Front Porch Digital

Videotape to digital files solutions

FRONT PORCH DIGITAL

The past, present and future of media

Eliminating the pain of analog videotapes

You don't want to think about it but there it is, and it won't go away: that mountain of analog videotapes stacked up in your tape storage area.

- The tapes are gradually deteriorating. Unless something is done, eventually they'll be worthless.

- They don't work for digital TV or on modern VTRs.

- They occupy valuable and expensive real estate.

- They're not readily searchable.

- If you wanted to make a copy of any of the tapes, you'd have to do it manually, one at a time.

- Worst of all, much of the content could be repurposed and monetized, but doing so by conventional methods would be enormously expensive in both money and labor.

This all adds up to serious pain.

Help is at hand

There are solutions and Front Porch Digital has them: versatile, fast and cost effective machines for migrating the content on those tapes to several simultaneous digital files of varying formats for multiple purposes. Front Porch Digital's SAMMA technology (System for Automated Migration of Media Assets) delivers the most productive and failsafe automated ingest systems on the market today.

See figure 1. Using Front Porch Digital's efficient migration work-flow (shown by red arrows) just one playback pass of an original video tape will create a Preservation/Master (archive) copy (uncompressed or highest resolution), a Work/Mezzanine copy (medium to hi-resolution and edit-friendly) plus easily-viewed smaller scaled Proxy copies including watermarks if desired. Access copies often require editing to remove color bars, etc. and may be created after tape migration from Work/Mezzanine and/or proxy copies (shown by bottom grey arrow).
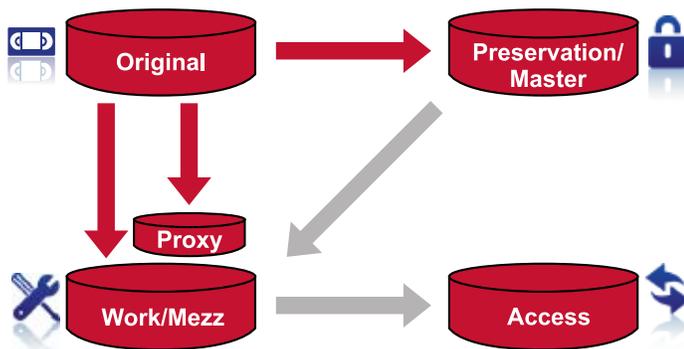

Figure 1

The Front Porch Solution: only one pass required.

And if Work/Mezzanine copy ever becomes obsolete or lost, the Preservation copy is there to back it up (shown by grey diagonal arrow).

Front Porch Digital's Solutions are automated systems that:

- Inspect and clean your tapes (some of which may be 50 years old)

- Prepare them for migration

- Create a running stream of metadata that comprehensively details the condition of every inch of tape

- Create and affix barcodes for easy identification and retrieval, and

- Produce digital files Uncompressed, in JPEG2000, MPEG-2, MPEG-1, Windows Media, Flash, MXF, QuickTime and other formats to facilitate a modern digital content workflow.

The whole process begins with cleaning your archives

SAMMA Clean™ is a system for conditioning, inspecting and properly winding video cassette tapes. SAMMA Clean™ pre-cleans cassette videotapes before they are migrated to digital files.

In a single cycle (forward and reverse) SAMMA Clean™ cleans and optically inspects the tape with two types of sensors: one measures the width of the tape with maximum precision to detect possible folds, stretching or other damage; the other measures light reflected from the tape to detect any surface damage.

SAMMA Clean™ features software which evaluates the condition of the tape and determines the level of cleanliness and preparedness of a cassette. Through sophisticated and extremely gentle monitoring of tape tension and dirt accumulation in the cleaner, Front Porch Digital software graphically displays reflectivity charts and quantified cleanliness graphics which assure passage of a clean tape and rejection of tapes which require more attention.

