# MRC Location-Based Advertising Measurement Guidelines

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**Sponsoring associations:**
Media Rating Council (MRC)
Interactive Advertising Bureau (IAB)
Mobile Marketing Association (MMA)

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# 1   Overview and Scope

This document presents guidelines for the measurement of digital location-based advertising including measurement or assignment of device and user location for physical visitation and advertising exposure (including static devices such as desktop PCs, connected TVs, OTT devices, as well as mobile devices such as tablet, smartphones, etc.) as well as place measurement as a reference point for physical visitation and location-based targeting. The document was prepared for the use and benefit of the media Industry, especially those constituents that analyze audience volumes based on location attributes or those entities that seek to analyze physical visitation or foot traffic.

It should be noted that the "best" methods and approaches to measure the audience of any media are driven by the nature of the medium, its environment, its mode(s) of delivery and how its audience consumes and interacts with the medium.  This is especially true of Location-Based media due to the diverse nature of the locations, environmental factors for each location and the available measurement techniques for these unique environments.

This document establishes a detailed set of methods and common practices for entities that measure and use location-based metrics.  These Guidelines are intended to establish and document good practices of measurement; improve practices and disclosures used by practitioners; and also provide education to users of location-based measurement data from all segments of the Industry.

This document also establishes a recommendation and a benchmark for audit processes whereby the practices and disclosures of location-based measurement organizations can be voluntarily validated by third parties.

In summary, our goals for this document are as follows:

- Provide for a consistent set of definitions for key elements of location-based measurement
- Recommend minimum disclosures which should be provided to measurement data users
- Provide a clear statement of recommended research operating practices and quality and describe minimum requirements as well as best practices
- Encourage experimentation and advances to improve audience research quality

Specifically, these Guidelines cover the methods used for measurement of digital location-based advertising including: (1) establishing the appropriate universe information for projection of measurements, (2) establishing location with appropriate quality and granularity, (2) establishing place and visitation with appropriate quality and granularity (3) providing guidance and references for the possible use of data sources, (4) assigning or measuring location through

methods such as panels, or a combination of methods with sufficient quality and granularity, (5) guidance on internal controls, quality control and other measurement practices considered best practices (including invalid traffic filtration), (6) guidance on appropriate weighting, projection, calculation and reporting processes, and (7) considerations for disclosure and auditing guidance.

This document should be considered in conjunction with the IAB's Mobile Location Data Guide for Publishers, published February 2016, as well as the MMA's Demystifying Location Data Accuracy whitepaper, published October 2015, which describe general principles, measurement framework and definitions for utilizing location data for Mobile and Cross-Platform advertising. The MRC studied these documents while completing these measurement guidelines.

Finally, these guidelines are meant to represent specific supplemental guidance for location measurement, to be applied in conjunction with the *MRC Digital Audience-Based Standards*. Measurers of location audience are required to also apply these standards. With regard to cross-media comparability considerations, the *MRC Digital Audience-Based Standards* represent the digital input into a Cross-Media Audience-Based Measurement Standard.

## 1.1   Guidelines Development Method

The Guidelines contained in this document originated from a project led by the Mobile Marketing Association (MMA) and the Interactive Advertising Bureau (IAB) facilitated by the Media Rating Council (MRC), with the participation of a large group of digital media content providers, advertising agencies, advertisers, vendors/consultants, measurement organizations and other interested organizations.  These Guidelines were also be reviewed and approved by major buyer-side trade organizations (4As, ANA) and their constituents and provided to the public through a formal period of public comment prior to formal adoption.

The final Guideline is published and available on the MRC website and will be re-assessed periodically to ensure it remains applicable over time.


# 2   Glossary of Terms

**Accuracy (Location or Place) –** The ability or degree to which a measurement can ascertain the actual location of a device or user and/or place and visitation correctly (the difference between measured and true location or place).

Accuracy is an estimate of how likely the measured location represents the true location of the device/user/place/visitation and Precision is how specific and granular a measurement of location is stated (in terms of decimal points, etc.). Accuracy and precision are independent concepts, but both are necessary disclosures for location measurement.

