

Etere
a consistent system

Media Prima Project



A complex system made simple

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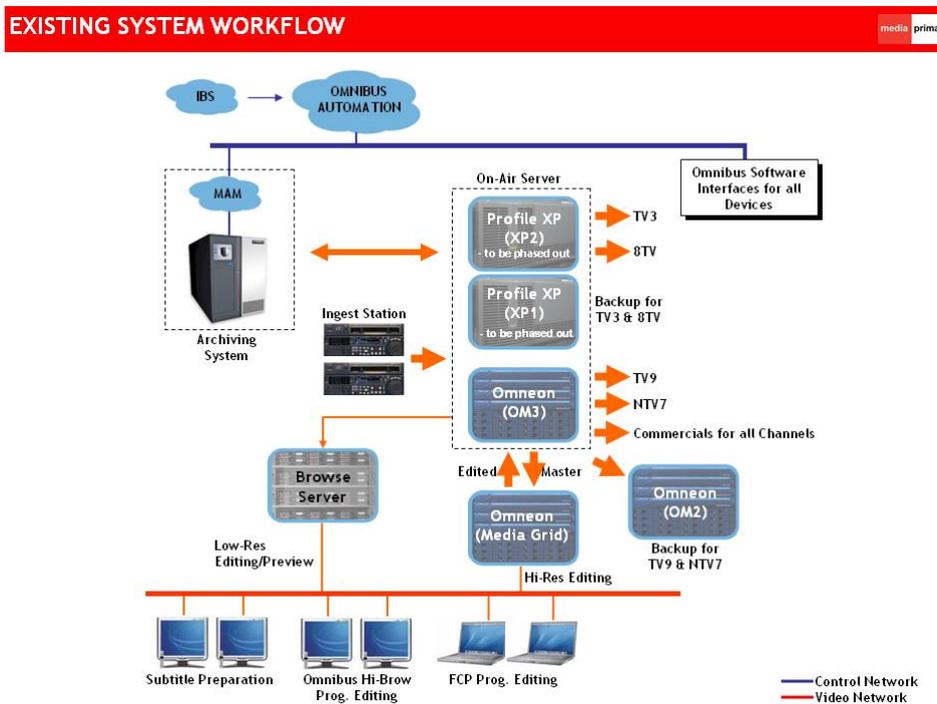
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1. Introduction

Media Prima is the biggest media group in Malaysia, broadcasting a total of four free-to-air TV networks TV3, NTV7, 8TV and TV9; which comprise approximately 54% of Malaysia’s private television viewership.

Media Prima has recently increased the broadcasting hardware of its playout system, and it is looking for playout system able to leverage the maximum of performance of the added devices, and integrate the formerly used devices as a redundant backup automation to achieve a high level of fault-resilience.

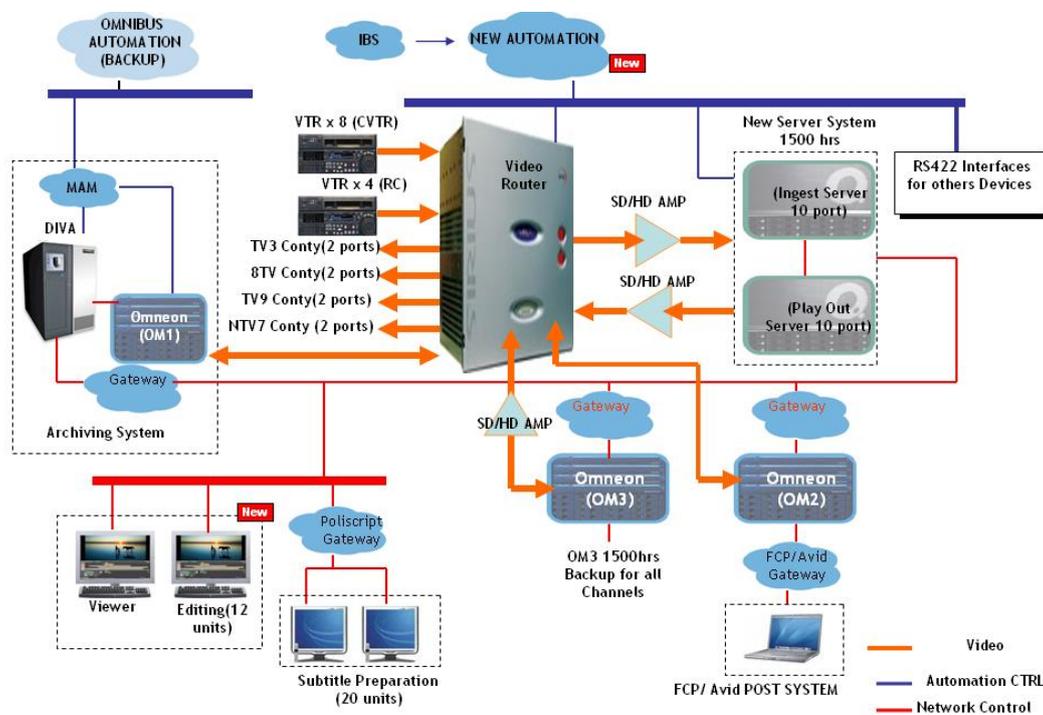


This paper specifies the requirements of Media Prima and the solution proposed by Etere, describing its architecture and identifying the operational advantages and benefits offered by a system able to manage and streamline the most important phases of Media Prima’s playout

workflow with a wide set of cutting edge applications that goes from the delivery of contents to an automatic traffic reconciliation.

2. Requested Features

Since Media Prima is planning to move from its current playout system to a new fully-redundant one, and in these terms the company's engineering staff has summarized the characteristics that the solution must include:



- Complete integration with all existing hardware and software, creating a bulletproof framework,
- Complete integration with the existing network, so it must be able to move video from/to existing servers and editing stations,
- Ability to manage two video servers for main/clone backup, fully integrated with the two existing servers used for ingest and/or preview,
- Integration with the archive to send and retrieve material, being also capable of sharing information with the existing omnibus automation system,

- Programming schedule arrives from an Accenture IBS scheduling system to which also As-Run goes back.

3. Proposed Solution

An Etere playout system is designed to interface with existing programming and automation systems; here below are listed some of the main characteristics that makes of ETERE the right solution for a reliable playout that meets all the requirements of Media Prima:

- A patented distributed architecture which avoids any single point of failure,
- Seamless integration with existing and co-existing systems,
- Safe and fully-tracked external access to video files, enabling NLE stations for uploading/downloading contents,
- Fast and efficient transferring connection for all the video servers and archives,
- Intelligent and customized workflow management including low-res transfers for subtitling,
- Best power and flexibility on import and export from traffic system.

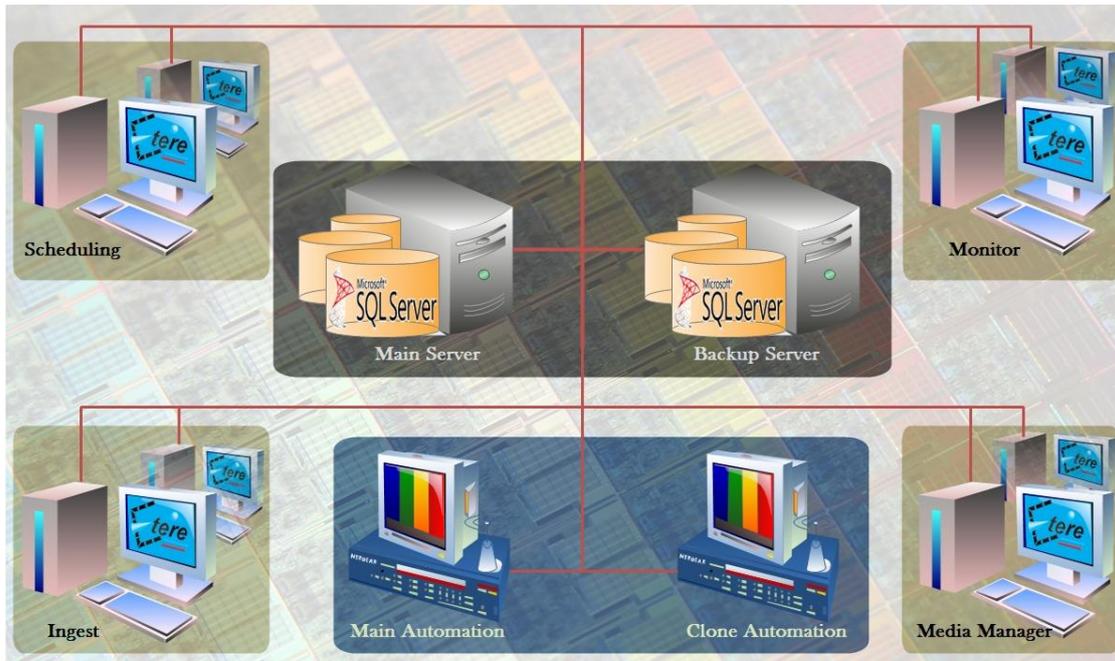
4. Etere Architecture

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. Etere allows achieving a greater availability and reliability in the playout process thanks to its ability to manage two parallel automation systems able to manage independent resources (main and clone) that in case of failure can recover from any hardware or software failure by simply switching to the clone automation.

