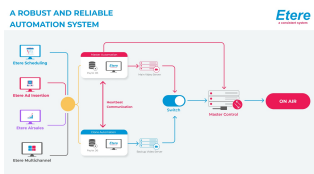


ABS-CBN Project: A Federated Playout System

This paper describes how Etere, is able to provide a solution that will closely connect the main station, where assets are created and daily schedules defined, with a remote station, that will receive the daily schedule together with the assets that make it.



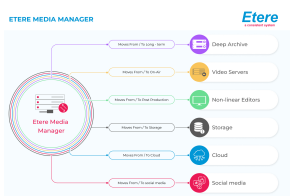
ABS CBN



Etere Playout Automation diagram



Etere Web Diagram



Data Mover Process

For more information, please download the case study attachment.

Etere will periodically synchronize the remote station to the main station, thus permitting the main station to export full schedules and the remote station to manage imported schedules as well as searching, browsing, editing and transmitting media contents originally stored in the main system.

Introduction

Founded in 1946, ABS-CBN (Alto Broadcasting System-Chronicle Broadcasting Network) is the largest integrated media and entertainment company in the Philippines, ABS-CBN broadcast also to the Filipino enclaves located in the USA and other geographical areas such as Australia, Asia Pacific, Middle East and Europe.

Currently, the ABS-CBN main facility located at Philippines, counts with an Etere system implemented to send on-air its more than 20 satellite channels, ABS-CBN has always renewed its preference for Etere every time they have planned to expand its existing broadcasting system, being always provided with rock-solid solutions empowered with a seamless integration.

In last years, ETERE has accompanied ABS-CBN across its various system expansions; supporting with an extreme modularity the integration of all the new modules and equipment into the global system workflow without interfering with the overall project, a precedent that has consolidated the presence of Etere not only in the Philippines but in the entire Asian Market

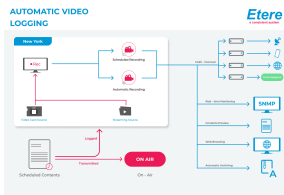
Etere's solution are characterized for being distributed solutions able to reduce human errors and increase the efficiency of the entire system by centralizing the content management processes under a unique integrated system. Etere-based solutions maintain consistency between the acquisition, the production and the playout departments, allowing playlists to be prepared in advance under an accurate schedule structure, further supporting last minute modifications with faster operations and increased efficiency.

This paper describes how Etere, is able to provide a solution that will closely connect the main station, where assets are created and daily schedules defined, with a remote station, that will receive the daily schedule together with the assets that make it; Etere will periodically synchronize the remote station to the main station, thus permitting the main station to export full schedules and the remote station to manage imported schedules as well as searching, browsing, editing and transmitting media contents originally stored in the main system.

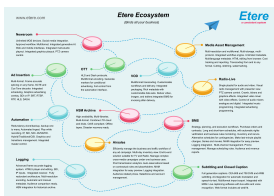
1. The main station export the daily schedule (and the related assets) to the remote station using Etere F90, which at its time import it into their local database with Etere F90,
2. An operator in the remote station opens the imported schedule in Etere Scheduling, the remote database is updated by adding the local video server,
3. Etere Aligner automatically launches an Etere Workflow in the remote station for restoring from the main station all those video files which are not present in its archive,



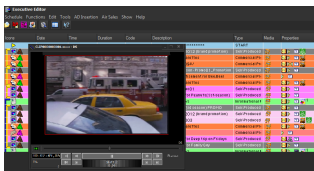
f90



Memory diagram



Etere Ecosystem



scheduling integration

4. In the main station, Etere Media Manager copies the requested video file(s) into a remote station's FTP path,

5. The remote station transfer and transcode the video file(s) into its video server by using Etere Media Manager, creating also a proxy version, after then, the video file is deleted from the FTP path,

6. In the remote station, Etere Automation transmits the video file at the time specified for the related event,

7. In the remote station all transmitted video files will be logged across custom time slots by Etere Memory,

8. A playout as-run log of the remote station will be available to be sent using Etere F90 to the main station, thus permitting to reconcile the exported and the transmitted schedules.

In order to perform the above mentioned procedure, Etere will provide ABS-CBN with all the modules required for the implementation of a remote playout department periodically synchronized with the main station, including automatic files delivery. Operations related to all contents present in the main and remote stations are cemented on a file-based workflow framework featuring a wide range of function-specific workflows for ingest, production and playout with additional remote capabilities.

