Intrinsic In-Game Advertising Measurement Guidelines 2.0

Initially released September 2009

Updated August 2022

These Guidelines have been developed by the IAB Intrinsic In-Game Advertising Measurement Task Force, led by a joint effort between the Interactive Advertising Bureau (IAB), the IAB Tech Lab and the Media Rating Council (MRC), with guidance from the IAB Games and Esports Board.

The Objective of the IAB Intrinsic In-Game Advertising Measurement Task Force:

The primary objective of IAB's Intrinsic In-Game (IIG) Advertising Measurement Task Force is to establish and release measurement guidelines for Intrinsic In-Game Advertising, in order to establish an updated and specific measurement framework – embraced by both buy and sell sides – for ads that appear within gameplay.

Company Participants

ABC Networks

Adelaide

Adelphic

AdInMo

Admix

Alliance for Audited Media (AAM)

American Urban Radio Networks

Anzu

Baker & Hostetler LLP

BDO

Bidstack

Campbell Ewald

dentsu

Dentsu Holdings USA

EY

Frameplay

Google

GoWit

Havas Media Group North America

Horizon Media

IAB UK

IAS

InMobi

Jun Group

Marketing Architects

Method Media Intelligence

Microsoft Advertising

Mindshare

Oracle Advertising & Customer Experience

PepsiCo

Pixalate

Playstack

Publicis Media

Sayollo

Simulmedia

Viant

Xandr

Xaxis

Zynga

About the IAB Games and Esports Board:

227 million US adults spend an average of over 12 hours per week gaming, yet US ad spend in gaming is still less than 6% of total digital ad spend. The mission of the Games and Esports Board is to help marketers unlock this channel as a powerful way to reach consumers. This board is expanding the advertising marketplace in gaming and tackling the most pressing obstacles to scale through player-first market education and advising on standards needed to reduce friction in the supply chain.

Board Member Companies

Anzu	Labelium US	Trivver
Bidstack	Marketing Architects	Twitch
Dentsu	Meta	Vindex
Frameplay	Microsoft Advertising	Zynga
Gameloft	Niantic	
Google	THECE	

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1. Scope and Applicability of these Guidelines

These Guidelines are intended to cover Impression, Viewable Impression and Audience measurement of In-Game Advertising (IGA) ads embedded in computer and video games; typically integrated within computer/console games and mobile games. This includes the applicable environments such as Desktop Web, Desktop Application, Mobile Web, Mobile Application and Console (inclusive of standalone game systems and Augmented Reality /Virtual Reality [AR/VR] headsets as well as game systems connected to television displays).

The scope of these Guidelines is intended to cover In-Game ad placements served by an ad server with a corresponding ad session. These may or may not include rotational elements and may consist of Display or Video.

Hard-coded In-Game branded elements that are integrated into a video game design are not intended to be directly applicable to these Guidelines as they generally are not ad placements that have a corresponding ad session. Future updates of these Guidelines may consider hard-coded elements and to the extent impressions and viewability are attempted to be measured for these elements, it is expected that they are measured consistent with the guidance herein. Likewise, Advergames, or custom-built games with the sole purpose of promoting a brand or product, may not be directly applicable to these Guidelines given they are not distinct placements with an ad session. However, these Guidelines do contain specific guidance related to application-related measurement for Advergames.

These Guidelines are not intended at this time to cover the following:

- **Interstitial ads:** Interactive, full-screen ads that cover the interface of their host app or site. Such ads appear between content, so they are placed at natural transition points or breaks, such as in between activities or game levels.

- **Banner (Web Based) ads:** Typically occupies a designated advertisement location for where an image-based graphic is displayed.

- **In-stream or outstream video ads:** In-stream refers to video ads typically placed before, during, or at the end of video content. Outstream refers to video ads that exist outside of video content and that typically play within a video player, even if the publisher doesn't have its own video content.

The above placements are excluded from these Guidelines as existing measurement standards and guidelines provided by IAB and MRC that are related to Desktop, Mobile Web and Mobile In-App Display and Video Impression and Viewable Impression measurement should be applied. However, incremental guidance contained herein that relate to specific In-Game aspects or concepts, should be considered for these placements.

This document is principally applicable to those organizations involved in the gaming industry, and is intended as a guide to accepted practices, as developed by the IAB and MRC. In addition, In-Game Advertising planners and buyers can use this document to assist in determining the quality of measurement. This document does not include aspects of In-Game measurement beyond ad delivery and viewability such as interaction attributes, engagement and outcomes, although these aspects may be considered as part of future phases of this project.

2. Glossary

Ad Campaign: A collection of messages from an advertiser or client that is designed to run during a specific interval and / or within a set of media outlets.

Audience: Audience activity generally consists of counts of users accessing content and/or advertising through applications, browsers, console-based gaming, etc., filtered to remove suspected Invalid Traffic.

Client-User: A device that interacts with an application, essentially executing or otherwise reviewing the application. The number of Users (people) or the demographic characteristics of the Users interacting with the application through the Client User is not necessarily known.

Cool Off Period: A cool off period is a specified period of time that must pass between valid Ad Impressions. Cool off periods serve a purpose similar to Frequency Capping, but are not required under these guidelines.

In-Game Measurement Organization: An organization that counts and reports Ad Impressions and other metrics associated with the delivery of In-Game advertising. Such organizations typically may include, but are not necessarily limited to, In-Game Ad Networks, Ad Serving Organizations, or Game Publishers or Developers.

Occlusion: Occluded ads are ads that are obstructed to various degrees by objects that appear on the screen in the game environment that affect the User's ability to see and/or distinguish the advertiser's message.

Reach: Unique users that visited the site measured over the course of the reporting period or the total number of unique users who will be served a given ad.

User, Unique User: A person playing a gaming application and exposed to advertising messages, as determined through registration, User self-identification or some form of heuristic. A Unique User is an unduplicated person playing a gaming application and exposed to advertising messages during the reporting period.

Viewability Polling: A method where snapshots or observations are assessed at specific time intervals that determine the viewable state of an ad at that specific time.

3. Measurement Definitions and Other Metrics

3.1. Ad Impressions

An intrinsic In-Game advertising Impression is the measurement of an advertising exposure occurrence within a gaming environment being played by a Client-User (device) that is contained within real-time or stored and transmitted client-initiated game-play activity records, sourced from a properly functioning (not crashed, frozen or otherwise corrupted) game application, or measurement application within or external to a game application or software. The advertising exposure occurrences should meet or exceed the minimum requirements summarized below and be filtered for invalid activity where applicable.

The physical attributes (ad unit, placement dimensions, format and/or position) of the advertisement and the placement of the advertisement within the game environment should be fully disclosed to the extent possible on a standardized basis by the IGA measurement organization as part of initiating the campaign with the advertising agency or buyer.

The IGA measurement organization should have sufficient business rules and controls to ensure there is no significant known faulting information for the specific game installation that would affect measurement, and to determine:

- That the measurement application within or external to the game environment (if separate) or hardware was functioning as designed during any measured In-Game Session (i.e., no significant bugs or errors that would materially impact or inhibit measurement were identified), and

- That the game itself was functioning as designed during any measured In-Game Session (i.e., no significant bugs or errors that would materially impact user experience as well as rendering of ads were identified).

In-Game transaction records, which contain evidence of advertising delivery, can be derived and transmitted to the In-Game measurement organization: (1) on a real-time basis during on-line game-play, (2) in batched groups that are transmitted periodically during an on-line game-play Session, or (3) first stored during off-line game-play and later transmitted during subsequent on-line Sessions (not necessarily associated with game play) of the applicable User device, if appropriate authentication and minimum timing from play to data collection is present. To consider an ad Impression valid, the timing of the delivered ad must be included within the campaign reporting period considering the pre-determined billing cycle.

An In-Game session is measured from the start of the game software or application to the end-time of use of the software or application (or as otherwise configured by gaming developers), as long as the IGA measurement organization does not encounter inactivity

(player idle) exceeding pre-determined thresholds discussed further below, which will terminate the Session.

The IGA measurement organization should have the ability to segregate Ad Impressions for reporting by individual ad units upon customer request. Ads which consist of multiple connected elements, e.g., where the same ad is duplicated on multiple surfaces, can be considered as one unit for purposes of measurement, where supported, however distinct ad units should be measured and reported separately. Reporting Impressions based on the segregation of ad units is not required under these Guidelines. However, this ability is likely to become increasingly important in the analysis of the performance of event-based ads and creative segmentation in reporting is encouraged. Segregated reporting of ad activity by platform or environment (Console, Mobile, etc.) and format (Display or Video) is required. To that end, these Guidelines encourage further industry efforts to standardize consistent inventory type signals to differentiate In-Game placements in bid requests and In-Game measurers are encouraged to consider and utilize these signals in reporting where available.