4.1 A 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 user-defined workflows that ensure an efficient overall system controlling.

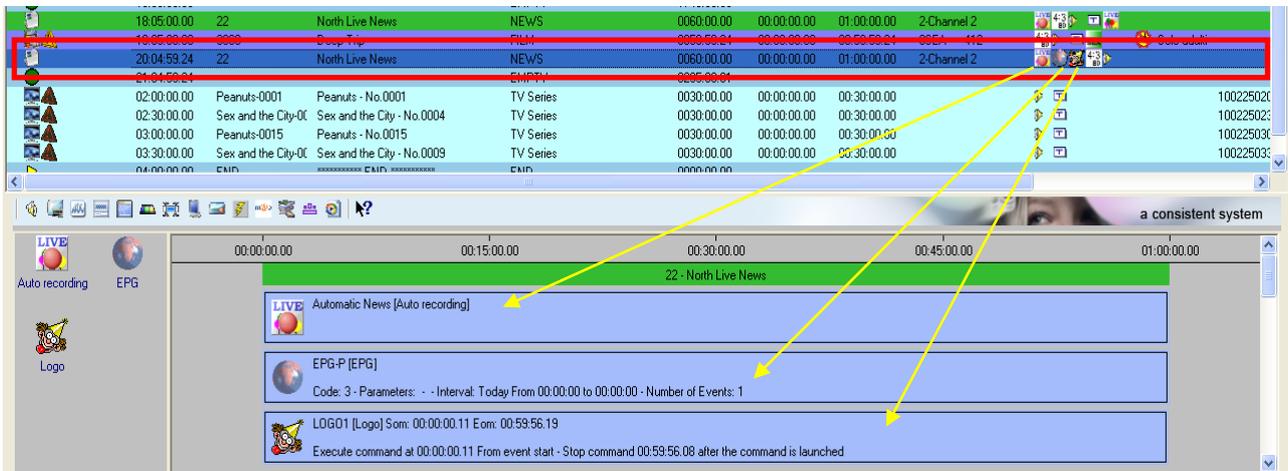


4.2 Etere GUI with Secondary Events

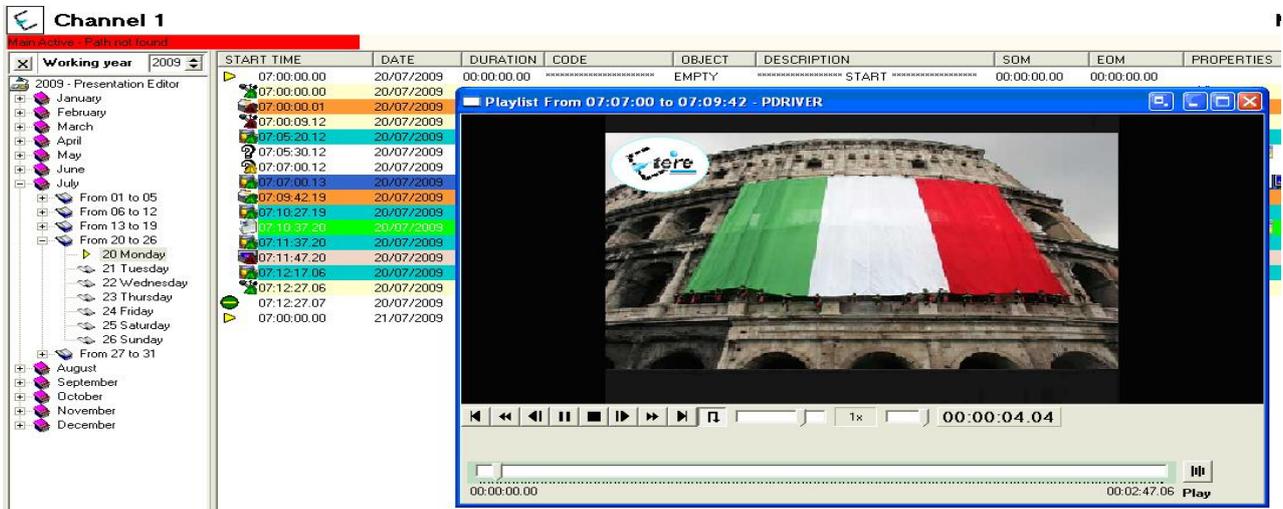
Etere Automation is the powerful, reliable and modular playout system able to enhance Media Prima' potential in terms of functions and workflow design, it is based on a unique approach which combines in a single product real-time device control and media asset management, offering a powerful mix of solutions 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:

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a consistent system



Furthermore, Etere Automation manages all the secondary events with a simple graphical tool, allowing previewing secondary events in low res before their playout through a browsing application:



4.3 Main Clone Redundancy

Etere offers the best fault tolerant automation solution on the market, because it is the only system with distributed playout intelligence and with real-time main and clone systems running. Clients can rely on the best data protection and the most advanced Fault Tolerant technologies achievable by Etere's Main/Clone redundancy, which consists in two synchronized automation

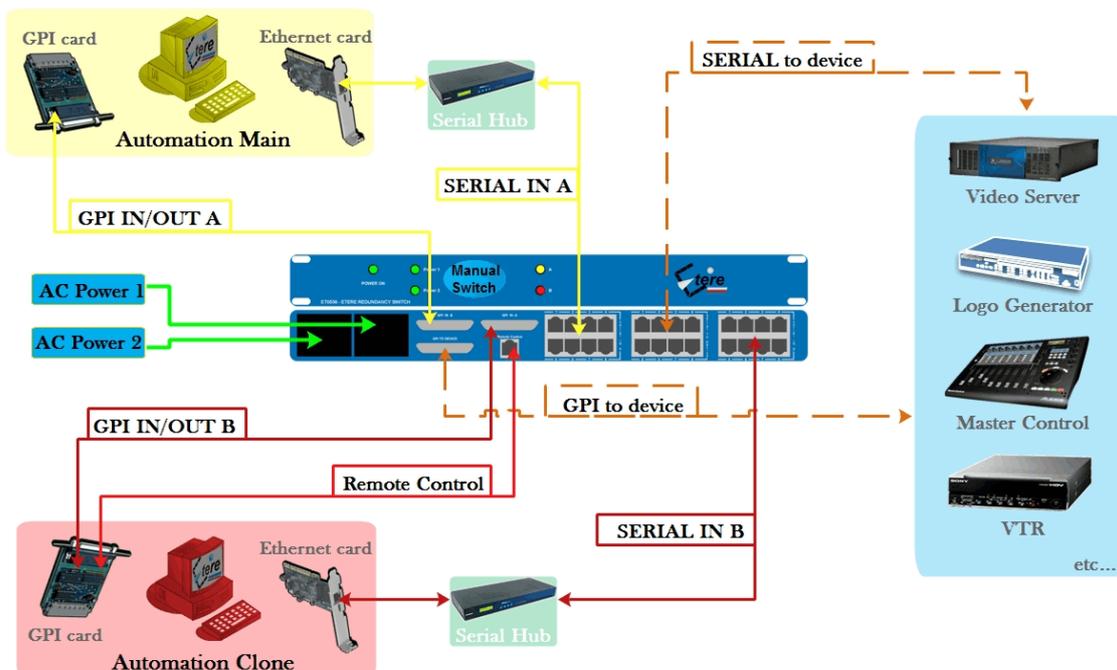
systems that run two independent copies of the same play-list, and manages independent payout resources

If some resources are not redundant and require serial control they can be switched in case of fault by Etere's ET0558-B redundant switch.

4.4 ET0558-B Redundancy Switch

Etere will provide the ET0558-B redundancy switch to control the master and the backup automation systems including the GPI and Serial devices (i.e.: Master Control, Logo Generator and matrixes) used by them. The switch between automations can be performed either manually (a front button) or automatically (via GPI).

Serial devices are connected to a RJ45 port whereas GPI devices use a DB25 port; ET0558-B will manage the switch of the connected devices from the main to the backup automation by changing its status from A to B (a led in the front panel indicates the current status) each time the backup automation notices a fault in the main one.



