PROJECT

Etere

a consistent system

A smooth upgrade to an Enterprise Workflow

Disney CHANNEL

September 2011

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1. INTRODUCTION

Disney Channel is a cable and satellite television network owned by the Disney-ABC Television Group division of The Walt Disney Company. The Disney Channel International Networks is a global portfolio of more than 90 kid-driven, family inclusive entertainment channels and/or channel feeds available in over 160 countries and 30 languages. The channel specializes in television programming for children through original children's television series and movies, as well as third-party programming. It is marketed mostly toward young children, with the exception of their weekend primetime block that is aimed at pre-teens and teenagers ages 9–15, and the Disney Junior programming block aimed towards children ages 2–5.

Disney Channel Italia is the Italian version of Disney Channel. Disney Channel Italy also includes a +1 hour time-shift service (Disney Channel +1), a channel for pre-school children (Playhouse Disney), a cartoon channel (Toon Disney), an English-audio channel with subtitles (Disney in English), and a channel for male teenagers (Disney XD). Soon, it will launch Disney Cinemagic, which it will replace Toon Disney.

In order to streamline its global production system, Disney Channel is planning to move to a fully integrated tapeless and paperless workflow. Due to the sensitive nature of an upgrade process, the best of expertise is required; in these terms Etere will support the station on this process through a progressive integration of the new modules that will replace a series of current independent and non-integrated systems. An extreme modular solution will be provided to tightly integrate existing equipment and systems, thus permitting to achieve a level of productivity that will consistently meet the expectations set on the upgrade process.

This paper illustrates the upgrade process proposed by Etere for an integrated workflow based not only on a world-acknowledged system but on a hard-earned expertise on the implementation and maintenance of media asset management systems all around the world, providing 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 of Disney channel with a wide set of cutting edge applications that goes from an accurate contents management to an automatic delivery.

2. CURRENT SCENARIO

Nowadays, the broadcast workflow of Disney Channel involves the following aspects:

2.1 Media Library

The station's library holds all the assets and data, whether used or not for the on-air transmission, including DVD, tapes, etc. The library is divided into the following four primary areas:

- **Program Library**: Programs, movies, series, specials (i.e. short films), interstitials (short elements usually contracted by third-parties).
- **Presentation Library**: All self-produced assets (e.g. promo, bumper, billboard, ident, station ident and all non-contractual assets since they are self-produced).
- **Promotion Library**: Local promo jingles, Sky cross promotions,
- **Commercials Library**: Spots and frame spots.

The station manages different versions for each asset (e.g. DVD version, TX version, TX No-Credits version, TX 4:3 version, TX 16:9 version, TX with short credits, source master, asset), where only the "asset" version has real TC references to be used for the on-air transmission.
Among all the assets managed by the station, only some are marked as 'to broadcast' (i.e. active).

2.2 Strategic Playlists

The so called 'strategic playlist' will be internally created, managed and planned by Disney Channel Italia (without inputs or forced changes from UK).

The strategic playlist is managed using an excel worksheet which accompanies the real playlist from the start to the end. The strategic playlist is generated about 45 minutes before the on-air transmission; data is then manually reinserted in Vision.

2.3 Advertisements

Disney's advertisements are managed by the SKY agency, which sends a 'strategic playlist' with a month in advance. Billboards are always managed as the last on-air element before a movie and/or as the first on-air element after the movie's end.

For the management of advertisements, Disney Channel creates assets with a unique progressive code which differs from the one used by Sky for the programming. When the returned playlist is imported, the Sky assets (if not existing) are newly created inside the database. All assets contain both, the Disney and the Sky codes.
Promos and fillers are manually inserted viewing the strategic playlist until completing the broadcast playlist filling up.

2.4 Broadcast playlists

In Vision, the station manages templates used by a self-produced tool that inserts secondary events, said tool inserts also the on-air code of a crawl which is generated and controlled by the playout system.

Another self-produced external tool undertakes the playlists exported by Vision (in Harris LST format), "translating" and "remaking" it adding the primary and secondary events based on preset station rules in order to obtain the one that will be the real broadcast playlist. This tool provides proper functions that allow operators to interact independently with the playlist's secondary events, without passing back (if necessary) by the Vision.

Disney transmits also over the Sky and Mediaset DTT platforms; therefore, the same playlist is undertaken by the external tool which searches for the station promos and replace them with the ones dedicated to either Sky or Mediaset. Therefore, another two broadcast playlists are generated from the station's main playlist.

2.5 Other operations

An operator is committed to the censorship, eliminating the scenes considered not suitable for transmission; being, from this point of view, fully self-sufficient from the head office. The document used for the censorship is also used for writing the basic metadata that describes the scenes within the asset and indicates after how many minutes/seconds they appears with respect to the event start.
Moreover, assets are also linked to the proper keywords such in a way that –if required- they can be searched from the playlist all the events scheduled in future playlists which matches a certain keyword in order to replace them (e.g. princess Diana death. The next two weeks they won't be scheduled events relayed to 'princesses', 'deaths', etc.).

At this moment, the SIAE is managed by an external society in charge of integrating ROF and/or ROM data regarding the events in the playlist, being also responsible of issuing an appropriate registry. Furthermore, the subtitles management is performed by an external company which receives a low-resolution copy of the related media.

2.6 Assets Management

Assets can be received in either ProRes or Xdcam format. The station has a currently enabled AdStream service for receiving contents. Once the location, the quality control and the on-air file preparation is done, a copy of the file is send back to the head office.

The station manages an XLS file where are contained manual notes regarding the video reception date, the audio reception date, the date and person who performed the location, the date and person who performed the quality control, the formats generated from the original file and the person who was in charge (for ProRes formats also an Xdcam 16:9 and SD 4:3 versions are generated, for Xdcam 16:9 formats also an SD 4:3 version is generated, for SD 4:3 no other file is generated).
Currently, ARC and AFD are managed at a video level, that is, a properly real file is generated; being the same for the audio/loudness leveling. For the same previous reasons, the Quality Control and the check of time code markings is performed using different files even of the same content (e.g. different formats), thus resulting in a heavy and time-consuming operation without an appropriate protection against errors.

A STK 3000 library is used along with LTO4 cartridges as the deep archive, being currently controlled by Diva. The station also manages an Omneon Spectrum video server with one MediaPort 5000 and two new MediaPort 7000 intended to be used for the automatic AFD up-conversion into the same format (i.e. SD to SD).
Graphics are managed by a Vertigo system, moreover, FlexiCart cart machines are no longer used for ingest but only as “spare devices” for going on-air in case of maintenance on the playout system.

2.7 Rights Management

Rights and all the operations related to the payment and counting of programs runs and re-runs are managed by Vision in a completely independent way with respect to everything else.

3. ETERE PROPOSED UPGRADE

The system upgrade is a complex process that will change all current workflows which –at today- are almost fully independent and not integrated at all into a system based on a single database holding and managing all the station's data under an all-around approach.

It is due to the system complexity and its currently operating and unstoppable state that the upgrade process must be performed across progressive stages, where each one of them will allow to improve the efficiency and quality of the final product and services.

In this chapter, there will be described one of the possible scenarios, the one considered as the baseline of the project.

3.1 Replace the current Vision workflow

The first –and possibly more complex- stage of the project consist in setting up a MERP (Media Enterprise Resource Planning) platform that will be preparatory for the following stages and the addition of integrative functions and modules. The tasks comprised in this stage are following detailed:

i) **Introduction of a core Etere MAM system**: This database will replace the current one present in Vision and unlike it, the new database will be linked to real files, allowing to:
   - Deliver correct data related to the presence of files, metadata and markings.
   - Diffuse the low-resolution preview (proxy),
   - Check files without handling them, letting Harris and Diva intercommunicating directly.

   In the latter way, Etere MAM will be inserted progressively and effectively into the infrastructure to take charge of the transcoding services, audio leveling and NLE transferring.

ii) **Introduction of an Etere strategic playlist**: This playlist will be used instead of the current excel worksheets which are independent and disconnected from the main system.

iii) **Playlist editing**: The playlist will be drawn up using Etere until the LST file is generated.

iv) **Playlist post-processing**: The LST file generated by Etere will be ready for being post-processed using the current tools.

This first stage allows replacing Vision and reaching a streamlined service improved for controlling and accessing files, being inserting in parallel to the current workflow until the final transmission.

3.2 Media Asset Management

At a second stage, the following media asset management operations will be performed:

i) Etere MAM will be in charge of the entire management and handling of files, excepting the archiving and on-air processes.
ii) Etere will implement a worksheet service managed via workflow to generate work orders and keep track of their results.
iii) Integration of notifications for sending an email to the process responsible each time a work is ordered or its state is changed.
iv) Inclusion in Etere of metadata and the approval services management.
v) Insertion of the subtitling management, including the generation of subtitles and the re-generation of subtitled files.
vi) Direct management of the media repositories as well as the sending/reception of existing (signant) and new files (tapeless reception).
vii) Integration and management of content related rights.

3.3 Control of the Digital library

The third stage consists in the management of the digital tape library use by the station, the STK 3000.

3.4 Playout integration

The current Harris playout system will be integrated by either redesigning the Etere interface tools or replacing it with an Etere playout.

Etere will implement an “Integrated Media Management” solution able to store and transparently manage the facilities’ archived material over the long term. Etere’s solution consist of a MAM 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 based on a file-

based workflow framework featuring a wide range of function-specific workflows for acquisition, production and playout with additional integration capabilities.

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:

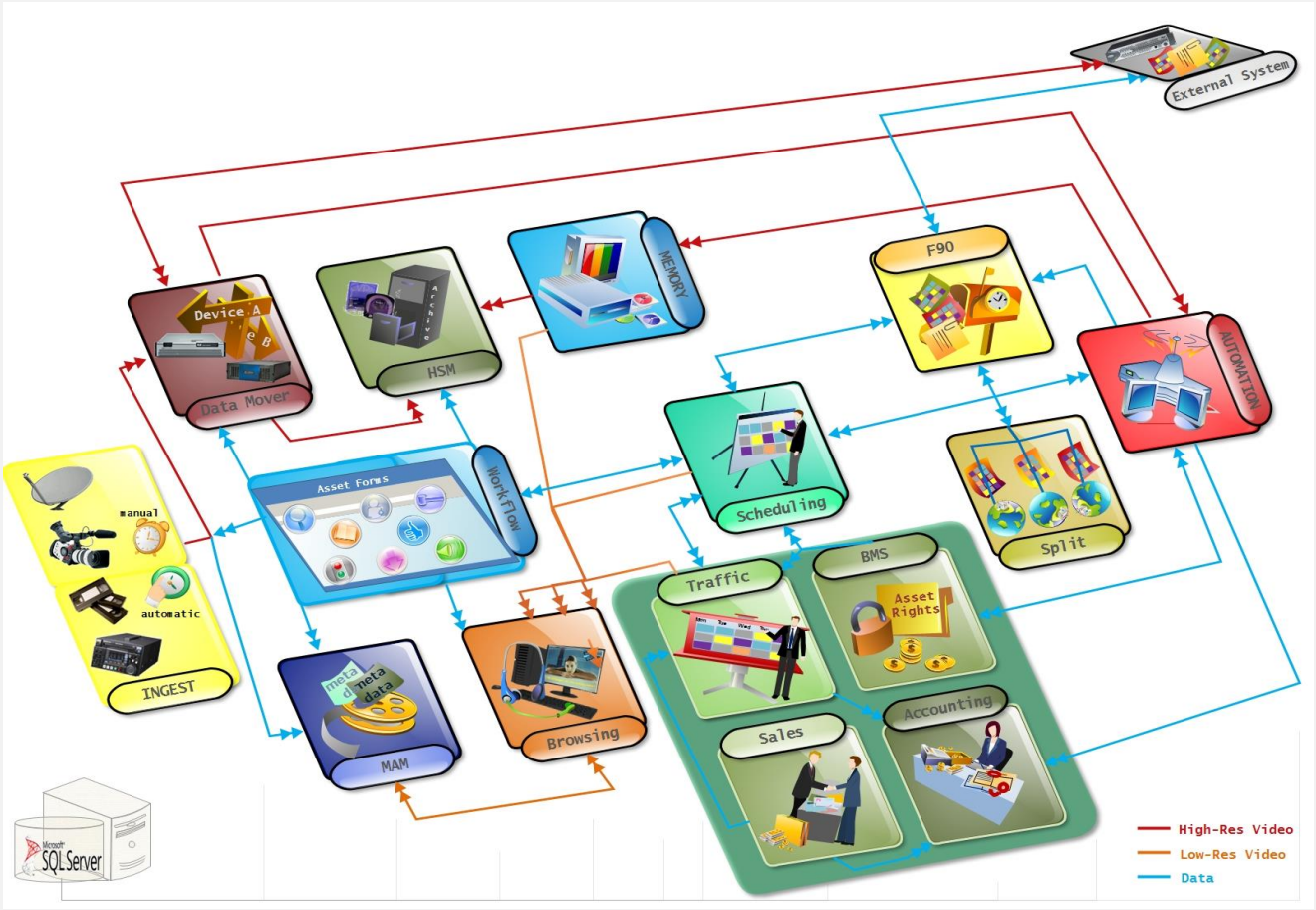
- **Etere MAM**, the best solution for indexing and editing a huge amount of media assets, it provides tools for an easier metadata insertion and video cut and merge,
- **Etere HSM**, an automatic tape-based storage system for long-term management archive,
- **Etere Media Manager**, the enterprise workflow-based 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),
- **Etere Scheduling**, the module for the draw up of on-air schedules which integrates a wide range of utilities (e.g. import/export, reporting, statistics, etc),
- **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 BMS**, for a reliable management of broadcast rights, guaranteeing that licensing terms and regulatory conditions regarding purchased programs are not violated.

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.

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.

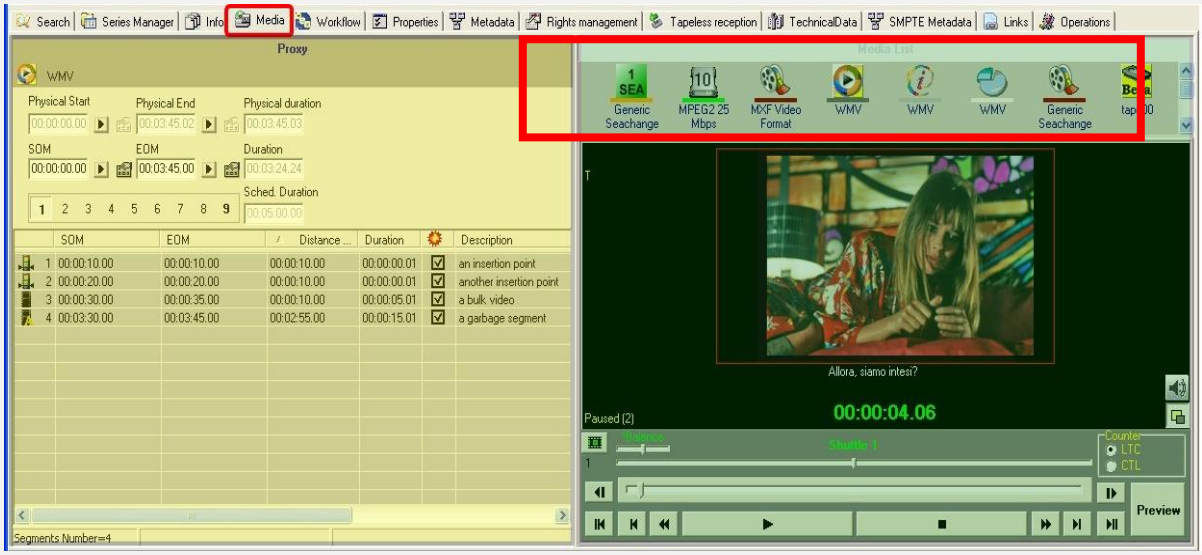


Etere's distributed architecture allows achieving a top-level availability of resources and reliability of operations across the entire broadcast workflow thanks to its redundant capabilities to improve the fault resilience on any hardware or software failure.

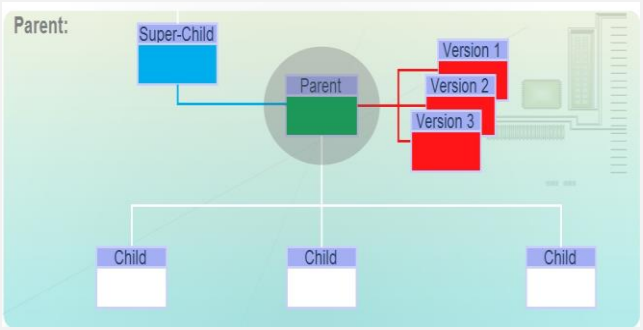
4.2 Multi-level Storage Hierarchy

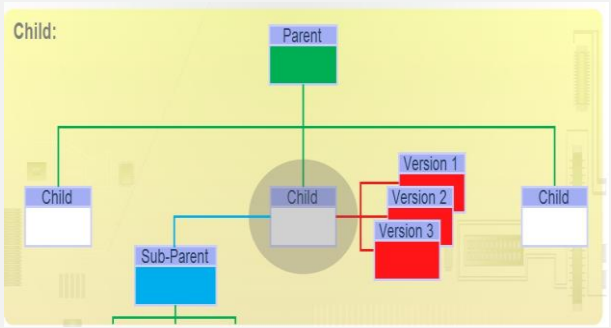
Etere systems improves the media management by introducing a multi-level storage management consisting in the use of different storage levels based on the frequency of use of the files stored on them. For example, data files which are frequently used will be stored on video servers (i.e. online servers) 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 user-specific 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:

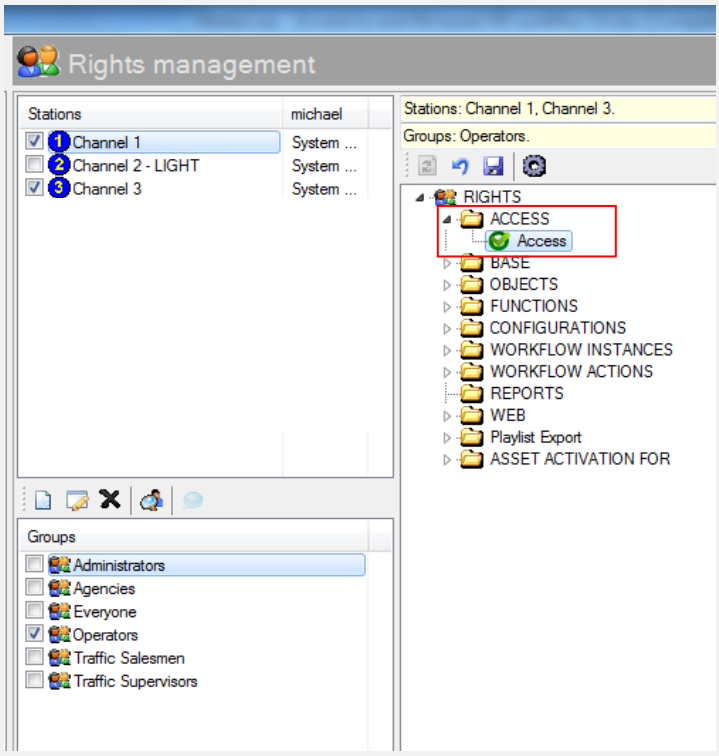


Moreover, media holders (i.e. asset forms) can be organized –along with their related information-under a hierarchical structure based on Parent-Children relationships, thus allowing, for example, to handle different versions of a same asset and all the assets derived from them:



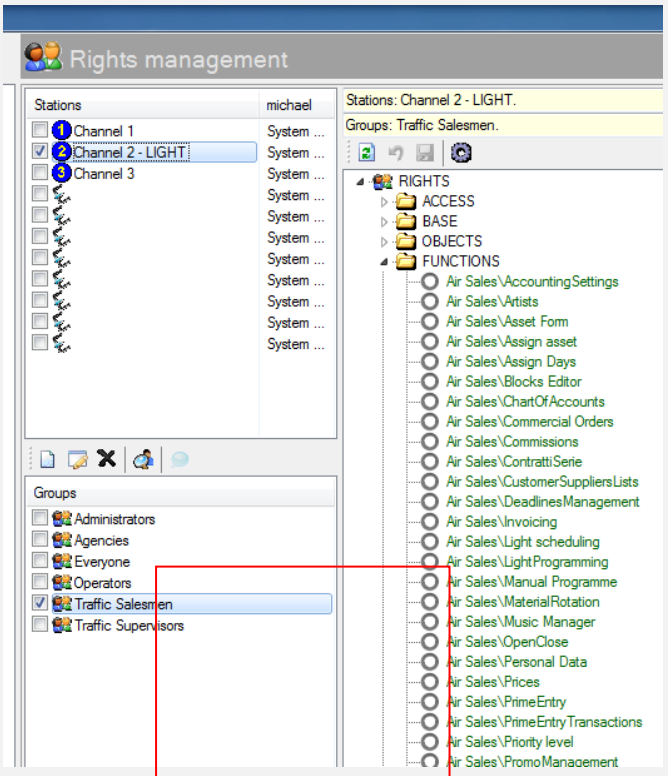


4.3 User Access Levels



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.



