

# Invalid Traffic Detection and Filtration Guidelines Addendum

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# 1 Overview

This document presents additional guidance for the detection and filtration of invalid digital traffic intended to be applicable to all accredited or certified measurers of digital advertising and content. MRC's original guidance is contained in measurement guidelines maintained by the IAB, MMA and/or the MRC (all written by MRC) that pre-date this addendum – including served ad impressions, clicks, rich media, digital video, rich Internet applications, audience reach, in-game advertising, mobile web advertising, in-application advertising, ad verification and viewable impressions. This addendum was prepared for the use and benefit of the media Industry, especially those constituents that analyze impression or audience volumes, composition and behaviors, whether for content or advertising in digital media. All of this guidance is directly applicable to measurement products that rely on tagging, beaconing, cookies, redirects or other message tracking, SDKs or other forms of census-like tracking. For organizations that use panels to track digital usage, this reported activity should be free of invalid traffic, and the detection and filtration requirements apply (although specific detection techniques may be different), however the reporting mechanisms can merely be stated in net audience activity, rather than at the levels of General and Sophisticated as outlined in Section 7 (this is herein referred to as a “panel reporting-only exception,” i.e., much of the guidance herein applies – this exception is merely about reporting structures/requirements). This reporting-only exception for panel measurement arises because the application of filtration and other controls to remove invalid traffic can be significantly different and reliant on panel and measurement instrument controls (not addressed herein).

This addendum resulted from a project led by the MRC, IAB, MMA and other industry groups, with the participation of a large group of digital measurement practitioners as well as a group of industry technical experts. This addendum will also be reviewed and approved by major buyer-side trade organizations (4As, ANA) and their constituents and thereafter provided to the public through a formal period of public comment prior to formal adoption.

For the purpose of this document, Invalid Traffic is defined generally as traffic that does not meet certain ad serving quality or completeness criteria, or otherwise does not represent legitimate ad traffic that should be included in measurement counts. Among the reasons why ad traffic may be deemed invalid is it is a result of non-human traffic (spiders, bots, etc.), or activity designed to produce fraudulent traffic.

## 1.1 Applicability

All metrics subject to audit by MRC or certification auditors are expected to comply with this addendum as soon as possible. This addendum is applicable to all existing digital measurement guidelines and the reported metrics described therein (see reporting-only exception for panel based measurement products described in the Overview section above). This addendum is effective immediately (upon issuance); a one hundred eighty (180) day grace period from the

date of issuance is being provided for existing accredited/certified measurement organizations, if a compliant implementation plan (fulfills requirements of this addendum depending on what level of techniques are employed) is in place to adopt the guidance within that timeframe.

**Adoption Guidance:** Adoption milestones, for already accredited/certified measurement organizations or measurement organizations already in an audit/certification process are summarized in the below chart. These dates are exclusive of the 30-day public comment period that occurs prior to issuance.

General Invalid Traffic

Day	Status	Description
0	Issuance	Addendum is effective
+30*	Implementation Plan	<p>Organization adopts compliant implementation plan for all General Invalid Traffic requirements, supplies to auditor organization.</p> <ul style="list-style-type: none"> <li>• A measurement organization should immediately disclose whether they apply General or Sophisticated IVT Techniques (or both) to data users in an update to the organization’s description of methodology (DOM).</li> <li>• Development of the implementation plan should be initiated during the public comment period for this Addendum.</li> <li>• Plan includes milestones to achieve compliance during the 180-day grace period.</li> </ul>
+180	Grace Period	Organization executes implementation plan, files completion with auditor organization, otherwise accreditation removed
Next Audit	Testing	Substantial compliance validated by auditor organization, otherwise accreditation removed. Substantial compliance means adherence to all General Invalid Traffic requirements herein, unless in the judgment of auditors a reasonable attempt to comply has been made and any items of non-compliance must be supported by data empirically demonstrating immateriality or mitigating factors.

\* On a case-by-case basis, the MRC (or the relevant certification organization) may allow summary level documents to be submitted for larger organizations (i.e. organizations with several audited services) within 30 days, followed by more detailed documentation within 60

days, with advanced approval. Organizations allowed this exception are still subject to all other requirements detailed above.

#### Sophisticated Invalid Traffic

- Measurement organizations should contact the MRC to state compliance intentions, file methodological plans and initiate audit processes. MRC will disclose entry into the audit process on its website. Vendors can also announce entry into the audit process with MRC approved language.

The MRC intends to track/disclose the adoption stages of accredited and in-process measurement organizations that have census-based or panel-based measurement products applicable to this guideline. The information provided will include filing of an implementation plan, filing of completion (self-represented by measurement organization), and audited compliance.

Measurement organizations not already accredited/certified or not already in an audit/certification process will need to demonstrate material compliance, through a completed audit, prior to accreditation/certification.

This addendum is intended to lead toward improved measurement practices in the United States and because of the dynamic nature of causes for, and detection processes applied, these requirements are expected to change over time; improvements are likely to be from enhanced accuracy and more robust removal of traffic that should not be monetized for advertising purposes.

The sponsors of this addendum strongly encourage all organizations that measure advertising traffic or audience (beyond the accredited or certified organizations where it is required) to apply the guidance in this addendum – see reporting-only exception for panel based measurement products described in the Overview section above. Those organizations that undergo audits to verify measurement metrics should expect their auditors to expand the scope of their audit to include testing/validation of organizational structures, compliance with control objectives and application of the specific procedures required herein.

#### Updating Process

Comments on the contents of these guidelines or suggestions for enhancing content can be submitted to [staff@mediaratingcouncil.org](mailto:staff@mediaratingcouncil.org) (using a subject line of “IVT Guidelines Comments”). MRC will seek to update these guidelines on a semi-annual basis, or more frequently if significant invalid traffic discoveries or significant alternative IVT processes are encountered. Changes to these guidelines will be vetted through an ongoing working group, established from volunteer media organizations, agencies, marketers and auditors.

#### Levels of Accountability

The terms “should” and “must” can be used interchangeably in this document – these are requirements. Provisions that are non-mandatory are presented as “recommendations.”

### 1.1.1 General Orientation

This addendum will strengthen existing invalid traffic filtration and removal guidance in several important ways by requiring accredited or certified measurement organizations (or those in the process of an audit) to: (1) adopt processes that are continuously applied across all measured traffic, audience or content, (2) require processes that are “continually monitored and updated” to ensure detection and filtration methods change as the underlying invalid traffic and causes change, (3) increase the specificity of detection and filtration requirements in many areas as compared to prior guidance promulgated by MRC, IAB and MMA, and (4) provide broad recognition for the need to implement requirements with a higher level of diligence in protecting the reported metrics from material levels of invalid traffic. All of these requirements particularly relate to advertising metrics that are reported externally and used as primary and ancillary advertising monetization inputs (see reporting-only exception for panel based measurement products described in the Overview section above).

### 1.1.2 Categories of Invalid Traffic and Associated General Requirements

This addendum establishes two categories of invalid traffic. The first, referred to herein as “General Invalid Traffic,” consist of traffic identified through routine means of filtration executed through application of lists or with other standardized parameter checks. Key examples are: known data-center traffic (*determined to be a consistent source of non-human traffic; not including routing artifacts of legitimate users or virtual machine legitimate browsing*), bots and spiders or other crawlers (except those as noted below in the “Sophisticated Invalid Traffic” category), activity-based filtration using campaign or application data and transaction parameters from campaign or application data, non-browser user-agent headers or other forms of unknown browsers and pre-fetch or browser pre-rendered traffic (*where associated ads were not subsequently accessed by a valid user; pre-fetch clicks associated with accessed ads should not be counted until acted-upon by a valid user*).