**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 (Source: CIMM Lexicon 2.0).

**Altitude** – Z coordinates or elevation data that may be included with GPS latitude and longitude (X and Y) coordinates. Multiple places within the same latitude and longitude coordinates, but at varying levels of elevation (such as in multi-level buildings).

**Audience** – Audience activity generally consists of counts of Internet users accessing content and/or advertising through one or more Internet applications such as a browser or a browser-equivalent [or mobile application], filtered to remove suspected Invalid Traffic (Source: IAB).

**Audience Composition** – The audience breakdown of aggregated, segmented characteristics, often reported as a percentage, based on such elements as age, gender, income, education, household characteristics etc. (Source: IAB). In addition to demographic characteristics, Audience Composition may also include behavioral variables such as site visitation, purchase activity, location, etc..

**Browser (or Web Browser)** – A software application for retrieving, presenting, and traversing information resources on the World Wide Web.

**Caching** – Memory used to temporarily store the most frequently requested content, files or pages in order to speed its delivery to the user. Caches can be local (i.e. on a browser) or on a network (Source: IAB). As discussed in this document, IAB measurement guidelines require certain cache busting techniques designed to minimize the impact on measurement accuracy of cached measurement assets.

**Client User** – A mobile 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.

**Cookie** – A small piece of information (i.e., program code) that is stored on a browser for the purpose of identifying that browser during audience activity and between visits or sessions. Cookies are typically set to expire. Some cookies are intended to remain on the browser temporarily (for example, during a session) and some are persistent in that they are intended to be retained for longer periods. (Source: IAB)

**Coverage** – The extent or area covered by sampling or a data source relative to the population measured. Within this document coverage is used when discussing projecting audience estimates based on a subset or sample of the measured population as well as the degree to which a particular data set or source represents a measured population.

**Data Fusion** – Combining data from two or more different sources where the data merges and becomes blended into a new data source (Source: CIMM Lexicon 2.0).

**Data Integration** – Combining data from two or more different sources while having the data maintain its individual database integrity (Source: CIMM Lexicon 3.0).

**Data Normalization (also Calibration)** – Where there are two or more disparate data points within a data set, combining them in such as way that maintains data integrity and accuracy while improving usability (Source: CIMM Lexicon 3.0).

**Duplication/De-Duplication** – The instances where a Unique (Cookie, Browser, Device, Household, Respondent, User or Visitor) is exposed to the same content or advertisement more than once within the same dataset or measurement period. De-Duplication is the data editing technique used to remove Duplication from reported processed data or reported results.

**Frequency** – The number of times an ad is delivered to the same Browser (or user) in a single Session or time period (Source: IAB). The average number of times the unduplicated homes reached are exposed to a schedule of content whether an ad, a program, a video or a schedule of spots (Source: CIMM Lexicon 3.0).

**Geo-fencing** – A method of assigning reported location from a mobile device to a specific place. Geo-fencing may involve either *Point-Radius or Boundary* methodologies. In *Point-Radius* measurement, a mid-point and a circle of a specified radius established around the latitude and longitude of a place, with the data location points within that circle acting as a representation of the place itself. In *Boundary* measurement, a complex polygon or boundary is established that is generally a more precise and granular representation of the confines of the place, with the data location points within the polygon acting as a representation of the place itself.

**Inactivity** –In digital media refers to specific inactivity rules, by which a user visit is terminated and thus excluded from additional contributions to Time Spent after a pre-determined level of consecutive minutes of inactivity (Source: IAB Audience Reach Measurement Guidelines).

**Impressions** – An Ad Impression is generally a measurement of exposure to an ad that meets established minimum thresholds for quality and the terms and conditions established between a seller and a buyer (Source: IAB). Valid Ad Impressions must meet the minimum requirements of the IAB Measurement Guidelines for the applicable creative type (Display, Rich Media or Video) and user environment (desktop browser, mobile web and application environments).

**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.

**Panel Data** – A selected cross section of opt-in consumers or viewers whose behavior and usage is measured over a period of time as a group or set of sub groups with the intent to form opinions and trends about their behaviors (Source: CIMM Lexicon 3.0).