4.4 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.

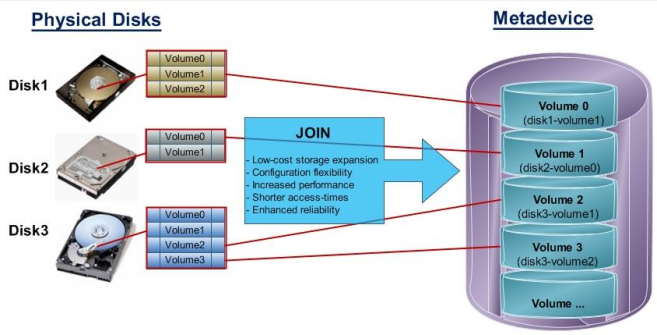
5. ETERE MEDIA FUNCTIONALITIES

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.

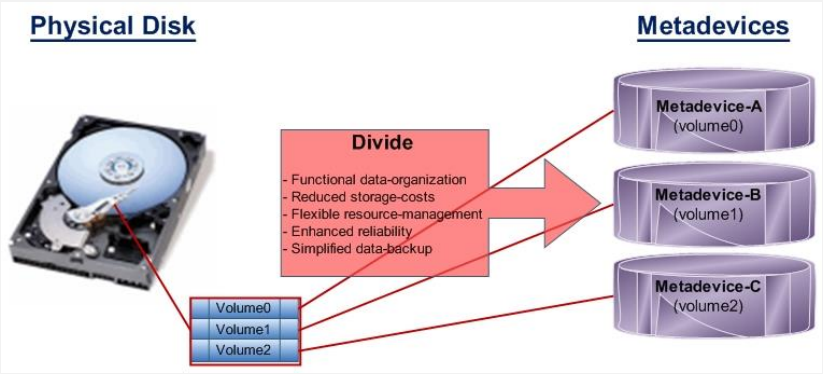
5.1 Multiple Storage Management

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:

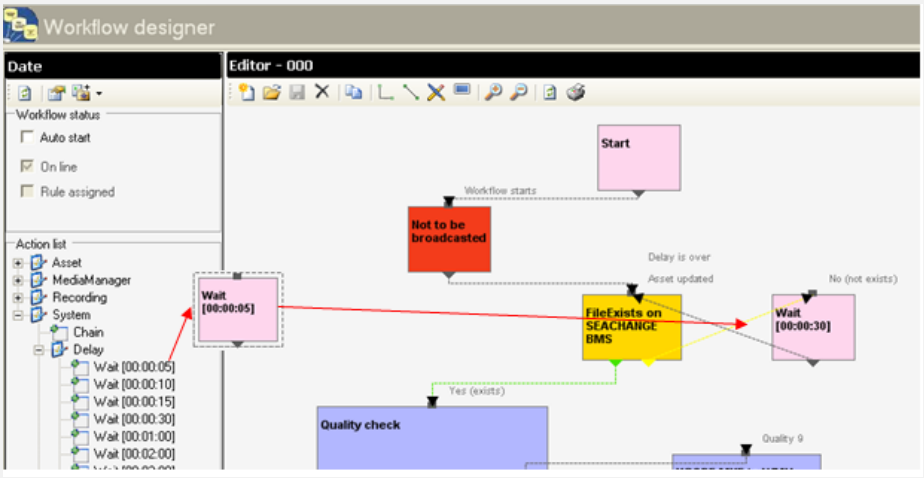


5.2 Custom Design Workflow

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:

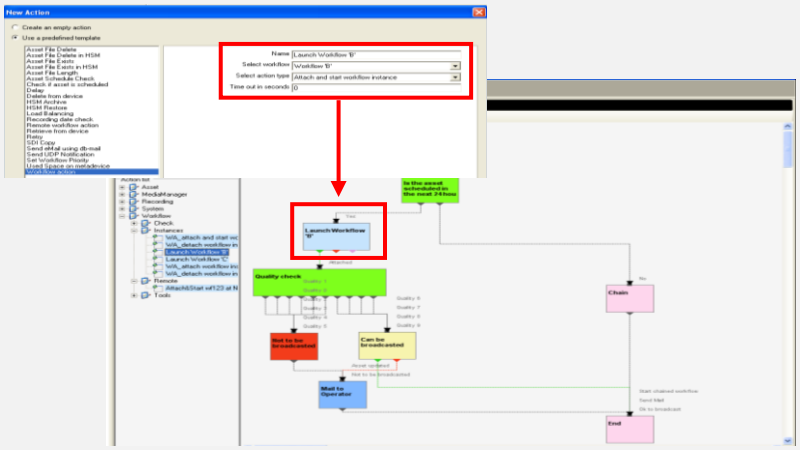
- Clear definition of each complex step of the broadcasting process,
- Visual representation of each step mapped out on a PC not in a paper document,
- Set of instructions and authorizations that must be followed in order to move forward,
- Complete log of all steps carried out, operations denied etc.

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

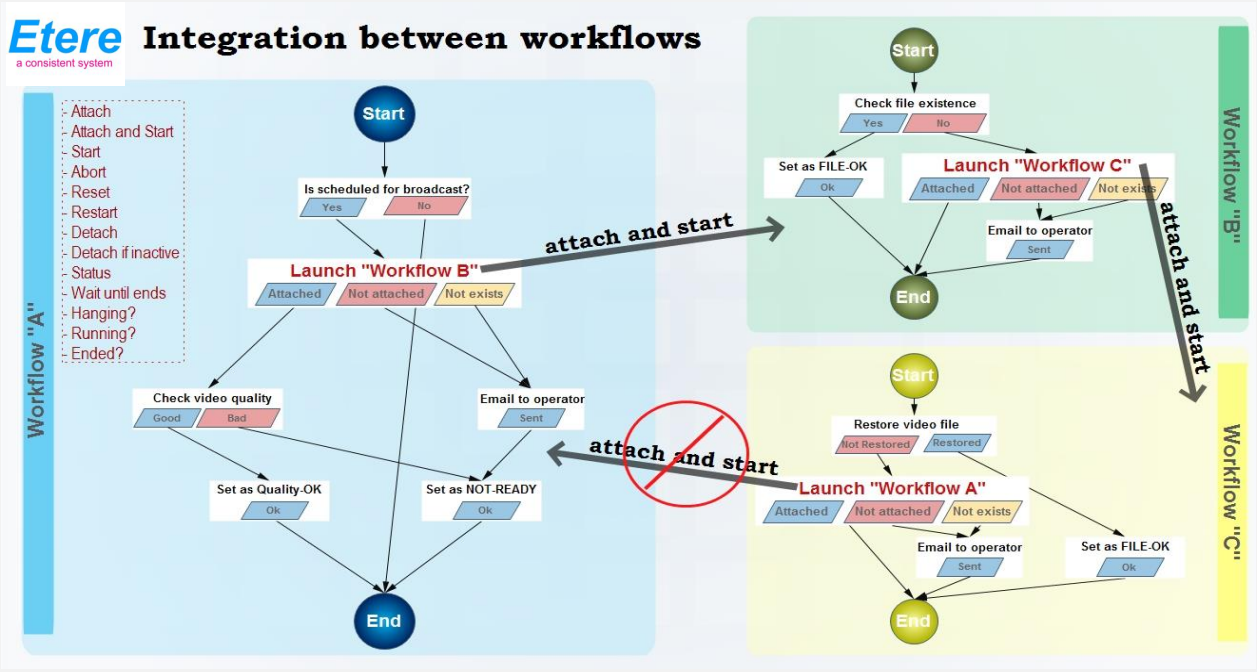


5.3 Integration between workflows

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:



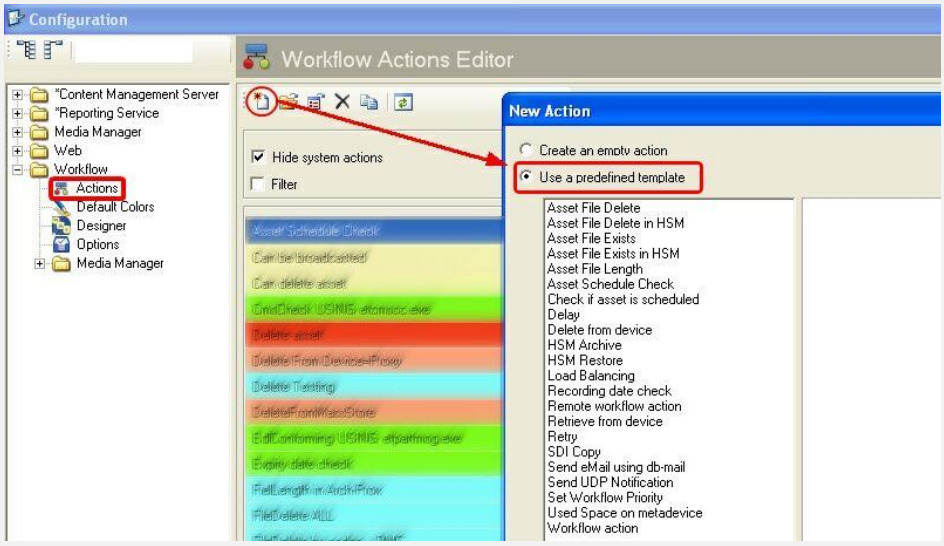
The diagram below illustrates how Etere maintains the system consistency by avoiding loops between workflows (a message is displayed indicating action incompatibilities between workflows):



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'.

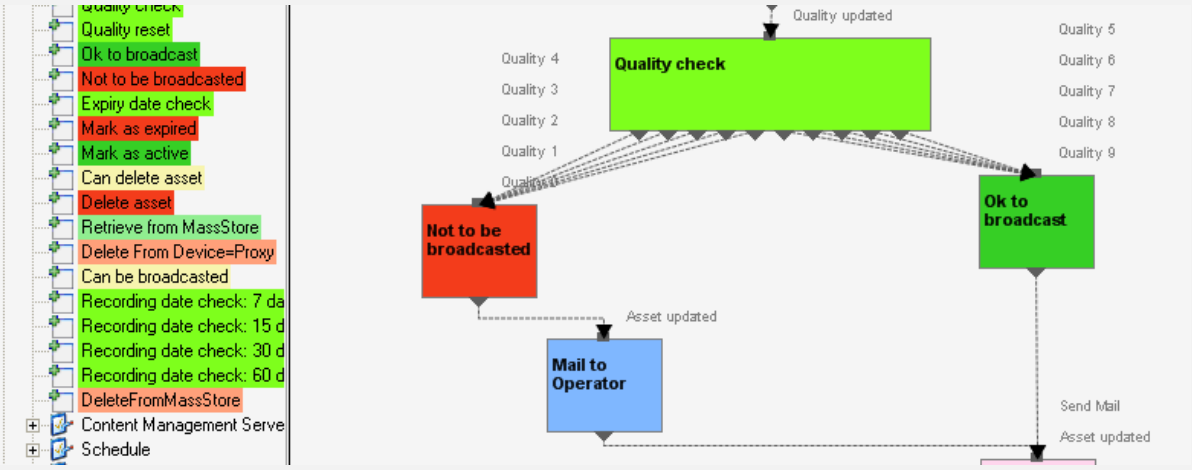
5.4 Workflow File-based Processing

Etere provides a wide range of templates for creating workflow actions regarding the most common file-based media operations, allowing to customize them and also use completely user-defined actions:



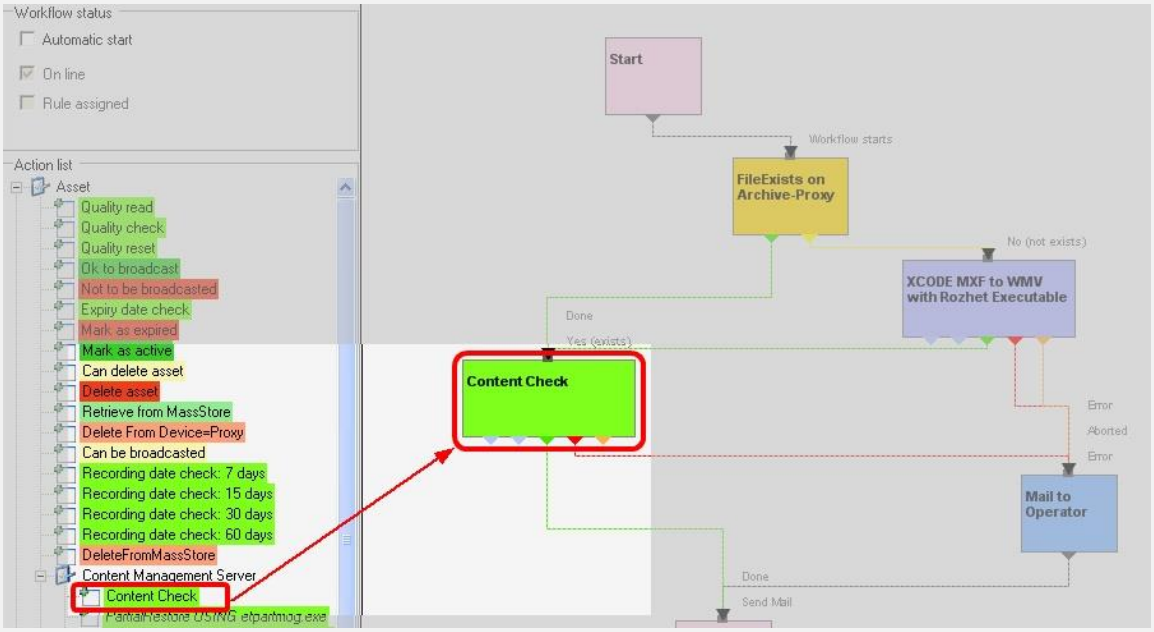
5.4.1 Quality Check

An Etere quality check workflow is able to automatically ask operators to assign a quality value to a certain asset(s) after browsing its video content:



5.4.2 Content Check

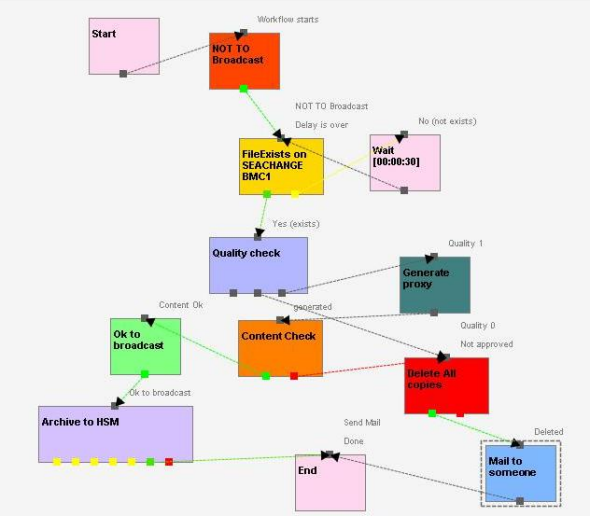
Etere counts with a workflow action called content check that once inserted into a workflow and attached to an asset, searches on its related proxy video file for defective video issues:



All defective video segments will be marked into their EDL list including black scenes, scene changes, freeze video, color bar, etc.

