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Presentation of Aveco and its products

1. Executive summary

Aveco s.r.o., based in Prague, Czech Republic and the United States (as Aveco Americas), designs, sells, and supports broadcast facility automation and media asset management systems worldwide.

More than 275 broadcasters use Aveco products on air throughout Europe, the Americas, Asia, and Africa. The customers range from regional single channel broadcasters to large premium broadcasters and multichannel facilities with over 60 TV channels.

Based on a powerful content management system, ASTRA Suite of Tools provides complete solutions for all aspects of file-based and traditional video workflows including solutions for ingest, browse, master control, newsrooms and studio automation. Aveco's products include:

- ASTRA CMS – content/media asset management system
- ASTRA Ingest – solution for automated mass ingest
- ASTRA MCR – master control playout
- ASTRA News – manual playout control in a studio
- ASTRA Studio 2 – fully featured news/studio production automation
- Regional ad insertion – solutions for regional ad insertion
- Disaster recovery – solutions that back up the broadcasting headquarter

All of the products can be part of a seamlessly integrated solution as well as separate.

A variety of architectures are available from small standalone systems to high channel, multi-site operations which are modular and easily expandable. Solutions are custom configured with various redundancy options, and provide very cost-effective and reliable systems.

ASTRA is the only automation system available that scales from single channel to high channel systems that are built on a Real-Time Operating System which has the ability to hot swap software modules without rebooting and for which viruses do not exist.

Since formed in 1992, Aveco has remained a stable, privately owned company with a long-term commitment to steady growth and timely support.

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2. History

Aveco was established in 1992. Since the beginning the focus has been on control systems, automation and media management in the media industry.

Aveco's first product was a control system for dubbing studios that allowed ingesting Czech dialogues to imported movies.

In 1994-1995 Aveco implemented, installed and successfully commissioned it's first fully featured automation system for the Czech TV called the ASTRA 1. It was the direct predecessor of the current ASTRA 4.

The next year Aveco implemented Procon, the videoserver playout control system, which was sold to many TV stations.

Both ASTRA and Procon were expanded and re-written several times.

In 1999 Aveco products made their way into news studios.

In 2000 Aveco achieved two milestones: 1. Delivering the MAM, workflow control and end-to-end automation for a large 24hour news channel in India. 2. Providing system integration services including design, racking, cabling, commissioning and training to the same customer.
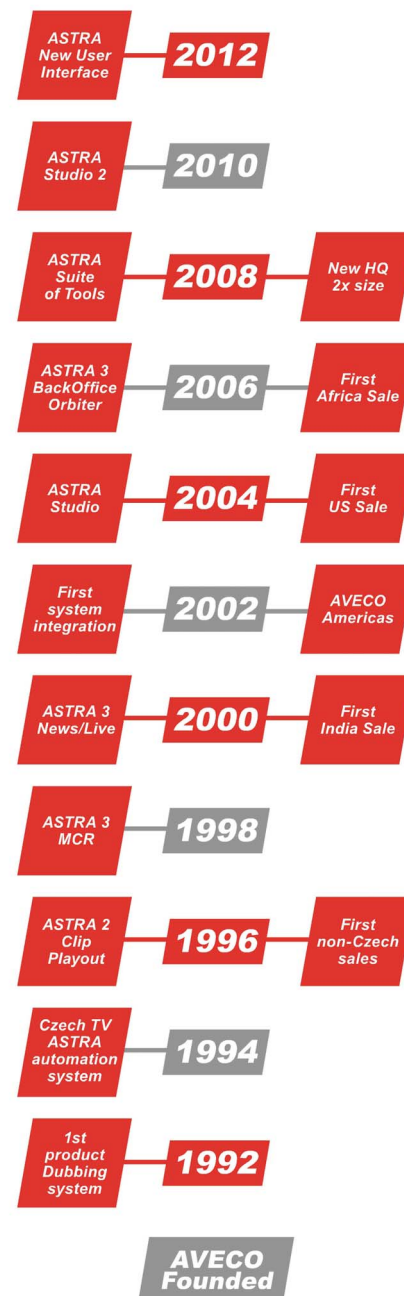
In the year 2002 Aveco decided to address the markets in North and South Americas, and opened an office in the US.

