MRC Mobile Viewable Ad Impression Measurement Guidelines
Final Version – June 28, 2016

Introduction

The Mobile Viewable Advertising Impression Measurement Guidelines document that follows is intended to provide guidance for the measurement of viewable impressions in Mobile Web and Mobile In-Application (In-App) environments.

These viewability guidelines are designed for mobile (web and in-app) advertising. This document supersedes all previous MRC guidance on the measurement of viewable impressions of advertising that appears in mobile environments effective upon issuance and serves as permanent guidance (subject to periodic updates; future iterations of these guidelines will be managed in coordination with the IAB Modernizing Measurement Task Force and include appropriate notification and grace periods for compliance).

This document supplements the existing Interactive Advertising Bureau (IAB)/Mobile Marketing Association (MMA)/Media Rating Council (MRC) Measurement Guidelines for mobile web advertising and mobile application advertising as well as serves as an addendum to the Desktop Viewable Ad Impression Measurement Guidelines published by the Media Rating Council (MRC). These Guidelines and the most recent version of the MRC Desktop Viewability Guidelines may be found at the following links:

IAB/MMA/MRC Mobile Web Ad Measurement Guidelines:
http://www.iab.com/wp-content/uploads/2015/06/MobileWebMeasurementGuidelines2FINAL-1.pdf

IAB/MMA/MRC Mobile Application Ad Measurement Guidelines:
http://www.iab.com/wp-content/uploads/2015/06/MobileAppsAdGuidelines1FINAL-1.pdf

MRC Desktop Viewability Guidelines:
http://mediaratingcouncil.org/081815%20Viewable%20Ad%20Impression%20Guideline_v2.0_Final.pdf

The criteria established in this document will provide a path by which organizations that do comply with the guidance noted herein can become accredited. Any organization that was granted accreditation by MRC for mobile viewability measurement prior to the final completion of these guidelines is required to substantially comply with the final mobile viewable impression measurement requirements within 90 days of final issuance of these guidelines or accreditation will be removed.

For background and details on the process of developing MRC's Viewability Guidelines, see the *Viewability Project Background and Data Analysis Addendum* issued separately by MRC.

Definitions

Application Programming Interface (API): A set of routines, protocols and tools for building software applications. An API defines functionalities that are independent of their respective implementations, which allows definitions and implementations to vary without compromising the interface. In the context of this document, an API is one of the available techniques to gather and transmit information about mobile viewability measurement within an application at the publisher side.

Density-Independent Pixels (also called Device Independent Pixels or iOS Points): An abstraction from physical screen pixels meant to simplify application and content development across devices of different screen densities (identical to a Cascading Style Sheet or CSS pixel). One Density-Independent Pixel corresponds to roughly one device pixel on a device with roughly 160 DPI or 1/160th of an inch. For purposes of this document, creative dimensions and viewability pixel thresholds refer to Density Independent Pixels (also used by the IAB's Mobile Rich Media Ad Interface Definition or MRAID), not Physical Pixels (defined below).

Inline Frame (IFrame): An HTML document embedded inside another HTML document on a website. The IFrame HTML element is often used to insert content from another source, such as an advertisement, into a Web page. IFrames can be nested, essentially creating a "chain" of serving instances from serving partners. An IFrame associated with a placement where the ad tag is located on an HTML document loaded from a domain other than the domain of the document on which the IFrame was rendered is called a cross-domain IFrame.

Invalid Impressions: Impressions that do not meet certain ad serving quality or completeness criteria, or otherwise do not represent legitimate ad impressions that should be included in impression counts. Among the reasons why an ad impression may be deemed invalid is it is a result of non-human traffic (spiders, bots, etc.), or activity designed to produce fraudulent impressions (see definition of Fraudulent Impressions in the Desktop Viewability Guidelines). For more on invalid impressions, refer to *MRC's Invalid Traffic Detection and Filtration Guidelines Addendum*.

Mobile Device: A handset, tablet, or other communication device (generally running a mobile operating system) used to access the Internet wirelessly, usually through a mobile carrier or Wi-Fi network. Traditional PCs and laptops are not considered Mobile Devices for the purposes of these guidelines nor are hybrid devices running desktop operating systems.

Mobile In-Application (In-App; for purposes of this document and mobile viewability): Refers to content and ads within the native User Interface of an application and not content within either a mobile browser or an embedded browser within an application environment (an instance that is embedded within a native application; typically, this occurs when a user clicks on a URL in a mobile application and the application executes the embedded browser). Mobile In-Application includes scenarios where viewability cannot typically be measured using only JavaScript (SDKs or APIs as defined in this document are generally also required for viewability measurement) and interstitial ad content (where the ad content represents 100% of the screen size) within applications. WebView components may or may not be present.

