

Caracol TV: A Full Enterprise Media Asset Management System

This paper is aimed to describe how the solution proposed by ETERE is able to fulfill all the specifications required by Caracol TV, providing detailed information on every module forming part of the overall solution.



Caracol TV

Caracol Televisión is a Colombian private national television network founded on 1954 and owned by the Santo Domingo Group. Caracol TV broadcasts news, sports and other entertainment programming such as telenovelas and series in nearly 80 countries throughout five continents.

With fifty years of experience, Caracol TV produces 4,000 hours of audiovisual content per year, and has more than 10,000 hours of original programming.

1. CHALLENGE

In order to consolidate its position as major media company in the international market, Caracol TV has requested ETERE provide a full enterprise wide media asset management system to streamline the entire station's media management to efficiently acquire, archive, produce, delivery and playout content through multiple channels while keeping the system cost-effective thanks to a file-based framework.

This paper is aimed to describe how the solution proposed by ETERE is able to fulfill all the specifications required by Caracol TV, providing detailed information on every module forming part of the overall solution.

2. SOLUTION

Caracol TV has requested a consistent project for the digital management of media content under a file based workflow environment. Etere's solution consists of a "Full Enterprise Wide Media Asset Management System" with acquisition, management and delivery capabilities of multilingual media. The proposed solution will be relied on a workflow-based framework able to cover the end-to-end archive management including ingest, storage, catalogue, search, retrieval, production and playout.

KEY FEATURES

- Distributed architecture managed via workflow to avoid any single point of failure
- Enterprise management of digital content under a file-based environment
- Seamless integration with existing and co-existing systems
- Fast, safe and fully-tracked local/remote access to the content archive
- Enterprise management and transport of media between storage devices
- On-demand media transcoding to always deliver the correct media format
- Quality control to ensure the reliability of archived assets over short and long terms
- High preservation and high availability of archived and catalogued media content
- Browsing features including preview, slow-motion, time code, bookmarking and metadata
- Robust editing functions including video cut, merge, overlay and restore
- Best flexibility on digitizing media content from multiple sources
- Full integration support for NLE systems including archive upload/download
- Reliable monitoring of the modules and equipment integrated within the global system
- Automated playout of content with reliable fault-tolerant capabilities
- Enterprise commercial management from proposals to billing

INTEGRATED EQUIPMENT

- x1 Leitch/Harris Nexio (4 channels) video server
- x4 VTR

- x2 Audio/Video router
- x5 Master Control
- x7 Logo Generator
- x1 CG/Title

3. MODULES

ETERE is an integrated broadcasting solution that implements a modular system formed by a set of modules specifically oriented to cover each complex phase of a broadcasting system, focusing to efficiently carry out specific operations such as ingest, archiving, transferring, browsing, etc.

All these operations are synchronously performed within the same database environment and managed by suitable user-defined workflows that ensure an efficient overall system control; these are some of the main features that make of ETERE a solution that can easily fit any media management workflow. All modules that make part of the Etere's proposed solution will be treated throughout this chapter, explaining their roles in the global distributed and integrated system.

The modules upon which this project is cemented are listed below:

ETERE MODULES

- **Etere Workflow**, automated management of assets and resources
- **Etere Ingest**, flexible media acquisition from a wide range of sources including live feeds
- **Etere DataMover**, intelligent and fast transfers between devices (SAS, NAS, etc.), enabled with EDT protocol
- **Etere Automation**, redundant main/backup playout system supporting real-time device control
- **Etere STMan**, multi-layer and real-time management of secondary objects (e.g. logos, branding, crawls, etc.)
- **Etere Scheduling**, prepare playlists including secondary events, logos and subtitles
- **Etere F90**, automatic execution of import and export functions concerning assets and playlists
- **Etere Air Sales**, automated management of commercial material, from contract creation to planning
- **Etere Money**, financial invoicing, bookkeeping and reporting
- **EtereWeb**, web-based access to view, preview and manage the media library
- **Tapeless Reception**, web portal provided to authenticated users to allow delivering contents