A new product was introduced in the 2004 – the ASTRA Studio: a news automation system that allows a single operator to produce complex live news bulletins.

To be able to manage large broadcast systems Aveco introduced the architecture of BackOffice and Orbiters in 2006. This allowed Aveco to install large complex projects.
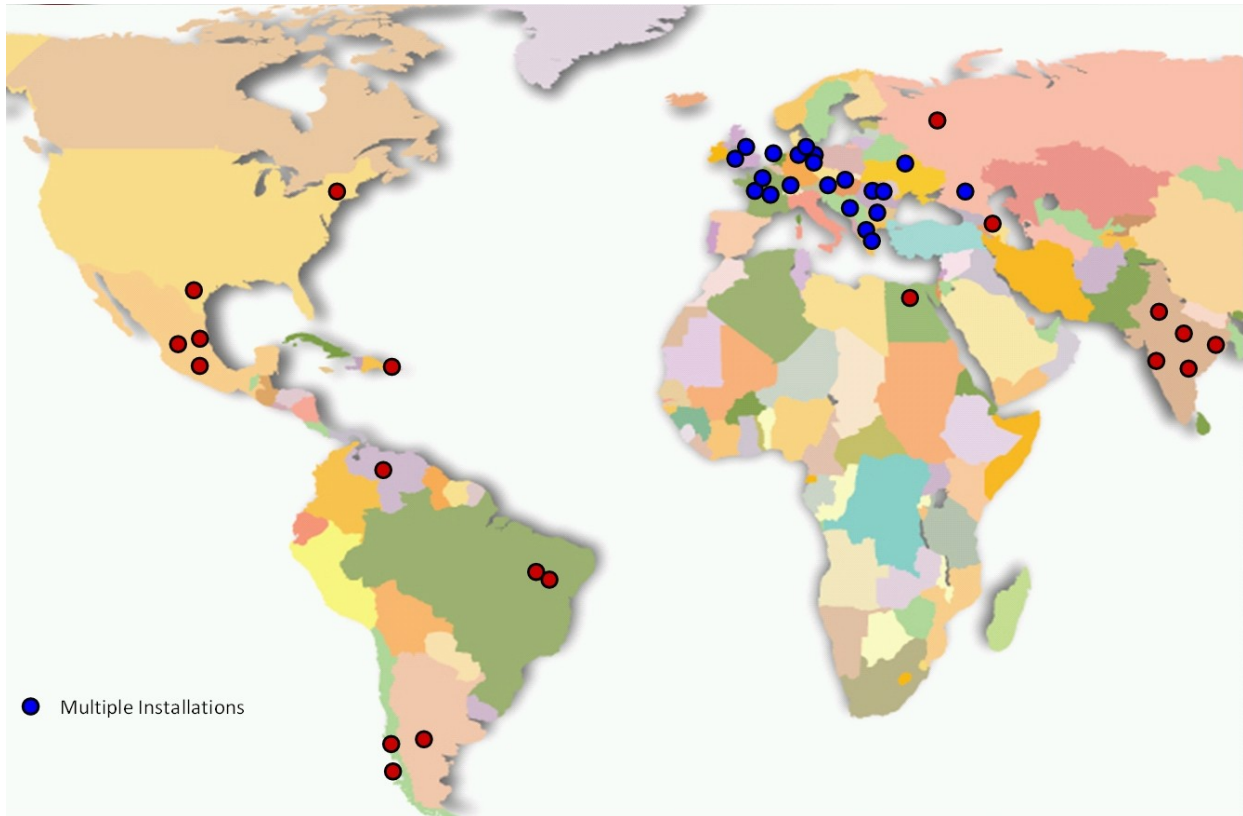
In 2010 Aveco introduced the new generation of news/studio automation system: ASTRA Studio 2. This cutting edge product is attracting many broadcasters and is becoming very successful.

In 2011 Aveco delivered the first disaster recovery system that synchronizes the media and playlists as well as playout control commands with the remote headquarter so that anytime is possible to switch signals from headquarter to disaster recovery without viewers noticing anything.

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3. Customers

More than 275 customers around the world.

