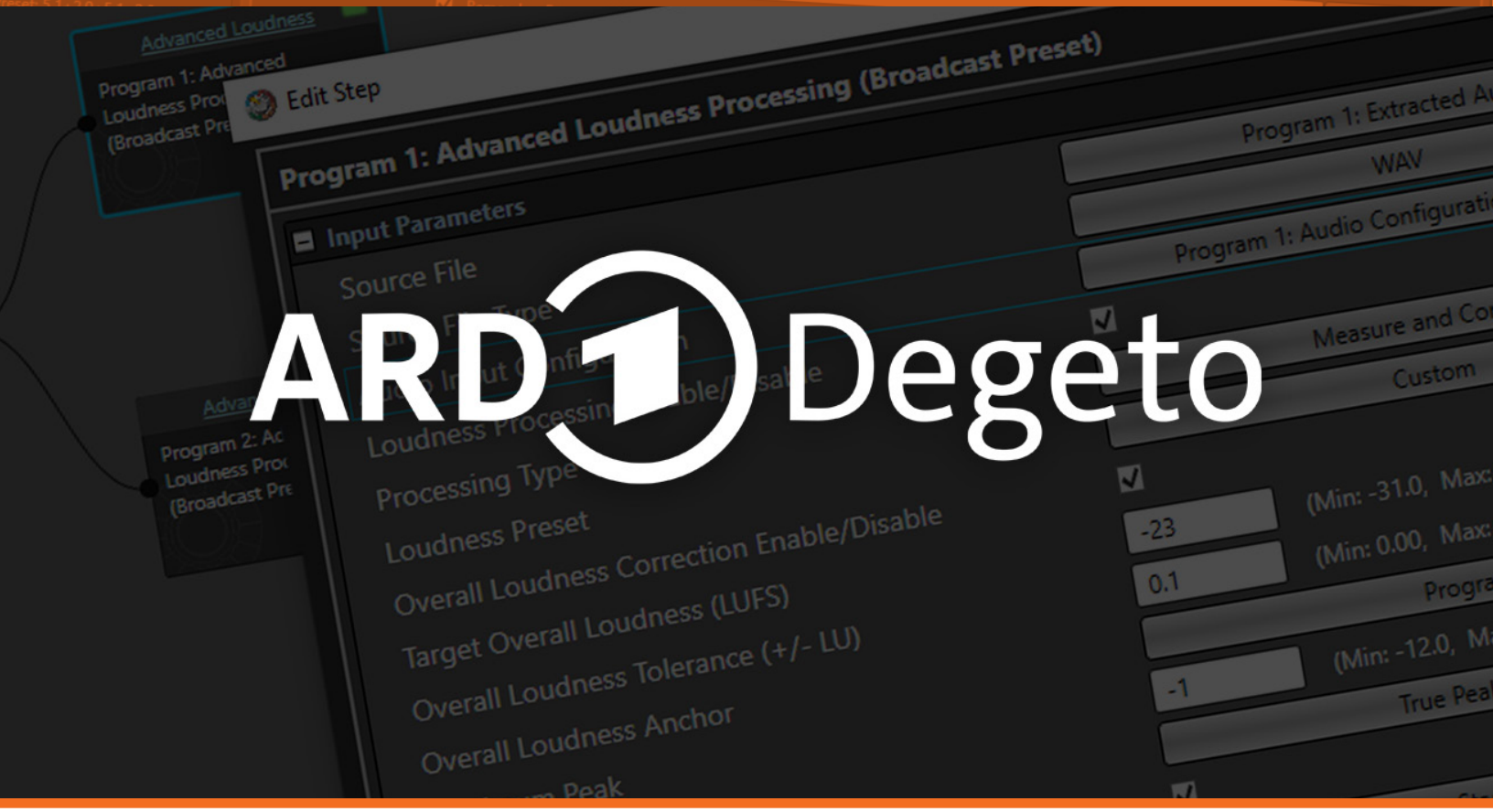
Telos Alliance®

Case Study

AudioTools® Server Helps Degeto Break The Logjam

MINNETONKA AUDIO®

ARD 1 Degeto



Stefan Raupp, Senior Technologist at Degeto Film GmbH in Frankfurt am Main, had a series of workflow bottlenecks that needed addressing...”One of the biggest problems was getting our material into R128 compliance. In the past, we would use a Jünger Audio C8000 modular system during ingest to process our content.”