3.1. Ingest: A versatile acquisition system

Etere Ingest is a versatile set of modular applications that significantly improves the digitization process inside a broadcasting system:

3.1.1. Wide range of acquisition modes

Ingest covers any particular requirement of the entire process, automatic and scheduled captures:

Etere Ingest supports multiple parallel ingest streams, managed automatically either on a single workstation or across various workstations, allowing also to schedule the video files to be ingested:

3.1.2. Automatic workflow actions

Once ingested, video files are transcoded into the specific format of the destination device on which they will be stored, in the same way, video files are transcoded each time they are moved from one device to another (e.g.: archiving, playout, etc.):

The image below illustrates how Etere allows setting the workflow to be launched at the start and end of an ingest process to for example, create a low resolution version or normalize the audio of captured contents:

Automation: Reliable playout system

Etere Automation is the powerful, reliable and modular playout system able to

enhance the station 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, etc.:

3.2.1. Live events management

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:

3.2.2. Secondary Events Manager

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:

3.2.3. As-Run Logging

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 in any of the available formats:

3.2.4. Synchronized broadcast

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 the Parameters it's possible 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:

3.3. DataMover: Intelligent archiving and delivery

Etere Data Mover is a 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.

3.3.1. Simple and user-friendly interface

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 DataMover; this migration process also includes rewrapping and transcoding capabilities.

3.3.2. Logical management of data

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

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.

3.3.3. Distributed parallel jobs

Data Mover is capable to provide both, distributed processing for using an independent agent per data transfer and parallel processing for simultaneously performing different instances of one data transfer; these features will allow stations to exploit high computing resources to use a single workstation to perform multiple transfers, thus enhancing the flexibility, scalability and fault-tolerance of the entire Etere system.

3.3.4. Integrated transcoding

Etere's integration with Carbon Coder software handles a wide array of critical operations including format conversions that ensures content to be always stored in the right place in the right format:

Etere provides multiple ways to use Carbon Coder within workflows, you can use Carbon presets as well as complex projects:

3.4. EtereWeb: Web-based asset management

EtereWeb is a web service that supports all major browsers including Microsoft Internet Explorer, Mozilla Firefox and Apple Safari; thus ensuring the reliability and quality of the service. EtereWeb integrates the latest streaming technologies for video distribution and a comprehensive rights management system that gives to authorized users the possibility to access via web to a user-friendly interface:

3.4.1. Authenticated access and rights

In order to ensure that only authorized persons access the web service, EtereWeb counts with an encrypted authentication method on which users must count with a username and password in order to enter the web portal:

3.4.2. Tapeless reception

Tapeless Reception is an extension of EtereWeb designed with the purpose of offering an efficient solution for digital content delivery between external agencies and stations, it integrates the latest streaming technologies for video distribution and a comprehensive rights management system that gives to authorized users the possibility to access via web to a user-friendly interface:

Etere provides Tapeless Reception to allow remote clients to deliver digital content into the library, this web portal will permit other station's areas (e.g. Post-production houses, NLE systems, News providers, MAM systems) to easily and safely upload content (e.g. dubbed audio, conformed video, subtitles, etc.) and related metadata into a web server; once content is delivered (i.e. uploaded), a post-upload workflow (e.g. nearline archiving) is automatically triggered and a confirmation email is sent to the deliverer (attaching a proxy video) and the station operator.

Additionally, a customizable security policy will allow the station to determine different levels for accessing the files delivered through the web portal, thus making possible, for example, to dictate that a certain web user (e.g. NLE system) will be allowed to retrieve only its own delivered files whereas another web user (e.g. MAM system) to retrieve its own delivered files and also other user's files.