Mobile Rich Media Ad Interface Definition (MRAID): A protocol (API) that enables communication between an ad and a mobile application in order to execute interactions such as geolocation, ad resizing, and accelerometer functions among others.

Mobile Viewable Ad Impression: A mobile served ad impression can be classified as a mobile viewable impression if the ad was contained in the viewable space of the device, either within an in-focus web browser (Web View) or a fully downloaded, opened, initialized application, based on pre-established criteria such as the percent of ad pixels (Density-Independent) within the viewable space and the length of time the ad is in the viewable space of the device. It is recognized that an "opportunity to see" the ad exists with a mobile viewable ad impression, which may or may not be the case with a mobile served ad impression.

Mobile Web (for purposes of this document and mobile viewability): Refers to website content and ads within it, displayed within a mobile web browser or displayed by an embedded browser within an application environment (excluding interstitials). Mobile Web viewability can typically be measured through JavaScript alone (with the exception of certain cross-domain IFrame scenarios which may require other measurement assets or techniques).

News Feed (also called Continuous Feed, Endless Page or Infinite Scroll): For purposes of this document, refers to mobile environments either within a mobile browser or an application that contain a continuous, infinitely scrollable collection of content and links, generally arranged vertically or horizontally. In order to be considered a News Feed environment for purposes of this document, the content must be serial and automatically loaded during user scrolling (News Feeds does not include discrete loading of content after user interaction; scrollable content must be continuous).

Obstruction: Used generally to include any occlusion of content including Z-order layering (or vertical stacking) of elements, OS level alerts or notifications, content in

the background and content clipped or scrolled in the user interface which is either partially or completely unable to be seen by a user. Foreground content without obstruction is analogous to in-focus in desktop environments (see the MRC Desktop Viewability Guidelines for further detail) and used interchangeably throughout this document.

Physical Pixels: The actual pixels on a device screen. Devices with higher screen density or resolutions may manifest more pixels than those devices with lower densities for identical creatives with the same physical dimensions. Hence, the Physical Pixels contained within the same physical area can vary between Mobile Devices, which makes the use of physical pixels difficult as a viewable impression parameter in a mobile environment. For purposes of this document, creative dimensions and viewability pixel thresholds refer to Density Independent Pixels (defined above and also used by MRAID), not Physical Pixels.

Rendered Mobile Served Ad Impressions: The Rendered Mobile Served Impression counts referenced in this document apply to mobile viewability measurement and reporting and refer to valid served mobile ad impressions as specified by the IAB Ad Impression Measurement Guidelines (as well as applicable Mobile Web and Mobile In-Application Measurement Guidelines; see Note below) using client side counting as well as verification that an ad was delivered and loaded/rendered within a browser or container in an application. The required count needs to go beyond "count on download". Discrete measurement at each step (delivery and load) is not required.

Note: The Desktop Viewability Guidelines define Rendered Served Ad Impressions as served impressions that meet the current requirements for a valid served ad impression as specified by the IAB Ad Impression Measurement Guidelines (as well as applicable Mobile Web and Mobile In-Application Measurement Guidelines), with the exception of those ads counted as served utilizing a "Count on Decision" methodology, which is a method in which the served ad is counted at an early point in the client-side counting process (the count typically occurs when the ad server serves the ad content in response to an ad request). *The MRC intends to work with the IAB to update the Measurement Guidelines regarding ad serving (Display, Video and Mobile Web/Application) to create consistent requirements for served impression counting across platforms and content. Vendors are encouraged to move all impression measurement to the stricter viewability guidelines detailed above.*

Server-Side Ad Serving (can include Stream Stitching, Video Pre-Loading or Ad Stitching): In the context of mobile video, the use of an intermediary server to insert ads dynamically into video streams on the server side or directly embedding ads into video content prior to content delivery where a streaming video player is not capable of executing dynamic ad responses or tracking impressions and interactions.

Software Development Kit (SDK): A separate sub-application within the application environment which is directed at performance of certain common functions such as measurement or counting of advertising activity and/or the delivery or storage of advertising content. In the context of this document, an SDK is one of the available techniques to measure mobile viewability within an application.

Video Ad Serving Template (VAST): An XML response framework that enables a consistent delivery format for ads or advertising across streaming video platforms.