“This is a realtime operation, and it performs audio manipulation in various ways. However, because it is realtime, it produces delays during processing. Every step has to be checked very carefully because you have both decoding delay and encoding delay. Depending on the workflow steps, you have to compensate the processing delays by delaying the video relative to the audio so that it’s in phase again.”

For Degeto, varying video delay wasn't the only issue. "A second problem was the real-time processing during the ingest process. You never know the exact audio data over the whole program duration, only in a time window (dictated by the real-time hardware). This makes for a complex problem to get accurate (EBU) R 128 (loudness measurement) data for the entire film."

"Degeto Film is the Film Archive and Production Partner for the ARD (Arbeitsgemeinschaft der offentlich-rechtlichen Rundfunkanstalten der Bundesrepublik Deutschland, a joint organization of Germany's regional public broadcasters). We have a lot of different films in our archives, from black and white old stuff to modern HD premium material. We are trying to deliver the best material and get the best postproduction results for the ARD. When we receive films, sometimes the audio and video has to be remastered. Also, multichannel (5.1) audio is part of our daily business."

Raupp's workflow issues are compounded by legacy format limitations. "When we are doing XDCAM HD, we have the problem that it only has eight audio tracks. This is not enough for our needs. We also have to deliver an Audio Description so that sight-impaired people can also enjoy the film even though there may be no dialogue. Stereo, Audio Description and 5.1 together use ten tracks, which does not fit in the XDCAM HD format. So, the discrete 5.1 tracks have to be transcoded into Dolby E. When we have to work with Dolby E in our Final Cut systems, it has to be decoded back into discrete tracks."

"Our HD tape formats are Sony's HDCAM SR as the premium format and XOCAM HD422 for dailies. For tape ingest, we are using Omneon Components. The codec is MXF-wrapped 100 Mbit AVC-Intra for our premium material and XDCAM HD422 for the dailies. The ingest is done with Omneon MediaCenter. From there, the files are transferred to the (Harmonic Omneon) MediaGrid, which is our central working storage. Connected to the MediaGrid are, among other things, three Final Cut systems, Amberfin iCR, (Minnetonka Audio) AudioTools Server (ATS), and Telestream Vantage. After finishing all processing on the files, they are transferred to our Spectra Logic (T680) tape library."

"We build a directory structure for the ingested files depending on their audio content. As an example, a separate directory for:

- files with audio on 1/2 only, which can be mono, stereo or surround
- files with audio on 1/2 and 5/6, with 5/6 being the tracks for the audio description
- files with audio on 1/2 and 7/8), with 7/8 carrying Dolby E-encoded content
- files with audio on 1/2, 5/6 and 7/8
- files with discrete multichannel (split mono) audio tracks

A Copy routine transfers the files from the ingest directory to ATS, which has the same directory structure. The ATS server is multiprocessor hardware with a 2.5 TB RAID. Specifically, it is an HP ProLiant DL380 G5 with dual 3 GHz Xeon 5160s with 20 GB RAM and five 500 GB RAID'd SAS drives as local storage. The server is running Windows Server 2008R2. This system is fast enough for our work."

"We are working 10 hours a day, so there are 14 hours of "free time" for the system. When we start in the morning, all jobs are done and have been copied back to their places, so there is no need for expensive hardware. Our tests indicated that copying the MXF files to the local storage of the ATS system, doing all audio jobs locally, then copying the corrected MXF files back to the CMS system is the fastest and best way for our environment. Doing the audio extraction and all jobs over the network and not on local drives results in heavy network traffic and makes no sense for us. Our network is mixed 1 and 10 Gigabit, depending on the various systems. Besides that, we can program time slots for the Copy processes while network traffic is low."

"The RAID System can hold about 20 films. During processing, the RAID is filled about 60%, so utilization is perfectly balanced. After processing, the MXF and the log files are moved back to the Omneon MediaGrid, where they made known to the CMS system and written to our data tape library. Our CMS system is an arvato Systems' VPMS."