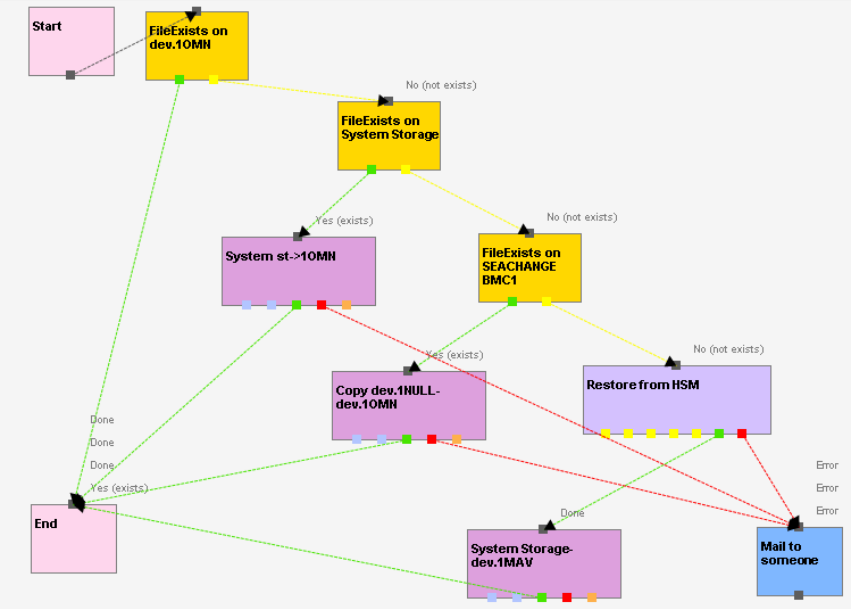
5.4.3 Archiving

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:



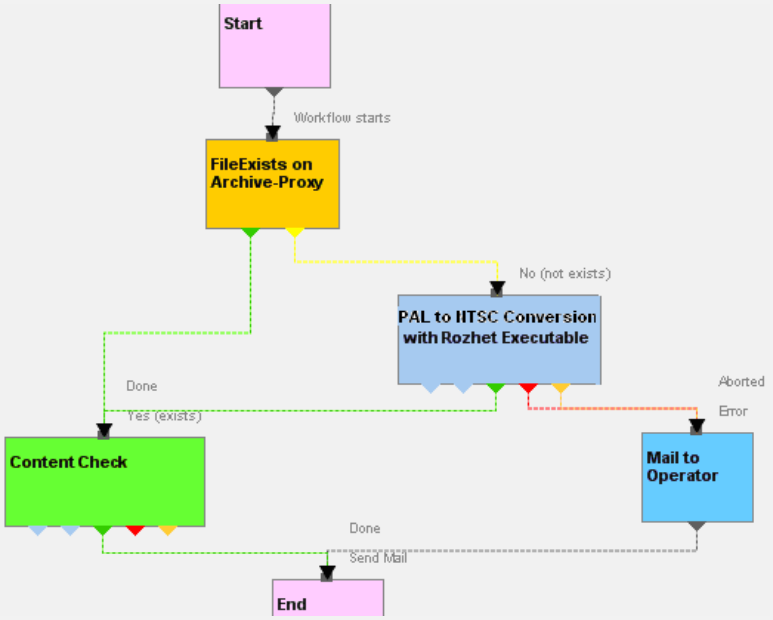
5.4.4 Restore

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:



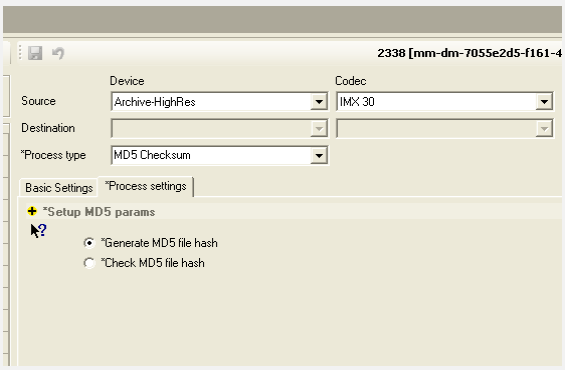
5.4.5 Transcoding

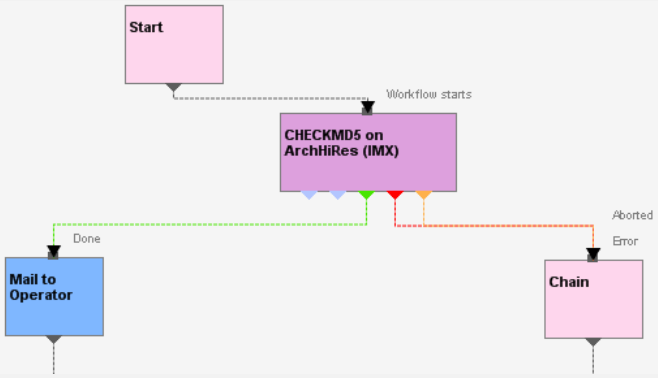
Etere's integration with Rhozet's Carbon Coder software handles a wide array of critical operations including format conversions, workflow operations that can be launched for example, immediately after a content capture:



5.4.6 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:

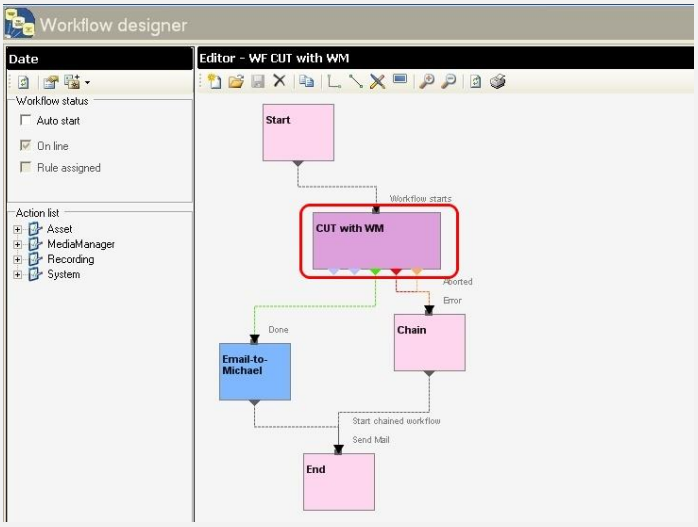


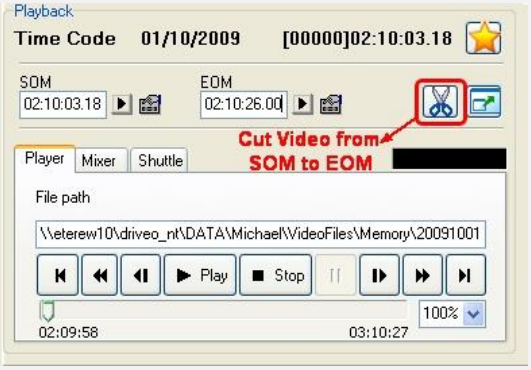


The workflow editor allows creating custom Checksum workflows to either generate or check the MD5 hash of a video file.

5.4.7 Video Cut

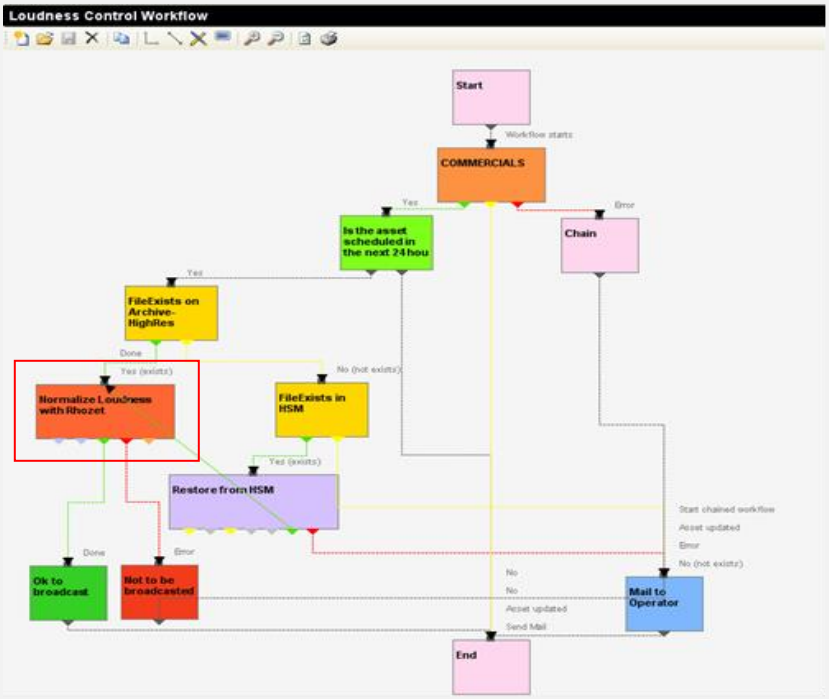
Etere offers 'Cut actions' that permits to take only a portion of a certain video file, using a given time code SOM and EOM. Defining and using a Memory Cut operation is as easy as shown below:





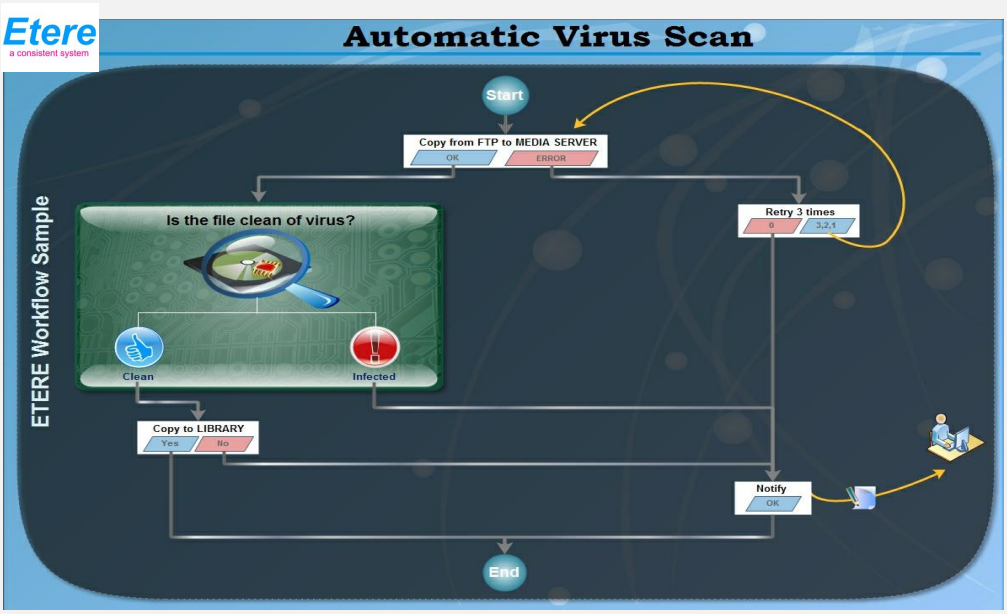
5.4.8 Loudness Control

Etere provides a file-based loudness control, allowing stations not only to check the loudness level of media contents but also to normalize them to meet specific limitations. Loudness control workflows can be launched automatically for specific assets, for example, after their ingestion or tapeless reception (i.e. web upload):

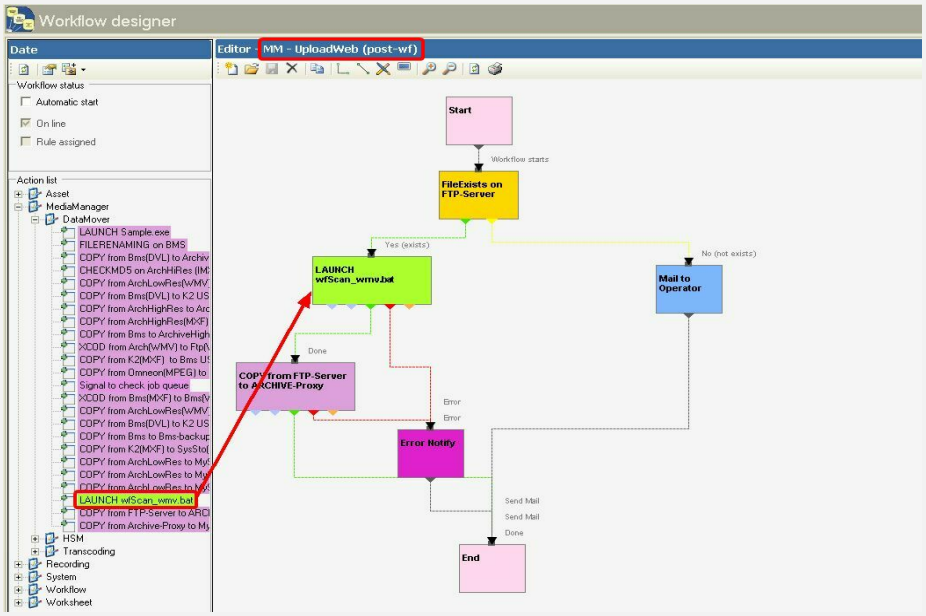


5.4.9 Antivirus Scan

Etere includes, as a part of its enterprise media management, the capability of integrating antivirus protection within workflows, allowing stations to improve their media workflows (e.g.: post-upload workflows) by giving them the capability of automatically scanning transferred files for virus and thus end their work with a flourish.

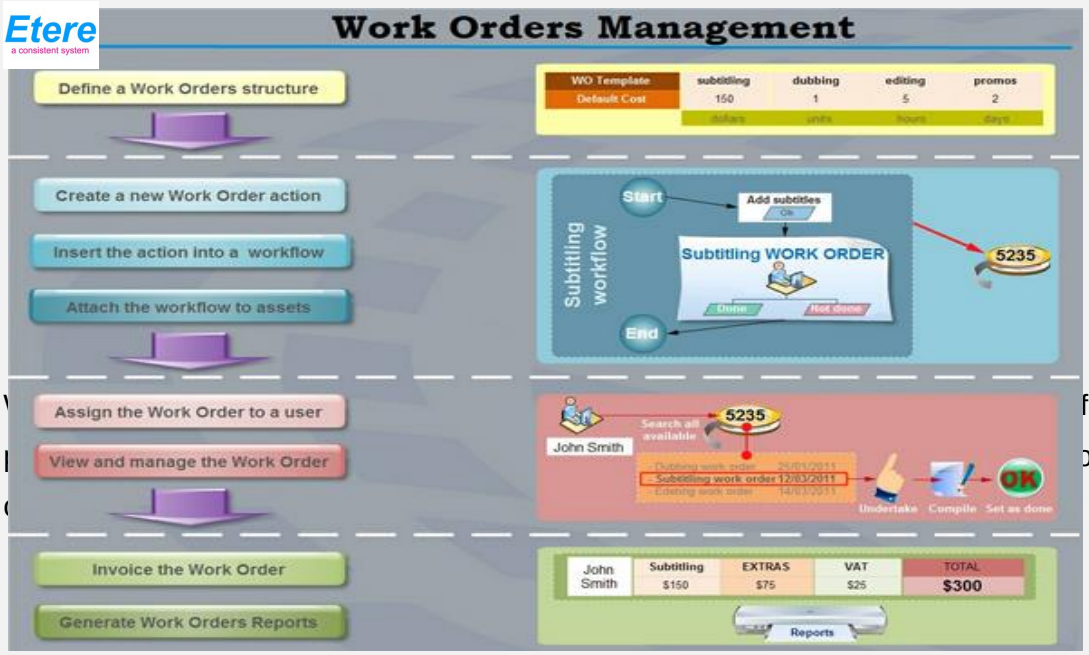


As shown in the figure above, the automatic virus scan capability can be easily integrated within any workflow at any stage just by inserting an action block configured to perform the virus checking; stations can insert them, for example, within the default workflow to be launched after an EtereWeb upload.



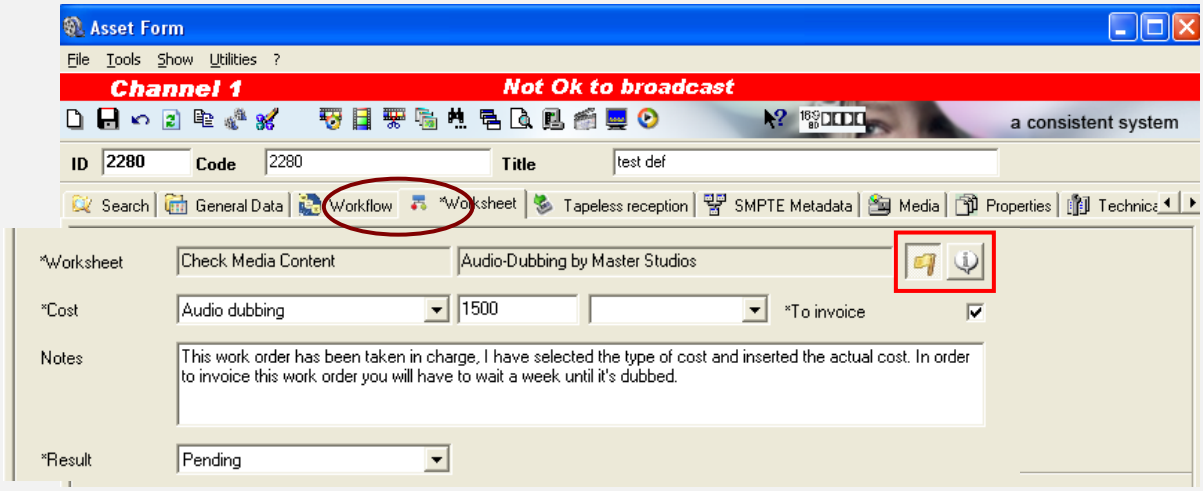
5.5 Work Orders Management

Etere's Work Order Management is the flexible solution that permits to virtually manage all operations actually involved in the media asset management, such as for example, subtitles generation, promo creation, tape copying, media editing, audio dubbing, etc. Etere integrates the management of work orders, from their creation and compilation to their tracking and invoicing:



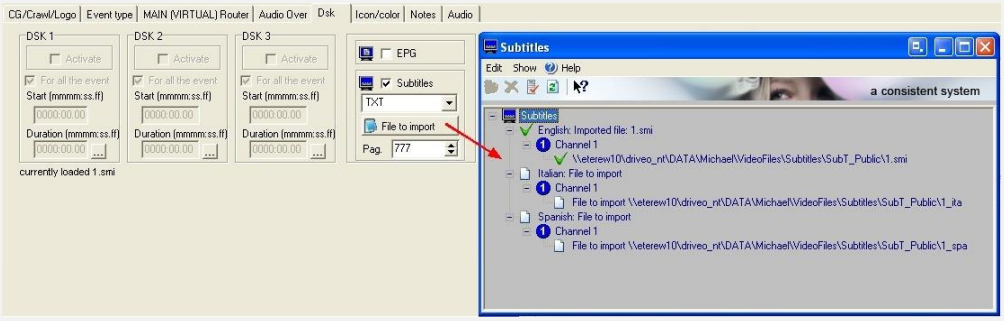
flow management, being

ows which current status



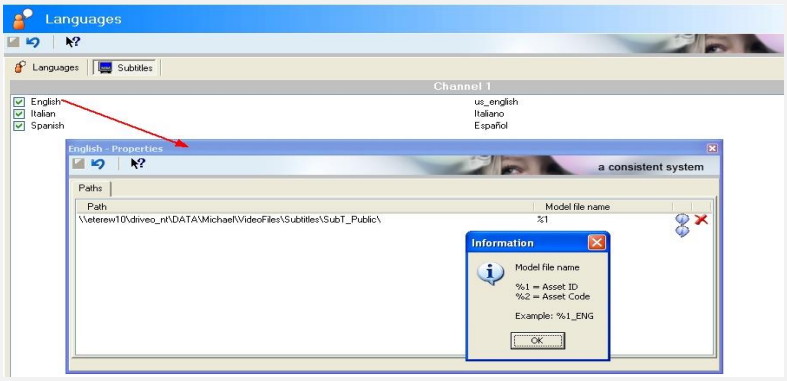
5.6 Subtitles Management

Etere includes, as a part of its enterprise media management, the capability of managing subtitles, subtitles can be generated whether using the WMP synchronized lyrics tool or any other external tool, in all cases Etere will import them automatically:



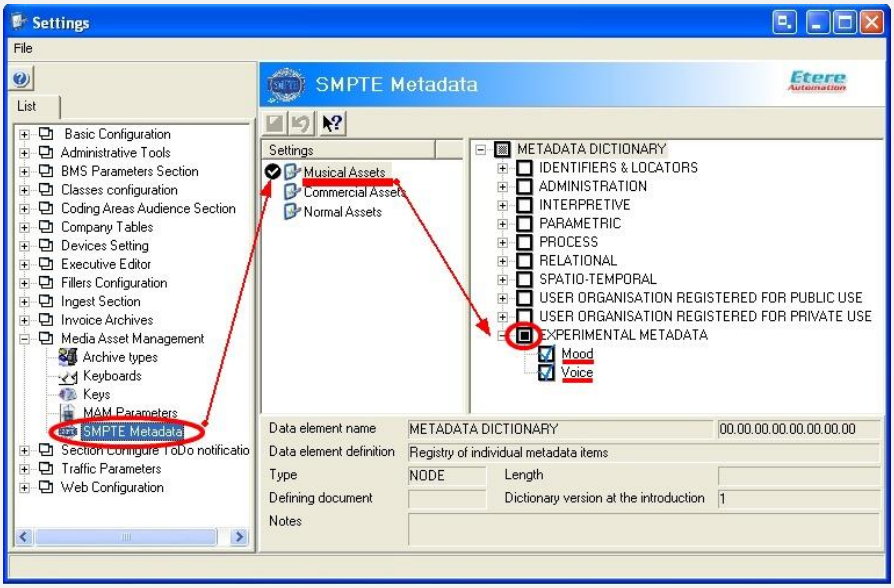
Once imported, subtitles are stored in a repository, ready to be moved to the subtitle engine when either the broadcast playlist will require it or a proxy preview will be performed (e.g. for quality check purposes):

Additionally, multiple language subtitle files are supported, allowing stations to specify so many subtitling languages as needed (including their storage paths):

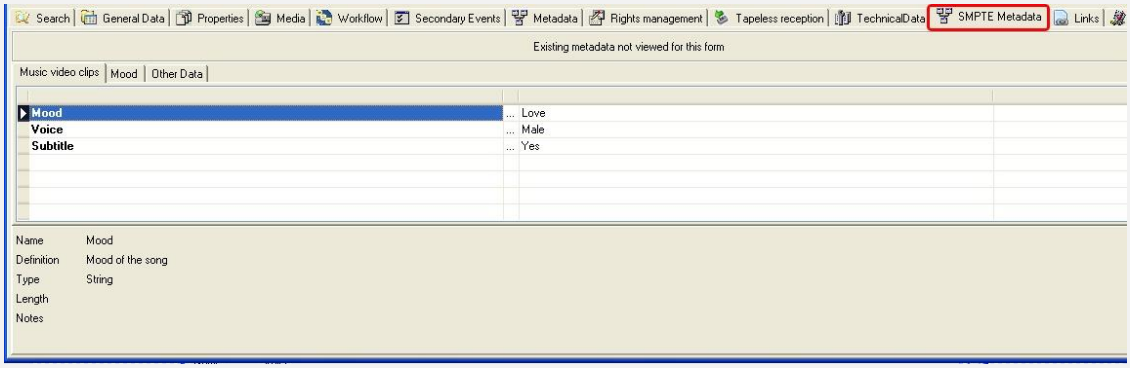


5.7 SMPTE Metadata

SMPTE (Society of Motion Picture and Television Engineers) Metadata is a key part of the media management, that's why Etere provides a dedicated module for defining eventually useful metadata (e.g.: 'technical comments', 'descriptive names', 'intellectual rights') and store them into a robust SMPTE dictionary:



In Etere, all assets contain user-defined SMPTE metadata fields, these fields can be either manually compiled or automatically compiled (retrieved from specific asset properties):



SMPTE metadata can be used also for cataloguing media content, allowing operators to quickly add specific information to a video segment.

6. ETERE COMPONENTS

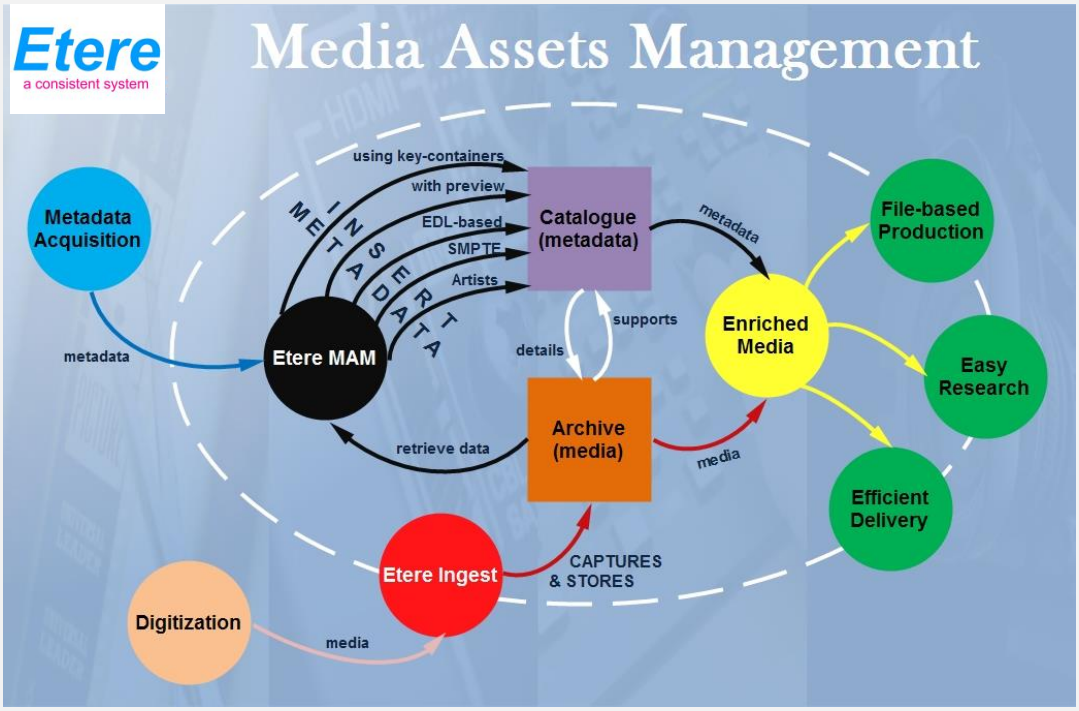
ETERE is an integrated broadcasting solution that implements a modular system formed by a set of modules specifically oriented to cover each complex phase of a broadcasting system, focusing to efficiently carry out specific operations such as media ingest, archiving, transferring, browsing, etc.

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.

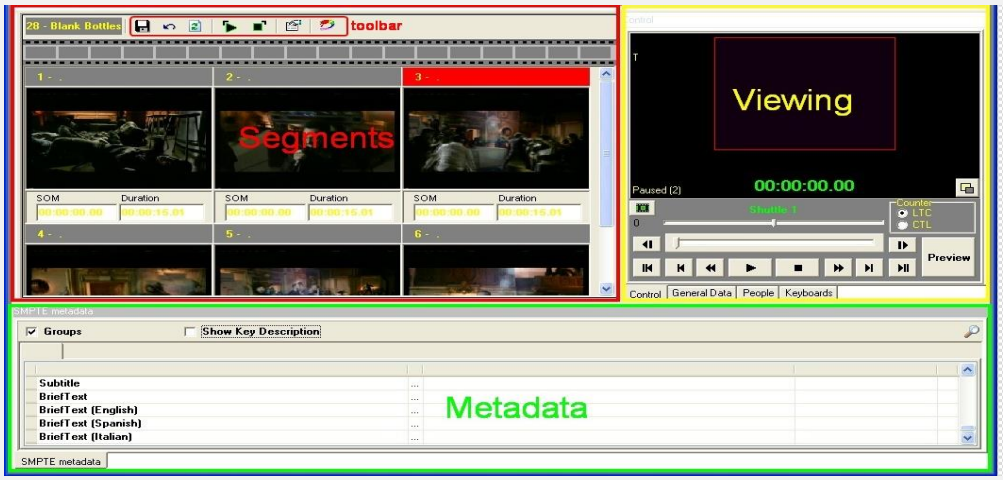
All modules that make part of the Etere's proposed solution will be treated throughout this chapter, explaining how its distributed architecture and integrated complementation are key parts of the success of the global system where a top-level performance and reliability is reached.

6.1 ETERE MAM: Browsing and Editing

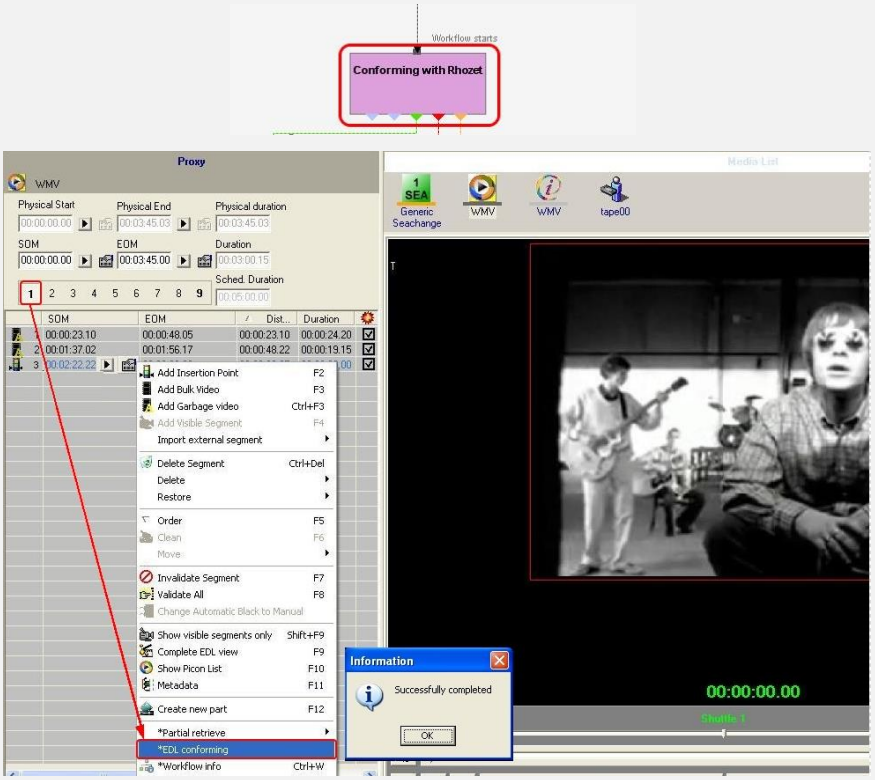
Etere MAM will allow operators to store information, search media EDL, and transfer EDL-based media to the playout server and the editing systems.



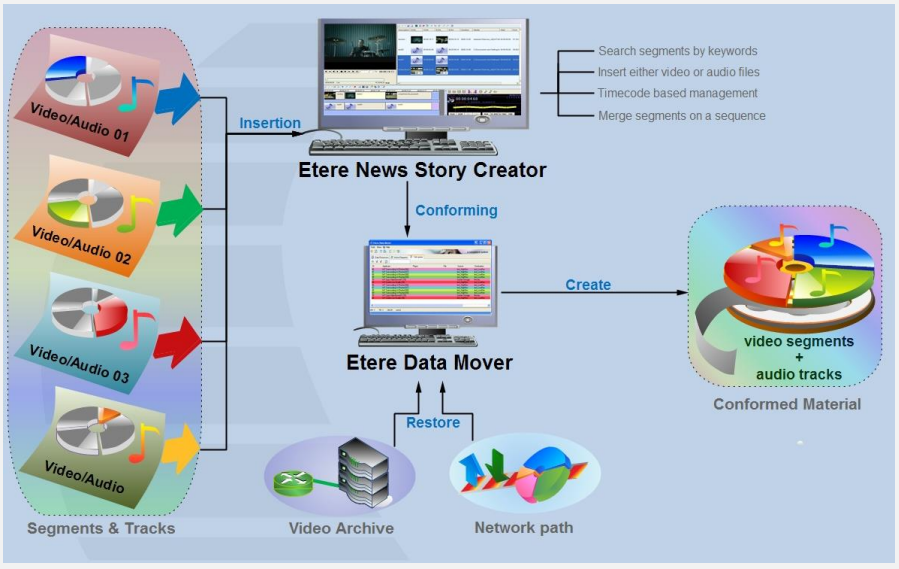
Etere enables comprehensive search and browse and cataloguing of rich media, its very intuitive interface establishes a bridge between the ingest department and the production department, allowing contents to be browsed simultaneously from various workstations thus enabling low-res proxy browsing over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



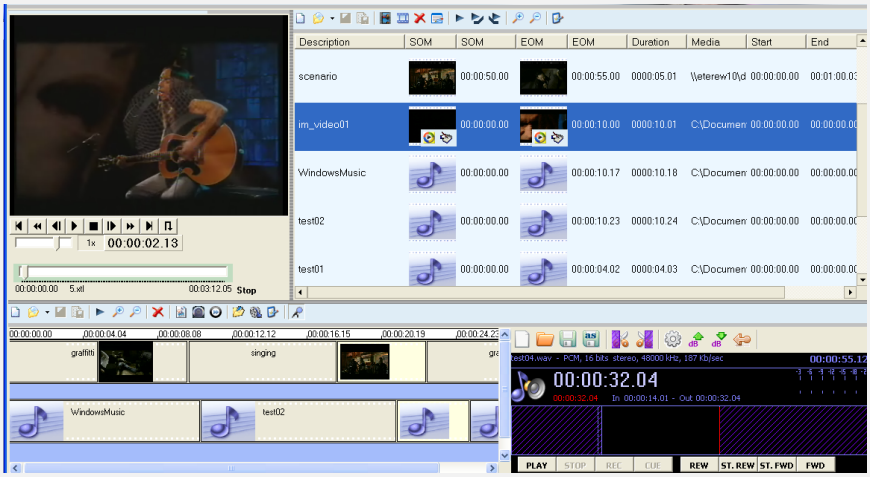
Etere also allows restoring only a part of video files by creating either high or low resolution video files including specific segments described on the source video EDL, it is important to note that as usual on Etere's operations, the conforming of video files is fully performed via workflow:



Etere MAM permits to join cut segments from different sources, to create a single final video file containing all scenes selected by the operator:



Use this function to for example perform the dubbing of video contents by overlaying an audio track over a video(s):



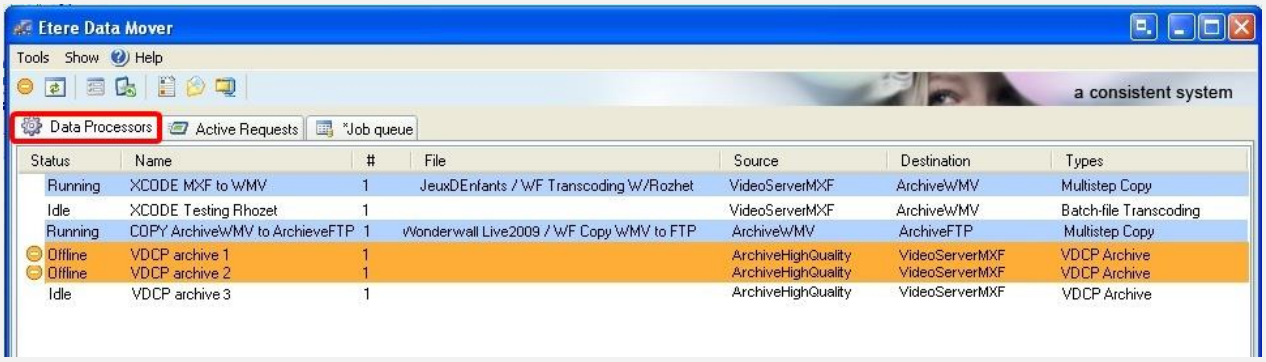
The image above illustrates the user-friendly interface on which operators creates new video sequences of MAM captions which includes all relevant metadata associated to the inserted scenes.

6.2 ETERE MEDIA MANAGER: A Digital Archiving and Delivery

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 rewrapping and transcoding capabilities.

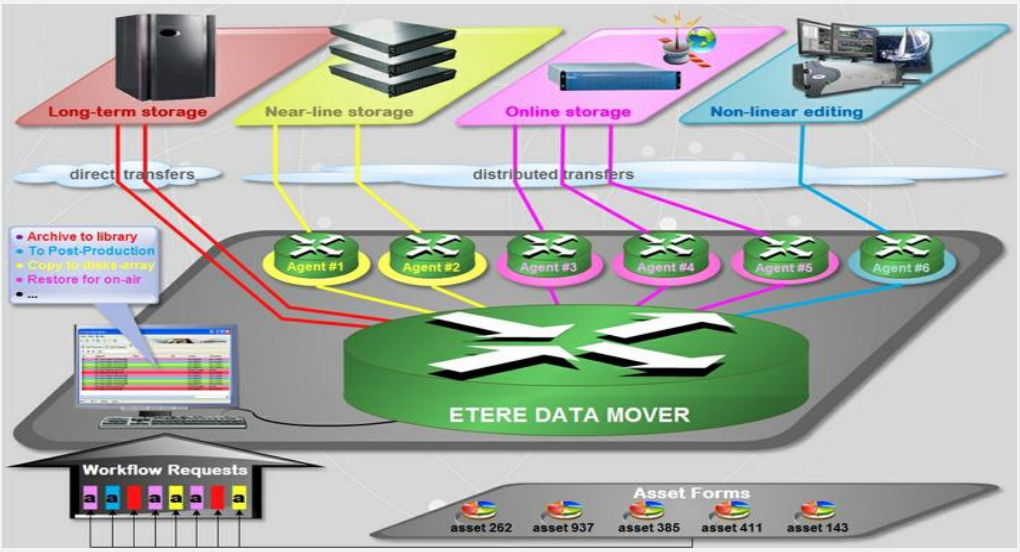
Etere's approach is oriented to "virtualize" the entire media management process, improving it with flexibility, customization and most important cost-effectiveness.



