Coalition for Innovative Media Measurement

A CIMM Study, co-sponsored by OpenX and FreeWheel

Behind the Bidstream: The Signals that Matter

What Buyers and Sellers Need from the CTV Bidstream

November 2026



About CIMM

The Coalition for Innovative Media Measurement (CIMM) is a non-partisan, pan-industry association of companies from across the media and advertising ecosystem, focused on cultivating and supporting improvements, innovations and best practices in measurement and currency development, the use and application of new metrics, and data collaboration. CIMM's role is to convene stakeholders, illuminate emerging issues, and help the marketplace make informed decisions. CIMM embraces the entire media and advertising ecosystem and prioritizes effective collaboration to deliver meaningful change.

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About the Co-Sponsors

This research benefited from the support of two leading industry stakeholders driving innovation in programmatic TV: FreeWheel and OpenX.

FreeWheel

FreeWheel empowers all segments of streaming advertising ecosystem. We are structured to provide the full breadth of solutions the advertising industry needs to achieve their goals. We provide the technology, data enablement and convergent marketplaces required to ensure buyers and sellers can transact across all screens, across all data types, and all sales channels, in order to ensure the ultimate goal – results for marketers. With offices in New York, Chicago, London, Paris, and across the globe, FreeWheel, A Comcast Company, stands to advocate for the entire industry through the FreeWheel Council for Premium Video. For more information, please visit freewheel.com, and follow us on X and LinkedIn.

Current Offerings

FreeWheel powers the streaming advertising ecosystem, making it easier for buyers and sellers to transact across screens, partners, and markets around the world.

For advertisers and media buyers, the FreeWheel Advertiser Suite consists of complementary buy-side offerings that help deliver more value to clients while reducing costs. This includes FreeWheel Buyer Cloud, a highly versatile, demand-side platform powered by a suite of extensible APIs that can be deployed as a turnkey DSP or a fully customized buying solution and Curation Hub, an inventory curation and deal management solution that unites direct publisher access with exclusive content metadata and audience insights.

For media owners, its Publisher Suite offers comprehensive solutions to efficiently manage supply and maximize the value of every impression, consisting of the FreeWheel SSP, the platform trusted by top streaming TV media companies, as well as FreeWheel Streaming Hub, a full-stack, supply-side solution that combines our industry-leading ad server and FreeWheel SSP to maximize yield and optimize viewer experience, while ensuring full business control across all sales and distribution channels.

Looking Ahead

FreeWheel remains focused on making premium video easier to buy, sell, and manage, while giving clients the flexibility to work in the ways that best fit their businesses.

As the industry evolves, FreeWheel is expanding its APIs and developer capabilities to help clients connect systems, streamline workflows, and build differentiated solutions on top of its platform. This includes enabling emerging AI and agentic applications while preserving flexibility, control, and the value of key partners across the premium video ecosystem.

OpenX

OpenX is The Intelligent SSP™ (supply-side platform), simplifying advertising for marketers, advertisers, and publishers worldwide. As one of the largest SSPs globally, OpenX combines the industry's only fully cloud-based infrastructure with leading AI capabilities to make digital advertising easier and more effective across every format, including CTV. Built to responsibly deliver quality, performance, and adaptability, OpenX makes digital advertising safer, smarter, and built for what's next. Learn more at www.openx.com.

Current Offerings

OpenX helps buyers apply intelligence at the source of supply, before the auction, while helping publishers better monetize their inventory and improve yield. OpenX's inaugural State of Supply-Side Intelligence report found that supply-side targeting (SST) reached 37% of deal spend by Q4 2025, roughly doubling every year since 2022. That growing demand for audience targeting, quality controls, and optimization continues to shape OpenX's product suite.

- OpenXSelect lets brands, agencies, and data partners apply audience, quality, measurement, and content signals closer to supply. In CTV, content-object targeting lets buyers select inventory by show, genre, and rating. As Chris Milano, Global VP of Supply at Stagwell Media, put it: "It just makes sense that you would get better data fidelity by working closer to the publisher."
- OpenXBuild enhances ad performance while reducing operational overhead by enabling buyers to shape bidding strategies dynamically before the auction, so they bid on the most effective impressions. This work is particularly critical for brands and agencies using AI to build bespoke curation and decisioning frameworks. As Audrey Elman, Media Director at Polaris, put it: "A lot of the tools that I traditionally would go to the DSP for, I'm now bypassing and going straight to an SSP."
- OpenXExchange connects DSPs to quality publisher inventory and audience data across devices and formats. Its global, omnichannel marketplace offers access to more than 150,000 domains and apps, supported by a supply-side identity graph covering over 275 million U.S. individuals and 120 million CTV households.
- OpenXControl connects publishers to quality demand at scale, with access to more than 210,000 brands and agencies, 75+ DSP partners, and 250+ data partners. Centralized controls and AI-powered insights help publishers maximize inventory value, improve yield, and grow revenue.

Looking Ahead

OpenX expects supply-side intelligence to keep expanding across the value chain, evolving from a set of individual targeting capabilities into a complete solution for buying, optimizing, and measuring media. Algorithmic optimization and predictive models are emerging as the next area of growth, and OpenX's second annual report, planned for Q1 2027, will examine agentic buying alongside full-year 2026 data, helping inform industry definitions and measurement standards.

Research Objectives and Approach

The study set out to examine the state of bidstream transparency in US Connected TV (CTV) and streaming video: which signals buyers require, where signals are missing or unreliable, what buyers and sellers say causes the gaps, how those gaps shape buying behavior and seller outcomes, and what could improve transparency.

Its evidence comprises a survey of 50 qualified programmatic CTV buyers fielded May–June 2026, interviews and CIMM Programmatic Working Group discussions, and platform analyses supplied by FreeWheel and OpenX. More details on each method are as follows:



Quantitative buyer survey:

The survey describes respondents' expectations and reported behavior. Appendix B provides methodological details of the buyer survey. 50 qualified programmatic CTV buyers, media agency, holding company, independent agency, managed service, and in-house advertiser professionals with direct budget authority or significant recommending influence were surveyed, conducted by Christine Pierce of Ozona Insights, and fielded by OvationMR, May–June 2026.



Qualitative interviews and working group:

Unless otherwise noted, all interview quotes are taken from in-depth interviews or seminars undertaken by Emily Palmer. Interviews were conducted off-the-record, and working group discussions took place under Chatham House Rule. Named sources are cited only when explicit permission was granted; otherwise we anonymize quotes by using just the company category of the interviewee.



Bidstream analysis:

The platform analyses identify associations between selected signal availability and bidding or pricing measures within their respective datasets. These sources do not establish the market-wide prevalence of every reported problem or the causal effect of adding a signal.

Acknowledgements

We would like to extend our gratitude to the following industry leaders for their generosity of time and sharing their experience, examples and ideas that contributed to this study:

Abbie Reichner, VP, Customer Success, PubMatic
Alex Strickland, Head of Programmatic Supply Relationships, FreeWheel
Aleksandra Injac, Global Head of Programmatic, WPP Media
Andrea Wood, Director, Research & Insights, FreeWheel
Andrew Tint, VP, Programmatic Partnerships, LG Ad Solutions
Benjamin Vandegrift, SVP, Measurement Strategy & Innovation, VAB
Bill Murray, Head of Growth and Performance, Warner Bros. Discovery
Brad Pipkin, Director, Product - Advanced TV, IAB Tech Lab
Danner Close, VP, Global Commercial Operations, OpenX
David Simutis, Vice President of Product Marketing, Peer39
Eric Silverstein, Head of Programmatic Operations, FreeWheel
Erika Loberg, VP, Global CTV and Enterprise Solutions, OpenX
Esra Bacher, Global Agency Lead, CTV Lead, Google
Glen Gullickson, Vice President, Investment, Operations & Solutions, WPP Media
Greg Langer, VP, Programmatic Supply, Havas Media
Inderpreet Sandhu, Global Head of CTV Partner Development & Growth, Google
Jackie Rosenberg, Product Go-To-Market Advance Video/CTV, Google
James Wilhite, VP of Product, Index Exchange
Jenny Yurko, Vice President, Data Product Strategy, Warner Bros. Discovery
Josh Sharma, Vice President, Advertising Partnerships, Allen Media Group
Justin Federico, Senior Director of Programmatic Activation, FreeWheel
Katie Black, Director, Inventory Development, The Trade Desk
Kyle Turner, Director, Advertising Product Strategy, Philo
Liam Kristinnsson, Head of Programmatic & Strategy, DISH Media
Mario Diez, CEO, Peer39
Matt McLeggon, SVP, Advanced Solutions & Channel Revenue, Magnite
Meagan Myers, VP of Programmatic Strategy & Partnerships, FOX
Michael Hopkins, VP, Supply Strategy and Activation, Comcast Advertising
Michael Kraskin, Director, Product Management, Video Metadata, Xperi / TiVo
Nicole Kilaita, Director, DSP Strategy, Yahoo DSP
Owen Bailey, Sr. Analyst, Research and Insights, FreeWheel
Paul Gubbins, CTV Lead, EMEA, Exchange Platforms, Google
Richie Hyden, SVP, Supply & CTV, Viant
Rob Carroll, Vice President, Precision Enablement, Publicis Media
Tommy Cabrera, Director, Supply Strategy, Comcast Advertising
Tracy Chavez, Executive Vice President, Managing Director, Investment, Publicis Media
Travis Flood, Executive Director, Insights, FreeWheel
Tucker Hennemuth, Global Head of Customer Success Engineering, OpenX
Zoey Larsen, Brand and Product Communications Senior Director, OpenX

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Key Takeaways

Understanding the bidstream

- **What did this study set out to explore?** Incomplete or unusable bidstream information can prevent buyers from identifying suitable programmatic TV (CTV, streaming and set-top-box) inventory and publishers from attracting demand. This study examines which signals buyers need, why gaps arise, and how clearer requirements and better platform reporting could help buyers and sellers trade more effectively.
- **What is the bidstream?** The bidstream carries information about advertising opportunities offered through programmatic auctions and flows in two directions. A bid request from the seller can describe the app or service, content, device, available audience signals and parties involved in selling the inventory. A bid response from the buyer can include information such as the advertiser domain, creative content categories, and campaign and creative IDs. This paper focuses primarily on bid request data, as these signals dictate the viability of a buying opportunity.
- **Where does information in the bidstream come from?** Publishers, distributors and their technology partners assemble the information in the bidstream. Supply-side platforms and exchanges pass bid requests to buying platforms, sometimes adding, translating or restricting bidstream data signals (or simply, 'signals') along the way.
- **How and when is the bidstream used?** Before an ad is served, a buyer's demand-side platform evaluates the request against campaign requirements to decide whether to bid and at what price. Supported signals can inform targeting, bidding and optimization, while some information is available only for reporting.
- **Why is information in the bidstream sometimes missing or incomplete?** Privacy obligations, commercial choices and distribution agreements can limit disclosure. Technical gaps and differences in how platforms transmit or process signals can also leave information missing or unusable.

Findings and commercial implications

- **Buyers want richer signals, but confidence in the supply path comes first.** Surveyed buyers preferred limited signals on a verified path to detailed signals on an unverified, multi-hop path. Their strongest preference was for detailed signals combined with a verified path. In CTV, the app operator, content owner, distributor and authorized seller may be different organizations. Validation must recognize legitimate selling relationships while identifying incomplete or inconsistent declarations.
- **Signal gaps can redirect advertiser demand away from lower-signal inventory.** Buyers reported switching supply paths or broadening targeting more frequently than lowering bids when requirements were unmet. Better signals may therefore improve access to demand, but do not guarantee higher CPMs. FreeWheel and OpenX analyses associated selected signals with higher pricing or bidding measures, without establishing that adding those signals caused the improvement. Sellers should assess bid participation (or bid rates), delivery (whether against a particular deal or overall fill rate) and revenue as well as CPM.
- **Negotiated access can provide richer information, but disclosure practices vary.** Some sellers reserve selected signals for negotiated deals, while others maintain similar information across buying routes. Buyers need to confirm both what the seller can provide and what the DSP can use. Agreement on access does not establish that targeting will work as intended.

- **Buyers report uncertainty about whether required signals are used consistently.** Only 8% said their required signals were always operationalized by their DSPs, while 58% said often.[1] These responses point to a demand for clearer reporting, though as buyer perceptions, the survey responses do not independently measure how often or why platforms operationalize signals.