The following details are key components of the ad Impression measurement guidelines:

3.1.1   General Impression Counting

An ad Impression is the measurement of responses from an ad delivery system to an ad request, which is filtered for invalid traffic and is recorded at a point as late as possible in the process of delivery of the creative. The ad must be loaded and at minimum begin to render in order to count it as a valid ad Impression.

In the context of the guidance above, "loaded" means the logical creative file has been transmitted and received at the client-side (user device) and "render" refers to the process of painting the creative file or when the asset has loaded and has been attached to a loaded part of the game environment or User Interface (UI).

The original intent was to set Impression requirements closest to actual opportunity to see by the user (see specifics below). However, since the original publication of these Guidelines, the emergence of the Viewable Impression (as defined in the *MRC Viewable Impression Measurement Guidelines*) as a separate metric has satisfied this intent.

Ad Impression measurement remains relevant at minimum as an input into viewability metrics (such as in the Measured Rate denominator) as well as a mechanism to quantify activity measured by organizations that might not be part of the advertising chain (such as non-ad-serving third-party measurement organizations).

Two methods are used to deliver ad content to the user: server-initiated and client-initiated. Server-initiated ad-counting uses ad or content servers for making requests, formatting and re-directing content. Client-initiated ad counting relies on the user's device to perform these activities (in this case the term "client" refers to a user's device).

These Guidelines require ad counting to use a client-initiated approach; server-initiated ad

counting methods (the configuration in which Impressions are counted at the same time the underlying ad content is served also known as count on decision or count on insertion) are not acceptable for counting ad Impressions because they are the furthest away from the user actually seeing the ad. However, pass-through methods of signaling interactions detected on the client side from server infrastructure are acceptable as are server-initiated approaches that can be empirically demonstrated to reflect client-side activity.

A valid ad Impression may only be counted when an ad counter receives and responds to a request for a tracking asset from a client. The count must happen after the initiation of retrieval of underlying content and only when ad content has been loaded and at minimum begins to render. Ads that are not confirmed as meeting these requirements (do not load and begin to render) cannot be counted as Impressions.

The measurement organization should have sufficient controls to determine that:

- The application or software itself (or measurement assets within it) was functioning as intended during the session by examining data received for completeness or signs of corruption. Sessions and ad Impression metrics associated with "faulted" conditions (situations of functionality issues with the application, errors or non-working conditions that materially impact measurement) should be tracked and segregated from fully functioning Sessions and Impression metrics.

There will necessarily be some slight differences among measurers in the precise moment when rendering is measured as a qualification for ad Impressions. The requirements above mean that the ad content must have been loaded at the client-side and at minimum have begun to render into the user interface or device such that an opportunity for the ad to be visible has been created (also referred to as ad injection or execution). Measurement of begin to render should include logical components necessary to display the ad, but does not necessarily include logical elements that are not essential (such as other tracking elements). It does not require any portion of the ad to be visible or displayed on screen.

There may be certain situations where load and render events are captured, but an ad has not actually begun to render (due to measurement artifacts separate from IVT). Measurement organizations should disclose this as a general limitation and periodically study the incidence and the impact of this.

Alternatively, measurement organizations may choose to meet the begin to render requirements for In-Game Impressions by measuring the point at which an ad is displayed or partially visible. It should be noted that this is a conservative approach that may understate the number of ad Impressions actually rendered. Likewise, measurement organizations should disclose this as a general limitation and periodically study the incidence and the impact of this.

Some game content inclusive of ads may use a progressive download technique that delivers content in a series of downloads that are stored locally on the Client User device. Content delivered to a game session using adaptive bitrate streaming, detects a user's bandwidth and CPU capacity, and adjusts the quality of a stream accordingly. In these

environments, a persistent connection may not be maintained, and instead groups of content/ads may be sent to the user's device through a periodic (not persistent) online connection. These groups of content/ads can be variable in length (depending on the sensed connection speed and other communication environment attributes such as quality of connection) so as to enable a user experience that appears to be a continuous connection, but may not contain ads in full. As such, measurement organizations should consider this phenomenon, and adequately account for its impact on Impression measurement including reconciling client-side data with server-side data. Further Deferred and Offline Impression guidance below should also be considered.

In situations where the connection speed of the Client User can impact counting effectiveness or the counted activity itself, the application developer or measurement organization, if applicable, should make reasonable efforts to ensure counting is accurate. Editing and error handling rules should be developed to detect, segregate and report counting situations with suspect accuracy related to connection speed, where known, either directly within the application or by examining data received for completeness or signs of corruption.

3.1.2   Video Ad Impression Counting

For measurement of Digital Video Ad Impressions In-Game, the requirements within the *IAB/MRC Digital Video Impression Measurement Guidelines* should be met. This includes the begin to render counting requirements discussed above for Display Ad Impressions, and the video-specific requirement whereby a Video Impression must be counted after the initiation of the ad stream, post-buffering, as opposed to the linked digital video content itself. Specifically, measurement should not occur when the buffer is initiated, rather measurement should occur when the ad itself begins to render on the user's screen (begins to play). For In-Game environments, as video renders in a succession of frames that are painted to a loaded part of the game environment or UI, the Video Impression requirement is met by determining that the first frame of the video creative has been decoded and attached to a loaded part of the game environment or UI.

Presence of Audio

As current technological limitations make it difficult for a measurer to detect the presence of unmuted audio in all situations (while player audio may be more readily detectable, device or hardware muting detection may present challenges), detection of audio is not currently a requirement for Video Impression measurement. However, we encourage the development of a technological or other solution to device or hardware limitations so that audio may be considered. Also, we strongly encourage, but do not currently require, that the presence of audio be a consideration in measuring duration in those situations where it is feasible to do so today and further encourage measurement and reporting of other audio-based metrics (such as average audible duration or audible completion).

Measurement organizations are encouraged to separately report duration that is audible (non-mute or non-zero) for device/hardware volume. Measurement organizations should separately report and consider duration that is audible for player volume where known. As

part of the consideration of audio in digital video measurement, measurement organizations are encouraged to study the further development of technology or methodology to better determine device audio state and incorporate this into measurement.

3.1.3   Event-dependent Impressions

In those instances where an event must occur before an ad can be delivered (i.e., a user must interact with an object in order for the ad to be delivered), measurement of such events must occur first in order for a valid Impression to be counted. Measurement of such events should consider the requirements in the *IAB/MRC Click Measurement Guidelines*. This is distinct from general In-Game ad placement where a user must interact with or play the game itself for an ad request to be generated or for an ad to be served.

3.1.4   Advergame

As described above, Advergames are custom built video games with the sole purpose of promoting a brand or product. For Advergames, measurement should be restricted to only those situations where the downloaded application or game has been opened and initialized after downloading. If more than one of the same applications/games has been downloaded (except in the case of cloud-gaming or in cases where the game is not required to be fully downloaded to be played), opened and initialized by a user, and the newer application download does not replace the existing application, then the duplication should be considered in the reporting of Users or in Frequency Capping situations whenever possible. In general, de-duplication functions should be applied over the reporting timeframe - for example, for a weekly report, users that open and initialize more than one of the same applications on the same device should be de-duplicated within a week.

Further, measurement organizations measuring application installs as a relevant Advergame metric must take precautions regarding the quality of this metric given the ease to create and the prevalence of invalid install traffic. Valid app/game installs must be tied to corresponding valid Impressions and Clicks directly measured and subject to unique identifiers. In addition, specific activity-based logic shall be applied to the relationship between Impressions, Clicks and Installs including the time between them (short, illogical durations may be a signal of invalid activity) as well as to post-install activity (non-use or deinstallation may also be a signal of invalid activity). Invalid Installs may be tied to generation of invalid Impression and Click activity through hidden ads, redirects and routed traffic and must be considered regardless of the reporting of app/game installs when measuring application activity.

3.1.5 Other considerations for Impression counting

3.1.5.1 Pre-fetch and pre-render

As stated above, a valid ad Impression count must happen after the initiation of retrieval of underlying content and only when ad content has been loaded and at minimum begins to render. As such, pre-fetch and pre-render requests do not qualify for measurement as a valid ad Impression unless ad content has been loaded and begins to render in response to a request by a user.

Content owners or media seller organizations are encouraged to disclose the use of pre-fetch and pre-render requests (such as via self-announcing). Measurement organizations are encouraged to implement counting methodologies in such a way as to not subject the measurement events to being pre-fetch or pre-rendered, to reduce or eliminate reliance on self-announcing.

3.1.5.2 TV/Input source Off

Certain gaming devices that display to televisions or external monitors may include dedicated power sources and as a result, may be independent of the power state or input source of the TVs or monitors used to display their content. In such environments, content and advertising may be played while corresponding TVs or monitors are off or on a different source. Measurement organizations should consider this limitation as well as its effect on measurement and clearly disclose it as a general limitation.