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:

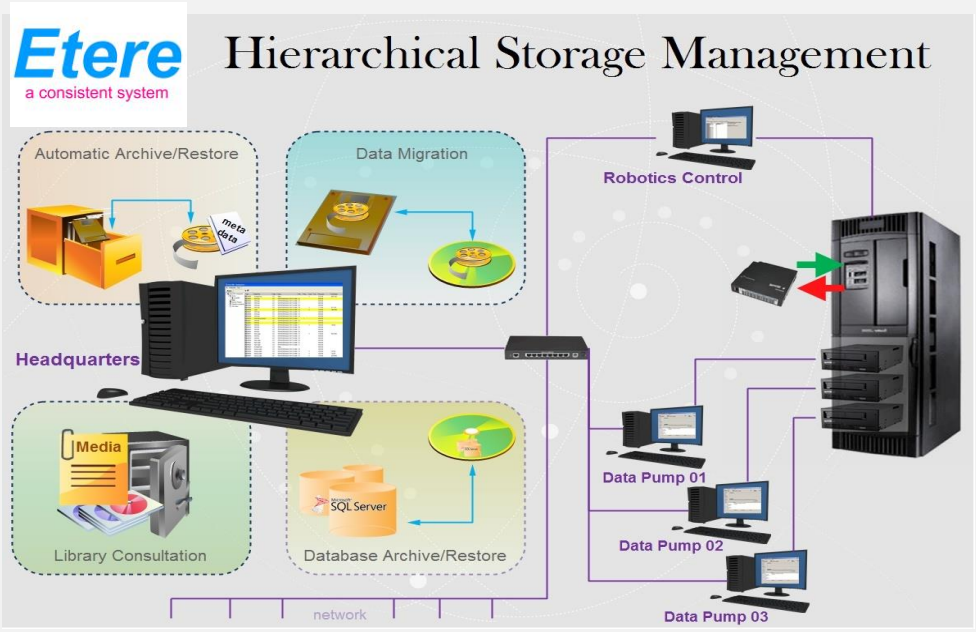
Etere Data Mover is the application used to perform the physical storage and retrieval of video files, a typical Data Mover operation would be to move a video clip from a video server to an archive based on custom actions which are defined and executed via workflow.

Additionally, Etere 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.

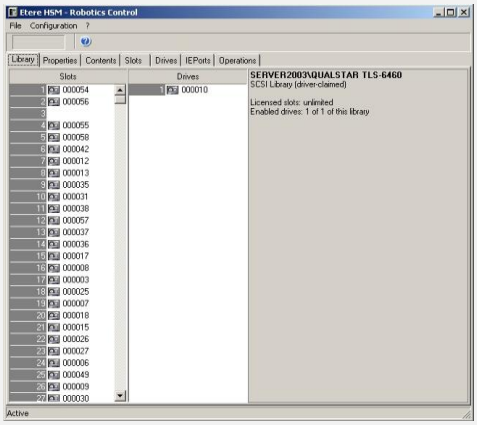


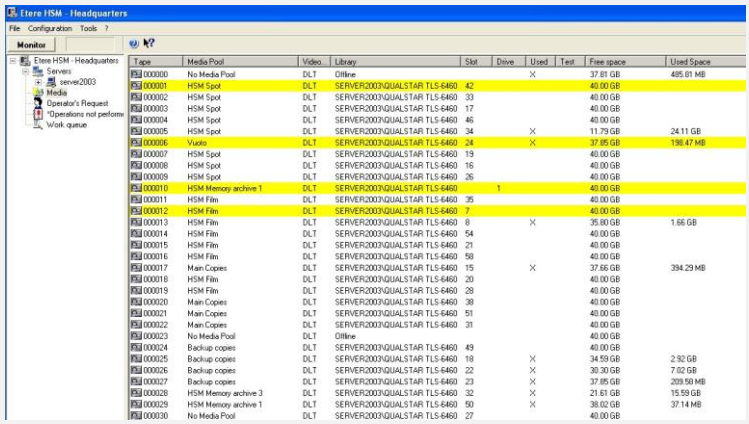
6.3 ETERE HSM: A Tape Based Archiving

LTO tape libraries present in the station will be managed by Etere HSM, the cost-effective solution to radically streamline the management of expensive tape libraries; allowing stations to optimize the migration of contents including high and low versions as well as associated metadata.



Etere HSM improves the management of libraries by controlling their mechanical movements through the HSM Robotics Control and HSM Data Pump applications, which are able to run several data pumps on different machines to boost their throughput, while offering access to real-time logs, reports and statistics.





Etere HSM distinguish four different archiving levels into a broadcasting workflow, these levels required distinct access times which vary from 0 minutes (video server) to 15 minutes (standard video tapes). All these levels are managed “virtually”, that is, you can use logical devices (metadevices) based on physical devices to free design your storage layout, enriching in this way the entire system with the benefits derived from the use of metadevices:

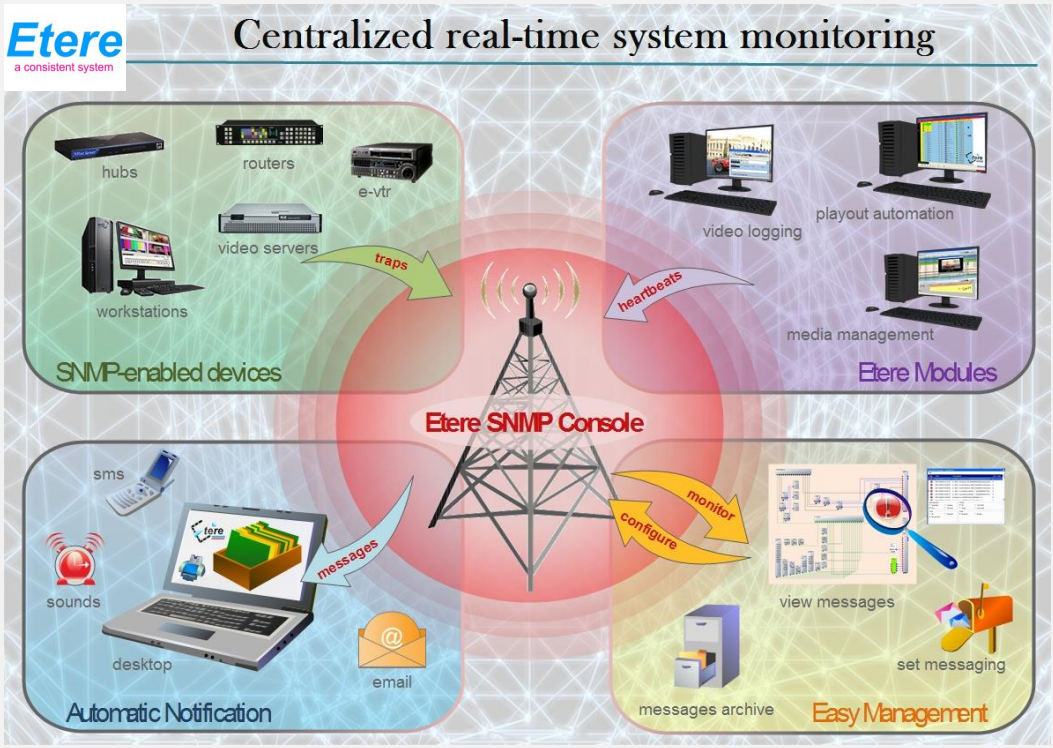
- Carry out loan-balanced movements on an intelligent multi-volume scenario,
- Extend your storage space by joining physical devices into one metadevice, without altering the archiving workflow,
- Categorize your storage devices by dividing them into metadevices with no partitioning required,
- Space limits and storage distribution are defined by the user and not by devices itself,
- Classify metadevices in media pools in order to automate their management,
- Background defragmentation and online/offline tape management,
- Scheduled archiving of devices, media contents and entire databases.

Etere HSM forms a tandem with Etere Data Mover to be the only solution in the market with an embedded multi-level and multi-rule cache that offers an intelligent management which ensures the best performances with low investments.

Moreover, owing to Etere's comprehensive character, these applications are perfectly integrated with other modules (e.g.: Ingest, EtereWeb, etc.) to allow all these modules to use shared resources and have unlimited communication.

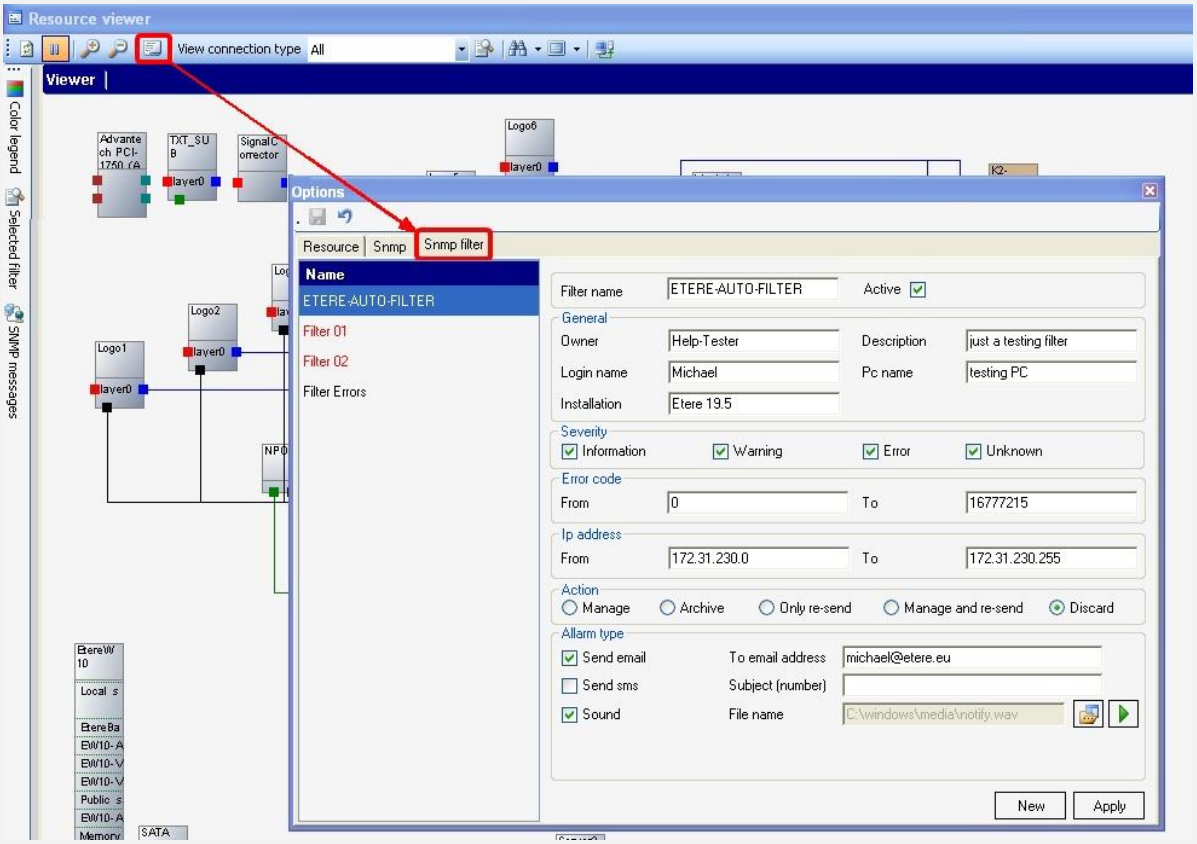
6.4 ETERE SNMP: A Complete System Monitoring

The Etere SNMP Console is the solution that allows to monitor any Etere module which collects and stores its management information (errors, warnings, etc.) through the locally installed Etere SNMP Agent which sends messages containing this information to a remote Etere SNMP Console which in this way monitors all the Etere's modules; through this console the operator can decide about the receiving policies (content, validity, filters, etc.).



The Etere SNMP Console is a key part of the broadcasting process because it permits to have a complete report of the way the Etere modules are working, allowing to catch errors, store them in a database for a further analysis and also forward them to an another console (forward the message to the pertinent operator who is intended to solve it) and thus saving time and resources on real-time which are invaluable assets in the broadcasting business.
In order to improve monitoring of modules and devices, all Etere components are automatically subscribed to the Etere SNMP Service, so it will monitor the periodic heartbeats sent via SNMP by the components.

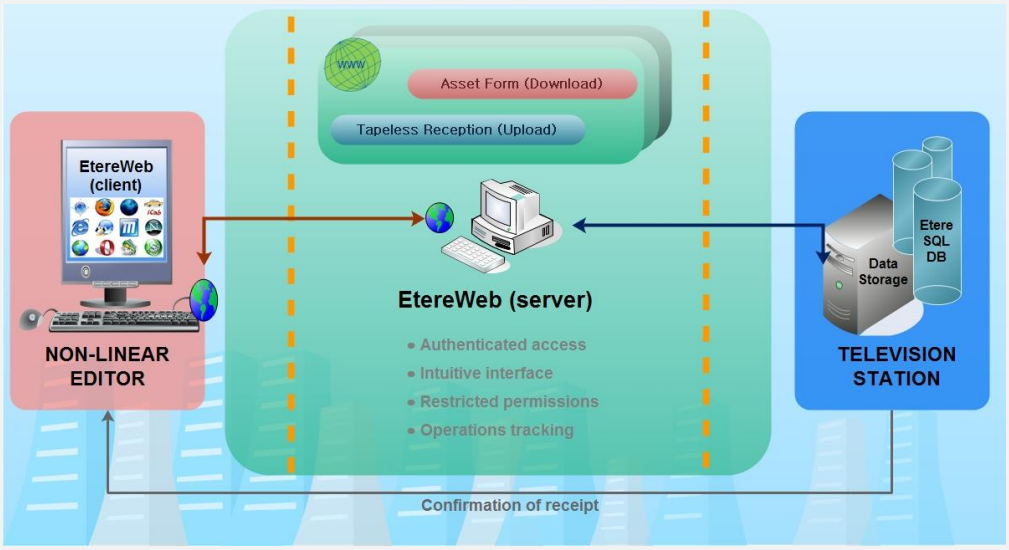
The monitoring system (i.e.: Etere SNMP Console) detects missing heartbeats and sends both a visual-alarm and an e-mail notification to the operations department. Owing to the use of this feature, the general health of the Etere system can be further examined to isolate raised faults:



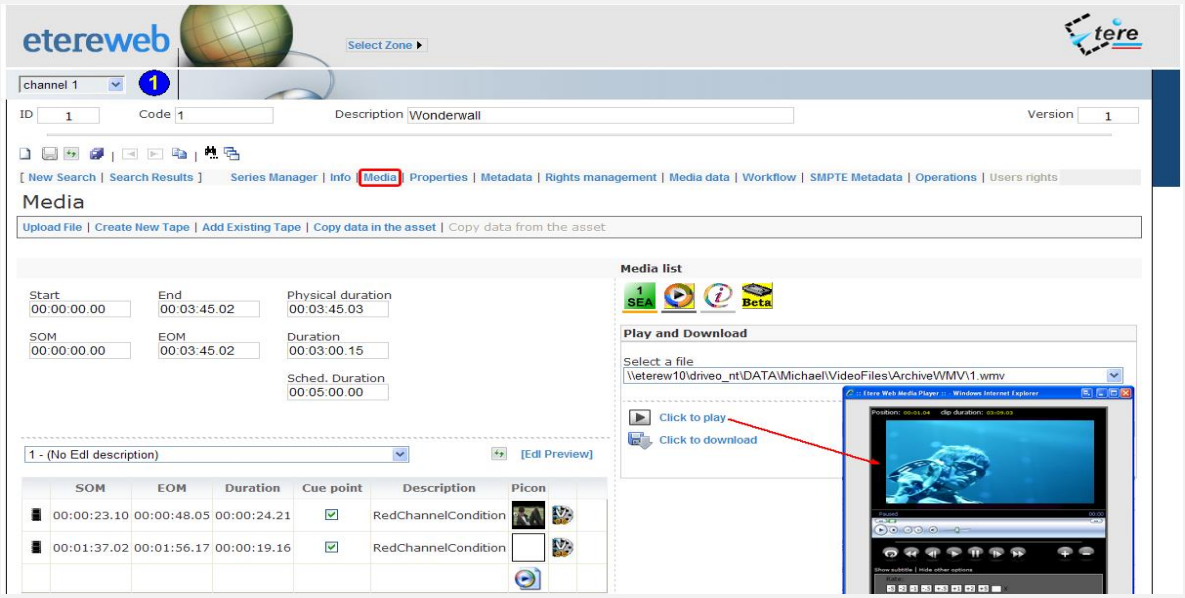
6.5 ETEREWEB: Post-Production Integration

Etere's NLE integration will allow stations to achieve a tight integration with NLE systems, without using insecure "hot folders" or "ftp open sites" but including full tracked uploads (i.e. digital receipt of files) and

immediate workflow triggering. EtereWeb is best solution for integrating NLE systems (e.g. FCP, Avid, Edius) with the station's broadcast workflow; it provides non-linear editors with an authentication web portal for managing media contents through a user-friendly interface:

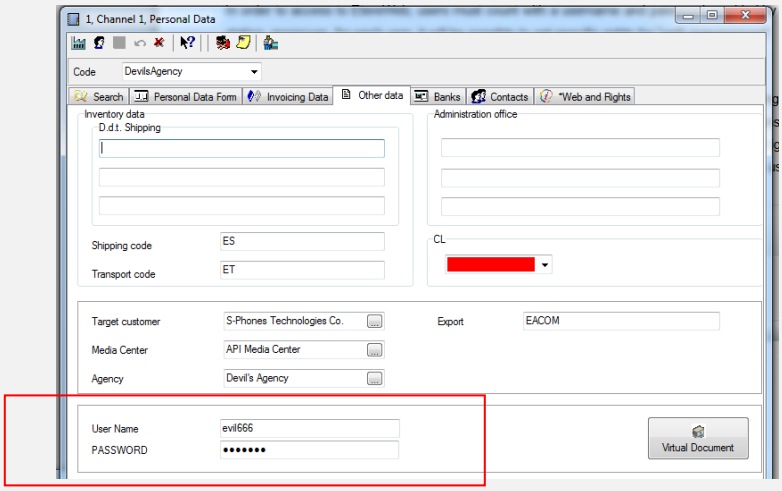


The EtereWeb web service supports all major browsers including Microsoft Internet Explorer, Mozilla Firefox and Apple Safari; thus ensuring the reliability and quality of the service. EtereWeb integrates the latest streaming technologies for video distribution and a comprehensive rights management system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