Practical priorities

- **Buyers and sellers can make signal requirements explicit before trading.** Buyers can distinguish essential requirements from desirable enrichment, explain their intended uses and confirm support across the chosen supply path. Sellers can state what information they can provide, identify restrictions and check how intermediaries handle their metadata. Both sides can agree on acceptable alternatives, request reporting against those agreements and establish contacts for resolving discrepancies.
- **Shared tools could make these checks more consistent.** A candidate trading baseline could clarify the information needed to recognize inventory, assess declared selling relationships and evaluate an opportunity. Comparable platform capability statements and reconciliation reports could help participants identify where agreed signals become missing or unusable. A voluntary pilot could test whether these measures improve delivery and reduce troubleshooting overhead at a manageable implementation cost.

Conclusions

- **Buyers need reliable information to recognize inventory, assess selling authority and apply campaign requirements.** Sellers need visibility into whether agreed information reaches buying platforms and remains usable. Gaps can result in rejected opportunities, redirected spend and delivery problems even when the underlying inventory is suitable.
- **Richer signals can support particular buying strategies, but their commercial value depends on the campaign, supply path and platform implementation.** Associations with higher CPMs do not establish the effect of adding a field or guarantee increased revenue.
- **A candidate trading baseline, comparable capability statements and reconciliation of agreed signal handling offer a practical basis for testing improvements.** A voluntary pilot could establish where these measures reduce friction, what they cost and which limitations require alternatives.
- **Effective transparency means clear expectations about available information, applicable restrictions and verifiable handling of the signals agreed upon for the transaction.**

1 CIMM, *Buyer Survey* (May–June 2026). Q9a 'When your buying requirements include specific bidstream signal requirements, how often do DSPs operationalize the signals?' n=50.

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Introduction

Programmatic TV trading depends on buyers having enough reliable information to identify an advertising opportunity, assess the seller's authority and determine whether the opportunity meets their campaign requirements. Publishers and distributors depend on that information reaching buyers accurately. Missing, inconsistent or unusable signals can leave suitable inventory without access to demand.

A bid request can describe the app or distribution environment, content, device, available audience information and selling path. A demand-side platform evaluates that information alongside its own data and the campaign's requirements to decide whether to bid and at what price. Different signals serve different purposes. Information about selling authority helps establish whether an opportunity is legitimate. Content and audience information can support campaign selection, while technical information helps platforms process the opportunity.

Three requirements underpin effective trading: recognizable inventory, verifiable selling relationships and clear handling of agreed signals. Richer information can support particular buying strategies, but its value depends on whether the parties can interpret and use it.

This paper focuses on biddable US CTV and streaming video inventory, including open auctions and private or curated arrangements in which buyers evaluate individual opportunities. Its survey distinguishes open, curated and private marketplaces. These are survey categories rather than mutually exclusive technical transaction types, since curated supply can also be offered through private deals.

Programmatic Guaranteed and other automated direct arrangements are outside the principal scope. Their commercial terms are agreed in advance, although execution can still depend on accurate bid requests and signals.

"Bidstream signals" refers primarily to information carried in OpenRTB bid requests. Receipt, technical support, campaign configuration, use and disclosure to the buyer are separate questions. Information available in reporting has not necessarily been used for targeting or bidding.

Effective transparency requires clear expectations about what information can be supplied, what restrictions apply and how platforms will handle it. The practical priorities are to make legitimate inventory easier to assess and to identify where delivery departs from agreed requirements.

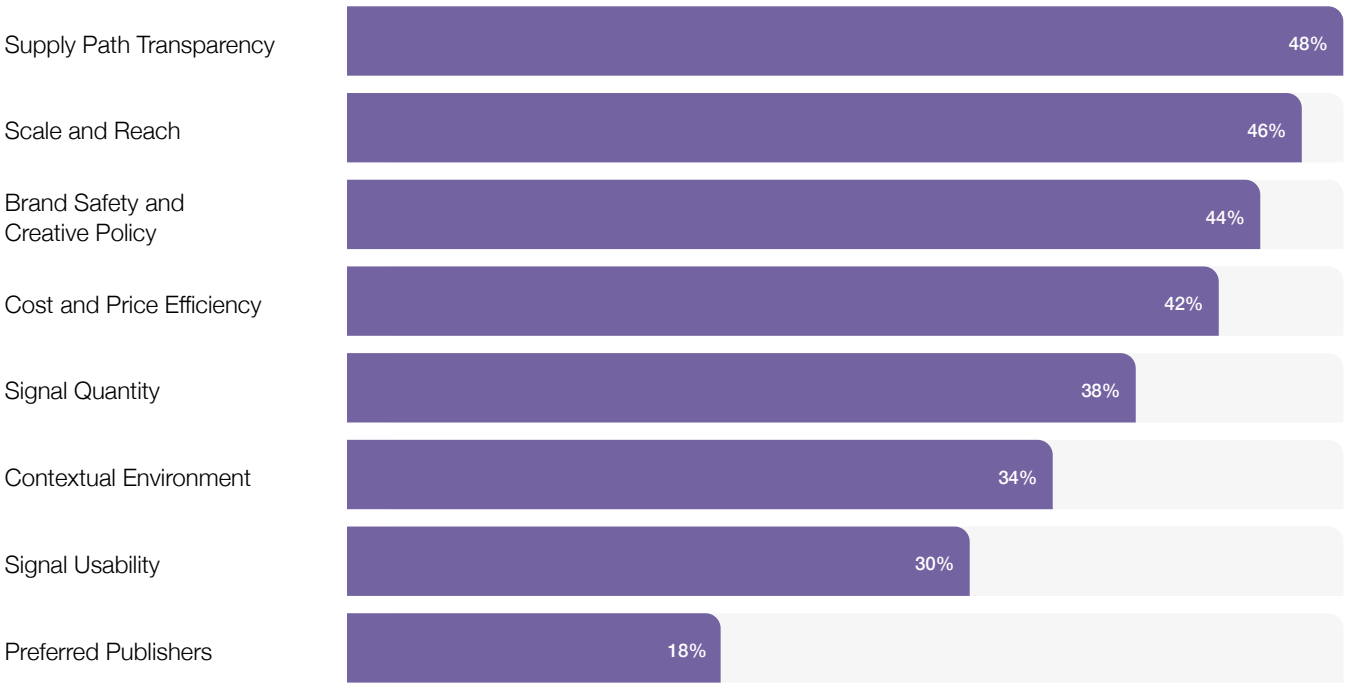
Chapter 1.

Buyers Need Useful Signals and a Trusted Supply Path

Buyers evaluating CTV and streaming inventory are really judging two different things. One is **signal richness**: how much the bidstream says about the impression itself, its content environment, audience, and device. The other is **supply-path clarity**: how confidently a buyer can tell who is selling the inventory, and whether that party has the right to sell it. Information about content, audiences and devices can help determine campaign suitability and value. Supply-path information helps buyers assess the organizations involved and their authority to sell the inventory. These functions are related, but neither substitutes fully for the other.

When asked to force-rank the factors most important to their CTV buying decisions, nearly half of surveyed buyers (48%) placed supply-path transparency in their top three, followed by scale and reach (46%), brand safety (44%), and cost efficiency (42%). Supply-path transparency and brand safety also tied for the largest share of #1 rankings, at 18% each.[2]

Exhibit 1: What Buyers Prioritize When Evaluating CTV Inventory



Each bar shows the percentage of buyers who ranked that factor among their top three priorities (n=50). Supply-path transparency and brand safety tie for the largest share of #1 rankings, at 18% each.

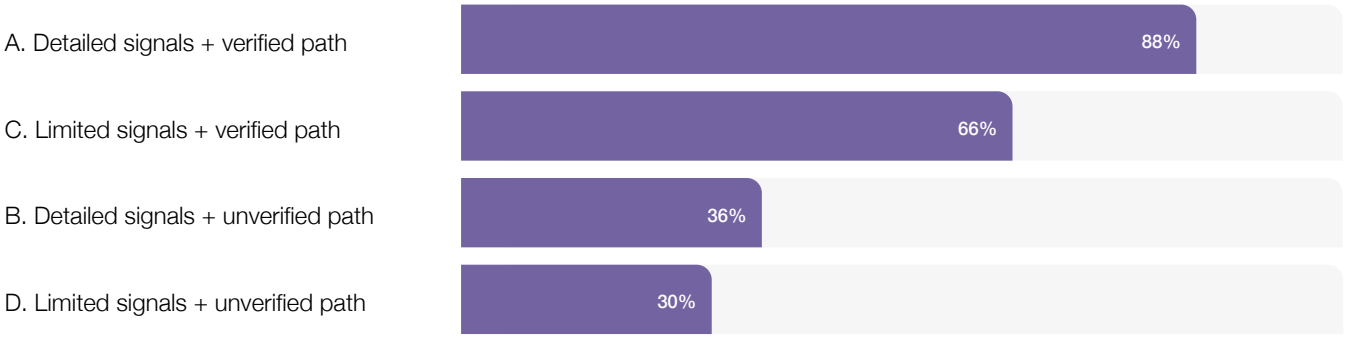
Source: CIMM, *Buyer Survey* (May–June 2026)

2 CIMM, *Buyer Survey* (May–June 2026). Q1 'When buying CTV programmatically, what are the most important factors underpinning your decisions?' Forced ranking of eight decision factors buyers weigh when evaluating CTV inventory – share of buyers naming each factor in their top 3, n=50.

In the survey, 66% of respondents rated their likelihood to bid at 5–7 on a seven-point scale for limited signals on a verified path, compared with 36% for detailed signals on an unverified, multi-hop path. Detailed signals combined with a verified path received the highest share of these ratings, at 88%.[3]

Buyers preferred the verified-path scenario even when it offered less information. Because the scenarios combined verification status with other path characteristics, the comparison does not isolate the effect of verification or intermediary count. It nevertheless indicates that additional inventory detail does not remove buyers' concerns about the selling relationship.

Exhibit 2: Buyer preferences for bidstream signals and verified vs. unverified supply paths



Source: CIMM, *Buyer Survey* (May–June 2026)

Tracy Chavez, Executive Vice President and Managing Director of Investment at Publicis Media, framed the issue: *"If the supply is rich and robust, but it's not clear where it's coming from, how do we know the richness and robustness are accurate?"* Sellers also generally acknowledge that supply path clarity is essential.

> *"The inventory is irrelevant without the supply path."*
>
> **Senior TV executive**

Supply-path transparency has been a growing issue for years, and in programmatic TV the stakes are especially high: "*Rich signals sitting on top of a questionable supply path don't actually tell you anything reliable; you're just getting more detail about something you can't trust in the first place. With the high-quality nature of CTV and streaming, signaling authentic and valuable inventory is incredibly important in this medium. What earns the bid is knowing the path underneath it is transparent, clean, and verifiable, and that's what's validated here,*" according to Erika Loberg, VP, Global CTV and Enterprise Solutions, OpenX.

Multiple interviewees said that signal quality has meaningfully improved in recent years but buyers always want more signals, especially show-level information.

3 CIMM, *Buyer Survey* (May–June 2026). Q6 asked respondents to rate their likelihood of bidding on inventory (1-7 scale, where 1 = very unlikely and 7 = very likely) across four scenarios varying signal richness (detailed content, device, and audience signals vs. limited signals) and supply-path transparency (direct path with documented, verified supply chain vs. multiple intermediaries with incomplete chain and unverified reseller). Percentages reflect share of respondents rating 5-7. n=50.

Chapter 2.

Legitimate Inventory Must Be Verifiable and Recognizable

> *"There is still a lot of opacity in who is actually selling the inventory in many CTV transactions."*
>
> **Independent Media Agency,** buyer survey respondent[4]

For legitimate CTV and streaming inventory to attract demand, buyers need to answer two questions: does this seller have the authority to sell the advertising opportunity, and can we identify the inventory being offered? These are separate requirements. A seller can have valid commercial rights but still struggle to reach buyers if those rights are difficult to verify or its inventory is inconsistently identified across supply paths.

Establishing who has the right to sell

The right to sell CTV inventory can arise through ownership, distribution agreements, sales representation or authorized resale. The content owner, app operator and seller may therefore be different organizations. Selling arrangements can differ substantially. A sales house or distributor may hold rights to monetize an allocated share of inventory. Another authorized seller may offer inventory on a non-exclusive basis. Buyers must be able to verify sellers' authority relevant to transactions.

Authorization files (ads.txt and app-ads.txt), seller disclosures (sellers.json) and the OpenRTB SupplyChain object help buyers check declared selling relationships and each seller or intermediary ('hop') in the payment path. They provide different parts of the evidence and do not, combined or individually, establish all underlying contractual rights.