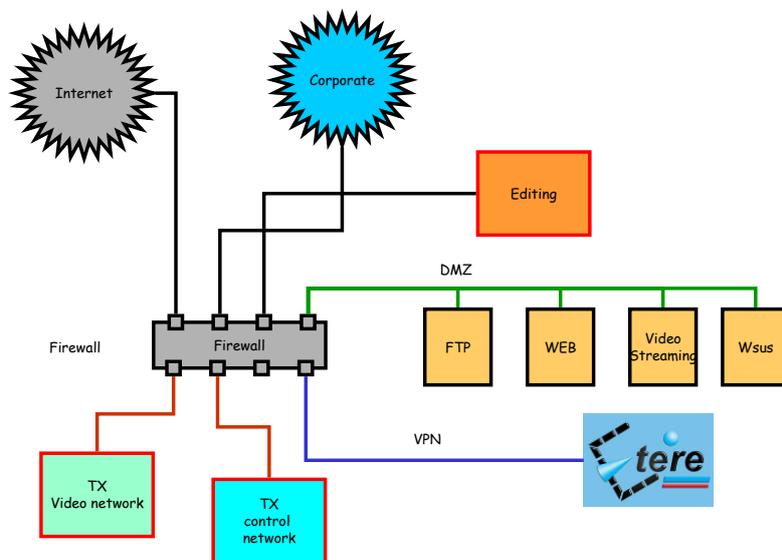
5. NLE integration using Etere WEB

5.1 Firewall and DMZ

Etere allows improving the system communication security by deploying internal firewalls and DMZ routers, critically important devices to the overall protection of the network. This deployment can incorporate sections that isolate FTP Transfers, Web Services, Video Streaming, NLE connections, and operator’s connections.

All the services provided to Media Prima from the networks outside (e.g.: NLE systems) are placed on DMZ to allow the necessary safety, this process has a minimum impact on performances, but it is a highly required procedure to increase system’s security:

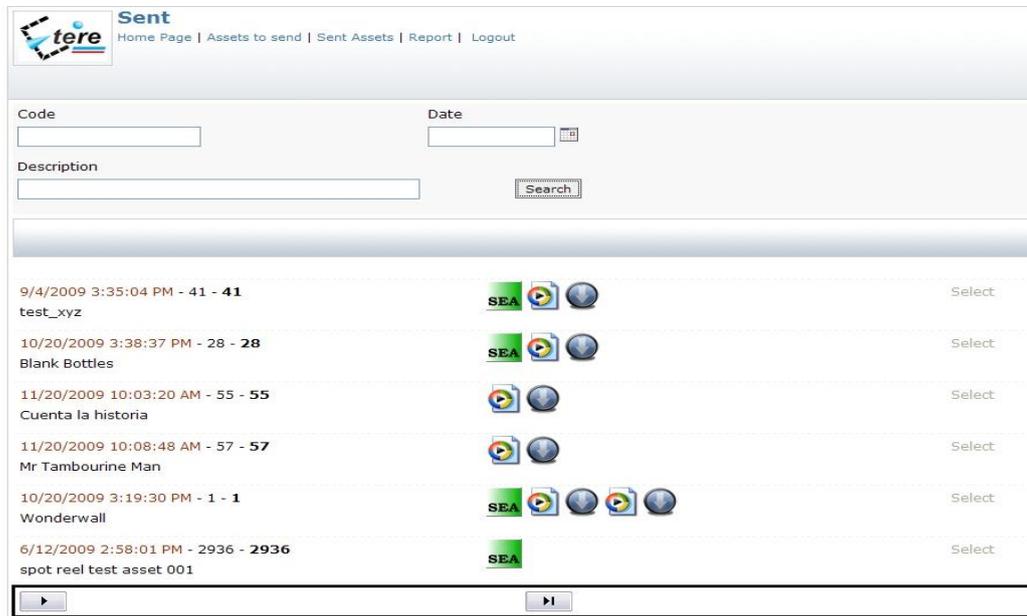
The DMZ router adds an additional layer of security to Media Prima’s Local Area Network (LAN) so external users can access DMZ only the devices allowed by the DMZ rather than the entire network.



A safe and tracked communication between the Storage system and NLE systems is thus achieved, allowing authenticated NLE stations to download and upload contents from/to the storage systems present across the station.

5.2 Etere Tapeless Concept

Etere’s tapeless approach contributes to increase the level of security of the overall system since operations performed with digital files can be performed only by authorized users and these operations are completely tracked within the system.



Etere Web is the web service seamlessly integrated with the playout and media management system to permit arriving contents to be managed digitally, resulting into a faster and more efficient delivery process which also includes digital signing features for any delivered content.

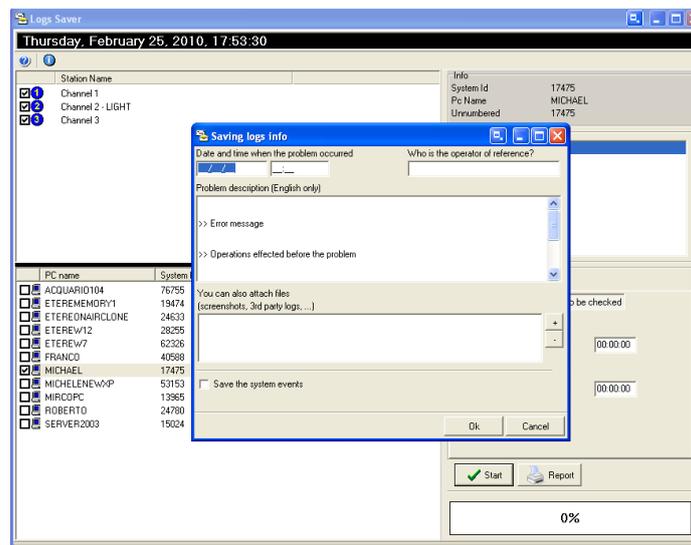
Etere Web works perfectly behind a DMZ router so remote access and ftp transfers are drastically improved. NLE systems can deliver contents via Etere Web as a digital equivalent of physical reception, where selected people can deliver video and metadata to the station, but owing to its digital nature, operations are perfectly organized, performed and logged, avoiding loss of any content information.

5.3 Etere Logs to Track File Movement

Logging is a crucial function implemented 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. Log files can be very helpful to understand and solve software and devices problems.

All logs are located in a local shared directory of the workstation where Etere is installed. When a log exceeds a certain size (which is user-defined) it is automatically renamed including an "OLD" suffix to indicate that it is an older log file.

Etere’s Log Saver application offers a user-friendly interface to manage recorded logs, it allows filtering logs by channel, workstation and date such in a way that only relevant logs will be retrieved, saved and optionally send via ftp (including related attached files):



6. Etere Media Manager

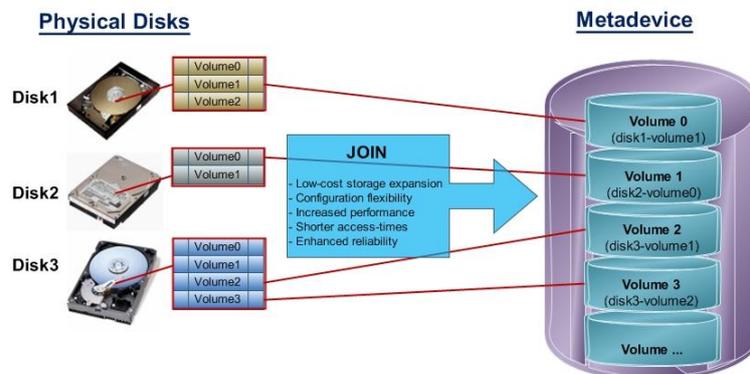
Media Prima’s video contents will be transferred from/to the required devices by Etere Media Manager; this migration process also includes rewrapping and transcoding capabilities. Etere’s approach is oriented to “virtualize” the entire media management process, improving it with flexibility, customization and most important cost-effectiveness. 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 (see image below).

