*Etere*
a consistent system

EBC PROJECT: An enterprise media management system

This paper illustrates how Etere is aware about the importance of media archiving, and how it offers not only a world-acknowledged system but a hard-earned expertise on the implementation and maintenance of digital archives able to bring access to any file, at anytime and most important, with a the maximum of speed, characteristics that will ensure the improvement of each single broadcasting area with a wide set of cutting edge applications that goes from an accurate contents management to an automatic delivery of contents.

EBC
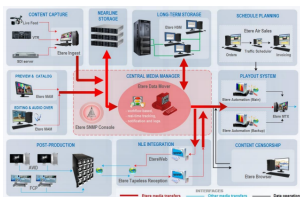
Total Media Management

For more information, please refer to the attachment for more details.

Eagle Broadcasting Corporation (EBC) is a Philippine television and radio network with head offices and studios in Quezon City. The EBC media network has a television channel (NET25) and an FM station (DWDM) in Metro Manila and several AM radio stations across the country. NET25 is the flagship station of EBC, it's the first Philippine free-TV to use HD systems in the production of a programming which covers information technology as well as religious programs, integrated news and public service.

Since its beginning, EBC has always delivered valuable video and audio programs, continuously introducing broadcast technology innovations in order to maintain the high quality of said contents. In these terms, the company has planned the integration of NET25 and DWDM stations into a new modern building equipped with four studios, one intended for news and the others for live and taped entertainment programs. EBC has decided to seize the opportunity to improve the broadcast workflow of NET25, requesting for this purpose a robust, flexible and solution able to manage all the stages of content management from ingest to playout, including commercials and programs planning as wellfv as production and resources management.

Etere proposes a "Total Media Management System" comprising media ingest, archive, management and distribution solution combining powerful modules with an easy to use interfaces, this solution will permit to straightly connect content captured by Etere Ingest with Etere MAM to view and catalog video assets before delivering them via workflow, in either standard definition or high definition. Etere MAM (Media Asset Management) will be the core of the overall system, providing workflow management, production project management and content management features; thus ensuring a streamlined tapeless environment able to capture, edit, catalog and deliver contents, fast and efficiently.

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Project Overview
Etere will implement a "Total Media Management" solution able to store and transparently manage the facilities' archive material over the long term in a tape robotic system. Etere's solution consist of a system intended to be the core of the central archive, providing media archive management and delivery services to the global system including instant access and delivery of media files; all this media

management is cemented on a file-based workflow framework featuring a wide range of function-specific workflows for ingest, production and playout with additional integration capabilities.

The diagram above illustrates how Etere can take control of the various operations that makes part of the entire station's workflow. The solution proposed by Etere will provide the station with a rocksolid distributed system able to integrate into a single solution the key features of a Media Asset Management. Additionally, Etere's solution will permit to straightly connect ingest channels with Etere MAM to browse and edit media assets before their delivery.

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Operations related to all contents present in the station are cemented on a file-based workflow framework featuring a wide range of function-specific workflows for ingest, production and playout with additional traffic capabilities. The modules that Etere will implement across the system are briefly described below:
■ Etere Ingest, the flexible solution for capturing contents from a wide range of sources
■ Etere MTX, the most advanced, tightly integrated and cost-efficient driver to implement a video server based on the ultimate HD/SD Matrox digital video cards
■ Etere MAM, the best solution for indexing and editing a huge amount of media assets, it provides tools for an easier metadata insertion and video cut and merge
■ Etere Air Sales, a robust solution for Traffic departments which permits to maximize the productivity of the commercial on-air planning, from an initial proposal to a final invoice
■ Etere HSM, an automatic tape-based storage system for long-term management archive
■ 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
■ EtereWeb, a secure and robust threshold to the station's outside world, a web-based interface that will permit a tight integration with NLE systems and remote facilities (e.g. post-production)

The station will be mainly provided with the following key features:
■ A distributed architecture managed via workflow to avoid any single point of failure
■ Seamless integration with existing and co-existing systems
■ Safe and fully-tracked access to the content archive
■ Enterprise management and transport of media between storage devices
■ Transparent media transferring, the correct media format will be always delivered
■ 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, timecode, 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 (Avid, FCP, etc), including content uploading/downloading
■ Fast and efficient transferring connection between internal –and external- systems
■ Reliable monitoring of the modules and equipment integrated within the global system

Furthermore, the implementation of an Etere system will allow Editing Systems to access the digital archive directly and efficiently through a proper production environment, making use of the highest security standards.