Abbie Reichner, VP of Customer Success at PubMatic, explained, *"The contracts are asked for because you have so much duplication out in the marketplace and you have so many different types of reseller agreements. Some reseller agreements again are very valid. You might be the sales house. You might have a distribution agreement and that is why you actually do have the sole right to sell whatever percentage of that inventory. But there's also a lot of resellers that are simply buying the inventory and reselling it – in that scenario, you do not have sole ownership of x% of the inventory. So that's what's causing a lot of this duplication."*

DSPs sometimes request contracts or other supporting evidence where declarations are insufficient. These checks can provide additional assurance, but can also delay activation and create repeated work for sellers.

4 CIMM, *Buyer Survey* (May–June 2026), Q11 'What is the biggest challenge you face today with bidstream transparency in programmatic CTV buying?' Open-ended question, answered by a professional from a media agency with 5,000+ employees.

Making authorized inventory recognizable

Establishing selling authority does not ensure that buyers can find the inventory they intend to buy.

Peer39's Mario Diez described a Multichannel Video Programming Distributor (MVPD) whose inventory appeared across its own branded apps and other platforms. Bidstream auditing showed that its app ID and app name were consistent on inventory it directly controlled but varied across OEM environments. Buyers seeking the distributor's inventory by name could therefore overlook opportunities offered through other paths.

> *"The distributor has been putting as much data as they can into the bidstream and also authenticating their content to ensure they're as transparent as possible while honoring carriage agreements. However, through bidstream auditing, they could see that their app ID and app name were only consistent on the inventory they directly controlled – and varied across different OEMs."*
>
> **Mario Diez,** CEO of Peer39

Recognition also requires distinguishing the app or platform carrying an impression from the organization supplying or monetizing the content. In inventory-sharing arrangements, these identities may legitimately differ. A buyer 'allowlisting' one app name or bundle may inadvertently exclude authorized inventory distributed elsewhere. For example, Tommy Cabrera, Director of Supply Strategy at Comcast Advertising (a different MVPD from the one described earlier) said, "Set-top-box inventory can look unfamiliar to buyers who are used to 'allowlisting' based on CTV app bundles." Mapping rules need to preserve these roles rather than force every path into one publisher label.

The same inventory can carry different identifiers depending on the path it takes. Those differences are not, by themselves, a sign of a problem. The problem arises when buyers cannot connect those identifiers to the inventory source or selling relationship they are trying to evaluate. Supplying more information does not solve this problem if the information remains inconsistent or difficult to interpret.

Keeping declarations and identifiers accurate

When the same inventory arrives under different identifiers or conflicting declarations, the cause is not always clear. Some differences are the result of innate complexities in inventory sharing. Others come from mapping errors, poor upkeep or misrepresentation. The records buyers rely on, such as ads.txt, sellers.json and the SupplyChain object, show only what their maintainers have put in them.

OpenX's Erika Loberg emphasized that maintaining accurate seller and supply-chain declarations requires continuing attention after a deal is signed. As she explains: *"A lot of the duplication and opacity we see isn't a technology gap – it's a willingness gap. Sellers.json and the schain object aren't difficult to implement correctly. When they're incomplete or inconsistent, it's usually because keeping them accurate isn't a priority once the deal is signed, not because anyone lacked the tools to do it right. How we see it is that everyone has a responsibility to prove the path is clean on every impression, not just claim transparency in a pitch deck. Buyers should expect that same standard from anyone selling inventory."*

Publishers, distributors and intermediaries need to maintain the identifiers and authorization information they control. SSPs and DSPs need clear procedures for identifying discrepancies and resolving them with the relevant parties.

The practical goal for the industry is to make legitimate inventory both verifiable and recognizable. That gives buyers a sounder basis for assessing opportunities and reduces the risk that authorized sellers lose demand because their inventory or selling relationships cannot be established.

Chapter 3.

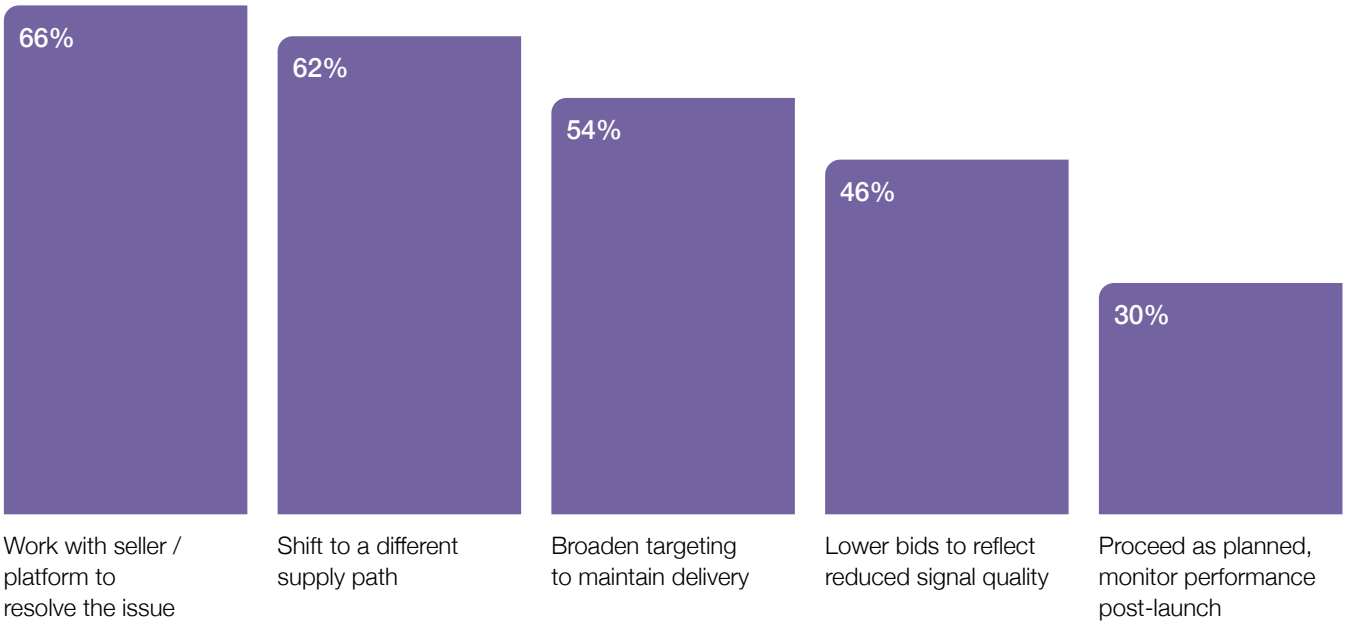
Signal Gaps Affect Access to Demand as Well as Price

Missing signals can affect whether inventory receives a bid, not simply the price of a winning impression. Sellers therefore need to assess demand participation and delivery alongside CPM.

Buyers often change where and how they buy

When signal requirements were unmet, 62% of buyers reported shifting to another supply path and 54% reported broadening targeting, compared with 46% reporting lower bids. The most common response, at 66%, was to work with the seller or platform to resolve the problem.[5]

Exhibit 3: Buyer responses when minimum signal requirements are not met

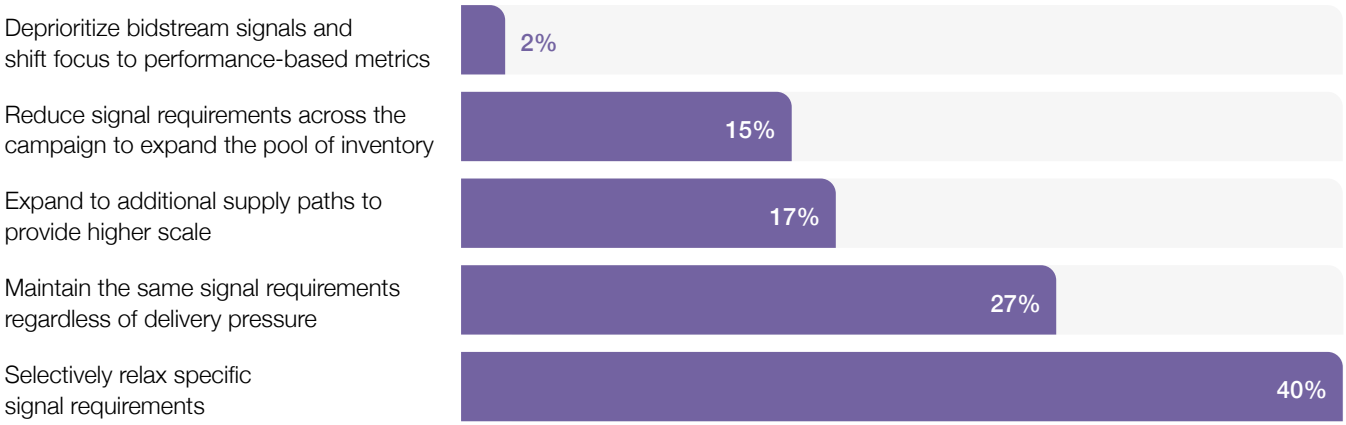


Source: CIMM, *Buyer Survey* (May–June 2026)

Delivery pressure can also change requirements. Among buyers answering the follow-up question, 27% maintained the same requirements regardless of pacing pressure. Others selectively relaxed requirements, reduced them more broadly, expanded to additional supply paths or deprioritized bidstream signals.[6]

5 CIMM, *Buyer Survey* (May–June 2026). Q4a 'When CTV bidstream signals do not meet your minimum requirements, how do you typically respond?' Multi-select, n=50.
6 CIMM, *Buyer Survey* (May–June 2026). Q4b 'When you are facing delivery or pacing pressure, how do your bidstream signal requirements change?' n=48.

Exhibit 4: Signal requirements change with pacing and delivery pressures



Source: CIMM, *Buyer Survey* (May–June 2026)

These responses do not all have the same commercial effect. Switching paths can move spend between sellers or intermediaries. Broadening targeting can change the eligible inventory pool. Expanding supply paths does not necessarily mean accepting less information.

Sellers highlight the nuanced relationships between signals and price

One publisher said, "*We do tiering structures of requests with all signals and some requests with no signals. We tend to see brands and campaigns spend on the no signal side when they're just looking to do branding, frankly. It's more the retargeting [campaigns] that people are looking for these other signals to do a bit more on. And we try to segment it in that way. But I think buyers wouldn't do this naturally; they would just look for the cheapest price always. So, on the publisher end, we're as strong as our weakest link – and the weakest link is the publisher that is just sending out all signals at the lowest price point all the time. And the algorithms are going to be trained to look for those low price points, which will always happen in programmatic*."

Signals carry commercial value, but it is built into how inventory is packaged and priced rather than added automatically when a field is populated. Another publisher offered an analogy: content metadata is bundled into a CPM the way furnishings are bundled into rent: *"You want a lower rate, but you're expecting the same amount of information. We're going to take the couch away."*

Several sellers identified specific signals they believe would drive stronger monetization. One publisher pointed to OpenRTB's new (June '26) 'Programming Liveness' signals being a likely catalyst for CPMs and demand to rise together. Another sell-side executive shared that "*it can set the publisher apart if you're able to provide channel name and a strong percentage of alternative user ID coverage – that definitely pushes you towards having a very satisfied cache of buyers. It allows you to be far more monetizable*."