The second category, herein referred to as “Sophisticated Invalid Traffic,” consists of more difficult to detect situations that require advanced analytics, multi-point corroboration/coordination, significant human intervention, etc., to analyze and identify. Key examples are: bots and spiders or other crawlers masquerading as legitimate users; hijacked devices; hijacked sessions within hijacked devices; hijacked ad tags; hijacked creative; hidden/stacked/covered or otherwise intentionally obfuscated ad serving; invalid proxy traffic (*originating from an intermediary proxy device that exists to manipulate traffic counts or create/pass-on non-human or invalid traffic or otherwise failing to meet protocol validation*); adware; malware; incentivized manipulation of measurements (*fraudulent incentivized promotion of an entity, without its knowledge or permission – excludes cases where the entity paying for the incentive is the entity being promoted\*\**); misappropriated content (*where used to purposefully falsify traffic at a material level*); falsified viewable impression decisions; falsely

represented sites (sites masquerading as other entities for illegitimate purposes) or impressions; cookie stuffing, recycling or harvesting (*inserting, deleting or misattributing cookies thereby manipulating or falsifying prior activity of users*); manipulation or falsification of location data or related attributes; and differentiating human and IVT traffic when originating from the same or similar source in certain closely intermingled circumstances.

Definitions of these examples can be found in the *IAB Anti-Fraud Principles and Proposed Taxonomy*, dated September 2014, and the revised Trustworthy Accountability Group (TAG) Fraud Taxonomy, dated March 2015. The term invalid traffic refers to both General and Sophisticated Invalid Traffic collectively. Additionally, later in this addendum, specific aspects of General and Sophisticated Invalid Traffic procedures are further explained. The specific components of the General and Sophisticated Invalid Traffic groupings will be reevaluated by MRC semi-annually and MRC will seek to align with TAG Taxonomy changes and the availability of standardized lists from TAG. It is expected that, over time, items that are currently included in the definition of Sophisticated Invalid Traffic may be incorporated into standardized, objective lists and criteria through industry organizations such as TAG, etc. and as a result, may be re-categorized as General Invalid Traffic. Any such changes will be announced as part of updates to this document and general measurers will be given a defined period to adopt.

All accredited or certified digital measurement organizations must apply General Invalid Traffic detection processes as specified herein; application of Sophisticated Invalid Traffic detection processes are strongly encouraged. In cases where the measurement organization of record for the campaign or application solely applies General Invalid Traffic detection processes, buyer organizations are encouraged to consider adding a capability including Sophisticated Invalid Traffic processes through a third party or alternate method. Accreditation or certification of any digital measurements requires the organization to apply General Invalid Traffic detection techniques as is compliant with these Guidelines; General Invalid Traffic techniques or procedures are not separately accredited or certified. Sophisticated Invalid Traffic detection functionality is eligible for independent accreditation or certification.

We believe industry organizations such as TAG or IAB (the Bots & Spiders List, for example, is facilitated by IMServices) will help administer an expanded set of lists (when these lists become available) that will allow for uniform application of most General Invalid Traffic processes. These lists can be coordinated with similar lists produced by entities outside of the United States, for example in the UK by ABCe or other digital measurement governance organizations.

Wherever applicable, measurement organizations can use their own lists or detection/filtration bases if their internal processes lead to more complete or accurate filtration, rather than industry-based lists. The burden of proof is on the measurement service to demonstrate that their lists or processes meet or exceed the effectiveness of Industry lists or processes. *Measurement organizations should be aware that the objective of Industry lists is to facilitate as complete as possible General filtration processes and comparable processes, hence all*

*measurement service discoveries (for General filtration) should be communicated to Industry Organizations such as TAG, IAB staff and/or MRC staff for inclusion on lists. Such communications should be conducted with sensitivity to the risk of reverse engineering that could potentially result. Decisions to forgo communication by measurement services must be supported by auditable evidence of such risk. See Section 2.4 for further discussion of reverse engineering concerns with respect to communications and disclosures.*

Known General Invalid Traffic must be removed from monetized counts and metrics and are subject to industry communication requirements specified herein. Measurement organizations that apply Sophisticated Invalid Traffic techniques are likely to need to remove identified Sophisticated Invalid Traffic downstream from original detection at later times to protect detection procedures from reverse engineering. Also, detection procedures for Sophisticated Invalid Traffic take time to execute and may not be feasible to apply to real-time processes. Sophisticated Invalid Traffic must be segregated and reported when reporting total net metrics for the campaign to protect against reverse engineering. Additionally, enrichment/attribution must be disabled for impressions identified as Sophisticated Invalid Traffic, if the measurement organization is capable of doing so (as applicable). *[See the Other Matters section for guidance with backward looking disclosures of invalid traffic issues discovered after campaign reporting.]*

General Invalid Traffic must be excluded, where possible, from ancillary processes that impact monetization, such as goal setting, targeting, frequency capping, etc.

In general, the goal of establishing two types of invalid traffic (General and Sophisticated, with the required differences in treatments) is to manage discrepancies between measurement vendors to a minimal level – the critical aspect here is the General Invalid Traffic technique, which all organizations must apply. General Invalid Traffic techniques will rely extensively on list-based common filtration procedures and parameter based techniques.

The addendum adds requirements for a defined measurement organizational focus on invalid traffic with accompanying internal controls. Stronger communications, both internal and external, are addressed herein – although this area is complex and evolving.

This addendum supports IAB's *Anti-Fraud Principles and Taxonomy*, TAG's *Inventory Quality Guidelines (IQG)* and the *Trustworthy Accountability Group (TAG) guidance*, although the herein stronger requirements are intended for accredited/certified measurement organizations beyond IQG participants. Deviations from the requirements of this addendum will require measurement organization proof of efficacy, at minimum at the levels required or implied herein.

## 2 Internal Controls – Control Objectives

For the purposes of this addendum, which relates to digital advertising measurement, Internal Controls are defined as follows:



Systematic and/or manual activities (e.g., reviews checks and balances, processes and procedures) instituted by a measurement organization to (1) process and administer measurement in an orderly and efficient manner, (2) prevent and detect errors, irregularities, fraud and misstatement, (3) protect resources, (4) ensure complete and accurate data, (5) produce reliable, accurate reports in an expected time-frame and (6) execute measurement as management intends. Internal controls should be executed over time by the organization as a routine process.

Measurement organizations must have specifically directed internal controls for the filtration and removal of invalid traffic. This addendum does not present a list of all potential internal control objectives and processes, it is merely intended to state certain minimum controls that should be present. This addendum does not prevent a measurement organization from adopting additional, stronger objectives and controls it believes to be warranted. Certain control objectives specified below have additional considerations, which are presented to help inform measurement organizations of specific aspects expected to be present in conducting the control.

A periodic risk assessment (at least annually for both General and Sophisticated Invalid Traffic as applicable) for the measurement organization should be performed in conjunction with assessing the sufficiency of the internal control objectives and resulting internal controls. This should include assessments of the continued relevance and effectiveness of IVT procedures, in addition to ongoing analyses of accuracy and the identification/internal reporting of false positives and negatives discussed below. Where applicable, especially for public entities, these internal controls and the resulting processes can be coordinated with other related controls to maintain regulatory compliances (such as public company accountability compliance [e.g., SOX]) and other protection measures such as content piracy protection. Specialized accreditation or certifications focused on audience measurement or ad traffic measurement should also consider these processes.

