

Brochure

Perceptual Similarity

Enhance governance and compliance, reduce and simplify content validation operations issues by over 50% by adapting LTIMindtree Perceptual Similarity Solution. This is AI/ML/DL-based forensic content inspection to determine ownership, versions, and content modifications, leading to 80% savings in OPEX. Perceptual Similarity is the core kernel of our Content Storage Cost Optimization and Standardized Content Upkeep Product. It can be used for content identification when conventional techniques such as watermarking are not applicable – copyright violations. It simplifies content identification across the content supply chain.

The Why (what is shaping our solution)

Media companies create dozens, and at times numerous versions of content. For a company, which creates or licenses thousands of programs, scenes and shots each year, the growth of versions creates multiple thousands of media assets that need to be stored, tracked, and managed. Media companies create these versions of the same content for the best of reasons: to customize for different international regions, to tailor a program for a specific platform, or to get support from a key advertiser.

However, these versions quickly grow to become an obstacle to effective manufacturing, paralyzing any automated production system with too many options that have undefined differences and out-of-date licensing, which cannot be detected by the naked eye, thus raising the need for AI/ML deep content inspection and discovery.

Current Scenario:

- **AI/ML deep content inspection and discovery is just limited to segregate versions of very similar content.**
- **Lack of availability of standard product available for Shot Detection, Scene Detection and Rights License Validation.**
- **Lack of video anomaly detection.**
- **Limitations to video metadata extraction and write-back to MAM, or access by Rights Management.**
- **Lack of audio difference detection.**
- **Lack of availability of any standard product for Semantic and Intent Detection.**

The What (what is the opportunity we see and are solving for)

In Perceptual Similarity, a hash of a video shot scene or show (generated string) is produced by an algorithm, that is used to compare similar media content. The Hamming distance is then used to compare similar videos to a reference video and videos under inspection and solve the below issues:

- **Deduplicating content, which is otherwise not possible via naked eye, resulting in content segregation and identification.**
- **Identifying modifications to video like scene location and duration.**
- **Metadata extraction and write-back to MAM, resulting in effective governance and compliance, data archival and retrieval.**
- **Detection and removal of unwanted video, like colors bars, black frames, and countdown slates. EDL output for restitching video.**
- **Validating ownership.**
- **Savings via storage cost optimization and standardized content upkeep.**

And, these are creating the right opportunity for: **LTIMindtree Perceptual Similarity.**

