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Beyond the Silos: Automating Content Scheduling Across All Linear Streaming Scenarios

October 2024

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in partnership with Mediagenix



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About the author

Fred Dawson, principal of the consulting firm Dawson Communications, has headed ventures tracking the technologies and trends shaping the evolution of electronic media and communications for over three decades. Before dedicating himself to consulting, he was CEO and editor of ScreenPlays Magazine from 2005 to 2021.

Throughout his career, he held editorial leadership roles at Virgo Publishing, Cahners, and Cablevision Magazine, and published executive newsletters like the Cable-Telco Report, the DBS Report, and Broadband Commerce & Technology.



Introduction

In a recent article titled [“The Content Scheduling Challenge: Mastering the Agility Imperative”](#), Nick Moreno explains why broadcasters and content rightsholders need the flexibility to change media supply chains as necessary, given uncertainty over future business and distribution models. This includes agile scheduling to deliver partly automated or fully automated channels as needed.

Our premise in this companion white paper by Fred Dawson is that to program assets with greater speed and agility across various linear streaming outlets, broadcasters and content rightsholders need unprecedented capabilities through advanced, AI-driven automation.

While typical automated scheduling systems set program sequences primarily for Free Ad-supported Streaming TV (FAST) markets, there is a need for advanced automation of the entire range of scheduling tasks across any distribution scenario. This includes linear channels in AVOD, subscription services, ad-free subscription services, short-term “pop-up” channels and FAST outputs.



These highly automated workflows should be freed from the constraints of traditional service silos and should manage both stored and live content, along with relevant advertising and other elements, all tailored to each broadcaster's unique distribution model.

AI-driven automation is specifically needed for:

- Conducting metadata-aware searches across archives and live programming schedules to identify suitable programming assets for linear streaming channels.
- Vetting selected assets to ensure compliance with licensing and regulatory requirements.
- Managing ad and program breaks.
- Responding to changes in business models, such as adding or dropping channel distribution affiliates or adjusting monetization strategies.
- Aggregating ancillary video, graphics, and text to complement core channel programming.
- Adjusting to all scheduling changes in a linear programming lineup, including accommodating live news interruptions and the variable lengths of live sports within preset programming schedules.

In this white paper, we explore the evolving strategies that require advanced automated linear scheduling platforms, what automated scheduling should provide, and how the comprehensive Mediagenix approach to automation delivers at least an **80% efficiency gain** in the scheduling process.



Part 1. The Importance of Flexibility in Content Scheduling

Today, broadcasters are entering a new era in content monetization. Cloud computing is eliminating the need for separate processing silos dedicated to distributing programming through legacy and streamed TV channels.

Blurred Processing Boundaries

As noted by TV Technology Magazine, this cloud-induced blurring of processing boundaries has engendered a “blended service cloud production paradigm where any mix of stored and live programming can be spun up with point-and-click efficiency across all business models.”¹

These developments point to the fact that business-defined distinctions among services are not to be confused with operational realities as defined by rapidly evolving technology. The new perspective calls for maximizing returns on video programming assets by leveraging cloud-based flexibility to put assets to timely use wherever opportunities arise.

1. TV Technology, Live Cloud Production Takes Off with Far-Reaching Implications, June 2024



Remote Collaboration

Moreover, the cloud enables collaboration across diverse locations. This is essential in a post-pandemic environment where remote collaboration in TV operations has been normalized with the SMPTE 2021-enabled transition from SDI to IP-based TV program production.

The Rise of Linear in Streaming

This cost-saving transformation is occurring in tandem with the rise of linear in the streaming domain. As summarized in Figure 1, services delivering linear content now account for 55% of the global over-the-top (OTT) market, with 40% of that share attributable to live-streamed sports.