"With the help of Minnetonka Audio's (professional services) staff, we created workflows for adding and embedding ADR (Audio Description) WAV files into existing MXF files. This is a big help for us, for completing films with ADR which were ingested in the past. For editing films in Apple's Final Cut Pro, AudioTools Server does the Dolby E decoding and re-encoding. All files are checked and corrected for (EBU) R128 compliance. Dolby E source material and metadata are also corrected by ATS. The ATS log files are saved together with the MXF files in the CMS system, so we also have access to the (loudness) measurement file (for compliance verification)."

Degeto Film worked with system integrator Netorium GmbH to realize both the original and new AudioTools configurations. Netorium installed the systems, and provided integrationservices to insure seamless interoperation with Degeto's existing infrastructure. "We implemented ATS in our system in January of 2013. Designing the workflows didn't take a long time. Week by week, the ATS component got more and more rock stable and precise, so it became a main process in our workflow. As the ATS system now had a load of 80% over the day, we were thinking about redundancy and (data) safety. There was no question about expanding the system, but in which way? More licenses, more powerful hardware, load balancing? We thought about a second system only as a second (processing) node in the system. After a period of thinking how to optimize the workflows, we bought the second ATS system."

"Load balancing will be done from the first system. The point against this decision was the network traffic from ATS #1 to ATS #2. The only way for us to have redundancy was to build two identical systems with all the licenses we need. The two systems are hardware identical, so we had only to clone system 1 to system 2 and plug in the second USB dongle."

"No installing software, no time wasted. Both systems have an identical directory structure, and all workflows are installed on both systems. They act like twins. Now the tricky thing: In ATS' Queue Control on both systems, all workflows are loaded but only half of them are active. System 1 is doing workflows 1,3,5 and 7, while system 2 is processing workflows 2,4,6 and 8. If one system crashes, the other system can do all jobs. It only costs us the time for some clicks to activate the disabled workflows on the running machine."

"Since we implemented ATS in our system, we can now be sure that our audio matches all specs. When we got the first ATS system, it was meant only for checking R 128 compliance. We bought the second system for safety, even though the original system has never crashed since install, but there was more work for the ATS system then we thought at first; encoding, re-encoding, and especially embedding new audio files into MxF files. With ATS we do not have to check the audio in the files with measuring equipment, we get log files from ATS. The files are corrected automatically and the Dolby E metadata is also corrected."

Internally voted "Purchase of the Year" at Degeto, AudioTools Server delivered on the promise of intelligent automation. "With the Minnetonka Audio ATS system, we bought Quality and Safety. It's a great product."

About AudioTools Server

AudioTools Server (ATS) is Minnetonka Audio's award winning flagship product for automating even the most sophisticated audio tasks. ATS provides standards—compliant loudness control, plus enterprise features including load balancing, workflow failover, and support for radio-centric codecs. AudioTools Server interoperates with existing infrastructure via SOAP and XML.

An island of audio expertise that easily augments existing systems, AudioTools Server is the first system of its kind to include Movie Adaptation for wide dynamic range content, and Voice Level Consistency measurement. In addition to loudness management, ATS offers quality control, audio conforming and channel management, encoding/decoding/transcoding, watermark management, audio essence extraction and ReWrap for containerized assets and transport streams, upmix/downmix and program correlation determination.

About Minnetonka Audio

Minnetonka Audio, along with Linear Acoustic, forms the TV Solution Group of the Telos Alliance.

The award-winning Minnesota based company creates essential technology for top media professionals in the motion picture, video, broadcast, game and optical disc industries and is a leading provider of OEM solutions through its international network of distributors and partners.

Its revolutionary AudioTools server brings expert file-based audio automation to existing production infrastructures, including its SurCode family of products supporting the full array of audio codecs, file types, and standards for CD, DVD, BluRay and broadcast television.

About Netorium GmbH

Founded in 2002 in Wiesbaden Germany, Netorium GmbH specializes in file-based workflows and streaming solutions for the Media and Entertainment market. As a VAR and application integrator, Netorium is focused on innovative and reliable solutions for their customers, delivering flexible support with a 24/7 hotline.

See how AudioTools® Server can help you.

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