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# Papermule Workflow

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## Workflow and Asset Management Software

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*Papermule Workflow - the power to  
specify adaptive and responsive  
workflows that let the business  
manage production problems in a  
resilient way.*

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# Papermule Workflow

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## The Workflow and Digital Asset Management Solution

Papermule *Workflow* has been designed to provide the asset management and workflow management facilities required to automate pre-media content production from start to finish. *Workflow* helps organisations automate and optimise their business processes, giving them the opportunity to increase productivity and reduce errors and costs.

At the heart of *Workflow* is a full Digital Asset Management (DAM) system for storing digital

*The system has a clean design and modularity that makes it easily configured – to integrate with third-party software and to accommodate business change.*

content in a secure environment, strengthening an organisation's ability to manage, re-use and access its content.

Coupled to the DAM is Workflow management (WM) software that can be configured to design and implement automated production workflows. With strong reporting and audit facilities, Papermule *Workflow* gives its customers a cost effective tool for automating and managing pre-media production.

## Integrate and automate

### Workflow management and automation

*Workflow* combines asset and workflow management functionality to create a fully integrated system for automating media production. Automated workflows are defined by representing business logic as events, processes, and specifying which processes follow which events.



As actions happen or status changes, an Event Manager triggers and manages progression to the next step in production. *Workflow* manages every production task, passing commands, content and parameters to and from multiple processes to coordinate workflow execution and bind individual systems in to a managed whole. For example, an artwork element arriving at 'finished' status might trigger generation of a proof sheet, which in turn initiates a customer approval process. The 'invisible hands' of *Workflow* smoothly manage the flow from one task to another.

Error conditions can be modelled in advance and represented in the business logic, ensuring that mistakes are caught and handled. The result is the power to specify adaptive and responsive workflows that let the business manage production problems in a resilient way. Manually intensive processes can be automated, reducing the risk of human error and bringing the organisation cost savings and greater productivity as repetitive tasks are automated, allowing workers time to be more profitably used. Technically, a workflow is

*...reducing the risk of human error and bringing the organisation cost savings and greater productivity...*

defined and held in configurable XML files that are easy to change and update, keeping the system adaptable to change. A modular design ensures that *Workflow* maintains a clear separation of concerns between the 'when' and the 'how' of the business logic. This means the system is easily re-configured to adapt for business change.

### **Integrate tools to create a production framework**

Papermule Workflow integrates the individual systems and tools used for specific creative and production tasks into a single production framework. As individual production processes are performed, the Event

Manager invokes third-party software tools at the workflow steps where they are needed.

This design means that Papermule's technology cleanly combines disparate systems in to a whole without the compatibility issues commonly associated with integrating third-party products.

Software is easily integrated, be it open source or industry vendor tools like Adobe® InDesign®, QuarkXpress®, or a pre-flighting tool like OneVision's Asura.



As requirements and production processes change, then this loosely bound integration model has the added advantage that Papermule's technology can gracefully adapt to change.

### Collaborative working across boundaries

Pre-media production often crosses organisational and departmental boundaries, bringing together multiple teams and skills from different

organisations and departments to create content and assure production quality. .

Collaborative workflows are easily configured and set up, with each actor (person or system) in the

chain delivered the data they need to perform their task. After the task is completed, the data is picked up and handed on to the next actor in the chain. For collaborative tasks that involve third parties, like proofing workflows, Papermule's *Remote Portal* product can be added to *Workflow* to provide dedicated functionality for these processes. *Remote Portal* is Web-based, letting users work in a browser interface that is easily customised to

*Papermule Workflow fully supports collaborative working by its ability to coordinate individual business processes in to managed workflows.*

integrate with the customer's intranet and branding.

### Interoperable, scalable, flexible

Papermule's technology is interoperable and scalable. The client is thin and platform independent, running on Mac or PC. The server runs on Solaris or Linux, database technology from Oracle, Sybase, or PostgreSQL and J2EE for enterprise scalability and strength. XML and AdsML industry-

standard messaging is used for interoperable import-export of data between systems. Industry standards for data formats for images, textual content and meta data, are supported, and a wide range of data

conversion utilities can be used to handle proprietary formats.

