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APPLICATION NOTE

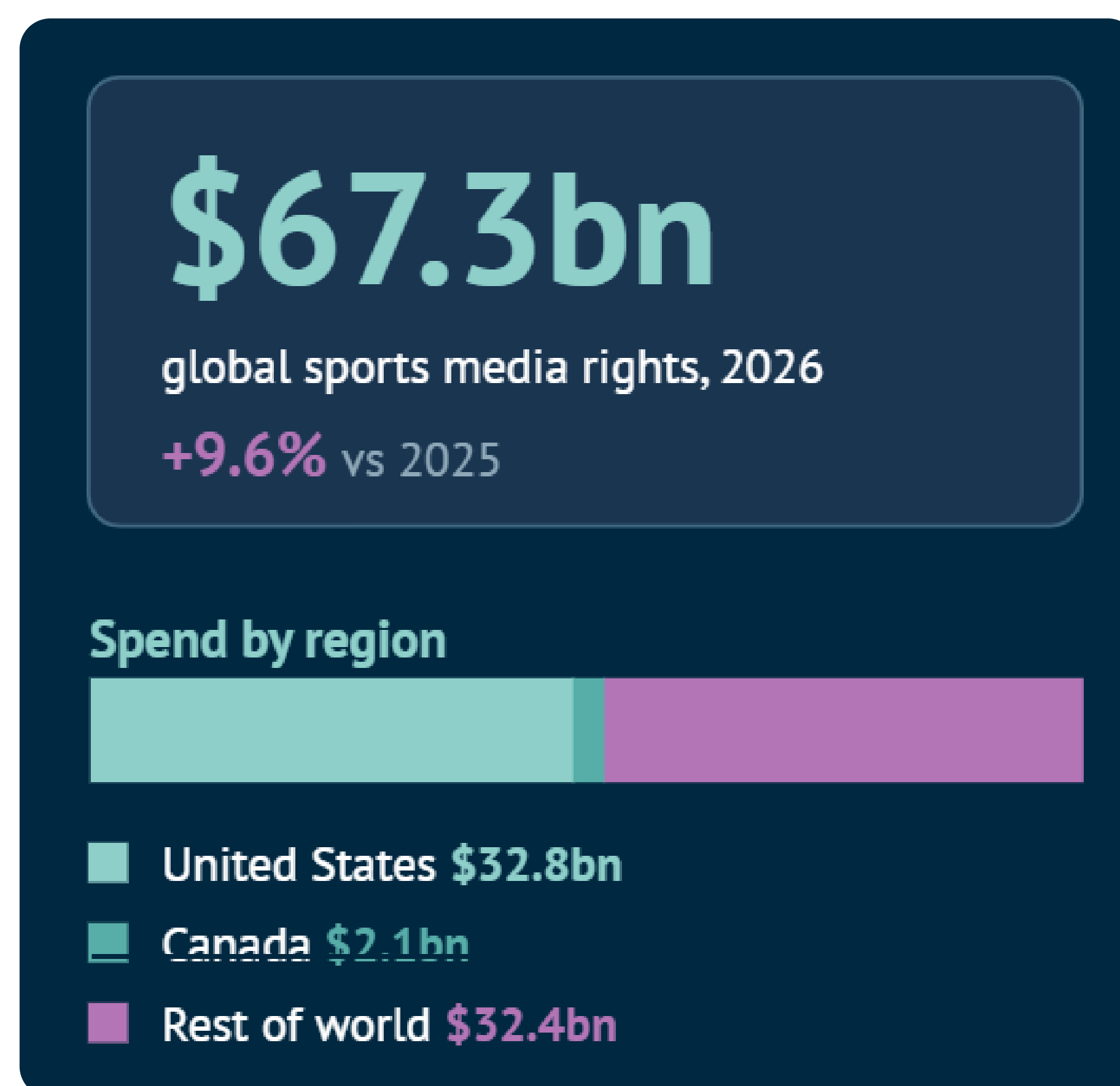
SCTE-35 Transformation to Maximise Content Monetisation

Frame-Accurate Dynamic Ad Insertion and Regional
Signalling Adaptation

AUGUST 2026

Live content powers the commercial engine of television. Sports rights fees alone exceed \$67 billion globally in 2026* and advertising continues to fund a substantial share of broadcasting revenue.