Device name	Total	Available	Quota of available	Available free space
SEA-BMS	*Not available	58:00:00.00	58:00:00.00	78 %
K2-Client	*Not available	58:00:00.00	58:00:00.00	50 %
EtereMTX	*Not available	58:00:00.00	58:00:00.00	64 %
PDR2	16,66 Gb	5,85 Gb	5,85 Gb	65 %

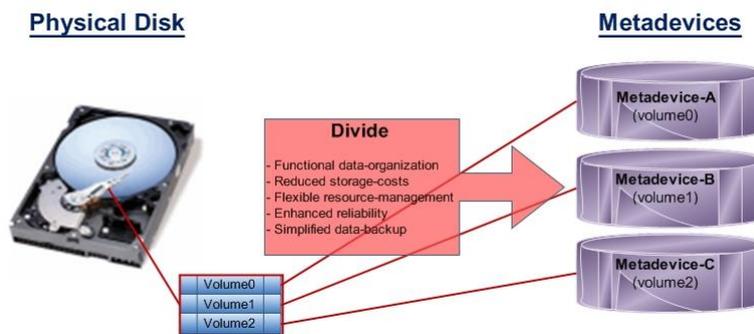
6.1 Devices and Metadevices

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:

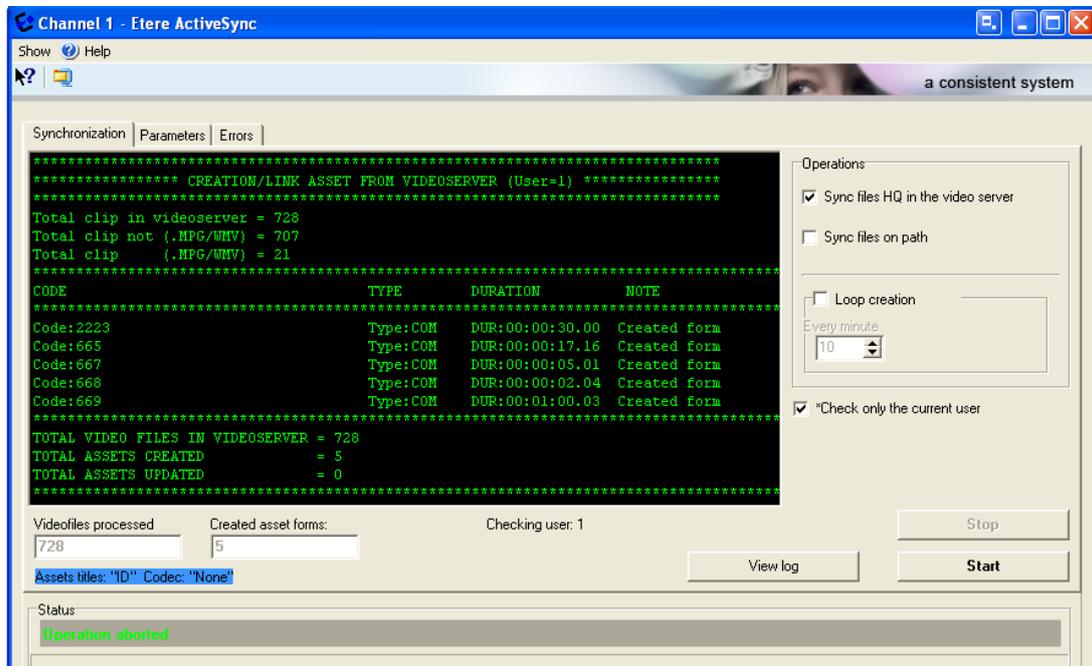


- Distributed storage according to specific requirements without the need of creating partitions, just associate individual disk volumes to different:



6.2 Active Sync

Etere will provide Media Prima with Etere ActiveSync, the easy-to-use application that verifies with just one click if all archived contents (both high and low qualities) matches with data present in the database.

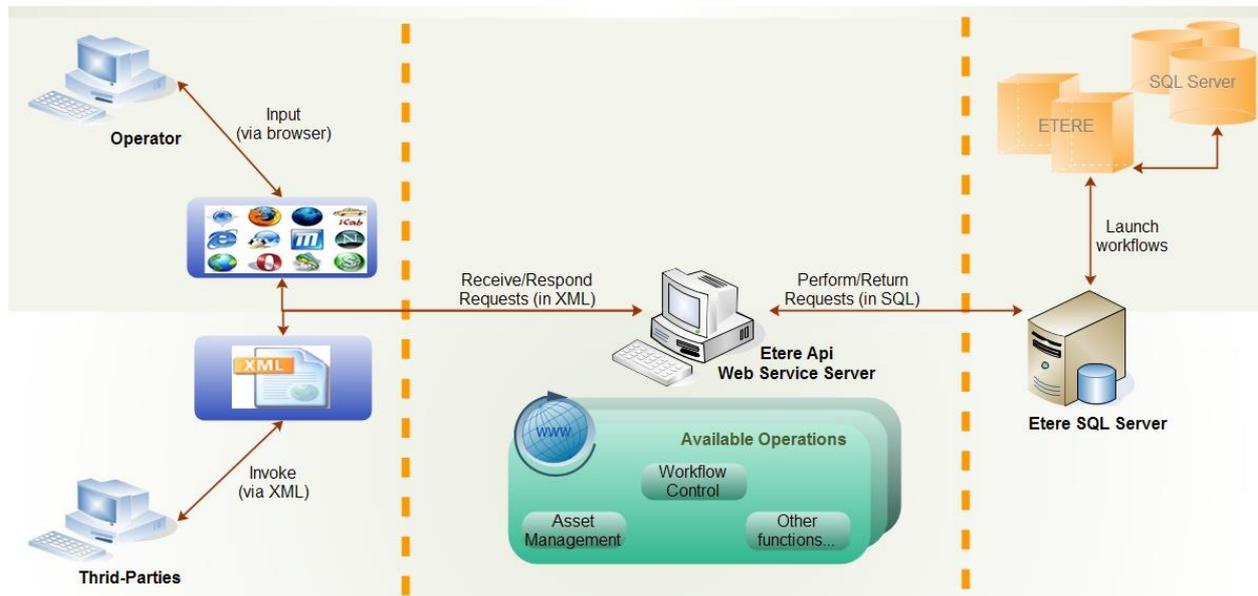


ActiveSync reads all video files present on a video server, pointing out to the operator all differences between logical and physical durations, as well as inserting into the database those video files which are not linked to any asset.

6.3 Etere API

Etere API (which stands by Application Programming Interface) is the web service 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.

In essence, through Etere API Web Service, 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).

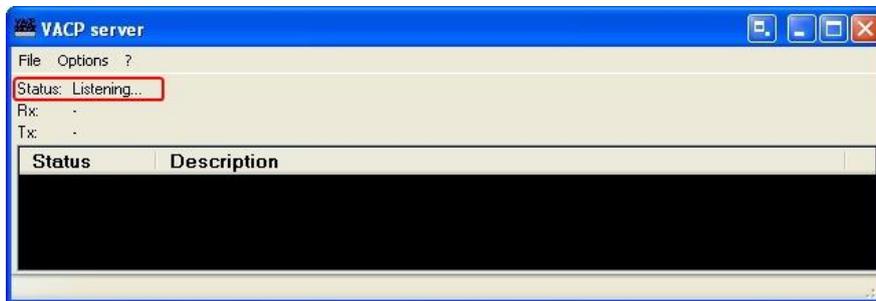


Media Prima will be provided with a reliable and easy-to-use application based on cutting-edge technology for web services, improving the overall Etere’s distributed architecture for bringing you a quality service, this service is accurately illustrated in the following picture:

6.4 Etere VACP Archive integration

Etere brings full support for Video Archive Control Protocol, one of the market standards for controlling large digital archives, by establishing a network layer between VACP devices and the Etere system.

Etere VACP Server will provide Media Prima with a great flexibility to carry out the migration of data between subsystems over a VACP protocol, Etere VACP Server is easy to implement and provides a versatile connectivity solution, it supports both serial (RS-422) and standard network connections (TCP/IP), allowing to get the maximum of the functionalities that reside within physical devices.



Etere VACP Server interfaces with the Etere API Server through a XML protocol to interact with the various Etere components (i.e.: asset management, workflow control, etc). Etere API allows Etere VACP Server to track the content stored on media devices, and provides a web-accessible view and control of related material.

7. Etere Workflow

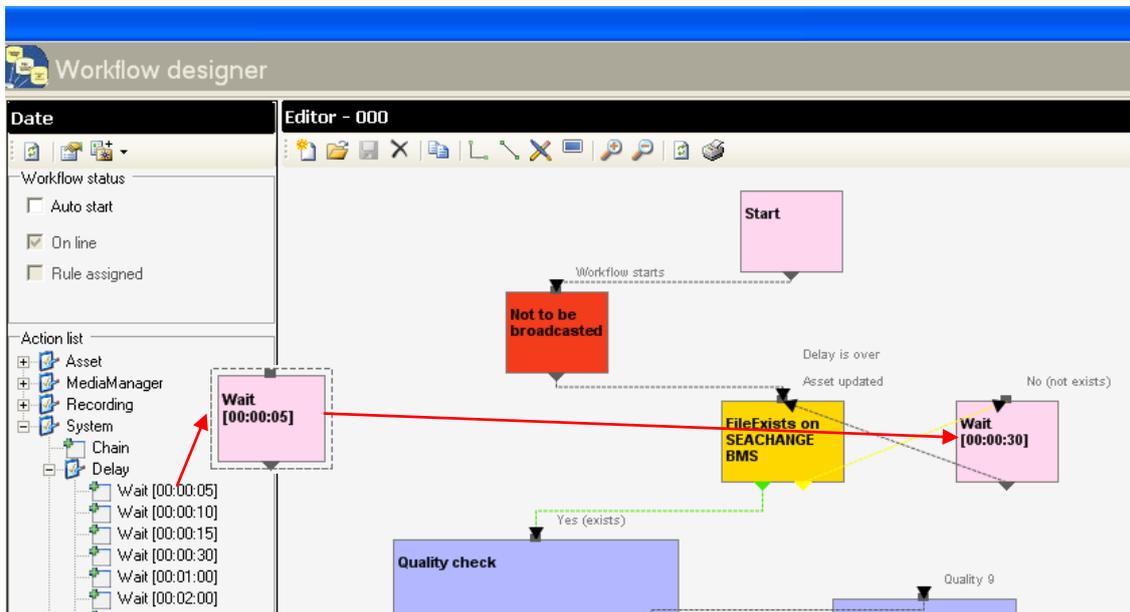
Etere's solution features an integrated and professional workflow management to optimize the entire broadcasting system, reduce operating costs and facilitate overall process control. Etere Workflow permits modules to for example, seek confirmation for sensitive process, follow specific rules, enhance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

7.1 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.