ETERE ARCHITECTURE

Etere is based on a distributed architecture which allows different modules to run on different workstations interconnected via a local area network. All system configuration parameters, security roles, user data, and pre-defined rules are stored in a reliable SQL database supporting backup and redundancy operations.

3.1 Distributed System

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 userdefined 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.

Multi-level Storage Hierarchy

Etere systems improves the media management by introducing a multi-level storage management consisting in the use of different storage levels based on the frequency of use of the files stored on them. For example, data files which are frequently used will be stored on video servers (i.e. online servers) whereas those which are not used for a certain period of time (e.g. typically a few months) will be eventually archived in tapes (or any other long-term storage mean) and then automatically restored -to video servers- every time they are required by the broadcast playlist.

Etere offers a hierarchical storage management of media content, it allows to organize in userspecific levels an unlimited number of content versions with different access times (e.g. video servers, near-line servers, archive servers), being all these levels available to the operator under a simple and user-friendly interface:

Moreover, media holders (i.e. asset forms) can be organized –along with their related information under a hierarchical structure based on Parent-Children relationships, thus allowing, for example, handling different versions of a same asset and all the assets derived from them:

User Access Levels

Etere provides stations with a 'Rights Management Tool' to control and track access to its various modules and functions, with it, stations will be able to freely assign (grant or deny) access to specific user groups (i.e. roles to which one or more users belongs to), thus allowing to set different mixtures of access levels for each group. Etere allows managing different –and fully customizable- access levels for users which form part of the system, with Etere; it will be possible to configure specific access rights not only for different users, but also for different stations.

Rights-based Operations

All the functions provided by an Etere system (e.g. quality control, event scheduling, program playback, etc.) falls under different categories according to their nature (e.g. media manager, air sales, automation), the availability of these functions is determined by the 'Right Management Tool'.

Thanks to this tool, stations will be allowed to reflect into the Etere system the actual way in which rights are managed within the station facility, for example, scheduling operators will be allowed to use only those modules to which they are authorized to use, including (or excluding) some sensitive functions intended to be managed by system administrators.

ETERE MEDIA FUNCTIONALITIES

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.

4.1 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 arching, 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

4.2 Custom Design Workflow
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:

4.3 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 action incompatibilities between workflows): 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'.

4.4 Workflow File-based Processing
Etere provides a wide range of templates for creating workflow actions regarding the most common file-based media operations, allowing customizing them and also using completely user-defined actions:

4.4.1 Content Check
Etere CMS, which stands for Content Management Server, an integrated file-based module for performing Quality Controls (QC) via workflow. Etere CMS is the best solution for checking audio/video either prior (e.g. playout, repurpose, archiving) or after (e.g. encoding, ingest, editing, transcoding, archiving) a media operation.

Etere CMS will speed up, automate and streamline the operational efficiency of file-based quality controls performed via workflow across the entire content life cycle. Etere CMS is based on a workflow action which, once included into a workflow that will automatically analyze the asset's proxy video to detect and log (into its EDL) the following audio/video issues:

■ Scene changes: Video stream segment containing brightness differences between consecutive frames
■ Black frames: Video stream segment containing black frames and an audio volume lower than a reference level
■ Freeze frames: Video stream segment containing a single frame image repeated -as a frozen like a snapshot- for a period of time

■ Audio silence: Video stream segment containing silent frames (i.e. frames matching a certain silent audio level and a black video level)
■ Audio level: Video stream segment presenting "noisy audio signals" which are greater than a given maximum threshold
■ Anti-phase audio: Video stream segment containing audio waves with "anti-phase signals", that is, opposite channels which mutually cancel each other out
■ Audio loudness: Measurement performed based on the ITU-R BS.1770 loudness metering algorithm widely used as loudness-compliant standard