Multiple Installations

Here are some examples of Aveco premium customers

3.1. ARD, Germany

Germany is the second largest media market in the world.

In Germany ARD is the 1st TV channel. They have been on air under Aveco control since 2005.

ARD broadcasts one main TV channel and nine regional opt-out TV channels.

Aveco ASTRA controls ingest, manages the media and controls playout of all ARD TV channels.

In 2009 ARD built an HD facility, again with Aveco automation system.

3.2. Euronews, France

Euronews is the leading international 24hour news channel covering world news in a unique style.

A key activity is gathering, marking and archiving newsfeeds as well as producing news clips. ASTRA provides control of scheduled ingest, manual ingest as well as file ingest, provides tools for archivists, integration with NRCS and NLEs.

3.3. Televisa, Mexico

Televisa is the world's largest Spanish speaking TV station. ASTRA controls the main SD and HD TV channels that generate 2.5B USD annual turnover.

This requires a complex automation and media management solution. Redundancy is critical as the cost of failure is extremely high.

In addition to the broadcast center, AVECO with Televisa has also built a disaster recovery facility in another part of the city. The DR site synchronizes media, playlists as well as frame accurate playout. At any moment it is possible to switch from the main broadcast center to DR site without affecting the on air presence.

3.4. TV Today Network, India

TVTN is the No. 1 news broadcaster in India. It started broadcasting its first 24hour news channel in 2000 with Aveco ASTRA automation and MAM that controlled the whole lifespan of news clips from acquisition to studio playout and MCR playout.

Currently TVTN broadcasts four news channels in India and three international news channels.

Recently TVTN built a new facility with new equipment, again controlled by Aveco ASTRA.

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4. ASTRA architecture

4.1. Aveco ASTRA automation platform differentiators

There are multiple features that make Aveco different from the competitors:

- The server software runs on QNX realtime automation system, that gives many advantages:
  - Hard realtime performance – critical for true frame accurate control
  - No viruses
  - Reliability – the OS has been designed for industrial control purposes
  - Modularity, where individual software modules run in memory protected address spaces – add security, allows for hot swapping software modules while on air.
  - Expandability – The complete Aveco ASTRA automation can run in a single PC including playlist managers, database, media managers and device drivers, as well as be distributed across the world, consisting of many server and client PCs connected via IP networks.
- The client software is multiplatform, running on Windows, Apple and Linux.
- Reliability – Aveco ASTRA includes automated failover strategies that automatically solve problems such as loss of a videoserver or other device, or even loss of an automation server.
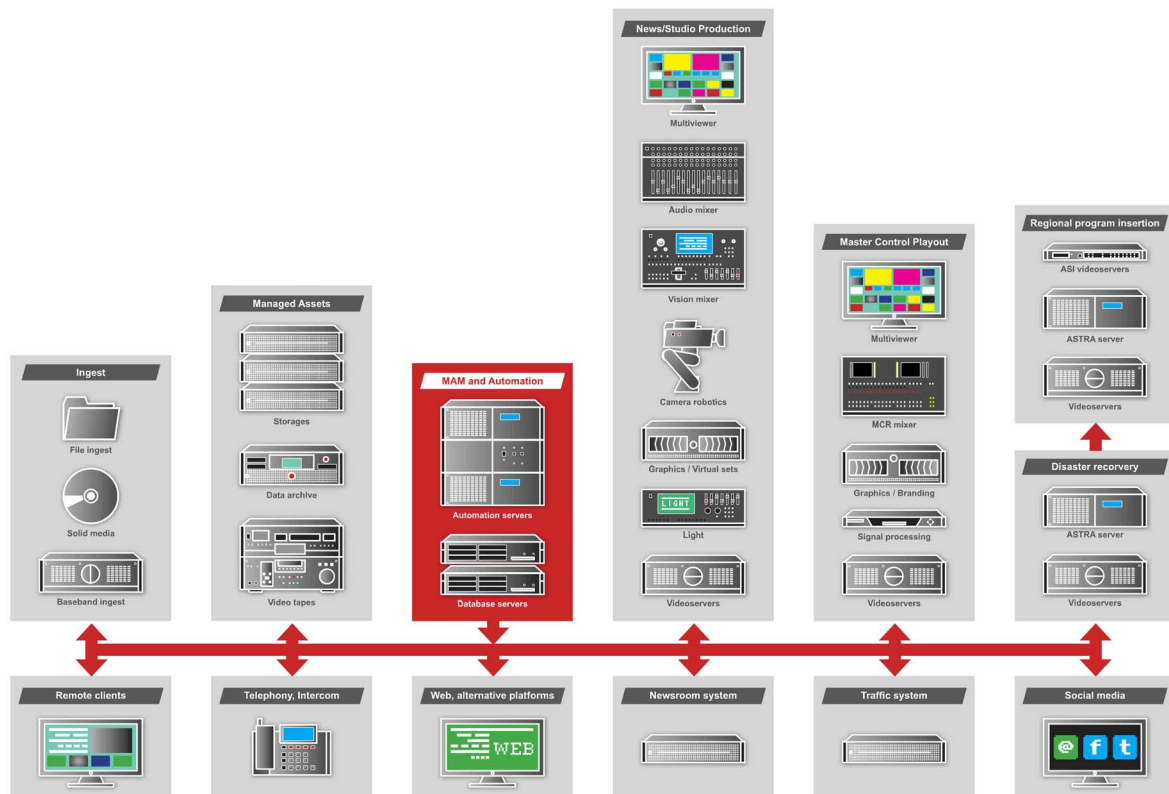
4.2. ASTRA Suite of Tools