Better signals do not guarantee higher CPMs

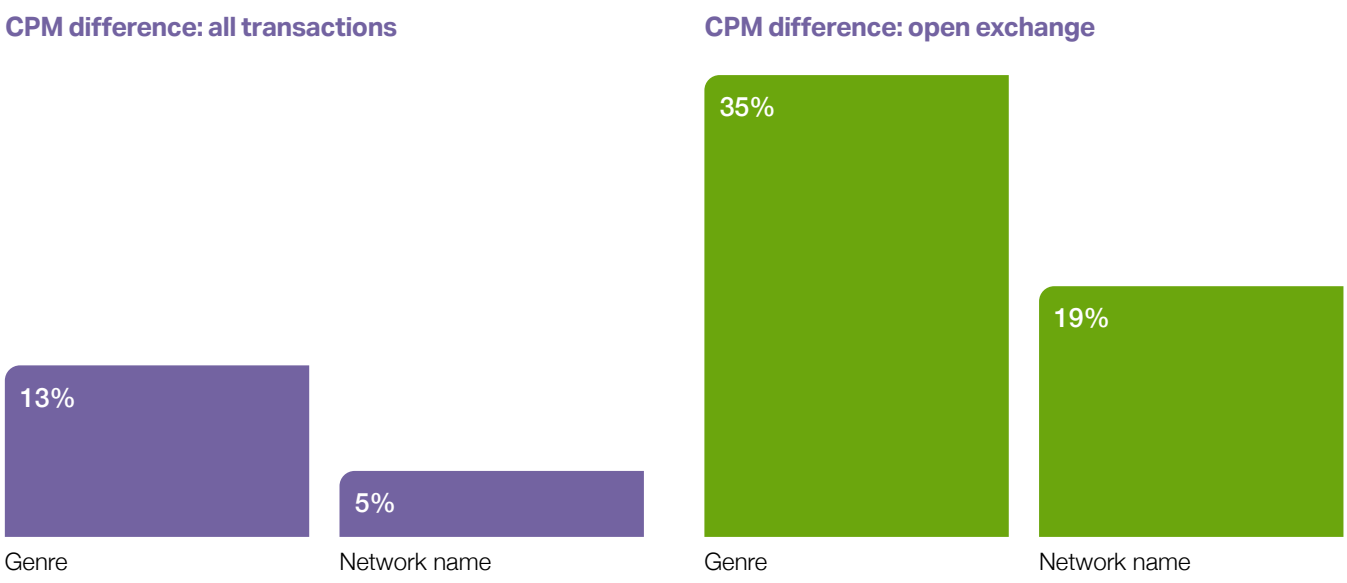
If transparency improved for otherwise comparable inventory, 54% of buyers said they would raise bids only for trusted supply sources or paths, compared with 18% who would raise bids broadly.[7] Buyers' confidence in the source remains important when assessing the value of additional information.

> *"We often see buyers make different tradeoffs between transparency and price efficiency. In some cases, supply with less granular transparency can still attract demand when the economics are compelling."*
>
> **Alex Strickland,** Head of Programmatic Supply Relationships at FreeWheel.

In data from FreeWheel's platform, publisher name was populated in 98% of deal-based bids and 67% of open-exchange bids. Its presence in the open exchange was associated with 6–13% higher CPMs.[8]

FreeWheel's analysis also found that video content identification is an area with significant CPM impacts and potential for signal enrichment. With Genre and Network Name, CPM lift was consistently larger when isolating to the open exchange. "*The open exchange is often signal-constrained, which makes content identification even more important. When publishers provide clear signals such as Genre and Network Name, it helps buyers recognize and reward premium inventory,*" said Andrea Wood, Director, Research & Insights, FreeWheel.[8]

Exhibit 5: Signal presence and associated CPM differences[8]



Similarly, OpenX reported a sevenfold higher average bid rate for content-object-targeted deals than other deals on the same publisher, and an 11% higher average bid CPM on requests carrying standardized genre information.[9]

7 CIMM, *Buyer Survey* (May–June 2026) Q7 'If bidstream signal transparency were to increase significantly for otherwise comparable CTV inventory, how would your bidding behavior change?' n=50.

8 FreeWheel bid-log analysis, May 2026, US CTV/STB video placements. CPM lift measures how much higher a publisher's average CPM runs when a signal is present versus absent. Each publisher is compared with itself, and the results are combined using weights based on each publisher's bid volume, so the figures isolate the signal's own effect rather than reflecting which publishers happen to use it most. CPM lift was consistent across auctions ($p < 0.05$). Lift represents a statistically significant relationship, not a proven cause.

9 OpenX first-party auction data, Q3 2024, all CTV inventory on the OpenX exchange. Bid rate compares nonzero bids to eligible bid requests per deal; content-object-targeted deals identified from a manually compiled deal list. Bid CPM compares requests where genre was populated versus not, regardless of deal targeting. Findings are correlational.

The FreeWheel comparisons concern paid CPM differences associated with signal presence. The OpenX comparisons concern average bid rates and bid CPMs. These measures are not interchangeable. Additionally, differences in campaigns, inventory, buyers and commercial arrangements may contribute to the observed results, so the comparisons do not establish what would happen if a seller added a particular signal.

Furthermore, one platform executive described the correlation between signals and CPMs as less about universal lift and more about redistribution: richer, verified bidstream signals shift demand away from opaque supply paths toward direct, verified ones. In some cases, SSPs won't send a request to DSPs that it knows will pass on a poorly furnished bid request. That description echoes what another platform told CIMM's Programmatic Working Group about ignoring requests that arrive without basic signals like IP address or device ID.

Evidence supports transparency as a qualifier that lets trusted, well-decorated inventory command a premium. It is not a lever that mechanically lifts price the more fields a publisher fills in.

Sellers need to make suitable inventory recognizable to buyers and ensure that agreed signals can support the campaign. The commercial benefit should be assessed through bid participation, delivery and revenue, alongside CPM. A higher price on winning impressions does not reveal whether more inventory attracted bids or whether total revenue improved.

Chapter 4.

Which Signals Buyers Require

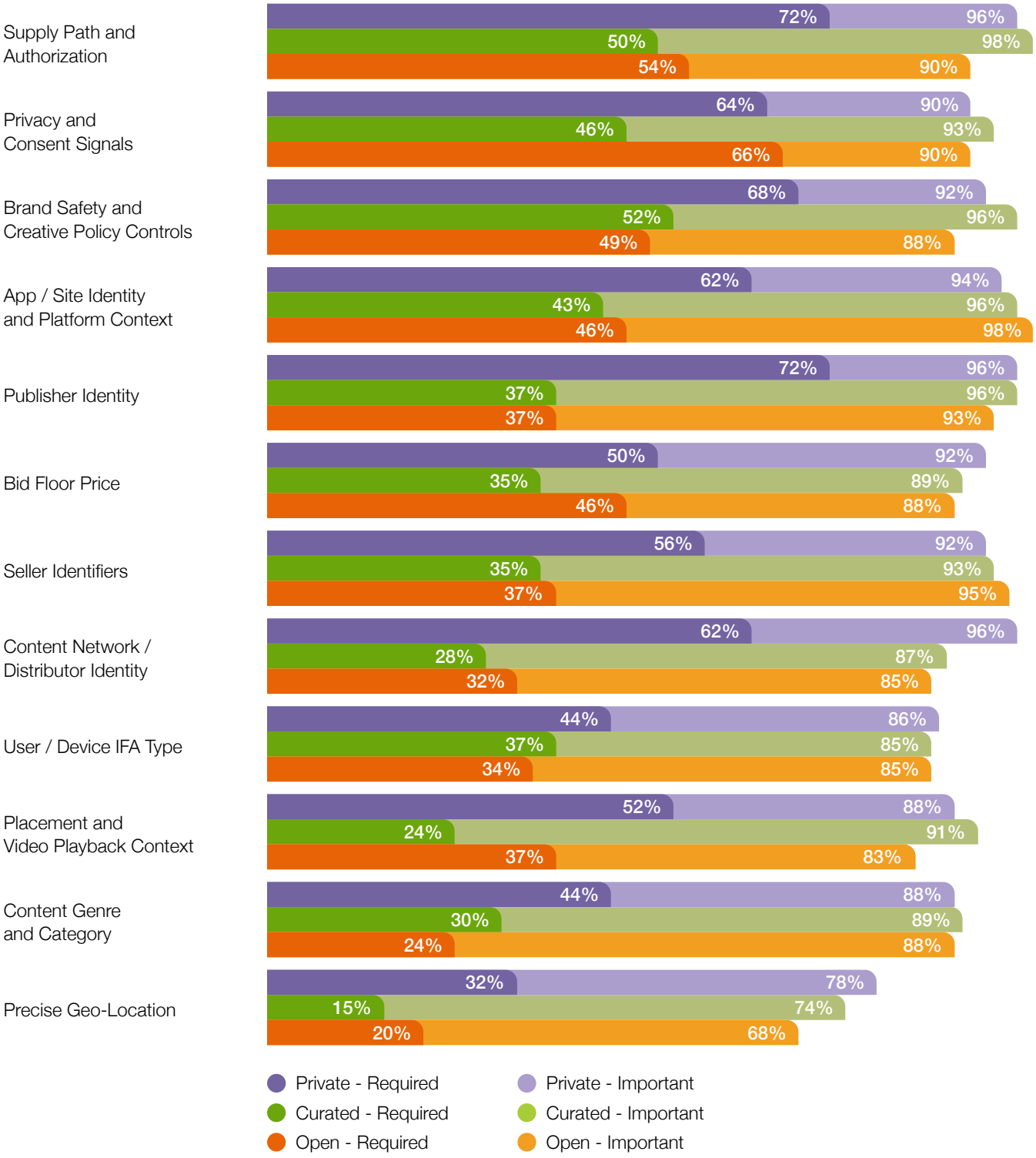
Supply-path and authorization information, privacy and consent signals, brand-safety controls, and app or publisher identity are among the categories buyers most frequently classify as required. Content genre and precise location are less frequently mandatory. These priorities describe buyers' stated conditions for bidding. They do not establish which signals create the greatest campaign value, or which fields every buyer needs.

Requirements can also reflect availability. Buyers may regard a signal as valuable but decline to make it mandatory if doing so would exclude too much inventory. A widely available signal may become a routine screening requirement. Availability, buyer requirements and demonstrated campaign value therefore need to be assessed separately.

The study's survey asked buyers to classify each of 12 signal categories across 3 deal types (private, curated, open) on a 4-point scale ranging from Required to Not Applicable. The median buyer treats 7 of those 12 signals as strictly required in private marketplaces, 4 of the signals required in open marketplaces, and 3.5 of the signals required in curated marketplaces. The solid portion of each bar in the chart below – the share of buyers who will not bid without the signal – diverges notably by deal type, with private marketplace buyers setting the strictest requirements. The full bar, which adds buyers who indicated the signal is important – meaning they use the signal to adjust bids or prioritization without requiring it – converges: averaged across all 12 signals, 91% of private marketplace buyers, 91% of curated buyers, and 88% of open marketplace buyers rate these signals as actively driving their bidding decisions.

Exhibit 6: Buyer Bidstream Signal Requirements by Deal Type[10]

Percentage of buyers rating each signal as Required or Important



Source: CIMM, *Buyer Survey* (May–June 2026)

10 CIMM, *Buyer Survey* (May–June 2026), Q2 asked respondents how they use each signal when buying CTV programmatically, with four response options: 'Required – will not bid without it,' 'Important – used to adjust bids or prioritization,' 'Optional,' and 'Not applicable.' Bars show the share responding 'Required' and 'Important.' n=50 overall; per-deal-type bases vary because not all respondents buy all deal types (private n=50, curated n=46, open n=41).

It's possible that buyer expectations have adjusted to match reality. Buyers may require a supply path signal, in part, because they can reliably receive it. One interviewed buyer commented on content genre being less of a requirement than many of the other signals: "*It might be because they just can't get it. It's always the holy grail – but if buyers know they're not going to get it passed, they're not going to call it a requirement.*" The natural question that follows is: what are buyers actually receiving?

FreeWheel's analysis of US CTV and set-top-box video bid requests found the SupplyChain object present in 99% of sampled auctions and content genre populated in 74%.[11] These figures describe signal availability within the sample, but they do not establish that the information was accurate, complete or used in buying decisions.