Accordingly, the following specific minimum internal control objectives should be addressed:

## 2.1 Invalid Traffic Detection and Removal Process Controls

A measurement organization should have sufficient controls to detect and remove known General Invalid Traffic (including both non-human traffic and illegitimate human activity) from reported metrics. We strongly recommend that whenever feasible, Sophisticated Invalid Traffic should also be segregated and removed from downstream net campaign total reporting and from data enrichment/attribution processes since reverse engineering is a significant concern. [See reporting-only exception for panel measurement products in Overview section above.]

Organizational processes should evolve and “learn” over time to ensure digital environment changes are considered and new invalid traffic orientations are detected.

### 2.1.1 Considerations for Objective #1:

- a. The measurement organization should maintain detailed written internal standards and documentation for invalid traffic detection, as a supplement to these Guidelines.
  - i. This internal documentation should be detailed enough for alternate internal users who may need to apply procedures to understand each detection procedure employed by the measurement organization, the purpose of the procedure, individuals performing the procedure and how the procedure is performed as well as the frequency of the procedure. An updating infrastructure should be in place to ensure the documentation remains up to date with current practices.
- b. Measurement organizations have a responsibility for certain aspects of the behavior of their business partners in the supply chain – they should have a qualification process to make sure they are dealing with a legitimate entity with appropriate traffic-related internal controls. The size/materiality, nature and history of business partner relationships should be considered in these qualification processes. Accordingly, business partners themselves have a responsibility to detect and remove General Invalid Traffic.

Third-party measurement organizations are generally not in control of campaign business partner qualification and selection, so their responsibilities are limited to inquiries of their customers as to their knowledge and application of the principles expressed herein. Third-party measurement organizations are responsible for their own methods business partner selection, for example Data Enrichment Providers, etc.

Measurement organization responsibilities include downstream/upstream partner qualification, monitoring and data trending. This implies each downstream/upstream partner should make similar diligent efforts to comply with the requirements of this addendum, and compliance with this addendum should be the subject of partner qualification discussions, coordinated with recommendations of IAB’s TAG initiative. For accredited measurers, in the case of material downstream/upstream partners involved in the ad serving or delivery transaction, this implies more than inquiry since compliance should be audited/tested by an independent third party, with accreditation/certifications applied. If material downstream/upstream partners do not participate in accreditation/certifications, these situations should be maintained in an internal record (which could be used in discussions involving IVT investigations over time, sometimes with customers). *[Note: In this context, a “business partner” means an organization that is part of the transactional chain associated with serving, capturing ad actions (e.g., clicks) or enriching ad impressions or audience measurement and/or a*

*organization originating the terms and conditions of the campaign that outsources these transactional chain functions.]*

Business partner qualification processes do not need to be applied to very small volume entities; each measurement organization should establish a materiality policy subject to review by auditors. Additionally small volume entities should be periodically (annually) evaluated in aggregate to ensure cumulative materiality is considered.

To the extent advertising agencies or other buyer organizations are involved in establishing tags or entering serving parameters, legitimacy and appropriate controls should be the subject of business partner evaluations for these entities (for new and/or suspect entities) – see IAB’s Ad Campaign Measurement Process Guidelines.

The definition of business partner above and the considerations given to size/materiality, nature and history should be consistently applied to all referenced requirements for business partners throughout this document.

- c. Sufficient empirical evidence should exist supporting specific invalid traffic detection parameters, edits, etc., employed by the measurement organization and accordingly the reasons for removal (and disclosure) of known IVT
  - i. Evidence for a specific parameter should be retained for a sufficient period – as long as the procedure remains in force and one year past the modification or sunset of the rule. Obfuscated or truncated data used as supporting evidence may be maintained to satisfy this requirement, should there be PII or privacy concerns, but should be available in a transparent manner to accreditation/certification auditors
  - ii. Different metric/transaction types and varying risks associated with transaction types should be considered
- d. Escalation procedures should exist to allow removed or suspected legitimate publisher sources of invalid traffic to challenge that process, if they believe they represent legitimate traffic – this requirement pertains to exclusions at the publisher, network and exchange levels only, not specific user-agents, URLs or proxy servers. Escalation processes are principally applicable to monetized traffic only, are subject to materiality requirements, and are generally applicable where already established communication linkages and relationships do not exist.
- e. Employee policies that discourage bad behavior impacting reported metrics or the credibility of the measurement organization must be present (i.e., specifically prohibiting: employee participation in or financially benefiting from IVT generation, purchasing or selling IVT (except for the purpose of company sanctioned research – see below), linkages with suspect business partners and lack of transparency in IVT actions). An employee code of conduct related to invalid traffic is encouraged. Organizations may acquire traffic suspected of being or including IVT in order to test, evaluate or

develop invalid traffic approaches; this is not to be considered objectionable behavior provided that the entirety of the acquired suspected traffic is removed from billable counts and reported metrics in a timely manner.

## 2.2 Change Controls

A measurement organization should have sufficient controls to ensure development of and changes to its invalid digital traffic processes are authorized, tested and approved prior to being placed in production

## 2.3 Access Controls

Access to invalid traffic detection parameters and base analytics/support data should be restricted to authorized measurement organization users, except as suggested for external communication (in limited instances) in these guidelines.

## 2.4 Disclosures

Measurement organizations should provide sufficient disclosures to allow buyers that rely on measurement metrics to understand the totals of General Invalid Traffic counts removed (*from all reported metrics*), Sophisticated Invalid Traffic at the campaign total level (*this macro-level campaign total disclosure is intended to help protect against reverse engineering of detection controls*), and Sophisticated Invalid Traffic that is removed from enrichment/attribution downstream in later processes, and reported legitimate counts; and as well, upon request, the specific transaction level details (subject to reverse engineering concerns discussed below) that facilitate reconciliation of removed or not-attributed invalid activity and legitimate counts in the monetization process.

Communication with publisher organizations about significant negative matters should be made (this is naturally required as part of the ad monetization process), unless the publisher organization is reasonably suspected to be an illegitimate organization (based on empirical support) solely focused on perpetrating invalid traffic. Publishers that have been negatively impacted by significant negative invalid traffic findings (whether by General or Sophisticated detection) may make inquiries of measurement organizations aimed at understanding detection results, but responses to these inquiries should not entail details that may jeopardize detection methods in the future.

Contractual requirements should be structured to enable appropriate communication, however ultimately contractual/legal requirements control communication levels.

### Reverse Engineering Concerns

All communications should be conducted with sensitivity to the risk of reverse engineering that could potentially result. Decisions to forgo communication by measurement services must be supported by auditable evidence of such risk. Furthermore, if measurement services do forgo certain of these communications because of supportable concerns over reverse engineering risks, they are strongly encouraged to offer in person inspection or other alternative secured mechanisms to subscribers to allow for review and reconciliation of results.

### Attribution

In all cases attribution processes should not be applied to invalid traffic. We strongly recommend that whenever feasible, Sophisticated Invalid Traffic should also be segregated and removed from downstream net campaign total reporting and from data enrichment/attribution processes, since reverse engineering is a significant concern. General invalid traffic should not be subjected to attribution processes because it is removed as detected and therefore is not included in further downstream processes.

Guidance Concerning Materiality – Matters in this document which reference “significant” or “material” are generally considered to meet this threshold when they meet or exceed 5% of reported activity, by granular reporting break – therefore, invalid traffic occurrences or false positives that meet or exceed 5% (individually or in aggregate) are considered material. Internal controls should be structured to detect and correct matters that limit invalid traffic to below this threshold for reported metrics. [Note: For extremely high volume campaigns thresholds can be lowered as individual entity impact may be significant at lower percentages than 5% -- auditors and measurement entities should discuss exceptions to the 5% threshold during the audit process and base these judgments on objective criteria.]