As current technological limitations make it difficult for a measurer using digital measurement assets to detect the power state or input source of a TV or monitor in all situations, detection of TV/Input source Off is not currently a requirement for In-Game Impression measurement, although it must be considered for Viewability measurement as discussed below. Measurement providers are encouraged to analyze user activity or movement during an In-Game session, as well as use available signals to attempt to identify these instances. Additionally, we encourage the development of a technological or other solution to this limitation so that it may be considered in the future and require available signals related to TV or monitor power state and input source to be considered where present. When TV or monitor power state is known to be Off or input source is known to be different than the gaming input being measured, ad activity should not be included in Impression counting as the ad could not have begun to render or have been delivered to a user.

3.1.5.3   Ad Exposures during Inactivity (idle) Periods

An In-Game Session is measured from the start of the game software or application to the end-time of use of the software or application (or as otherwise configured by gaming developers), as long as the software application does not encounter inactivity of a pre-defined duration (in that case the beginning of an inactive period can be considered as the end-time of the session). These inactivity rules may vary based on the type of game involved; for instance, some game applications are designed for long periods of inactivity (such as games that involve waiting rooms or where game objectives may warrant legitimate inactivity whereby a user is still present), in which case a longer inactivity threshold may be more appropriate than in another situation where longer periods of inactivity are not normally to be expected. In all cases, inactivity rules applied must be empirically supported, documented and disclosed as well as periodically studied and adjusted where applicable. Ad activity inclusive of Impressions should not be included during Sessions that exceed pre-defined inactivity thresholds (these should not be included and removed as IVT, but excluded altogether).

Further, inactivity may have differing levels of impact depending on ad type. For instance, In-Game ads that also require a user to move or interact with to appear may not be generated when a user is inactive and as a result, the impact of inactivity on static ad measurement in these instances may be diminished. However, In-Game ads that may be generated or appear without user activity may be more materially impacted by periods of inactivity (i.e., dynamic ad placements). Measurement organizations should consider studying the impact of inactivity by ad type and incorporate this into the inactivity thresholds applied.

The In-Game advertising environment generally allows for a greater range of options for determining user activity than are available in traditional online environments, and these should be leveraged in making inactivity determinations. Inactivity rules may be based on application idle, which is generally defined by the application developer based on time since last interaction and can result in an application running in the background or being inactive. Device idle or power state should also be considered for inactivity rules and may be user configurable.

3.1.5.4   Cool Off Periods

In-Game Measurement Organizations may establish and disclose a "Cool Off Period." A Cool Off Period is a period of time that occurs after a valid ad Impression, in which additional exposures may not be accumulated toward another valid ad Impression.

Cool off periods may relate to Frequency Cap thresholds, and should be fully disclosed and empirically supported.

3.1.5.5   Auto-refreshed ads

Auto-refresh refers to the action of serving or changing advertising or content in an automatic manner. Auto-refresh can be set directly by a user (common in browser settings) or set by a site, content seller organization, platform or game developer without user interaction (not set by a user). Auto-refresh set by a user can be counted as a normal ad Impression.

If auto-refresh is known to be present in an In-Game environment, measurement organizations are required to collect and utilize site initiated auto-refresh information disclosed or passed by content owners or media seller organizations. Measurement organizations are also encouraged to develop techniques to detect and estimate site initiated auto-refresh (how often ads are refreshed on the application or site) if not otherwise disclosed or passed.

To the extent known by measurement organization, the presence of site or property/game initiated auto-refresh should be disclosed to users of measurement data including the parameters and settings surrounding auto-refresh. Further, site or property/game initiated auto-refresh should utilize reasonable refresh rates (i.e., the time interval at which ads are refreshed or replaced) for the associated content type and include segregated disclosure of the auto-refresh counts if they are material to total Impressions by campaign.

There may be instances where the auto-refresh rate is excessive, and it may be coupled with a high number of ads served to a screen (clutter), to the extent that user experience is diminished. Excessive auto-refresh rates, and/or excessive ad clutter that materially diminishes user experience should be considered and evaluated by measurement organizations as potential Invalid Traffic (IVT). Further guidance around IVT considerations is discussed below.

3.1.5.6   Other considerations from existing guidance

Other existing key concepts and guidance around measurement of Impressions should be considered and followed where applicable, as detailed in previously issued *IAB/MRC Measurement Guidelines*. These include:

- Measurement and reporting of auto-play ads
- Cache busting techniques
- Ad blocking
- Ad stitching or Server-side Ad Insertion (SSAI)
- Disclosure of material internal traffic

3.2. Viewability

Viewable Display Impressions are counted when the following criteria are met:

- Pixel Requirement: Greater than or equal to 50% of the pixels (intended creative; see additional note below) in the advertisement were visible from the game player's perspective or on the game player's screen on a fully downloaded (where necessary for gameplay), opened, initialized application or software, on the viewable space of the device, and

- Time Requirement: The time the pixel requirement is met was greater than or equal to one continuous second, post ad render (Impression measurement).

Note on Pixels: The term "pixel" is used above and throughout these Guidelines for consistency with existing Viewability terminology across various digital formats. However, for the explicit purpose of In-Game, it is meant to mean the intended creative or the creative element with respect to creative dimensions and device/screen resolution.

The above actions—determining pixel requirement, determining time requirement—should be performed in that specific order when measuring the viewability of an ad. In other words, satisfying the minimum pixel requirement should precede the measurement of the time duration; for example, the clock starts on determining whether the ad meets the one continuous second time requirement only when the ad is determined to have met the 50% pixel threshold. For counting In-Game Viewable Impressions, the above minimum criteria should be met along with the additional In-Game considerations for Viewability measurement as further discussed below.

Note: In situations where custom time or pixel thresholds above the minimum criteria are utilized in classifying an impression as viewable, such parameters should be clearly disclosed and labeled in reporting (including a means to note user configured parameters in reporting). Custom Viewability reporting above minimum thresholds must be in addition to standard Viewability reporting, not in lieu of it. Impressions that do not meet the minimum time and/or pixel thresholds herein must not be reported as Viewable Impressions.

Other Notes Related to Viewable Impression Measurement:

1. In all cases a Viewable Impression must also meet pre-existing criteria for a valid Impression, for example, counted based on client-initiated signals, filtered for invalid activity, etc. These are over and above the viewable criteria.

2. Each valid Viewable Impression originates from a valid Impression. In no case should Viewable Impressions exceed Rendered Impressions counted on a campaign. There can never be a qualified counted Viewable Impression that does not tie to a valid Impression and there is a maximum of a one-to-one correspondence between Impressions and Viewable Impressions.

3. Once an ad qualifies as a valid Viewable Impression, it should only be counted as one Viewable Impression within that user session, regardless of subsequent exposures. It should not be counted again as an additional Viewable Impression, even if the user moves completely away from the ad and then moves back to it so it again qualifies as viewable. This additional exposure may contribute to the total time the ad is in view, but only the original Viewable Impression should be counted. Replays for the same user may be reported as a separate metric (while replays are not required to be reported, where reported they must be reported separately).

3.2.1   Requirements for In-Game Digital Video Advertising Viewable Impressions

A Video or Dynamic Ad that meets the criteria of 50% of the ad's pixels on an in-focus (visible space of ad) fully downloaded (where necessary for gameplay), opened, initialized application or software, on the viewable space of the device can be counted as a Viewable Video (or Dynamic Ad) Impression if it meets the following time criterion:

Video or Dynamic Ad Time Requirement: To qualify for counting as a Viewable Video Ad Impression, it is required that 2 continuous seconds of the video advertisement is played, meeting the same Pixel Requirement necessary for a Viewable Static or Display Ad. This required time is not necessarily the first 2 seconds of the video ad; any unduplicated content of the ad comprising 2 continuous seconds qualifies in this regard.

3.2.2   Minimum Ad Size

The ad must be a minimum of 1.5% of screen coverage to be considered viewable. The 1.5% should represent the total coverage of the visible portion of the ad relative to the screen real estate. In other words, an ad that is 2% of a user's screen that is 50% in view (or where 50% of the ad's real estate is obstructed) would not be considered meeting the 1.5% minimum requirement as only it only represents 1% of the screen real estate. Future iterations of these Guidelines may involve further study and adjustment of this threshold as measurement of In-Game specific ad types evolves.

Related to scaling of ads (including responsive design), if the scaling of an ad is determined to be material in nature, the pixel percentage calculation used to determine the ad's viewable status should be based on the pixel (intended creative) area of the ad after scaling. Further study is encouraged to determine what a minimally acceptable percentage of original display size that is appropriate for acceptable legibility and Viewability qualification for future iterations of these Guidelines. Sampling of pixels making up an ad to extrapolate viewable conditions is permitted with empirical support to validate that these approaches maintain measurement accuracy.