Webview: A component that displays HTML documents within the user interface of mobile applications.

General Requirements

For counting of mobile viewable ad impressions, existing key concepts of served ad impression counting should be followed, as detailed in previously issued IAB Measurement Guidelines. These include:

- Client Side Counting
- Mobile measurement for downloaded, opened, and initialized applications
- Inclusion of off-line application activity during a campaign reporting period
- Filtration of Non-Human Activity and Invalid Activity commensurate with *MRC's Invalid Traffic Detection and Filtration Guidelines*
- Cache Busting Techniques
- Differentiate Significant Auto-Refresh versus Human-Initiated Activity
- Differentiate Pre-Fetch and Pre-Render Activity (from traditional served activity and each other where possible and counts ads only after they appear on a user's browser)
- Differentiate Impressions Out-Of-Focus or with Obstruction
    - Measurers are required to account for situations of obstruction as defined above to the extent technically feasible to determine the in-focus status of measured content. Limitations in the ability to detect certain obstructions or occlusions of measured content should be fully disclosed with impact on reported results quantified where material.
- Disclosing Material Internal Traffic (if not filtered)
- Full Disclosure of measurement methods and key metrics by Publishers, Portals, Ad-Servers, Ad Networks and Exchanges
    - In the context of viewable mobile ad impressions, this principle of transparency of measurement processes to data users should apply to all measurers of viewable mobile impressions, including 3rd party measurers.

Requirements for Mobile Viewable Display Advertising Impressions

In addition to the above requirements, Mobile Viewable Display Ad Impressions are counted when the following criteria are met:

- **Pixel Requirement:** Greater than or equal to 50% of the pixels (Density-Independent) in the advertisement were on an in-focus browser[1] or a fully downloaded, opened, initialized application, 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. This time requirement applies equally to News Feed and non-News Feed environments.

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.

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.

Additional Notes on Mobile News Feed Environments: Data reviewed in the preparation of these Guidelines supports that the vast preponderance of mobile display News Feed ads that meet or exceed the qualifications stated above for a Viewable Impression will indeed have resulted in the establishment of OTS in a News Feed environment, however, the MRC recognizes the possibility exists, because of the unique manner in which content and display advertising in a News Feed environment passes through a user's viewable port of a mobile web browser or application, that in certain limited circumstances specific to mobile display advertising in News Feeds, the Opportunity to See (OTS) an ad may be established at a sub-second level.

While compelling evidence does not exist at this time to establish a lower industry time threshold for mobile display ad viewability in News Feed environments, MRC is aware of some research that suggests that more rapid establishment of OTS in

[1] See definition of "in focus" above; "browser" in this context refers to a mobile browser or embedded browser within an application.

certain limited ad contexts may occur more frequently within mobile News Feeds than in other environments. These Guidelines therefore allow for the separate reporting of mobile display ad impressions that appear in News Feeds where 50% or more of the ad's pixels are in continuous view for more than 0.5 seconds but less than 1 second, post render; this metric is to be labeled a "Sub-Second Ad Impression."[2]

Sub-Second Impressions *are not Viewable Impressions*, as they fail to meet the time exposure threshold necessary to qualify as Viewable Impressions as defined herein. However, buyers and sellers may choose to assign value to these Sub-Second Impressions, recognizing that any value they may have can vary based on the specific type of advertisement involved (for instance, logo-based display ads may inherently be recognized more quickly than other types of creative executions) and the nature of the News Feed environment in which it appears. The MRC believes that exposures (post render) of less than 0.5 seconds, even within ideal contexts in News Feed environments, are extremely unlikely to result in the consistent establishment of OTS occurrences.

The segregated reporting of Sub-Second Impressions can facilitate the buy/sell parties' abilities to recognize any value they may choose to assign to these impressions, but also recognizes they do not meet the requirements to qualify as Viewable Impressions.

User Interaction Considerations: If the measurer is able to determine that there is a strong user interaction with the ad, then the ad may optionally be counted as viewable even if it does not meet the pixel and time criteria noted above. In this context, a legitimate tap or click within an ad (i.e., it satisfies the requirements for counting a click, based on the IAB's Click Measurement Guidelines) may constitute a "strong user interaction" that would result in a Mobile Viewable Impression (given the nature of mobile environments which may involve more frequent and inadvertent interaction, clicks or taps to minimize or close ads as a proxy for viewability should be supported empirically); but a swipe alone (for example, a swipe for horizontal or vertical scroll in a feed environment), without compelling empirical support of user intent, generally would not be considered a strong user interaction with the ad that would serve as a proxy for viewability. A swipe or flip within the space of an ad unit for certain Rich Media and larger format or full-screen creatives may represent strong user interaction when empirically defensible (demonstrating support for user intent to interact) as a reasonable proxy for viewability by the measurer.