Every ad break, blackout and regional variation depends on accurate, standards-compliant SCTE-35 signalling technology.



**Source: S&P Global Market Intelligence / Kagan,
Global sports rights climb to over \$67 billion in 2026 (Apr 2026)*

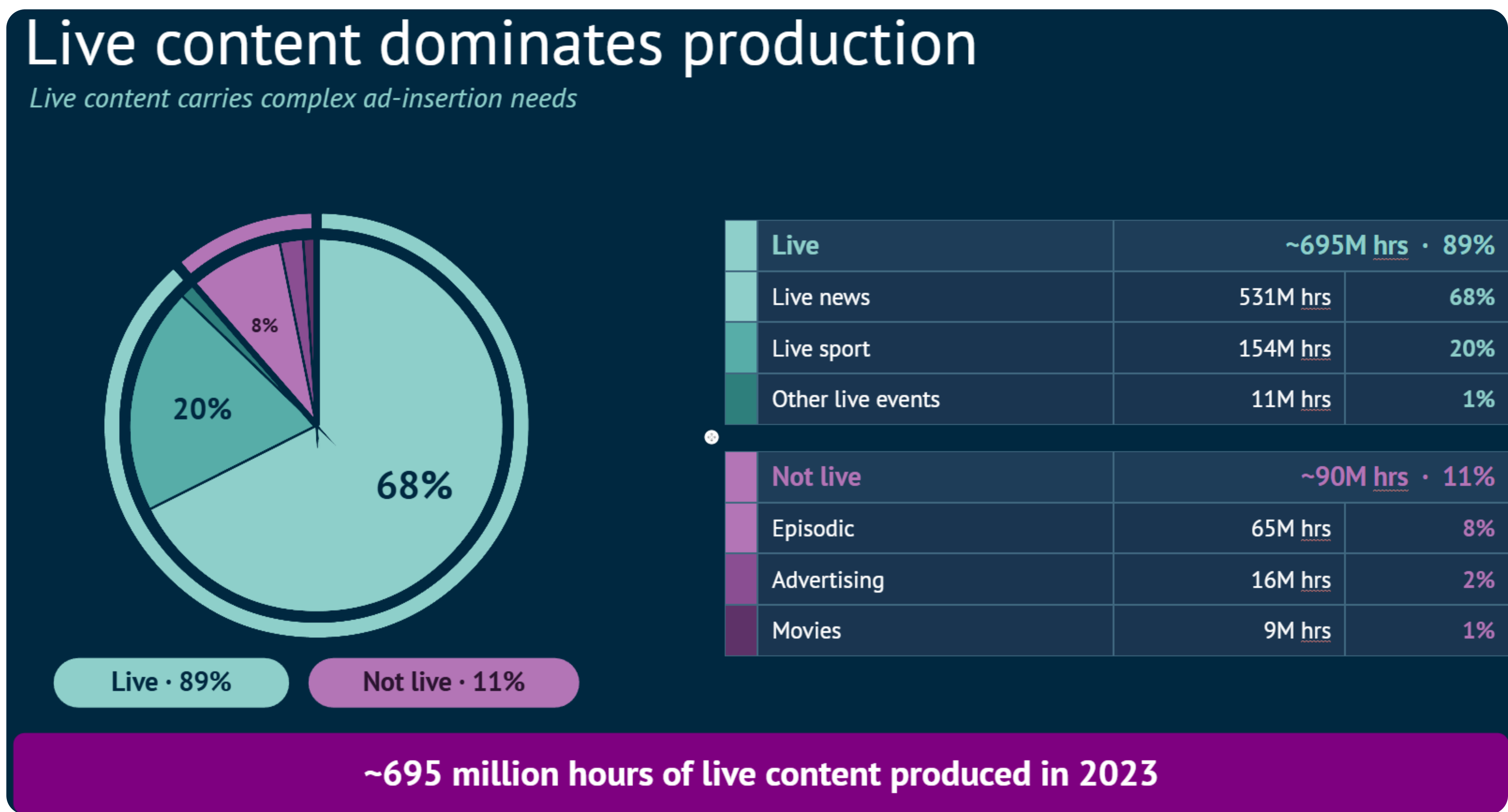
Ad-break signalling is carried by SCTE-35 messages embedded in the MPEG transport stream. When SCTE-35 messages are valid, dynamic ad insertion (DAI), rights blackouts and affiliate localisation commands ensure that commercial content is presented to the viewer. When they are not, revenue is left on the table and contractual obligations are put at risk.