3.2.3   Ad Angle Relative to Game Screen

In instances where the ad angle can be measured for X, Y and Z coordinates discretely, an ad angle no greater than 55 degrees for any one coordinate (on an absolute basis) relative to the game screen is recommended in order for a Viewable Impression to be valid, although IGA measurement organizations may utilize different thresholds as long as those are empirically supported. When measuring angle, measurement should be conducted from the most center point of the portion of the ad that is on screen or the center of the surface that is being measured, with 0 degrees representing an ad facing the screen, 180 degrees representing an ad facing away from the screen and 90 degrees representing a state in between.

However, it's important to note that a critical objective of measuring ad angle is the determination of the extent to which the ad is shown distorted or compressed to the user, and whether this distortion or compression affects the opportunity to see the creative. The extent of this distortion or compression may vary depending on the environment or creative type, and measurement organizations may find further complexity in measuring ad angle for all coordinates. **For example, an ad angle of less than 55 degrees relative to the game screen for more than one axis at a time (i.e., 50-degree angle on the X and Y coordinates) may result in significant distortion or compression that affects the opportunity to see the creative. Due to these potential variables, as stated above measurement organizations may set different thresholds based on a combination of axes to determine the point in which the ad angle, or ad distortion or compression have reached a point where the creative no longer has the opportunity to be seen. Any differential thresholds set to determine this must be empirically supported and documented as well as periodically studied and adjusted where applicable. Future updates of these Guidelines may seek to standardize more complex and discrete combined ad angle and rotational minimum requirements based on further study.**

Additionally, measurement organizations should differentially consider non-uniform or uneven ad surfaces/objects for calculating angle and determining distortion, as the angle may change depending on the point or perspective of measurement. In these instances, measurement providers may measure angle on an uneven surface/object by separating the ad into approximate pieces and measuring each piece separately, although other approaches may be permissible as long as they are empirically supported and documented.

Finally, measurement organizations should also consider prevailing industry guidance related to Out of Home (OOH) measurement related to ad angle and opportunity to see including the Exposure Zone requirements of the MRC's *Digital Place-Based Audience Measurement Standards*.

3.2.4   Occlusion Determination

Occlusion represents an instance where the In-Game ad unit is blocked from view either totally or partially during game play, and therefore the User's opportunity to see the creative is diminished. This includes UI occlusion.

IGA measurement organizations must specifically identify and segregate occluded ad Impressions for reporting purposes meaning ads with any occlusion present vs. ads with no occlusion present. Additionally, occlusion must be considered in the measurement of Viewable Impressions and ads that are determined to be occluded to the point where less than 50% of the creative is visible should not be counted as Viewable. Use of occlusion rules, specific rules where used and related limitations of occlusion measurement should be disclosed and supported by empirical analysis related to impact on viewability determination.

3.2.5   Impaired Visibility Considerations

Measurement organizations should consider different aspects that may impair the creative's visibility such as low lighting, opacity, contrast with background or other objects, shading and the effect of moving particles (that may create partial occlusion) whereby these conditions may diminish the opportunity to see the creative.

These aspects or conditions may manifest in color accuracy issues or material deviations from the original color properties of the creative. In those instances where these conditions exist to the extent they prevent the opportunity to see the creative, a Viewable Impression should not be counted. Measurement organizations may develop techniques and thresholds to measure these conditions inclusive of efforts to measure color accuracy or deviations, and these should be empirically supported and documented, as well as periodically studied and adjusted where applicable.

When measuring Viewability for transparent ads, measurement and consideration of color accuracy may not be relevant and as such, it is not required in these cases. However, there may be instances where an ad is shown backwards, or seen through a reflection. In these cases, these ads should not be counted as Viewable.

While these Guidelines do not recommend specific thresholds or techniques to account for the above conditions, at this time given disparate environments and approaches, it is possible that further research and evaluation of measurement approaches will result in future updates of these Guidelines to consider more specific requirements.

3.2.6 In-Game Viewability Polling

To promote consistency across measurers, the following guidance for measurement polling or snapshots of observations for determining In-Game Viewability of an ad are required:

- 200 milliseconds (ms) for both Display and Video ads

This frequency equates to five and ten consecutive positive observations for an In-Game Viewable Impression for Display and Video, respectively. The measurer is not required to store all of these observations.

While polling at a higher frequency is allowed, if a measurement organization can empirically validate that polling at a less frequent interval than every 200 ms (including the use of back off polling, or differential and less frequent polling for certain environments, content and viewability conditions) will result in no material differences in its Viewable Impression counts, this less frequent interval is allowable for In-Game Impression measurement. If a measurer chooses to poll for In-Game Viewability at a less frequent interval than 200 ms or utilize back off, the support for this approach must be revalidated on at least an annual basis, and this practice must be prominently disclosed.

In addition, measurement organizations with the capability to monitor state changes (or certain event-based techniques) may utilize this approach in lieu of the above polling requirements, until such time as a state change is recognized (at which time they should poll at the above stated frequencies at minimum with support for less frequent or differential polling as required above). Measurement organizations who use this approach should clearly disclose this.

The In-Game environment may be highly dynamic, where a user's movement within an In-Game session may be at a speed that leads to certain signals or snapshots within a second to return a "non-viewable" state due to partial occlusions, while the opportunity to see the creative is materially continuous (such as viewing a creative through a fence while moving). As this may lead to a risk of understating Viewable Impressions due to the lack of consecutive signals returning a "viewable" state, measurement organizations may use a majority of signals or observations within a second approach for measuring In-Game Viewability. **Under this approach, as long as measurement organizations conduct Viewability polling every 200 ms, they may count an Impression as Viewable when at least 3 out of 5 polling signals have returned a "viewable" state within a second. Measurement organizations opting for this majority of signals approach must empirically support that this measurement technique will not materially impact the accuracy of Viewability measurement by creating systematic over-counting. Additionally, support for using this approach must be retained and reviewed on a periodic basis, and this practice must be prominently disclosed.**

If a measurer utilizes a supported polling approach less frequent than 200 ms as described above, viewability determination must be based on consecutive events and cannot utilize a majority approach. Further, once the viewable condition is established, viewable duration may be incremented on a non-consecutive, sub-second basis, regardless of polling approach.

The MRC is cognizant that different polling frequencies and approaches can cause measurement differences between providers so materiality considerations when assessing impacts or justification for polling differences will be stringently applied.

3.2.7   TV/Input Source Off

As discussed above as part of Impression measurement, certain gaming devices that display to TVs or external monitors may include dedicated power sources and as a result, may be independent of the power state or input source of the TVs or monitors used to display their content. In such environments, content and advertising may be played while corresponding TVs or monitors are off or on a different source.

TV Off is not currently required to be directly measured for in-game Impression measurement determination as it is a common limitation. However, it must be measured and considered for Viewability measurement.

Current technological limitations make it difficult for a measurer using digital measurement assets to detect the power state or input source of a TV or monitor in all situations. Measurement organizations shall consider this limitation as well as its effect on measurement and clearly disclose it as a limitation where applicable. In addition, measurement organizations shall make efforts to identify and account for TV or monitor off conditions using empirically supported techniques such as modeling.

The impact of this limitation would be to overreport viewership by collecting and reporting data that was not displayed on the TV or monitor. While the impact of this limitation can be somewhat mitigated by inactivity rules (discussed above in this document), in some cases, the overreported measurement can be significant, such as a powered-on game console delivering game content and ads to a TV or monitor that is powered-off for an extended period of time. The direct use of signals or data for In-Game measurement that does not account for this can result in material bias in overreported Viewability. Measurement organizations should properly account for and adjust this overreporting in order to be accurate.

Measurement organizations are required to analyze available user activity or movement during an In-Game session, as well as use available signals to attempt to identify these instances. Additionally, we encourage the development of a technological or other solution to this limitation so that it may be considered in the future and require available signals related to TV or monitor power state and input source to be considered where present. When TV or monitor power state is known to be Off or input source is known to be different than the gaming input being measured, ad activity should not be included in

Impression counting, much less viewability measurement, as the ad could not have begun to render or have been delivered to a user.

3.2.8   Ad vs. Ad Container measurement and measurement of branded elements

Viewable Impression measurers generally measure the viewability of an ad based on the ad itself. However, some measurers who do not tag the ad determine ad viewability by measuring the ad container in which the ad appears. Viewability measurement based on the ad container involves an inference that that ad in fact appeared within the container in its intended format. While measurement based on the ad itself is generally preferable whenever possible, ad container-based measurement is also acceptable, but it should be supported by evidence that viewability measurement based on the container rather than the ad does not result in material counting differences, or in inaccurate viewability determinations because of the mis-sizing or scaling of ads (including responsive design) that appear within the container. Such empirical analyses should be conducted periodically for continuing support of this approach.

Related to scaling of ads (including responsive design), if the scaling of an ad is determined to be material in nature, the pixel percentage calculation used to determine the ad's viewable status should be based on the pixel (intended creative) area of the ad after scaling.