A tap or click that initiates a Click to Play video ad would not, in itself, be considered a user interaction that satisfies this criteria, as a valid video impression should not

[2] In the event that a 200 millisecond polling interval is used for measurement, 3 successful polls are required to qualify as a Sub-Second Ad Impression.

be counted as served until after the initiation of the stream, post-buffering (measurement should not occur when the buffer is initiated, rather measurement should occur when the ad itself begins to appear on the user's browser as specified by IAB guidelines). Only subsequent clicks after initiation of a Click to Play video are eligible for consideration of user interaction for purposes of viewability measurement.

Specific user interactions that will satisfy the requirement of a "strong user interaction" should be appropriate to the advertisement and the environment in which it appears, they should be empirically defensible as reasonable proxies for viewability, and each type of qualifying user interaction should be fully disclosed by the measurement organization. In addition, the number of Mobile Viewable Impressions that result from application of a user interaction rule (rather than the 50% of pixels/one continuous second rule) should be segregated for reporting purposes.

Measuring the Ad vs. the Ad Container: Viewable Impression measurers generally measure the viewability of an ad based on the ad itself (for instance, by attaching a JavaScript tag to the ad). However, some measurers who do not tag the ad determine ad viewability by measuring the ad container (e.g., such as in an IFrame) 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 under these guidelines, 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.

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 (Density-Independent) area of the ad after scaling. Further study is encouraged to determine whether there is a minimally acceptable percentage of original display size that is appropriate for acceptable mobile legibility and viewability qualification for future iterations of these guidelines.

Large Size Display Ads: Large size display ads (such as IAB's "Rising Stars" formats, which also exist in mobile environments) may present special challenges in terms of meeting viewability thresholds. Because these ads are designed to occupy a large area of the browser or application, it was determined that applying different criteria to determine the viewable status of certain large size ads was reasonable in a desktop environment. However, due to the complexities of the varying device sizes and resolutions included within the scope of the mobile device definition and these guidelines, and a concern over whether a differing threshold would present

unmanageable discrepancies, these guidelines do not stipulate a similar exception for mobile viewability.

We suggest further study to evaluate whether it is appropriate to apply different thresholds for large size mobile display ads (based on % of pixels or % of device screen) or full-screen display ads, with particular attention to balancing the special challenges presented by ads of these sizes, with the need to preserve the effectiveness of the advertising message. If it is determined to be appropriate to apply different thresholds for large size mobile display ad units, this guidance will be provided in a future update of these guidelines. We believe that large size or full-screen mobile *video* ads require, at minimum, a similar time threshold to that specified in these guidelines for qualification as a video viewable impression.

<u>Other Notes Related to Mobile Viewable Impression Measurement:</u>

1. In all cases a viewable impression must also meet pre-existing criteria for a mobile served impression, for example, counted on the client side, filtered for invalid activity, etc. These are over and above the viewable criteria.

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

3. Once an ad qualifies as a valid Mobile Viewable Impression, it should only be counted as one Mobile Viewable Impression within that user session (see IAB Audience Reach Guidelines and Mobile In-Application Measurement Guidelines for details on "Sessions"), regardless of subsequent exposures. It should not be counted again as an additional Mobile Viewable Impression, even if the user scrolls completely away from the ad and then scrolls 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 Mobile 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).

4. 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 (user initiated) or set by a site without user interaction (site initiated).

   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 encouraged to develop techniques to detect and estimate site initiated Auto-Refresh if not otherwise disclosed or passed.

To the extent known by measurement organizations, the presence of site initiated Auto-Refresh should be disclosed to users of measurement data including the parameters and settings surrounding Auto-Refresh. Further, site 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[3] and include segregated disclosure of the Auto-Refresh counts if they are material to total impressions by campaign. User initiated Auto-Refresh is counted as a normal advertising impression.

To the extent new served impressions are counted in accordance with the Auto-Refresh guidance above, a new viewable impression may be associated to them, with appropriate segregation in disclosure. As discussed earlier in this document, measurers are required to account for situations of obstruction as defined above to the extent technically feasible to determine the in-focus status of measured content. Screen time-out as well as other inactivity should be considered in this regard when measuring Auto-Refresh viewability.

