

Etere:

A Workflow Based Archiving System



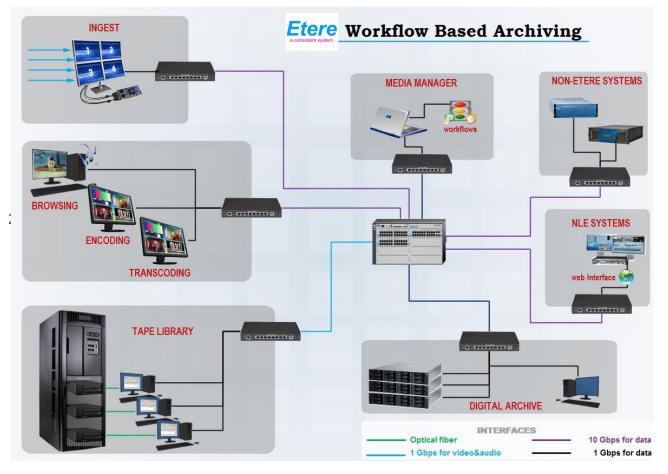
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1. INTRODUCTION

Etere provides broadcasters, media companies, content providers and house productions with an integrated archive and distribution system which combines powerful servers with an easy to use browser interface. Etere has developed the latest technology to turn a broadcast system into a digital archive that combines rock-solid reliability and high availability with increased bandwidth and storage, allowing operators to easily search, retrieve and browse any media they want from the digital archive.



- A patented distributed architecture to avoid any single point of failure,
- Reliable control at high-performances of the equipment integrated within the global system,
- Enterprise management and transport of media between storage devices,
- Best flexibility on digitizing media content from multiple sources,
- Robust media management including high resolution files, browse copies and metadata,
- Seamless integration with existing and co-existing systems,

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- Quality management to ensure the safety of archived assets over short and long terms,
- Intelligent and customized workflow management,
- Safe and fully-tracked access to the content archive,
- Transparent media transferring, the correct media format will be always delivered,
- Capability of NLE stations for uploading/downloading contents,
- Fast and efficient transferring connection between internal –and external- systems.

Furthermore, the implementation of an Etere system will allow Editing Systems to access the digital archive directly and efficiently through a proper production environment, making use of the highest security standards. An important aspect of the selected Etere solution is functionalities which support the preservation and high-availability of media content archived and catalogued by the Etere system.

3. ETERE ARCHITECTURE

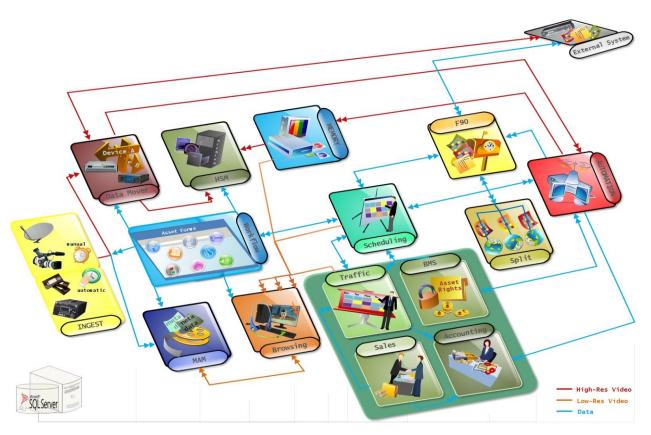
Etere is based on a distributed architecture which allows different modules to run on different workstations interconnected via a local area network. All system configuration parameters, security roles, user data, and pre-defined rules are stored in a reliable SQL database supporting backup and redundancy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







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

4.2 Multi-level File Access Hierarchy

Etere offers a hierarchical storage management by organizing in user-specific access levels an unlimited number of content versions offering 'instant access' (from video servers), 5 minutes access (from NLE) and 15 min access (from archives), being all these levels available to the operator under a simple and user-friendly interface:







4.3 Tape Library Management

Etere allows stations to carry out the management of tapes (i.e.: video tapes, data tapes, discs, etc) by providing them with a set of modules specifically designed to improve the most important tasks involved in the logical management of tapes:

😒 Tape Archive	8			
File Tools				
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Search Tape				
ID	2		Domain User	137
Code	2			
Title	test Tape			
Description	testing tape	10000 MIN.		
Таре Туре	Master Beta	VTR Info Number 0 \$ Types	8	•
Types Format	Ntsc 625 DF	Counter C LTC		
Barcode	2	Source barcode		
Generation Date	21/04/2009	Last _/_/		
Dual Audio		Subtitled 🗖		
Media Pool				
Personal data 🛛	Archive Location Lang	uages Notes Operations		1
Agency	SE.	➡ Devil's Agency		
Source	sa	✓ Devil's Agency		

Etere provides full support for managing tape libraries within the system, being possible to monitor its status and view specific contents in real-time:



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2		30 🕂 sec 邚	📓 📰 tool	bar					Code	,
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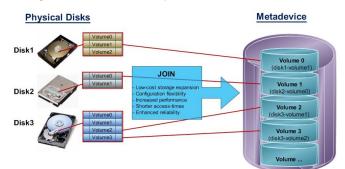
4. WORKFLOW BASED MEDIA MANAGEMENT

Etere's solution features an integrated and professional 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

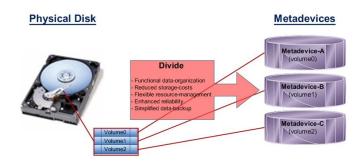
Etere reduce the complexity of managing storage devices by arranging physical storage devices present across the system into metadevices (logical devices), the use of metadevices improve the overall media management by offering the following features:

- 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:



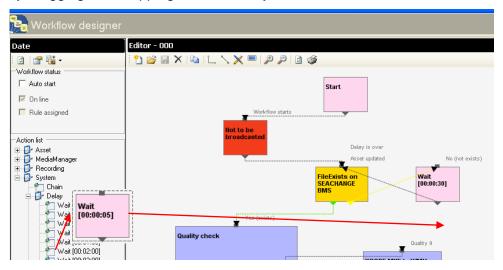


5.2 Custom Design Workflow

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:

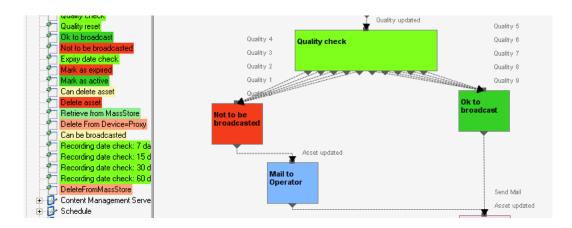


5.3 Video Files Quality check Workflow



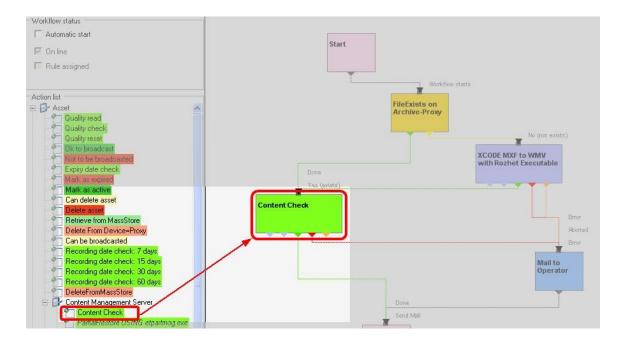


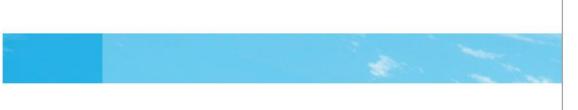
An Etere quality check workflow is able to automatically ask operators to assign a quality value to a certain asset(s) after browsing its video content:



5.4 Video Files Content Check via Workflow

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 to subsequently mark (into their EDL list) all encountered defective segments including black scenes, scene changes and freeze video:

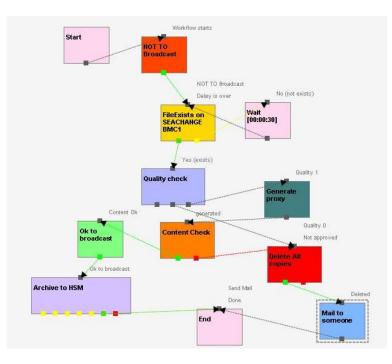






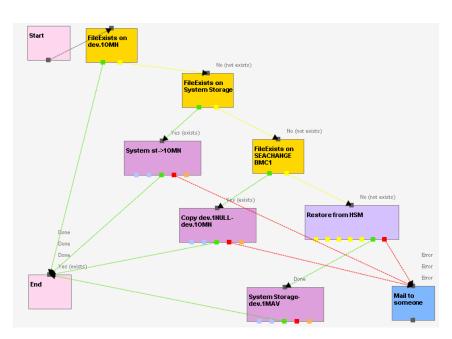
5.5 Video Files Archiving Workflow

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:



5.6 Video Files Restore Workflow

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

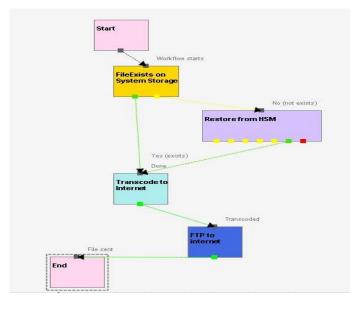


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5.7 Video Files Transcoding and Uploading Workflow

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



5.8 Video Files Checksum MD5 Verification

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

				Start		
1.0		2338 [mm-dm-7055e2d5-f161-4				
7	Device	Codec			J 	
Source	Archive-HighRes	IMX 30 ▼				
Destination	-				CHECKMD5 on	
*Process type	MD5 Checksum]			ArchHiRes (IMX)	
Basic Settings	"Process settings					
+ *Setup MD	5 params					Aborted
. ₩	'Generate MD5 file hash		Done			Error
- C	'Check MD5 file hash		Mail to		Chain	
-			Operator		Chair	
-						
_						

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



5. DETAILED FUNCTIONALITIES

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 MTX: Digital Capture using Matrox Video Cards

Etere MTX is the application offered by Etere to drive the most popular HD/SD Matrox digital video editing platforms, it combines the professional effects technology of a wide range of industry standard codecs with an Etere system, allowing to capture in both high and standard definition formats over digital inputs, mix in real-time all types of footage on a timeline with more layers and/or effects, as well as parallel multi-format ingestions, all these under a user-friendly interface:

💷 *Etere MTX Service Applica	tion		
File Database *Process Monito	or Tools		
🎅 *Open database root folder 🛛 🔂 🛛	/iew logs folder 🛄 Save Logs Files		
💡 *Process Manager 🛯 🌜 *Graphic	cs 🔟 Configuration		
DS.Xmio#0: 52/65 °C		Genlock: UNLOCKED	
🚱 *Graphics Gateway	Generation Channel 1 [*Playout]	Channel 2 [*Ingest]	Girannel 3 [*Playout]
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*Process is running fine	*Process is running fine	*Process is running fine	*Process is running fine
 Idle No job active	00:14:26.15	00:03:41.00 TESTMAX.avi (MPEC-2 IBP HD 4:2:2 50 Mb/s wrapped	O1:O4:56.24 Preview IDLE
Process ID 3128 Up-Time 01:05:05 Handles 797 Threads 28 Cpu 0.00% IO Bytes/s 0 B Working Set 29.11 MB Private Bytes 26.87 MB	Process ID 2556 Up-Time 00:14:30 Handles 1235 Threads 84 Cpu 6.44% IO Bytes/s 0 B Working Set 72.14 MB Private Bytes 74.66 MB	AVT) Process ID 5924 Up-Time 00:23:58 Handles 2743 Threads 141 Cpu 63:64% IO Bytes/s 4.54 KB Working Set 214.42 MB Private Bytes 330.87 MB	Process ID 1316 Up-Time 01:05:05 Handles 1337 Threads 84 Cpu 4.29% ID Bytes/s 0.8 Working Set 49:14.MB Private Bytes 57.64 MB
F:\mtxdb	27/07/2010 11:09:06 *Etere DB (Dk *No Warnings	

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The station will be benefited with a real benefit due to an Etere MTX strong, its lower cost, that permits Etere to offer a cutting-edge product to acquire contents through four different channels with an outstanding performance, a complete support and most important, an unbeatable relation between quality and price.