**Personally Identifiable Information (PII)** – Data that can be used to identify a specific individual. This includes names, addresses, email addresses, phone numbers, among others (Source: CIMM Lexicon 3.0). Any information about an individual maintained by an agency, including (1) any information that can be used to distinguish or trace an individual's identity, such as name, social security number, date and place of birth, mother's maiden name, or biometric records and (2) any other information that is linked or linkable to an individual such as medical, educational, financial and employment information (Source: NIST, Guide to Protecting the Confidentiality of PII). Refers to information such as an individual's name, mailing address, phone number or e-mail address (Source: IAB).

**Precision** – The level of granularity of location measurement, typically reflected in the number of digits following the decimal point such as in latitude and longitude. While higher precision is required for accurate location measurement, the number of digits following the decimal should neither be equated with superior accuracy, nor does it necessarily reflect the reproducibility of the measurement. Proximity technology, like beacons, may measure precision in distance to a known sensor/context.

Precision is how specific and granular a measurement of location is stated (in terms of decimal points, etc.) and Accuracy is an estimate of how likely the measured location represents the true location of the device/user/place/visitation. Precision and accuracy are independent concepts, but both are necessary disclosures for location measurement.

**Probability Sample** – A random selection method to create a sample that is designed to best replicate the greater census or Universe being measured. Each selection in the sample must have the same probability of being chosen within relative sampling strata for sample selection.

**Proximity Targeting** – Delivering ads based on users' real-time location, typically defined as proximity to specific place(s) (Source: MMA). Place and proximity is typically defined as part of geo-fencing techniques discussed above and throughout this document.

**Reach** – The amount of unduplicated homes or audience, expressed either as a percentage or in thousands who have viewed or tuned [consumed] at least once during a time period or program or any piece of content (Source: CIMM Lexicon 3.0). 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 (Source: IAB Audience Reach Guidelines).

**Recency** – In the context of this document, refers to the time between collection of data and the passing or use of that data.

**Registration Data** – Data collected via a process for site visitors to enter information about themselves. Sites use registration data to enable or enhance targeting of content and ads. Registration can be required or voluntary (Source: IAB).

**Session** – A single application-use event that spans an unspecified period of time of constant or ongoing application activity by a User through the Client User. Sessions are terminated by User actions indicating the closing of the application, or by inactivity levels that meet or exceed defined thresholds. Sessions are generally applicable to the calculation of reach metrics (Source: IAB Audience Reach Guidelines).

**Speed** – The rate at which a device or user is moving. Speed can be inferred indirectly from mobile accelerometer and gyroscopic measurements, but generally requires longitudinal analysis of location over time.

**Targeting** – A technique used by online publishers and advertisers to increase the effectiveness of their campaigns based on behavior or demographic characteristics including location [by focusing advertising impressions against a pre-determined sub-set of the universe or the "target"; targeting may be based on demographics, behavior, or other measurable characteristics]. Behavioral targeting uses information collected on an individual's web browsing behavior such as the pages they have visited or the searches they have made (as well as patterns of app usage and social media activity) to select which advertisements to be displayed to that individual (Source: IAB).

**Time Spent/Dwell Time** – The amount of elapsed time from the initiation of a visit to the last audience activity associated with that visit. (Source: IAB Audience Reach Guidelines).

**Unique Cookies, Browsers, Devices and Users (Various; Source IAB Audience Reach Guidelines):**

*Machine-Based Measures:*

    **Unique Cookies** – A count of unique identifiers (Cookies) that represents unduplicated instances of Internet activity to Internet content or advertising during a measurement period.

    **Unique Browsers** – An identified and unduplicated Cookied Browser that accesses Internet content or advertising during a measurement period.

    **Unique Devices** – An unduplicated computing device that is used to access Internet content or advertising during a measurement period.

*People-Based Measures:*

    **Unique Users or Visitors** (both terms are acceptable and equivalent) – An identified and unduplicated individual Internet user who accesses Internet content or advertising during a measurement period.