See the *IAB Digital Video Measurement Guidelines* for further discussion of measurement and reporting issues related to Auto-Refresh.

Requirements for Mobile Viewable Video Advertising Impressions

A Mobile Video Ad that meets the criteria of 50% of the ad's pixels on an in-focus browser or a fully downloaded, opened, initialized application, on the viewable space of the device can be counted as a Mobile Viewable Video Ad Impression if it meets the following time criterion:

Video Time Requirement: To qualify for counting as a Mobile 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 Mobile Viewable 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] Sports leaderboards, certain news site features, and stock tickers represent examples of unusual instances where site-initiated refresh rates may be more frequent than normal; in more typical situations, refresh rates would be expected to be less frequent than these unusual instances, and empirically supported..

Sub-Second Ad Impressions apply to display ads only; it is our conclusion that a 2 continuous second exposure is the minimum threshold that should be applied as a measure of the establishment of Opportunity to See for mobile video ads.

Similar to the rules for counting Mobile Display Ad Viewable Impressions, strong user interaction with a mobile video ad may, in certain instances, be considered a proxy for viewability. Specifically, a legitimate tap or click on a video ad (i.e., the click satisfies the requirements for counting a click, based on the IAB's Click Measurement Guidelines) may optionally result in a Mobile Viewable Video Impression even if the ad does not meet the pixel and time criteria necessary for a Mobile Viewable Video Impression (but, as noted earlier in these guidelines, a tap or click that initiates a Click to Play video ad would not, in itself, be considered a user interaction that satisfies this criteria). Given the nature of mobile environments which may involve more frequent and inadvertent interaction, clicks or taps to minimize or close ads as a proxy for viewability should be supported empirically.

As is the case with mobile display ads, specific user interactions that will satisfy the requirement of a "strong user interaction" should be appropriate to the advertisement and the environment in which it appears, and they should be empirically defensible as reasonable proxies for viewability. If Mobile Viewable Video Impressions are counted as a result of such user interactions, this methodology should be fully disclosed, and these counts should be segregated for reporting purposes.

Mobile Video Ad above refers to an in-stream and stand-alone (out-stream) video ads. Banner ads with video embedded within them generally are covered by the display ad criteria for viewable impression measurement. Also note that the criteria specified here is "50% of the *ad's pixels*" (emphasis added); if the criteria used to determine viewability is based on 50% of the video player's pixels, rather than those of the ad, this distinction should be prominently disclosed, and should be supported by evidence that the impact of using the player as the basis of viewability measurement rather than the ad itself is immaterial.

It is encouraged, but not required, that the orientation (landscape or portrait) of video ads be disclosed as part of placement level reporting.

<u>Note</u>: 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. 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.

Other Considerations

Measurement Techniques: Measuring Mobile Viewable Ad Impressions differs from measuring mobile served ad impressions, as the latter are counted when served on the client side regardless of whether they appeared on the viewable space of the device or met any specific time requirements. Hence, not all served impressions will have had the opportunity to have been seen by the user, and therefore they will not be viewable.

Mobile Viewable Ad Impression measurers are encouraged to report conditions surrounding and possible causes of mobile non-viewable ad impressions (where known). This information will be a value-add to users of Mobile Viewable Ad Impression data and will serve to allow sellers to improve their operating environment and page/application strategies.

Mobile Viewable Impression measurement may require one or more measurement techniques or assets depending on creative, environment and device. These techniques and assets include JavaScript tags similar to those employed in desktop measurement (Mobile Web); however, certain characteristics of mobile environments may impact the efficacy of page geometry and especially browser optimization (based on the reliance of the latter technique on Flash). These techniques may also involve SDKs (which may be developed by a third party measurer or an application publisher and may require coordination between measurers and application developers) as well as APIs (such as MRAID) that are implemented on the application publisher or developer side.

Software Development Kits (SDKs): SDKs can be developed by a third party measurer and fit into applications in which advertising may be served. Software development controls, software data integrity controls, integration of the SDK into the application and selection of measurement parameters or options to be used by the SDK should be consistently applied, subject to robust quality control procedures and periodically reviewed.

Commensurate with the IAB/MMA/MRC Mobile In-Application Measurement Guidelines, ultimately it is the responsibility of the advertising measurement organization to ensure that proper testing and release processes are followed and that controlled development processes were employed in building the original SDK (which may be addressed via Terms and Conditions for SDK use).