Exhibit 7: Availability of selected information in FreeWheel's sampled bid requests and associated platforms[12]

Signal	Example	Signal Availability
Schain	ver="1.0", complete=1, nodes: [asi="freewheel.tv", sid="311111", hp=1]	95-100%
Device Type	Mobile/Tablet; Personal Computer; Connected TV	95-100%
Player Size	Small; Medium; Large	95-100%
Region/State	CA; NY; TX	95-100%
IP address	Typical user/device IP like 192.0.2.34	95-100%
Device OS	iOS; Android; Windows	95-100%
DMA	Named DMAs like Chicago, Pittsburgh, Nashville, etc.	95-100%
Video Placement	In-stream; In-banner; In-feed	95-100%
Start Delay	Pre-Roll; Mid-Roll; Generic Mid-Roll; Generic Post-Roll	95-100%
User ID	Internal user identifiers such as user_123456; hashed IDs like 7f3a9c…	95-100%
App/Site Bundle	Mobile app bundle IDs like com.example.app; com.netflix.mediaclient	95-100%
App-ads.txt	Pass; Fail; Not Available (ads.txt compliance status)	95-100%
App/Site Name	"CNN"; "Hulu"; "Weather Channel"	95-100%
VPAID	1 (VPAID present); 0 (no VPAID)	80-95%
Guaranteed	Guaranteed; Non-Guaranteed; Private Deal	80-95%
Seller Name	Supply partner / seller names like "NBCU", "Disco", "Tabmo"	80-95%
Seller Type	Publisher; Exchange; Reseller	80-95%
Auction Type	First Price; Second Price; Fixed Price	80-95%
Publisher Name	"NBCUniversal"; "Discovery"; "Fuse Media"	80-95%
Video Playback Method	Auto-play sound on; Auto-play muted; Click-to-play	60-80%
Content Genre	"Sports"; "News"; "Kids & Family"; "Entertainment"	60-80%
Bid Floor Price	Numeric floors such as 0.50, 5.00, 20.00 (in auction currency)	60-80%
Blocked Attributes	"Expandable"; "In-Banner Auto Play Video"; "Ad Can Be Skipped"	60-80%
Lat/Lon	37.566146,-122.323644	<50%
Content Network Name	Network/portfolio names like "NBCU Digital"; "Azira"; "Comcast VOD"	<50%
Has Privacy Policy	true; false (whether the app/site declares a privacy policy)	<50%
App/Site Category	"News"; "Sports"; "Games"; "Lifestyle"	<50%

11 Source: FreeWheel internal bidstream data, February 2026. Sample covers US auctions for CTV and set-top-box video placements.

12 Source: FreeWheel internal bidstream data, February 2026. US Only auctions for CTV and set-top-box video placements. Availability indicates that information was recorded in the sampled data. It does not establish accuracy, completeness, relevance to every placement or use in a buying decision. Some entries may represent platform-derived checks or classifications rather than native bid-request fields.

App/Site Domain	example.com; news.example.com; hulu.com	<50%
API frameworks	MRAID; MRAID 2; VPAID 2.0 (plus "None" when no API framework)	<50%
Universal IDs	Shared IDs like "Unified ID 2.0"; "ID5"; "RampID"; "PubCID"	<50%

The survey data shows what buyers want; FreeWheel's data shows what sellers send. But when different industry players describe what should be table stakes, the answer depends on who you ask – and often starts with the purpose a baseline signal set is meant to serve. Information used to assess seller authorization, inventory identity or privacy conditions serves a different function from information used for audience targeting, frequency management or attribution. Content information may support contextual selection and campaign suitability. The relevant requirements depend on the buying strategy and the tools used.

> *"No one buys CTV without IP and IFA – there would be no real attribution, no real targeting, no real frequency capping. So to me, there's already a subset of signals that are absolutely necessary: IP, IFA, bundle. But then with the content metadata, my feedback is none of that is 'table stakes'."*
>
> **Senior Publisher Executive**

The publisher view that IP addresses and advertising IDs are indispensable reflects particular targeting and measurement workflows. It does not establish that those identifiers are necessary for every CTV purchase. Any proposal to require them needs to specify the use case and the applicable privacy conditions.

Another publisher highlighted the importance of user identity to better support buyers. "*You can tie identity signals to what's going to drive better outcomes. I'd like for all of us to agree on something consistent, and then hold ourselves accountable to sharing what that is – not just something preferential, but something we've found actually drives efficacy or outcomes. So we're passing these signals because we know they're going to help you as a buyer.*" – Senior Publisher Executive.

Signal requirements differ across buyers, sellers and platforms. Some platforms distinguish between mandatory fields, whose absence prevents bidding, and encouraged fields that may support additional uses. An ideal signal baseline needs to define the function of each required field and the consequence of its absence, while allowing additional requirements for particular campaigns.

> *"We recently revised our supply partner policies, and there's now very clear guidance around signal transparency and metadata – signals we require versus signals we strongly encourage across the supply chain. Anything under 'required': if you don't pass it, we don't bid. Anything under 'strongly encouraged': it's not that our bidder will completely discard it if it's missing, but it creates more value – it's up to the publisher and SSP whether they pass it through, but for us, sharing that information means more."*
>
> **Nicole Kilaita, Director,** DSP Strategy, Yahoo DSP

Agentic buying may make campaign-specific signal requirements easier to negotiate. Any arrangement would still depend on agreed definitions, reliable information and records that participants can check. Automating negotiation does not establish the accuracy of the signals or confirm that platforms used them as agreed.

"Agentic buying is going to completely change the way that we think about the need for signals. And within agentic buying, I think that a publisher and a buyer can come up with what the minimum signals need to be on each campaign on each buy. That's not something that we can do right now because it's not scalable and that's why we look for what is the minimum that everyone can agree to."

Senior SSP Executive

The immediate priority is therefore clear signal requirements and verifiable handling across the supply path. These capabilities would support both current buying workflows and future automation.

"It has to be auditable against an agreed source of truth - something that actually exists - not just a sell-side agent's ability to say 'Here's the record'. The question is always, 'what is that report based on?'"

Glen Gullickson, Vice President of Investment, Operations & Solutions for WPP Media

"Agentic buying gets pitched as the fix for signal negotiation, but it doesn't solve anything if the supply-path problem is still unresolved underneath it. A buyer agent and a seller agent can negotiate the minimum signal set for a campaign, but without clear and transparent supply paths, they've just automated a negotiation with a bad foundation. Everything else, including agentic buying, builds on top of trust and quality."

Erika Loberg, VP, Global CTV and Enterprise Solutions, OpenX

So when we ask 'which signals matter most,' it's reliable ones, for buyers, sellers, and agents.

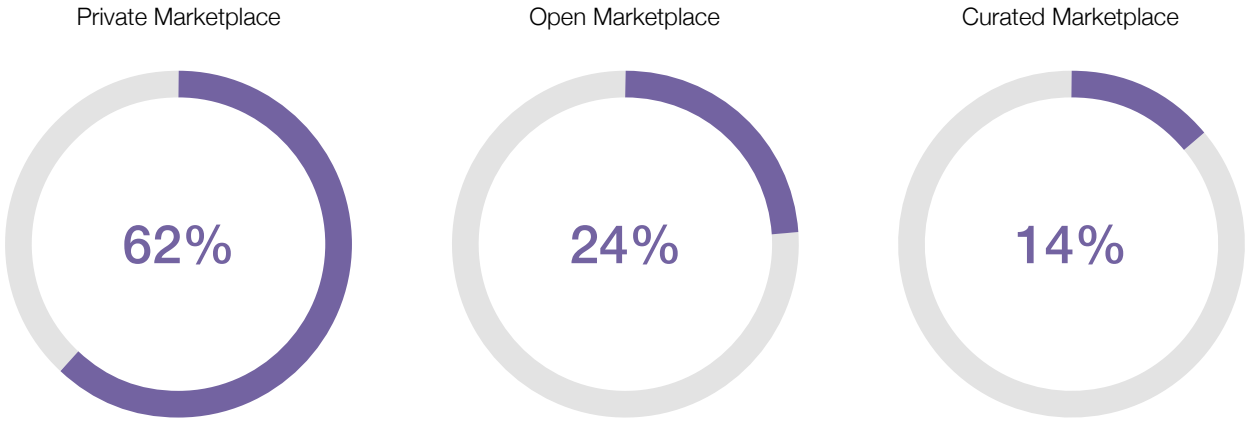
Chapter 5.

Signal Requirements Depend on the Deal

Negotiated deals can provide a setting for buyers and sellers to agree which signals will be supplied, how they may be used and how discrepancies will be handled. Open auctions also operate under platform policies and contractual terms, but buyers and sellers typically set their requirements in their respective platforms without negotiating signals. Thus, signal disclosure can vary widely.

Buyers' perceptions are consistent with this distinction. Private marketplaces were ranked the most transparent deal type by 62% of buyers, compared with 24% for open marketplaces and 14% for curated marketplaces.[13]

Exhibit 8: Buyer rankings for deal type transparency



Source: CIMM, *Buyer Survey* (May–June 2026)

Seller practices vary. Negotiated deals do not invariably provide richer signals. Buyers need to establish what information is available from each seller and through each buying route.

One reseller who sells entirely through deals described full transparency: "*We send everything we're allowed to send. I have no skin in the game for obfuscating anything in the bidstream*." Others take a tiered approach. One streaming publisher described stripping open-auction signals to near-nothing for legal reasons, offering bare-bones disclosure in curated deals, and reserving full granular targeting for PMPs – priced accordingly. A publisher's approach can also vary by inventory; one seller never puts sports and entertainment content in the open market, and sends only the minimum data needed for brand safety and fraud checking on the inventory offered there.

Other publishers maintain a similar signal set across deal types to simplify implementation and reduce friction. For example, one publisher holds its signal profile nearly flat across open market, PMP, and curated deals alike: device ID, IP address, a live signal when relevant, and about four broad genre categories. Their reasoning is that they want to stay consistent, reduce friction and simplify for both parties, knowing one party or the other will overlay additional targeting.

13 CIMM, *Buyer Survey* (May–June 2026), Q3a, 'Based on the level of bidstream signal typically available, how would you rank the following CTV deal types in terms of transparency?' n=50.

Publishers can face different expectations from DSPs. One publisher reported that missing fields could lower a bid request's completeness score even when those fields were not used in the bid decision. Counterintuitively, publishers are asked to reduce noise in the bidstream, then penalized by scoring systems for doing exactly that. A platform executive independently described bidstream transparency work inside their own organization as trending toward 'more of a compliance audit' than a signal-value exercise. A scoring framework that does not distinguish fields required for eligibility or buying from fields used only in reporting, or from optional fields, risks measuring decoration rather than usefulness.

Additional signal requirements can carry substantial implementation costs for a publisher. A sell-side platform reported that buyers often request every available data point with little clarity on what is actually used for bidding versus reporting versus not used at all. Meeting those requests can require app-level changes across 20 or more platforms, assuming each one even supports receiving it.

What happens to those signals once they leave the publisher is a separate question.

Chapter 6.

What Happens to a Signal After It's Sent

Sending a signal does not establish that it reached the DSP, was accepted as valid, or was used for the agreed campaign purpose. A DSP may support a field without receiving it on a particular deal. It may receive a signal but reject its format, make it available only in reporting, or use it in bidding. Buyers and sellers often lack a clear view of these different outcomes.

Only 8% of surveyed buyers said their required signals were always operationalized once a campaign was live; 66% say always or often, which means a full third of buyers regularly see a gap between what they negotiated and what their DSP did. [14]

Exhibit 9: How often do buyers say their required signals are operationalized?



Source: CIMM, *Buyer Survey* (May–June 2026)

Among buyers reporting gaps, 69% identify the DSP's algorithmic decisions as a possible explanation, 60% identify fee or margin considerations, and 60% identify technical or infrastructure limits. These are buyers' interpretations of the gaps, rather than verified explanations of individual DSP decisions.[15]

Sixty percent of buyers say they confirm with their DSP which fields will be ingested and operationalized before finalizing deal terms. None reported proceeding without any process.[16] The remaining problem is visibility into what happens after those checks.

Signals can fail at different points in the supply chain. One publisher described a DSP rejecting a privacy-consent value at a critical moment for delivering an upfront commitment, requiring the buyer to move spend through other DSPs to deliver the campaign. Another described an SSP receiving a signal but choosing not to forward it, without prior notice. Publishers also report limited visibility into which signals DSPs accept and use: "*We have zero insight once that bid request goes out,*" according to one publisher.

14 CIMM, *Buyer Survey* (May–June 2026), Q9a 'When your buying requirements include specific bidstream signal requirements, how often do DSPs operationalize the signals?' n=50.
15 CIMM, *Buyer Survey* (May–June 2026), Q9b 'Why are bidstream signals not always operationalized?' Multi-select, n=45.
16 CIMM, *Buyer Survey* (May–June 2026), Q8 'When arranging programmatic CTV deals, how does your organization account for how DSPs ingest and operationalize bidstream signals?' n=50.

> *"We can say what we're sending to each DSP, but once that signal leaves the exchange, we don't have visibility into how it's being ingested, operationalized, or used in the DSP's decisioning. That's an important transparency gap."*
>
> **James Wilhite,** VP of Product at Index Exchange

Receipt, use and disclosure are separate questions. A DSP may receive a signal but be restricted from surfacing it to the buyer to activate against or even to use it for measurement, depending on the terms of its supply or measurement contracts.[17] Capability statements need to distinguish whether a signal can be received, used and disclosed.