Furthermore, there may be instances within an In-Game session where a user comes across a branded object or element, where the brand's logo may be placed on one side or one area or subset of the object. In those instances, Viewability measurement should be based on the area designated by the buyer as the "area of interest" and standard Viewability requirements as described above should be followed for that specific area. However, ad sizes should be considered and must be reasonable (with respect to the ability to identify the ad) and standardized to the extent possible. Small, barely visible or invisible ad delivery or illogical (non-industry standard) ad sizes such as 0x0 and 1x1, should be considered by measurement organizations as part of General Invalid Traffic (GIVT) filtration processes, as described below.

3.2.9   Measurement of Multi-Ad Units

Certain ad campaign buys may be done on the basis of viewability measurement across multiple ad units. In such instances, viewability rules sometimes have been applied inconsistently. For instance, for certain buys, in which multiple ads for the same product appear on the same screen at the same time, there have been cases where measurers required all ads to be viewable in order to count the multi-ad unit as "viewable." Under this approach, a buy that involves three separate ads may have been considered not viewable even if two of the three ads qualified as viewable when independently measured.

In a case where the viewability of multiple ad units is required under the terms of a buy, each ad should be measured independently for viewability, and reported independently for viewability, regardless of whether the terms of the campaign specify that more than one (or all) of the multiple units must be viewable; the campaign terms should not influence the

reporting of each unit. Terms and Conditions may dictate the basis on which the units might be monetized (for example, payment is made by the advertiser only if all ad units in a multi-unit buy meet the requirements for a Viewable Impression), but each unit should still be measured and reported independently.

3.2.10 Other Viewability Considerations

3.2.10.1   Requirements for Reporting Viewable Impressions

Viewable Ad impressions should be counted and presented in three mutually exclusive buckets:

- Viewable Impressions
- Non-Viewable Impressions
- Impressions with Viewable Status Undetermined.

In all cases these three count totals should be disclosed for a campaign. Measurement providers are also encouraged to report the Total Impressions count along with the three metrics discussed above, which is the sum total of these three buckets. Counts that are the result of extrapolations or projections rather than specifically identified counts should be segregated for reporting purposes.

Additionally, it is appropriate to calculate performance metrics, beyond the pure impression counts. Three types of metrics should be presented together as they fully inform the user of the data taken together, and therefore should be disclosed:

- The "Measured Rate"
- The "Viewable Rate"
- The "Impression Distribution"

Measurers should strive to have the highest possible Measured Rates, as this rate is a key indicator of viewability measurement completeness and quality. Measurers may utilize different or a combination of different techniques and assets to measure viewability. These techniques and a measurer's implementation of them may have separate or overlapping capabilities as well as certain limitations in terms of devices, environments and creative types that can be measured for viewability. In In-Game environments specifically, there may be instances where certain hardware or platforms may not have the compatibility to enable complete measurement. These limitations should be disclosed to subscribers of the measurement service via methodological documents along with quantification of impact, where material. Measurers are encouraged to adopt a continuous improvement approach to measurement capabilities and work to address any material measurement limitations.

The above statistics should be reported separately for each measured environment. Further guidance regarding the proper calculation of these metrics is provided within the MRC Viewable Ad Impression Guidelines.

3.2.10.2   Mean Viewable Time

For those ads determined to be viewable, measurement providers are encouraged to disclose a metric that reports the total time the ad was in view (i.e., the cumulative time it was in the viewable area in accordance with the criteria for determining a Viewable ad Impression). This total includes all the time the ad was in view, including the time it was in view prior to having met the threshold to be considered a Viewable Impression.

When measuring the cumulative time the ad was in view, viewable duration may be incremented on a non-consecutive, sub-second basis, regardless of the polling approaches discussed above.

The Median Viewable Time is the median time those ad Impressions that were determined to be Viewable Impressions were in view. Non-Viewable Impressions or Undetermined Impressions do not contribute to this statistic. Different forms of ad-creative should be segregated for Median Viewable Time calculations on a campaign.

Note: For Video ads, it is possible that the Mean Viewable Time more often may be a more meaningful statistic than Median Viewable Time. This is because there are situations in which a majority of video ads are viewable for their full running lengths, in which case the Median Viewable Time would simply equal the running length of the ad. In such situations, measurers may consider reporting the Mean Viewable Time or Total Viewable Time in addition to (or, if convincing evidence of its relative efficacy exists, in place of) the Median Viewable Time metric, when a time in view metric is reported.

3.2.10.3   Other considerations from existing guidance

Other existing key concepts and guidance around measurement of viewability should be considered and followed, where applicable, as detailed in previously issued *MRC Viewable Impression Measurement Guidelines*. These include:

- Extrapolations or assumptions used to determine the viewable status of an ad
- Pre-bid Viewability determination
- Communication and discrepancy resolution for reported viewability metrics
- Viewability security considerations
- Strong user interaction *(NOTE: it is not expected this aspect applies to the current scope of these Guidelines, however, future iterations with more detail regarding A/R, V/R or immersive game experiences may consider this).*

3.2.11 Further study and reconciliation of viewability within In-Game

After issuance of these updated Guidelines, there may be value in further studying the different methods used for measuring viewability within In-Game, and reconciling measurement across measurers as this can inform any necessary updates that may be needed for the current Guidelines. The MRC and IAB intend to consider the need to perform reconciliation exercises as warranted to either update or add specificity to future iterations of these Guidelines as necessary.

In addition, as discussed in the scoping section of these Guidelines, this document does not include aspects of In-Game measurement beyond ad delivery and viewability such as interaction attributes, engagement and outcomes although these aspects may be considered as part of future phases of this project.

3.3. *Invalid Traffic*

Invalid Traffic (IVT) is defined generally as traffic or associated media activity (metrics associated to ad and content measurement including audience, Impressions and derivative metrics such as Viewable Impressions, Clicks, etc.) that does not meet certain quality or completeness criteria, or otherwise does not represent legitimate traffic that should be included in measurement counts. Among the reasons why traffic may be deemed invalid is a result of non-human traffic (spiders, bots, etc.) or activity designed to provide IVT. IVT does not include general editing such as cleaning, removal of corrupt or incomplete traffic or deduplicating traffic due to processing or timing artifacts unless evidence is present to suggest such edited traffic is generated by one or more of the techniques discussed below.

The MRC's *Invalid Traffic Detection and Filtration Standards Addendum Version 2.0 (MRC IVT Standards)* is applicable and should be considered for all existing digital measurement metrics, including In-Game metrics, subject to audit by MRC auditors and establishes two categories of IVT. The first, referred to as General Invalid Traffic or GIVT, consists of traffic identified through routine means of filtration executed through application of lists or with other standardized parameter checks. The second category, referred to as Sophisticated Invalid Traffic or SIVT, consists of more difficult to detect situations that require advanced analytics, multi-point corroboration/coordination, significant human intervention, etc., to analyze and identify.

All MRC-accredited digital measurement organizations, including organizations that measure IVT within In-Game environments, must apply GIVT detection processes as specified within the *MRC IVT Standards*. Application of SIVT detection processes are strongly encouraged. In cases where the measurement organization solely applies GIVT detection processes for a campaign, buyer organizations are encouraged to consider adding a capability including SIVT processes through a third-party or alternate method. Accreditation of any digital measurement (including In-Game measurement) requires the organization to apply GIVT detection techniques as is compliant with the *MRC IVT*

Standards; GIVT techniques or procedures are not separately accredited. SIVT detection functionality is eligible for independent accreditation.

All applicable GIVT areas discussed within the *MRC IVT Standards* as well as below are required to be adequately covered at minimum and SIVT accreditation requires effective coverage of all applicable categories and techniques discussed in the Standards and below – ad hoc or incomplete coverage is considered insufficiently compliant with the *MRC IVT Standards*.

3.3.1   GIVT Areas

Known GIVT must be removed from monetized counts and metrics and is subject to industry communication requirements specified in the *MRC IVT Standards*. GIVT must be excluded, where possible, from ancillary processes that impact monetization such as goal setting, targeting, frequency capping, etc.

As stated above, all measurement providers seeking accreditation for In-Game measurement are required to have adequate coverage in all GIVT areas described below, where applicable, and guidance provided within the *MRC IVT Standards* for each of these areas must be followed. For In-Game measurement specifically, there are additional considerations within each of the GIVT areas, and these are described below.

3.3.1.1   Data Center Traffic

Virtual Private Network (VPN), IP masking and data center/proxy traffic may be prevalent within In-Game environments and this may represent legitimate traffic that should not be filtered as IVT. Filtered data center traffic must be known and identified IVT and measurement organizations are required to empirically support identification of IVT or filters as well as to analyze and minimize false negatives/positives resulting from them. Any data center traffic unable to be labeled as legitimate or IVT must be considered as Unknown traffic when calculating an IVT decision rate, as further discussed below.