This application note examines the business and operational challenges of ensuring that live feeds are fully monetised through frame-accurate SCTE-35 signalling. This document also describes how a compressed-domain, software-defined platform can address content monetisation needs of broadcasters, affiliates and content owners' requirements, whilst avoiding the long development lead times and costs associated with traditional bespoke development.

The Commercial Stakes of SCTE-35



Live programming accounts for the large majority of professional production hours. Sports and live news together dominate viewing hours with nearly 700 million hours of live content broadcast each year.* Live sports dominates broadcast rights values and viewer ratings in the US, filling every one of the top 20 most watched programmes in 2025. Sports is a hugely valuable property for TV advertising.



**Source: Caretta Research. Total professional production ~786M hours (2023).*

SCTE-35 markers are the mechanism that controls downstream systems to define exactly when an ad opportunity begins and ends, which content must be blacked out for a given territory, and where programme boundaries fall for scheduled replacement.

In practical terms the markers power four primary commercial functions:

- **Dynamic Ad Insertion** – precise placement opportunities that allow regional or targeted advertising to replace national or barter spots without disrupting the viewer experience.
- **Live Event Monetisation** – frame-accurate break signalling during unpredictable sports and entertainment events, maximising the number of sellable inventory slots.
- **Rights Blackouts** – territorial or platform-specific content restrictions enforced by signalling that switches or blanks restricted material.
- **Scheduled Content Change** – programme-boundary and promo-window control for affiliate and FAST-channel workflows.

Because revenue depends on these markers being present, correctly timed and correctly formatted, any mismatch between the signalling a platform expects and the signalling a feed carries can massively impact advertising yield or create compliance issues.

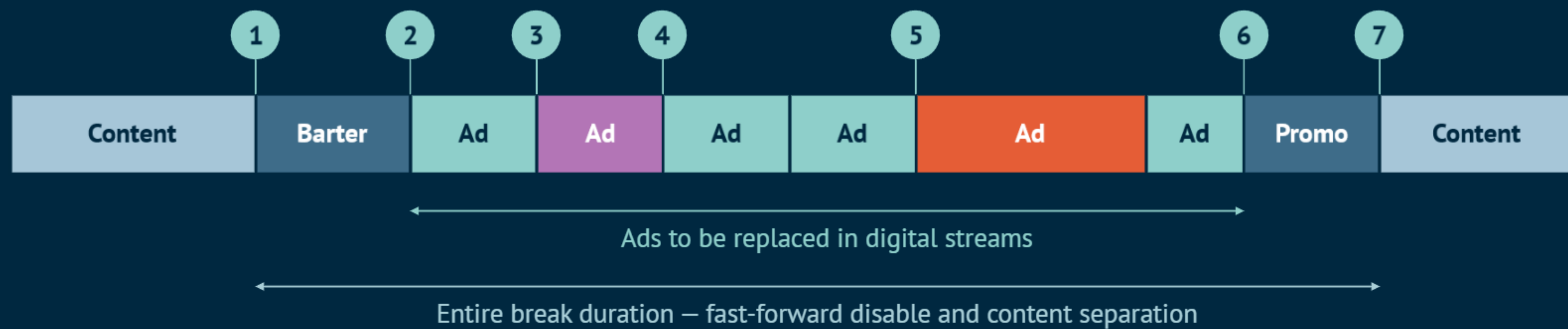
One Standard, Many Dialects

SCTE-35 is a single published standard with many capabilities. Real-world deployments have leveraged the flexible capabilities in the specification to lead to wide variations in implementation.

European workflows have historically favoured the compact *splice_insert* command (Type 5). North-American cable and OTT platforms more commonly use *time_signal* commands (Type 6) carrying segmentation descriptors that convey richer event semantics. Because of the variations allowed within the SCTE-35 specification and the common but different modes of operation, it is not uncommon to find a SCTE-35 syntax divide between the content distributor and the taker.