Figure 1. The Surging Value of Linearly Streamed Video Programming		
Global Revenue Totals 2023		
All OTT Services*	Services Streaming Linear Content**	Services Streaming Sports***
\$106.8 B	\$60.0 B = 55% Market Share	\$22.8 B = 21% Market Share

Sources: *Verified Market Research², **Maximize Market Research³, ***Verified Market Research⁴

2. Verified Market Research, Video Streaming Market Size and Forecast, October 2023

3. Maximize Market Research, Live Streaming Market – Industry Analysis and Forecast, September 2023

4. Verified Market Research, Sports Online Live Video Streaming Market Size and Forecast, June 2022



Broadcasters’ approaches to leveraging their assets in this new environment vary widely. Many, including a large contingent in North America, have embraced the FAST service model.

Other broadcasters have passed on FAST, having concluded it is more likely to decrease rather than increase ROI on content assets. However, many want to benefit from making their TV channels available to AVOD providers with the flexibility to adjust schedules as dictated by events.

Either way, the driving force in broadcasters’ opportunities to monetize assets in the streaming domain is advertising, which has surpassed subscription revenues as the dominant revenue generator. Statista predicts the share of total OTT revenues going to advertising worldwide will hit 60% in 2024.⁵

As reflected in Figure 2, consumer demand for lower-cost ad-supported services over subscription-only services has been a big factor behind the shift from what not so long ago was strictly a subscription VOD streaming model.

Figure 2. The Consumer Push Behind Ad-Supported OTT Services										
Prefer Services	S. Korea	U.S.	India	France	Italy	Brazil	U.K.	China	Germany	Japan
At Lower Costs With Ads	64%	57%	56%	53%	51%	46%	46%	46%	39%	37%
Higher Costs Without Ads	22%	27%	38%	18%	27%	34%	29%	20%	38%	14%
No Preference	14%	16%	5%	29%	22%	20%	25%	33%	23%	48%

Source: Morning Consult ⁶

5. Statista, OTT Video – Worldwide, February 2024

6. Morning Consult, Consumers in Every Country Prefer Streaming with Ads if it Means a Cheaper Bill, April 2022

The Surge in Business Model Volatility

It is also important to note that many service providers operate linear streaming channels without advertising support. This includes the vast community of public broadcasters who want to capitalize on the benefits of scheduling automation in their streaming services.

In addition, many commercial service providers want to offer subscribers options to subscribe to ad-free premium linear channels at subscription rates above the AVOD service rates. In any of these service domains, broadcasters may want to support pop-up channels that allow them to exploit licensing of special events or monetization of holiday coverage over streaming outlets.

The upshot of this surge in business model volatility is that broadcasters will be best served by maintaining technical flexibility to revise strategies as conditions that shaped previous decisions change.





Part 2

Key Capabilities of Automated Content Scheduling Systems

All the examples in Part 1 underscore broadcasters' need for a highly automated approach to scheduling linear programming that will give them the flexibility to quickly leverage assets unbounded by previous perspectives on content categories.

Touchless Parameter Application and Element Retrieval

In the automated scheduling environment, basic parameters – including program sequences, ad and programming break templates, captioning languages as dictated by channel destinations, and metadata requirements associated with each type of programming – are applied automatically on a recurring basis with no need for manual intervention.

Moreover, along with ensuring retrieval of the primary programming elements in the proper sequence over time, the scheduler must be able to trigger acquisition of graphics, subtitles, clips, UI presentations, and other essential elements with adjustments over time as dictated by metadata associated with recurring programs.

Last-Minute and Incremental Schedule Changes

An automated scheduling system should support long-term scheduling over days, weeks, months, or longer while providing support for schedule adjustments down to the last minute before transmission of sequences targeted for a change. The system should also make it easy to automate implementation of pop-up channels with all scheduling functions tied to the channel's duration to the point of automated termination. Provision should also be made for implementing channels featuring recurring programming lineups tied to specific dayparts.

“The system should manage incremental schedule changes separately from the long-term schedule, avoiding revisions to the overall plan.”

