

Best practices in server-based newsrooms



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Since 2001, **Kane**, a market research company based in Paris has developed a series of detailed reports on **Server-based News** operations and **Media Asset Management** systems in the broadcast sector. These studies, updated twice yearly, are based on several hundreds of site visits and meetings with leading broadcasters and manufacturers. They analyze and track developments in functionality, best-practice and ROI, from both the broadcaster and the manufacturer viewpoint, and provide a strong basis for carrying out detailed evaluations of news and production solutions, especially those which bring together several components such as Media Asset Management, editing and storage, NRCS, automation, graphics, and networking.

Introduction

Best Practice Analysis

Kane has carried out extensive research among broadcasters and manufacturers worldwide and has compiled a digest of Best Practices for digital news production.

These fall into five categories:

- Ingest and cataloguing
- Production
- Archiving
- Playout and distribution
- Integration and security

Ingest and cataloguing

Best-practice ingest requires a number of features in order to capture live feeds from a variety of agencies with as high degree of automation as possible. These include scheduled as well as “crash” records, segmentation of agency feeds into individual stories. The ability to use LAN and WAN technologies are all notable features. There are considerable potential savings to be realized by replacing a legacy video distribution system with an IP-Based WAN.

Streaming or chunking increases the speed of processing by allowing breaking news to begin to be edited even before transmission of rushes is over.

Automatic indexing addresses the high cost of human cataloguing and allows a more efficient archiving process, although a degree of manual indexing is unavoidable. A thesaurus can take time for an archivist to build, maintain and use, and many broadcasters do without one; but a “keep it simple” thesaurus is extremely effective in certain cases to enhance search efficiency and speed. Another feature is still barely present among broadcasters although journalists have long asked for it: to index a video with the text of the voice over.

Table 1: Ingest and cataloguing

Category	Best Practice Functionality	Detail	Impact
Ingest	Scheduling of live feeds	The ability to schedule in advance and automate the ingest of live feeds at known times	Productivity (reduces the cost of 24x7 ingest)
Ingest	Live ingest segmentation	The ability to segment incoming feeds automatically (can depend on agency formats)	Productivity (aids navigation, reduces processing time)
Ingest	Reception of incoming video feeds via IP	Ingest via data feed rather than as video. Can depend on the server's input protocols and formats.	Enhanced news coverage, flexibility of feeding, and speed of processing
Ingest	Ingest of multiple feeds directly to online storage	Depends on server capacity and ingest feature	Productivity, speed of processing, multiple concurrent access
Ingest	Faster than real time ingest	Ability to ingest video and record it onto disk at faster than real time. Can depend on network bandwidth and server processing	Speed of processing
Ingest	Streaming or chunking	Ability to start editing video before ingest is finished	Speed and productivity
Ingest	IT ingest	PCMCIA or other direct/quick IT ingest	Speed
Cataloguing	Manually prepared but assisted by indexing tools	Closed caption OCR, scene change detection, speech-to-text, face detection	Speed and productivity
Cataloguing	Thesaurus/controlled vocabulary	Allows a consistent approach to taxonomy, naming and metadata capture by defining word choices and definitions	
Cataloguing	Script/voice over as metadata for video	Allows the inclusion of intro and voiceover scripts as metadata, and thus their use as indexing and navigation aids. Requires workflow and and script interface between NRCS and DAM software	

Production

New technical architectures based on networked storage bring to all journalists (at last!) the ability to share all media. An appropriate low-resolution capability makes this perfectly possible from the field or from remote locations, and in addition allows other departments to browse media from a standard workstation. Bandwidth is an issue for large enterprises, and cost for small ones. Dual or triple media databases (i.e. high resolution, low resolution 1 for editing, low resolution 2 for browsing) add complexity, and can be hard to keep synchronized especially for late-breaking material.

Special effects are generally simple in news, but some are necessary for legal reasons, such as mosaics for concealing identities. Multi-skilling (especially journalist editing) may be considered as "best practice," as it provides additional coverage capabilities, and an increase in production capability in the case of breaking news. 60% of newsrooms according to our report are practicing journalist editing. A smaller proportion (20%) create and record voice-overs as part of browse-resolution editing.