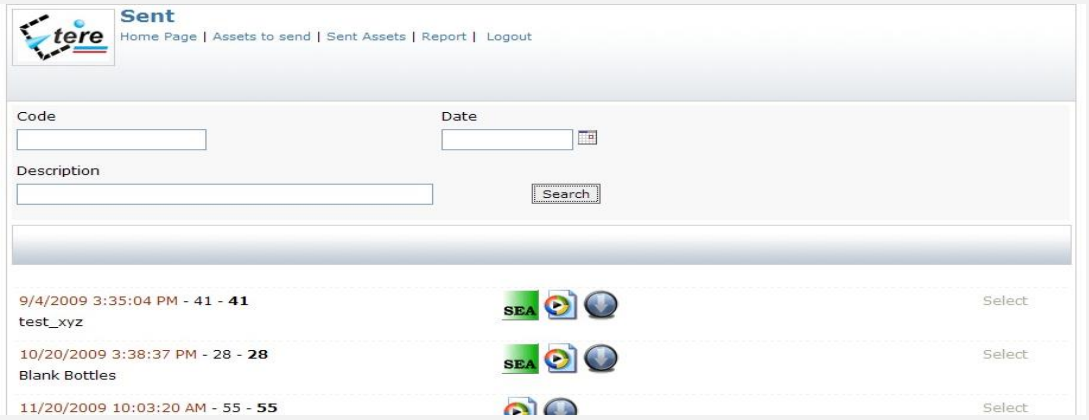
6.5.1 Authenticated access and rights

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:



6.5.2 Tapeless Reception

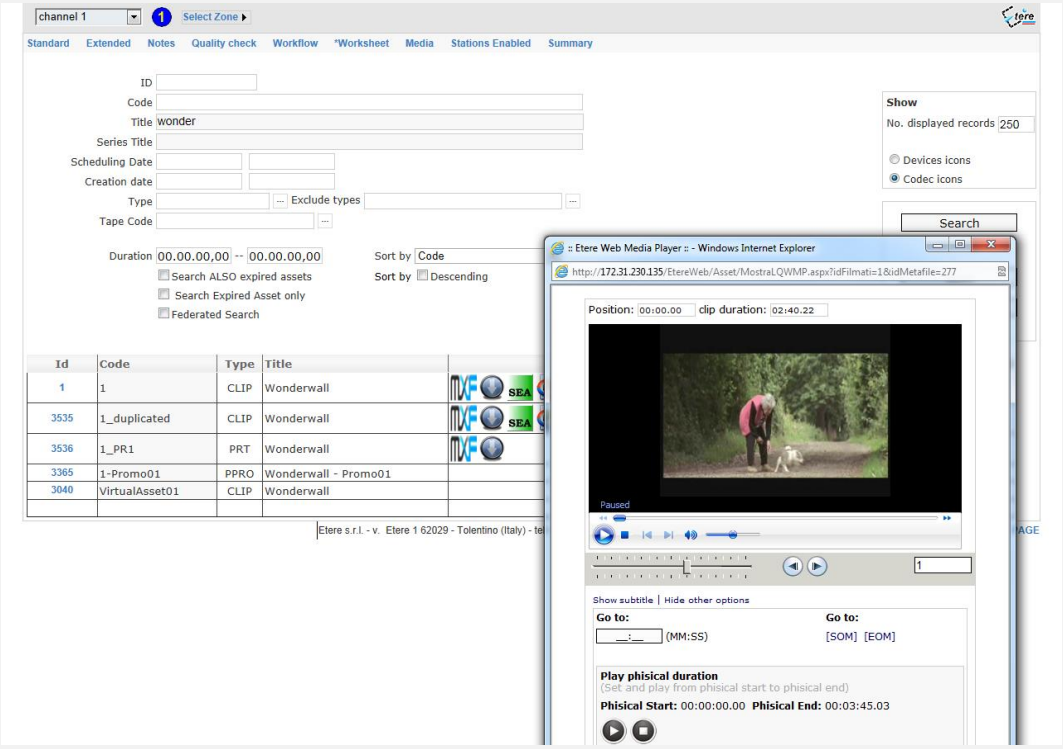
Etere Tapeless Reception is an extension of EtereWeb designed with the purpose of offering an efficient solution for multimedia content transfer between external agencies and stations, it integrates the latest streaming technologies for video distribution and a comprehensive rights management system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



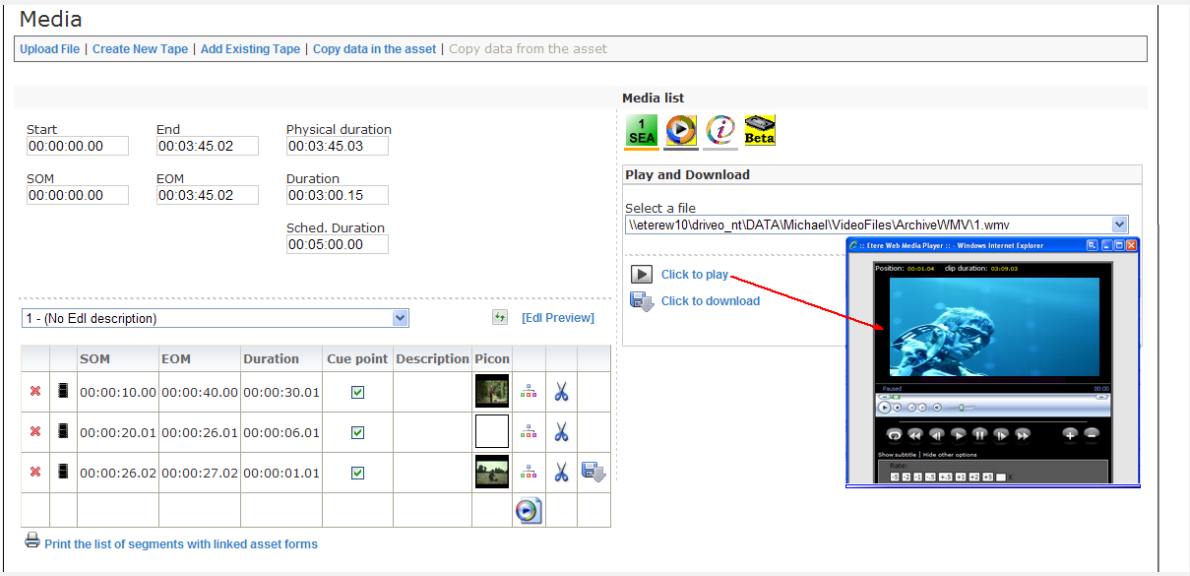
Etere Tapeless Reception takes full advantage of a tapeless environment to eliminate the need of creating physical copies, entrusting valuable material to private couriers, risking of excessive waiting times; thus by enabling contents to be sent digitally (i.e. without using magnetic tapes) via internet, bringing a shorter delivery time than this required by a common consignment of magnetic tapes.

6.5.3 Search, retrieval and preview

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



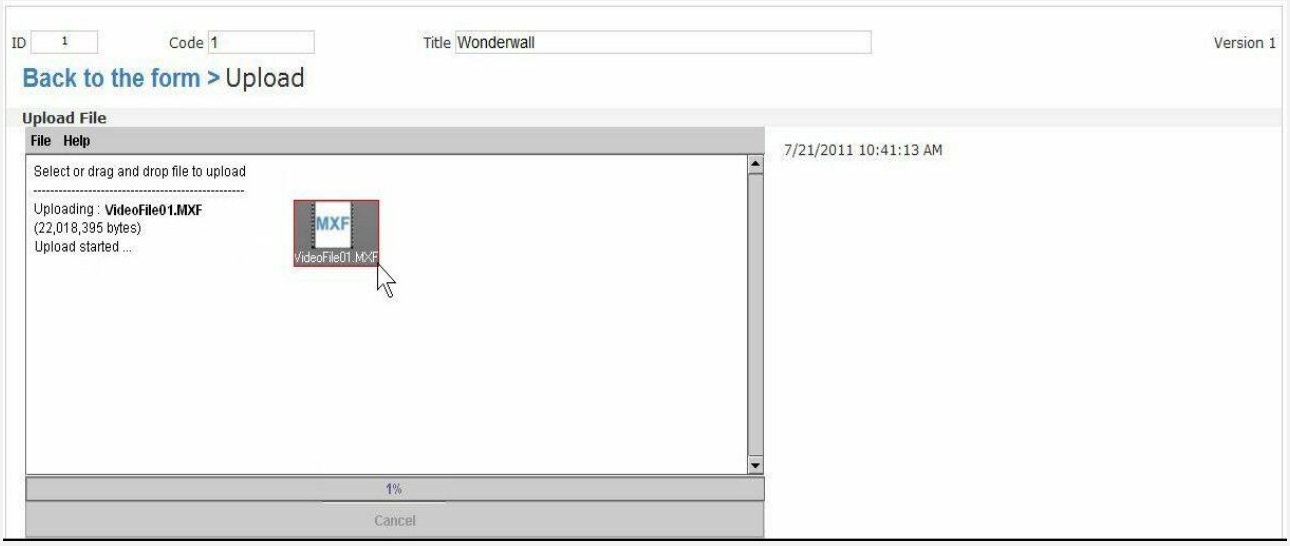
The Media tab holds information regarding the media associated to the asset, time code details and EDL configuration. By double clicking on any media item, if available, it will be available the preview and download of the asset:



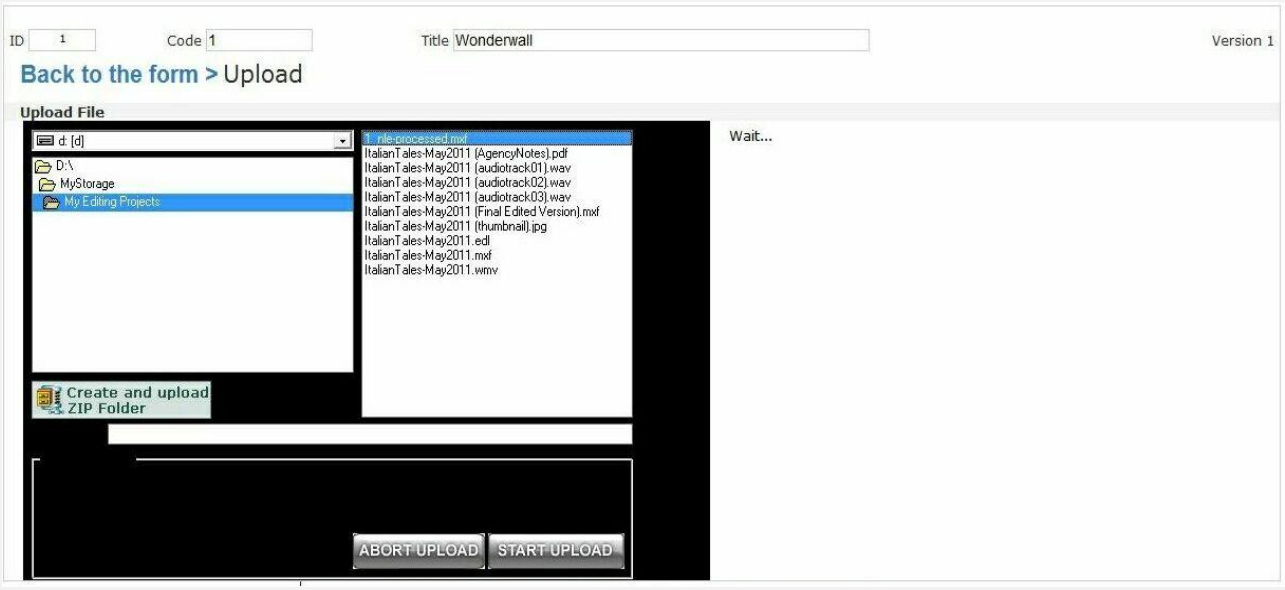
6.5.4 Selective upload interface

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:



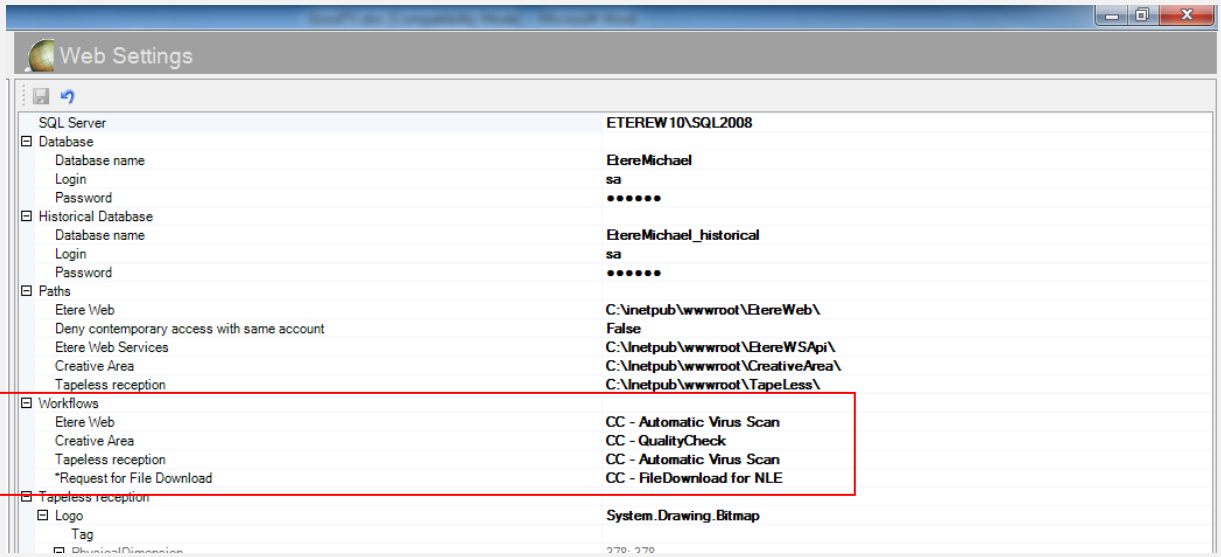
- **Active-X control**: This interface allows browsing for the media file(s) to be uploaded, being also possible to create a zip file for uploading an entire directory:



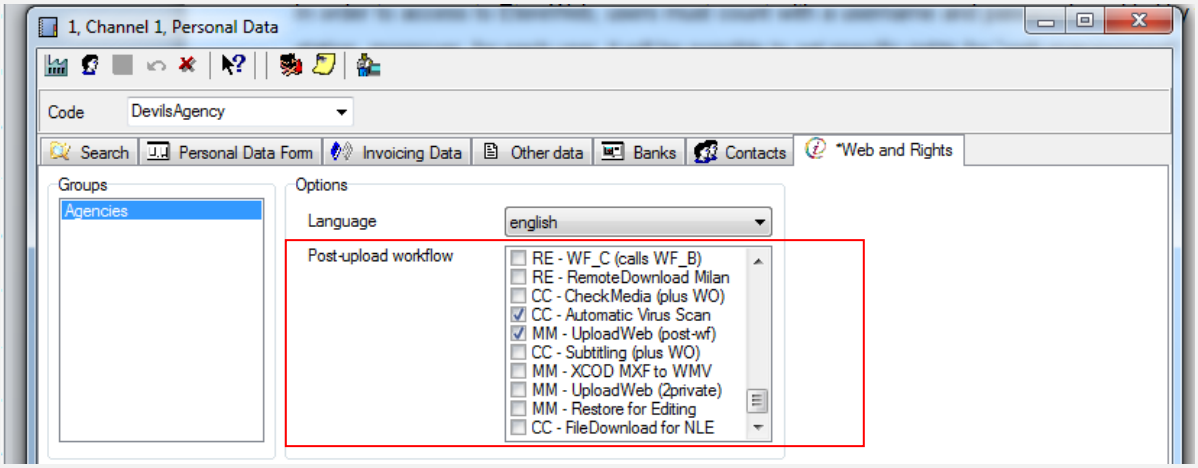
6.5.5 Pre and Post upload workflow triggering

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**:

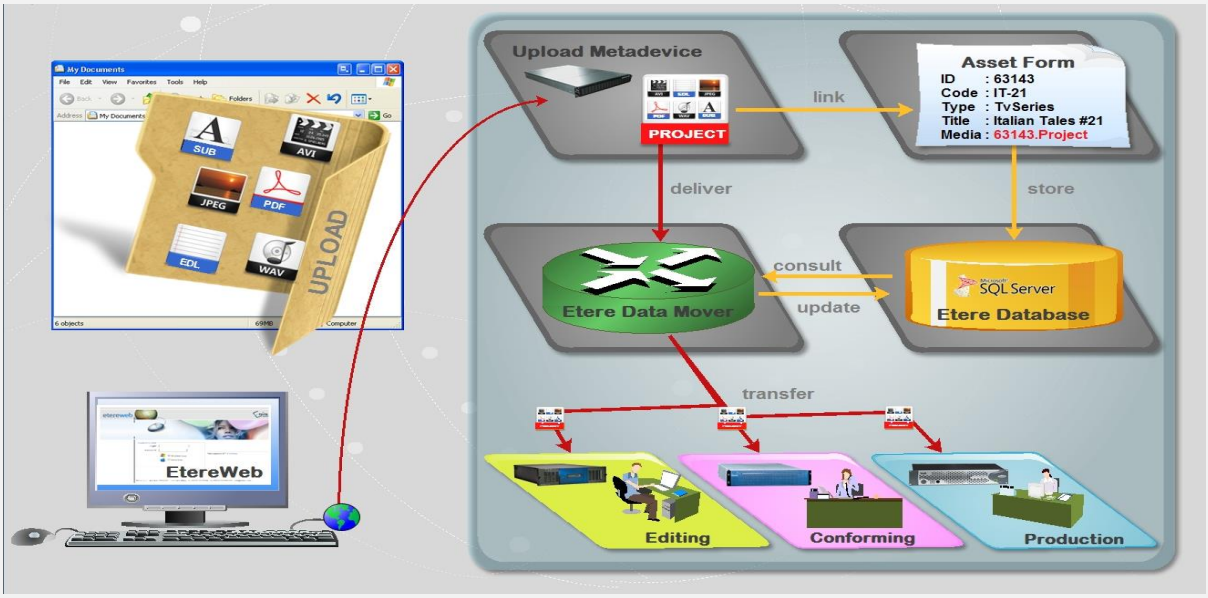


- **Post-upload workflows**:



6.5.6 Multiple file upload

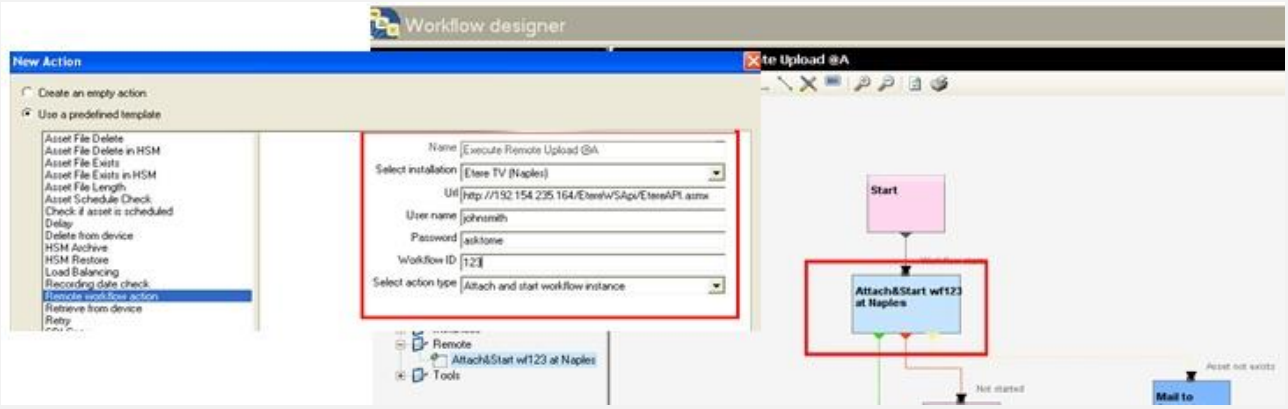
EtereWeb supports not only uploading multiple files with a simple drag and drop action, but also manage them as a single metafile:



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:

6.5.7 Workflow integration with NLE systems

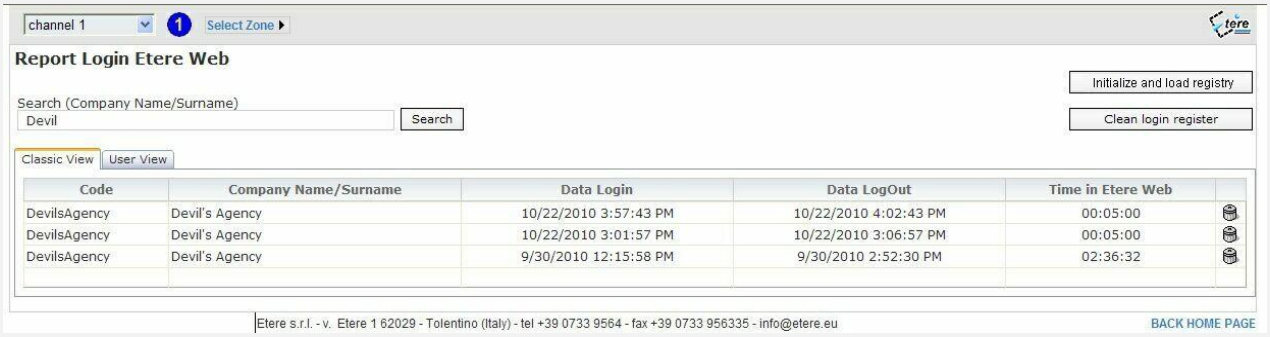
Thanks to the file-based approach of its media management, EtereWeb supports interfacing centralized NLE systems (Avid Transfer manager, Final cut pro server) via workflow. With Etere, it will be possible to transfer video files from and to NLE systems automatically via workflow, these workflows can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



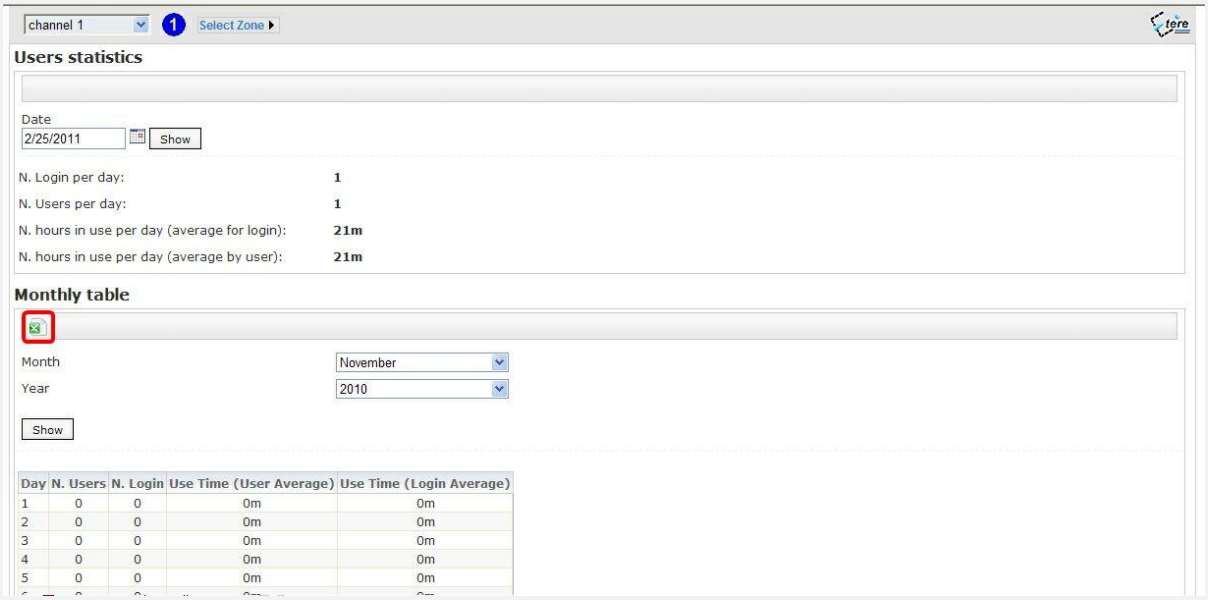
6.5.8 Centralized monitoring

EtereWeb provides administrators with two key sections from which they will be able to consult specific information about accesses, statistics and more:

- **Login Report** : Detailed information about user-specific accesses:



- **User Statistics** : Overall information about daily and weekly accesses:

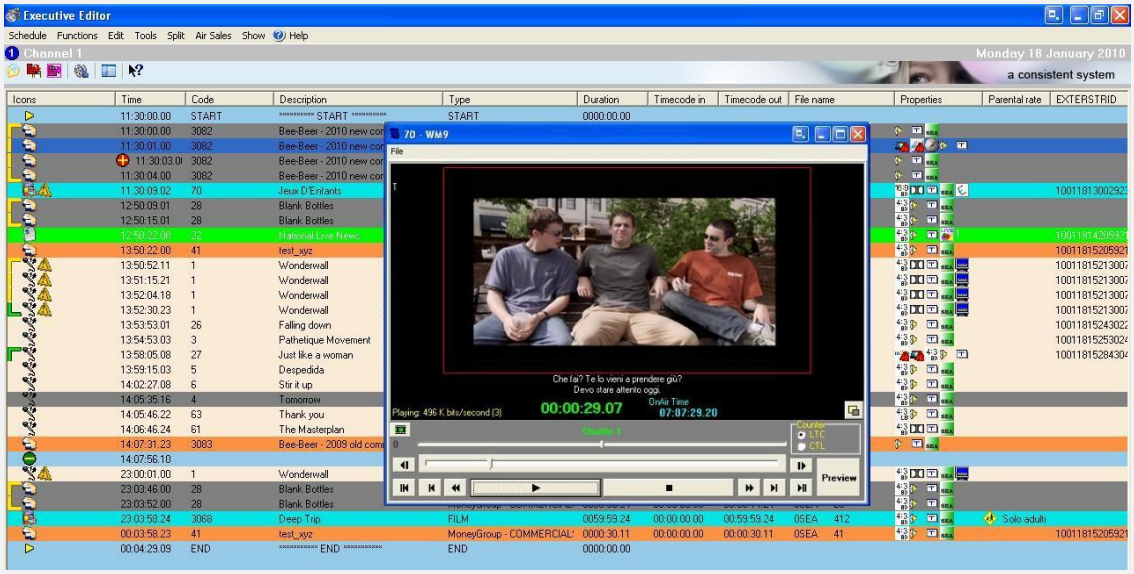


6.5.9 Security Integration

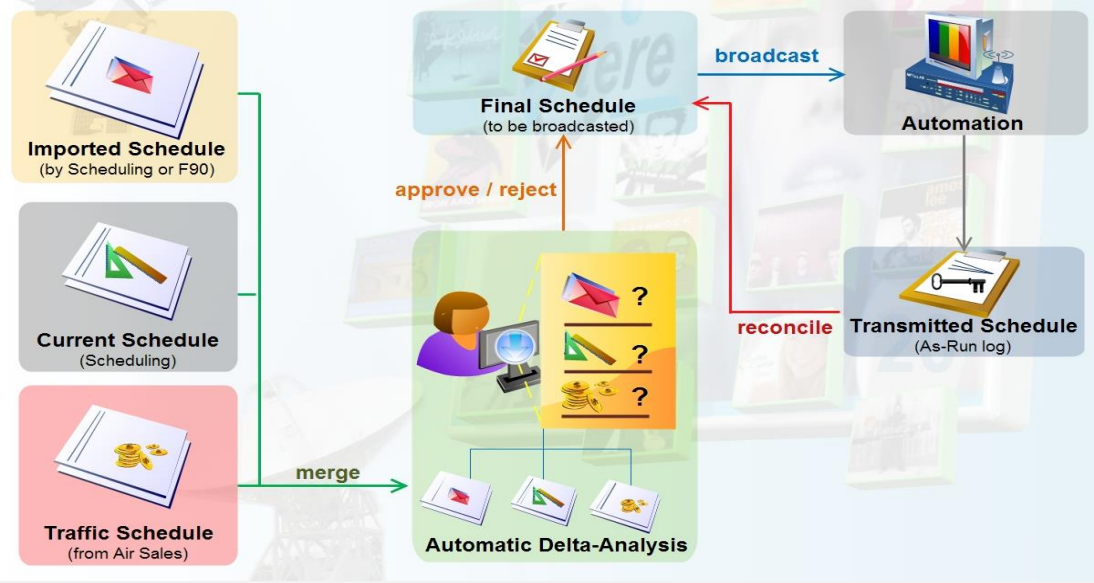
EtereWeb works perfectly behind routers so remote access and ftp transfers are drastically improved. NLE systems can deliver contents via Etere Web as a digital equivalent of physical reception, where selected people can deliver video and metadata to the station, but owing to its digital nature, operations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

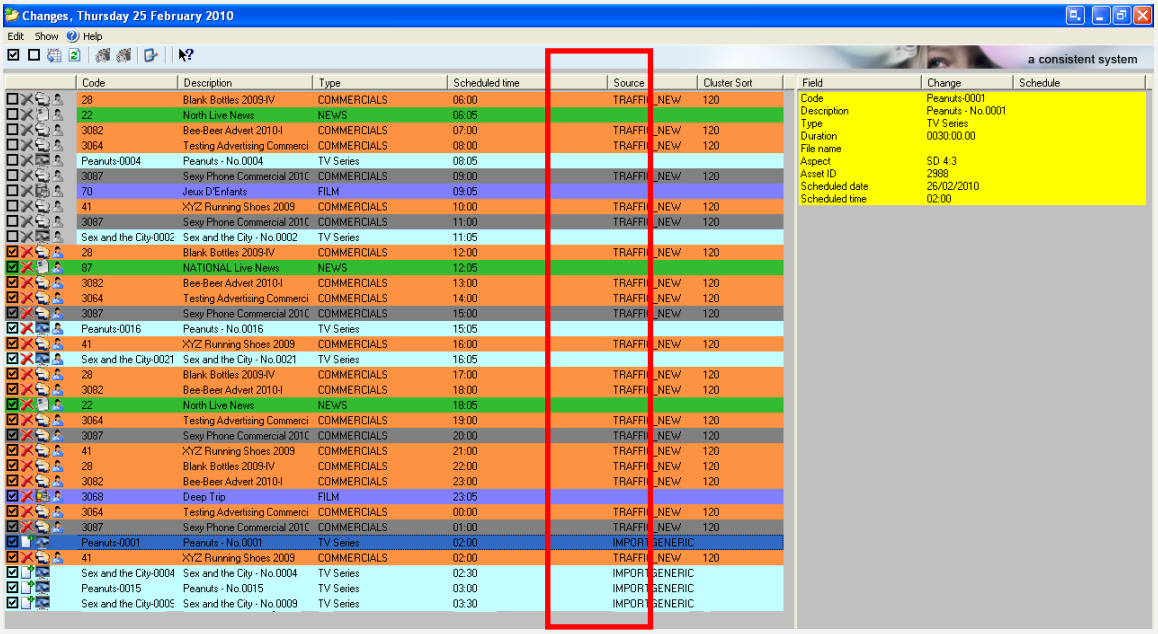
6.6 ETERE SCHEDULING: Playlist Management

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:



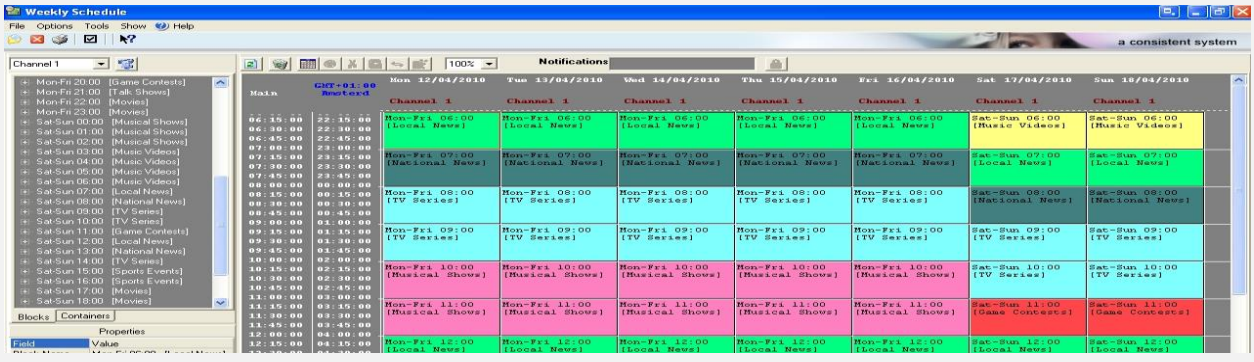


This simple interface allows the operator to easily identify the source from which changes have arrived and then decide to either approve or reject them though a simple selection process.

6.7 ETERE AIR SALES: Commercial 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.

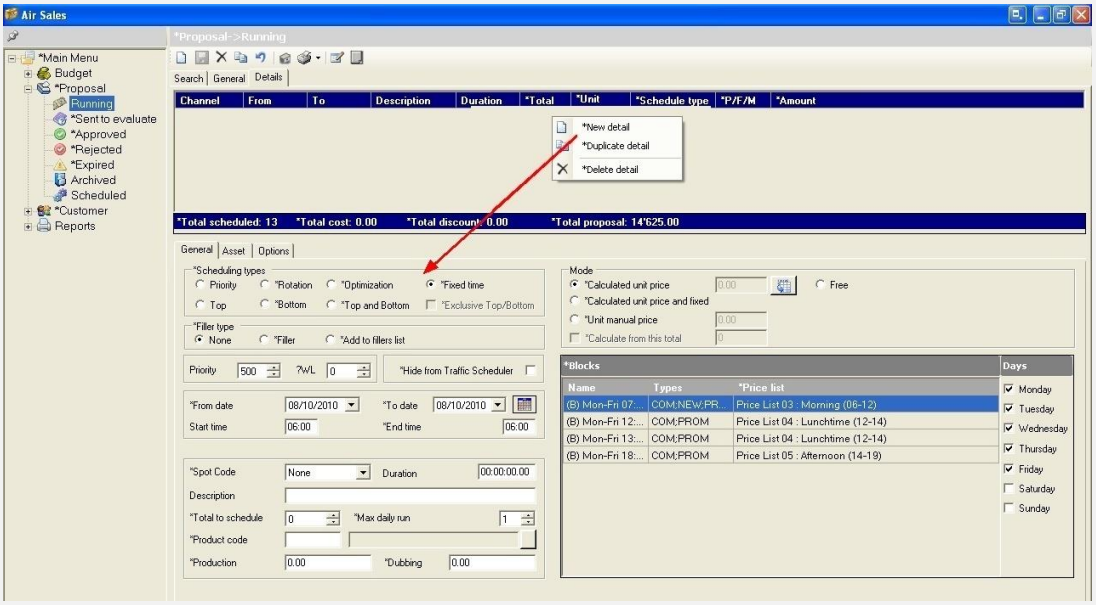
Weekly Schedule is the module that permits to build long-term and frame-accurate schedule grids that will define the traffic playlist, this schedule grid is formed by program blocks which at their time are formed by program segments defined by specific properties (i.e.: time range, duration, program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



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

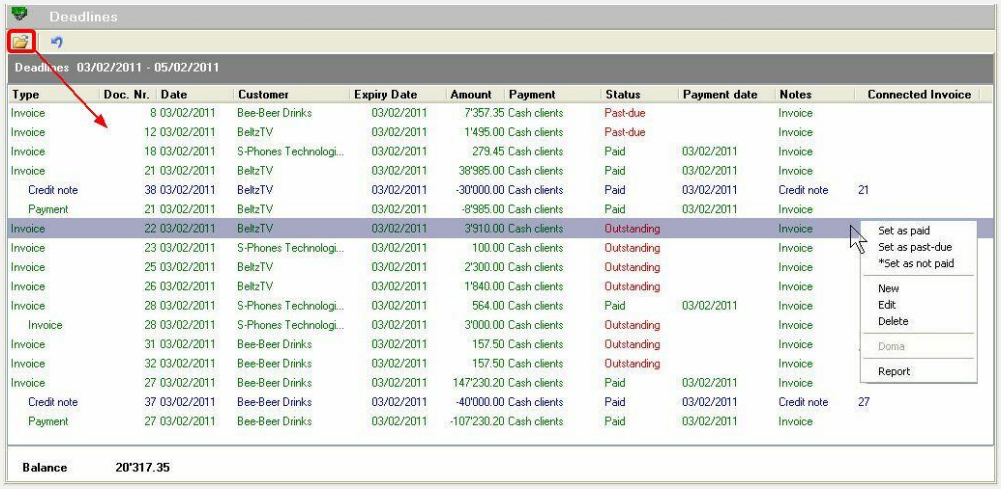
only valid events can be scheduled. Moreover, Strategic Editor features various facilities such as multiple color displays, intuitive events selection, automatic rights verification, etc.

Moreover, 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 dayparts (e.g.: breakfast, lunch, dinner and late-night) and a powerful spot placement based on key scheduling criteria (i.e.: top, bottom, priority, rotation or optimization).