The ASTRA Suite of Tools can automate the workflows of the facility. By automating Ingest, Content Management, Master Control Playout, News Playout and Studio operation, the operational costs are lower and the workflows are simpler. Built around a powerful Content Management System, ASTRA provides tools to manage all of the content locally, from a desktop or from remote locations.
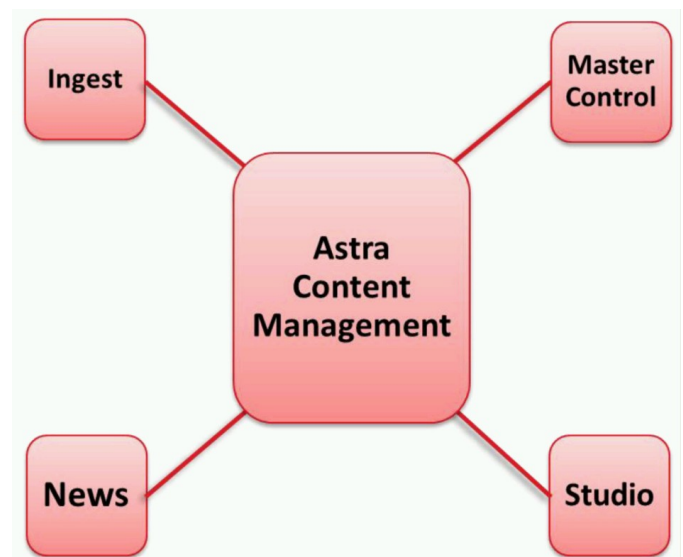
ASTRA is the overall architecture and brand name. It is configured for different markets with specific SW modules.

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4.3. Schematics of ASTRA controlled facility

The red rectangle contains the ASTRA MAM and automation system. Other rectangles show the individual areas controlled by ASTRA.

- Ingest – manual, scheduled, from live sources as well as VTRs, automated ingest from cart machines, file ingest, ingest from solid media (XDcam, P2)

- Asset management – management of clips in all storages, clip transfers, format conversions, low res creating, control of archiving on data tapes, even archiving on videotapes

- News/Studio production automation – automation control of all equipment in the studio, while a single operator produces the complex news bulletin on air.

- Master Control Playout – automation control of all equipment needed for on air playout. Single TV channel as well as multichannel, mirroring as well as N+M redundancy, opt-out channels.

- Regional program insertion – ASTRA supports several models: Centralized, Hub, Dual and Edge model.

- Disaster recovery – Disasters happen. And Aveco has the answer to the question "what happens if my facility is hit by a disaster?"

- Social media – ASTRA integrates with social media in two directions: it can publish

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information as well as receive information.

- Integration with NRCS, with traffic systems, with web servers, even with intercoms and telephony switchboards.