The general 5% threshold specified above may be modified by a measurement organization in select unusual circumstances (when supported by empirical evidence and judgment), but documentation must be retained by the measurement organization and available to auditors. This type of modification is not permitted as a pervasive general rule.

Additionally, measurement organizations may utilize relative materiality thresholds (5%) in conjunction with absolute dollar values (empirically supported) to further reduce instances of classifying statistically insignificant matters as material.

## **3 Organizational Functional Areas Now Required**

(Outsourcing of Certain Functions to a Third-Party is Acceptable, as long as Compliance is Maintained)

Measurement organizations should develop and maintain an organizational structure inclusive of functional areas designed to perpetuate the appropriate detection and filtration of invalid

traffic. These organizational areas are not mandated specifically by name, but are important to be present by function; specifically, the functions specified below are important, but it is not mandated that they be segregated or titled in the manner presented herein.

### 3.1 Traffic Quality Office, with a Responsible Data-Quality Officer

The measurement organization should establish a function specifically designated to ensure protection of reported metrics from invalid traffic and perpetuate accurate reporting. This function should have specified leadership reporting high enough within the management structure to affect change, if necessary, in management policies, procedures, internal controls, reports (including specific client reports) and consideration of data errors and reissue cases. This function should also assess risk periodically posed by invalid traffic and ensure adequate resources are devoted to the effort.

This quality function must be maintained independently from data collection, processing and reporting, and sales functions. Technically competent personnel should execute the duties of the Quality Office with appropriate objectivity.

This quality function is intended to align with the TAG initiative to establish a Quality Officer within measurement entities.

### 3.2 General Data Analysis

A measurement organization should establish and maintain a function that assesses and researches the attributes of the data it collects and reports. A part of this research-oriented function is to provide input into new methods of invalid traffic detection and alerting as well as the efficacy of existing employed methods at removing material invalid traffic.

This general data analysis function should contain the following areas, which are considered useful to the invalid traffic detection process:

- Data Attribute & Pattern Analysis
- Statistical Data Monitoring and Trending
  - § Levels (depending on the measurement organization) – Sites, Ads, Campaigns, applications, etc.

As mentioned above, this analysis function should devote particular attention to development of thresholds for internal data checks and alerting functions, and whether these items remain effective over time.

Data quality and completeness is a critical element of invalid traffic detection and filtration and accordingly this function should be independent from data collection and charged with ensuring business partners and other sources of traffic data are complete and fully populated to facilitate application of internal controls and detection processes. Data completeness for

events or transactions should include elements such as device information, user information (cookies, IP address, user agent string [as complete as possible, unmodified], and relevant ad serving information (ad serving sources, placement and campaign information, site information, application information, referrer information, etc.). The objective is to ensure the full record is received, not partially or fully lost or otherwise not corrupted.

The objective of measurement organizations and their business partners should be to ensure transparency with respect to where the ad is served from, the device type and the user agent receiving the ad. This information should be captured in ad serving transactions and maintained across business partner information transfer. The following fields should be captured by the measurement organization, where possible/applicable:

- Event Type (describes the nature of the transaction)
- Transaction ID (unique identifier for a given transaction)
- Timestamp
- IP Address (X-Forwarded-For, MAC Address)
- User Agent (full user agent string, browser and OS)
- Cookie/Unique Identifier or Mobile Fingerprint Field^^
- App Identifier (iOS IFA, Google AID, Windows AID)^^
- Mobile Telephone Number (can be partially obscured for PI reasons)^^
- Referrer Site Information, if applicable
- Device ID, Device Type^^
- Carrier Information; Carrier Routing^^
- Location information^^
- Publisher ID, Site ID, Section ID, Placement ID
- URL (full URL of the page or app where the ad was served)
- Advertiser ID, Campaign ID, Creative ID, Creative Type, Ad ID
- Method (e.g., GET, Post)
- Status Code (e.g., 200, 302, 400, 500)
- Pre-Fetch Headers (X-MOZ/FireFox, X-Purpose/Safari)
- OpenRTB attributes, where applicable
- Video/Audio Ads Completion Data (i.e., start, 25%, 50%, 75%, complete)

^^ The above list includes specific fields for mobile devices, although many of the general fields also apply to a mobile environment.

General Note 1: This list does not yet fully address connected TV data specifics.

General Note 2: Based on the above, the practice of buying anonymous traffic, if and when several of these fields are not populated, is strongly discouraged. The existence of this type of traffic and volumes of this traffic included in reported metrics must be disclosed.

General Note 3: Personal Identifying Information (PII) legal restrictions may dictate eliminating one or more of these fields from retained records or altering the content of fields for identity protection purposes. In these cases deviations should be supported by the measurement organization's privacy policy and should be available for review by auditors.

Measurement organizations are expected to comply with legal and business contractual requirements within the countries they operate; accordingly if a formal (legally dictated) privacy restriction in a country prevents the capture and tracking of certain of the fields stated above, these can be excluded. In all cases, documentation of legal limitations, by country, should be maintained by the measurement organization. The MRC staff will attempt to collect these restrictions across measurement organizations to understand the consistency of interpretations as well as build an understanding of regional differences in laws.

### 3.3 Invalid Traffic Process Development and Modification (Updating)

The measurement organization should maintain a specific functional responsibility in the development and modification of invalid traffic detection and filtration processes. This function may bridge operational departments, but all efforts should be coordinated through some central authority (as to insure completeness of coverage and seamless processes). Functions to be considered should include:

- Data Attribute and Parameter Inventory – specified what type of data is maintained, sensitivity of data (privacy, security, etc.), usefulness of this data in invalid traffic assessment and detection, data edits, trends and assessments employed by data type.
- List Maintenance and Coordination – to the extent industry lists are employed from external sources, these lists should be gathered timely and applied as intended.
- IVT Process – control of and inventory of IVT processes employed by the measurement organization across functional areas. This function includes the testing and approval of all applied techniques and new techniques as they are implemented.
- IVT (Known and Suspected) Tracking and Trending – gathering information on the effectiveness of processes employed, findings and whether these are presented uncovered threats and risks.
- Documentation Requirements – establishing documentation requirements necessary for exclusion of traffic and for resolving ambiguous situations, as well as documentation authorized for responding to information requests about invalid traffic sources, etc.
- External Source and Industry Monitoring – monitoring outside organizations and sources to learn about new invalid traffic-related detections, processes and risks
- Forensic Investigation Processes – post measurement process to investigate potential indicators of IVT or previously undetected items, to learn new attributes about these items and foster evolving detection processes.

### 3.4 Business Partner Qualification

Measurement organizations often deal with business partners in either measuring or fulfilling advertising transaction or both – as previously noted (section 2.1.1) a “business partner” in this context means an organization that is part of the transactional chain associated with serving, capturing ad actions (e.g., clicks) or enriching ad impressions or audience measurement, and/or a organization originating the terms and conditions of the campaign that outsources these



transactional chain functions (size/materiality, nature and history of business partner relationships should be considered as discussed in section 2.1.1). A key aspect of protecting the supply chain of advertising transactions is to ensure business partners are legitimate and that they carry similar interest in detecting and filtering invalid traffic. Each measurement organization that interacts with business partners should have policies and procedures to ensure they are working with legitimate business partners and a general understanding of the invalid traffic processes employed by each business partner. These functions should include:

- Initial Qualification of the Business Partner (executed prior to doing business); key questions to address here include:
  - Are partners legitimate businesses? For example, do they have a known address, tax id, phone number or other contact information, third-party data reviews, other customers, etc. Organizations should seek to be in compliance with business partner guidance and processes promulgated by TAG.
  - Are partners known “bad actors?” (for example, already appearing on organizational or industry exclude lists)
  - Do partner business models function without the presence of significant IVT?
  - Are partners legitimately interested in removing IVT, or are they seeking access to IVT detection results for the purpose of evasion?
- Ongoing Evaluation of Business Partners, Linked with IVT results
  - Trending of IVT and other data trends by business partner
  - Periodic review of actions taken by business partners in response to reported and verified IVT results
- Periodic Auditing and/or Gathering Evidence of Partner Certifications
  - Review of third-party audits regarding partner certification, where possible, otherwise consideration should be provided to contractual provisions that allow direct checking of processes and procedures employed by the business partner.
  - For accredited measurers, material downstream/upstream business partners should supply evidence of compliance with this addendum through independent accreditation/certification processes, or if not available a record of validation status should be maintained for future reference.

