Automating workflows: Go broad or go deep?
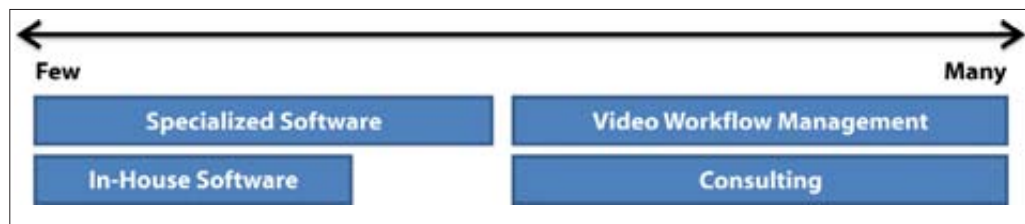

Fig 1: Number of content elements processed

Workflow Opinion

By John Pallett,
Telestream, Inc,
Nevada City, California

Whether reducing costs through workflow automation or adding support for new distribution channels, video operations managers are faced with an important choice: build infrastructure optimised around a few file-based workflows, or build a more flexible infrastructure to meet changing workflow requirements.

Today's file-based workflow automation problems are generally addressed by four approaches: utilise in-house software development; hire consultants/system integrators; purchase specialised software products to solve specific, immediate problems; implement generalised video workflow products to solve problems in a broader environment.

Workflows are composed of discrete tasks (file copying or format conversion) stitched together into a process. Individual tasks and the process itself may be candidates for automation. The best approach may not be the same for each task or process.

When choosing a strategy, consider five aspects:
● How many content elements are processed, and how often? Some workflows process thousands of elements weekly, and others only a few. Content volume has a significant impact on the strategy.
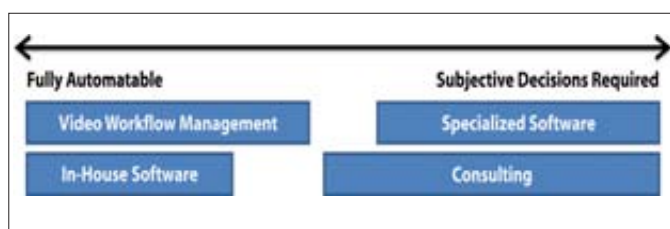

Fig 2: Subjective requirements

● Can I fully automate the workflow, or do subjective tasks exist as part of the process? Many workflows can be fully automated. For example, sorting content by video properties and transcoding and delivering content are ideal candidates for automation. However, certain subjective aspects of a workflow preclude automation: determination of content suitability, for example.

● Does the workflow interact with others? Organisations often automate common steps including, delivery, processing and creation. However, some steps may require interaction with other workflows: a content element may be analysed, then delivered to one of many processes based upon its quality, its importance, and whether it is a substitute for other content.
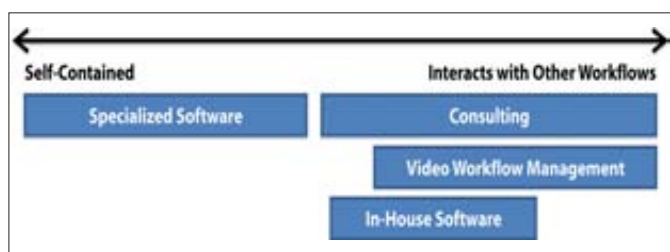

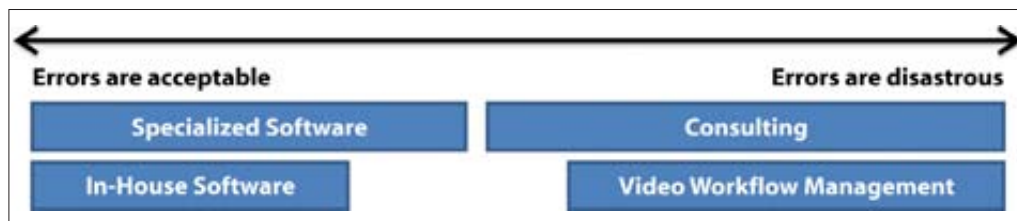**Fig 3: Interactions with other workflows**

Fig 4: Sensitivity to errors

● How sensitive is the workflow to errors? Some workflows are highly sensitive to error — the misplacement of a spot can significantly impact revenue. Conversely, trimming a rough highlight allows ample room for error. It is important to understand what types of errors are likely, and which are most acceptable.

● How specialised is the workflow? This relates to both the overall process and specific tasks. Some steps — such as metadata-based decisions — may be unique to an organisation. Specialised software may be required.

Common workflows execute generic tasks (transcoding, reviewing, editing) but implement a unique process. These workflows benefit from generic task software within a flexible process design framework; enabling a process to be uniquely designed, maintaining cost-effectiveness with reusable components.

Organisation considerations

Organisational attributes should also be considered:
● How many workflows could be automated? News and video service organisations typically have a variety of workflows — due to the demands of their generated content or the demands of their clients. In contrast, content aggregators and Web providers may implement a few high-volume workflows.

