



# INDUSTRY RALLIES AROUND DIGITAL SUPPLY CHAIN AUTOMATION

Consumers love to watch movies and TV online. That desire is driving the rapid expansion of online platforms in markets all around the world. Enabling that rapid global expansion is an increasingly elaborate network of content providers, digital platforms, supply chain workflows, components, and service providers. That network builds and maintains the digital plumbing—and the digital standards—that make it possible for the industry to efficiently deliver increasingly compelling consumer experiences.

Through a multi-year collaboration, the entertainment industry has created a suite of digital supply chain standards that enable that consumer experience. Just as importantly, those standards and specifications provide the automation framework that will enable the industry to scale globally and deliver that experience to an ever-increasing number of worldwide consumers. Key elements of that automation framework include:

- EMA Avails - A cross-industry format for delivery of licensing avails specifying how and when content can be presented to consumers,
- EIDR - Standard unique IDs for precise machine-readable identification of content,
- Media Manifest - Media manifest specifications for organizing the ingestion of the components necessary to deliver the consumer experience,
- Digital Extras - Specialized manifest for enhancing the consumer experience with digital extras and interactive experiences,
- Common Metadata – Core metadata specifications that provide the shared vocabulary underlying the entire suite of cross-industry initiatives.

These elements comprise a family of complementary, compatible specifications that address key aspects of online delivery; facilitating automation, providing cost savings, and enabling superior consumer experiences. These specifications are created and maintained through industry collaboration, and are open to all industry participants. Parties can adopt these individually or together, with the most benefit coming from greater adoption.

The key companies driving these initiatives are major studios—Disney, Fox, Lionsgate, NBCU, Paramount, Sony Pictures, Warner Bros.—and major digital platforms—Amazon, Google Play, Microsoft Movies & TV, Comcast, Netflix, Sony PlayStation, and Vudu. This broad industry collaboration means that it is no longer necessary to reinvent the wheel to deploy key elements of a digital platform. Instead, the solutions described in this paper solve pressing technical issues in digital supply chain automation from beginning (Avails) to end (consumer experience); saving cost, improving quality, improving the user experience, differentiating products, and enabling partners to deploy advanced business and marketing models to increase revenue.



## STANDARDIZING DELIVERY OF BUSINESS RULES WITH EMA AVAILS

Studios authorize online platforms to offer tens of thousands of titles, across dozens of territories in multiple distribution windows and in multiple resolutions. Each title arrives with rules that communicate the windows, territories, formats and other business terms that the platform must follow. For a single major studio, this information, called “Avails”, can be hundreds of thousands of records. Studios have hundreds of partners, each with their specific Avails. Large online retailers have hundreds of partners. If any of these data are wrong, sales are lost, pricing is wrong, and titles could be released out of window.

Until recently, almost all Avails were processed manually, often with transcription off PDF images of Avails data. This not only presents problems for accuracy, it also precludes more complex offerings and more advanced business models.

With a shared interest in addressing this bottleneck, studios and online platforms have collaborated on creation and implementation of a standardized format for avails. Avails are the first step in the supply chain workflow, so have garnered considerable industry attention. The result is the EMA Content Availability Data specification (EMA Avails), sponsored by the Entertainment Merchants Association (EMA) in collaboration with studios and MovieLabs.

EMA Avails offers a standardized format for conveying avails information from a content licensor to an online platform, including identification of the title and relevant edits of the title, basic metadata to support a buying decision, identification of the licensor or studio, region and time information, and flexible business terms. The specification is an active collaboration supported and adopted by all major Hollywood studios and most large international platforms. It represents the best and most viable option for standardizing the exchange of licensing avails with Hollywood and major platforms, and it has already produced dramatic reductions in manual reconciliation.

In an analysis published by Google Play, adoption of EMA Avails reduced a 50-hour manual reconciliation to a half hour of processing time for one batch of 1000 Avails, a benefit that can be replicated across tens of thousands of Avails.

Processing Time for Batch of 1000 Avail Updates		
	Before EMA Avails	Using EMA Avails
Title matching, de-dupe, parsing, including research and partner communications	~25 hours	0.1 hour
Apply final update and audit	~25 hours	0.1 hour
<b>TOTAL</b>	<b>50 hours</b>	<b>0.2 hour</b>

The EMA Avails spec is available in an Excel spreadsheet or XML format. Initial implementations have focused on the Excel format, but the ever-increasing complexity of film and TV avails, as well as the growing demand for more automation, is driving an ongoing migration to XML. An API for fully automated delivery of XML Avails is in early implementation.

The EMA Avails specification, as well as tools for converting between the Excel and XML formats, can be found at [www.movie labs.com/md/avails](http://www.movie labs.com/md/avails).

## IMPLEMENTING AN INDUSTRY STANDARD ID

Ambiguous content identification is at the root of many non-standard manual processes in digital distribution. The industry burns time and money manually trying to figure out whether two records refer to the same title (“title matching”). Automation requires minimizing exceptions that need human intervention, and making maximum use of an industry standard ID for content is an essential starting point for avoiding time-consuming title-matching and other manual processes.