Measurement organizations will be required to provide evidence of partner qualification vetting processes during accreditation or certification audit processes. Additionally, accreditation or certification auditors will examine evidence of use of review/audits by measurement organizations over business partners as well as using appropriate contract language with business partners with applicable qualification requirements. As TAG is further developed, measurement organizations are strongly encouraged to comply with business partner qualification tools produced by TAG.

### 3.5 IVT-Related Communications (Internal, IAB/MRC, Outside Practitioner, and Legal)

Each measurement organization should have functions devoted specifically to communications related to IVT matters. Routine communication functions are limited to General Invalid Traffic detection and processes. Sophisticated Invalid Traffic detection and processes should be closely controlled and subject to limited communication to staff of industry oversight bodies as required, etc., these should only occur on a broad generalized basis when major new issues [of new methodologies for creating and monetization of invalid traffic types] are discovered, and information about such discoveries should be communicated in a manner that maximizes the effectiveness of reducing IVT. Communication processes should encompass: (1) ensuring internal notifications are provided as necessary to foster awareness and clues to detecting invalid traffic (referred to as “internal communications”), (2) communication with industry leads in this area – specifically IAB staff, IAB TAG and MRC staff (referred to as “industry communications”), (3) communication of learning and best practices in a facilitated manner to other industry practitioners to encourage ecosystem improvements (referred to as “outside practitioner communications”), and (4), as necessary, communication to law enforcement and/or measurement service legal counsel on significant invalid traffic matters (referred to as “legal communications”).

Item #3 above is a new area driven by this addendum whereby we are encouraging communication of General Invalid Traffic findings and techniques of discovery to enable ecosystem improvement. We believe practices and communication mechanisms in this area need to be developed and evolved, but for a start, we are proposing that the TAG (with MRC staff assistance, where necessary) maintain lists of findings (identified IVT sources) – where applicable, IAB and/or TAG filtration lists will continue to be facilitated, as expanded by the requirements of this addendum. Information gathered by the MRC staff related to new or emerging identification techniques would be made available solely to measurement organizations participating in the accreditation process, but disseminated in a controlled manner to other organizations with a need to know and subject to the MRC staff confidentiality restrictions. Specifically in all cases, MRC will maintain the identity of the disclosing party as confidential, and will not disclose this information to any outside party.

All communications should be conducted with sensitivity to the risk of reverse engineering that could potentially result. Decisions to forgo communication by measurement services must be supported by auditable evidence of such risk. Furthermore, if measurement services do forgo certain of these communications because of supportable concerns over reverse engineering risks, they are strongly encouraged to offer in person inspection or other alternative secured mechanisms to subscribers to allow for review and reconciliation of results.

Measurement organizations are encouraged to participate in IAB’s Anti-Fraud and Anti-Malware working groups, and other such groups that may be formed, to encourage consistency of knowledge and Industry action.

Processes to dictate communication policies and instances to be communicated should contain:

- Alert analysis and findings analysis to identify situations that should qualify for communication
- Internal and External disclosure policies and qualified disclosure participants (information recipients).
- Error correction policies and materiality policies (forward and backward looking data implications should be included).

Communications Between Buyer and Seller Organizations: Measurement organizations must maintain the technical capability of sharing IVT related reports with seller organizations, when their buyer clients provide permission to do so or when this communication is pre-arranged in campaign terms and conditions. Legitimate seller organizations should be informed of significant negative findings as described in Section 2.4.

Communication Requirements for IVT Special Purpose Measurement Organizations: Certain measurement organizations perform IVT detection and other forms of ad verification as a primary business function. For these special purpose organizations, the following communication requirements are relevant:

- Communication with customers prior to execution of an IVT service is encouraged to properly set expectations – if illustrative example results are shown to potential customers using site-based information/discovery, this information should be real rather than hypothetical, otherwise disclosure as hypothetical should be made. Customers should be informed of the technical limitations, if any, of the general nature of the IVT services performed as well as past experience with false positives.
- A key focus of performing IVT services is the improvement of the advertising ecosystem, hence communication of known exceptions to customers as well as sellers (to enable process correction) is strongly encouraged.
- Completely anonymous monitoring of advertising campaigns for IVT is discouraged, except as described below in the paragraph on Initial Benchmark Testing.

Initial Benchmark Testing – Occasionally a marketer will ask an IVT Special Purpose measurement organization to conduct passive benchmark testing early in a campaign to learn about the general IVT risks of seller organizations. These benchmark tests are sometimes conducted without the participation of the seller organization (i.e., non-integrated). This practice can be considered if not explicitly prohibited in the campaign terms and conditions; and (1) the applicable client (agency, marketer, or in some circumstances reseller network/exchange) discloses their typical use of this practice in advance to the seller organizations, or (2) the IVT measurement organization has been previously approved to work in the seller organization's environment. In these cases, for legitimate seller organizations significant negative results of benchmark tests should be shared timely after the conduct of the testing.

Communication Requirement for Sophisticated IVT Techniques – Measurement organizations applying sophisticated techniques are generally not required to communicate the specific nature and extent of these sophisticated techniques to the Industry, due to concern regarding reverse engineering of detection methods. However, these measurement organizations should contribute to industry maintained lists (e.g., TAG) related to General IVT Methods, to the extent they identify relevant sources of IVT.

A measurement organization should retain documentation of communication policies as well as a log of specific communication instances for internal compliance reviews as well as external audit organizations.

## 4 Invalid Traffic Detection – Specific Tasks Now Required

In addition to tasks required by existing measurement guidelines, the following presents new tasks required by this addendum. Measurement organizations choosing to not execute one or more of these tasks should be prepared to demonstrate compensating controls that derive materially similar results.

### 4.1 Pre-Traffic/Campaign Preparation and Historical Analysis

#### 4.1.1 Front-End Partner/Source Qualification

As described previously, partners or other advertising traffic sources must be evaluated and determined to be legitimate and also concerned with removal of invalid traffic. Partners or other sources must have business and technical resources and processes in place to allow compliance with this Addendum.

#### 4.1.2 Analysis of Acquired/Purchased Traffic

If an organization specifically purchases traffic (such as through an intermediary) or makes use of an assigned traffic arrangement, the ultimate source of traffic to the party from which that organization obtains the traffic must be known (on a per-impression basis), at minimum to the intermediary, and subject to similar invalid traffic detection and filtration by either the purchaser or the originator of the traffic. The seller or provider of the traffic must have business and technical resources and processes to allow compliance with this addendum – see guidance herein related to business partner qualification. The fact that traffic is purchased does not absolve the ultimate measurement organization from the responsibility to ensure the traffic is materially free from invalid traffic. Organizations are encouraged to require that intermediaries they engage with in such arrangements are accredited or certified.