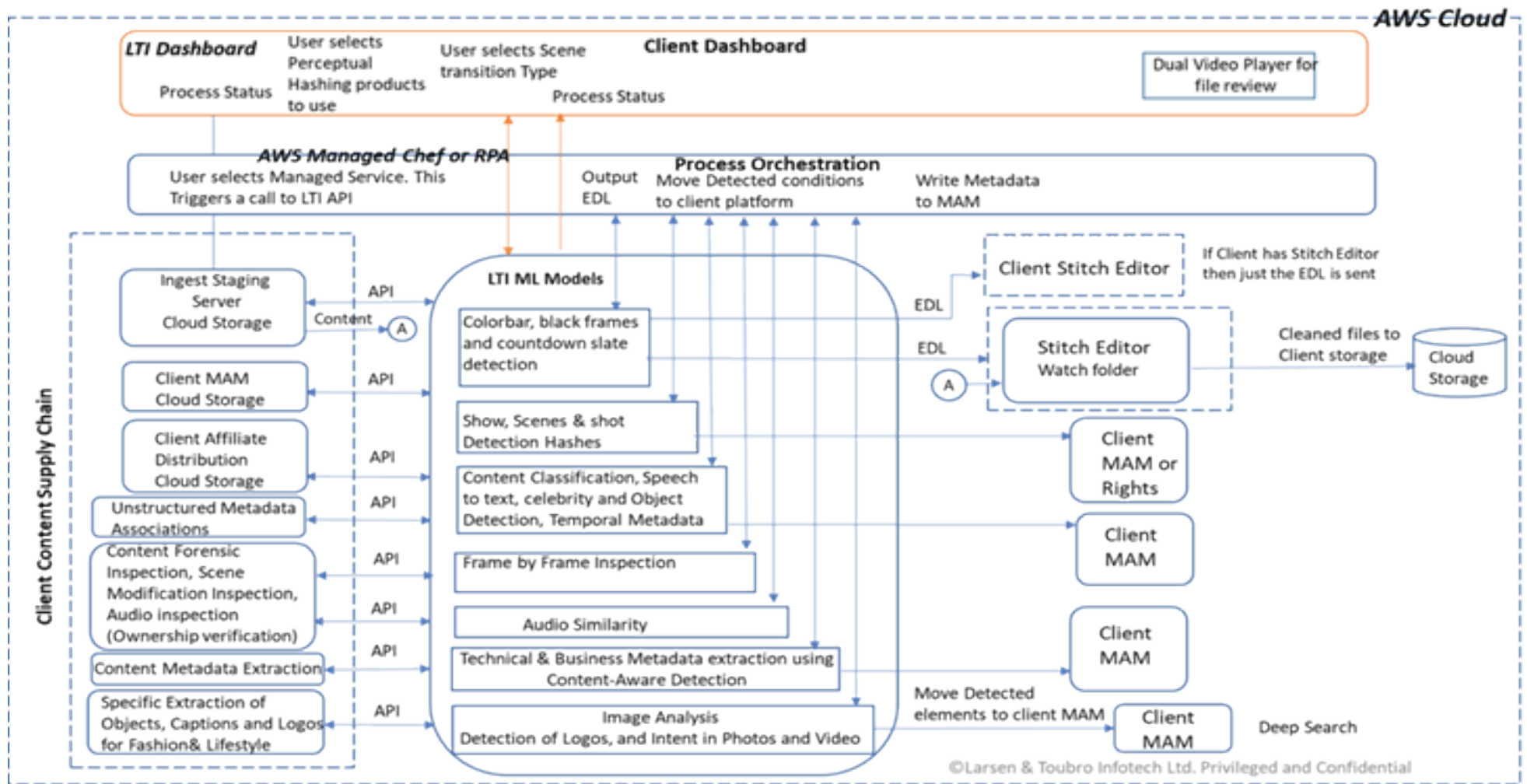
The How (what is our solution for this opportunity)

- A hashing function that creates a signature value for each frame of image becomes the key building block.
- The signatures of one version of a program are compared with the signatures of another version to find similarities and differences.
- The hierarchical nature of this perceptual hash allows a database containing hash values of movies, shows scenes and shots to work efficiently.
- It becomes quick and simple to evaluate if versions of a program are identical, and easy to watch out if they contain identical segments.
- Hierarchical perceptual hashes also allow to build interfaces, content platforms, and easily show program changes.
- Additionally, if the perceptual hashes are treated as event-based-metadata, it's easy to tie them to fixed locations within and program and visualize them on timeline interfaces.