3.3.1.2   Robots and Spiders

The presence of robots and spiders may not be relevant within the In-Game environment when within a native game environment; however, for Desktop or browser-based games, and in some cases mobile applications, the requirements for filtration of robots and spiders as delineated in the *MRC IVT Standards* should be followed where applicable.

Within In-Game, there may be other tools available for detecting robots and spiders such as anti-bot and anti-cheat solutions; however, these may be more applicable within SIVT filtration. Furthermore, there may be more sophisticated perpetrators in this area, and these should be addressed as part of SIVT filtration as well.

3.3.1.3 Activity-Based Filtration

Activity-based filtration techniques should be applied by In-Game measurement providers, and as discussed in the *MRC IVT Standards* these should be based on transaction-level data and parameters from campaign or application data, and traffic should be removed when thresholds are met for the following evaluation criteria:

- Continuous, Full Coverage of Monetized Traffic
- Speed of Transactions
- Repeat Transactions
- Interval Testing
- Outlier Identification
- Missing Values, Missing User Agents (UA) where applicable, etc. Note: The IAB Tech Lab has issued UA guidance and this guidance should be followed, where applicable.
- Transaction Protocol Verification

Thresholds used for activity-based filtration within each of the above criteria should be supported by empirical research and must be periodically reviewed. Furthermore, these thresholds should be defined specifically for the In-Game advertising environment as well as further within desktop web, mobile application and console (further guidance regarding setting of thresholds and parameters is provided below).

3.3.1.4 Non-Browser User Agent Headers and Unknown Browsers

Although some gaming consoles may provide consistent GPU information, and native platforms may have unique User Agent (UA) patterns, there is currently a lack of standardization of UAs within the In-Game industry. In addition to this challenge, it may be difficult to control users' ability to change the UA on the HTTP request, adding an additional challenge to this environment.

While guidance provided within the *MRC IVT Standards* for this area should be followed where applicable, there is a need for the industry to discuss the potential standardization of UAs within the In-Game industry, at minimum for illogical UA checks or in an effort to reduce false positive flags (incorrectly flagged legitimate UAs). To the extent this industry development progresses, In-Game measurement organizations should utilize standardized fields in IVT considerations where available.

3.3.1.5 Pre-Fetch, Pre-Render and Invalid Placements

Guidance within the *MRC IVT Standards* related to pre-fetch, pre-render and invalid placements is applicable to the In-Game environment and should be followed where applicable.

As discussed above within the Ad Impressions section of these Guidelines, the ad must be loaded and at minimum begin to render in order to count it as a valid ad

Impression. As such, pre-fetch or pre-render traffic does not meet the requirements to be counted as ad Impressions and should therefore be removed from Gross Impression counts as well as from Net of GIVT (further guidance on IVT reporting is provided within these Guidelines and such guidance should be followed for In-Game measurement where applicable).

Furthermore, as discussed above within the Viewability section of these Guidelines, ad sizes should be considered when measuring Viewability and these must be reasonable and standardized to the extent possible. Small, barely visible or invisible ad delivery or illogical (non-industry standard) ad sizes such as 0x0 and 1x1, should be considered by measurement providers as part of GIVT filtration processes, as discussed within these Guidelines.

3.3.1.6   Non-rendering capabilities

Guidance within the *MRC IVT Standards* related to sessions or traffic without the capability to render or display images as determined at the client side should be followed for IGA measurement where applicable.

For native applications, IGA measurement providers may be able to evaluate GPU and hardware configurations for illogical values to detect non-rendering sources. However, in general the availability of signals to detect non-rendering sources may be largely driven by the specific In-Game environment as well as the ability for measurement providers to receive the appropriate signals.

3.3.2 SIVT areas

As stated above, the application of SIVT detection procedures is not required, but is strongly encouraged and therefore some measurement organizations may not apply these advanced techniques. Additionally, some subcomponents of SIVT involve specific metric types, such as Clicks and Viewable Impressions. Measurement organizations may have varying levels of coverage of these metrics and as such, certain aspects of SIVT may not be applicable to their measurement.

The resulting reported filtered metrics derived from a measurement organization's SIVT 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 and the overall effectiveness and coverage can be established across all required areas. SIVT is required for Audience and Outcomes measurement accreditation, including within In-Game environments.

The following are key examples of SIVT categories, which as stated above consist of more difficult to detect situations that require advanced analytics, multi-point corroboration/coordination, significant human intervention, etc., to analyze and identify. Specifically related to In-Game environments, the below areas should be considered where applicable. For example, most of these areas will be applicable for Desktop,

browser-based and mobile application-based games; however, several of these may not be applicable in native gaming environments.

- Automated browsing/playing from a dedicated device: Known automation systems (e.g., monitoring/testing), emulators, custom automation software and tools;
  - Within In-Game environments, game developers may have a specific incentive to protect the gaming environment from these risks, as these instances could negatively affect the user experience (i.e., a user using an automated technique with the objective of winning the game). There may also be anti-bot and anti-cheat tools that can be used to mitigate this risk, and these should be considered where relevant.

- Automated browsing/playing from a non-dedicated device: infected and hijacked devices (and sessions within) as well as incentivized automated activity;

- Incentivized human invalid activity: self-directed activity to benefit self or harm others and directed activity;

- Manipulated activity: Forced new browser window opening, forced tab opening, forced mobile application install (mobile re-direct), forced clicking behavior, tricking users to click / accidental clicks, clickjacking (UI redress attack) and hijacked measurement events;

- Falsified measurement events: visit, Impression, Viewable Impression, Click, location (specific to location falsification aimed at generating invalid ad activity, but not necessarily including validation of exact location for targeting purposes), referrer, consent string, conversion attribution and user attribute spoofing as well as SSAI spoofing where applicable to a measurement organization;

- Domain and App misrepresentation: App ID spoofing, domain laundering and falsified domain / site location;
  - In-Game environments may provide measurement providers with the necessary signals to identify such instances and these should be considered and utilized where applicable.

- Bots and spiders or other crawlers masquerading as legitimate users detected via sophisticated means (this does not include Non-Player Characters or NPCs as these instances are not expected to manifest as actual game sessions generating ad activity);

- Hijacked ad tags and creatives (specific to ads);

- Hidden/stacked/covered/transparent/invisible or otherwise intentionally obfuscated ad serving such as Z-order stacking, banner stuffing, transparent ads and background cycling and pop-under with auto-close (specific to ads; while it is expected game QA efforts may mitigate this occurrence, to the extent present even

in error, ad activity associated to these placements should be considered SIVT);

- Invalid proxy traffic (originating from an intermediary proxy device that exists to manipulate traffic counts or create/pass-on invalid traffic or otherwise failing to meet protocol validation);

- Adware and Malware that conduct deceptive actions including ad injection and unauthorized overlays;

- Incentivized manipulation of measurement (invalid incentivized promotion of an entity, without its knowledge or permission such as shilling or for purposes of manipulating measurement – excludes cases where the entity paying for the incentive is the entity being promoted, but still subject to Sourced Traffic disclosure requirements discussed in the *MRC IVT Standards*);

- Misappropriated (pirated or stolen) content (where used to purposefully falsify traffic at a material level);

- Cookie stuffing, recycling or harvesting (inserting, deleting or misattributing cookies thereby manipulating or falsifying prior activity of users); and

- Differentiating valid and invalid traffic when originating from the same or similar source in certain closely intermingled circumstances.

We expect SIVT perpetrators to change and evolve their techniques to become more sophisticated within the In-Game environment as this channel grows, and as such, MRC intends to re-visit the above SIVT areas in the future in order to provide further examples of SIVT areas that may specifically impact the In-Game environment. MRC may do this as part of planned IVT Standards updates efforts as warranted.

3.3.3 General IVT Considerations

3.3.3.1 Risk Assessment

A periodic risk assessment (at least annually for both GIVT and SIVT as applicable) for the measurement organization shall be performed in conjunction with assessing the sufficiency of internal control objectives and resulting internal controls, as delineated within the *MRC IVT Standards*. The results of such periodic risk assessments shall be tied to controls. This shall 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. 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 focused on audience measurement or ad traffic measurement shall also consider these processes.

Periodic IVT risk assessments must be performed considering each specific relevant platform (i.e., Desktop Web vs. Desktop Application vs. Mobile Web vs. Mobile Application vs. Console) and if the measurement organization measures within an In-Game environment, this must be conducted for that environment specifically and discretely as well as within desktop/web, application and console environments within In-Game. Measurement organizations are also are encouraged to be differentiated by or include other pertinent traffic segmentation such as video vs. display, geography or client type (e.g., managed-service vs. self-service, etc.) as applicable. Results of risk assessments must be directly tied to discrete controls for each platform and segmentation. If a measurement organization believes platforms or traffic segmentations demonstrate similar risk profiles and should be assessed as a group, this shall be supported by auditable demonstrable evidence.