### 4.1.3 Data Analysis and Discovery Functions

Section 3.2 of this Addendum describes the requirement for a data analysis function. Minimum tasks for this function are as follows (all General tasks must be used by the measurement organization):

#### General Invalid Traffic Processes

- Establish Legitimate Baselines and Control Group(s) of Data, allowing, but not limited to, ongoing analysis of accuracy and the identification/internal reporting of false positives and negatives
- Data Ingesting and Trending; Pattern Analysis
  - § Techniques to Ensure Complete Data Ingesting
  - § Disclosure of sampling methods and error rates, as applicable
- Other Forms of Analytical Review to Seek Nuanced Invalid Traffic Orientations
  - § Machine and Human Review Techniques
- Review of Transaction Parameters and other relevant data points related to measurement data and appropriateness of parameters for IVT determination with regard to specific advertising transactions. Assessment and periodic re-evaluation of transactional motivations and/or effects
  - § Determination of sources of monetary transactions and issues these may cause in traffic legitimacy – a “follow-the-money” orientation
  - § Assessing the financial benefits of IVT to parties in the transaction chain who are not the ultimate sources of or targets of such IVT
- Outputs from these data analyses are used to periodically inform and modify existing list-based and activity based techniques

Additionally the following data analysis and discovery functions are strongly encouraged for Sophisticated Invalid Traffic Process measurement organizations:

- Indirect Detection Techniques – alternatives to be considered for inclusion but are not limited to:
  - § Primary Research
  - § Traps, honeypots
  - § Properly evaluated/supported captcha functions
  - § Using device or parameter-based fingerprinting, as permitted depending on privacy circumstances

## 4.2 Analysis of Specific Production Traffic or Campaign Data

Invalid traffic detection and filtration can occur early in an advertising transaction based on known conditions at the time (“front-end detection”) or may be applied after the transaction takes place based on backward looking assessment procedures (“back-end detection”). Each technique has certain strengths and weaknesses and both have a place in a well-executed traffic protection strategy. Measurement organizations should employ elements from both of

these detection and filtration techniques on an ongoing basis, while minimizing the potential for their use to signal the detection methodologies to perpetrators of IVT.

Front-end detection techniques should be employed with caution because they are particularly prone to telegraphing detection techniques, in most cases, to the traffic source because of an element of blocking that becomes apparent. As such, they tend to become less effective over time without additional research and development into new detection methodologies. Application of these techniques on a front-end basis is not required. Back-end detection and removal techniques are more invisible to the source, and therefore less prone to signaling detection methodologies to IVT perpetrators, however they may add complexity to reporting and processing, since data that flows through the measurement organization will therefore contain IVT transactions that are removed in later stages.

The following techniques should be employed by the measurement organization to the extent necessary to filter material General Invalid Transactions:

*[Note: All of these techniques should be employed by measurement organizations, but use of a front-end blocking technique is not required – these techniques may be employed at any time in transaction processing prior to reporting and monetization.]*

- List or Parameter Based Detection (TAG Based, Where Possible)
  - Traffic that Does Not Originate from Known Browser Types
    - § Non-Browser User-Agent Header
  - Known Data-Center Traffic Identified Pre-fetch Calls that do not include a timely in-view trigger
  - Known Dangerous or Fraudulent Sources, Based on Specifically Identified Blocking Lists
  - Robotic Indicators or Suspect Strings
    - § The Use of “Exception” Strings is Required to Minimize Ambiguous Cases and to Avoid False Positives
    - § Includes Suspect Visitors to robots.txt (identifying any visitor to robot.txt and ensuring proper handling of these user agents in filtration processes)
  - Activity-Based Detection and Removal Techniques – Based on campaign level activity and attributes of campaign transactions; traffic is removed when threshold or other negative evaluation criteria are met
    - § Continuous; Full Coverage of Monetized Traffic
    - § Speed of Transactions
    - § Repeat Transactions
    - § Interval Testing
    - § Outlier Identification
    - § Missing Values, Missing UAs, etc.
    - § Transaction Protocol Verification
    - § Inconsistencies in Transaction and Browser/Agent Parameters

- Auto-Refresh Ad Detection – Based on publisher chosen, auditor validated, criteria (To Be Segregated, Not Removed)
- Viewable Impression Falsification
  - Manipulation, hijacking, alteration or injection of false or misleading viewable impression decision data into the transaction stream – these issues can be detected at any stage of ad serving and/or executing viewable impression-related functions.

The following types of Sophisticated Invalid Traffic and related processes are applicable to optional Sophisticated Invalid Traffic detection techniques:

- Sophisticated Invalid Traffic Detection (not part of General Invalid Traffic)
  - § Adware; Malware; Hijacked Devices; Hijacked Tags; Incentivized Manipulation of Measurements; Misappropriated Content; Falsified Viewable Impression Decisions; Cookie Stuffing; Recycling or Harvesting of Cookies; Manipulation or Falsification of Location Data or Related Attributes; Traffic from Known IVT Proxy IPs; Hidden/Stacked/Covered Advertising and Differentiating Human and IVT Traffic when Originating from the Same or Similar Source in Certain Closely Intermingled Circumstances
  - § Internal reporting with sufficient detail to allow meaningful analysis of and reporting of false positives and false negative rates
  - § Sophisticated Activity-Based Detection or Analyses – Front-end or back-end techniques using analytical review of traffic data or attributes, but requiring multiple sources of information or inferences made from complex multi-data-point assessment of transaction sets (generally over more than one campaign). Often these are developed over time and can be very complex. Additionally this area can involve bringing ancillary data assets to bear beyond the body of traffic directly under measurement by the service.
    - Note: Execution of techniques to detect these types of complex invalid traffic scenarios may involve complex analytics, corroborative investigation, human intervention, meta-analysis of advertising data or transactions across time and cannot necessarily be learned and applied effectively in a single campaign. Some Sophisticated issues may require adjustment after campaign reporting; these adjustments should occur within 14 days of the campaign's completion date, and are required only if historical data is available to perform such an analysis.
    - Note: Certain Sophisticated techniques can be performed as front-end processes. If so, a delay in reporting is optional. If no delay in reporting is chosen, results of these front-end Sophisticated techniques should be reported just as General Invalid Traffic techniques are reported.

## 5 Other Matters:

### 5.1 Removal of Internal “Unnatural” Activity

- Measurement organizations should have procedures to segregate all internally generated activity (that of the measurement organization and the organization under measurement) which does not represent legitimate advertising consumption or otherwise valid internet traffic – for example: software testing; tag testing by publisher, agencies and advertisers; corporate mandated transactions that may drive traffic unnaturally high, etc. These activities are considered invalid traffic for advertising commerce purposes if material.
- Testing computer environments should be logically segregated from production environments as to not commingle test and production transaction.

### 5.2 Relevant Policies

Measurement organizations should have sufficient internal policies to guide the determination of legitimate versus invalid traffic, and in ambiguous situations a vetting and escalation procedure should be executed to lead to a final determination about traffic records. These decision protocols should be documented in sufficient detail to handle materially occurring cases, and concepts should be documented to help guide unusual conditions. Traffic quality determinations should be guided by industry guidance, internal guidance and traffic quality officer functions using authority granted by management.

Measurement organizations should have specific procedures for the capture of exclude lists (as specified by customers or experience) and the confidentiality of these lists as well as list updating procedures.