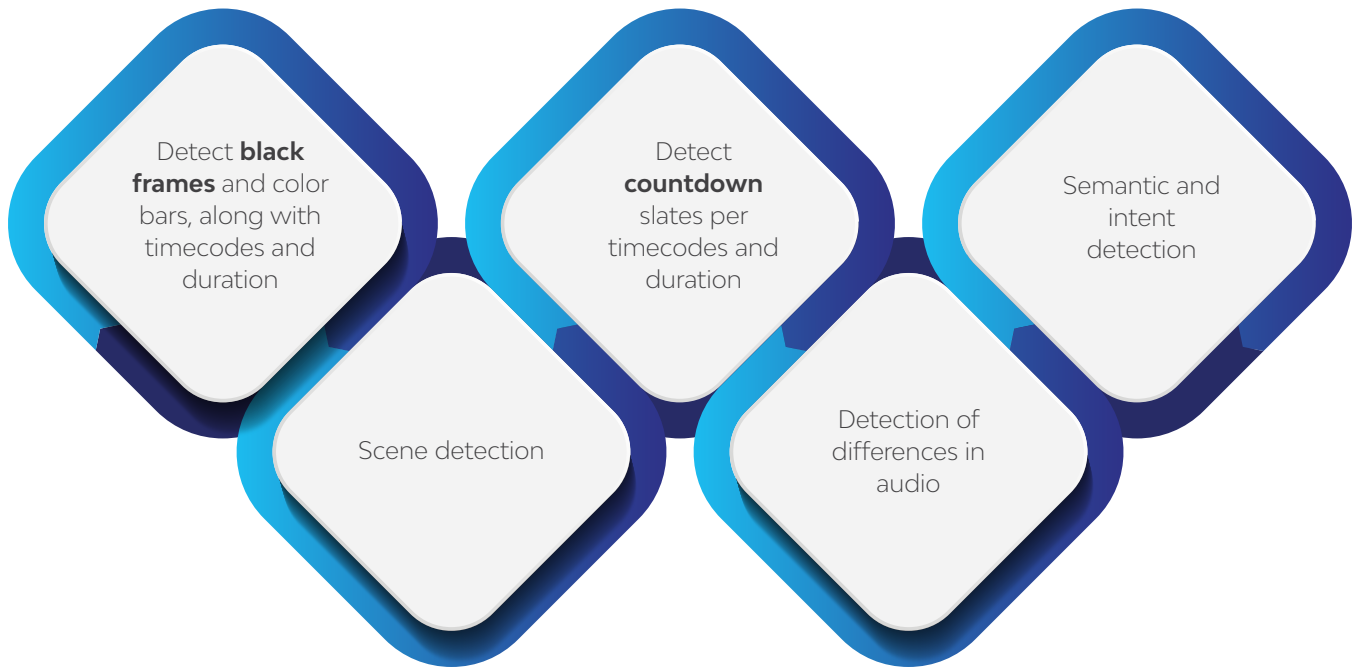
LTIMindtree Perceptual Similarity solution identifies and exposes the differences between content versions at the shot scene; thus providing an effective solution to duplication through AI/ML-based deep inspection and discovery. Bringing video comparison to the frame-level, opens a world of possibilities for visualizing the relationships between programs and assets.

Our Approach:

LTIMindtree Perceptual Similarity solution creates a hash of a reference video and a hash of a movie, show scene or shot using PHash. The video is compared and the hamming distances are calculated using a floating threshold associated to content genre and spectral content. These associations are visually represented using a measurement scale to determine the perceptual closeness of the comparison – SSIM. To search for anomalies in content, our solution hashes the anomaly it is attempting to detect, like – color-bars and then search video using the hash of the anomaly to find the time code of where the anomaly starts and ends. The time code locations are converted to an edit decision list, which is sent to a production editor to remove. Our solution also extracts metadata from the video which can be written back to a content providers MAM to enrich and provide a deeper search. Below is the high-level architecture for our solution:



Key Features



The Who (Who are our target customers)

Organizations with proprietary rights of large content repositories, more specifically multimedia conglomerates, namely -

- **Broadcasters.**
- **Content providers and Publishers.**
- **Studios.**
- **Streaming services providers.**
- **Information services providers.**
- **Media publishing companies.**
- **Healthcare EMR's – X-rays and scan video.**

The Key Outcomes (What benefits we will bring to the table)

- **Content segregation, classification, and identification.**
- **Structured content upkeep.**
- **Video metadata extraction and write-back to MAM.**
- **Facilitates better governance and compliance adherences - over 95%.**

Why LTIMindtree (what is our USP and winning card over competition)

- **Adapts deep analysis of media content to validate ownership, modifications, quick validation of rights and elimination of unwanted video anomalies to produce clean content.**
- **LTIMindtree provides continuous machine learning and mature models, so as to adapt to the types of multiple versions and formats of same content found in a content providers' environment.**
- **Unlike other techniques that provide only surface hash comparisons, LTIMindtree provides deep object inspection and detect differences that the human eye can't easily see.**
- **We are the only company that provides deep inspection based upon known industry metrics and can customize /adapt to customer's specific metrics.**



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