A loosely coupled integration model means integration with third-party software is flexible and can be accommodated by command line, over HTTP and 'hot folder' options. A generic model and flexible database schema makes the system easily configurable to publisher-specific workflows



and capable of scaling and handling change over time.

### Secure

Workflow provides the levels of reliability and security that are critical to any system to which data is entrusted. System access and user security is assured by an access control framework that authenticates users on log-on and maintains user identity throughout their session. Access rights are governed by a user group hierarchy with permissions inherited down the hierarchy. User group membership determines what an individual user is able to see and controls their read/write access; permissions are checked whenever a user attempts to access data or perform a function for safety. The user group model is robust and easy to maintain: system access for large groups of user can be revised at the click of a mouse.

Beneath, Papermule *Workflow* is built on proven and robust technologies. Client access is via secure Web-based access. At the Server level, Solaris or Linux operating systems, Java

and proven relational technology provide a robust environment. RDBMS constraints are extensively used to safeguard against the risk of database corruption; Schema normalization removes redundant data and the risk of duplicate data becoming out of sync.

### Asset management

#### Digital Asset Management

Assets need to be associated with additional information or 'meta data' that describes the asset to support their production and use. The possible range of this information is huge – from information describing characteristics of the asset itself, such as its

*Meta data about a digital asset is captured from the moment it enters the system, creating a context that accurately records important facts about the content and supports its re-use and archiving.*

provenance or keywords to support indexing and search, through to associated information used to guide the production process itself. For example, to support the production of advertisement content, information from the advert's associated booking is needed.

From the moment a digital asset enters the production workflow, *Workflow* begins to collect the meta data information needed to



support the production process. A history of the asset's production and use is built and maintained, creating a context that accurately records important facts about the content and supports its re-use and archiving.

For those production environments where associated meta data is not certain to arrive at the same time as the asset, it will need to be linked to the asset when it is available.

*Workflow* provides rich support for

automated and manual copy linking based on matching fielded data. For advertising workflows, Papermule's *Copy Chasing* product can be added to *Workflow* to provide functionality dedicated to chasing late copy.

*To add dedicated functionality for remote approval and copy chasing, Papermule's Remote Portal and Copy Chasing products can be combined with Workflow to create a powerful package*

### Asset storage

At the heart of *Workflow* is a Digital Asset Management (DAM) system that ensures assets are persisted in a secure and managed environment. The complexity of pre-media production is often such that an individual asset has multiple digital files associated with it, different 'aspects' of the asset that are used for different purposes in production. For example, a PDF used for customer proofing

while its EPSF is used for page composition. *Workflow* is easily configurable to support each customer's requirements for asset maintenance and delivery to maintain the integrity and quality of stored assets: files are shared sharing across assets to avoid unnecessary data duplication; it is easily scheduled to generate file 'aspects' as they are needed for production, and to run clean-up operations after production has finished.

### Context sensitive data delivery

Digital content for a production job may consist of multiple components - logos, text, artwork, images – that need to be associated with one another and

delivered to specific process points to support production. Depending on the purpose of a specific production process, different combinations of components in varying file formats will need to be provided to enable process execution. For example, an 'Approval' purpose will require a high resolution PDF of the content delivered to the customer for approval.



*Workflow* lets users define the workflows needed to execute these purposes and ensures that the content is assembled and delivered to users or their software applications in the right format exactly where it is needed. To illustrate by continuing the above example, once production has finished a proof copy is generated and delivered to the customer, initiating an 'Approval' workflow.

## Control

### Quality

The early identification and correction of faults is key to improving quality and reducing costs. With *Workflow*, quality cycles are automated and embedded in the workflow to assure quality and manage the risk of faulty content going to publication. For example, content validation and pre-flighting tasks can be configured directly in to the workflow and error handling programmed so faulty content and error analysis is delivered to the user for correction.

Where quality measures require human intervention, such as content approval or

proofing, then review processes can be explicitly added to the workflow, the system generating, gathering, and delivering the necessary content direct to the necessary users.

