new workflows while the system is running. Improvements can be made quickly and with minimal effort whenever the opportunity presents itself.

Seamless content management

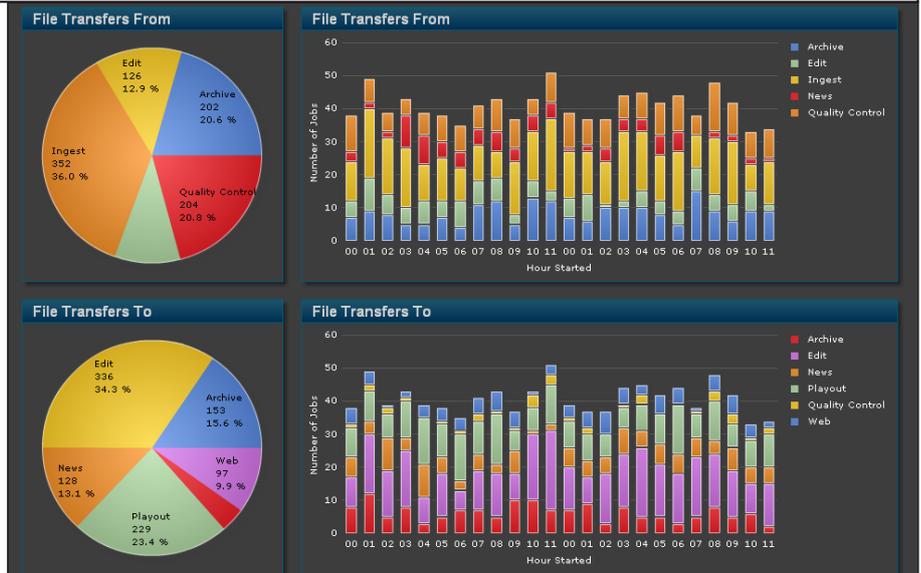
Whether interfacing with an enterprise MAM or Sony’s optional content management module, the Conductor seamlessly merges asset management with a world-class enterprise workflow management and integration platform. Sony’s content management module manages assets and associated metadata through a rich set of tools including viewing, approvals, cuts-only editing, manual quality control and metadata editing. The optional content management module can also serve as a portal into one or more existing MAM and PAM systems located either inside the firewall or anywhere else in the world – in any combination.

Enhanced policy/priority compliance

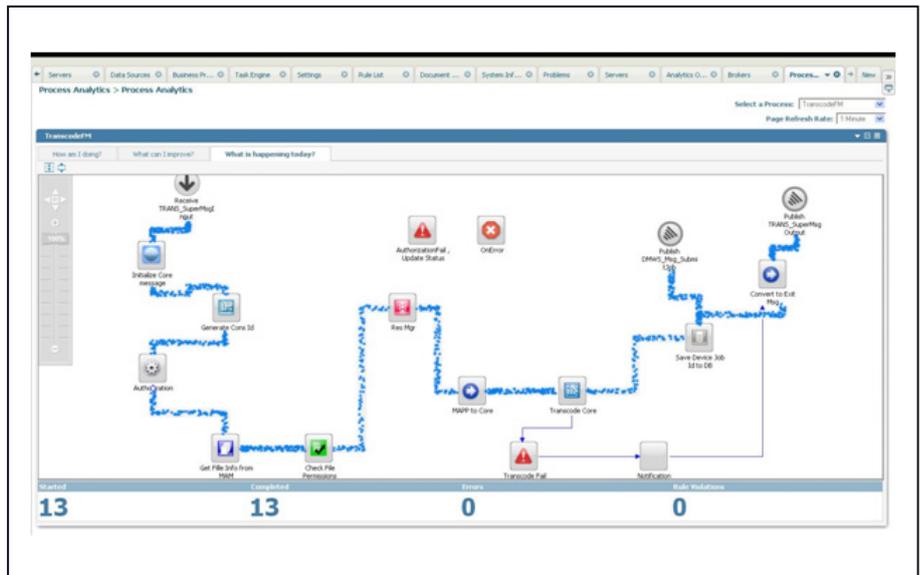
Every business wants its priorities and policies implemented according to management wishes. This reduces risk, fosters predictable outcomes and maximises value. Because each application communicates in real time with the Media Backbone Conductor, the system ensures compliance at each step of the process.