The materiality of invalid traffic discoveries should be evaluated on the basis of the traffic of impacted campaigns (individually), time, and customer relationships (i.e., how much historical invalid traffic has been encountered for customer entities and partner qualification procedures). Assessments should be backward looking across historical data for the need to correct previously reported estimates, as well as the forward implications on current traffic yet to be reported. Material items (those in excess of 5% of campaign traffic and an absolute dollar amount where applicable and empirically supported) should be disclosed to the parties involved in the advertising monetization – buyers and sellers – by the measurement organization.

All communications should be conducted with sensitivity to the risk of reverse engineering that could potentially result. Decisions to forgo communication by measurement services must be supported by auditable evidence of such risk. Furthermore, if measurement services do forgo



certain of these communications because of supportable concerns over reverse engineering risks, they are strongly encouraged to offer in person inspection or other alternative secured mechanisms to subscribers to allow for review and reconciliation of results.

### 5.3 Requirement for Backward-Looking Assessments and Correction

When new types of invalid traffic are discovered or otherwise overlooked invalid activity are identified by a measurement organization, these guidelines require a backward-looking analysis to ensure previously processed and reported ad campaign data was not materially impacted. This is required only if historical data is available to perform such an analysis (new data or signal was collected and available during the analysis period). If material omissions or errors are identified in previously reported ad campaign data, the measurement organization has a responsibility to inform users of the data, including both buyer and seller organizations. The following are the general requirements of backward-looking analyses:

- Consider the frequency of reporting – long-term campaigns that execute over several months should be evaluated over the period of the campaign. Shorter campaigns only require evaluation over the applicable shorter campaign period.
- This period is not required to exceed 14 days, but can be longer based on the measurement service's customer service terms or the campaign period.
- If a customer waives the requirement for backward-looking assessments formally in campaign terms and conditions, this requirement can be ignored; such a waiver must be an exception from normal Terms and Conditions, rather than a standard inclusion.

### 5.4 Communication Functions

A previous section of this addendum identified internal and external communication functions. Each measurement organization should have appropriate procedures to administer these functions as well as the pre-identified communication mechanisms and processes. General Invalid Traffic, where material, should be communicated with sufficient supporting information, which may include -UA Strings, IP Addresses, and the Proxy Servers involved, as well as new or emerging General IVT detection techniques and evidence to support the invalid determination. Detection technique information will be strictly protected by the staff of the MRC, but may be generalized and shared among other auditing organizations and/or accredited/certified measurement organizations.

## 6 General Methodology Disclosures

Measurement organizations are required to take care to not disclose information that would allow reverse engineering of detection processes or avoidance by perpetrators. However, this information protection does not absolve the measurement organization from the need to disclose and provide comfort as to the nature and sufficiency of internal controls as well as ensure business partners understand that procedures are applied in compliance with

measurement guidelines. The following invalid traffic processes require description in disclosures of methodology:

- General Invalid Traffic Process Description
- Presence of Sophisticated Invalid Traffic Processes, with a High-Level Description
- Frequency of Processes; Granularity – Impression Level Preferred
- Updating Processes
- Traffic Acquisition Processes Employed and Approximate Volume
- Partner Qualification Controls
- Nature and Scope of Process and Transaction Auditing Exercised
  - Internal and External

Measurement organizations should have published error correction and reissue criteria, which are objective in nature and prescribed so as to drive consistency of application.

Material Business Partner relationships (an organization that is part of the transactional chain associated with serving, capturing ad actions or enriching ad impressions or audience measurement and/or a organization originating the terms and conditions of the campaign that outsources these transactional chain functions), especially when they impact traffic processing either downstream or upstream, must be disclosed to the extent possible. Additionally, measurement organizations must have the ability to report information related to IVT traffic sources to those traffic sources when deemed appropriate by the measurement organization management and their business partners.

## 7 Reporting Metrics Associated with Invalid Traffic Functions

Measurement organizations should report the nature and volume of General Invalid Traffic detected for the purposes of reconciling to served impression counts and to ensure a full accounting for all impressions, whether monetized or not. *(Since General Invalid Traffic detection and removal are required for all measurement organization, the disclosure of these invalid counts and net resulting valid impressions enable a comparison between measurement organizations.)* This type of reporting helps bring confidence to users of data on the application of detection procedures and the removal of problematic transactions. [See reporting-only exception for panel measurement products in the Overview section above.]

Sophisticated Invalid Traffic volumes should be segregated and reported at the time of reporting campaign totals in aggregated periodic reporting (so as to protect from reverse engineering). Additionally, we strongly recommend that Sophisticated Invalid Traffic is removed from processes that enrich/attribute transactions for monetization purposes, including when such IVT inflates engagement metrics. [See reporting-only exception for panel measurement products in the Overview section above.]

The types of metrics that should be reported for production campaigns are as follows:

Overall Entity or Metric Level:

- Validation Indicator By Metric (MRC Accreditation or IAB Certification or None/Blank)

Specifics for Campaign Reporting – Always Present; Actual Report Headings in Quotations:

- “Gross Metrics (Completely Unfiltered)”
- “Net Metrics (Filtered for General Invalid Traffic Requirements)”; this would be inclusive of known Sophisticated Invalid Traffic where applicable
- IF APPLICABLE TO THE CAMPAIGN OR MEASUREMENT ORGANIZATION – “Total Net Metrics for the Campaign (Filtered for Sophisticated Invalid Traffic Requirements)” (*segregated incrementally from the prior total net metrics filtered for General IVT*) Similarly at the Placement level, if required by Terms and Conditions.

Downstream Reporting (Strongly Recommended Whenever Feasible):

- Various Un-enriched/Un-attributed Transaction Data – As flows through monetization process (Filtered for Sophisticated Invalid Traffic Requirements)

Specifics for Campaign Reporting – Available Upon Request to Assist in Reconciliation Procedures:

- Disclose Placement URL to Buyer, Where Applicable
- Reporting Period, including time zone

*Note 1: If a measurement organization is unable to separate General and Sophisticated Invalid Traffic in their reporting of valid impressions, as described above, or if measurement organizations decide to forgo this segregation due to the risk of reverse engineering (which must be on an exception basis and supported by auditable evidence of such risk) the organization should be prepared to otherwise estimate the relative proportion of these techniques in a more generalized manner. Again, these separations were intended to enable a comparison between measurement vendors on a common basis, which remains a valid objective by users.*

*Note 2: The availability of placement URL information for a campaign (used for reconciliation purposes) is generally for a limited time, due to data size. Unless contractually modified/extended, this data can be made available for seven (7) days from the transaction date, which emphasizes the need for timely campaign stewardship and monitoring by all parties. Measurement organizations are likely to choose to maintain data (section 3.2) for longer periods than 7 days, in accordance with record retention policies.*

*Note 3: If a measurement organization uses up-front blocking or identifies invalid traffic concurrent with ad-serving as part of its overall General and/or Sophisticated Invalid Traffic procedures (so there is a possibility this traffic would not be included in “Gross” metrics above) this practice should be known to measurement data users. We recommend that blocking or*

*other exclusions that result from these practices should be quantified and disclosed if material and if not included in Gross metrics.*

Appendix A contains an illustration showing metrics to be reported at the Gross, Net of General Filtration, and Net of General and Sophisticated Filtration levels.

## 8 Sophisticated Invalid Traffic Detection and Filtration

As noted above, measurement vendors must apply General Invalid Traffic detection processes. However, the application of Sophisticated Invalid Traffic detection procedures is not required, but is strongly encouraged, therefore some vendors may not apply these advanced techniques.

