IAB EUROPE'S GUIDE TO PROGRAMMATIC FOR CTV

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Contents

Introduction

IAB Europe's CTV and Programmatic Working Groups have developed this guide as a concise yet comprehensive view of the programmatic CTV landscape, covering ecosystem fundamentals, regional considerations, real-world case studies, technical standards, and the requirements for live and SSAI-enabled environments. It outlines best practices for media quality, fraud prevention, and consent signalling, alongside guidance on measurement, data usage, and targeting.

IAB Europe's CTV Working Group supports the understanding and growth of CTV advertising in Europe through the development of industry- agreed definitions, measurement guidelines and adoption of technical standards.

IAB Europe's Programmatic Working Group supports the industry in navigating a constantly shifting programmatic landscape, covering both core, continuously relevant topics and emerging trends.

Section 1 - Overview of the Programmatic CTV Ecosystem

Connected TV (CTV) advertising is experiencing exceptional momentum. In 2024, subscription-based video-on-demand (SVOD) consumption in Europe grew by more than 200%, while broadcaster video-on-demand (BVOD) rose nearly 30%. This surge reflects a major shift in how audiences access and engage with premium video content. Yet despite this rapid expansion, the industry continues to face fragmented definitions, inconsistent terminology, and differing interpretations of what "CTV" and "digital video" truly mean.

To bring greater clarity and alignment to the market, IAB Europe's CTV Working Group has developed a **Digital Video Framework** supported by a comprehensive glossary of definitions. This work lays an essential foundation for shared understanding and more consistent standards across the European CTV ecosystem.

What Do We Mean by Digital Video?

Digital video encompasses the full spectrum of video content delivered across screens and platforms, enhanced by the precision, accountability, and flexibility of digital technology. It includes broadcasters, streaming services, and digital-first platforms—capturing the breadth of today's viewing landscape and the diverse ways audiences choose to watch.

Building on this foundation, the evolution of CTV is increasingly shaped by the rise of programmatic buying. At the heart of the modern CTV marketplace is a dynamic, data-driven ecosystem that automates the buying and selling of video advertising across streaming platforms. Programmatic CTV enables advertisers to reach targeted audiences across a fragmented mix of smart TVs, streaming apps, and over-the-top (OTT) devices, offering precision, efficiency, and measurable outcomes.

Relevant Programmatic CTV Technologies:

- **Demand Side**: Advertisers and agencies use DSPs to purchase ad inventory programmatically, targeting specific audiences based on data such as viewing habits, location, and device type.
- **Supply Side**: Publishers and content providers monetize their inventory through SSPs, which connect them to a global pool of advertisers.
- **Data and Measurement**: Third-party data providers and measurement tools enable granular audience segmentation, attribution, and performance tracking, ensuring campaigns are both effective and accountable.
- **Ad Serving and Verification**: Technologies ensure ads are delivered to the right users, in the right context, and free from fraud, while also verifying viewability and brand safety.

Section 2 - Technical Considerations and Standards for CTV in Europe

The rise of programmatic CTV is driven by the convergence of TV's premium content with digital advertising's agility. As streaming continues to grow, the programmatic CTV ecosystem is redefining the future of video advertising, offering unparalleled opportunities for engagement and innovation.

Alliance Digitale's **Guide to Technical Standards for CTV** provides an overview of the technical standards that today structure the delivery, buying, measurement, and traceability of digital TV campaigns.

Overview of Relevant APIs and Technical Standards

As streaming TV matures across Europe, interoperability, transparency, and standardisation have become critical to sustainable growth. Unlike linear TV, streaming environments rely on multiple systems working together in real time, from content delivery and ad decisioning to measurement and reporting. Without common technical standards, this complexity can lead to fragmentation, inefficiency, and reduced trust across the ecosystem.

APIs (Application Programming Interfaces) play a foundational role in streaming TV by enabling different platforms and services to communicate with one another in a structured, predictable way. In a streaming context, APIs support everything from deal setup and bid requests to identity signalling and reporting. Standardised APIs ensure that publishers, broadcasters, and buyers can transact at scale without relying on bespoke integrations for each partner.

