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RE: Novelty Search related to SYSTEM AND METHOD FOR CONDITIONAL TRAVERSAL OF VIRTUAL VIDEO CONTAINERS (Australian Patent Application No. 2026907287)

Dear Anthony ,

We refer to your instructions to conduct a Novelty Search relating to SYSTEM AND METHOD FOR CONDITIONAL TRAVERSAL OF VIRTUAL VIDEO CONTAINERS as described in the provisional specification 2026907287 filed and the documents shared in relation to the invention prior filing the provisional application.

The Novelty search was conducted using different databases, such as Espacenet; PatentScope; FPO; USPTO; Jplat-Pat; KIPRIS; Patseer and Other Non-Patent Literature Publication Sources(Google/Google Scholar/Science Direct).

The search focused on the below jurisdictions:
1. USA
2. Japan

3. Korea
4. Europé
5. WIPO (PCT applications)

The search was conducted with reference to Claim 1 of the provisional application. The claims may be amended in subsequent filings, hence the search results are indicative and may require updating if required.

A. THE INVENTION

The invention relates to a traversal-governed video assembly system and method for dynamically constructing continuous video streams from virtual video reference containers. The system removes raw media payload data from rendered video files while retaining structural sample timing metadata, enabling containers to be interconnected through traversal references within a recursively nested graph. Runtime branch conditions based on viewer inputs, AI directives, rights policies, and environmental signals determine target containers. Independent cryptographic video tokens control traversal authority, with validation enabling ephemeral key release or signed authorization for media retrieval. Spatial context metrics further establish fidelity classes, including gaze-based resolution allocation. Media blocks may be prefetched into non-executable buffers while authorization remains withheld until token validation. A client cryptographic wallet facilitates secure session initiation. The system may additionally enforce trusted execution, inheritance of restrictive policies, cycle and depth controls, synchronized traversal, audit logging, and automated financial settlement. Video is assembled in volatile memory without writing rendered video files to persistent storage.

B. KEY FEATURES CONSIDERED FOR THE SEARCH

Novelty - *An invention must not be anticipated by prior art information that was publicly available anywhere in the world before the priority date*.

Inventive Step - *The invention must not be obvious to a "person skilled in the relevant art" (PSA) in light of common general knowledge combined with prior art.*

Test for Novelty - A invention must not be anticipated by prior art information that was publicly available anywhere in the world before the priority date.

Test for Inventive Step- For inventive step, the invention must not be obvious to a person skilled

in the relevant art (PSA) in light of:

1. Common general knowledge in the field.
2. Prior art documents.

Claim 1 :

A system for traversal-governed video assembly, comprising:

a virtualisation engine, wherein the engine generates a plurality of virtual video reference containers by removing raw media sample payload data (mdat) from rendered video files while retaining structural sample timing metadata (stbl);

a graph composition mechanism operatively coupled to the virtualisation engine, wherein the mechanism receives the virtual video reference containers and interconnects them into a traversable graph using traversal references, wherein at least one traversal reference resolves to another virtual video reference container rather than raw media sample data to enable recursive container nesting across the traversable graph;

a runtime traversal engine communicatively coupled to the graph composition mechanism, wherein the engine evaluates a dynamic branch condition against real-time signals to select a target candidate container from the traversable graph;

a token validation module coupled to the traversal engine, wherein the module inspects an independent cryptographic video token bound to the selected target candidate container and grants traversal authority for the selected target candidate container upon successful validation, wherein resolution of the selected target candidate container is denied in the absence of a valid token;

a spatial resolution module, wherein the module ingests spatial context metrics to establish a sample resolution gate defining a plurality of fidelity classes; and

a playback assembly operatively coupled to the token validation and the spatial resolution modules, wherein the assembly retrieves, decrypts or verifies authorisation for, and sequences media sample blocks governed by the sample resolution gate to output a continuous playable video stream across traversed containers without writing rendered video files to storage

C. **SEARCH TERMS**

- Virtualized Video, Virtual Media, Virtual Media Container, Virtualized Media, Reference-Based Video, Video Container, Virtual Video Package, Reference Container, Assembly Container, Virtual File