3.4.3. Search, retrieval and preview

The Quick and robust search engine of EtereWeb allows users to easily search and preview assets, even during the search:

The Media tab holds information regarding the media associated to the asset, time code details and EDL configuration. By double clicking on any media item, if available, it will be available the preview and download of the asset:

3.4.4. Selective upload interface

EtereWeb allows uploading media files into the server through a simple and intuitive wizard procedure. Depending on the upload interface set in the system, it will be possible to upload the media file using either a java-applet or an active-x interface:

- Java-Applet: This interface allows dragging and dropping the media file(s) to be uploaded from the file explorer into the web browser:
- Active-X control: This interface allows browsing for the media file(s) to be uploaded, being also possible to create a zip file for uploading an entire directory:

3.4.5. Pre/Post upload processing

EtereWeb allows setting different workflows to be launched at different stages of the web management, for example, it is possible to configure the following workflows:

- Pre-upload workflow:
- Post-upload workflows:

3.4.6. Multi-file upload support

EtereWeb supports not only uploading multiple files with a simple drag and drop action, but also manage them as a single metafile:

This feature allows NLE systems to, for example, upload into the station's server all the files which make part of a project (e.g. production of promos, conforming of separate scenes, editing of source material, etc.) and deliver them to the related department with a single click and with the reliability of a workflow management.

3.4.7. Workflow integration with NLE systems

Thanks to the file-based approach of its media management, EtereWeb supports interfacing centralized NLE systems (Avid Transfer manager, Final cut pro server) via workflow. With Etere, it will be possible to transfer video files from and to NLE systems automatically via workflow, these workflows can be attached, for example, to assets which requires editing:

3.4.8. Centralized monitoring interface

EtereWeb provides administrators with two key sections from which they will be able to consult:

- Login Report : Detailed information about user-specific accesses:
- User Statistics : Overall information about daily and weekly accesses:

3.4.9. Remote archive consultation

EtereWeb allows web users to check and also control the digital archive remotely via web. Web users will be provided with a fully-tracked access to the most relevant Asset Management operations through a robust search engine and including a wide set of function-specific sections (i.e. general information, media, properties, metadata, rights, technical data, workflows and much more).

Specially, a section dedicated to the media management will provide information regarding all media files associated to the asset, indicating for all of them the timecode details and EDL configuration with further preview/cut/download/upload capabilities.

3.4.10. User Permissions

EtereWeb allow stations not only to share the right files to the right persons but it also allows sharing contents with the right permission levels; this capability is based on granting/denying function-specific permissions through Etere Worksheets, the module that allows web users to request temporary permission for specific functions (e.g. download a file linked to a certain asset):

Web requests are managed via workflow to allow a custom and automatic launch of worksheets.

Supervisors count with a dedicated interface for viewing pending requests and accept/deny them.

Once the requested is evaluated, web-users will automatically receive an email notification containing the information (e.g. ID, codec, fixed note and an evaluation note) about the asset for which the request has been performed. The email notification will be sent to the email specified in the personal data of the web-user who performed the request, this, depending on the entity type.

Finally, in case the request is accepted, the web-user will be now allowed to download the requested file(s) through EtereWeb.

■ 3.4.11. Security integration

EtereWeb works perfectly behind routers so remote access and ftp transfers are drastically improved. NLE systems can deliver contents via Etere Web as a digital equivalent of physical reception, where selected people can deliver video and metadata to the station, but owing to its digital nature, operations are perfectly organized, performed and logged, avoiding loss of any content information. Moreover, as a further security level, Etere provides direct authentication of web users through the station's active directory domain.

■ 3.5. Scheduling: A complete 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.

Executive Editor is the broadcast programming solution to made up programming schedules, offering a digitally based broadcast scheduling of your transmission using a second-by-second approach, so you can freely and accurately define what to broadcast and when, ensuring that every second of airtime is covered.

- Enterprise interface, an easy-to-use main scheduling application for drawing up broadcast schedules manually, Executive Editor can manage up to 10 different alternative schedules besides from the main one (real scheduling).