4.4. ASTRA servers

ASTRA servers run the entire automation software, that is database, playlists, device drivers and other components, or, in multi-server systems each ASTRA server runs the relevant allocated software modules.

The servers are industrial grade PC servers with dual power supply, two system hard disks. They contain a genlock card, serial communication cards, network interfaces and GPI inputs/outputs, to allow for integration with any equipment.

ASTRA servers can be mirrored.

Both servers run synchronized, and the mirror server takes over the control within 5 frames from detecting a failure of the main server.

Serial ports of both servers are connected to the controlled devices via serial changeover unit.

The serial changeover unit makes sure that all serial lines are switched from main to mirror server when the mirror server takes over the control.

4.5. ASTRA clients

The ASTRA client software runs on a minidesktop PC.

Typically the client is equipped with a hardware control panel.

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4.6. Control panels

Aveco Standard control panel includes

- transport control buttons
- jog wheel,
- playout control buttons
- software keys.

Aveco LCD control panel is freely configurable. It is used for:

- ASTRA Studio 2 playout control
- ASTRA News multichannel playout control
- triggering macro operations

Aveco News control panel has been specifically designed for two channel playout in news studios

Contour ShuttlePro can be used with ASTRA GUI, too

JL Cooper audio fader panel controls audio with ASTRA Studio 2

4.7. Key benefits of the QNX operating system

ASTRA servers run the QNX Realtime Operating System. This OS is a product of the Canadian company QNX and has been implemented for applications where failure is not an option, in industries such as air and space, security and defense, medical, energy, automotive or telecommunications.

Among companies enjoying benefits of QNX in their products are Cisco, General Electric, Siemens, Thales, and – of course – Aveco.

Using QNX provides the following benefits:

- Real-time Operation

    Provides True frame accurate & deterministic response times.

- Hot Swappable Software Modules

    Virtually any component can fail without damaging the kernel.

    Failed components can be replaced/restarted quickly and intelligently.

- Immune from Virus attacks

    Viruses do not exist for this OS

- Bandwidth Management

    Key processes are prioritized so they always get the CPU cycles needed.

- Network transparency

    A unique redundancy feature in which any process can talk to any device regardless where on the network the process runs

    Playlist can control any device regardless of where the driver resides

- Add nodes and devices dynamically

    Automatic configuration while still on air

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4.8. ASTRA architecture options

4.8.1. Standalone system

One ASTRA server runs all MAM and automation services:

ASTRA Microkernel

ASTRA CMS database

ASTRA Control System & Drivers

ASTRA GUI

Device Control

1-8 Playlists

Optionally the ASTRA server can be mirrored.

4.8.2. Distributed system – BackOffice and Orbiters

Large solutions require multiple ASTRA servers. All server hardware is identical. The servers differ only from the software point of view. The BackOffice runs shared services, while Orbiters provide dedicated tasks, such as playout control or ingest control. The servers can be installed at remote places and yet act as a single large automation system.

This solution has a high level of redundancy. Failure of one server just causes an automatic switch to mirror server, while the functionality of the automation system as a whole does not change.

4.8.3. SHS

This Aveco technology adds a dynamic flexibility to the system.

SHS allows playlists to move from one automation server to another, to dynamically assign devices to jobs, to move staff from one control room to another.

5. Products

More about ASTRA Suite of Tools can be found in the data sheet:

http://www.aveco.com/sites/default/files/ASTRA_Suite_of_Tools_DS-1000.pdf

The technological components of ASTRA Suite of Tools, discussed in the previous chapter, are the building blocks to several standalone products listed below, as well as fully integrated unique solutions for individual broadcasters.

5.1. ASTRA MCR

ASTRA MCR automates all master control room functions controlling ingest, QC, playout, routers, switchers/vision mixers, graphics and other devices. Single and multi-site operations are supported with full redundancy or selected redundancy as needed.

Understanding that one model does not fit all users, the flexible architecture of ASTRA offers a variety of designs with various levels of redundancy to meet the budget.