The modules that Etere will implement across the system are briefly described below, and further explained in detail on the next chapter:

- Etere F90, the automatic import/export system that permits to share daily playlists between Etere and other systems,
- Etere Scheduling, a robust set of modules for the management of daily schedules, it provides a simple graphical tool to view, analyze and approve imported schedules,
- Etere Aligner: it keeps the published schedule constantly synchronized with the automation one, correcting broadcast timings and launching file-restoring workflows,
- Etere Workflow, the file-based technology that permits to design and automatically control the overall broadcast management of the station,
- Etere Media Manager, the enterprise workflow-based media manager that guarantees timing and effectiveness on media transfers between devices,
- Etere Automation, a fault-tolerant system to automate the playout of scheduled contents,
- Etere Memory, the video-logger in charge of recording all broadcasted events from specific time slots in dedicated storage devices.

4. SOLUTION COMPONENTS

ETERE is a distributed, modular and fully integrated broadcasting system composed by a set of applications specifically oriented to efficiently perform each complex phase of the broadcasting chain synchronously within the same database environment, being all managed by suitable user-defined workflows that ensure an efficient overall system controlling.

Etere's distributed architecture allows achieving a top-level availability of resources and reliability of operations across the entire broadcast workflow thanks to its redundant capabilities to improve the fault resilience on any hardware or software failure.

All modules that make part of the Etere's proposed solution will be treated throughout this chapter, explaining how its distributed architecture and integrated complementation are key parts of the success of the global system where a top-level performance and reliability is reached.

4.1 ETERE ASSET MANAGEMENT: A Federated Management System

Etere's federated capabilities will permit the station to take full advantage of

federated technologies, allowing them to import/export assets between systems such in a way that it will be possible to manage external assets as local ones. The diagram below clearly illustrates how Etere allows to handle external assets and also to orchestrate external workflows:

Etere's enhanced federated capabilities allow integrating different systems and provide the global system with the following features:

- An extensible access and extended catalog with optimized retrieval performances,
- Search, open and manage assets' data and content stored across diverse sources,
- Centralized processing of media data with further replication over different systems,

The local Etere system connect itself with federated systems making best use of currently available proven technologies such as SQL (federated search), XML (federated import/export) and web services (federated workflows).

4.1.1 Federated Search

Etere implements a 'federated search' system based on Microsoft SQL technology, it permits to search across assets belonging to different systems. During the search it is possible to highlight assets according to their source installation and once retrieved, they can be managed as local assets for almost all intents and purposes (i.e.: consultation, workflows, etc).

4.1.2 Federated Workflows

Etere's advanced workflow management allows all data and digital content of all external installations (repositories) to be able to participate in the federated workflow processes, that is, it will be possible to execute workflows for external assets locally.

The federated workflow management is based on Etere Web Services; a web service that permits to remotely execute workflows, this key feature will take the station to a top media management level in which media files can be transferred remotely.

4.1.3 Federated Import/Export

The federated management is based on the import of external assets into the local system; import/export can be automatically and periodically performed according to the needs of the station. Asset's data included during this process comprehend local ID, external ID, code, description, type, metadata, etc.

Once defined (i.e.: imported), federated installations can be customized by assigning them a descriptive code, icon and color for a differentiated visualization and easier recognition.

4.2 ETERE F90: Playlist Acquisition

Etere F90 provides the system with the ability to import/export the daily playlist between Etere and other automation systems, including associated rights, alternative schedules and as-run logs, thus allowing to keep both traffic and automation systems always reconciled.

The entire system will be improved with a highly efficient and reliable connection between ABS-CBN's system and external departments, guarantees the maximum accuracy in the process of exporting or importing information through a fully automated, paperless data flow application. The benefits of the automation of this process are evident, as human mistakes which could cause the interruption of the work processes are completely avoided. The application is particularly helpful when the periodical export or import of this data becomes a part of the natural workflow of a station.

Etere F90 is able to carry out continuously the import schedules to the main DB from a PC by setting a UNC path, as well as export data from the main DB either to a PC by setting a UNC path or to an FTP Server. Contributing to take the overall programming process to a paperless management:

4.3 ETERE SCHEDULING: Playlist Management

Etere Scheduling takes care of one of the most delicate process of the broadcast chain, it offers a fully integrated management of daily schedules, and this application is greatly composed by various simple applications that those who draw up the daily schedule will appreciate:

Etere Scheduling also provides operators with a simple graphical module to view, analyze and approve changes (i.e.: traffic, imported, and corrected programs) between the current schedules and any imported schedule. When the current schedule has incoming changes, the operator is advised through a prompt-message which announces that new changes to be approved are available:

This simple interface allows the operator to easily identify the source from which changes have arrived and then decide to either approve or reject them through a simple selection process.