A simplistic title-based ID scheme is not sufficient for a complex supply chain. Sometimes the ID needs to refer to everything related to the work (abstraction). Sometimes, it refers to a specific edit. And sometimes it refers to a manifestation of an edit (such as an encode).

The Entertainment ID Registry (EIDR) is the industry standard ID that addresses all the real-world complexities of the digital supply chain. EIDR provides unique IDs for movies and TV titles, along with child IDs for edits and manifestations stored in a hierarchical database. EIDR IDs enable all participants in the media ecosystem to identify content uniquely and communicate precisely without reliance on proprietary numbers that cannot be validated in an open database or shared freely.



EIDR IDs can be looked up by studios, platforms, and service providers. They provide a shared reference for validation of deliveries and ingestion of data and content from partners. They are increasingly a tool for mapping between data sources, as more and more data vendors include EIDR IDs as a way to add value for customers and ease data integration. Even when not included, the EIDR database aggregates numerous alternate IDs and makes them available as a cross-reference for matching.

EIDR IDs are also a valuable tool for reporting and analytics. They identify parent titles with particularity, and the parent-child mappings allow roll-up of data between titles and regional or censorship edits required for distribution in different markets. EIDR’s series/season/episode hierarchy for television creates similar roll-up benefits for aggregation of transaction or measurement data across the same program or series.

Perhaps most importantly, EIDR serves as an anchor ID for the suite of digital supply chain standards and specifications developed by the industry. It is a key linking component that allows content producers and distributors to take full advantage of other major automation initiatives around licensing avails, metadata, media manifests, and digital extras.\*

---

\* EIDR is run as a non-profit industry consortium. To learn more about how to use or join EIDR or find matching, registration, or other tools to assist with implementation, visit [www.eidr.org](http://www.eidr.org).

## ORGANIZING DELIVERIES WITH MEDIA MANIFEST

The industry has also developed a specification for organizing delivery of the components necessary to deliver a consumer experience. The Common Media Manifest Metadata specification, known as Media Manifest, provides a standard framework for delivery of metadata and media files, regardless of how the actual media is packaged. In addition to connecting Avails to media deliveries, it addresses issues such as which tracks play in each region, what trailers go with which features, and which cards (dub, anti-piracy and ratings) are played in various regions and circumstances. It supports delivery of one set of components that can be used to build multiple offerings and consumer experiences.



MovieLabs and the EMA have published a streamlined delivery profile that targets the most important delivery use cases, called the Media Manifest Core (MMC) specification.

Media Manifest complements the SMPTE Interoperable Media Format (IMF) standards, that describe an approach to efficiently packaging mezzanine quality (high quality) video tracks, audio tracks, subtitle files with instructions to generate regional and censorship edits in various output formats.

For more information and tools, including best practices for use of Media Manifest with IMF and the Common Media Manifest Validator, visit <http://movielabs.com/md/manifest/>.



## ENHANCING THE CONSUMER EXPERIENCE WITH DIGITAL EXTRAS

The industry needed an approach for delivering an improved user experience across all media platforms. The industry developed a suite of solutions called Cross-Platform Extras, or CPE. The CPE specifications help online platforms deliver enhanced or interactive consumer experiences by defining extras (i.e., 'bonus', 'Value Added Material', etc.) in a form user services can easily translate into a full user experience compatible with that service's user interface.

CPE offers support for franchise and title extras, as well as leveraging social networking platforms. Digital platforms can use these and other options available in CPE to increase their value proposition, differentiate product offerings, engage consumers more deeply, and enhance the overall experience.

CPE supports digital extras and bonus materials such as trailers, galleries, interviews, featurettes, apps/games, and social networking, as well as the time-based (video-sync'd) data. CPE time-based data can define which actors are in which scenes, which pre-visualization coincides with the current scene, and where deleted scenes would have been seen. Regardless of how simple or complete the CPE definition, services can choose which features are presented to their customers.

CPE also works in conjunction with Avails to allow the creation of window-specific or sale-specific experiences. For example, in a pre-order window or pre-sale condition, CPE can provide a limited bonus experience to drive sales.

To reach the broadest range of devices, CPE has two base specifications: CPE-Manifest and CPE-HTML. CPE-Manifest not only supports delivery in a manner nearly identical to Media Manifest Core (MMC), but defines the relationship between assets needed to create a user experience. To customize experiences across applications on multiple devices, there are also accompanying specifications for delivery of appearance and app data. The CPE-HTML specification defines a JavaScript API to implement CPE experiences in a browser.

Specifications, tools, and sample code are available at <http://movielabs.com/cpe/>.