Enhanced security

In media, one crucial business policy is content security. The Conductor makes it much easier to ensure that your facility’s unique security rules are consistently followed. For example, users are assigned roles at the appropriate level (project, customer or facility-wide). This limits the content they can access and what they can do with it. If watermarking is required before content leaves the facility, the



MBC’s dashboards let you know how your platforms are being utilised and allow managers to monitor the efficient operation of your business.



The “ant trail” workflow screen enables you to confirm the current status of a job in near real time, locating bottlenecks as they occur.

appropriate level (project, customer or facility-wide). The combination of user-based access and privileges, full audit trails and automatic conformance to security procedures enhances the protection and monetisation of valuable assets.

Phenomenal scalability

The Media Backbone Conductor is designed with many abstractions and hierarchical structures that dramatically reduce the effort required to add projects, workflows and users. This reduces administrative burdens and avoids the “glass

ceiling” that many systems hit as they’re deployed across the enterprise. Adding a new workflow to the Conductor typically gets easier as scale-out is reached, due to the convenient reuse of common components already developed and integrated into existing workflows.

Interface to business systems

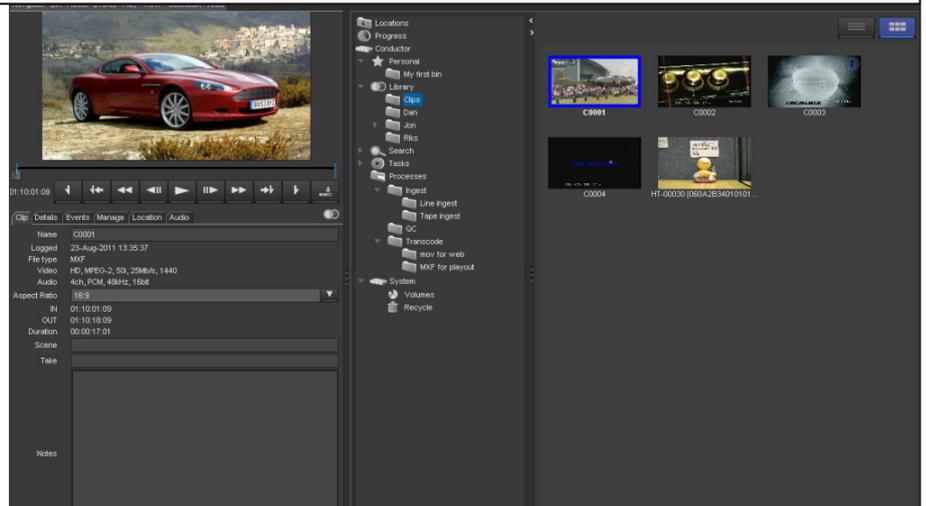
Although the Media Backbone Conductor handles the operational part of a media business, it does not include customer management, billing and scheduling. Realising full value from the Conductor typically requires a direct interface with these business applications. Because the roots of the webMethods SOA platform are in enterprise integration, interface tools already exist for Oracle, SAP and PeopleSoft. Through custom integration, the Conductor can also be directly interfaced with media-specific billing/scheduling systems from companies such as ScheduAll, Xytech and ShowMgr.com. The business systems are responsible for managing the business operations while the Conductor is responsible for accepting tasks from the business system, executing them and reporting back in relation to current status, as well as time and materials consumed.

Superior resource-tracking and billing

Sony's complete audit trail makes it easier to begin billing for services that traditionally could not be substantiated to a customer's satisfaction. For example, with custom integration it is possible to report back to the facility's business system regarding the storage usage (capacity and duration) for each project and customer. This is especially important in post facilities, as storage systems are being called on to support multiple terabytes of uncompressed 4:4:4 HD, plus resolutions of 4K and greater.