The SCTE Marker

How ad markers segment a break inside a live stream



MARKER POINTS

- 1 Break start
- 2 Provider placement opportunity start
- 3 Provider ad start
- 4 Provider ad end
- 5 Splice insert (distributor placement opportunity start)
- 6 Provider placement opportunity end
- 7 Break end

SEGMENT KEY

- Program content
- Provider C3 ad
- Provider ad marked for replacement
- Distributor local avail
- Barter / promo

The result is a signalling landscape in which a perfectly valid SCTE-35 message generated for one platform may be ignored or misinterpreted by another. Content that crosses regions or platform provider domains therefore frequently requires translation rather than simple pass-through.

THE MISMATCH

One Origination Feed

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Taker's Platform Syntaxes

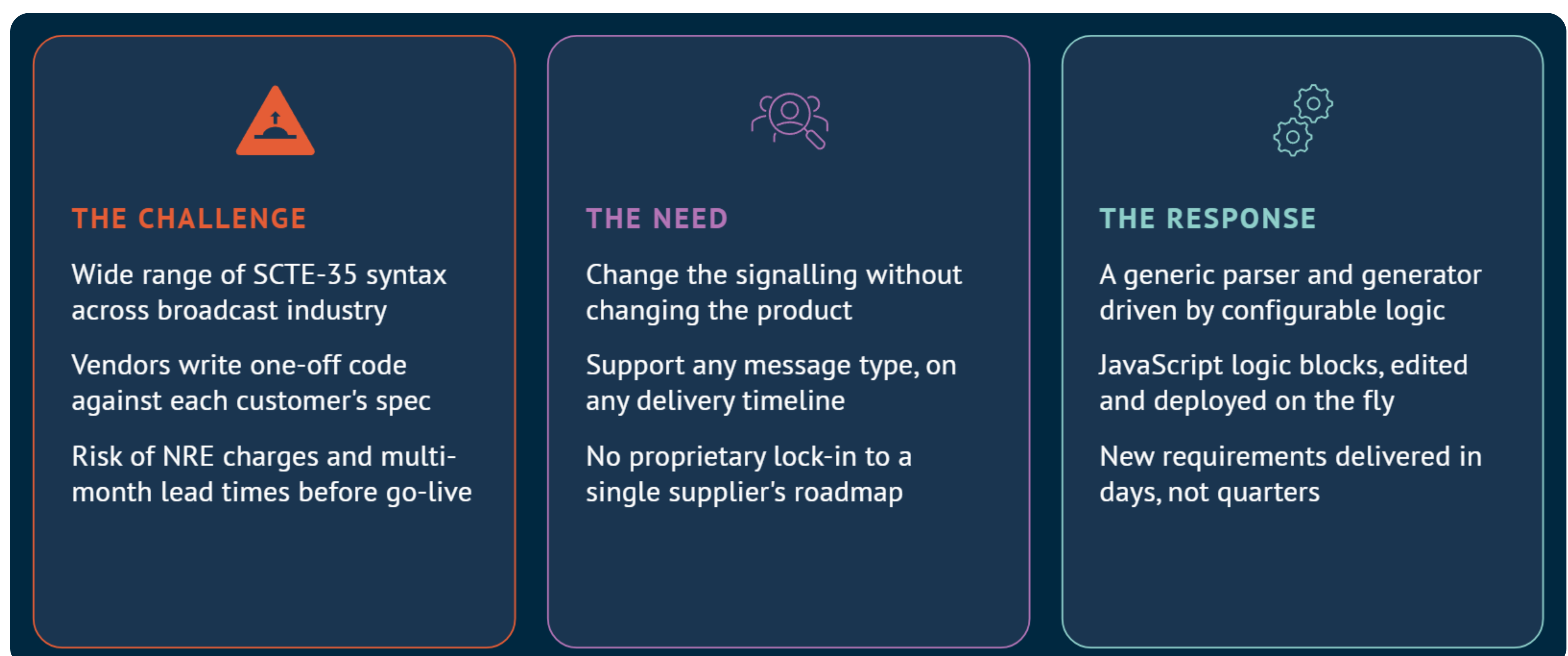
- Platform-specific segmentation types
- Territory-specific ad and blackout policy
- splice_insert ↔ time_signal translation
- New requirements arriving continuously