6.2 ETERE INGEST: An Enterprise Capturing System

Etere Ingest is a versatile set of modular applications that significantly improves the digitization process inside a broadcasting system, this software covers any particular requirement of the entire process such as automatic and scheduled ingest:

Ingest - Scheduled Ingest		Scheduled Ingest			
lultichannel ingest	18/06/2009 14:53:21 - Thursday	Multichannel inge	st 18/00	6/2009 14:59:24 - Th	nursdav
hannel 1		Recordings Config Plannin			
Next Recording December Type 10 Code December Stat Duation Stat Mode	Countdown to start 07:06:38	Show Single recordings planned Periodical recordings planned "LIVE" recordings planned Recordings completed		Channel ALL From 18/06/2009	
		D TYPE CHANNE DAT	E TIME DURATION DESCRIPTION	ASSET ID E	vent code STATUS M
		▶ 23 S 1	00:00:00.00 00:00:00.00	0	
		29 S 1	00:00:00.00 00:00:00.00	0	
HQ 1	Manual commands to use only for the test	22 S1	15:55:36.02 01:00:00.00 Dasis - She's electric	29	E
8K 0		27 S1	17:00:00.00 02:00:00.00 Pathetique movement	3	
	Deactivate Activate	28 S 1	19:00:00.00 02:00:00.00 The Masterplan	61	
	C C	30 S 3	20:00:00.00 02:00:00.00 Jeux D'Enfants	70	
VIR 0		20 S 1	22:00:00.00 02:00:00 Juventus - Real Madrid Champions	League 2009 2940	
Perding recordings Emons DURATION CH ID TIMEREC TYPE ID FILMATI	DESCRIPTION				
20090618 14:53:24.04 00:00:10.00 1 22 5 0 20090618 22:00:00.00 02:00:00 1 20 5 0	Recording of "Oasis - She's e Juventus - Real Madrid Champi	Coperation:	Rows:7 5	ec.: 0.000	2
Loop time (msec.):0	Status: 5 14:53:21.968		jkows:/ ja	sen 0.000	k ? Close

Automatic ingest

Schedule ingest

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

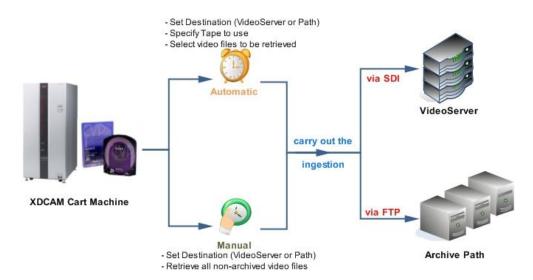
Recording	s Confi	_											
@]	and the second s	interval 2 24		96	٩	r B	C Errors		There are	overlaps		Start reco	rding
	18/06/20 13:00	09 14:00	15:00	16:00	17:00	18/06/20 18:00	09 19:00	20:00	21:00	22:00	23:00	19/06/20 00:00	09 01:00
Channel		-		-1	-		-	-			-		-
1 •				Oasis - She'	Pathetiq	ue movement	The Maste	inplar)		Juventus	- Real Madr	id C	
2 0			i										
30								Jeux D'E	nfante				



Etere ingest allows recording satellite signals to any storage target including video tapes, video servers, etc, just by configuring GPI devices to trigger the ingest process.



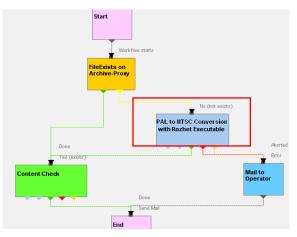
Etere Ingest permits to capture contents from a wide range of video storage devices including the broadcast industry standard Sony XDCAM. Etere counts with a XDCAM-dedicated module to acquire contents from professional XDCAM discs either manually or automatically, via SDI or FTP:



Moreover, Panasonic's DVCPRO P2 series products are fully supported by Etere, that access either the PC or the NLE system where the Panasonic P2 cards are placed, permitting operators to manage them as simple metadevices with immediate availability (e.g.: via LAN, FTP, etc).

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.

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



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6.3 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.