In general, the advertising measurement organization should have sufficient controls to ensure:

- Development of and changes to SDKs are authorized, tested and approved prior to being rolled out for User download (release). Segregation of versions

should be maintained where advertising functionality has been changed. (this should also be specified and quantified for disclosure where material to reported results).

- Access to SDK software associated with advertising, storage of ads, ad placement and serving functionality is restricted to authorized personnel (non User) and programs. Users should not have the ability to alter advertising content.
- Advertising related user-set parameters are documented, recorded and included in data transmissions back to the measurement organization if changed.
- The SDK is documented, and advertising associated functionality is documented.
- Only authorized served ad content is accepted as input by the SDK (see details on use of API inputs and required quality control below), regardless of whether that content is served real-time or stored for later use.
- Any calculations or data accumulation processes within the SDK have been tested for efficacy.
- Data transmissions from SDKs (whether real-time or batched) are complete, accurate and protected from modification.
- Errors and advertising data rejected for quality purposes is logged, evidence supporting the error is retained and errors are followed up on to correct potential cases of systematic or recurring issues.
- The application's performance is not materially affected by SDK integration.
- SDK integration contemplates allowable trackers in application ad requests.

Furthermore, robust quality control for onboarding SDK users, updating and version control must be present. In SDK oriented measurement environments, the application developer or measurement organization should have sufficient confidence that the above controls are maintained for the SDK functionality. Development of this confidence can encompass a periodic review and/or testing conducted by the application developer, in which case the application developer then is taking responsibility for the controls at the SDK developer. Another approach is for the SDK developer to itself be audited by a third party with some form of observable assurance provided such as certification, accreditation or a third-party CPA attestation. In this latter case, if the application developer is looking to become certified or accredited itself, the auditing organization can build a case for relying on the SDK assurance (depending on conditions of that assurance).

The use of SDKs for mobile viewability measurement may present some challenges in terms of administering and maintaining their use at scale. Furthermore, the potential for the presence of multiple SDKs within the same application may impact performance, user experience and data transmission. For this reason there may be value in the development of an open-source standard SDK by the industry that can

be used by all parties. We encourage such development and would support an open and single source standard.

Note: It should be noted that as of the date of these Guidelines' issuance, the MRC is not aware of any active initiatives to address a common industry SDK (unlike ongoing common API initiatives detailed below) and as such, it is likely that SDK measurement solutions will need to be measurement vendor specific for the foreseeable future.

Measurers using an SDK solution for mobile viewability should take steps to ensure their solution adequately covers any scenarios that may inhibit complete measurement. Any resultant limitations should be adequately disclosed in conjunction with the capabilities and limitations requirements below.

Application Programming Interfaces (APIs) and MRAID: In certain Mobile In-Application environments where JavaScript may not fully function, application publishers or advertisers may develop APIs to allow further communication between ad serving and application functionality such as MRAID for mobile Rich Media and VAST for mobile video or others (such as the W3C Web Incubator Group's IntersectionObserver).

MRAID, or "Mobile Rich Media Ad Interface Definitions" is the IAB Mobile Marketing Center of Excellence's project to define a common API for mobile rich media ads that will run in mobile applications. This is a standardized set of commands, designed to work with HTML5 and JavaScript, that developers creating rich media ads use to communicate what those ads do (expand, resize, get access to device functionalities such as the accelerometer, etc.) with the apps into which they are being served. MRAID offers a single API that an SDK can support, which means that MRAID-compliant rich media ads will run within applications using any MRAID-compliant SDK.

However, MRAID 2.0 was not designed with the express intent to fully address Mobile In-Application viewability measurement (MRAID 3.0 contains additional features that assist in viewability measurement, but may also exhibit limitations in accurately measuring pixels, size parameters and geometric position) and not all ad content and delivery is MRAID compatible (certain content and environments may require some level of SDK integration). As a result, similar to guidance for desktop viewability use of Page Visibility APIs, measurers utilizing MRAID 2.0 in its current form are encouraged to use this tool when available to assist in mobile viewability measurement, but the measurers should recognize this is unlikely to be a complete solution by which the viewability of an ad may be determined, and in most cases must be supplemented by additional intelligence.

Instead, measurers utilizing MRAID 2.0 are strongly encouraged to deploy this solution in combination with other assets and techniques or on an extended or enhanced basis (such as MRAID 3.0 and beyond) to enforce full measurement

coverage of Mobile In-Application and creative types. MRAID 2.0 should not be a standalone solution for Mobile Viewable Impression measurement (unless modifications are made to extend or enhance it to address the limitations discussed above), but certain functions within MRAID 2.0 can assist in the measurement process.