Data sheet: http://www.aveco.com/sites/default/files/ASTRA_MCR_DS-1004.pdf
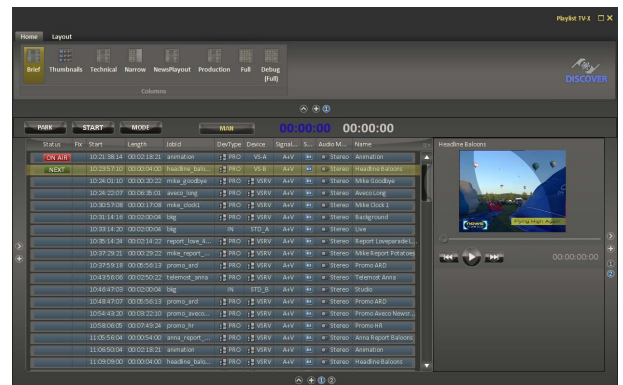
5.2. ASTRA News

ASTRA News provides the tools to control manually the playout of clips from videoservers and optionally the graphics in the studio.

In the news environment it is tightly MOS integrated with a NRCS, providing the media information and status information to NRCS and receiving the rundowns and their updates from NRCS.

When integrated with ASTRA CMS it controls the whole lifespan of the clip from ingest, creating low res, storing near online, NLE editing, archiving, up to playout and web publishing.

Data sheet: http://www.aveco.com/sites/default/files/ASTRA_News_DS-1003.pdf
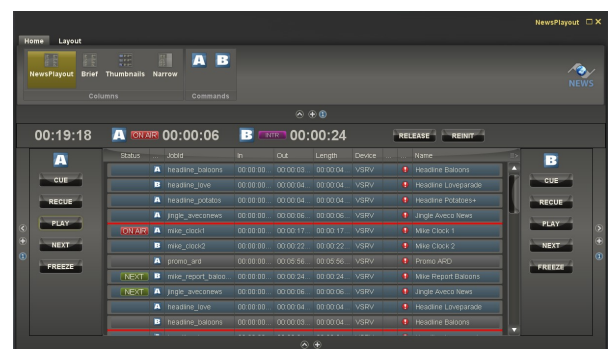
5.3. ASTRA Studio 2

ASTRA Studio 2 allows a single operator to run a complex live news/studio production on air, while all the studio technology including production switchers, graphics and virtual studio systems, videoservers, camera robots, lighting and other devices are controlled by the automation.
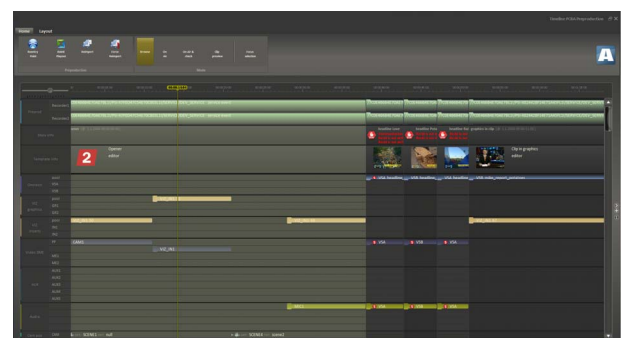
The strong template engine processes the rundown received by MOS, validates the data, interprets them according to the defined rules into set of technological events and groups relates events together to create Shots. Shots are then presented to the operator and allow him to easily control the production.

Data sheet: http://www.aveco.com/sites/default/files/ASTRA_Studio_2_DS-1005-01_0.pdf

5.4. ASTRA CMS

ASTRA CMS manages all aspects of a lifespan of assets. Integration with other Aveco products is seamless – they share the same database.

ASTRA CMS provides the following features:

- stores a rich custom structured metadata describing each asset in its database.