Differences in formatting and data definitions can also make signals unusable. As one sell-side platform commented, "*Due to the fragmented nature of CTV platforms, data normalization has been a challenge, and leads to buyers not always getting complete bid requests."* They pointed to examples including "*formatting of user agents across different device SKUs" and "true IP address that is HH vs. neighborhood level.*"

Opacity in the bidstream, intentional or not, can breed suspicion. One advertiser commented, "*There are a lot of sneaky things going on. DSPs say one thing but then they will suppress signals.*" – Advertiser (In-house), buyer survey respondent[18]

A media agency team described DSPs exposing *some* transparency around targeting inputs and post-campaign reporting, but generally no standardized view showing:

01	**Supported signals**	what a platform can theoretically support
02	**Present signals**	what actually showed up on this deal
03	**Bidding vs. reporting-only**	how a received signal was used
04	**Ignored or unusable signals**	and why

That gap is worse in CTV, where signal availability varies materially by publisher, SSP, and supply path. The same agency team said that standardized capability declaration and post-buy reconciliation would help buyers validate assumptions, compare supply partners more consistently, and troubleshoot signal loss across the supply chain.[19]

Ultimately, buyers and sellers seek the same fix: some kind of a signal confirmation. Both sides want to know what was received, what was ingested or unsupported, and what was or wasn't operationalized.

17 CIMM Programmatic Working Group discussion, May 2026.
18 CIMM, *Buyer Survey* (May–June 2026), Q11 'What is the biggest challenge you face today with bidstream transparency in programmatic CTV buying?' Open-ended question, answered by a professional working in-house at an advertising brand with 250-999 employees.
19 Written agency interview, September 2026.

"To help bridge the gap between publishers and the rest of the supply chain, we built a tool that our internal team uses to monitor the signals that are being passed. This publisher health check tool runs a signal analysis showing the coverage of required, preferred and recommended signals that a publisher is passing, and includes a gap analysis against their peers. This process allows our teams to further collaborate with our publishers to not only give them valuable visibility into what is or isn't working for them, but also allows us to continue to push for improved bidstream transparency across all our valued partners."

Erika Loberg, OpenX

DSP Viant recently announced reporting for publishers, publicly stating they're sharing "*which signals are present on their bid requests, where coverage is breaking down, and how we score their inventory*."[20] The Trade Desk says it's helping publishers understand how their inventory is valued and how to "*provide optimal metadata signals for buyer decisioning*".[21] While DSPs are the party best positioned to confirm which signals were received and operationalized, SSPs can work with partners to increase visibility for publishers. For example, one SSP has built post-campaign, show-level reporting through a content-identifier partnership.

These and other tools may answer part of the issue, however publishers consistently say they're in the dark. If additional tools exist for bidstream data verification, they are likely underutilized.

Multiple publishers pointed out that if they had more data flowing in their direction, they would be able to better optimize campaigns. One publisher spoke of wanting post-impression attribution data coming back to them – for example via a conversion API – so they can understand whether their audience or content metadata helped deliver campaign results. Such feedback serves a broader purpose than confirming receipt and use of agreed bidstream signals, and could benefit both sides of the transaction. Another publisher pointed to more data in the bid response itself.

"A bidstream can flow both ways. Right now, there's a ton of information we pass upstream as publishers, while the amount that comes back down to help us actually make things work is so minuscule by comparison. What's going to move the needle most in the next few years is the demand side getting behind sharing more in the bid response – things like frequency and pacing scores passed down to us, so we can make yield decisions that benefit both parties. Today that decision is made entirely at the DSP level, without any input from the publisher on what would actually work best for them."

Kyle Turner, Director of Advertising Product Strategy, Philo

20 Viant CEO LinkedIn post, June 2026.
21 The Trade Desk, "PubDesk: Helping Publishers Understand What Buyers Value," thetradedesk.com, accessed September 2026.

Chapter 7.

Content Signals are Still Inconsistent

Genre labels can change as content metadata passes through publishers, distributors, SSPs and DSPs. The same content may arrive labelled drama, history or action, depending on the taxonomy or classification applied along the supply chain.

A distributor described its detailed genre combinations being condensed into a much smaller set of downstream categories, with limited visibility into the mapping. Consolidation may be necessary for compatibility, but it can remove distinctions relevant to a campaign. The distributor claims to see thousands of its own distinct genre combinations condensed downstream by SSPs and DSPs to something closer to 200 categories, with no visibility into what gets collapsed or how. The same distributor described some publishers hardcoding labels that are technically true but functionally misleading, a channel tagged "live sports" around the clock despite airing a mix of programming most of the day. The distributor called it a white lie rather than fraud, but one that still produces buyer complaints about paying for live sports and landing on something else.

Channel-level classifications can also misdescribe an individual opportunity. A channel categorized as sports may carry news, studio discussion or other programming at the time of an impression. Buyers seeking live sports need information that distinguishes a live event from a replay or other sports content. A broad genre label alone cannot establish this distinction, as one seller put it: "*Is it a game that anyone's actually watching or caring about? Or is it darts? Or is it like the Super Bowl from '78? Whatever it is, they want to know whether they should be paying a premium on it.*"

A sell-side platform shared an illustrative example of a misalignment whereby a publisher might attempt to share a granular content signal "*in a custom string like Content_Type="SciFi_Drama_Premium", while a buyer's DSP is configured to only read standard IAB Content Category codes (e.g., IAB1-5). Because of this lack of translation, the DSP cannot parse the seller's custom metadata. The signal is discarded as "noise," and the seller gets zero credit or yield uplift for sending it*." Publishers and platforms can address this by agreeing the taxonomy, version and mapping rules used in an integration.

Mapping tools can help translate categories between systems. For example, IAB Tech Lab's open-source Content Taxonomy Mapper supports migration from Content Taxonomy 2.x to 3.0.[22] Mapping improves compatibility, but does not establish that the original label accurately describes the content.

"*It's really about creating clarity between declared signals and verified signals,*" said Justin Federico, Senior Director of Programmatic Activation at FreeWheel. "*If a network tags everything as sports and a news program airs, a buyer who paid for sports can end up next to news. That raises brand-safety flags and breaks trust downstream. Declared signals are the seller grading its own homework. Verification is what gives buyers confidence, and that's what makes premium supply worth paying for.*"

Identifier-based metadata can also encounter implementation problems. One publisher described being asked to replace its internal content identifier with a vendor identifier because the integration did not fully support multiple identifiers. This creates an operational burden where the publisher's identifier also supports systems outside advertising.

22 IAB Tech Lab, Content Taxonomy Mapper, accessed October 2026.

IAB Tech Lab's Extended Content Identifiers mechanism allows multiple publisher- and vendor-assigned content identifiers to be passed together.[23] This can avoid requiring a publisher to replace its internal identifier. Its usefulness nevertheless depends on consistent implementation by the partners handling the request and on the receiving platform being able to interpret the identifiers. However, adoption remains uneven across integrations.

> *"Many premium streaming networks and publishers deliberately mask show level details in the bidstream."*
>
> **Advertiser (In-house),** buyer survey respondent[24]

Publishers cite privacy and VPPA concerns when deciding whether to share granular viewing information alongside user or device data. An opaque content identifier does not automatically remove those concerns if a recipient can resolve it to a specific programme. Bidstream disclosure and post-campaign reporting also differ in timing, granularity and access, so willingness to provide one does not establish willingness to provide the other.

The Supreme Court heard oral arguments in Salazar v. Paramount Global on October 14, 2026. The case asks *"whether the phrase 'goods or services from a video tape service provider,' as used in the VPPA's definition of 'consumer,' refers to all of a video tape service provider's goods or services or only to its audiovisual goods or services."*[25] Its outcome may affect litigation exposure, but it cannot be assumed to resolve the broader questions surrounding show-level data sharing.

Terms including 'content id', 'genre', 'segment', and 'taxonomy' can become conflated or misunderstood. For a reference guide to the key types of content signals gaining the most attention, how they present and known limitations, see Appendix A: Content Signals Explained.

23 IAB Tech Lab, OpenRTB Extended Content IDs, accessed October 2026.
24 CIMM, *Buyer Survey* (May–June 2026), Q11 'What is the biggest challenge you face today with bidstream transparency in programmatic CTV buying?' Open-ended question, answered by a professional working in-house at an advertising brand with 250-999 employees.
25 25-459 SALAZAR V. PARAMOUNT GLOBAL, docket file, Jan 2026.

Chapter 8.

Not All Opacity is the Same

A missing or unusable signal can have different causes, each requiring a different response.

Withheld by the originating party. A publisher or rights holder may choose not to disclose information because of commercial priorities or legal and privacy concerns. Buyers need to know what is available before agreeing to campaign requirements.

Restricted by another party's contract. A distributor or intermediary may be prohibited from forwarding or displaying information under carriage, reseller, supply or measurement agreements. These restrictions can apply even when the platform has received the signal.

Unavailable or unsupported. The information may not exist, or an integration may lack support for the field, identifier or taxonomy needed to carry and interpret it. The response is clearer capability disclosure and, where worthwhile, improved implementation.

Not transmitted or used as agreed. A signal may be omitted, altered, rejected or left unused despite an agreement between the buyer and seller to transmit or use it. The response is reconciliation, investigation and correction.

An agreed restriction can explain a signal's absence without indicating a delivery failure. An undisclosed restriction or technical limitation can still undermine a deal if the parties assumed that the signal would be available. The practical requirement is to establish what can be shared and used before trading, then check whether delivery matched that agreement.

When asked to rank the causes of limited transparency, buyers put commercial intent first: 40% ranked intentional suppression by the publisher for pricing or competitive reasons as the single most significant cause and 30% ranked intermediary technical transformation first, against 16% for contractual, regulatory or privacy restrictions, 8% for DSP ingestion or field-support limits, and 6% for automated optimization or filtering logic.[26] These rankings describe buyers' perceptions of the causes, rather than independently verified explanations of missing signals.

> *"If there was a way to fully see bidstream transparency and then also be able to take that back to clients so they can easily digest that information as well … there is a gap in knowledge and understanding of what opportunities we could be missing with bidstream transparency within the DSPs."*
>
> **Media Agency,** Holding Company, buyer survey respondent[27]

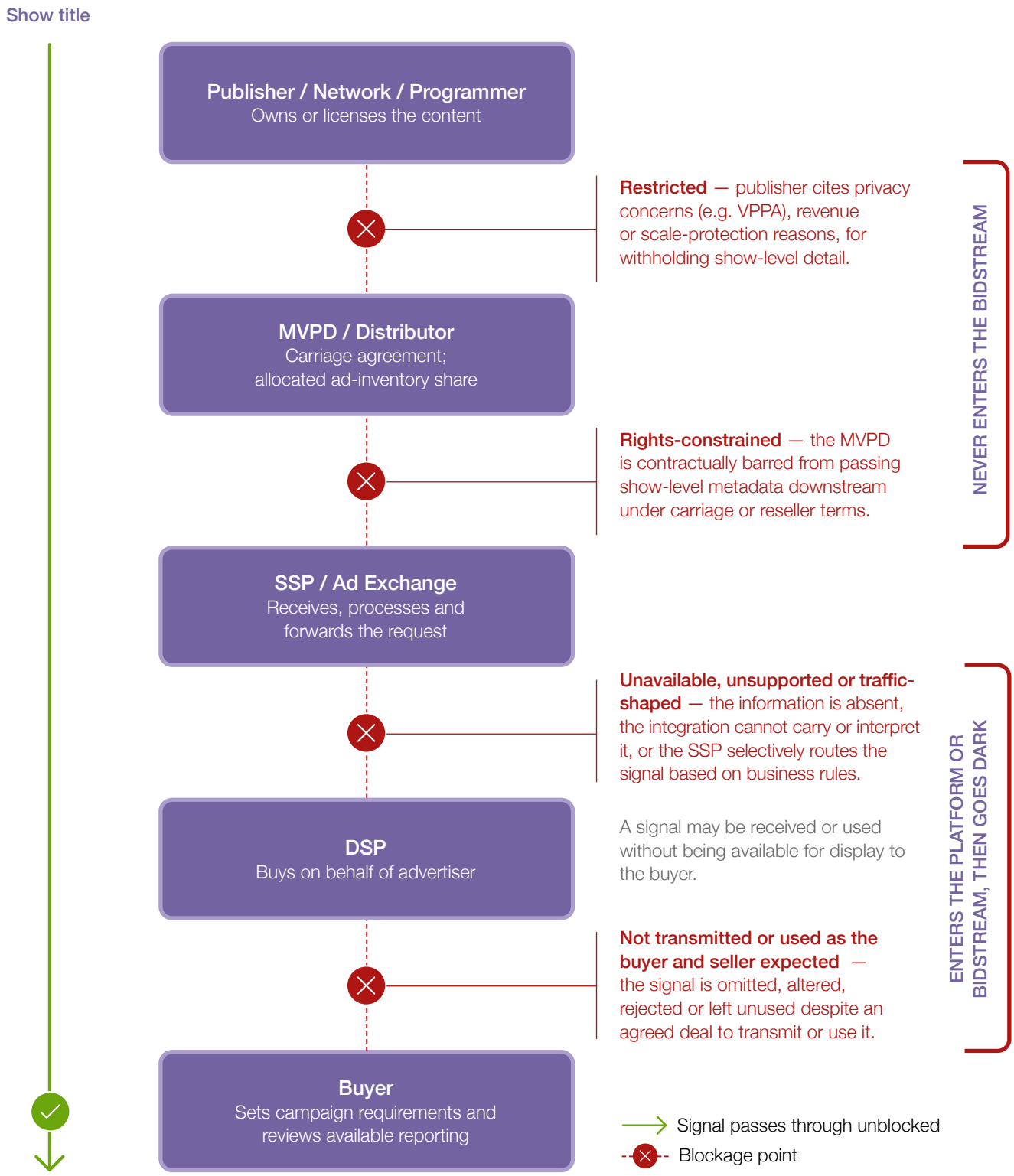
26 CIMM, *Buyer Survey* (May–June 2026), Q5c 'Which factors are the primary causes for gaps in bidstream signal transparency? (Rank the following factors with 1 being the most significant to 5 being the least. If you do not believe the factor contributes, mark N/A)' n=50.