Industry frameworks from the IAB Tech Lab underpin this interoperability. Standards such as OpenRTB (including extensions for CTV) define how bid requests and responses are structured, while the IAB Tech Lab's Deals API standardises how programmatic deals are created, managed, and shared across platforms. Together, these specifications reduce operational complexity and support consistent trading practices across markets.

SSAI (Server-Side Ad Insertion) Considerations

Server-Side Ad Insertion (SSAI) is widely used by CTV publishers to deliver advertising within video streams by "stitching" ads directly into the content stream before delivery, ensuring seamless playback and a broadcast-quality user experience. Because SSAI moves the ad insertion and delivery logic from the client device to a server-side environment, transparency regarding insertion and measurement methodology is essential. Publishers and technology providers must clearly disclose when SSAI is utilised and whether impressions are measured server-side, client-side, or through a hybrid approach to support alignment with Media Rating Council (MRC) and IAB Tech Lab standards.

Furthermore, SSAI implementations must preserve the integrity and transparency of the underlying device and application signals, enabling buyers and measurement providers to accurately validate the environment and detect invalid traffic. To support ecosystem trust and mitigate the risk of unauthorised reselling, CTV publishers are expected to implement app-ads.txt, maintain accurate sellers.json files, and support SupplyChain Object disclosures, helping ensure a verifiable and transparent CTV supply chain.

Section 2 - Technical Considerations and Standards for CTV in Europe

Because the limited signal transparency of SSAI can be vulnerable to fraud (see here) additional measures, such as the use of ads.cert authenticated connections (see here) can be helpful to mitigate the risk of fraudulent activity.

Considerations for Live Events

Live events represent some of the most valuable and technically complex segments of streaming TV. Sports, news, and tentpole cultural moments deliver highly engaged, concurrent audiences at scale, and according to Index Exchange analysis, live audiences are highly attentive reinforcing the premium nature of live event inventory compared to on-demand CTV. Live environments also introduce unique challenges around latency, concurrency, and real-time ad decisioning.

From a technical perspective, live event monetisation requires programmatic systems to make decisions within tight time constraints while maintaining stream stability. This is **where LEAP's broader standards for live event taxonomy, signalling, and technical alignment** become critical. By defining consistent metadata, such as event type, league, match status, and live indicators, LEAP helps buyers accurately identify live inventory and apply bidding strategies that reflect the true value of in-the-moment audiences. Ad opportunities must be identified and filled without introducing buffering or playback delays, and buyers need clear signals to distinguish live inventory from on-demand content. Without this clarity, campaigns risk pacing issues, misaligned targeting, or inconsistent delivery during high-demand moments.

This is where **standardised live event taxonomy and signalling** become critical. Metadata such as event type, league, match status, and live indicators allow buyers to accurately identify live inventory and apply appropriate bidding strategies. When these signals are consistently defined and passed through standardised APIs, buyers can value live impressions correctly, and publishers can ensure their inventory is not misclassified or undervalued.

Local Considerations - HbbTV

Hybrid Broadcast Broadband TV (HbbTV) is an international standard that merges broadcast and broadband delivery, allowing viewers to access free-to-air TV and internet-delivered services—including advertising—through a single interface. Integrated into most European TV sets, it enables interactive features and targeted advertising within the broadcast environment.

When discussing programmatic CTV, it's important to consider both local nuances and broader market standards, and HbbTV is a prime example. While it offers strong opportunities for interactive and targeted programmatic advertising on smart TVs, success requires navigating technical, data, and regulatory complexities. Programmatic buyers must ensure their ad formats are compatible with the dominant HbbTV specification versions in each market. Because HbbTV environments often limit access to persistent identifiers such as cookies or mobile ad IDs, cross-device targeting and frequency capping can be challenging—making household-level or contextual targeting more effective. Adoption also varies by region, with particularly strong penetration across Europe and parts of Asia.