Graphics are crucial to make news understandable. Creating a graphic is largely an editorial process rather than a production one, which is why template-based graphics (where journalist can choose a graphic style from a catalogue) and simulation tools are so important.

Table 2: Production

Category	Best Practice Functionality	Detail	Impact
Storage	Shared media, central repository	"Ingest once, use many times." All users have access to a central store. Depends on an appropriate network/disk array and adequate server capacity to handle multiple concurrent video data flows	Parallel workflow: speed and productivity
Storage	Remote access	Allows access to media from outside via IT methods	News coverage and speed
Storage	Synchronisation between low and high resolution through clip generation	Problems occur when rushes/sources video are cut directly on edit workstation because of urgency, bypassing central ingest. A clip generation process must create low res versions of finished items for visualisation	Efficiency in the validation process
Editing	Advanced editing for news	Transitions, effects and other "craft" edit capabilities on a networked NLE	Enhanced creative freedom, house style, rapid processing of shared material
Browse	Low-res browsing	Automatic browse version encoding/transcoding to provide low res media access across the enterprise	Workflow efficiency inside and outside the news department
Browse	Browse editing on the journalist's desktop	Shotlisting and simple editing at low resolution	Enhanced newsroom productivity and coverage
Browse	Voice-over creation and recording at browse resolution	Ability for browse editor to manage multiple audio tracks, audio effects such as cross-fades, and ingest/conforming of voice-over commentary	
Graphics	Templated Graphics	Journalists can create graphics in house style using a system of templated graphics into which specific data is filled	Speed, productivity, improvement in news presentation and comprehensibility
Graphics	Automated captions and subtitles with preview	Text drawn from NRCS is formatted as on-screen graphics using templates; is previewable at the workstation; and played out by the automation system	

Archive

The advent of mass storage on data libraries or on disk arrays accentuates the need for a highly efficient search engine capable of dealing with hundreds of thousand of items with a high level of performance. Many of the best engines were developed for Internet Search Portals, and mark a true convergence between the Internet and Broadcasting.

Best-practice content management in broadcast requires the concept of a “container” which allows broadcasters to group assets in many formats within the same “folder;” not just video and audio tracks, but attached scripts and wires, and other related audio, graphics, animation, and photos.

The rapid emergence of HDTV around the world (in which Korea is a leader) creates a new challenge for preservation at a higher resolution than the 25 Mbps normally considered as sufficient for news. Very few use 50 Mbps as well as IMX, but solutions are now under development by all manufacturers and it is just a question of time.

Very few newsrooms are managing metadata relative to rights clearance as well as inheritance rules when using several sources to edit a final story. However this is increasingly important.

Most broadcasters maintain a deep archive on shelves, even if they have online storage for current and future material. Once they launch IT-based production systems, they start keeping all or some of edited packages and in certain cases rushes.

Table 3: Archive

Category	Best Practice Functionality	Detail	Impact
Archive	Search Engine	Powerful intuitive searching integrated with other workflow elements	Speed, productivity, news accuracy
Archive	Container to manage multiple audio tracks	Ability to handle multiple languages	Efficiency of language and localization processes
Archive	Fast searching response time	Ability to manage a large number of items and numerous concurrent searches	Speed, productivity, news accuracy
Archive	Audio, stills and graphics in addition to video	Ability to handle and browse graphics-only and audio-only assets in addition to video assets	Efficiency of repurposing. Ability to streamline pre-broadcast workflows
Archive	Video partial retrieve	HSM software and archive hardware allow partial retrieval of clips based on timecodes	Speed and selectivity of processing
Archive	HD-ready preservation format i.e.. IMX/50 Mbit/s	Use of a sufficiently high resolution for storage in order to be used in HD news in the future (> 50 Mbit/s).	Preservation
Archive	IT standard format	Use of a storage format capable of future conversion (i.e. IMX) for future-proofing and portability	Preservation and cost of archive ownership
Archive	Rights information as metadata	Ability to manage rights status as metadata, with an inheritance mechanism in the case of mixed sources	Speed and legal costs
Archive	Digitization of legacy archives	An organisational as well as technical issue: whether or not to ingest existing archive material	Preservation, speed, accuracy of news

Playout & distribution

Getting breaking news to air as soon as it arrives is a crucial element of best practice.

It is key for productivity and reduction of staff in the news gallery to easily group together (and produce as one element rather than many) video, audio, stills, CGI, graphics and animation, and html.

