PixelStrings Case Study: Discovery

Creating a Fully-Automated, Fully-Orchestrated, Complex Media Transformation Solution

PixelStrings™

By Cinnafilm Inc. and Discovery

paradigm shift /'perə,dīm shɪft/ *noun*

a fundamental change in approach or underlying assumptions. (Oxford Languages)

This case study evaluates the tangible, positive business impacts experienced by Discovery over the past three years, as a result of a conscious investment into shifting the paradigm of how content is managed, delivered, and financially tracked.

This study is only a small snapshot of the entire process that Discovery has adopted. A string of new technologies, modified application techniques, intelligent machine cooperation, and orchestration, all built to serve the ability to scale both mechanically and fiscally. Cinnafilm has provided components of a very large operational "puzzle," built and commanded by the talented team within Discovery.

Note: *On April 8, 2022, Discovery and AT&T closed their WarnerMedia transaction to become Warner Bros. Discovery. The process, technology, and workflows described in this case study only reflect the legacy Discovery side of the business.*

Some Backstory

Like many media companies, Discovery initially built media workflows around legacy MAM systems and on-prem hardware and software. As the business of media & entertainment evolved to include a huge array of new products and services, Discovery transformed its workflows. Discovery embraced a new media supply chain philosophy focusing on building global workflows hosted on public cloud resources. The flexibility, scalability, and dynamic nature of these new supply chains helped Discovery transform the workflows for its over 500 linear networks and then launch Discovery+.

Discovery, alongside other large media companies with similar philosophies, pushed the industry away from on-prem hardware and perpetual software licenses to new “by the content minute” purchasing of software hosted in the cloud. Discovery’s supply chain includes over 50 different services from dozens of vendors, chained together in a flexible orchestration fabric that creates workflows dynamically based on business needs.

Building a Better Mousetrap

“Cloud processing” represents an on-demand resource that networks and content distributors cannot ignore – so long as they have the right orchestration and processing tools to take advantage of it. Otherwise, fully automated cloud processing is just the pipe dream of the CTO or an empty directive from the board to "do something." So while Company A celebrated a handful of initial workflows that are processing in AWS or Azure, Discovery finalized the orchestration details on some of the most difficult delivery workflows a media company could possibly undertake. Simply put, Discovery became a global leader in the concept of driving 100% automated, cloud-based file acceptance, processing, and delivery.

This bold statement is backed up by a fully functional, automated file transformation system that scaled quickly and operated (mostly) as expected. A great example of the power of this new paradigm investment presented itself when Discovery acquired Scripps Networks. The system built by the Discovery Content Systems team, headed by Group Vice President Josh Derby, was going to have the additional stress of six networks’ worth of daily video processing added to the queue that outsiders would certainly consider to already be full. Knowing they built a system that could easily scale, they flipped the proverbial switches and the system worked as expected, turning out video to meet the needs of a widely varied distribution model for both the legacy Discovery content and all of the added Scripps content.

While many companies take weeks/months to make decisions on processing, Discovery was able to close data centers and turn off countless racks of technology as their atomic automation simply scoffed at the massive increase in workload and turned out mind-numbing volumes of content that went through complex processing. All while simultaneously raising the quality bar for the new addition to the Discovery family.

Another example of the automation prowess created by this change in approach was when Discovery needed to convert its massive archive with more than 60,000 assets to bring the industry's largest, on-demand, OTT library online for Discovery+. While many companies would think about outsourcing such a daunting task or trying to find downtime in their schedule for processing the library, the automated system simply commandeered more cloud processing resources to achieve the task while the combined Discovery and Scripps daily volumes were delivered as scheduled and on time.

There are three specific technology contributions from Cinnafilm that will be overviewed in this case study. These three components are critical for file delivery to the international audience Discovery reaches on a daily basis and for the maximization of revenue associated with higher-rated assets and series. Those technologies are:

- PixelStrings (Video transformation platform)
- Tachyon (Standards conversion)
- Wormhole (File run-length retiming)

TRANSFORMATION TOOLS

PixelStrings – The Platform

> *"When we discussed upgrading our RadiantGrid platform to PixelStrings in 2020, we were concerned that Cinnafilm's relative newness to the transcoding market would be of concern. While they had provided solid support on the RadiantGrid technology they had acquired, developing a new transcoding platform was another story, and our delivery chain had grown to depend on the Tachyon standards conversion and Wormhole file run-length retiming options in RadiantGrid. Simply put, we could not afford our implementations of these key features on SDVI's Rally system to take a step backward,"* stated Josh Derby. *"But not only did the functionality we need transfer to PixelStrings, everything took significant steps forward in audio and image quality. And with PixelStrings, we have been able to achieve higher levels of automation than before."*

PixelStrings is a 64-bit media transformation platform that uses enterprise-grade demuxers, decoders, codecs, and specialty processing image and audio plug-ins to recreate optimized video for new delivery requirements. By providing functionality that would require 2, 3, and sometimes 4 separate renders on other equipment, users can generate mezzanine, archive, or distribution level files in a single render to meet all of their complex delivery requirements. This toolset is a fundamental piece of the total architecture because it empowers Discovery with the ability to create any number of high-quality deliverables on demand, but with the assurance that the image and audio quality will be best in class on output once converted.

To read the rest, request the full Case Study at Cinnafilm.com