27 CIMM, *Buyer Survey* (May–June 2026), Q11 'What is the biggest challenge you face today with bidstream transparency in programmatic CTV buying?' Open-ended question, answered by a professional from a media agency with 5,000+ employees.

Exhibit 10: Illustrative example of why a signal may not reach a buyer

One Signal's Path Through the Supply Chain

An illustrative route showing where a content signal may be withheld, unsupported or not used as agreed.



Examples align with the report's four types of signal gap causes (Section 8): withheld by the originating party, restricted by another party's contract, unavailable or unsupported, and not transmitted or used as agreed. Any single signal's actual path varies by publisher, distributor, SSP, and DSP.

Chapter 9.

Recommendations

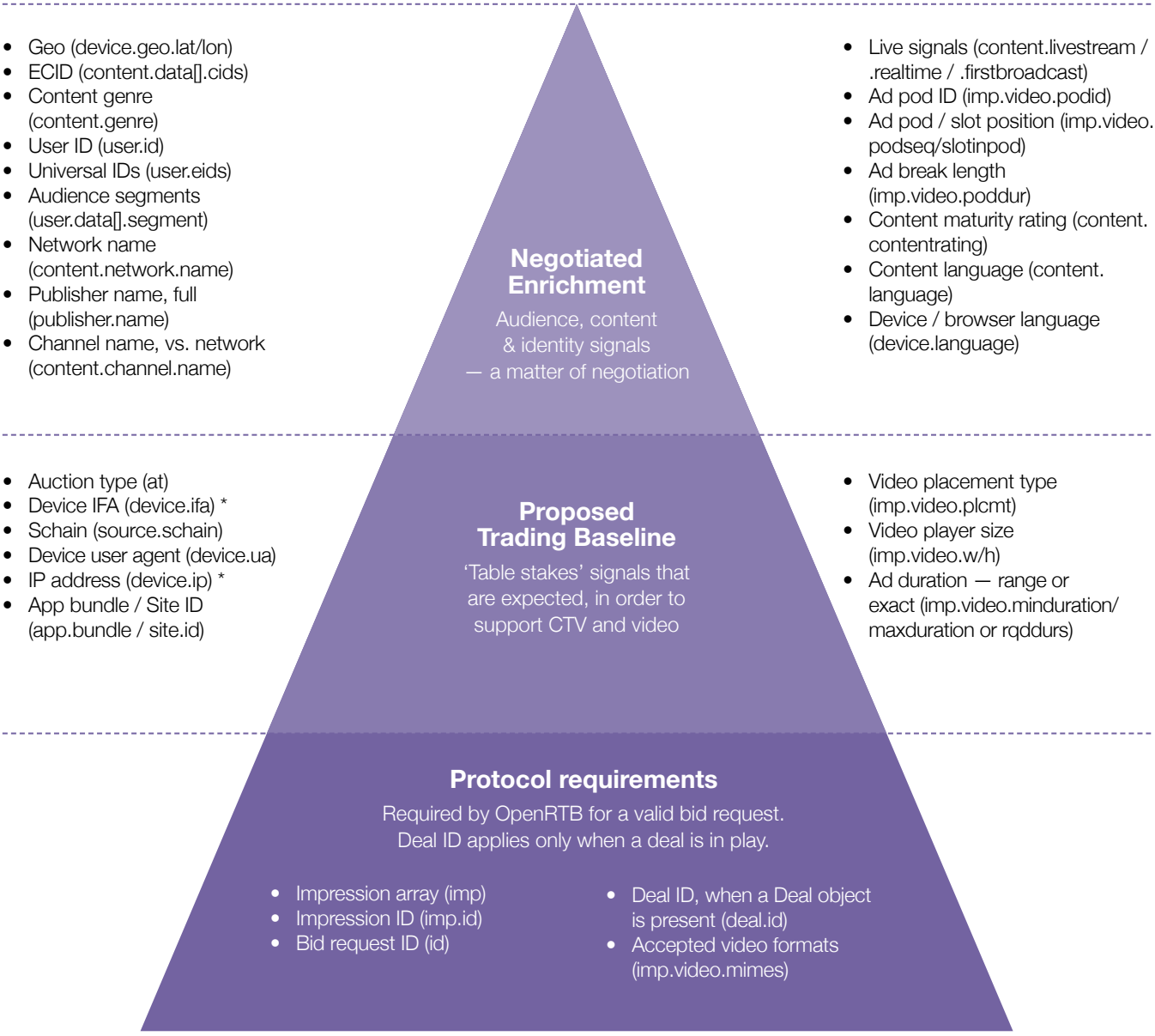
Two collective actions could reduce these gaps: a shared baseline of information for programmatic TV transactions, and consistent reporting of platform capabilities and agreed signal use. Both need to improve trust and usability rather than simply maximize data volume, preserve publishers' control over sensitive enrichment and avoid requiring disclosure of proprietary bidding or optimization logic.

Applicable privacy requirements and contractual permissions govern transmission and use across all three layers. The framework is a proposal for testing, not an adopted industry standard.

Recommendation 1: Develop a minimum viable trading signal set

Buyers and sellers should agree and test a minimum set of signals needed to identify inventory, check declared selling relationships and assess whether an opportunity meets basic buying requirements. A shared baseline would give sellers clearer expectations about the information they should supply and help buyers explain why an opportunity was accepted or rejected.

Exhibit 11: Minimum viable programmatic TV signal hierarchy
From protocol-mandated basics to signals that are a matter of negotiation



Based on OpenRTB 2.6 (IAB Tech Lab). See https://github.com/InteractiveAdvertisingBureau/openrtb2.x/. Selected examples for programmatic TV. This is not an exhaustive list of OpenRTB fields. Applicable privacy requirements and permissions govern signal transmission and use across all tiers.
* Where available and permitted, with limitations or alternatives declared.

Exhibit 11 distinguishes three layers. Protocol requirements establish the fields needed for a valid request, including requirements that apply when particular objects are present. The proposed trading baseline adds information needed to identify and assess the opportunity. Negotiated enrichment supports particular campaign objectives and commercial arrangements. This distinction would allow participants to agree on common trading requirements while retaining flexibility over additional disclosures.

The proposed trading baseline reflects the signals most frequently cited as table stakes in interviews and CIMM Programmatic Working Group meetings, many of which already show strong coverage in the bidstream based on FreeWheel's analysis. Interviewee opinions ranged from a bare-bones set of must-have signals to a more decorated bid request stopping just short of show-level identity. This recommendation should be judged by whether it reduces uncertainty over supply legitimacy and unnecessary rejection of otherwise valuable inventory.

For each signal proposed for the baseline, participants should specify its purpose, when it is expected and what alternatives are acceptable. Signals used to recognize the app or distribution environment, for example, serve a different purpose from information about ad duration or declared selling relationships. Agreement should cover how buyers interpret this information as well as whether sellers transmit it.

The baseline should distinguish broadly applicable information from signals whose availability depends on privacy permissions, device support or the deal type. Where a signal is unavailable, buyers and sellers should agree whether an alternative can meet the same requirement. This would help avoid rejecting legitimate inventory solely because a particular identifier or field is absent. Additional audience, identity and content requirements would remain matters for the campaign or deal.

An initial test on a limited set of supply paths or deals could establish whether the proposed baseline is practical. Buyers would identify missing or unusable information and explain resulting rejections; sellers would assess whether they can provide the information consistently and at a manageable cost. The results would inform revisions to the baseline and its acceptable alternatives.

Success should be judged by fewer avoidable interoperability failures, clearer reasons for rejection, less repeated troubleshooting and more reliable delivery against agreed requirements. The objective is to improve the usefulness and consistency of information exchanged, rather than increase the number of fields in every bid request.

Recommendation 2: Publish capability statements and reconcile agreed signal use

Visibility into what happens to signals expected to flow from the seller to the buyer in the bidstream is the single most consistent need from buyers and sellers alike across the research. Two mechanisms would close that loop.

SSPs and DSPs could publish capability statements using a shared format. Each statement would identify the supported fields, taxonomies and versions, relevant integration conditions, transformations and known limitations. DSP statements would also distinguish support for targeting, bidding and reporting, including any restrictions on displaying received information.

For deals with agreed signal requirements, participating platforms could provide reconciliation reports. SSPs would report what they received and forwarded. DSPs would report what they received, accepted as usable and used for the agreed purpose. Reports would identify missing or rejected signals and provide reason codes where the cause is known. OpenRTB does not currently include a signal-level feedback mechanism. Its nbr field comes closest, but it is a single, optional code explaining a no-bid at the whole-response level.

Reporting would distinguish between a platform's ability to use a signal, its availability to the decisioning system and its actual use. Where a platform can confirm that a signal was available but cannot establish whether it was used, the report would make that uncertainty explicit. Where use or non-use can be confirmed, the report would state this. Confirmation of use would not, by itself, establish that the signal changed a bid or campaign outcome.

Buyers, sellers and platforms could agree reporting periods, coverage measures and access arrangements as part of their deal setup. Each party would receive the information needed to reconcile its part of the transaction, subject to applicable privacy and contractual restrictions.

A voluntary pilot

An initial pilot could bring together willing buyers, publishers, distributors, SSPs and DSPs on a limited set of biddable deals. Participants would agree the candidate baseline, selected enrichment signals, intended uses, acceptable alternatives and known restrictions before delivery.

The pilot would compare capability statements with sampled transmission and processing records, investigate discrepancies and record implementation and troubleshooting costs. Tests would include opportunities receiving no bid, so the assessment covers access to demand as well as delivered inventory.

Success measures would include unexplained rejection rates, time to resolve discrepancies, delivery against agreed requirements and manageable implementation costs. CPM and revenue could provide commercial context, but would not substitute for those operational measures.

CIMM could convene interested participants, with IAB Tech Lab participation sought on technical definitions and compatibility with existing standards. Convening would not give CIMM authority to certify compliance, determine selling rights or require adoption. Responsibilities, funding and decision procedures would depend on agreement among participants.

Participants would document discrepancies, assign investigation responsibilities and agree escalation routes. Persistent failures would be addressed through existing commercial relationships and contracts. The pilot would create no new enforcement authority. Independent assurance could be considered later if adoption and reliance justify its cost.

A pilot among willing participants would establish feasibility within those arrangements, rather than market-wide readiness. Any wider proposal would need to account for participants with different resources, integrations and restrictions.

Practical actions for buyers and sellers

Buyers and sellers can reduce uncertainty by making signal requirements explicit before trading and checking whether delivery matches those agreements. These steps can build on existing deal discussions, platform relationships and reporting processes.