Note: Location measurement generally involves assigning location to a unique device or user either for attribution of ad exposure, location-based targeting of advertisements or correlation to place measurement for the purpose of foot traffic and visitation measurement. While the *IAB Audience Reach Guidelines* establish certain levels of unique measurement, location assignment should only be done at the device or, more preferably, user level (not at the cookie or browser level). Special consideration should be given to use of Wi-Fi location measurement techniques when determining people-based measures (IP switching and VPN/Firewall/Proxy considerations may impact data accuracy and availability and should be considered in data quality control and validation procedures). See section 5.1 of this document for further discussion on consideration of uniques and people-based measurement and section 6.2.1 for discussion of limitations and considerations of Wi-Fi techniques.

**Universe** – The total population included in the measured frame.

**Urban Density** – The concentration of venues/places within physical areas or close proximity as well as multi-level buildings made up of varying discrete places that may impact location and place measurement.

**Visit** – Physical visitation or foot traffic results from the intersection of user-device location and place measurement. Generally, measurement of user/device location that falls within the boundary (via geo-fencing or other means) established with place measurement is used to derive visitation, however, consideration should be given to not only the data collection techniques and fields used to determine location, but also other validation and quality control considerations such as altitude for places with multiple floors as well as speed or longitudinal analysis of location to differentiate a visit from a "drive-by" or other types of momentary proximity not meeting the requirements of a visit.

**Viewable Impression** – An Ad Impression that meets certain pixel and time thresholds (minimum 50% of the ad's pixels for 1 or 2 continuous seconds for display and video, respectively) in order to qualify as a Viewable Impression. These thresholds are designed to add greater assurance that there was an "opportunity to see" the ad by the user beyond assurance that the ad was properly served and rendered by the device. See the *MRC Viewable Impression Measurement* and *MRC Mobile Viewable Impression Measurement Guidelines* for guidance on Viewable Impressions.

# 3 Top-Line Measurement

## 3.1 Unique Device and Users

Specific machine based tracking of users – such as unique browsers or cookies – should be specified and distinguished from actual user (person) based tracking (which requires more advanced adjustments, registration, etc.).

De-duplication of user tracking (into "uniques") for reach measurements is desirable – but is recognized to be a difficult metric to capture accurately.  If a measure is labeled "unique" de-duplication is required.  It is critical that thorough descriptions of how "users" are actually determined and how de-duplication during measurement periods is accomplished are provided to users of unique user measurements. We refer the user of these guidelines to prior IAB guidance on Audience Reach Measurements with regard to the hierarchy of unique metrics (cookies, browsers, etc.). See section 5.1 for further detail on classification of uniques for the purpose of assigning location.

Tracking methods should be subject to internal testing and validation upon original implementation as well as periodic internal verification testing.  Tracking methods and disclosures will be the subject of intense procedural verification if external certification is sought by the measurement organization.

## 3.2   Location Measurement

Location measurement generally involves assigning location to a unique device or user either for attribution of ad exposure, location-based targeting of advertisements or correlation to place measurement for the purpose of foot traffic and/or visitation measurement. While the *IAB Audience Reach Guidelines* establish certain levels of unique measurement, location assignment should only be done at the device or, more preferably, user level. As a result, a location measurement vendor must have a robust methodology to identify and deduplicate unique devices and/or users for such assignment. See section 5.1 for further detail on classification of uniques for the purpose of assigning location.

Location measurement may involve various techniques and data sources, which include the use of beacons, GPS, Wi-Fi, Cell Antennae Trilateration, IP Addresses and Registration data as well as other first-party data such as opt-in panel data and social media check-ins. The various capabilities and limitations of each methodology are discussed further within this document.

User/device location may represent point in time location or may be used to determine home location and such distinction should be disclosed to users as part of methodological and definitional disclosures.

## 3.3   Place Measurement

Place measurement involves the determination of the physical location of a business or other place for the purpose of correlating this location to user/device location measurement to derive foot traffic or visitation data as well as to target users/devices based on proximity to a specific place or location.