General Invalid Traffic techniques should be removed from reported counts by all measurement organizations; however, if a measurement organization applies Sophisticated Invalid Traffic techniques the existence of these processes should be disclosed (with appropriate downstream reporting as specified earlier herein). In certain cases duplication or overlap in IVT detection may occur between General and Sophisticated techniques – these overlapping IVT transactions should be considered General Invalid Traffic items, wherever possible.

A measurement organization's application of General Invalid Traffic techniques will be verified as part of accrediting or certifying the metrics it chooses to submit to audit, i.e., no separate accreditation or certification of General Invalid Traffic techniques will be made.

Sophisticated Invalid Traffic detection methods are extremely proprietary and are not specified in detail within this addendum. However, the MRC will retain information about these methodologies and will undertake validation of these methodologies in separate special-purpose examinations. These Sophisticated Invalid Traffic detection methods can be accredited, assuming they can be verified, described in an understandable manner without damaging the ability for these methods to be effective (i.e., descriptions can be general enough to prevent manipulation to avoid detection), and the overall effectiveness and coverage can be established.

All measurement vendors that report metrics and that submit for accreditation or certification under IAB or MRC measurement guidelines must comply with the General Invalid Filtration requirements in this document, and they are encouraged to apply Sophisticated Invalid Traffic detection techniques. As previously noted, Sophisticated Invalid Traffic detection methods can be validated but they are not described herein. Measurement organizations that apply Sophisticated Invalid Traffic detection processes are strongly encouraged to seek accreditation/certification of these processes due to the implications of these processes on reporting accuracy. In most cases, since Sophisticated Invalid Filtration measurement organizations also apply General processes and in some cases are already subject to audit for

existing measurement products, these examinations can be conducted simultaneously for efficiency purposes.

## 9 Participating Organizations

### Associations – Primary Sponsors/Facilitators

- Media Rating Council (MRC)
- Interactive Advertising Bureau (IAB)
- Mobile Marketing Association (MMA)

### Participating Working Group Organizations:

#### General:

4As	Jun Group
A&E Networks	Kellogg's
A+E Ole Communications	KRGV-TV
ABC Group (Audit Bureau of Circulations)	LAMAC (Latin American Multichannel Advertising Council)
ABC Owned Stations	Mansueto Ventures
ABC Television	Mediaedge:cia (MEC)
AdColony	Medialets
AdMaster	Meredith Corp.
Annalect	Microsoft
AOL	Moat
Are You A Human	Mobile Marketing Association
Advertising Research Foundation	NABOB (National Assn. of Black Owned Broadcasters)
Alliance for Audited Media (AAM)	National Public Radio
BPA Worldwide	NBC Owned Television Stations
BrightRoll	NBC Universal
Business Insider	Neustar
Campbell-Ewald	New York Times
Catch5	Nielsen
CBS TV	Pandora
CBS Interactive	PlacIQ
CBS Radio	PricewaterhouseCoopers (PwC)
Chartbeat	Quantcast
CIMM (Coalition for Innovative Media Measurement)	Radio Research Consortium
Collective	RealVu
comScore	Rocket Fuel
Conversant	S4M
Cox Media Group Digital	Scripps Networks Interactive
Craig Jaffe Research 360	Sizmek
Deloitte	Starcom MediaVest Group

Digital Content Next	Telemetry
Discovery Communications	Time Warner Cable
DoubleVerify	Tremor Video
ESPN	Tribune Broadcasting
Extreme Reach	Triton Digital
EY	TubeMogul
EyeReturn	Turn
Forbes Media	Turner Broadcasting
Forensiq	Ulive Lifestyle Network
FreeWheel	Universal McCann
Gannett Broadcasting	Univision
Gawker	Unruly
Google	Viacom Media Networks
Graham Media Group	Videology
Hearst Digital Media	Vindico Group
Hearst Magazines	Wall Street Journal
Hearst Television	WBEB FM
IAB Canada (Interactive Advertising Bureau)	WestwoodOne
IAB U.S. (Interactive Advertising Bureau)	WhiteOps
IAB UK (Interactive Advertising Bureau)	Yahoo!
ImServices	YuMe
Innovid	ZenithOptimedia
Integral Ad Science	

Technical Subcommittee:

Alliance for Audited Media (AAM)	Integral Ad Science
comScore	Mobile Marketing Association (MMA)
Deloitte	Moat
DoubleVerify	RealVu
EY	Rocket Fuel
EyeReturn	Telemetry
Google	TubeMogul
Interactive Advertising Bureau (IAB)	WhiteOps
ImServices	Yahoo!

## 10 Contact Information In Case of Questions or Issues

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# 11 Appendix A - Illustrative Reported Metrics by IVT Filtration Level

The following chart illustrates the metrics that should be reported by the various levels of IVT filtration - Gross (Unfiltered), Net of General IVT, and Net of General and Sophisticated IVT. The metrics can be reported by measurement segment, i.e., by campaign, placement, section/page, creative, creative type, geography, device type, etc., as required by the applicable terms and conditions of the transactions.

Gross Metrics (Unfiltered)															
Delivered Impressions		Clicks													
<b>Gross Metrics (unfiltered)</b>															
- These would include the total number of Count on Download/Rendered compliant impressions, and Clicks, prior to the application of filtration, in order to provide comparability and transparency among vendor(s) at the most basic level to determine if the population of impressions and clicks being measured align, prior to any further processing. This is required for all vendors.															
Net Metrics (Filtered for General IVT)															
Delivered Impressions*	Clicks*	Viewable Impression Metrics				Viewable Impression Distribution				Other Metrics reported by the vendor...					
		Viewable Impressions*	Non-Viewable*	Unmeasured Impressions*	Viewable Rate (%)*	Measured Rate (%)	Viewable (%)	Non-viewable (%)	Unmeasured (%)	Unique Cookies	Frequency	Demo Group (1)	Demo Group (2)	Demo Group (n)	Other metrics...
<b>Net Metrics (Filtered for General IVT)</b>															
- These would include the application of General IVT filtration for Delivered (rendered) Impressions, and Clicks, with the addition of Viewable Impressions for all vendors (including those that apply Sophisticated techniques). The purpose is to provide a second comparison point based on General IVT filtration methods to allow for cross-vendor alignment prior to the application of vendor-specific Sophisticated IVT, which may have a higher likelihood of creating differences in the final reported metrics. If Sophisticated vendors are unable to separate General and Sophisticated Invalid Traffic in their reporting of valid impressions, they may otherwise estimate the relative proportion of these techniques in a more generalized manner with proper disclosure.															
* Denotes fields that are required to be reported by Sophisticated Invalid Traffic measurement organizations; other fields are reported at the Total Net Metrics level (below).															
Total Net Metrics (Filtered for General and Sophisticated IVT)															
Delivered Impressions	Clicks	Viewable Impression Metrics				Viewable Impression Distribution				Other Metrics reported by the vendor...					
		Viewable Impressions	Non-Viewable	Unmeasured Impressions	Viewable Rate (%)	Measured Rate (%)	Viewable (%)	Non-viewable (%)	Unmeasured (%)	Unique Cookies	Frequency	Demo Group (1)	Demo Group (2)	Demo Group (n)	Other metrics...
<b>Total Net Metrics (filtered for any and all IVT); Applies Only to Sophisticated Vendors</b>															
- This represents the Sophisticated vendor's "last/best" metrics, reflecting the results of all filtration techniques, data quality techniques, and adherence to all requirements across all applicable Standards and Guidelines. It is at this level that all remaining metrics (beyond the "building block" metrics of Delivered Impressions, Clicks and Viewable Impressions, which are required as noted in the two initial data presentations above are required) reported by the vendor applying Sophisticated techniques across the Service, would be reported to users in Dashboards, UIs, APIs, exports, or through other means.															