The system should be structured so that tasks related to implementing incremental schedule changes can be managed separately from the long-term scheduling process with a focus on what needs to be done with these short-term adjustments, thereby avoiding the need to revise the overall pre-programmed schedule. In the case of scheduling updates that require repositioning of previously scheduled programs, this should be doable as efficiently as possible with drag-and-drop movement of the affected titles.



Automated Asset Discovery

When it comes to identifying program assets that might fit a given channel profile, the scheduling platform should be able to search archives automatically for matches based on channel descriptions input by schedule managers. It should also be able to look at playlists of upcoming live content to convey relevant options that might qualify for inclusion in the channel plan.

Vetting Content for Compliance

Whether broadcasters' content is designated for FAST or AVOD distribution, scheduling cannot truly be automated without an automated approach to determining the licensing and regulatory boundaries surrounding every archived or live program designated for distribution beyond the over-the-air broadcast arena.

The inclusion of higher-value content in streamed channel lineups has made such capabilities more vital and challenging than ever. For example, sports coverage requires adherence to blackout rules stipulating where the programming can be watched, with scheduling provisions for substitute programming where blackouts are in force.

Consequently, the system must provide space for and access to compilations of licensing rights and regulatory requirements associated with all assets that might be subject to inclusion in new linear streaming channels. It must be able to parse those compilations to ensure that only the content that qualifies for inclusion with a given channel is added to the lineup.

“The uncertain durations of live sports require real-time scheduling flexibility.”

Navigating the Complexities of Live Content

Sports and other live content impose many other scheduling challenges. Major news and weather developments can force interruptions in regular programming at a moment's notice, and the uncertain durations of live sports require real-time scheduling flexibility.

When the archived content includes live segments that differ from the legacy TV broadcast, the automated scheduling system must be able to make the necessary adjustments in scheduled programming and ad breaks with alert responses to cues signaling the live segments' endpoints. Also, with any live content that is not part of the legacy broadcast schedule, scheduling needs to include provision for automatic recording and storage as the program plays.



Stand-Alone or Easily Integrated

Much else comes into play with an automated scheduling system suited to the current distribution environment. For example, the scheduling system must be available for use as a stand-alone solution that does not lock users into workflows dependent on one vendor's end-to-end asset management or playout platform. At the same time, it should be equipped with well-designed APIs that ensure easy integration with other vendors' workflows.

“The scheduling system should be equipped with well-designed APIs that ensure easy integration with other vendors' workflows.”

Data Compilation for Performance Monitoring

Another aspect to consider when weighing an automated scheduling process is how well it facilitates compilation of data useful to whatever performance monitoring tools are in play, as well as the degree to which it seamlessly interacts with such tools. This is essential to troubleshooting performance glitches and tabulating overall channel performance.

Tracking and Managing Ad Strategies

Regarding advertising, the automated scheduling system must not only ensure that existing ad blocks are retained as required for programming compiled for linear channel output but also be able to reposition those blocks or add new ones according to the new channel strategy. The system's identification of business policies associated with a channel strategy should also be able to keep track of variations in ad strategies associated with ad blocks.

In other words, the scheduling data field should allow for input that identifies whether and how ads are to be replaced through conventional presales or programmatic processes and whether some degree of locational or personal targeting is involved. Tracking expectations for ad blocks is instrumental in alerting any performance monitoring system associated with the scheduling platform about what to look for when resolving issues and verifying adherence to commitments to advertisers.





Part 3

The Mediagenix Approach to Automated Content Scheduling

As just discussed, today there is a need — unfulfilled until now — for a scheduling system that can take advantage of the full power of automation to perform all the tasks essential to scheduling broadcasters' programming for use in the multiplying FAST, AVOD, and other streaming market scenarios that call for the creation of linear broadcast channels.

Mediagenix's approach has been to develop a Scheduling Automation platform that executes all tasks a fully automated scheduling system can perform by leveraging the latest advances in automation, AI, and machine learning. With an intuitive and efficient dashboard interface, broadcasters can spin up channels in minutes, complete with ad breaks, promotional intervals, and branding.