### 3.3.3.2	Decision Rate

In addition to taking steps to secure and protect measurement tags and assets, measurement organizations must actively report IVT "decision rates" (or an alternate and descriptive name) or situations where insufficient signals are collected to make an IVT decision. Details regarding the calculation of the decision rate are contained within the *MRC IVT Standards*.

This decision rate shall be computed as recorded Impressions where the vendor was able to collect sufficient information and signals as designed/intended to be collected and used to make an IVT determination; divided by the total number of Impressions (or respective transactions, if applied to something other than Impressions) intended for measurement and reporting by the same measurement organization. Impressions without sufficient information to make an IVT decision must be reported as such and must not contribute to IVT metrics or rates. Decision rates can be reported on both the basis of Tracked Ads and Impressions, but it is not expected that downstream metrics such as Viewability would include Impressions without sufficient information to make a GIVT decision (differential GIVT and SIVT reporting of decision rates for downstream metrics is permissible). The decision rate shall also be reported by media type and environment (Desktop Web, Mobile Application, Console, etc.), with differential and discrete consideration of In-Game environments, and shall be presented for GIVT and SIVT distinctly if different. MRC may consider decision rates, much like Viewability measured rates, when making accreditation decisions based on benchmarking across audited vendors.

Further, measurement organizations must differentiate between degrees of detection capabilities (when a decision can be made or when varying tags such as SDKs, scripts or pixel tags are applied and differential signals are collected) and empirically support the effectiveness of each across environments. Limitations of each technique (such as instances where certain normally collected and utilized fields are not available) shall be actively disclosed and quantified to client users where applicable and appropriate and considering reverse engineering concerns. In situations where differential detection capabilities are present and vendors may not be able to make a full IVT

decision, this traffic must be reported as unknown and not included in the numerator of the decision for purposes of IVT reporting and not assumed to be valid or invalid unless supported to be without material false positives or negatives.

The data fields required to consider an Impression recorded where the measurement organization was able to collect sufficient information and signals as designed/intended to be collected and used to make an IVT determination may vary depending on methodology and environment, but must be empirically supported and demonstrable through auditable evidence.

If a measurement organization has a decision rate of 100% across all measured traffic, this can be generally disclosed in reference materials without the need for discrete reporting, with appropriate support. It is not necessarily always desired or required to have 100% signal collection to have effective IVT defenses and the decision rate is designed to be informational to users of measurement data. It is important that steps are taken to educate users related to this metric and its meaningfulness. There is also a risk of assisting bad actors by highlighting lack of coverage of certain properties or inventory types and as a result, reporting of decision rates should be limited to users of reported data that have been subject to Business Partner Qualification as defined in the *MRC IVT Standards*.

3.3.3.3   Specific Thresholds and Considerations for In-Game

The risks and techniques perpetuated in In-Game environments may exhibit differential characteristics when compared to those employed in other environments. Moreover, IVT detection assets utilized in other environments may not be available, function, or widely adopted within In-Game environments (i.e., JavaScript, cookies, etc.). As such, measurement providers performing IVT detection and filtration in In-Game environments must consider this environment discretely in risk assessments (as discussed above). Such consideration must not only be with the intent of assessing differential risks, but also to determine whether corresponding controls are relevant in this environment. Additionally, GIVT thresholds and parameters should also be differentially and discretely considered for the In-Game environment.

In-Game SIVT detection techniques must also consider this environment differentially and discretely, and shall include (but not be limited to) where known:

- Detection measures and capabilities at various application or gaming session stages.
- Fraud types, models, risks or incentives specific to this environment.
- Whether specific types of In-Game inventory are priced at a premium and may draw more focus or risk for potential IVT generation.
- Relative sophistication of potential IVT schemes required in this environment, as it might involve techniques that could be more difficult to detect.
- Susceptibility of apps or gaming hardware to transmission interception; the encryption and security protocols of these transmissions (or lack thereof) may drive increased risk and may warrant consideration by measurement organizations.
- To the extent that IVT and measurement detection assets (such as JavaScript, Flash or

cookies) or other techniques deployed in other environments do not function within In-Game, measurement organizations should consider additional assets or telemetry to serve as compensating controls and to cover detection gaps.
- Presence of proxy traffic or routing artifacts that may obfuscate origination information or limit the granularity of data collected for purposes of IVT determination.

3.3.3.4 Other IVT Considerations From Existing Guidance

Other existing key concepts and guidance around IVT should be considered and followed, where applicable, as detailed in previously issued *MRC IVT Standards*. These include:

- Business Partner Qualification
- Organizational functional areas
- Sourced or purchased traffic
- Up-front IVT techniques

3.4. *User Attribution and Audience*

Audience measurement and associated user attribution processes for In-Game should adhere to the requirements of the MRC's *Digital Audience Based Measurement Standards* including viewability and SIVT requirements as well as the IAB/MRC *Audience Reach Measurement Guidelines* where applicable.

However, there are certain aspects of In-Game environments that are unique regarding Audience measurement that should also be considered. Specifically, while mobile gaming may involve individual users per Session and device, console-based gaming and to some extent, PC gaming, may involve multiple users or gamers per Session and device. Whereas online multi-player game instances may involve separately measurable devices and Sessions, local multiplayer game instances may not be as straightforward to measure.

Generally, it is permissible to count more than one Session and resulting ad occurrences when multiple gamers are present, but this likely requires additional signals related to the presence of multiple input devices such as controllers and keyboards, multiplayer, split screen and shared keyboard game mode instances and/or player IDs, accounts or logins. To the extent these signals are present, they should be used in determining multiple Sessions and users per gaming instance for distinct ad measurement and to distinguish this from multiple ad instances for the same Session and user (requirements for establishing Sessions and measuring ad activity within them are included within these Guidelines as well as related IAB/MRC *Impression Measurement Guidelines* where applicable). Further, local multiplayer game instances for turn-based games or where input devices are shared should also be considered and accounted for. These Guidelines encourage further industry efforts to standardize consistent input device and multi-player signals for use by In-Game measurers. Establishing consistent signals for multiple users or gamers is important for audience measurement, but also when considering IVT and activity-based filtration as discussed above.

In addition, consistent with the *MRC Digital Audience Based Measurement Standards*, efforts must be made to establish the presence of a user when measuring audience. For example, the game context should be considered in that waiting rooms that do not require gamer presence or passive/non-interactive cut scenes may be less likely to have active user Sessions or gamers may be more likely to leave the room even though ads may be present. These situations should be considered along with the guidance related to Inactivity detailed previously in these Guidelines.

Finally, beyond establishing audience and the presence of users, there may be unique aspects of In-Game measurement when attempting to attribute characteristics to a user or gamer. These include the presence of multiple users regardless of whether the game Session is multiplayer or during a single Session of a turn-based multiplayer game. Multiple users may still be present in a room and exposed to gameplay inclusive of ads when another gamer is actively playing a single-player session or their turn. These multiple users may not reside in the household where gameplay occurs and the gaming content may not always be the best predictor of the user type playing or present. While similar conditions exist in legacy media such as TV and existing approaches to capture this audience should be considered, further research is likely required to determine approaches to properly account for the presence and attention of multiple users during a single gameplay Session when measuring audience and attributing users.

4. Other Measurement Considerations

Significant measurement limitations, such as limitations associated with technology platforms, game hardware and/or game-software versions or operational failures or errors, should be fully disclosed by the In-Game measurement organization. To the extent limitations are known up front, these should be fully disclosed in advance of negotiating the advertising campaign. Any other measurement errors noted by the In-Game measurement organization should be disclosed to buyers if they impact greater than 5% of reported counts, including if the error was discovered post campaign, within one calendar quarter.

Aggregation methods used to collect and summarize records of game-play activity from a Client-User and across Client-Users for a reporting period should be specified and fully disclosed, as well as the definition of a gaming session as these may be configurable by gaming developers. Reasonable internal controls should be present to prevent the loss, duplication or unintended alteration of game play activity. The nature of the data captured for game-play records (specific fields with descriptions) should be disclosed.

Editing, ascription, attribution or other data adjustment techniques should be specified and fully disclosed. Where applicable, valid ad Impression counts subject to significant levels of adjustment (sourced from the In-Game measurement organization and not User activity directly) should be segregated from non-adjusted counts for reporting purposes.

Other measurement limitations that may be present during game-play such as abandonment, pop-up blockers, modified browser attributes, cached activity, etc., should

be fully disclosed where applicable.

Software Development Kits (SDKs) and Other External Inputs

Robust quality control for onboarding SDK users, updating and version control must be present. In SDK oriented measurement environments, the measurement organization should have sufficient confidence that controls are maintained for the SDK functionality. Development of this confidence can encompass periodic review and/or testing.