Figure 2

Internal sensors (green chip pictured) inside SAMMA Clean™ measure tape width to detect surface damage and light reflection to detect surface dirt.
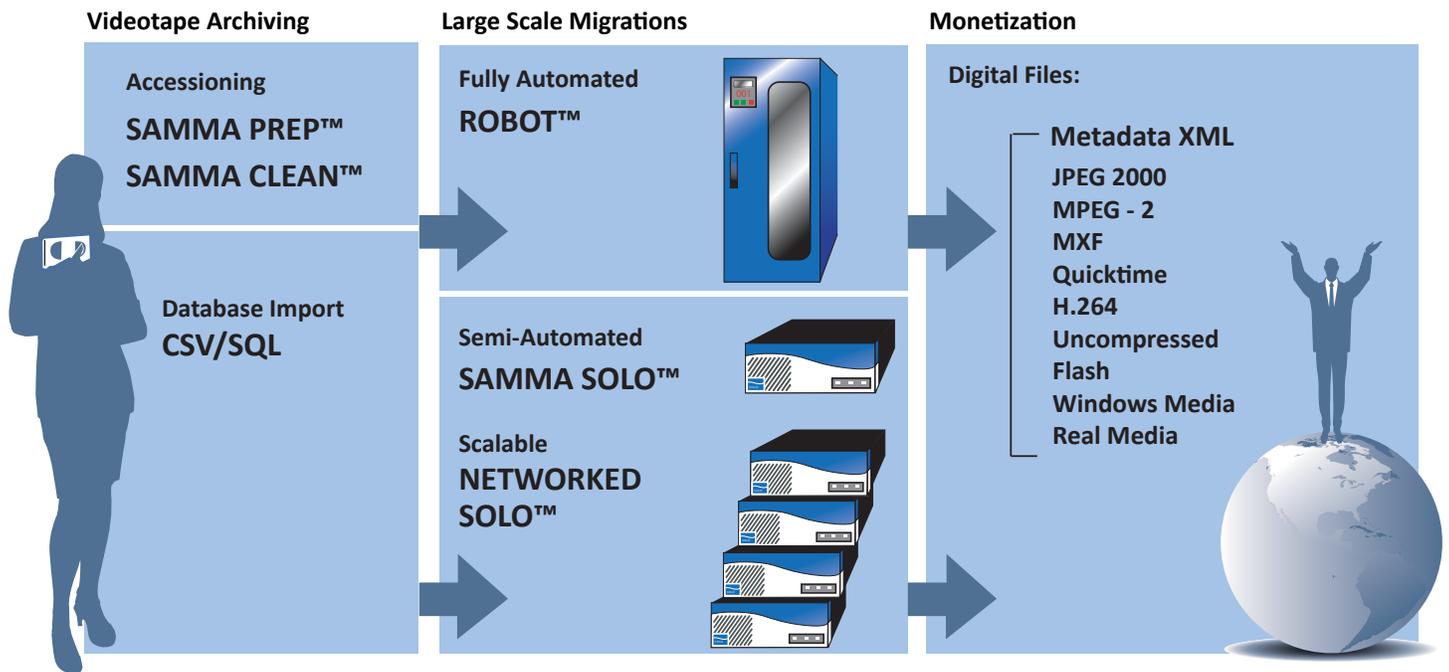
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Videotape Archiving

Accessioning
SAMMA PREP™
SAMMA CLEAN™

Database Import
CSV/SQL

Large Scale Migrations

Fully Automated
ROBOT™

Semi-Automated
SAMMA SOLO™

Scalable
NETWORKED
SOLO™

Monetization

Digital Files:

Metadata XML
JPEG 2000
MPEG - 2
MXF
Quicktime
H.264
Uncompressed
Flash
Windows Media
Real Media

Figure 2

SAMMA Robot: Fully-Automated Solution

With the Front Porch Digital Solution the migration process is automated and requires a human only to inspect the tapes and load them into the machine. Once loaded, the SAMMA Robot™ can migrate up to 60 cassettes at a time using up to 7 tape machines for playback, 24/7.

The process begins with SAMMA Prep™, a systematized accessioning procedure performed by a tape-prep operator on a suitable batch of tapes from the library. Prior to being loaded into the robot, each tape undergoes a visual and olfactory inspection for foreign objects or damage. The unique barcode label gets printed and is applied to tapes passing the initial inspection.

Before each inspected tape gets loaded into the robot, it first cycles through SAMMA Clean™ (recommended). The tape prep operator notes each tapes cleaning status (Pass/Fail) in the accessioning procedure and each tape's cleaning status is reported in the SAMMA Robot's™ XML output.

After a suitable batch of cassettes is loaded into the robot's tape libraries, the operator presses GO and migration begins. Seven VTRs and several simultaneous encoders per channel deliver dozens of streams all day, every day. That's a fountain of video output from one part-time operator and about ten square feet of floor space. If a user chooses lossless JPEG2000 for archiving, 15-50 Mb/s MPEG-2 for a mezzanine or working copy, Flash, Quicktime, or Windows Media for general purpose sharing, a SAMMA Robot™ could easily generate a terabyte or more of digital files a day.

When all tape migrations are completed, the SAMMA Prep™ workstation informs the operator. Progress is always visible so the operator can predict when to return with the next batch of tapes.