- Assembly Map, Reference Map, Sample Table, Index Map, Structural Map, Asset Assembly Map, Pointer Map
- Controlled Resolution, Authorized Resolution, Policy-Controlled Retrieval, Governed Access, Regulated Resolution, Permission-Based Resolution, Access-Controlled Resolution
- Token-Gate Enforcement Block Token-Controlled Gate, Authorization Gate, Cryptographic Access Block, Token Validation Module, Permission Gate, Access-Control Block, Authorization Enforcement Unit
- Encoded Media Samples Encoded Video Samples, Media Data Samples, Compressed Media Samples, Encoded Media Segments, Coded Video Samples, Media Payloads, Encoded Content Units
- Governance Token, Security Token, Access Token, Policy Token, Cryptographic Token, Entitlement Token, Authorization Token
- Cryptographic Hash, Hash Value, Digest, Cryptographic Digest, Hash Code, Message Digest, Secure Hash, Hash Output
- Output Restriction Output Gating, Output Control, Output Blocking, Conditional Output, Access-Controlled Output, Output Authorization, Stream-Release Control
- Hardware Datapath, Hardware Input, Hardware Processing Path, Hardware Pipeline, Dedicated Datapath, Hardware Execution Path, Processing Circuit, Hardware Data Pipeline, Integrated Hardware Path, Hardware Pipeline, Silicon Datapath, ASIC/FPGA Pipeline, Hardwired Security Interlock, Secure Media Path (SMP), HSM (Hardware Security Module), System On Chip
- Timecode Alignment, Timeline Mapping, Temporal Reconciliation, Time-Base Conversion, Timescale Reconciliation
- Real-Time Authentication, On-The-Fly Verification, Inline Hash Check, Stream Authentication Playable Stream, Decoder-Ready Stream, Presentation Stream, Assembled Media Stream
- Hardware-Protected Boundary, Secure Boundary, Protected Region, On-Die Secure Zone, Trusted Execution Boundary

D. RELEVANT PATENTS AND ANALYSIS

1. **US 2022/0417619 A1** discloses an interactive video play control platform and system comprising a node editor and a video editor configured to build an interactive video structure. The system creates play nodes—including branching nodes, intermediate nodes, and child nodes—and associates multiple video files with play sub-paths connecting adjacent play nodes to define parallel plot branches. Traversal through the node hierarchy is governed at runtime by user input, wherein a viewer selects an option at a branching node to determine the subsequent plot direction and cause the corresponding video file to be retrieved via Uniform Resource Locators (URLs) and played. The citation further discloses buffering candidate video content starting from target play times in a video buffer area to prepare for upcoming branches, as well as providing user-specific editing control authority to operators or directors, and maintaining playback tracking data such as script timelines, network lag offsets, and branching execution times.

The document is silent regarding a virtualization engine that generates virtual video reference containers by stripping or removing raw media sample payload data (mdat) from rendered video files while retaining structural sample timing metadata (stbl). The play nodes in US 2022/0417619 A1 simply link to separate complete video files via external URLs rather than utilizing metadata containing rewritten sample-table references that identify externally stored media sample blocks.

Furthermore, the citation fails to disclose a graph composition mechanism where traversal references resolve directly to other virtual video reference containers to establish recursive container nesting across a traversable graph. The citation does not disclose an independent cryptographic video token bound to a selected target candidate container, nor a token validation module that inspects such tokens to grant traversal authority, release ephemeral decryption keys, or withhold resolution in the absence of a valid token.

2. US 9,236,091 B2 discloses an apparatus and method for processing and reading media files that separate stored data packets in a media data container from associated metadata in a metadata container. The system employs "virtual media tracks" that retain recovered transport timing information (from RTP/RTCP hint tracks) and sample table indexes (stbl) without requiring de-packetization or duplication of the media data, thereby saving storage space and enabling searches based on media timing. Multiple virtual tracks may reference transmission units of the same recorded data packet stream, and metadata tracks can reference and extend virtual media tracks.

A processor determines an output schedule from the metadata and decoding information, decrypts encrypted data packets using cryptographic keys delivered in an associated key stream ahead of time, and outputs decrypted payloads to a decoder in accordance with the schedule. The citation also describes a rights management scheme wherein access to programs is conditioned upon payment and restricted to authorized end-users via encryption keys.

US 9,236,091 B2 does not disclose a runtime traversal engine configured to evaluate dynamic branch conditions against real-time signals (such as viewer input, AI agent directives, rights policies, or environmental context) to dynamically select target candidate video containers during playback. The virtual tracks in US 9,236,091 B2 are designed for linear playback scheduling of recorded streams rather than forming an interactive, traversable video graph with recursive container nesting where traversal references resolve to other virtual video reference containers. US 9,236,091 B2 is entirely silent regarding a spatial resolution module that determines spatial resolution gates based on viewer spatial context to deliver full fidelity for foveal regions, reduced fidelity for peripheral regions, and withholding of out-of-view media.