● How often do workflows change? Similarly, an organisation that changes workflows frequently must have a flexible automation strategy.

● How large is the team? The more people involved with a workflow, the more important process enforcement and status reporting becomes.

● How computer-literate is the team? When implementing a workflow requiring operator data entry and job monitoring, computer literacy must be considered.

For example, a given operator may be capable of placing a tape in a deck, but may not be trained to use NLEs. Work performed by operators should provide an effective interface to minimise errors.

Does the team include software engineers? Some organisations don't have software engineers; others have an entire staff to write robust, reliable applications. Availability of in-house development significantly impacts the options available.

Potential strategies

In-house teams may have skills to solve any problem, but they're resource-constrained. Software engineers are expensive, and deployment and maintenance of internal solutions consumes a large chunk of the software development cycle. As a result, software to perform individual tasks is rarely implemented in-house, with the exception of organisations with large engineering teams. In-house systems to automate processes are more common.

Consulting companies offer an attractive compromise between in-house and off-the-shelf solutions. Many consulting companies offer process-management platforms that integrate with third-party products to perform specific process steps, leveraging technology, while (budget permitting) allowing customisation to meet specialised requirements.

Two key considerations relate to the maintenance and changes. Workflow changes typically generate more consulting fees. Unless the solution enables process customisation, changing requirements quickly expose limitations.

Task-oriented applications can perform one step in a workflow. Some solutions also implement a complete, specialised workflow from start to finish (for example, preparing media for a distribution channel).

Specialised solutions often promise cost-effective performance of a single workflow. But software that automates a single task may not integrate with process control or may require manual steps to achieve integration. Specialised solutions may not allow adequate room for growth.

Generalised software platforms are typically a suite of generic tasks stitched together using flexible workflow-design tools. Out-of-the-box asset management systems and transcoding solutions are examples. These solutions are flexible, but require time to fully explore and master. For specialised workflows, they may not perform as required for certain tasks: a trimming operation that does exactly
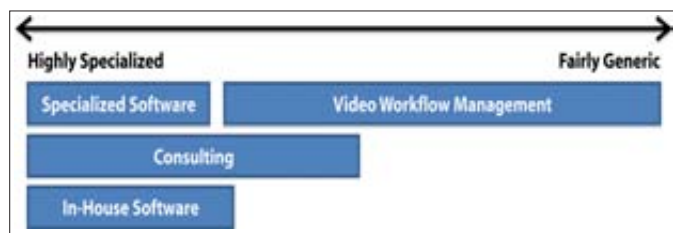
Fig 5: Specialised workflows

Fig 6: How many workflows need automating? How frequently do workflows change?

In conclusion, there is no 'one size fits all' strategy for every organisation, for every workflow. Selecting the right strategy has significant ramifications for the organisation, and choices must be properly evaluated. Using this framework, a general indication of what strategy is appropriate for an organisation can be achieved.

what is required may require custom engineering to integrate with the solution.

Selecting a strategy

The characteristics of the workflow and the organisation are the most important part of choosing how to automate workflows.

When a large number of elements are being processed, process automation software is essential simply to track the files being processed. Depending upon the tasks performed, high content volume may require multiple servers (see Fig 1).

If a workflow requires operators to make subjective decisions, a user interface must enable those decisions. Such interfaces typically present a higher development cost than simply automating common tasks; making them less attractive for in-house development (see Fig 2).

If a workflow interacts heavily with others — for example, if video files generated during capture are repurposed on the web, saved to an archive, and immediately edited — more integration with third-party systems is likely required. In this case, specialised software solutions probably are not appropriate (see Fig 3).

Errors are more likely when the process a) requires manual intervention, b) is not fully redundant, or c) is not self-correcting. Errors can be reduced through process design: integrating an automated quality-control check after performing a task, for example. This is best accomplished using consulting or flexible workflow management software (see Fig 4).

Although workflow management solutions offer custom metadata schemas, formats, and flexible process design tools, they often do not have the 'niche' interfaces required for highly-specialised tasks. That said, most workflow steps and processes can be represented by video workflow management software, making it the most cost effective solution (see Fig 5).

How many workflows need automating? How frequently do workflows change?

When multiple workflows can be automated, the cost savings quickly mount. In fact, many companies buy workflow management solutions to automate one workflow, then use the same system to automate others. Alternatively, in-house development allows you to leverage your assets repeatedly, increas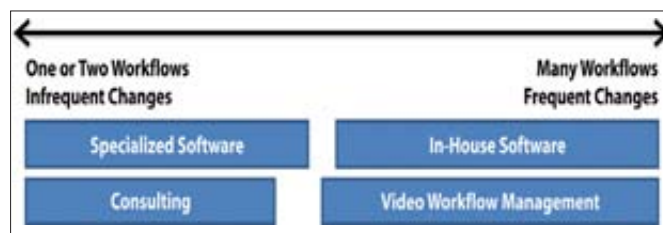ing your engineering ROI (see Fig 6).