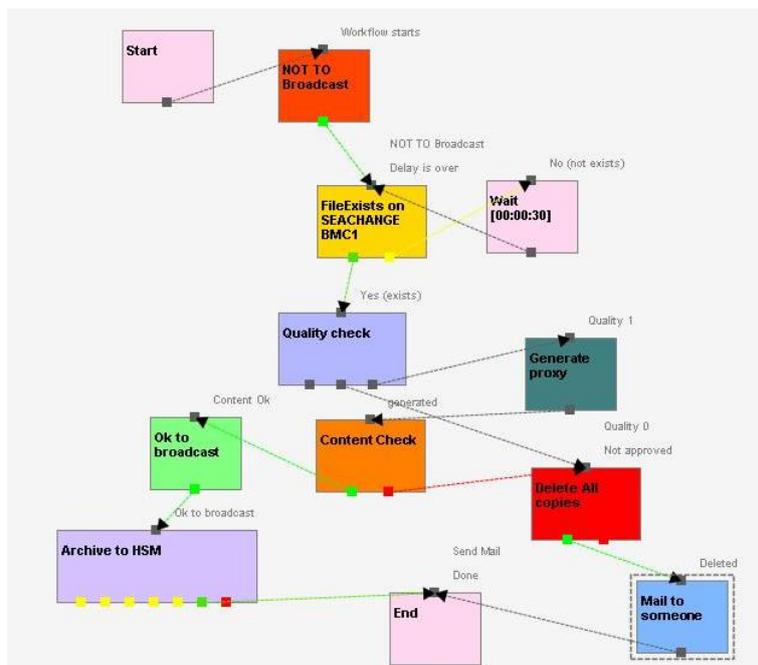
A comprehensive and user-friendly workspace allows creating suitable workflows based on custom actions just by dragging and dropping the necessary elements into it:



7.2 Workflow Samples

7.2.1 Archive Video Files

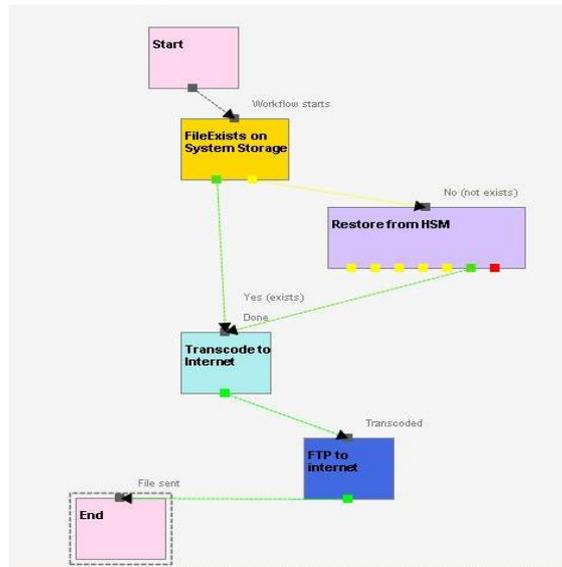
Etere allows you to design a workflow for archiving your assets on LTO tapes, including a quality and content check, a proxy copy generation and a final email indicating the result of the process:



7.2.2 Transcode Video Files

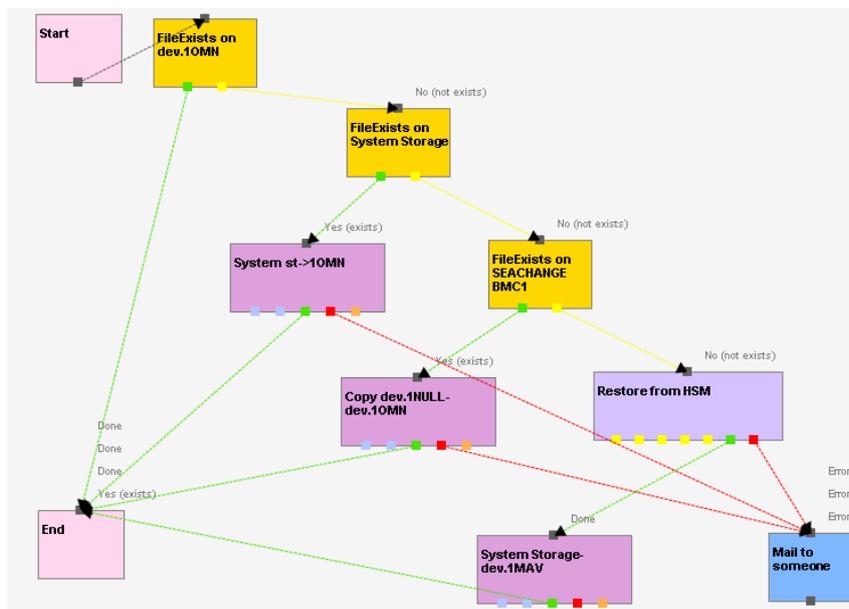
and Upload

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.: wmv) and upload it to a web server:



7.2.3 Restore Video Files for Broadcast

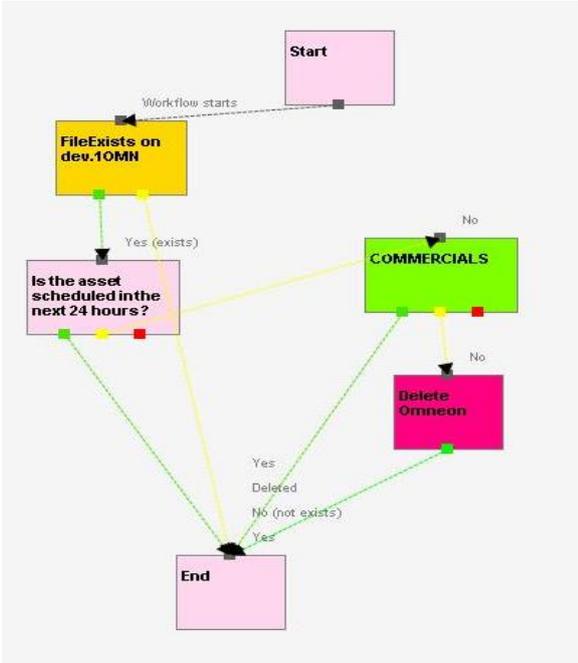
Create a workflow to automatically restore any scheduled asset for its playback by searching for them amongst a group of devices arranged on basis of their priority:



7.2.4 Free Video Servers

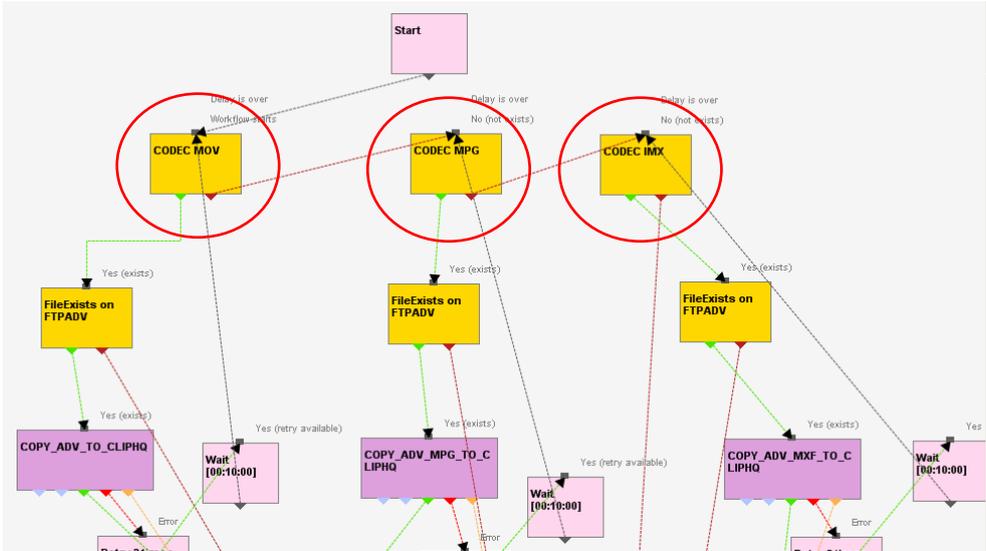
Space on

A simple workflow will keep the video server always clean of “not scheduled” assets (e.g.: on next 24 hours), allowing in addition to except all those which are commercials:



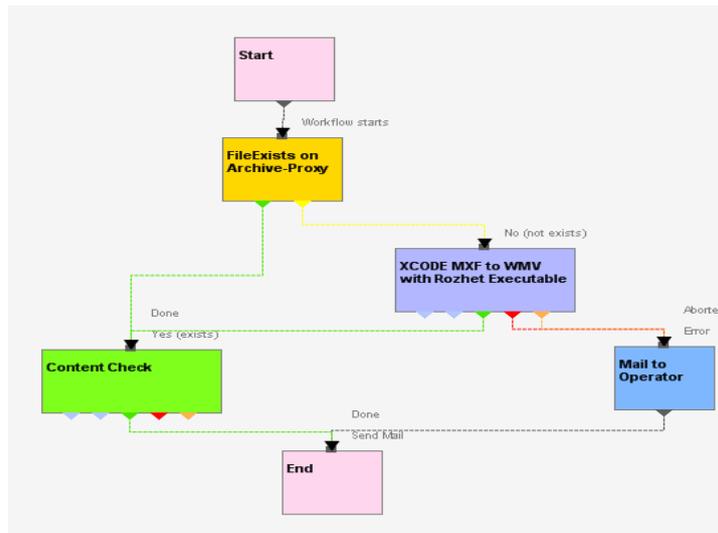
7.2.5 Different Codecs

Etere not only allows to move video files to different locations with just one workflow, but it also allows to put a copy on each destination with a different codec, thus allowing to have video files in the right place, with the right codec and at the right time:



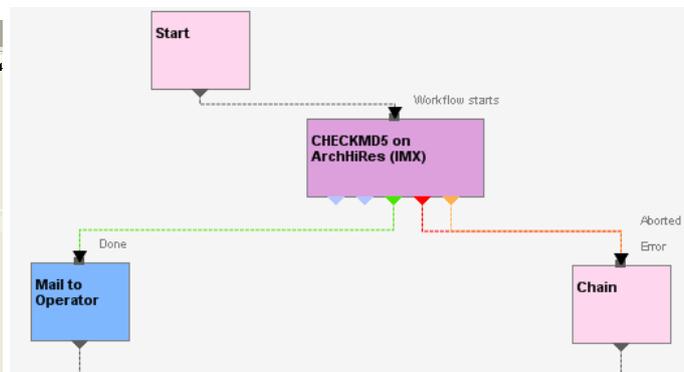
7.2.5 Transcoding If Needed

Workflows can “decide” if a video file needs or not to be transcoded in order to be suitable to its destination, for example, if the file is being moved to a low resolution archive, the workflow transcode it to a suitable low resolution format (e.g.: wmv):



7.3 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.

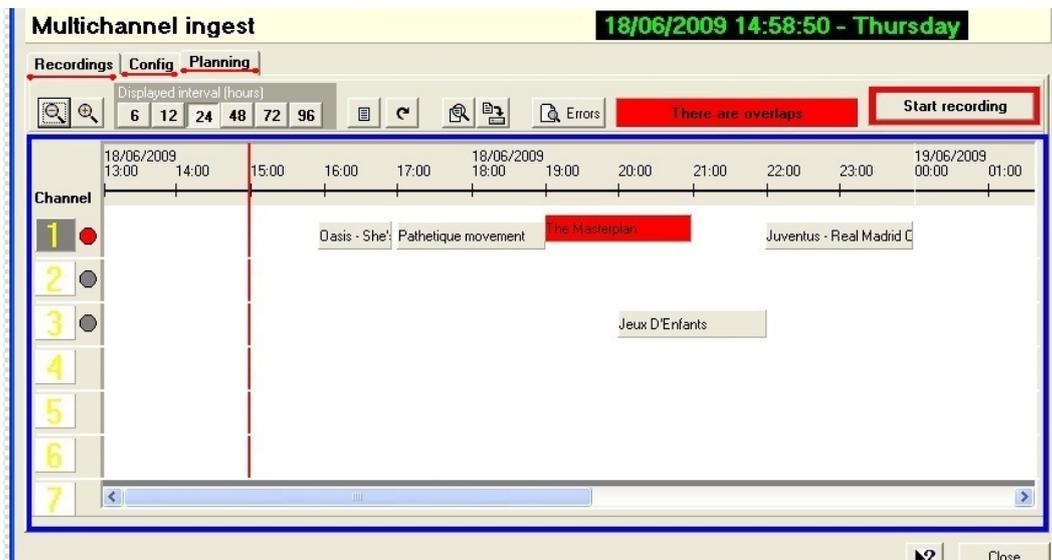
8. Low Resolution Browsing

Etere enables comprehensive search and browse and cataloguing of rich media, its very intuitive interface establishes a bridge between MAM and both Automation and Ingest, allowing contents to be browsed simultaneously from various workstations thus enabling low-res proxy browsing over the network.



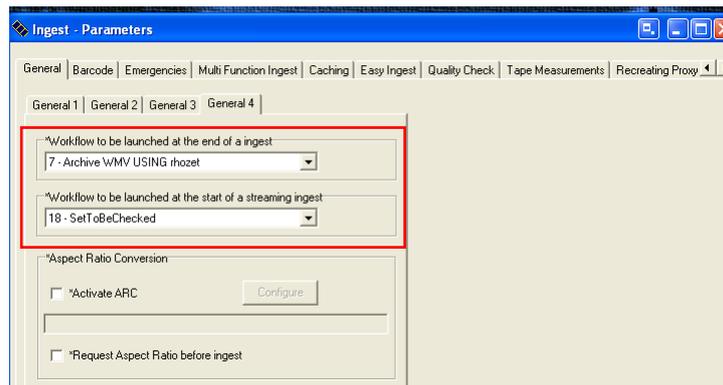
8.1 Parallel ingest

Etere 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:



8.2 Transcoding

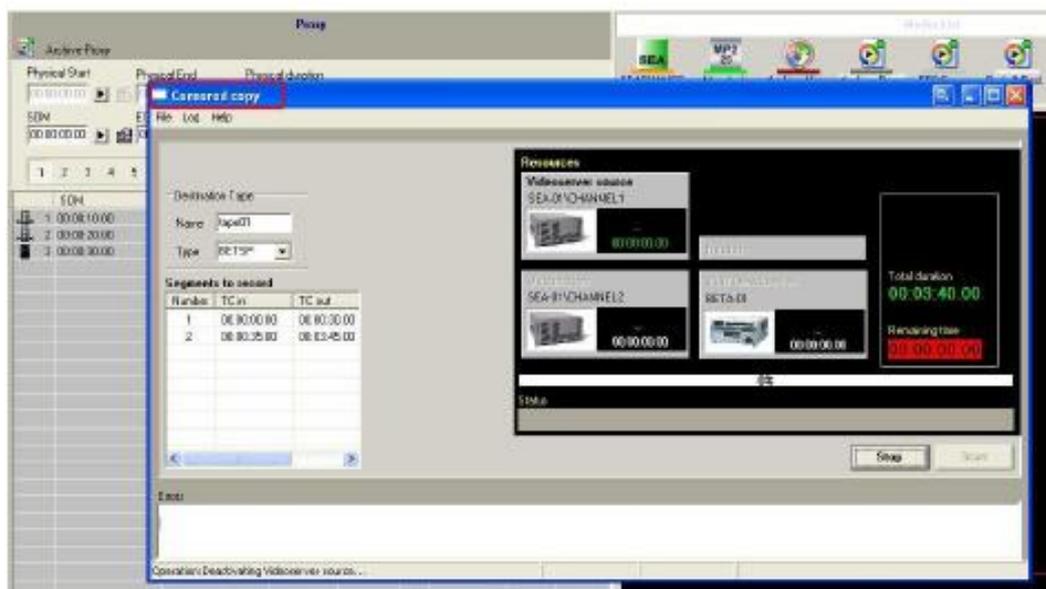
Once ingested, video files are transcoded into the specific format of the destination device on which they will be stored, in the same way, video files are transcoded each time they are moved from one device to another (e.g.: archiving, playout, etc):



The image above illustrates how Etere allows to set the workflow to be launched at the start and end of an ingest process to for example, transcode it before storing it.