## BUILDING FROM A COMMON METADATA FOUNDATION

Automation requires a shared vocabulary for describing the key deliverables and key characteristics of movies and TV shows necessary to deliver a consumer experience. Metadata is the basic building block that provides that vocabulary, and the foundational metadata for digital supply chain automation is provided by the Common Metadata specification. Common Metadata includes basic metadata for describing different types of works, identifiers, language variations, people, organizations, and other categories of information related to film and television. It also describes digital asset metadata such as information about encoded audio, video and subtitle streams, as well as package and file metadata.

The definitions in Common Metadata are foundational components for EIDR, EMA Avails, Media Manifest, CPE-Manifest, and other industry initiatives.

In particular, they help standardize the communication of metadata from content providers to online platforms. The Media Entertainment Core Metadata (MEC), developed through a collaboration between the EMA and the Digital Entertainment Group (DEG), specifies a subset of Common Metadata needed to support an online consumer experience. It defines the descriptive and encoding information that constitute the core requirements for standardizing metadata communication from content providers to online platforms.

The Common Metadata and MEC specifications are available at <http://movielabs.com/md/md/> and <http://movielabs.com/md/mec/>.

## COMPLETING THE ROUNDTRIP WITH STANDARD REPORTING

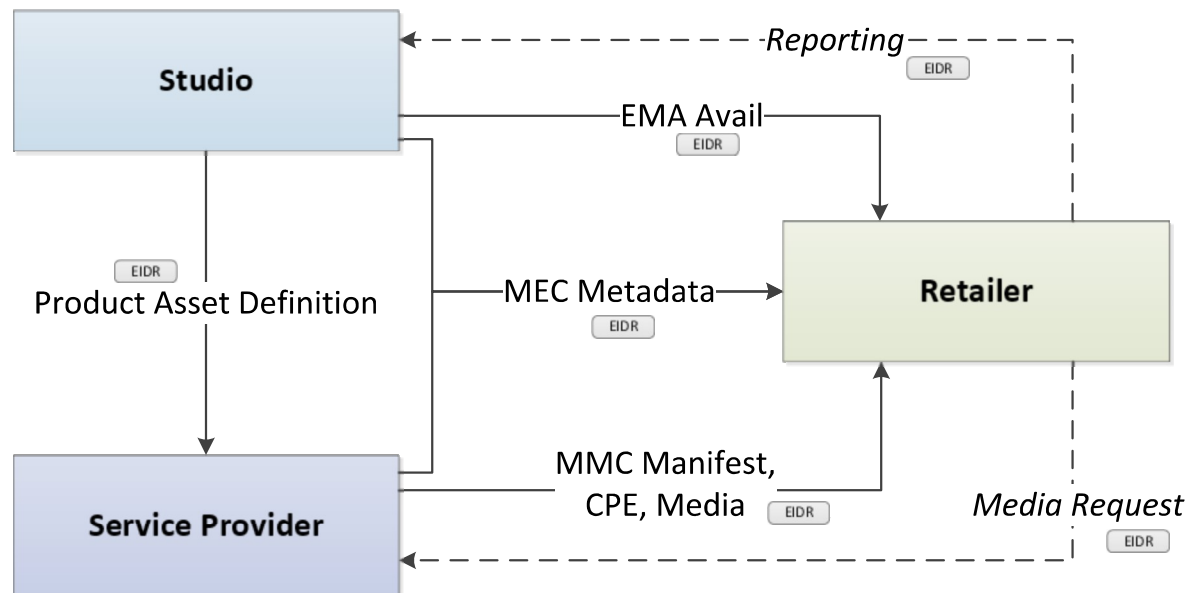
The DEG has taken the lead in standardizing reporting requirements through the DEG Digital Sales Reporting specification. The specification defines data fields and requirements that are shared across multiple studios and content providers. The requirements are mapped to EMA Avails definitions where possible, and include EIDR title and edit ID requirements that are consistent with other supply chain initiatives. Development and deployment is ongoing, but has already resulted in increased roundtrip reporting of EIDR IDs.

The DEG Digital Sales Reporting specification is available at <http://degonline.org>.

## MOVIELABS DIGITAL DISTRIBUTION FRAMEWORK (MDDF)

MovieLabs is an active participant in these digital supply chain initiatives and sponsors their continued development and adoption as part of the MovieLabs Digital Distribution Framework (MDDF), a package of industry recommendations for moving the industry forward to comprehensive supply chain automation ([www.movie labs.com/md](http://www.movie labs.com/md)). Each element of the package can be adopted independently, allowing content providers and digital platforms to stage their implementation to meet specific workflow requirements.

MovieLabs also is available to the industry as a resource to answer questions about these initiatives or their deployment. If you want to learn more or hear about best practices for deployment, you can find MovieLabs contact info at [www.movie labs.com](http://www.movie labs.com).<sup>†</sup>



<sup>†</sup> Motion Picture Laboratories, Inc. (MovieLabs) is a 501(c)(6) non-profit research laboratory founded by Paramount Pictures, Sony Pictures, Twentieth Century Fox, Universal Studios, Walt Disney Pictures and Television, and Warner Bros. Entertainment.