The invoicing process is the final -and most delicate- stage in the commercial broadcast chain, where all commercial events are reconciled with the accounting department, at this stage, the Invoicing module, is the section dedicated to generate, settle and track invoices, it is tightly integrated with all Etere modules to

permit a centralized management of invoices including a set of tools that permits operators to easily bill invoices and pay salesmen commissions in just few steps:



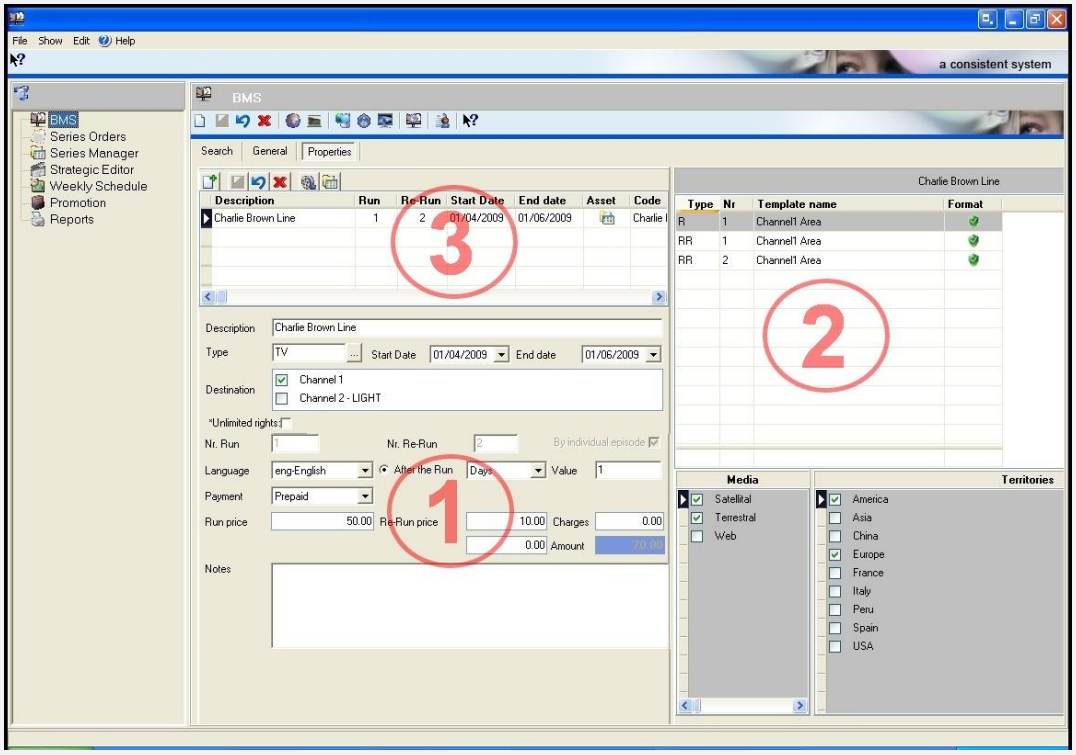
6.8 ETERE BMS: Rights Management

The Etere BMS module, is the place where rights are properly managed, this module allows defining purchasing contracts where a supplier gives to the station the right of transmitting copyrighted media assets (e.g.: tv series, movies, etc) in return to an agreed payment (i.e.: prepaid or at the use) under specific conditions (e.g.: dates, territories, etc).

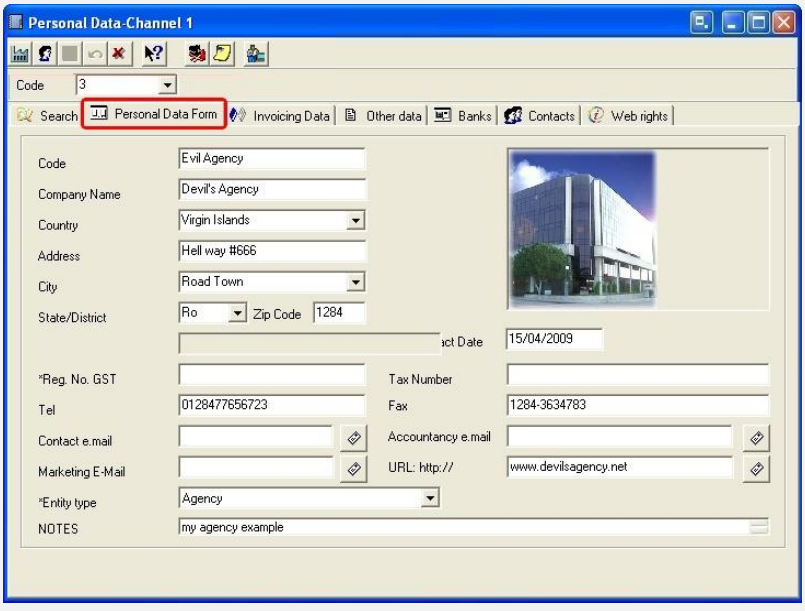
Etere BMS manages rights and make them available for the entire system, allowing validating programs (for the station and period) at the time of scheduling against the licensing constraints.

Through the use of purchasing contracts, Etere BMS provides monitoring of the rights status of single and multiple assets, giving the station total control over a rights management process which mainly consist in the following procedure:

1. Define the licensing rights of programs creating purchasing orders which are stored in the Etere's database and shared to other Etere modules,
2. Every time an asset is scheduled, it is consulted if the asset counts with the licensing rights to go on-air, warning the operator in case of a negative answer,
3. Once scheduled, licensed assets can be tracked, consulted and paid, giving also access to accurate reports.

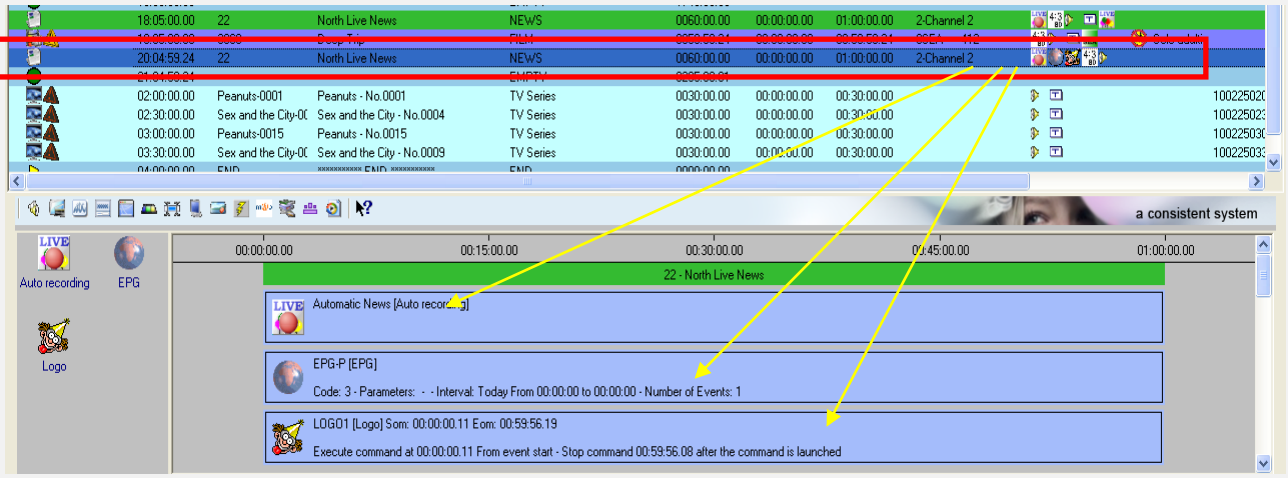


Moreover, Customer Relationship Management is provided by the Personal Data Module, where entities involved in sales processes allowing to define their roles (e.g.: customer, agency, media center, etc), their credit agreements, contact information, invoicing data, etc; thus allowing the entire system to leverage customer contact information during the various commercial processes (e.g. sales process management) for increasing efficiency and productivity:



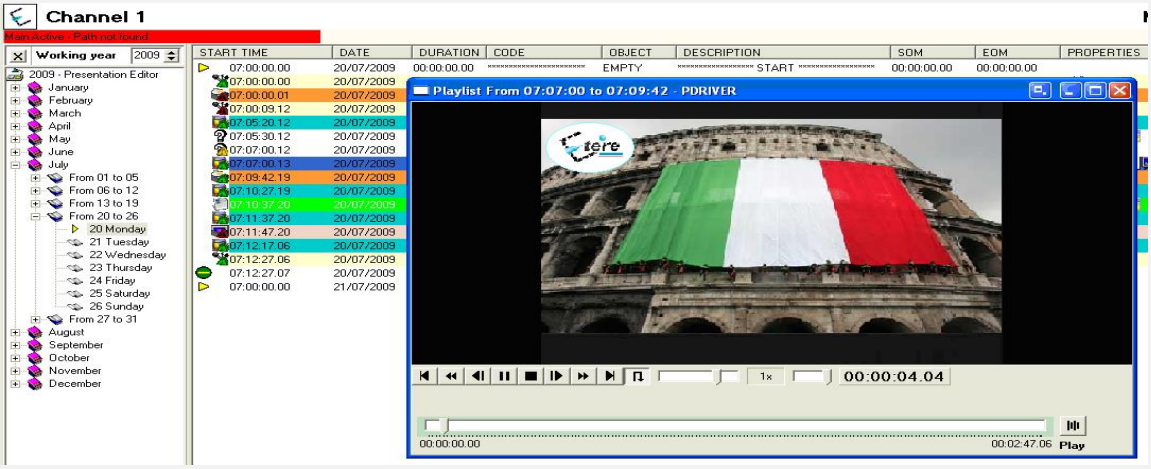
6.9 ETERE AUTOMATION: Playout System

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, scheduled and real times, etc.:



6.9.1 Secondary Events Management

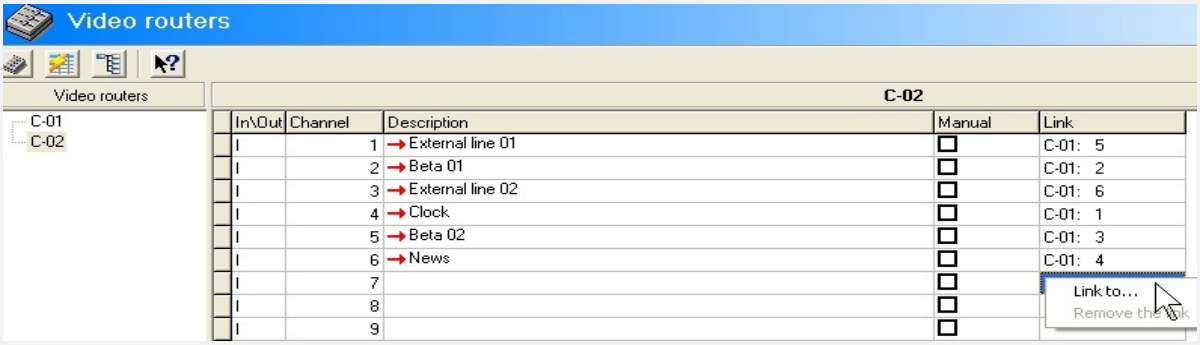
Etere Automation manages all the secondary events intended to be transmitted by dedicated devices (e.g.: Logo Generators, Crawl Generators, Subtitlers, etc.) with a simple graphical tool, allowing previewing secondary events in low res before their playout through a browsing application:



6.9.2 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:



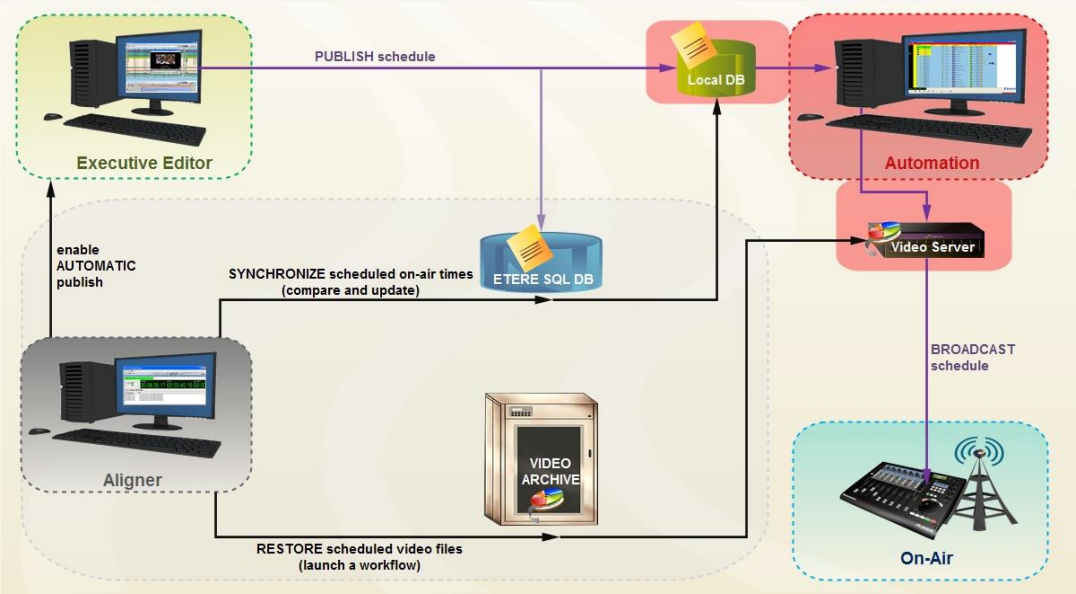
6.9.3 As-Run Logging

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 in any of the available formats:

```
[-   ] 04/28 15:09:20.593 |            |Log Started
[  APP   ] [2010-04-28 15:09:20.21AUTOMATION RESET
[  APP   ] [2010-04-28 15:10:31.05AUTOMATION IS ONAIR
[  CLIP  ] [2010-04-28 15:10:30.17Y, 210136785149, 22  , 0LIVE00000    , Live News , F, 00:00:00.00, 00:59:59.24, 01:00:00.00
[  CLIP  ] [2010-04-28 16:10:01.19Y, 210135546001, 28  , 0MCL  CBBot   , B-Bottles , F, 00:00:00.00, 00:00:08.18, 00:00:08.19
[  CLIP  ] [2010-04-28 16:17:03.21Y, 210136107001, 70  , 0MCL  JeuxD   , Jeux D'E  , T, 00:00:00.00, 00:30:00.00, 00:30:00.01
[  CLIP  ] [2010-04-28 16:47:08.02Y, 100000008996, 3   , 0MCL  PathMov, PathMov  , T, 00:00:00.00, 00:08:12.24, 00:08:13.00
[  APP   ] [2010-04-28 16.48.13.20PLAYOUT COMMAND: STILL
[  APP   ] [2010-04-28 16.48.14.19PLAYOUT COMMAND: RESTART_FROM_CURRENT
[  APP   ] [2010-04-28 16.48.20.07PLAYOUT COMMAND: STILL
[  APP   ] [2010-04-28 16.48.23.01PLAYOUT COMMAND: RESTART_FROM_NEXT
[  CLIP  ] [2010-04-28 16:48:23.01Y, 100000008998, 32  , 0MCL  Minuet  , Minuet    , T, 00:00:00.00, 00:11:10.24, 00:11:11.00
[  CLIP  ] [2010-04-28 16:52:12.06Y, 100000009000, 33  , 0MCL  Prima   , Primavera , T, 00:00:00.00, 00:09:19.24, 00:09:20.00
[  CLIP  ] [2010-04-28 16:54:13.12Y, 100000009003, 49  , 0MCL  Vivace  , Vivace    , T, 00:00:00.00, 00:04:59.24, 00:05:00.00
[  APP   ] [2010-04-28 16:55:16.11PLAYOUT COMMAND: SKIP
[  CLIP  ] [2010-04-28 16:55:16.11Y, 100000009005, 51  , 0MCL  OdeJ    , Ode Joy   , T, 00:00:00.00, 00:04:59.24, 00:05:00.00
[  CLIP  ] [2010-04-28 16.57.46.19Y, 100000018164, 12  , 0LIVE00001    , Meloldy01 , T, 00.00.00.00, 00.00.14.24, 00.00.14.15
[  APP   ] [2010-04-28 16.59.53.01PLAYOUT COMMAND: EMERGENCY_LIVE_START
[  APP   ] [2010-04-28 17.05.57.05PLAYOUT COMMAND: EMERGENCY_LIVE_END
[  APP   ] [2010-04-28 17:15:35.06AUTOMATION STOP
Log Closed
```

6.9.4 Broadcast Synchronization

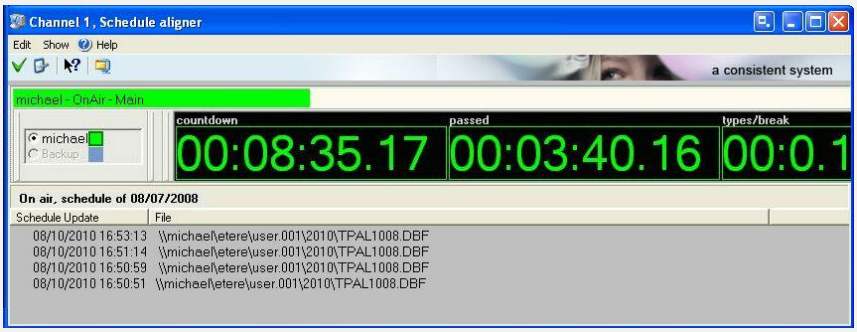
Etere Aligner is the application that maintains the published schedule constantly synchronized, it aligns the independent automation schedule with the Etere stored schedule, this operation is very important for the broadcast process since published on-air timings may vary and will need to be updated:



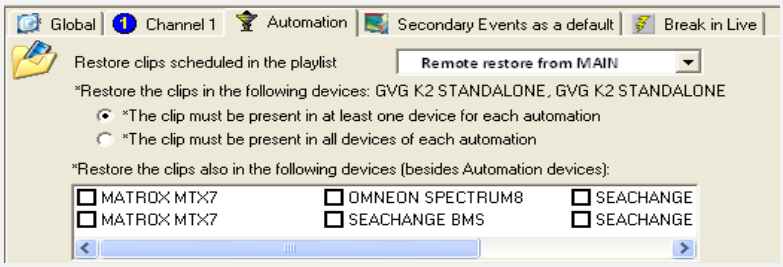
Etere Aligner provides stations with the following key features on managing broadcast schedules:

- 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:



7. BENEFITS

This paper has described how the development and deployment of a comprehensive Etere MAM system offers a large number of operational benefits and advantages derived from the correct use of digital technology; Etere will entirely support Disney Channel on its upgrade to an integrated environment by providing them with the following key features:

- **Efficiency**, reduced need for repetitive manual operations, allowing to define them in advance and then include them in workflows to increase productivity,

- **Flexibility**, on meeting all requirements by proving a versatile media management system tightly integrated with all capturing, storage, production and delivery systems present on the station,

- **Scalability**, for increasing the number of integrated modules without altering the system workflow complexity, thus minimizing operational overheads and reducing overall costs,

- **Workflow Reliability**, by setting up management rules automatically controlled via workflow without human errors, providing also a graphical view of how modules interact between them, thus making it easy to the operator to understand of how the system works.

- **Integration**, of currently used systems as well as the allowance for NLE systems to access the digital archive directly and efficiently through a proper production environment, making use of the highest security standards.

- **Accuracy**, from the media management to the final playout, reducing the risk of mistakes during on-air since the precision of archived content related information is continuously checked.

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 25 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.

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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