For buyers

- **Specify what is needed and why.** Identify the signals required for a campaign and distinguish their intended uses, including inventory assessment, targeting, bidding and reporting. Separate essential requirements from desirable enrichment, and agree acceptable alternatives where a signal is unavailable.
- **Confirm support across the intended supply path.** Ask the DSP and relevant supply partners whether the required signals can be transmitted, interpreted and used for the intended purpose. Establish any limitations by publisher, integration or deal, including restrictions on displaying information to the buyer.
- **Check delivery against the agreement.** Request reporting that distinguishes signals received, accepted as usable and used for the agreed purpose, where that use is observable. Investigate discrepancies with the relevant partners before assuming that missing information reflects deliberate withholding.
- **Use the findings in subsequent buying decisions.** Assess partners against their ability to meet agreed requirements and explain limitations. Where a requirement unnecessarily excludes suitable inventory, consider whether an alternative signal or reporting arrangement would meet the campaign's needs.

For sellers

- **State what can be provided.** Explain which signals are available through each supply path, the definitions and taxonomies used, and any commercial, contractual or privacy restrictions. Avoid promising information that downstream partners cannot reliably transmit or use.
- **Check how metadata is handled.** Work with distributors and SSPs to identify whether signals are omitted, transformed or mapped into different categories. Confirm that these changes preserve the meaning buyers need, particularly for genre, live programming and content identifiers.
- **Seek feedback from buying partners.** Ask SSPs and DSPs what they received, which signals were usable and where problems occurred. Use that feedback to improve integrations and resolve discrepancies between what was sent and what was available to the buyer.
- **Agree alternatives to sensitive disclosure.** Where granular information cannot be shared in the bidstream, assess whether less detailed signals or controlled access can meet the campaign's needs. Post-campaign reporting may support reconciliation or evaluation, but cannot replace information required for a pre-bid targeting decision.

Both sides can record signal requirements, limitations and escalation contacts in deal documentation. A shared record gives publishers, buyers and platforms a practical basis for investigating discrepancies and correcting recurring problems. The aim is reliable exchange and use of the information needed for the transaction, with clear expectations about what each party can provide.

Conclusion

Buyers need reliable information to assess inventory and apply campaign requirements. Sellers need to know whether the signals they provide reach buying platforms and can be used as agreed. Missing information can lead to rejected opportunities, shifted spend and delivery problems, even when the underlying inventory is suitable.

Richer signals can be associated with higher CPMs, but transparency does not guarantee a price premium. Publisher experience varies, and observed relationships between signals and pricing do not establish the effect of adding a particular field.

A shared trading baseline would provide a starting point. Capability statements would clarify what each platform supports, while reconciliation would identify where delivery departs from agreed requirements. Together, these measures could reduce avoidable friction while preserving control over sensitive information and proprietary decisioning.

Effective transparency means knowing what information is available, what restrictions apply and whether agreed signals were transmitted and used as expected.

Appendix A:

Key Content Signals Explained

Content classification and content identification serve different purposes. Genre and category fields describe what content is about or how it is classified. Content identifiers refer to particular pieces of content.

OpenRTB provides separate fields for these functions. Content.id carries the identifier in the seller's system. Extended Content Identifiers use cids within Content.data, with the source identified in the corresponding Data entry. One or more sources can be included, so publisher and vendor identifiers can coexist.

A field's presence does not establish its accuracy or whether the receiving platform can interpret and use it.

Genre, its newer coded counterpart genres (with taxonomy declared via gtax), and the IAB Content Taxonomy (cat, declared via Content's own cattax field) are all native fields directly on the Content object. *Note that cattax itself is not unique to Content: the spec repeats a field of that exact name, independently, on seven different objects (BidRequest, Site, App, Publisher, Content, Producer, and Bid), each governing only that object's own category array.*

Content also has its own native id field, but per IAB Tech Lab's implementation guidance that field is reserved for the seller's own internal content ID and is not the field used to pass IDs from external content data platforms. The latter job belongs to cids, a native field on the separate Data object (reached via Content's own data array) that holds one or more content identifiers from the source named in that same Data entry – a show, episode, movie, or event, not a categorization.

Extended Content Identifiers (ECIDs) is the name for using multiple Data entries in that same array at once, so a bid request can carry a publisher's own first-party content ID alongside one or more third-party vendor IDs rather than forcing a choice between sources.

Segment Taxonomies use the Data.ext.segtax community extension to identify the taxonomy applied to segment values. Interpretation depends on the recipient recognizing the taxonomy and the associated values. Segtax is not a native field: it supports passing a categorical or proprietary classification, as a registered numeric ID rather than freeform text, inside Data's ext placeholder – it supports vendor-specific taxonomies alongside IAB's own.

Sections ("§") hereunder refer to the OpenRTB v2.6-202606 specifications on IAB Tech Lab's Github.[28]

28 IAB Tech Lab, OpenRTB 2.x, accessed October 2026.

Content Signal Definitions and Known Limitations

Term	What it is	Who sets it	Known limitation	Bidstream example
Genre / content category	Native Content fields (§3.2.16): genre (free text, e.g. "Comedy"). A separate, newer pair – genres (coded IDs) plus gtax (which taxonomy) – carries the same idea as structured codes instead of text. Per implementation.md §7.13, genres/gtax default to IAB Tech Lab Content Taxonomy 3.1 (or its CTV Genre subset) and are meant only for the genre of the content as a whole – cat/cattax are for other, finer-grained category detail.	The publisher or its ad server, per impression.	No enforced standard on the free-text version: the same show can be labeled differently by different publishers ("MLB" vs. "Major League Baseball"). The structured genres/ gtax version is newer and adoption is still thin.	`// Object: Content (§3.2.16), native fields "genre": "Comedy" // Object: Content (§3.2.16), newer structured fields // 646 = "Comedy" in IAB Content // Taxonomy 3.1 (default gtax) "gtax": 9, "genres": ["646"]`
Segment Taxonomies (segtax)	Not a native field. A community-extension convention (segtax.md) for a value placed inside ext on a Data object (§3.2.21), itself reached via Content's data field (§3.2.16). Supports vendor-specific taxonomies (values 500+) alongside IAB's own.	Whoever registers/owns the taxonomy: IAB Tech Lab for standard ones, or a data vendor/publisher for vendor-specific ones (codes 500+).	Requires both sides to recognize the same registered segtax ID – without that shared registry, segment IDs are meaningless numbers. Per the extension spec, "segment IDs should (still) be considered fully proprietary when no segtax is provided."	`// Object: Content (§3.2.16) → data[] → Object: Data (§3.2.21) → ext "data": [ { "name": "iris.tv", "ext": { "segtax": 501 }, "segment": [{ "id": "10234" }] } ]`
IAB Content Taxonomy (Content.cat / Content. cattax)	Native Content fields (§3.2.16): cattax (which taxonomy/ version) plus cat (the actual codes), so buyers see a common vocabulary across publishers.	IAB Tech Lab defines the standard; the publisher decides whether and how to map its own genre labels to it.	Adoption is inconsistent – many publishers still send proprietary free-text labels instead of, or alongside, IAB codes.	`// Object: Content (§3.2.16), native fields // 9 = Content Taxonomy 3.1 (current); // 324 = "Movies" in that taxonomy "cattax": 9, "cat": ["324"]`
Content ID (cids)	A native field on the Data object (§3.2.16 □ data[] □ §3.2.21), not on Content directly, and not the same as Content's own id field. Identifies one specific show or episode from the source named in that same Data entry's name field – per implementation. md §7.14.3, explicitly NOT for categorization ("They are not to be used for expressing categorizations of the content").	Whoever owns the source domain named alongside the ID: a third-party content-data platform, or the publisher itself, passing its own ID under a domain it owns.	Per implementation.md §7.14.4, a vendor-sourced cids value is meant to be looked up by that vendor, or treated as an opaque string otherwise – a buyer with no relationship to that source can't interpret it on its own. Content's own id field (a different, single-value field) is explicitly reserved for the seller's internal use and is not meant to serve this purpose.	`// Object: Content (§3.2.16) → data[] → // Object: Data (§3.2.21), native cids field // (adapted from the spec's own §7.14.5 example) "content": { "id": "video_123", "data": [ { "name": "vendorA.com", "cids": ["vendorA_ c73g5jq96mwso4d8"] } ] }`
Extended Content Identifiers (ECIDs)	Source-qualified content identifiers carried through cids. Multiple Data entries allow identifiers from different sources to coexist, per implementation.md §7.14 ("Using Extended Content Identifiers"). Still explicitly for specific-content identity, not categorization.	Multiple parties at once: the publisher can pass its own first-party ID under a domain it owns, alongside one or more third-party vendor IDs, in the same request – this is the spec's own §7.14.5 "Multiple Extended Content Identifier Vendors" example, reproduced here.	Buy-side adoption and mapping support for reading more than one Data entry's cids is still catching up, so a populated second entry doesn't guarantee a DSP does anything with it yet.	`// Object: Content (§3.2.16) → data[] → // two Object: Data (§3.2.21) entries, native cids field // (spec's own §7.14.5 example, vendor names condensed) "content": { "id": "video_123", "data": [{ "name": "vendorA.com", "cids": ["vendorA_ c73g5jq96mwso4d8"] }, { "name": "vendorB.com", "cids": ["MV020788170000"] }] }`

Sources: IAB Tech Lab OpenRTB 2.x spec (github.com/InteractiveAdvertisingBureau/openrtb2.x); AdCOM 1.0, "List: Category Taxonomies" (github.com/ InteractiveAdvertisingBureau/AdCOM); IAB Tech Lab Content Taxonomy 3.1 and CTV Genre Mapping files (github.com/InteractiveAdvertisingBureau/Taxonomies); and the segtax community extension (github.com/InteractiveAdvertisingBureau/openrtb).

Appendix B:

Methodology

This report synthesizes three research streams organized by CIMM between January and September 2026, co-sponsored by OpenX and FreeWheel.

Quantitative buyer survey. The quantitative findings in this report draw on a survey of 50 qualified programmatic CTV buyers, conducted by Christine Pierce, Ozona Insights and fielded by OvationMR, May–June 2026. The CTV buyers were media agency, holding company, independent agency, managed service, and in-house advertiser professionals with direct budget authority or significant recommending influence. Respondents were recruited through both OvationMR's proprietary panel and outbound CATI (computer-assisted telephone interviewing), with each candidate individually evaluated against a defined target profile before being invited. Qualification required employment at a media agency (holding company or independent), managed-service buying specialist, or in-house advertiser programmatic team; personal work on CTV or streaming TV campaigns in the past 12 months; direct responsibility for at least one programmatic CTV buying activity; hands-on use of at least one traditional DSP for CTV buying; and a minimum of four years of hands-on programmatic video experience. All 50 respondents who completed the survey passed the full screening and quota criteria; per-question bases are lower only where the questionnaire's routing logic suppressed a question for some respondents. The instrument was designed to be fewer than 15 substantive questions scoped to be completed in 15-20 minutes on average. To minimize response bias, questions were written to avoid a normative tone, using ranking exercises, forced trade-offs, scenario ratings, and reported behavioral adjustments rather than asking directly whether buyers would pay more for transparency. Respondents were provided standardized definitions for key terms including bidstream signal transparency, the four marketplace/deal transaction types, and operationalization. Findings reflect buyers' stated responses and their reactions to hypothetical scenarios, not observed transactions or verified outcomes.

Qualitative interviews and working group. Interviews were conducted off-the-record and working group discussions took place under Chatham House Rule. Where named sources were cited, explicit permission was granted. Structured interviews with publisher, distributor, SSP, DSP, agency and data executives were conducted between May and September 2026, alongside discussions in CIMM's Programmatic Working Group which included stress-testing hypotheses, research findings and recommendations to the industry.

FreeWheel bid-log analysis. FreeWheel provided internal DSP auction and bid-log data analysis, based on a sample of trillions of US auction requests on CTV and set-top-box video placements across more than 50 SSPs and 300 publishers, February through May 2026. Signal availability figures are from February 2026. CPM figures refer to the paid CPM and are from May 2026. Findings are correlational.

OpenX analysis. OpenX first-party auction data covering all CTV inventory transacted through the OpenX exchange between July 1 and September 30, 2024. Analysis conducted October 2024. Bid rate: Calculated as the number of nonzero bids divided by the number of outbound bid requests that included a given deal ID, so only requests eligible to receive a bid on that deal were counted. Content object-targeted deals were identified from a manually compiled list of deal IDs. Bid CPM: Calculated as the sum of nonzero bid values divided by the number of nonzero bids, multiplied by 1,000. This analysis looked at all CTV bid requests, comparing requests where genre was populated in the bidstream against requests where it was not, regardless of whether genre was used in deal targeting. Findings are correlational.

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