- Instant editing, the schedule view is clearly laid out for ease of management, in this way, the simplicity of the software, the immediacy of the user interface and the completeness of the contextual help make this application extremely easy to use.

- Tight integration, due to the Etere distributed system architecture, you will be able to see events made with other Etere Modules (i.e. Etere Air Sales, Etere BMS, etc) as 'commercial events' which are shown with a particular icon which identifies their property, thus, taking care of the undesired manipulation of these highly important events.

3.5.1. Rich preview feature

The Executive Editor allows browsing event in either low and high resolution, preview can include secondary events associated to scheduled events, inserted branding logos and eventual subtitles:

3.5.2. Robust import/export tool

The Import / Export module included in Etere Scheduling allows to perform the importation and exportation of daily schedules in a wide set of fully customizable formats, ensuring the interaction of Etere with other scheduling systems and vice versa going from a generic txt or xml to a fully tailored exportation file:

Some of the several types supported by the import/export system includes TXT, XML, XML for assets, XML with tapes, TXT for money, XML assets full, EPG, etc. For instance, the XML import allows importing from an XML file the broadcast schedule for one or more television days. Values are identified by the name of the tag specified in the XML file, which are the same as the fields present in the Etere's asset repository and broadcast playlists tables.

3.5.3. Verify and approve changes

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.

3.5.4. Planning of secondary events

A Secondary Events Planning form permits to automatically schedule secondary events (including crawls) according to user-defined criteria based on either specific time slots or event durations/types.

All provided features have been summarized in the following key points:

- Recursive insertion within profiles
- Scheduled appearances information
- Planned data monitoring from EE

Air Sales: Commercial Traffic Management

Etere Air Sales is a complete, modular and scalable traffic system for the management of the planning and commercial processes of a broadcaster. From planning to playout, it provides specialist application modules to manage sales, planning, presentation, scheduling and invoicing of commercial contents.

3.6.1. Automated scheduling structure

Weekly Schedule is the module that permits to build long-term and frame-accurate schedule grids that will define the traffic playlist, this schedule grid is formed by program blocks which at their time are formed by program segments defined by specific properties (i.e.: time range, duration, program type, price list, etc.):

3.6.2. Automatic and manual scheduling

The Strategic Editor module provides a high flexibility to the scheduling process, based on a schedule grid structure; it integrates schedules with the assets' database, ensuring a rock-solid scheduling module where only valid events can be scheduled. Moreover, Strategic Editor features various facilities such as multiple color displays, intuitive events selection, automatic rights verification, etc.

3.6.3. Sales orders

The Sales module allows elaborating proposals that includes multiple product details which can be made up by multiple assets (e.g.: for different channels or periods). A customer-tailored elaboration of Sales proposals is possible thanks to the use of flexible schedule grids improved with key booking features such as an automatic pricing based on day parts (e.g.: breakfast, lunch, dinner and latenight) and a powerful spot placement based on key scheduling criteria (i.e.: top, bottom, priority, rotation or optimization).

3.7. Money: Billing and Bookkeeping

Etere Money is an essential and suitable component for any business system as broadcasting is, it allows to perform and record all financial transactions involved in the company workflow and thus make this information available for bookkeeping, reporting and auditing.

Etere Money consists of a set of accounting tools made available to improve the management of commercial sales, programming and invoicing. Etere Money is able to perform the most common accounting operations including transactions recording, deadlines management, payments registration, commissions settlement and accounting reports.

Etere Money is tightly integrated with all Etere modules (e.g. Air Sales) to allow a centralized management of invoices including a set of tools that permits operators to easily bill invoices and pay Accounts Executive commissions in just few steps:

Money has a wide set of tools including the Deadlines Management module, which allows settling outstanding invoice deadlines (+) and credit note deadlines (-):

3.8. F90: Automated data import/export

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 the station and external departments, guarantees the maximum accuracy in the process of exporting or importing information through a fully automated, paperless data flow application.

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.