Section 2 - Technical Considerations and Standards for CTV in Europe

Ad Compliance Considerations

Ad compliance is another critical consideration. In the UK, Clearcast acts as a central ad copy clearance to ensure that TV and VOD ads comply with the UK code of broadcast advertising. Ad clearance requirements can add a layer of complexity to programmatic TV, but careful planning and adherence to processes can ensure campaigns are both effective and compliant.

To that effect the IAB Tech Lab released the **Ad Creative ID Framework** (ACIF) v1.0, which defines a framework to enable a persistent identifier for ad creative at every phase in the video advertising supply chain. Some APIs have been developed for integration with the likes of Clearcast in the UK or ARPP in France.

Section 3 - Data and Targeting Considerations for CTV

Connected TV (CTV) operates within a distinct data environment compared with web and mobile advertising – one shaped by household-based viewing, screen-centric behaviour and a limited availability of persistent, user-level identifiers. In Europe, this environment is further defined by robust privacy regulation, where consent and transparency are central considerations. As a result, effective CTV targeting depends less on individual identity and more on high-quality signals derived from viewing behaviour, content context and device-level interactions.

In this setting, the provenance, accuracy and timeliness of data signals are often more important than scale alone. Understanding how CTV data is sourced, processed and activated is therefore critical for buyers and sellers alike.

Modelled vs. Deterministic CTV Data Signals

CTV data broadly falls into two categories: modelled (or inferred) data and deterministic. **Modelled data** uses statistical techniques, panels or proxy indicators to infer likely household interests or behaviours. And while this approach can support scale, it is inherently probabilistic. **Deterministic data**, by contrast, is based on observed events, such as confirmed content viewing or ad exposure on the television screen. These signals offer greater precision and enable use cases that depend on certainty rather than prediction. In regulated markets, the distinction also matters from a governance perspective, as deterministic signals are often easier to explain, audit and align with clearly defined purposes.

The Role of Automatic Content Recognition (ACR) Data

Automatic content recognition, or ACR data, is a key piece of technology, enabling deterministic signals in CTV environments. Specifically, ACR identifies the content being displayed on a television screen by matching on-screen pixels or audio signatures to known programming. This process generates exposure-based insights tied to specific content and moments in time.

Importantly, ACR derives signals from on-screen content rather than cookie-based or login-based identifiers. When deployed with appropriate consent and transparency, ACR supports a more direct and reliable understanding of household viewing behaviour – a critical input for both targeting and measurement.

From Raw Signals to Targetable Audiences

Before CTV signals can be activated programmatically, they are typically enriched with additional metadata – including content attributes, genre classifications, device context and viewing recency and frequency. This enrichment transforms raw signals into scalable, privacy-safe audiences suitable for programmatic activation.

ACR data can be used independently or combined with other compliant data sources, such as advertiser first-party data and industry identity frameworks, where available. Rather than replacing identity solutions, deterministic viewing signals provide a behavioural and contextual foundation that complements identity, particularly in environments where identity coverage is limited or inconsistent.

Privacy, Consent and Governance

In Europe, CTV targeting must be designed with privacy by default. Though deterministic signals, such as ACR data, typically operate at the household or device level and therefore do not rely on direct personal identifiers, strong governance is still essential, as they may still enable identification when combined with other data sources.

Buyers and sellers should ensure that consent signals are collected and respected, data sources are clearly disclosed, and data usage aligns with regional regulatory requirements, including GDPR and the associated ePrivacy framework. Establishing trust through transparent and accountable data practices is a prerequisite for sustainable growth in programmatic CTV.

There is a rise in interest around **Transparency and Consent Framework (TCF)** implementation in the CTV ecosystem. More CMPs are actively seeking validation to operate in this environment, signalling that the TCF is gaining traction beyond web and mobile to manage users' consent. This suggests that CTV is becoming a key focus area for the industry players. 18 CMPs are currently validated for CTV, while 466 Vendors registered to TCF support the CTV environment.