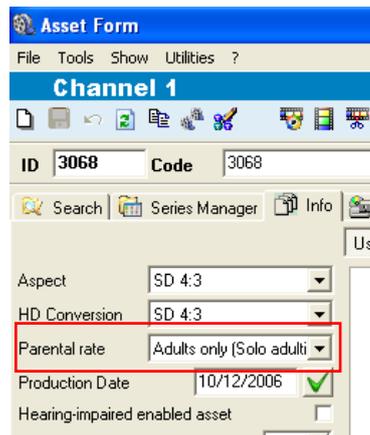
8.3 Censorship

Etere's censored copy function allows recording a new version of a video file cutting out all those scenes (EDL video segments) identified as inappropriate for the censored version:



Besides, this option, Etere also allows to also possible to set parental rate levels to restrict the scheduling of (inappropriate) contents on specific time slots, allowing in this way stations to be respect current broadcasting laws:

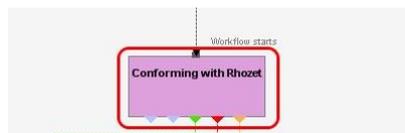
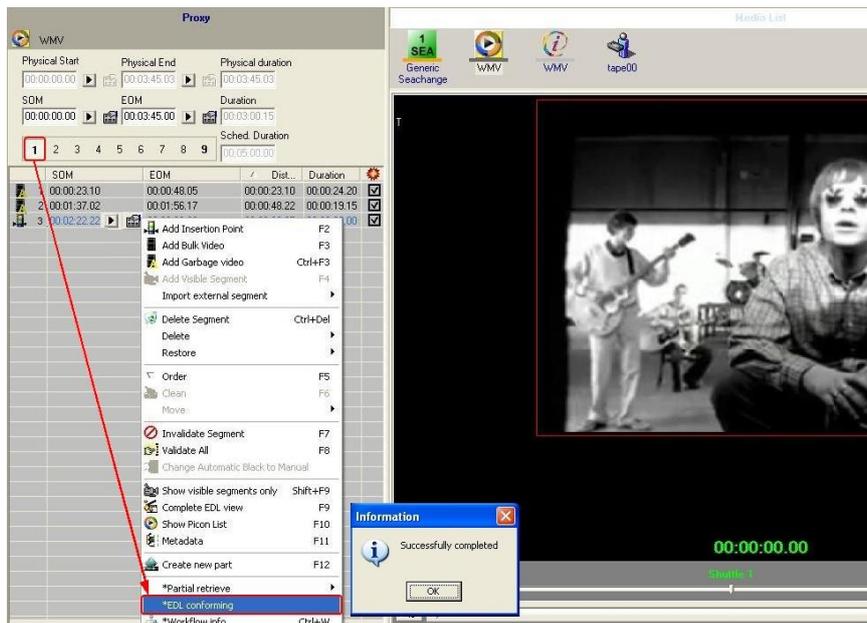
Code	Description
0	Prohibition free (Libero da divieti)
1	P.to M. under 18 (V.M. 14)
2	P.to M. under 18 (V.M. 16)
3	P.to M. under 18 (V.M. 18)
4	Unpublished (Inedito)
5	Unknown (Sconosciuto)
9	Parental guidance (Guida dei genitori)
10	Adults only (Solo adulti)



Asset Form
File Tools Show Utilities ?
Channel 1
ID 3068 Code 3068
Search Series Manager Info Use
Aspect SD 4:3
HD Conversion SD 4:3
Parental rate **Adults only (Solo adulti)**
Production Date 10/12/2006
Hearing-impaired enabled asset

8.4 Conforming

Etere allows creating either high or low resolution video files excluding all video segments described on the source video EDL, it is important to note that as usual on Etere's operations, the conforming of video files is fully performed via workflow:

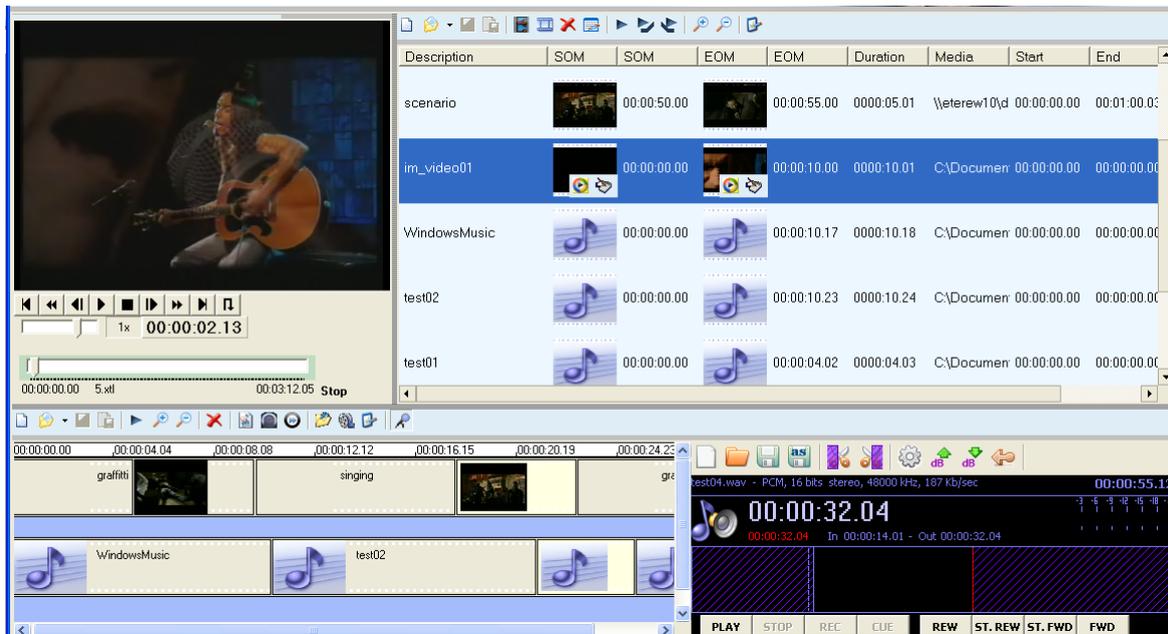
The screenshot shows the Etere software interface with a video timeline. A context menu is open over the 'EDL conforming' option. An information dialog box is displayed, stating 'Successfully completed'.

Physical Start	Physical End	Physical duration
00:00:00.00	00:03:45.03	00:03:45.03

SOM	EDM	Duration
00:00:00.00	00:03:45.00	00:03:00.15

SOM	EDM	Dist...	Duration
1	00:00:23.10	00:00:48.05	00:00:23.10
2	00:01:37.02	00:01:56.17	00:00:19.15
3	00:02:22.22	00:04:22.22	00:02:00.00

It is also possible to perform the conforming of video segments from different sources, to create a single final video file containing all scenes selected by the operator:



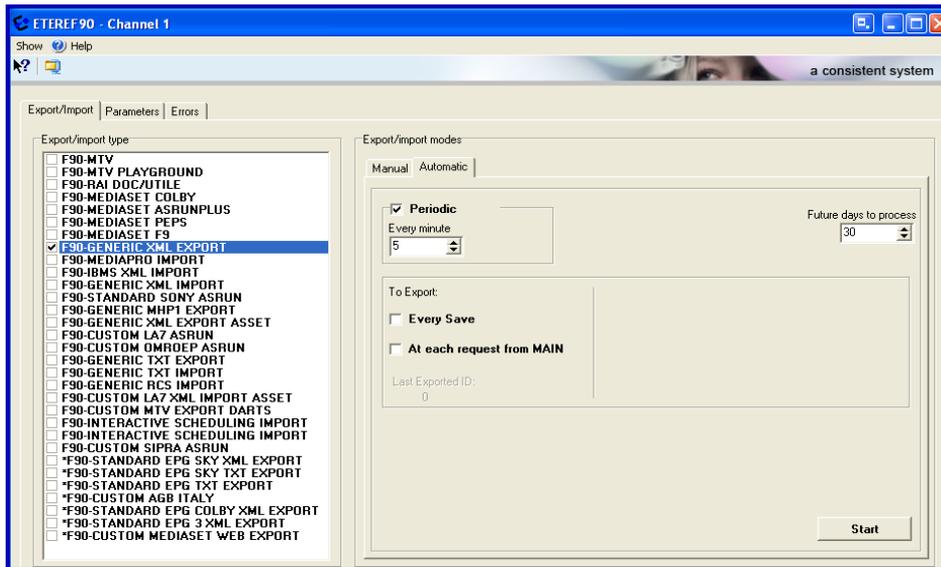
The image above illustrates the user-friendly interface on which operators creates new video sequences of MAM captions which includes all relevant metadata associated to the inserted scenes.