4.4 ETERE ALIGNER: Broadcast Synchronization

Etere Aligner is the application that maintains the published schedule constantly synchronized, it aligns the independent automation schedule with the Etere stored schedule, this operation is very important for the broadcast process since published on-air timings may vary and will need to be updated:

Etere Aligner provides stations with the following key features on managing broadcast schedules:

- Automatic publishing of the schedule by Executive Editor,
- Ensure consistency of the published schedule by updating it with last changes,
- Launch workflows automatically to restore video clips scheduled to go on-air.

In Parameters you are also able to specify that the system also carries out publication of the schedule at each Etere F90 request. Moreover, Etere Aligner allows restoring via workflow all those video files associated to scheduled events and which are missing in the remote archive, either manually or automatically:

4.5 ETERE WORKFLOW: Enhanced Overall Control

Etere's solution features an integrated and professional approach based on a workflow management to optimize the station's entire broadcasting system, reduce operating costs and facilitate overall process control. Etere Workflow permits modules to for example, seek confirmation for sensitive process, follow specific rules, enhance the efficiency and reliability of process, and manage multiple workflows to perform different tasks simultaneously and independently.

4.5.1 Custom Workflow Design

All workflows can be customized to fit the real needs of the station and thus give complete control

over the overall system management which offers:

- Clear definition of each complex step of the broadcasting process,
- Visual representation of each step mapped out on a PC not in a paper document,
- Set of instructions and authorizations that must be followed in order to move forward,
- Complete log of all steps carried out, operations denied etc.

A comprehensive and user-friendly workspace allows creating suitable workflows based on custom actions just by dragging and dropping the necessary elements into it:

4.5.2 Integration between workflows

Etere allows calling workflows from others just by inserting an action that can perform a specific task (i.e.: attach, attach and start, start, abort, reset, restart, detach, etc) on a certain workflow:

The diagram below illustrates how Etere maintains the system consistency by avoiding loops between workflows (a message is displayed indicating the incompatibility between action and workflow):

As shown above, for example, if 'workflow A' calls 'workflow B' and the 'workflow B' calls 'workflow C', the 'workflow C' will not be able to call the 'Workflow A'.

4.5.3 Remote launching of external workflows

Etere counts with predefined templates to allow an easy creation of workflows able to launch operations on other Etere installations, Etere will connect with remote installations using Etere Web Services, a web service that makes the most important Etere functions (e.g. data consultation, workflow execution, etc) available to other systems through the use of standardized XML messages. Defining and launching remote workflows is an easy task with Etere; it needs following four steps only:

Once launched, the remote workflow will be started remotely.

4.5.4 Video Files Restore Workflow

Create a workflow to automatically restore any scheduled asset for its playout by searching for them amongst a group of devices arranged on basis of their priority:

4.5.5 Video Files Transcoding and Uploading Workflow

In case you need to make your assets available for a web-server, just create a workflow that will automatically retrieve them from the archive, transcoding them automatically to a more suitable codec (e.g.: low-res mpeg1, wm9, QuickTime, mpeg4, etc) and upload it to a web server:

4.5.6 Video Files Checksum MD5 Verification

Etere offers an enterprise control of video files integrity; it keeps a log of the hash md5 of video files such in a way that it is possible to verify at any time if they have been modified after their approval. All video files registered on the Etere's database can be verified through an md5 checksum, this control is performed via workflow, each time that a video file is moved from one device to another, its initial hash md5 is calculated to allow a future checking.

The workflow editor allows creating custom Checksum workflows to either generate or check the MD5 hash of a video file.

4.6 ETERE MEDIA MANAGER: File-based data transfer

The Media Management solution proposed to encompass station's content transfer and archiving goes beyond of a simple copy concept by moving video files based on custom policies, transcoding video files when required and offering a full track of all operations.

Video contents will be transferred between the various departments (e.g.: near-line storage, archive, post-production, playout, browsing, and even non-Etere systems) by Etere Media Manager; this migration process also includes re-wrapping and transcoding capabilities.

Etere's approach is oriented to "virtualize" the entire media management process, improving it with flexibility, customization and most important cost-effectiveness.

Additionally, the crucial logging function is available for all Etere applications, log files are written by the software each time it performs a task so it will be possible to trace their execution status, interaction level, and final result.

4.6.1 Multiple Storage Management

Etere reduce the complexity of managing storage devices by arranging physical storage devices present across the system into metadevices (logical devices), the use of metadevices improve the overall media management by offering the following features:

- Automated management via workflow of logical devices including archiving, restoring, transcoding, etc,
- Monitored storage space owing to the set of restrictions,
- Increased storage and better performance since metadevices acts as a virtual device representing several logical disks or disk systems:
- Distributed storage according to specific requirements without the need of creating partitions, just associate individual disk volumes to different:

4.6.2 Logical Management

Etere manages (logical) metadevices instead of (physical) devices, this approach results in a wide range of possibilities for the media management, for example, it is possible to control with one click the available space of all metadevices:

Etere Data Mover is the application used to perform the physical storage and retrieval of video files, a typical Data Mover operation would be to move a video clip from a video server to an archive based on custom actions which are defined and executed via workflow.