- controls ingest

- processes and transcodes assets

- provides low res browse feature

- integrates with NLEs to manage the postproduction phase of the cycle

- manages hierarchical storages from online to deep archive

- exports assets in required target formats to distribution platforms.
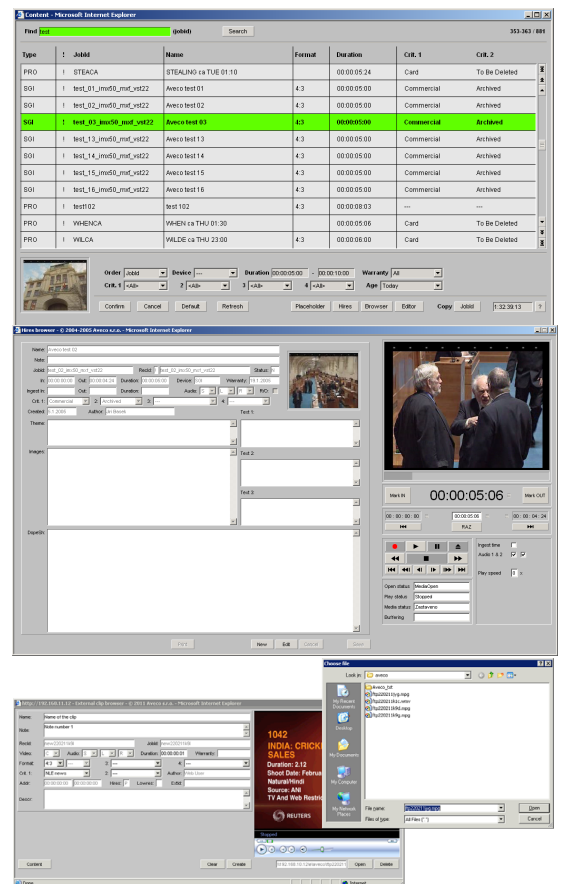
5.5. Disaster recovery solutions

Disaster may happen. Fire, floods, even strikes can put the TV station off air for days.

Aveco provides multiple solutions that allow to continue broadcasting. There are various solutions available:

- Fully synchronous facility broadcasts frame accurately synchronously with the main station. The media, playlists as well as playout control are synchronized automatically.

- Simple playout appliance that can be put on air as needed.

- Re-use of existing remote facility such as regional studio.

5.6. Ad insertion

Aveco ASTRA airs the advertisements in many ways according to the technical architecture and business models of the individual customers.

There are four regional ad insertion models available:

- Centralized model – central facility broadcasts to every region. Switching between global and regional content happens in the central MCR.

- Hub model – multichannel re-broadcasting center receives feeds, inserts ads and re-broadcasts throughout the region.

- Dual model – the broadcaster airs in some periods of time a local content and in the rest re-broadcasts the network feed with inserting regional ads.

- Edge model – the unmanned edge servers are located in the regions and insert the regional ads. ASTRA remotely manages the ad playlists, the ad media as well as monitors the operation.

Our customers also use various unusual ways of airing ads:

- Dynamic ad insertion – ASTRA squeezes the air time of the signal so that it creates spare time windows for adding ads, without reducing the aired content.

- Asynchronous ads – during sport matches the ads can be sold on important events, such as "This goal has been brought to you by Aveco!". Such ads cannot be scheduled in the playlist as these events do not come in time. The operator has an auxiliary playlist available that includes the asynchronous ads, and fires the ad when the event happens. He may have multiple ad playlists, such as one with full screen ad clips and another with sponsored graphics.

- Second screen ads – ASTRA can synchronize the aired program with web site content. The web sites then show the ads related to the broadcasting.

- Sponsored screams – the broadcaster sells spoken ads. These ads are presented in the playlist. When the moderator says the ad, he presses the button to confirm the ad and send it to the as-run log.

6. Internet tools

6.1. Integration with social media

Is social media hope or hype from the broadcaster's point of view? Currently the broadcast systems get messages from social media, censor them and display them. This is similar model to the sms messaging years ago.

Aveco does the opposite thing – ASTRA publishes messages on social media. It invites the followers to turn on their TV sets and watch the individual program titles, and thus increase the viewership.

6.2. Second screen

Once a program goes on air, ASTRA dynamically publishes the additional information about the aired topic on the web. The viewers can use their tablets to learn more.

The additional information can be included in the playlist, or retrieved automatically from 3rd party data sources.

6.3. Automatic publishing on web

ASTRA ingests the story during airing. It then transcodes the ingested clip to a web enabled format and publishes at the web site together with the additional metadata.

This great feature could be also a threat: viewers are gone, TV sets are off and people are watching the stories on the web.

7. Additional information

Please find more at the web site http://www.aveco.com

Or, contact us via e-mail info@aveco.com or phone +420 235 366 707.