Furthermore, an API approach may involve the use of a third party that is responsible for implementation and ultimately the inputs into viewability measurement. Measurers are required to conduct robust quality control procedures to onboard, vet and periodically review the use of third party inputs into viewability measurement. Such quality controls procedures should include (but not be limited to) executing scripts in third party API environments 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 by the API for publishers or vendors using standard agreed upon APIs is strongly encouraged. Third party 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.

Similar to the guidance on SDKs, there may be value in the development by the industry of an open-source standard API (using MRAID, VAST or a W3C output) that can be used by all parties. We encourage such development and would support an open and single source standard.

Measurers using an API or MRAID solution for mobile viewability should take steps to ensure their solution adequately covers any scenarios that may inhibit complete measurement. Any resultant limitations should be adequately disclosed in conjunction with the capabilities and limitations requirements below.

<u>Extrapolations:</u> Extrapolations or other assumptions used in the process of determining the viewable status of an ad should be fully disclosed along with pre-determined estimates of accuracy (based on independently conducted validation studies). If extrapolated counts are presented with specifically identified counts, metrics originating from each method should be segregated. In addition, measurers should not extrapolate desktop-based viewability rates to mobile-based ads.

<u>Minimum Polling Requirements:</u> To promote consistency across Mobile Viewable Impression measurers, the following minimum frequencies for measurement polling or snapshots of observations for determining mobile viewability of an ad are required: 200 milliseconds for both Mobile Viewable Display Impression and Mobile Viewable Video Impression processes. This frequency equates to 5 and 10 consecutive positive observations for a Mobile Viewable Impression for display and video, respectively. The measurer is not required to store all of these observations.

Further, if the measurer can empirically validate that its polling at a less frequent interval than every 200 milliseconds (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 Mobile Viewable Impression counts, this less frequent interval is allowable for Mobile Display Impression measurement. If a measurer chooses to poll for mobile display viewability at a less frequent interval than 200 milliseconds 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, measurers 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), if these monitored state changes account for changes in scroll position, browser size/dimensions, and focus. Measurers who use this approach should clearly disclose this.

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

Capabilities and Limitations: As discussed earlier in this document, measurement vendors may utilize different or a combination of different techniques and assets to measure mobile viewability. These techniques and a measurer's implementation of them may have separate or overlapping capabilities as well as certain limitations in terms of the devices, environments and creative types that can be measured for mobile viewability. These limitations should be disclosed to subscribers of a measurement service via methodological documents along with quantification of impact where material (MRC typically applies a materiality threshold of 5%). Measurers are encouraged to adopt a continuous improvement approach to measurement capabilities and work to address any material measurement limitations.

Ad Blocking: Ad Blocking represents technologies that consumers are using to prevent the download or display of advertising. Ad blockers exist for most desktop web browsers and also impact Mobile Web browsing as well. Furthermore, certain mobile operating systems and applications allow extension of consumer ad blocking techniques in the mobile environment. Ad content may be blocked separately from measurement assets and measurement techniques that do not account for actual ad delivery may be susceptible to counting inaccuracies caused by ad blocking.

As discussed earlier in this document, the Rendered Mobile Served Impression counts referenced in this document apply to mobile viewability measurement and reporting and refer to valid served mobile ad impression as specified by the IAB Ad

Impression Measurement Guidelines (as well as applicable Mobile Web and Mobile In-Application Measurement Guidelines) using client side counting which includes verification that an ad was delivered/rendered within a browser or container in an application. Discrete measurement at each step (load and render) is not required.

Measurers are required to use the Rendered Mobile Served Impression as a basis for mobile viewability measurement and also account for pre-rendering as discussed within this document. Measurers are encouraged to leverage the assets and techniques used to determine the rendered status of an ad in mobile environments to likewise detect situations where Ad Blocking is present (or a persistent delivery mechanism is present to mitigate Ad Blocking) and appropriately account for this within measurement.

Measurement Weight: Additional verification assets and calls are sometimes added to viewability measurement techniques, which are not directly relevant to the viewability functionality itself (referred to as "piggybacking"). This can lead to increased delivery and load times, which may impact user-experience, but also confound measurement accuracy. Measurers are strongly encouraged to consider the weight of measurement techniques and assets and seek to design them in a lightweight manner. Measurers should study and disclose the impact of such piggybacking.