The Commercial Stakes of SCTE-35

Historically, many SCTE-35 solutions have handled non-standard or customer-specific requirements by writing one-off code into the product. This creates several commercial and operational difficulties:

- **Non-recurring engineering (NRE) charges** and multi-month lead times before a new message type or mapping can go live.
- **Vendor roadmap dependency** – the customer must wait for a release slot that may be competing with other priorities.
- **Proprietary technology debt** – the resulting build is often unique to that customer and can only be supported by the original vendor.
- **Security and upgrade friction** – customised codebases lag behind the main product line, making security patches and feature upgrades harder to apply.

For both customer and supplier, custom development inside the product is an expensive and slow path. The industry need is for a system in which signalling behaviour can be changed by configuration rather than by rewriting and re-releasing the core software.



The need for SCTE-35 syntax translation comes to the fore when moving content between platforms, when distributing content to multiple consumer platforms, or when ingesting content from a content provider into the house SCTE-35 format. In both cases, the commercial advertising opportunities need to be fully monetised.

Typical Use Cases for SCTE-35 Processing **techex.**

One Feed, Fan-Out to Multiple Takers

A broadcast rights holder or content distributor must deliver tailored versions of a programme feed to multiple downstream platforms - national broadcasters, regional affiliates, direct-to-consumer streaming services or international partners. Each taker's broadcast system is likely to have been designed independently and may require a different SCTE-35 syntax, different PID assignment, different event-ID numbering conventions, and different policies for which placement opportunities are exposed.

Typical requirements may include:

- **SCTE-35 type 5 → type 6** - command conversion, synthesising or collapsing segmentation descriptors
- **SCTE-35 type 5 → type 5** – splice_insert in and out, with event IDs, durations, pre-roll and flags rewritten to the taker's rules.
- **SCTE-35 type 6 → type 6** – time_signal in and out, with segmentation type IDs, UPIDs, segment numbering and descriptors remapped.

Without an efficient SCTE-35 adaptation layer, the originator may be forced either to maintain multiple parallel signalling chains or to ask every taker to accept a single compromise format. The former multiplies operational cost and the risk of divergence; the latter constrains monetisation or risks creating friction with partners.

Conforming Incoming Feeds to a House Standard

The inverse problem appears when a platform or multi-channel operator receives programme content feeds from many third-party sources – live sports production organisations, news programming or international content partners. Each source may signal according to its own house rules or regional convention. The receiving organisation needs every channel to present a uniform, predictable SCTE-35 profile so that its downstream ad-insertion, blackout and automation systems can operate consistently

Asking every supplier to change their signalling is rarely practical. The more scalable approach is to apply per-source mapping rules at the point of ingest so that every feed is rewritten into a single house construct before it reaches the core distribution workflow.

Addressing the Challenge with Software-Defined, Compressed-Domain Processing

Modern software platforms that operate primarily in the MPEG transport-stream domain offer a more efficient foundation. Because the majority of SCTE-35 adaptation can be performed without decoding the video or audio to baseband, the processing footprint remains modest, latency is kept low, and video quality is preserved.

Within such an architecture the SCTE-35 workflow can be comprised of three stages:

1. **Parse** – Demultiplex the incoming transport stream, extract SCTE-35 sections and convert the binary messages into structured, readable objects.
2. **Transform** – Apply configurable logic that rewrites command types, descriptors, UPIDs, timing fields and any other parameters according to the rules defined for each destination or source.
3. **Generate** – Serialise the modified objects back into correctly formed SCTE-35 binary and insert them as PSI/SI tables on the required PID.

The product inefficiencies of classic systems that require customised releases to process each SCTE-35 syntax variation can be avoided by implementing the SCTE-35 transformation rules, live - in a logic layer rather than compiled into product code. New message types or mapping behaviours can be introduced by editing and deploying a simple configuration. With this more flexible SCTE-35 adaptation implementation, the underlying parser and generator remain unchanged for all user deployments, the result being no NRE incurred and no proprietary fork of the product is created.