An API approach may involve the use of a third-party (or first-party) that is responsible for implementation and ultimately delivering the inputs into measurement. In any case, measurers are required to conduct robust quality control procedures to onboard, vet and periodically review the use of external inputs into measurement. Such quality control procedures should include (but not be limited to) executing scripts in external game library environments or in coordination with game developer engines to verify appropriate and accurate implementation both during onboarding and periodically on an ongoing basis. Use of API libraries and a process for validating the analysis of data collected through an API for publishers or providers using standard agreed upon APIs is strongly encouraged. Providers of APIs may choose to have their functionality and API inputs centrally validated/examined to provide assurance to their measurement users – this approach could significantly reduce (but not eliminate) the testing required by measurement users.

5. Auditing Guidelines

General

Third-party independent auditing is strongly encouraged for all In-Game ad-serving applications used in the buying and selling process.

Auditing of In-Game advertising measurement is recommended to include both the counting methods and processing/controls employed, as follows:

1. **Counting Methods**: Independent verification of activity for a defined period. Counting method procedures generally include a basic process review and risk analysis to understand the measurement methods, analytical review, transaction authentication, validation of any relevant filtering procedures used, and measurement recalculations. Activity audits can be executed at the campaign level, verifying the activity associated with a specific ad creative being delivered for performance measurement purposes.

2. **Processes/Controls**: Examination of the internal controls surrounding the ad delivery, recording and measurement process. Process auditing includes examination of the adequacy of site or ad server applied filtration techniques, if applicable.

Although audit reports can be issued as infrequently as once per year, some audit testing should extend to more than one period during the year to assure internal controls are maintained. Audit reports should clearly state the periods covered by the underlying audit testing and the period covered by the resulting certification.

6. General Reporting Parameters

In order to provide for more standardization in In-Game advertising measurement reporting, the following general reporting parameters are recommended:

Day: 12:00 midnight to 12:00 midnight

Time Zone: Full and prominent disclosure of the time zone used to produce the measurement report is required. In addition, all reported data should be made available to users based on Eastern Time Zone (U.S.) time periods (in addition to any others that measurement organization may deem appropriate), to allow users to make comparisons across web sites and properties from a common standard of time reference.

Week: Monday through Sunday

Week parts: Monday-Friday, Monday-Sunday, Saturday, Sunday, Saturday-Sunday

Month: Three reporting methods are acceptable: 1) TV Broadcast Month definition—in this definition, the Month begins on the Monday of the week containing the first full weekend of the month; 2) 4-week periods (13 per year), consistent with media planning for other media; or 3) a calendar month. For financial reporting purposes, a month is defined as a calendar month.

7. Disclosure Guidance

An organization's methodology for accumulating In-Game measurements should be fully described and accessible to users of the data.

Specifically, the nature of In-Game measurements, the methods of sampling used (if applicable), data collection methods employed, data editing procedures or other types of data adjustment or projection, calculation explanations, reporting standards (if applicable), reliability of results (if applicable), and limitations of the data should be included in the disclosure.

Following are examples of the types of information that should be disclosed:

 Nature of In-Game Measurements
- Title of the Game(s) Included in the Measurement
- Name of Measurement Report
- Type of Measurements Reported
    - Time Periods Included

- o Days Included
- o Basis for Measurement
- o Geographic Areas
- o Significant Sub-Groupings of Data
- Formats of Reported Data
- Special Promotions Impacting Measurements
- Nature of Auditing Applied and Directions for Access to Audit Report
- Sampling/Projections Used (if applicable)
  - o Explanation of Projections Methods

Data Collection Methods Employed
- Method of Data Collection
  - o Logging Method
  - o Logging Frequency
  - o Logging Capture Point
- Types of Data Collected
  - o Contents of Log Files
- Contacts with Users (if applicable)
- Research on Accuracy of Basic Data
  - o Latency Estimates
- Rate of Response (if applicable)
- Editing or Data Adjustment Procedures
  - o Checking Records for Completeness
  - o Consistency Checks
  - o Accuracy Checks
  - o Rules for Handling Inconsistencies
  - o Circumstances for Discarding Data
  - o Handling of Partial Data Records
    - Ascription Procedures
  - o Computation of Reported Results
    - Description of How Estimates are Calculated
      - Illustrations are Desirable
    - Weighting Techniques (if applicable)
    - Verification or Quality Control Checks in Data Processing Operations
    - Pre-Release Quality Controls
    - Reprocessing of Error Correction Rules

Reporting Standards
- Requirements for Inclusion in Reports, Based on Minimum Activity Levels

Reliability of Results
- Sampling Error (if applicable)

Limitations on Data Use
- Non-Sampling Error
- Errors or Unusual Conditions Noted in Reporting Period
- Limitations of Measurement

8. References

List of previously released MRC / IAB Standards Industry Guidelines:

Most Recent Update	Original Issue Date	Standards & Guidelines (Hyperlink To Document)
Dec 2011	1964	Minimum Standards for Media Rating Research
	May 2009	Click Measurement Guidelines
	Feb 2012	Conduct of Ad Verification Guidelines
	Jun 2012	Multi-Channel Digital Video Data Capture, Accumulation and Procession Guidelines (Return Path Data)
	Aug 2013	Audience Reach Measurement Guidelines
Aug 2015	Jun 2014	Viewable Ad Impression Measurement Guidelines
Jun 2020	Oct 2015	Invalid Traffic (IVT 2.0) Detection and Filtration Standards Addendum
	Nov 2015	Social Media Measurement Guidelines
	Jun 2016	Mobile Viewable Ad Impression Measurement Guidelines
	Mar 2017	Digital Place Based Advertising Measurement Standards
	Mar 2017	Location Based Advertising Measurement Guidelines
Oct 2017	Sep 2004	Desktop Display Impression Measurement Guidelines
Oct 2017	July 2013	Mobile Web Advertising Measurement Guidelines
Oct 2017	July 2013	Mobile Application (In-App) Advertising Measurement Guidelines
	Dec 2017	Digital Audience-Based Measurement Standard
	Jan 2018	Digital Audio Measurement Standards (includes Podcasting)
Jun 2018	May 2006	Digital Video Impression Measurement Guidelines
	Sep 2018	Brand Safety Ad Verification Guidelines – SUPPLEMENT to Conduct of Ad Verification: Enhanced Content Level Context & Brand Safety
	Sep 2019	Cross-Media Measurement Standard: Phase I Video
	Aug 2021	OTT/CTV and SSAI Digital Video Measurement Guidelines

9. Background

Since 2009 when IAB's Modernizing Measurement Task Force (MMTF) released the In-Game Advertising Measurement Guidelines, digital advertising has undergone many changes.

In the past couple of years, members and advertising platforms across IAB, IAB Tech Lab, and Media Rating Council (MRC) have requested updated guidelines for In-Game ads. The IAB, IAB Tech Lab and MRC once again collaborated to update measurement guidelines for In-Game ads, aiming to modernize a set of guidelines that will drive growth in the ecosystem for both advertisers and developers armed with consistent metrics and the ability to better forecast monetization opportunities.

About the IAB Experience Center

The Experience Center focuses on emerging platforms and evolving consumer behaviors to help the industry understand and reach the new media consumer. The Experience Center is governed by the Flagship Experience Center Board, the AR Board and the Games and Esports Board.

Our Focus: Future-proofing and how to reach the audiences of tomorrow, innovation-focused buy and sell-side conversations, and big picture discussions about the implications of technological and consumer shifts for the digital media industry

About the IAB Tech Lab

Established in 2014, the IAB Technology Laboratory (Tech Lab) is a non-profit consortium that engages a member community globally to develop foundational technology and standards that enable growth and trust in the digital media ecosystem. Comprised of digital publishers, ad technology firms, agencies, marketers, and other member companies, IAB Tech Lab focuses on solutions for security and fraud; identity, addressability and privacy; advanced TV; ad experiences and measurement; and programmatic effectiveness. Its work includes the OpenRTB real-time bidding protocol, ads.txt anti-fraud specification, Open Measurement SDK for viewability and verification, VAST video specification, and Project Rearc initiative for privacy-centric addressability. For more information, please visit https://iabtechlab.com.

About the Media Rating Council

The Media Rating Council is a non-profit industry association established in 1963 comprised of leading television, radio, print and digital media companies, as well as advertisers, advertising agencies and trade associations, whose goal is to ensure measurement services that are valid, reliable and effective. Measurement services desiring MRC accreditation are required to disclose to their customers all methodological aspects of their service; comply with the *MRC Minimum Standards for Media Rating Research* as well as other applicable industry measurement guidelines; and submit to MRC-designed audits to authenticate and illuminate their procedures. In addition, the MRC membership actively pursues research issues they consider priorities in an effort to improve the quality of research in the marketplace. Additional information about MRC can be found at www.mediaratingcouncil.org.

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