9. Etere F90

9.1 Automatic Import Export

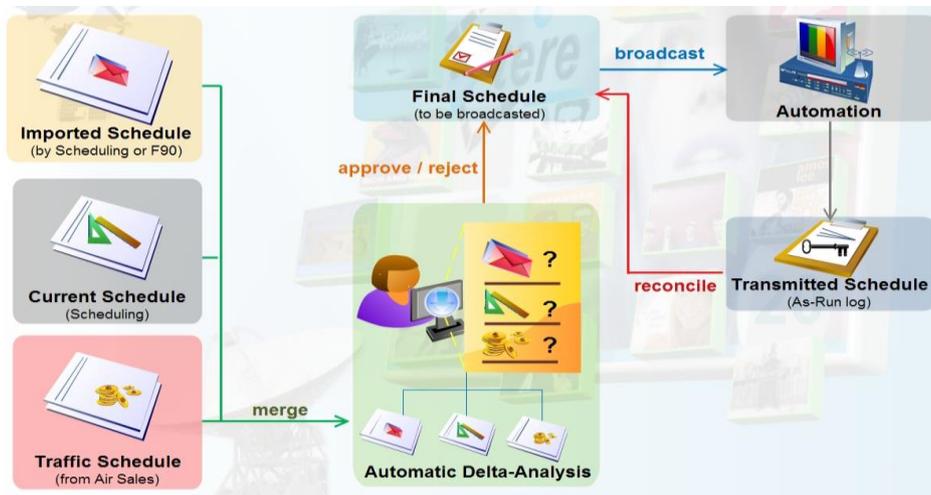
Etere F90 is the module that provides the system with the ability to import/export the daily programming from/to external departments. The entire system will be improved with a highly efficient and reliable connection between Media Prima's system and external departments, guarantees the maximum accuracy 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:



9.2 Schedule Compare Changes

Etere's scheduling application 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:



Code	Description	Type	Scheduled time	Source	Cluster Sort	Field	Change	Schedule
28	Blank Bottles 2009-IV	COMMERCIALS	06:00	TRAFFIC_NEW	120	Code	Peanuts-0001	
22	North Live News	NEWS	06:05	TRAFFIC_NEW	120	Description	Peanuts - No.0001	
3082	Bee-Beer Advert 2010-I	COMMERCIALS	07:00	TRAFFIC_NEW	120	Type	TV Series	
3064	Testing Advertising Commerci	COMMERCIALS	08:00	TRAFFIC_NEW	120	Duration	0030:00:00	
Peanuts-0004	Peanuts - No.0004	TV Series	08:05	TRAFFIC_NEW	120	File name		
3087	Sexy Phone Commercial 201C	COMMERCIALS	09:00	TRAFFIC_NEW	120	Aspect	SD 4:3	
70	Jeux D'Enfants	FILM	09:05	TRAFFIC_NEW	120	Asset ID	2988	
41	XYZ Running Shoes 2009	COMMERCIALS	10:00	TRAFFIC_NEW	120	Scheduled date	26/02/2010	
3087	Sexy Phone Commercial 201C	COMMERCIALS	11:00	TRAFFIC_NEW	120	Scheduled time	02:00	
Sex and the City-0002	Sex and the City - No.0002	TV Series	11:05	TRAFFIC_NEW	120			
28	Blank Bottles 2009-IV	COMMERCIALS	12:00	TRAFFIC_NEW	120			
87	NATIONAL Live News	NEWS	12:05	TRAFFIC_NEW	120			
3082	Bee-Beer Advert 2010-I	COMMERCIALS	13:00	TRAFFIC_NEW	120			
3064	Testing Advertising Commerci	COMMERCIALS	14:00	TRAFFIC_NEW	120			
3087	Sexy Phone Commercial 201C	COMMERCIALS	15:00	TRAFFIC_NEW	120			
Peanuts-0016	Peanuts - No.0016	TV Series	15:05	TRAFFIC_NEW	120			
41	XYZ Running Shoes 2009	COMMERCIALS	16:00	TRAFFIC_NEW	120			
Sex and the City-0021	Sex and the City - No.0021	TV Series	16:05	TRAFFIC_NEW	120			
28	Blank Bottles 2009-IV	COMMERCIALS	17:00	TRAFFIC_NEW	120			
3082	Bee-Beer Advert 2010-I	COMMERCIALS	18:00	TRAFFIC_NEW	120			
22	North Live News	NEWS	18:05	TRAFFIC_NEW	120			
3064	Testing Advertising Commerci	COMMERCIALS	19:00	TRAFFIC_NEW	120			
3087	Sexy Phone Commercial 201C	COMMERCIALS	20:00	TRAFFIC_NEW	120			
41	XYZ Running Shoes 2009	COMMERCIALS	21:00	TRAFFIC_NEW	120			
28	Blank Bottles 2009-IV	COMMERCIALS	22:00	TRAFFIC_NEW	120			
3082	Bee-Beer Advert 2010-I	COMMERCIALS	23:00	TRAFFIC_NEW	120			
3068	Deep Trip	FILM	23:05	TRAFFIC_NEW	120			
3064	Testing Advertising Commerci	COMMERCIALS	00:00	TRAFFIC_NEW	120			
3087	Sexy Phone Commercial 201C	COMMERCIALS	01:00	TRAFFIC_NEW	120			
Peanuts-0001	Peanuts - No.0001	TV Series	02:00	IMPORTGENERIC	120			
41	XYZ Running Shoes 2009	COMMERCIALS	02:00	TRAFFIC_NEW	120			
Sex and the City-0004	Sex and the City - No.0004	TV Series	02:30	IMPORTGENERIC	120			
Peanuts-0015	Peanuts - No.0015	TV Series	03:00	IMPORTGENERIC	120			
Sex and the City-0005	Sex and the City - No.0009	TV Series	03:30	IMPORTGENERIC	120			

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.

9.3 As-Run Logs Export

The ability to export As-Run logs containing the schedule “actually” transmitted allows an easy reconciliation between the Automation and Traffic systems, being possible to send to multiple (UNC and FTP) destinations a frame-accurate log (in any of the available formats) to allow the Traffic department to perform the reconciliation process.

ON-AIR DATE/TIME	ID	TITLE	DURATION	STATUS	DEVICE	CH	TYPE	CODE	NOTES
23/02/10 06:00:00.00	63	North Live News	01:00:00.00	OK	A	*	NEWS	22	
23/02/10 07:00:00.00	41	XYZ Running Shoes 2009	00:00:30.11	OK	A	*	COM	41	
23/02/10 07:00:30.11	34	Peanuts - No.0004	00:30:00.00	OK	A	*	TV	Peanuts-0004	
23/02/10 07:30:30.11	3082	Bee-Beer Advert 2010-I	00:00:30.00	OK	A	*	COM	3082	
23/02/10 07:31:00.11	70	Love me if you dare	01:19:59.24	MISSED	A	*	FILM	70	
23/02/10 08:51:00.10	3083	Bee-Beer Advert 2009-IV	00:00:24.12	MISSED	A	*	COM	3083	
23/02/10 08:51:24.22	234	Sex and the City - No.0002	00:30:00.00	MISSED	A	*	TV	Sex and the City	
23/02/10 09:21:24.22	3064	Testing Advertising Com.	00:00:29.20	MISSED	A	*	COM	3064	
23/02/10 09:21:54.17	345	NATIONAL Live News	01:00:00.00	MISSED	A	*	NEWS	87	
23/02/10 13:30:30.11	41	XYZ Running Shoes 2009	00:00:30.11	MISSED	A	*	COM	41	
23/02/10 19:00:29.20	412	Deep Trip	00:59:59.24	MISSED	A	*	FILM	3068	

10. Conclusions

This paper has described how the development and deployment of a comprehensive Etere Automation system offers a large number of operational advantages related to the efficiency, flexibility, scalability and accuracy of the overall system, benefits that have been condensed in the following points:

- Efficiency, since Etere reduces the need for repetitive manual operations, allowing to define them advance and then include them in the automation system, thus increasing productivity and allowing a single operator to control various process through a single interface.
- Flexibility, which permits the Etere system to fit the specific customer requirements, offer an easy playout management, integrate its functioning with other playout systems (e.g.: Omneon), and allow an automatic and custom generation of As-Run logs.
- Scalability, to enable Media Prima to increase the number of devices and complexity of operations used across the system, while minimizing operational overheads and reducing overall costs.
- Accuracy, from the media management to the final playout, reducing the risk of mistakes during on-air, archived content can be easily controlled to improve the precision of their related information.

11. About Etere

Etere is an international leader in the media market. Etere develops and distributes a wide range of high technology software for broadcasting and media businesses. With more than 20 years of experience, Etere provides powerful, flexible, cost-effective, high-performance, end-to-end media solutions. Etere is the only company worldwide that can offer you a solution to all your media needs in one single package.

Etere is the only solution 100% workflow based for all broadcast and media environments. It's a common framework where there is real-time sharing of all the data among several applications to

manage all media business requirements. The workflow approach allows a fully customized design with edge performances.

From its headquarters in Tolentino, Italy, Etere guarantees the best after-sales support service on the market with engineers ready to give professional assistance 24 hours a day, 7 days a week. The service includes voice, email, VPN and VoIP with unlimited calls and connection time, and a pro-active system to help diagnose problems before they appear.

Etere: a consistent system

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