Pre-Bid Viewability Determination: Certain mobile viewability measurement implementations may involve gathering information about viewability within a mobile environment or application prior to bidding or serving an ad (often referred to as a pre-bid approach). In these implementations, environments or applications may be determined to be such that ads served into them will always meet the viewability pixel requirements (such as with applications where ad units cover the entire space of the application and are wholly contained within a user's visible device space) and as a result, it may be the current practice for a measurer to assume that all served impressions meet the pixel threshold and only measure resultant time in view.

Such pre-bid implementations are required to comply with the client side measurement requirements of these guidelines and account for the rendered state of ads. Additionally, strong quality control over the precision of these implementations is required including onboarding and initial determination of the mobile and creative environment as well as periodic review for changes in the environment that may change the previous viewability assumptions. Finally, pre-bid implementations are still required to comply with the reporting requirements discussed below including Measured and Viewable Rate disclosures, however, alternate reporting disclosures may be acceptable (on a case by case basis) particularly in situations where served impressions are also pre-qualified and reported rates may be misleading.

Ad Stitching: For certain streaming video players, the player may not be capable of executing dynamic ad responses or tracking impressions and interactions. In these cases, an intermediary server is needed to insert ads dynamically into the video stream on the server side prior to content delivery (called ad stitching among other terms; stream stitching, ad insertion, video pre-loading, etc.). In server-to-server and server-side ad-stitching, the player may not be able to process ad tracking, and the ad-stitching service cannot access cookies used in traditional client-side tracking. Instead, the ad-stitching service must identify devices where ads play by a combination of other methods.

When an ad-stitching service is involved, the ad-stitching server may send tracking on the player's behalf, but this tracking may be limited and not fully able to satisfy client-side measurement requirements. This server-to-server tracking process may also be problematic because all the tracking is coming from one IP address and may be subject to IVT detection techniques. Certain measurers may use custom integrations or leverage aspects of the IAB's Video Ad Serving Template (VAST), which allows header identification of IPs. Custom solutions should be clearly disclosed as part of methodological documents and should also comply with the client side and rendered counting requirements within this document. To the extent that measurers are not able to measure viewability in these environments, they should be included and dimensioned within limitation disclosures discussed above.

Other Items: The Desktop Viewability Guidelines contain other provisions related to Viewable Video Requirements, Audio, Communication and Discrepancy Resolution, Expandable Rich Media Ad Units, Pre-Fetched or Pre-Rendered Ads, Measurement of Multi-Ad Units and Multiple Tags as well as Security Considerations and Viewability Measurement Issues Related to Cross Domain I-Frames. Mobile Viewability measurers should refer to these provisions as it is expected that they are fully applicable to mobile viewability measurement.

Disclosure Requirements:

The Desktop Viewability Guidelines include provisions related to Disclosures in the areas of:

- Reporting (including required metrics) and Ad Verification
- Reporting Considerations when Additional Suspected Invalid Impressions Are Identified:
- Other recommended metrics
- Invalid Traffic

Mobile Viewability measurers should refer to these provisions as it is expected that they are fully applicable to mobile viewability measurement.

Mobile Web and In-Application Segregation

In addition, measurers should segregate mobile ad impressions from desktop ad impressions in their reporting, to the fullest extent possible (campaign, creative or placement). Measured Rates can differ significantly between desktop and mobile, in part because the range of viewability measurement solutions available is currently more limited in mobile environments. As a result, measurers should report separate Measured Rate statistics for those ads in a campaign that appear in mobile environments, both for Total Mobile ads and for Mobile Web ads (Mobile Web and Mobile Application discrete reporting is also acceptable). Segregation in reporting must be present in at least one instance within reporting and include both user interface disclosure (or denotation that directs users to where such segregation occurs when only presenting Total Mobile) as well as raw file or data feed presentation (exports), but does not have to be present in all views or reports.

For the purposes of viewability measurement, Mobile Web refers to either website content and ads within it displayed within a Mobile Web browser or website content and ads within in it displayed in an embedded browser, typically measured through JavaScript alone (with the exception of certain cross-domain IFrame scenarios which may require other measurement assets or techniques). Mobile In-Application refers to content and ads within the native User Interface of an application that cannot typically be measured using only JavaScript (SDKs and/or APIs as defined in this document are generally also required for viewability measurement).

Technical limitations may inhibit the distinction between an embedded browser within an application environment and a native application UI. Measurers are encouraged to develop solutions to accurately measure these instances discretely while considering the impact such solutions may have on the accuracy of measurement. Any estimation involved should be empirically supported and disclosed to subscribers. Techniques should be periodically monitored and assessed.

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