4.7 Etere Automation: Playout System

Etere Automation is the powerful, reliable and modular playout system able to enhance the ABS-CBN potential in terms of functions and workflow design, it is based on a unique approach which combines in a single product real-time device control and media asset management, offering a powerful mix of solutions and capabilities under a graphical user-friendly interface displaying for each event its source, type, description, properties, live status, secondary events, time code, GPI status, scheduled and real times, etc:

4.7.1 Secondary Events Management

Etere Automation manages all the secondary events intended to be transmitted by dedicated devices (e.g.: Logo Generators, Crawl Generators, Subtitlers, etc) with a simple graphical tool, allowing previewing secondary events in low res before their playout through a browsing application:

4.7.2 Live Events Management

Etere Automation offers complete support for live events present on the daily schedule, being possible to manage various different live inputs that can be switched at any time, few minutes before the event broadcasting or even during its transmission:

Additionally, Etere allows managing one video router per automation, being possible to create links between routers so when a channel is switched in the Main Router; the equivalent channel is also switched in the Backup Router:

4.7.3 As-Run Logging

Moreover, the ability to export As-Run logs containing the schedule “actually” transmitted allows an easy reconciliation between planned and real playout, being possible to send to multiple (UNC and FTP) destinations a frame-accurate log.

4.8 Etere Memory: Automatic Video Logging

Etere Memory is the module that automatically captures an audio/video copy of all specified broadcasted events. The interface is user friendly and provides information about the current recorded file size and the remaining free hard disk space. It is a video logging system, automatic and easy to use, effective in reducing expensive tape:

The recording interface can be either manually or automatically started and it will display a preview of the currently recording event, detailing some important recording information such as status duration, storage path, occupied memory, cache status, etc:

Etere Memory counts with a browsing interface with powerful capabilities to turn a selected video into a sub-clip, inserting the Time-code and sending the video or part of it to standard Microsoft OS users:

Etere Memory allows recording and viewing clips at the same time with just a few frames of delay while offering the following key features:

- Audience integration: if Etere Memory is used to record competitors' transmissions, you can have a chart audience wizard related to the recorded video in order to understand better your competitors' audience composition
- Media Manager integration: is meant for both local or network video clip storage in order to prevent system faults and to avoid data loss. The integration provides full file maintenance with storage and periodical deletion
- SNMP alarms, Etere Memory detects loss of video, black video, or frozen video and alerts using SNMP messages. These alarms can be converted by Etere SNMP console in acoustic, email or Sms,
- Streaming capabilities. Using Etere Memory you can view the video on the network. This feature is very important if you wish to distribute the video and you don't have a video cabling infrastructure.

4.9 ETERE WEB SERVICES: Integration with another systems

Etere Web Services is a web application programming interface provided by Etere to render some of the most Etere's important functions (e.g. assets management, workflow control, etc) available to mainly Non-Etere programs through the use of standardized messages, thus, Etere allows to the Stations to communicate its own software with Etere.

The station will be provided with a reliable and easy-to-use application based on cutting-edge technology for web services, improving the overall Etere's distributed architecture for bringing you a quality service, this service is accurately illustrated in the image above.

In essence, through Etere Web Services, a client invokes the web service by sending an XML message, then waits for a corresponding XML response which can be a data retrieval (e.g. a list of certain assets) or a function execution (e.g. an asset deletion).

5. BENEFITS

By implementing Etere's solution, ABS-CBN will achieve besides a comprehensive media control and a reliable programming management, an automatic system able to manage split networks in the most intelligent way, ensuring all scheduled events (including lives) are delivered at the right time and in the most efficient way.

In the basis of the aforementioned elements, ETERE will improve ABS-CBN's overall system in several points amongst which the most remarkable ones are mentioned below:

- Flexibility, on meeting all requirements by proving a versatile import/export and media management functions tightly integrated with all existing systems present on the station,
- Scalability, for increasing the number of remote stations and devices without altering the complexity of the global system workflow,
- Workflow Reliability, all operations automatically generates fully customizable As-Run logs to track both the overall and individual functioning of the entire system,
- Efficiency, reduced need for repetitive manual operations, allowing to define them in advance and then include them in the automation workflow, thus increasing productivity,
- Cost efficiency, extending a main system to transmit contents across a remote station is cheaper than implementing a new system in the remote location,
- Accuracy, from the schedule generation to the final playout, reducing the risk of mistakes during on-air since the precision of archived content related information is continuously checked.