Best Practices

For buyers, effective CTV targeting starts with understanding how audiences are built and prioritising high-quality, deterministic signals – particularly when those signals can be activated in the same environment where they're accessed, reducing data loss, latency and friction. For sellers, consistency in signal delivery, clear metadata standards and a thoughtful balance between precision and scale are key. A shared understanding of data practices across the ecosystem will be essential to maximising the effectiveness, and credibility, of CTV advertising. The next consideration is how these data and insights are brought to life in practice through the range of ad formats available in programmatic CTV.

Section 4 - CTV Ad Formats

CTV ad formats have expanded far beyond traditional pre-roll and mid-roll pods. By 2026, programmatic CTV buying spans both linear-style video ads and a growing set of UI- and behaviour-driven placements. Understanding how these formats differ—and how they are defined and signalled in programmatic transactions—is essential for operating CTV at scale.

This chapter focuses on the practical reality of today's CTV formats, with emphasis on the IAB Tech Lab CTV Ad Portfolio, which provides a shared framework for defining and transacting these units.

The Shift Beyond Video Pods

Early CTV simply applied online video logic to the TV screen, with most inventory delivered as 15- or 30-second pre-, mid-, or post-roll ads. These units still deliver the bulk of reach and remain the foundation of programmatic CTV spend.

What has changed is the environment around the video player. Modern CTV platforms function as operating systems with discovery layers, navigation surfaces, and remote-driven interactions. This has created new monetisable moments—pause screens, home menus, idle states, overlays, and split-screen experiences—that fall outside the traditional pod model.

Historically, these placements were sold through custom integrations with inconsistent naming, making cross-publisher planning and optimisation difficult.

The IAB Tech Lab CTV Ad Portfolio

To address fragmentation, the IAB Tech Lab introduced a standardised portfolio of six native CTV formats. Developed from more than 100 real-world submissions, the portfolio complements (rather than replaces) video pods and provides consistent definitions and OpenRTB guidance so buyers and sellers can describe placements using shared language.

The six formats in the **CTV Ad Portfolio** are: **pause ads, menu ads, screensaver ads, in-scene ads, squeezebacks, and overlays**.

Pause Ads — Triggered when viewers pause content. Typically, static or lightly animated, often with QR codes. They monetise a natural break without interrupting playback, making clear context signalling essential.

Menu Ads — Appear within navigation environments such as home screens, rails, or carousels. They sit alongside content choices and often remain on screen longer, influencing how attention and frequency are evaluated.

Screensaver Ads — Displayed when the TV or app enters an idle state. Usually full-screen, high-impact branding units initiated by the system rather than the user, with implications for measurement and viewability.

In-Scene Ads — Integrated directly into content (e.g., virtual product placement or contextual signage). Premium and curated, increasingly transacted via programmatic guaranteed or deals to leverage targeting and reporting consistency.

Squeezebacks — Resize the primary video into a smaller window while an ad occupies the remaining screen. Used around breaks or live moments, sitting between video and display logic and requiring clear format identification.

Overlays — non-linear ads occurring during program content and outside of the traditional ad break. The ad format places ad creatives over top of the program content, often as a banner or picture- in-picture execution. Overlay Ads may have user interaction with the remote control or scanning a QR code that is part of the ad creative.

Section 5 - Media Quality Considerations in CTV

Opportunity to See

A core CTV quality challenge is confirming ads are actually visible. Some CTV apps continue streaming content and firing ad impressions even after the TV has been switched off because they do not properly respond to device-level screen off signals. This results in impressions with **no opportunity to be seen**, which inflates performance metrics and wastes spend.

Transparency Gaps in CTV Supply

CTV largely operates within closed, app-based environments. This limits visibility into the specific app and device delivering an impression. **Research** shows that app-level transparency is available for only a portion of global CTV impressions. This restricts an advertiser's ability to evaluate media quality, enforce brand suitability, and conduct accurate attribution.