Mediagenix's Scheduling Automation delivers huge benefits for its customers, with at least an 80% efficiency gain in the scheduling process.

The Scheduling Automation platform is designed to work in tandem with workflows across broadcasters' supply chains. With an extensive foundation of APIs facilitating integration with content management systems, ad servers, branding tools, and other components, the Mediagenix scheduling applications operate in a cohesive, streamlined workflow irrespective of customers' vendor choices.

“These capabilities are vital to eliminating the encumbrances of managing content lifecycles in separate distribution silos.”

In addition to improving operational efficiencies within any distribution scenario, this allows automated scheduling to be set up for linear channel streaming in any service environment. Just as importantly, the Scheduling Automation platform allows broadcasters to add new distribution outlets for an existing channel without disrupting its scheduling operations. These capabilities are vital to eliminating the encumbrances of managing content lifecycles in separate distribution silos.

The role Scheduling Automation plays in maximizing asset ROI includes satisfying producers’ needs to preserve and build brand identity over the content lifespan. The Mediagenix platform’s persistent inclusion of brand identity in asset selection and ability to track brand utilization across all channel setups is instrumental in sustaining returns on assets.

The Mediagenix Scheduling Automation platform is offered as a Pack within its overall suites, fully compatible with all other elements in the Mediagenix product suite. To accommodate the distinctions between creating long-term schedules and implementing changes in that scheduling over time, the Mediagenix Scheduling Automation Pack is divided into two components for use as broadcasters see fit.



Scheduling Artist executes everything that goes into setting the foundational linear programming lineups, while the other, Continuity Artist, is a capability that ensures that any broadcast can be made continuous by planning promotions, synchronizing commercials, timing out schedules and much more.

Optimizing Automated Channel Lineups: Key Elements

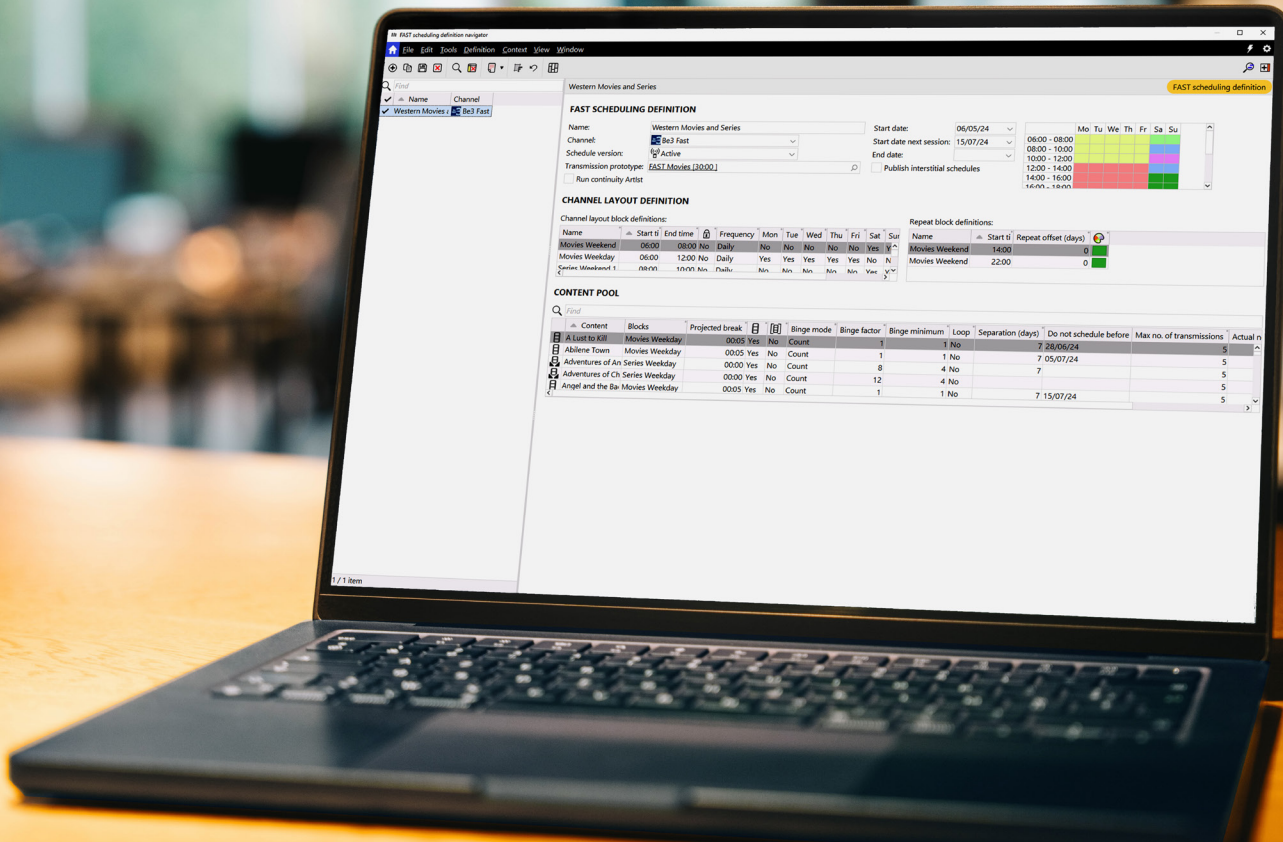
Scheduling Artist is comprised of three main building blocks. The first is designed to create the parameters that define how broadcasters want to set up the automated scheduling process. This includes specifying the time blocks to be filled in the scheduling process, the span of time over which the scheduled sequences will be repeated, the duration of ad breaks between programs, the promotional or other spacing elements to be included with program breaks, and much else.