It is highly desirable for certain news formats to be able to create a “news wheel” (i.e. an automated news bulletin without presenters), particularly for 24 hour news channel, but also where premium channels are proliferating the number of bulletins without additional staff.

NRCS (Newsroom Computer Systems) must control automation, either internally or by interfacing seamlessly with third party automation systems. This allows changes at the last moment (to drop or to replace a story) to be decided from a journalist perspective. The agility of the rundown is increasingly important as bulletins are more and more subject to last minute changes. Therefore the user-friendliness of the status display inside the rundown is essential.

It is becoming compulsory to have publishing tools (and technology) to repurpose scripts and videos for mobile phones and Internet portals.

Table 4: Playout and distribution

Category	Best Practice Functionality	Detail	Impact
Playout	On-air shunt	The ability to route a feed directly on air, bypassing the news production system	Speed to air of breaking news
Playout	CGI and graphics attached to video	Auto-follow: the ability to synchronize and play out together server-based video and graphics	Productivity of news gallery
Playout	Newsheels (preparation/automatic mode)	Ability to prepare and produce quickly night automatic newsflashes through NRCS or automation specific features	Productivity
Playout	NRCS controls automation	Integration between NRCS and automation (or internal NRCS automation capability) to allow NRCS to control all on-air devices from a central rundown	Control of agenda by journalists. Speed
Playout	Ability to drop, replace or change the order of a story quickly in a rundown	Fast and accurate automation between NRCS and automation, either by internal NRCS automation capability or by integration (i.e. with MOS)	
Playout	Story status display	Instant status updates, usually colour-coded, to show status of individual elements. Depends on the integration between NRCS and automation as well as a workflow feature (validation/readiness of stories) associated with colour on the rundown	
Distribution	Publish to WAP for video	Dependent on technology and services architecture inside software	Productivity, new revenues
Distribution	Publish to the web for video		

Integration & security

As IT-based systems become more and more the norm in broadcasting, integration and security are a more and more pressing issue.

Newsrooms need to assemble many proprietary pieces of hardware and software quickly and efficiently into real-time systems without the need to access or change source code. OS, XML, truly supported APIs, a consistent services infrastructure and a component-based architecture are important best-practices steps towards speed of implementation and future-proofing.

Scalability is also important and is closely linked to an open architecture.

Redundancy is seldom in the network area, but progress is being made to secure solutions, with back-up and disaster recovery sites becoming more common. There is in many places a new vision regarding maintenance where IT, broadcast and networking know-how must all be shared by each maintenance staff member.

Table 5: Integration and Security

Category	Best Practice Functionality	Detail	Impact
Workflow	Workflow tool	A workflow tool is used to design and change business processes involving media inside the newsroom: validation of a story by the editor in chief, media transfer for on-air operations, archive decision. Status, media appartenance to folders, action trigg	Ability to improve continuously organisation efficiency
Media identification	Naming synchronization	The integration between NRCS, media ingest, and the central media asset management offer a simple way to give media a smart ID and to link rundown to media ID	Data integrity and ability for journalist to quickly retrieve media
Integration	Ability to integrate components from different vendors simply and easily	Depends on API support and use of standard protocols such as XML	Speed and cost of implementation
Maintenance	Scalability	The ability to increase the dimension of the system (users, disk capacity, supported peripherals such as edit suites) without replacing or stopping systems	Cost of ownership, system lifecycle duration, flexibility, ability to meet future business requirements
Maintenance	Development capability and roadmap	Use of new technologies such as MS dot.net or J2EE, and true component architecture design	Speed and cost of implementation, future-proofing
Security	Redundant architecture	Redundancy of all critical points: IT, NRCS servers, on-air servers, I/O server ports, network including switches, routers.	TV-operations continuity
Security	Recovery mechanism, breakdown intervention process	Use of an automatic recovery process, along with user training to handle technical problems by organisational means. All maintenance staff trained in IT, networking and video	
Security	Back-up site	Disaster recovery or back-up site/service	

Best Practice Conclusions

We have identified a number of leading broadcasters in Asia, Europe and North America, and while the average broadcaster in this category achieves a score of 60% against our list of best practice elements, **“best of the breed broadcasters” achieve 80%.**