Accommodates project-by-project exceptions

With traditional integration, minor differences between various customer and/or project requirements force the creation of additional workflows to accommodate each difference. In a busy facility, the number of workflows (or watch folders) can quickly grow and soon become unmanageable. The Conductor takes a different approach. Instead of hard-coding certain parameters in each workflow, the Conductor reuses a generic



MBC's optional content management interface allows users to search and browse content that is interfacing with MBC. Users can carry out simple editing tasks, create new media and utilise shared services directly from within this GUI.

workflow with reference to customer or project-specific business rules. In this way, the same workflow can be used without modification to meet many different requirements, while ensuring that the correct parameters are always used. If needs change, a single entry in a central location ensures that the new requirements are met by every workflow from that point on. This eliminates the time-consuming and error-prone alternative of modifying each and every workflow the facility uses.

Handles changing business requirements

Change is inevitable. Not all the systems, software and vendors you use today will be the ones you use tomorrow. Compared to traditional workflow integration, the Conductor makes it much easier to add or replace hardware and software as business conditions warrant. Thanks to SOA, the Conductor workflows call applications as "services" to eliminate absolute reliance on a single vendor. The service can use centralised business rules to select one or more specific brands or types to pass the request on to. For example, if a business decision is made to replace existing transcoders or add transcoders from another vendor, you don't need to modify the workflow; you only need to change the business rule.

In this way, the Conductor minimises time to market and implementation costs to accommodate variant workflows or additional resources. Thanks to the Conductor, new business opportunities that previously could not be pursued are suddenly within reach.

Supports external vendors and partners

Sony understands your need to collaborate with external suppliers and other vendors in the production ecosystem. With the Conductor, you can construct external portals where collaborating businesses can receive instructions and elements, update progress and ultimately deliver the finished elements, metadata and business information. In this way, facilities can collaborate easily, use cloud-based services – or offer their own.

Implementation

Sony Professional has been delivering tapeless solutions for over a decade. We have a large independent systems integration business that delivers best of breed solutions tailored to customer needs, whether they are based on a Sony Solution or a solution from one of our strategic partners. Sony's SI division is able to take your project from concept through to delivery and offer you further peace of mind with a

customised multi-year support programme.

Sony recognises that the successful implementation of any project requires that your most important stakeholders; your staff, are fully engaged and comfortable with the new system. To this end, Sony is able to support you in the process of change management and offer system training for users and administrators alike.

Integration of a platform like the Media Backbone Conductor can be achieved in many ways. Very few clients have the luxury of starting again with a greenfield site, so customers with existing infrastructure will either start the project on the back of a specific platform renewal or upgrade program, where they can start to integrate the new platform into the old, using the Conductor. From this point on, the Conductor can be migrated across the rest of the enterprise in a phased manner, which reduces the risks associated with complex project delivery and reduces the need for any major “big bang” investment.

For clients who recognise the inherent benefits of a SOA platform but are unsure where to start the integration, Sony will consult with you and your teams and begin an examination of your current operation. You can share your concerns and we will document your existing workflows. At this point the “low hanging fruit” – those parts of the business where changes are most immediately needed and the value of improvement is highest – should be fairly obvious. Focusing on a few of these areas will deliver big gains at reduced cost and risk. As staff become familiar with the Conductor, other problem areas can be addressed using a budget-friendly, phased approach.

Incorporating the Conductor into facility workflows will transform procedures, job responsibilities and management visibility over the operation. This is best handled proactively, by engaging change management practitioners, who will work with key players and stakeholders to guide the organisation through the transition, while maximising cooperation and buy-in.

Conclusion

Managing the operations of today’s broadcasters, content creators and post facilities has become increasingly complex – with more formats, more financial constraints and less margin for error. Yet, at the same time, there are more new opportunities to monetise assets than ever before. Sony Media Backbone Conductor provides the solution – transforming workflow and uniting disparate digital islands into a single, networked system.

The Conductor provides the business and process management foundation to efficiently drive complex workflows while providing superior management visibility and control. This is the “content factory”, fully realised and available today.

Sony’s Media Backbone Conductor: file-based workflows on which you can build a more agile and efficient business.

At Sony Professional we believe
images have immeasurable power

Images nurture life
connect cultures
deliver justice
inspire education
energise entertainment
liberate imagination
capture history
even promote peace

An image can do so much more

We use the power of images to
increase business value

We turn images into assets

This is Visual Wealth

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