3. US 2024/0013810 A1 discloses a computer-implemented method and system for non-sequential playback of pre-rendered multimedia items based on branching logic. The pre-rendered multimedia item is represented by a branching narrative graph comprising multiple logical segments (e.g., scenes) that map 1-to-1 to graph nodes interconnected by branching points. At runtime, a content player evaluates trigger conditions, rule preconditions, user input choices, elapsed playback time, and custom user state data (such as collected virtual items or user preferences) to dynamically select and transition between alternative media segments. Branching logic and state data can be stored separately from the pre-rendered media files, and candidate segments can be dynamically weighted according to selection likelihood and prefetched into a first-in, first-out content buffer. The system also maintains viewing history, connection metrics, and user logs, and supports state snapshotting across playback sessions.

US 2024/0013810 A1 is silent regarding a virtualization engine that generates virtual video reference containers by stripping raw media sample payload data (mdat) while retaining structural sample timing metadata (stbl) with rewritten sample-table references identifying media blocks stored externally. Instead, it relies on conventional pre-rendered media items, files, or streams that are authored and compiled at encode time. While US 2024/0013810 A1 discloses a narrative graph, it does not disclose recursive container nesting where a traversal reference within a container resolves directly to another virtual video reference container rather than raw media data.

The citation fails to disclose independent cryptographic video tokens bound to target candidate containers, or a token validation module that inspects such tokens to grant traversal authority and release ephemeral decryption keys.

4. US 12,316,905 B2 discloses systems and methods for seamless endpoint transitions in interactive media presentations structured as a video tree or linked node hierarchy. A Project Configuration File defines presentation paths, node linkages, interface elements, and mappings to corresponding audio and video files. At decision points, user interactions—such as mouse clicks, touchscreen inputs, or head and eye movements—are collected to interactively select a branch or path, whereupon the presentation seamlessly transitions to the linked segment without perceptible latency or buffering gaps. The citation describes intelligent pre-buffering wherein all potential next segments at a multi-branch decision point are partially or fully preloaded prior to viewer selection. A Video Appender concatenates multiple media streams into a single timeline and byte stream for continuous playback, and an analytics database records user choices, node traversal history, and playback events. In parallel-track modes, non-selected tracks may continue playing with reduced visual focus or remain invisible.

US 12,316,905 B2 is silent regarding a virtualization engine configured to generate virtual video reference containers by stripping the raw media sample payload (mdat) while preserving structural sample timing metadata (stbl). Its nodes merely associate references to full, external media files rather than maintaining rewritten sample tables pointing to external sample blocks. It does not disclose recursive container nesting where traversal references resolve to other virtual video reference containers across a traversable graph.

US 12,316,905 B2 completely lacks cryptographic video tokens, a token validation module governing traversal authority, and the release of ephemeral decryption keys or signed policy authorizations. Although it detects eye movement as a user input mechanism for interface selection, it is silent regarding a spatial resolution module that ingests spatial context to establish sample resolution gates defining fidelity classes (foveal full fidelity, peripheral reduced fidelity, and out-of-view withholding) at the media sample block level.

5. US 11,956,520 B2 discloses methods and systems for dynamically assembling personalized media assets, such as customized movie trailers. The system accesses a media item containing multiple segments encoded in a single data structure, generates multiple playgraphs defining non-linear and out-of-order playback paths through the segments, and selects a tailored playgraph based on user preferences or profile data. The selected playgraph is packaged into a "virtual asset" comprising a unique identifier tied to the media item. The playback device receives the virtual asset and sequences the media segments in volatile memory using adaptive bitrate streaming (ABR) and separate

audio/video first-in, first-out buffers according to the playgraph.

A playgraph can also define paths across multiple distinct media items.

This document does not disclose a virtualization engine that generates virtual video reference containers by removing raw media sample payload data (mdat) while retaining structural sample timing metadata (stbl) with rewritten sample-table references identifying externally stored media sample blocks. US 11,956,520 B2 is silent regarding independent cryptographic video tokens bound to target containers, token validation modules inspecting tokens to authorize traversal, and the dynamic release of ephemeral keys or signed policy authorizations. It is completely silent regarding spatial context metrics, gaze tracking, and spatial resolution gates defining foveal/peripheral fidelity classes.

E. CONCLUSION

Based on the analysis of the relevant citations, Alder IP opines that **SYSTEM AND METHOD FOR CONDITIONAL TRAVERSAL OF VIRTUAL VIDEO CONTAINERS** is both novel and inventive due to its unique technical architecture based on the attached search results.

Please refer to **Annexure A** for the detailed report. Please note that this search only detects and identifies publicly available disclosures as of the date of the search. When this patent application is examined by patent examiners around the world, they may raise citations not detected by us or not deemed relevant by us.

If you have any questions regarding any of the matters in this document, please do not hesitate to contact us.

Yours faithfully

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