The second building block is devoted to assembling the content pool to be drawn on in the channel creation process. Utilizing the platform's recommendations engine as directed by the broadcaster's choice of parameters defining a given channel, this component of Scheduling Artist queries archived content metadata and metadata identifying forthcoming live programming to list all content that may qualify for inclusion in a channel's lineup.

The third building block is the set of algorithms underlying the intelligence that makes Scheduling Artist unique. This AI-enhanced intelligence determines the execution of the other building blocks.



As the first step in the scheduling process, Scheduling Artist leverages metadata, ratings, demographic data, time-of-day considerations, and business model parameters to search broadcaster catalogs and live programming schedules for content that fits a given channel's profile, thereby providing operators with a complete view of the options. The second and final step to setting up the channel's foundation schedule entails using AI-enhanced intelligence to determine whether any licensing rights or regulatory issues are barring the use of the chosen channels.



In Scheduling Artist, you can create the parameters that define the automated scheduling process.



This process is entirely automated. Once the broadcaster has entered in the Scheduling Artist repository all the rights and regulatory policies germane to content considered eligible for use in linear streamed channels, the system can immediately assess what restrictions, if any, apply to each program chosen for a particular channel.

After programs are chosen and assigned their positions in the timeframe set for cycling through an unrepeated sequence, Scheduling Artist maintains that schedule for as long as the channel runs by pulling in the ensuing programs for each block for as long as the preset schedule is maintained. Scheduling Artist also makes it possible to keep track of and respond to business models and changes in those models that might be implemented over time.

“The platform automatically executes mandated changes in ad breaks and replaces scheduled programming segments with appropriate new content.”

The platform is responsive to nuances such as the limits on how long a program can run in a recurring schedule, policies requiring the recording of live content for archiving purposes, notices that ad breaks need to be added or repositioned, rules establishing what types of advertising strategies are applied with ad breaks, and much else. The platform automatically executes mandated changes in ad breaks and replaces scheduled programming segments with new content that fits the designated program block.



