



Point of View

Cognitive-Driven Content Supply Chain

by **John Missale**



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The ongoing technological disruptions have paved a way for new advanced business models for the collection and analysis of data, and as such, is not possible for the traditional content supply chain to keep up with the dynamic challenges.

The challenge lies in collecting and examining the datasets to derive meaningful insights for decisioning. Cognitive-driven analytics can simplify the processes associated with the content supply chain for media companies to drive value, save operations cost and to then steer human operators to more critical tasks.

Some benefits include:

- ✔ Speeds up the demand forecasting and critical consumer audience topic planning – It can bring significant improvements in forecasting accuracy and demand prediction. With well - designed cognitive-driven design models, content providers can understand the relationship between demand signals and demand factors.
- ✔ Improvements in transport technology management – The ability to launch pools of transmitter and receiver containers globally, in any cloud, and control security, encryption transport encapsulation, backup and remediation for weak branches or over-subscribed branches of the Internet are key improvements that are needed in the broadcast distribution and transport model. Machine Learning can monitor and make route decisions. The model can train on distribution and management history and learn to take actions to optimize best route and overall high QoS.
- ✔ Improvements in distribution management – Content route optimization and prioritization based upon time to market of high value v/s, medium value, v/s low value content. Satellite primary and backup, public network SRT primary and backup, and 5G.
- ✔ Content storage cost optimization – By using content-aware deduplication and intelligent content routing based upon historical access frequency, as well as maintenance of usage and new content.



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- ✔ Micro-decisioning reduces manpower - Cognitive Adaptive Operators are models that simplify workflow and take micro-control of processes – models that train on rules and create event classifiers and then directs the action within the content event context – production, ingest, insight and planning, distribution, broadcasting and publishing. The cognitive adaptive operator also has a tracker model that keeps track of the success of each classifier and modifies the set of existing classifiers so that the variants of good successful classifiers persist, low performing classifiers are cycled out and replaced, and better ones are created using the scoring baseline of the proven tracker. This system mimics human pattern processing and are derived from recent critical psychological studies and are used in the design of artificial knowledge systems.
- ✔ Pattern-directed decisioning eases human to machine interaction - Pattern directed processing of knowledge from speech to text – or from machine generated text based upon an event.
- ✔ Cognitive machine comprehension lets the machine deal with patterns of abstract conceptual relations in content supply chain personas and the behaviors are used to guide processing. These patterns consist of clusters of knowledge that encode prototypical co-occurrences of situations and events in narrative texts. The patterns are assumed to be a part of a content supply chains persona world of knowledge and can be activated during comprehension to build associations among multiple linguistic propositions according to their higher-order conceptual relations. During text reproduction from memory, these patterns provide retrieval plans for recall and a mechanism for sophisticated “guessing” when retrieval fails. It can provide adaptive error-handling mechanisms along the content supply chain such as those observed in human behavior.
- ✔ Intention Learning and Expectation Matching – With the exit of highly skilled content supply chain actors, there is a need for knowledge-directed inference. This is a cognitive information processing system that constructs intentional interpretations of an observed sequence of the human actions of highly skilled persona/actors that make critical decisions daily.

- ✔ Content conformance and testing using object detection and speech to text – Detection of accurate brand, logo, text and intra-country content requirements.

In summary, the Content Supply Chain can benefit from the application of cognitive models and methods to the provided co-existence of human and machine process. This can help to streamline content supply chain operations and add value to media enterprises.



Author Profile



John Missale

Senior Advisor, Principal, Chief Architect,
Media & Entertainment, LTI

John is the Senior Advisor, Principal and Chief Architect for Media & Entertainment at LTI, providing architectural solutions for media clients in Digital Transformation, Cloud, Software Technology, and Emerging technologies. John worked as a CTO for four leading global media companies. He was also the Founder & President of Rant Technology, Inc. and implemented Cyberstar, the first global CDN for Loral Space and Communication. He developed the 31 David Sarnoff patents for MPEG 4 and H.264 for the eVue Corporation. John's work on streaming digital video distribution over a public fiber optic network received the Technical Emmy Award from SMPTE in 1996.

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