To empower a client's infrastructure to absorb that much video that fast, a SAMMA Robot's™ files and metadata are organized in an open standardized manner, on generic computer equipment, on Windows XP with standardized video connections and best practices:

- All logs, encoder settings, operator names, VTR settings, file locations, tape sequences, times and dates, checksums, user options, and frame-by-frame video analyses are reported in a single XML file for each tape migration.

For large tape collections, Front Porch Digital's fully-automated robotics operate non-stop, 24/7.

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- All data imported from a user's library management system, plus all data generated by SAMMA Robot™ during tape migration, is available to users by standard SQL query at any time.

- All encoded files can be "pulled" from SAMMA Robot's™ F:\Success directory, or "pushed" by Uniform Naming Convention (UNC) to any storage directory of the user's choosing, local or remote. Two standard Gigabit Ethernet connections carry the output from each migration channel, up to 14 per Robot Solution.

Front Porch Digital's software, called SAMMA Eye™, monitors dropouts, RF level, servo lock, audio, black level and input level according to preset criteria and parameters that the client determines and sets. A continuous metadata report on tape encoding conditions is available as the migration takes place. If any single tape shows a condition that indicates a need for further inspection, the Robot stops the migration on that tape, flags the cassette for later inspection and manual processing, and may send an e-mail to the operator to report the action.

SAMMA Solo: Semi-Automated Solution

Front Porch Digital offers scalable solutions using single channel appliances which can be networked. SAMMA Solo™ can handle tapes in any original format including 1", U-matic, Betacam, VHS, and digital formats. Each Solo produces a single stream of migration with the same multi-format file output as the Robot. SAMMA Solos™ can be networked up to 16 at a time and monitored by one operator from a single station. Solos use SAMMA Eye™ software, producing the same XML metadata and providing the same reporting capabilities as the Robot.

Digitizing American Culture; SAMMA Robot™ in operation at the National Audio Visual Conservation Center at the Library of Congress. (see back page)

The SAMMA Solo™ solution is intuitive: simply connect a video tape machine, set preferred parameters in the migration software, and press go.

SAMMA Solo™ watches over the entire operation automatically, monitoring the process and implementing specified quality standards frame by frame. It converts videotape in real-time to simultaneous digital files.

SAMMA Eye™ generates post-migration color-coded data analysis graphs for video parameters Y/Pb/Pr, as well as for drop-outs, RF, servo-lock and audio.

Networked Solos: Up to16 SAMMA Solos™ at a time can be networked and monitored by one operator from a single station.

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Productivity will skyrocket

The Front Porch Digital solution enables dramatic productivity gains over manual migration. For example, in an 8-hour shift, the Robot can produce 50 hours of encoding vs. 4 hours if done manually, an output gain of 1,250%. A Solo can produce 8 hours of encoding in an 8-hour shift, a gain of 100% over manual operation.

An example of the productivity advantages would be a typical television station with a library of content on cassettes. 10,000 hour long video tapes would take three technicians over 3 years to complete migration. Operated by unskilled laber, the SAMMA Robot™ could do the job in less than 3 months.

Benefits are numerous

Front Porch Digital's solutions solve four problems:

1. Eliminate the need for manual video quality monitoring during migration

2. Encode for high, medium and low quality versions at the same time

3. Migrate a large number of tapes at the same time, in real time

4. Improve image quality

Once digitized, those bulky and deteriorating videocassettes can be sent to the recycling center. The floor space can be used for more productive purposes. You need never worry again about maintaining obsolete VTRs. Your content is now readily available and usable for broadcasting, viewing or downloading – all avenues to monetizing and realizing the dollar value of all those hours of recordings.

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Front Porch Digital and the Library of Congress; Digitizing America's Cultural Assets

Front Porch Digital systems are now being used to digitize analog videotape files in the world's largest library – the Library of Congress (LOC). Two SAMMA Robots™ have been delivered already and two more Robots will be delivered in the summer of 2008.

In addition, fifteen SAMMA Solos™ will be employed in the LOC migration project, now under way at the Library's $240 million National Audiovisual Conservation Center in Culpeper, VA.

Other migration projects using Front Porch Digital products are in progress at ABC's owned and operated television stations, the US Holocaust Memorial Museum, The Smithsonian, Yale University and the University of Georgia.

Around the world, libraries, television stations, universities, museums and other institutions or businesses with videotape libraries can realize the same savings of time and money in digitizing their videotapes with Front Porch Digital's solutions.

National Audio Visual Conservation Center (NAVCC) at the Library of Congress (LOC) at Culpeper, Virginia.

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