Adjusting Schedules in Real Time with AI-Enhanced Intelligence

As an integral component of the Mediagenix Scheduling Automation Pack that complements Scheduling Artist, Continuity Artist brings to bear all the AI-enhanced intelligence employed with Streaming Automation algorithms in tasks specifically suited to making incremental schedule changes without interfering with irrelevant aspects of the basic channel schedule. Within the targeted programming block, Continuity Artist can be used to create secondary events, format new commercial breaks, time out schedules, and schedule sportscasts.

With today's broadcast operations calling for the flexibility to introduce ever more scheduling changes at a moment's notice, this is an aspect of the Mediagenix Scheduling Automation Pack that can be used to revamp linear channel schedules at real-time speeds in any linear programming scenario. For example, one of the most popular applications of Continuity Artist is managing scheduling dynamics with streamed versions of primary broadcast TV channels.

While broadcasters can rely on their set scheduling modes when it comes to implementing changes in their over-the-air TV programming schedules, they need the automated functionalities provided through Continuity Artist to accommodate scheduling changes they may want to make in the streaming domain. This is especially important now that broadcasters can leverage IP technology to perform enhancements to user experience and advertising in streamed services that cannot be executed with traditional TV distribution.



More broadly, even when broadcasters are using a traditional manual approach to program scheduling, automated support from Continuity Artist can also be used to execute changes in the primary broadcast schedule. Given the workload imposed by making schedule changes more frequently than ever, Continuity Artist can be employed to deliver major operational cost savings in TV station management.



Within a programming block, Continuity Artist can be used to create secondary events, format new commercial breaks, time out schedules, and schedule sportscasts.



Automating the Full Spectrum of Tasks

Beyond merely setting the sequence of programs for linear channel output, the Mediagenix Scheduling Automation Pack automates all the tasks broadcasters typically deem essential to more efficient, cost-effective approaches to spinning up and terminating linear programming feeds. This includes AI-assisted automated control over:

- Metadata-aware searches across archives and live programming schedules for all programming assets that qualify for use in linear streaming channels.
- Vetting of selected assets in the channel scheduling process to ensure content chosen for a given use case meets licensing and regulatory requirements.
- Management of ad and program breaks.
- Responses to changes in business models, including adding or dropping channel distribution affiliates and adjusting to new approaches to monetizing channels.
- Aggregation of ancillary video, graphics, and text to be used with core channel programming.
- All scheduling changes occurring in a linear programming lineup over time with the ability to seamlessly accommodate live news interruptions and indeterminate live sports durations in preset programming schedules.

The Mediagenix Scheduling Automation Pack is a fully compatible add-on to its Linear Suite and Linear & On-Demand Suite. While optionally available as an onsite-hosted software solution, the Pack is designed to function optimally in a cloud-hosted software-as-a-service (SaaS) mode.



Conclusion

Furious competition for audiences is blurring the boundaries between FAST, AVOD, and SVOD services in a market dominated by restless consumers searching for high-value content at low costs. As a result, broadcasters need to be able to schedule channels to reach viewers wherever and whenever they can be found.

When it comes to scheduling linear streaming channels, the days of juggling spreadsheets, consuming ever more staff time, and setting up separate operations to deal with disparate streaming business models are over.

Broadcasters need to be able to maximize returns on their assets in a cross-platform environment where speed to market is vital. This requires highly automated workflows that can orchestrate scheduling of stored and live content with relevant advertising and other elements specific to each broadcaster's distribution business models, free of incumbrances imposed by traditional service silos.

Mediagenix solves that challenge by developing a comprehensive approach to automating scheduling for linear channel distribution with any type of streaming service. The Mediagenix Scheduling Automation Pack goes well beyond the linear channel scheduling systems employed in the FAST market by providing broadcasters the agility and speed they need to capitalize on opportunities to monetize their assets wherever they see opportunity, regardless of how streaming services are categorized.



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