The Scale of CTV Ad Fraud

Because CTV commands high CPMs, it is a target for invalid traffic (IVT) and spoofing schemes. Industry research indicates that 15% to 25% of total global ad spend is currently lost to fraud, with CTV and mobile in-app environments being heavily affected compared to traditional web channels. Furthermore, global invalid traffic rates doubled between Q3 2023 and Q3 2025. This growth highlights the need for strict verification standards to ensure ad spend flows to reputable publishers rather than server-side emulators.

Strengthening Supply Chain Integrity

Supply chain standards like app-ads.txt, sellers.json, the SupplyChain Object, and inventorypartnerdomain improve transparency and reduce fraud risk. These tools focus on authenticating the business relationship and the supply path. For example, app-ads.txt uses domain-hosted text files to verify which seller account IDs are authorised to sell a publisher's inventory. This helps buyers ensure they are only purchasing inventory from authorised digital sellers. However, the effectiveness of these standards depends on consistent adoption across both the buy and sell sides.

Content Transparency in Streaming CTV

Streaming has become the dominant video channel, yet it lacks the program-level transparency common in display, social, and platforms like YouTube. This disconnect affects budget allocation, with some advertisers shifting spend toward environments that offer clearer content context. Advertisers are willing to pay premiums for high-quality, professionally produced content, but only when they can verify what they are buying.

What Advertisers Need

- **Investment Validation** — Program-level transparency confirms that spend went to the expected TV-like content rather than screensavers, gaming apps, or other non-premium environments. It also reveals which programs drive outcomes.
- **Brand Alignment and Suitability** — Granular content context enables nuanced suitability controls and helps brands align with culturally relevant, high-impact programming.
- **Workflow Efficiency** — Current "Do Not Air" list management is manual and error-prone. Content transparency enables automated enforcement and more precise suitability parameters, reducing operational friction for both advertisers and publishers.

What Content Transparency Enables

- **Program-Level Reporting** — Privacy-safe clean room solutions provide aggregated impression counts by program, episode, genre, and maturity rating across devices, enabling accurate attribution tied to placement IDs.
- **Enhanced Contextual Intelligence** — Standardised classification systems incorporate trend signals, audience sentiment, and temporal relevance, enabling consistent cross-publisher comparison.
- **Premium Content Differentiation** — Verified classification distinguishes true streaming TV from lower-value environments (e.g., games, screensavers, short-form UGC). Live event identification and quality scoring help justify premium CPMs and increase demand.

Evolving Verification: OM SDK and Device Attestation

While supply chain standards verify who is authorised to sell an ad slot, the IAB Tech Lab's Open Measurement SDK (OM SDK) and device attestation authenticate the physical device and execution environment. The OM SDK executes native code at runtime on the client device or app to measure ad viewability, duration, and playback completion. In CTV environments, it is integrated directly into the native app or CTV player and relies on standard signals passed via <AdVerification> nodes within VAST (Video Ad Serving Template) tags. This provides measurement vendors with signals on device and session state, including the TV or set-top box power status. These signals help identify incomplete impression opportunities, such as ads playing while the screen is off.

To address the threat of device spoofing, the OM SDK **now supports device attestation**. Based on work by the IAB Tech Lab's Open Measurement Working Group, this utilises the IETF Privacy Pass Protocol for digital ad verification. Device attestation cryptographically verifies that a programmatic bid request originated from a legitimate CTV hardware device rather than a server farm. It does this by allowing the device to pass an attestation challenge proving its authenticity without passing persistent, tracking-enabling personally identifiable information (PII) to the ad server. This validates the hardware and secures the CTV supply chain at the device level.

Section 6 - Measurement Considerations for CTV

Measurement in CTV is shaped by technical constraints, and established approaches to privacy that differ sharply from both digital video and traditional broadcast, and many long-held assumptions break once campaigns move into streaming environments.

CTV measurement is heavily influenced by server-side ad insertion (SSAI), which limits the use of client-side tags that underpin verification in other channels. As a result, measurement often depends on server logs, platform-level reporting, and pre-agreed verification scopes rather than real-time client signals. This makes it essential for buyers and sellers to align on what can—and cannot—be measured before a campaign launches.