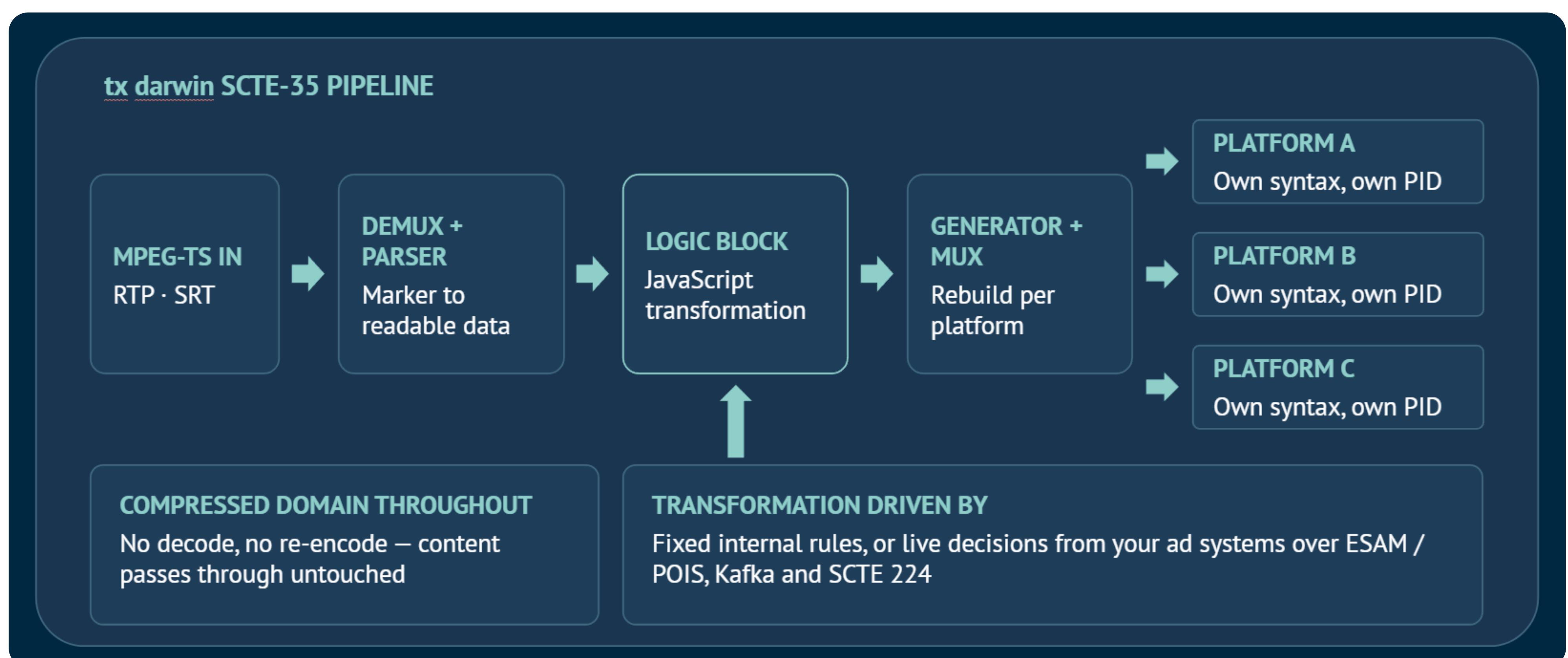
Techex's tx darwin is a software media-processing framework designed for contribution, distribution and master-control workflows. Its SCTE-35 capability is built around the Parse – Transform - Generate pipeline described above, as part of complete broadcast workflows operating with high CPU efficiency – in the compressed domain wherever possible.

tx darwin leverages a Logic Block concept to apply the required SCTE-35 transformation. Because the SCTE-35 transformation logic is expressed in a widely understood JavaScript language and has full access to stream metadata, operators and integrators can implement new mappings themselves or with minimal assistance, then test and deploy them on their own schedule.

Using this tx darwin capability, the typical SCTE-35 transformation use cases can be rapidly deployed.