Idle XCDDE Testing Rhozet 1 VideoServerMXF ArchiveWMV Batchfile T Running COPY ArchiveWMV to ArchiveFTP 1 Wonderwall Live2009 / WF Copy WMV to FTP ArchiveWMV ArchiveFTP Multistep C Offline VDCP archive1 1 ArchiveHighQuality VideoServerMXF VDCP ArchiveFTP Offline VDCP archive2 1 ArchiveHighQuality VideoServerMXF VDCP ArchiveFighQuality		a consi						
Idle XCDDE Testing Rhozet 1 VideoServerMXF ArchiveWMV Batch-file T Running CDPY ArchiveWMV to ArchieveFTP 1 Wonderwall Live2009 / WF Copy WMV to FTP ArchiveWMV ArchiveFTP Multistep C 0 Iffline VDCP archive1 1 ArchiveHighQuality VideoServerMXF VDCP ArchiveHighQuality VideoSer		Types	Destination	Source				
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Offline VDCP archive1 1 ArchiveHighQuality VideoServerMXF VDCP Arch Offline VDCP archiveHighQuality VideoServerMXF VDCP Arch	file Transcoding	Batch-file Tr	ArchiveWMV	VideoServerMXF		sting Rhozet 1	XCODE Testing	Idle
Offline VDCP archive 2 1 ArchiveHighQuality VideoServerMXF VDCP Arch	ер Сору	Multistep C	ArchiveFTP	ArchiveWMV	Wonderwall Live2009 / WF Copy WMV to FTP	iveWMV to ArchieveFTP 1	COPY ArchiveV	Running
Idle VDCP archive 3 1 ArchiveHighQuality VideoServerMXF VDCP Arch		VDCP Archi VDCP Archi						
	Archive	VDCP Arch	∛VideoServerMXF	ArchiveHighQuality		ive3 1	VDCP archive (Idle

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:

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%

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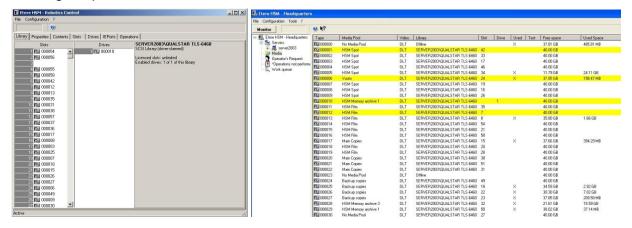
Etere Data Mover is the application used to perform the physical storage and retrieval of video files, a typical Data Mover operation would be to move a video clip from a video server to an archive based on custom actions which are defined and executed via workflow.

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

6.4 ETERE HSM: A Tape Based Archiving

Etere HSM is 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. 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.



6.5 ETEREWEB: Post-Production Integration

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.

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:

etereweb select Zone >	Etere a consistent system
Channel 1 💌 1	
ID 1 Code 1 Description Wonderwall	Version 1
Media	anagement Media data Workflow SMPTE Metadata Operations Users rights
Upload File Create New Tape Add Existing Tape Copy data in the asset Copy data from the asse	Media list
Start End Physical duration 00:00:00.00 00:03:45.02 00:03:45.03	
SOM EOM Duration 00:00:00.00 00:03:45.02 00:03:00.15	Play and Download Select a file
Sched. Duration 00:05:00.00	\\eterew10\driveo_nt\DATAMichael\VideoFiles\ArchiveWMV\1.wmv C:::free Web Model/Riger::::Windows Internet Septem
1 - (No Edl description) [Edl Preview]	Click to play
SOM EOM Duration Cue point Description Picon	
■ 00:00:23.10 00:00:48.05 00:00:24.21 🗵 RedChannelCondition 🌇 👺	
■ 00:01:37.02 00:01:56.17 00:00:19.16	

- Workflow Reliability, all operations automatically generates fully customizable logs to track both the overall and individual functioning of the entire system,
- Flexibility, on meeting all requirements by proving a versatile media management system tightly integrated with all capturing and storage devices present on the station,



- Scalability, for increasing the number of capturing channels and devices without altering the system workflow complexity, thus minimizing operational overheads and reducing overall costs,
- Efficiency, reduced need for repetitive manual operations, allowing to define them in advance and then include them in the ingest workflow, thus increasing productivity,
- Accuracy, during the whole media management process, reducing the risk of mistakes when retrieving data since all archived contents are continuously checked.

7. 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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