Optimisation also requires a shift in mindset. CPM alone is not a reliable proxy for value in CTV. More meaningful indicators include incremental reach, frequency distribution, completion-rate stability, attention-weighted exposure, and outcome-based proxies that reflect how viewers actually engage with TV-like environments. The growth of CTV supply that utilises first-party and ACR data provides new ways to judge performance and impact.

Because CTV sits between digital and broadcast, its measurement frameworks must reflect current technical realities, not idealised future capabilities. Effective strategies acknowledge these limits, blend approaches, build around what can be verified today, and evolve as the ecosystem matures.

Section 7 - Programmatic CTV Real-World Examples and Case Studies

Example 1: Large-scale CTV spoofing using infected devices (PARETO)

A real-world example of how programmatic CTV can be attacked at scale is PARETO, where nearly one million infected Android devices generated invalid traffic while spoofing CTV environments, producing an average of 650 million bid requests per day observed by HUMAN. The operation involved apps spoofing thousands of CTV apps. PARETO involved infected Android devices spoofing thousands of CTV apps; the disruption was coordinated with ecosystem partners, including Roku and Google.

Example 2: Device / supply-chain compromise enabling CTV fraud and broader abuse (BADBOX 2.0)

A second real-world example is BADBOX 2.0, which illustrates how compromised Android Open Source Project devices (including connected TV devices) can create systemic risk for CTV media quality. HUMAN's Satori team describes BADBOX 2.0 as an operation rooted in backdoors on low-cost, off-brand consumer devices that let threat actors remotely load fraud modules. The activity supported multiple abuse schemes (including advertising fraud) and was observed across 222 countries and territories. The operation targeted the digital advertising ecosystem, compromised the journey from an ad to a website, abused login portals through residential proxy capabilities, and exploited infected devices as a botnet. The key takeaway for CTV is that media quality controls sometimes need to account for device integrity and upstream supply-chain risk—and not rely solely on classic ad-tech signals, because tactics like residential proxies can make abusive traffic appear more like real people.

Case Study: How CTV Supercharges Omnichannel Performance: Lessons from Czech and German Campaigns

A recent Czech campaign by Adform, OMC Czech Republic, Skylink (Canal+), and FTV Prima shows how powerful CTV becomes when inventory and tech stacks are fully aligned. By activating FTV Prima's CTV supply through Adform's unified buy- and sell-side technology, OMC combined brand-building with performance tactics.

During the awareness phase, OMC used sequential storytelling to continue messaging to viewers exposed to CTV ads, retargeting them across the open web using CTV-based identifiers. Thanks to Adform's full-stack setup and FTV Prima's integration of the Czech Ad ID, the team achieved retargeting reach equal to 11.2% of the original CTV audience. Adform's ID Fusion expanded this reach 8.4×, ultimately delivering 93.7% total online reach.

A second case study from Germany reinforced the impact of CTV-exposed audiences: in a Breuninger campaign run through the Adform DSP, users reached via CTV drove 57% of all conversions.

Case Study: Programmatic Breakthrough - Bringing Digital Precision to Linear TV

Programmatic advertising is beginning to reshape linear television, and a recent proof of concept from the Czech market demonstrates just how far the technology has come. Tivio Studio successfully integrated programmatic capabilities into linear TV as part of a ČSOB campaign (within the KBC Group), executed in partnership with Publicis Groupe Czech Republic.

The activation delivered digital-grade measurement within a traditional broadcast environment. The inventory achieved a 99% Video Completion Rate and 99% HD or Full HD rendering quality—performance levels typically associated with premium online video formats. With this advancement, advertisers can now reach more than three million households across the Czech Republic through programmatically enabled linear TV, unlocking new precision and accountability in a historically broad-reach medium.

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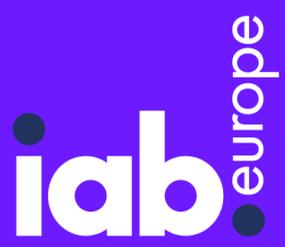**Ezechimere Uchegbulam**, Senior Manager, Media Futures Group

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