### Prioritisation

For effective working users need to be able to allocate and prioritise tasks by deadline and local work practices. *Workflow* lets them do both and gives team leaders the flexibility to allocate work at team and individual user levels. Individually, users can view their

assigned tasks by deadline, allowing them to easily identify and prioritise urgent work.

At the process level, workflow queues are load balanced and are by default

handled in the standard first-in-last-out manner. Further prioritisation can be applied manually or automatically to allow urgent jobs to advance in the queue. For example, prioritisation by deadline.

### Adapt for change

As a business evolves and requirements change, production systems must adapt and keep pace with the change. Making changes,

*Workflow cleanly combines multiple systems to create a unified production environment with a single point of control.*



updates and upgrades to large systems is a costly and complex undertaking. To counter this burden, Papermule's *Workflow* is designed around a generic model that has the pliancy to adjust and be customised as workflows evolve. Workflow modernization can be achieved in a straightforward manner by simply updating the XML configuration files where they are defined. Altering the database schema to support additional meta data is straightforward and, again, easily configured.

## Report

*Workflow* comes with comprehensive reporting facilities to help users work effectively. Pre-defined reports for common tasks come as standard, and the system is readily configured to provide tailored reporting matched to the customer's workflows. For viewing by users, report data can either be presented in its entirety or pre-processed to give customised reporting. Reports can be viewed directly from *Workflow* or from third-party software applications like Business Objects as required.

*The system has a clean design and modularity that makes it easily configured – to integrate with third-party software and to accommodate business change.*

## Find the data you need to work

As an asset moves through production users need ready access to the information they need to monitor production and resolve any issues as they arise. Data needs to be structured and presented in a way that is intuitive to users who must be able to find and then navigate straight to that data.

*Workflow* gives users just this. The system is designed for easy customisation to ensure

that the data and reporting users need to perform their work is at their fingertips on demand. Custom views on to the data are easily created and updated to give users the level of granularity they needed

to support specific production processes and working practices. When users need to locate data manually, intuitive folder-based hierarchies are easily configured to support this.

## Monitor production status

Tracking production status is essential to ensure deadlines are met and any errors are identified and corrected as soon as possible.



In our system, a workflow is represented as a sequence of statuses through which content passes as it is produced. Progression along the workflow is triggered by changes in status, making an asset's status a reliable indicator of where it is in the workflow and what production work is still to be done. Workflow combines status with deadlines to provide reporting and analysis of your system at any moment in time. With all this power in place, reports on individual or groups of assets can be easily created, in either detail or summary form.

### **Examine throughput and performance**

Accurate measurement of production and throughput times helps managers control and

monitor production and provides a valuable source of performance indicators for process monitoring and quality improvement.

In addition to its standard reports, Papermule's *Workflow* is easily configured to provide time and activity based reporting tailored to the user's workflow. Temporal information can be combined with other customer data to produce customised reports such as how many jobs were run for a customer last Sunday for a given publication. For finer grained performance analysis, activity based reports can be generated, either from a job-centric or user-centric perspective.



## Key features

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### Server

- Solaris and Linux (RedHat)
- Supports Sybase, Oracle, PostgreSQL
- Standard J2EE application server including Tomcat
- Standard SQL92 via JDBC

### Client

- Java-enabled web browser - no client software to install
- Platform independent (Mac & PC)
- Enables local and remote access and remote working
- Multi-lingual support
- Easily customised User Interface
- Login based access control

### Asset Management

- Extensible schema for meta data
- Easy asset searching and browsing using Virtual Folders
- Full UTF-8 data support
- Non-unique name support
- Link assets to form jobs, runs and lifts
- Track assets in multiple workflows by status

### Storage

- Shared duplicate files optimises storage
- Platform independent storage format
- Referential integrity between RDBMS and file storage

### Integration

- Integrate existing software tools in a single managed workflow
- Centralised workflow control
- Managed transition between process steps

### Workflow Automation

- Event driven processes
- Folder and memory based queues
- Deadline driven processing
- Configure modular workflows
- Full logging and audit trails

### Reporting

- Standard reports out-of-the-box
- Easily configured custom reporting, both detailed and summary
- Examine performance in real time and historically
- Export to Excel
- Easily integrate with Crystal and J Reports