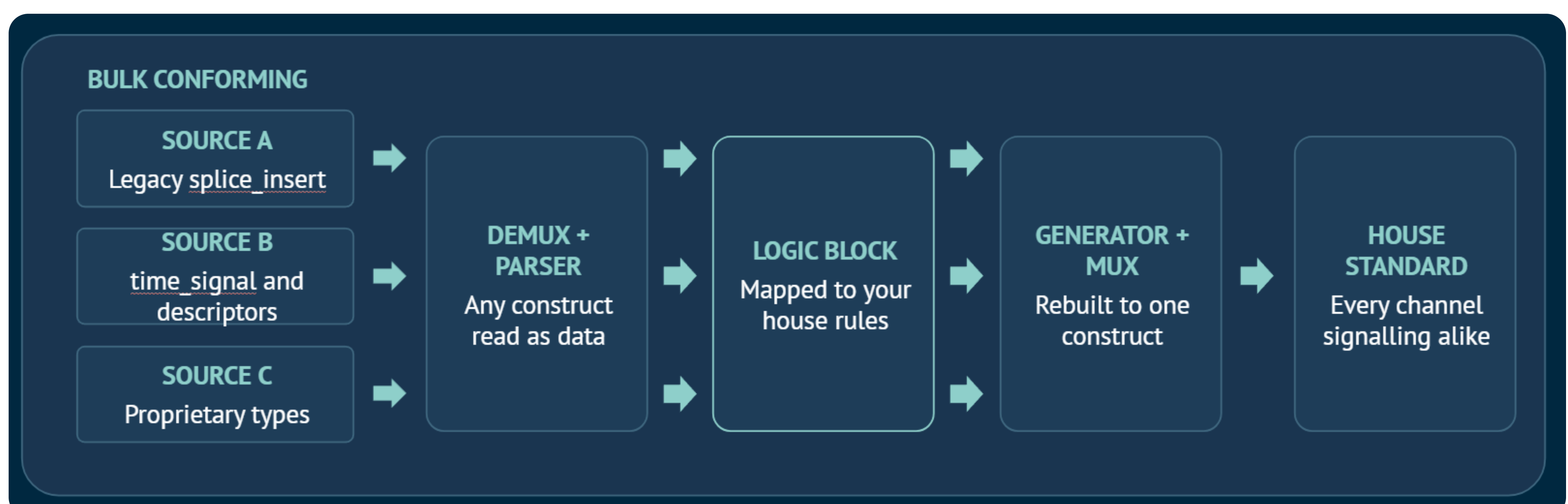
Fan-out to Multiple Takers

An incoming transport stream is demultiplexed and parsed once. A logic block applies the required SCTE-35 transformation required for each outgoing stream, re-multiplexed with its own SCTE-35 PID and syntax profile and delivered to the corresponding taker. Internal rules within the SCTE-35 logic block can handle deterministic mappings; live decisions arriving over ESAM or Kafka can drive event-by-event policy (for example, suppressing a placement opportunity for a particular region).



Conforming Incoming Feeds to a House Standard

Each incoming contribution is associated with a source-specific logic block that maps whatever command types and descriptors arrive into the organisation's chosen house construct. After transformation, every channel presents identical signalling semantics to the downstream automation and ad-insertion systems, regardless of origin.



The commercial value of live content is realised only when the signalling that drives dynamic ad insertion, blackouts and regional tailoring is accurate, timely and compatible with every downstream platform. The fragmentation of SCTE-35 practice across regions and vendors makes that compatibility non-trivial.

Two recurring use-cases dominate: The need to fan-out a single origin feed to many takers with differing syntax requirements. And the need to conform multiple incoming feeds from multiple operators to a single house standard. Both common applications are poorly served by traditional approaches that embed customer-specific logic inside the product itself slowing down deployment times and potentially increasing costs.

Techex's tx darwin is different. As a software platform that parses, transforms and regenerates SCTE-35 entirely driven by configurable logic rather than compiled code as part of a complete broadcast workflow it offers a more sustainable path. New requirements become configuration changes rather than development projects; each destination or source can be given its own profile without proliferating hardware or proprietary forks; and the same infrastructure can also perform the seamless switching, format conversion and monitoring that live workflows demand.

With tx darwin, signalling ceases to be a bottleneck that delays launches. It becomes a controllable, observable part of the broadcast workflow - allowing rights holders, distributors and broadcasters to focus on the content and the audience while the technical layer reliably protects and realises the commercial value of every break.

For more information

Visit www.techex.tv

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