Such place measurement generally involves geo-fencing (or establishment of a "virtual barrier"), which may be done manually via direct measurement or beacon placement by a measurement vendor, as well as via acquisition or subscription to a location directory, mapping

service or third-party data. Geo-fencing may involve either Point-Radius or Boundary methodologies. In *Point-Radius* measurement, a mid-point and a circle of a specified radius established around the latitude and longitude of a place, with the data location points within that circle acting as a representation of the place itself. In *Boundary* measurement, a complex polygon or boundary is established that is generally a more precise and granular representation of the confines of the place, with the data location points within the polygon acting as a representation of the place itself.

In each case, it is important to validate that the geo-fence representation accurately reflects not just the location and dimension of the physical place, but accounts for how a mobile device would report its location when at that place, to ensure correct conclusions about visitation. In general geo-fencing cannot represent multi-story structures.

Place measurement may also include probabilistic assignment based on user-behavior measurement via the ability to survey users about their location during periods of behavior or through use of check-ins (such as through social media activity). While use of such techniques may be viable, when properly supported, it should be recognized that a user device's reported location may not correspond to their physical location on a map and as such, place measurement may not align completely with the map location and dimensions of the place. As a result, use of probabilistic assignment techniques for establishing place boundaries requires empirical support and appropriate accuracy/precision tolerances.

A measurement vendor must disclose the specific methodologies (such as the method of geo-fencing or user assignment) employed (and the portion data for which each is used if a mixed-methodology is used) as part of methodological reference materials.

## 3.4   Physical Visitation and Dwell Time

Physical visitation or foot traffic results from the intersection of user-device location and place measurement. Generally, measurement of user/device location that falls within the boundary or geo-fence established with place measurement is used to derive visitation, however, consideration should be given to not only the data collection techniques and fields used to determine location, but also other validation and quality control considerations such as altitude for places with multiple floors as well as speed or longitudinal analysis of location to differentiate a visit from a "drive-by" or other types of momentary proximity not meeting the requirements of a visit. These requirements are discussed further throughout this document.

Dwell Time or time spent in a particular location or place is generally the amount of elapsed time from the initiation of a visit to the last audience activity associated with that visit. Dwell Time can be reported on the basis of device sensor data, registration or panel participation, but in concept should represent the activity of a single user for a single access.  Granularity of measurement and frequency of data collection should be considered when collecting Dwell Time (see Section 5.2.1 for further guidance on collection frequency) and reporting of such data should be no more granular than the level measured. Inactivity Rules (see section 5.2) and Speed (see section 5.2.1) should be considered when measuring Dwell Time and factored into

empirically supported edit rules applied to collected to data.

## 3.5   Ad Impression Assignment

An Ad Impression is generally a measurement of exposure to an ad that meets established minimum thresholds for quality and the terms and conditions established between a seller and a buyer.

Impressions involve 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 material to the user's browser or device. In an application environment, this includes the measurement of an advertising exposure occurrence, contained within real-time or stored and transmitted application use activity records, Client-initiated, sourced from a fully downloaded, opened, initialized application in an application Session with a Client User.

A Digital Video Impression is the measurement of response from a digital video ad delivery system to an ad request from the digital video content host. A valid digital video impression may only be counted when an ad counter (logging server) receives and responds to an HTTP request for a tracking asset from a client. The count must happen after the initiation of the 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 appear (begins to play).

Valid Impressions must meet the minimum requirements of the IAB Measurement Guidelines for the applicable creative type (Display, Rich Media or Video) and user environment (desktop browser, mobile web and application environments). See the applicable IAB Measurement Guidelines (Desktop Display, Mobile Web, Mobile Application and Video) for further details of Impression measurement guidance.

### 3.5.1   Viewable Definition

An Ad Impression must meet certain pixel and time exposure thresholds (minimum 50% of the ad's pixels for 1 or 2 continuous seconds for display and video, respectively) in order to qualify as a Viewable Impression. These thresholds are designed to add greater assurance that there was an "opportunity to see" the ad by the user beyond assurance that the ad was properly served and rendered by the device. See the *MRC Viewable Impression Measurement* and *MRC Mobile Viewable Impression Measurement Guidelines* for guidance on Viewable Impressions.

While Impressions may be measured in cross-media environments, Viewable Impressions are the minimum required qualifying measurement unit for digital audience-based measurement including location assignment to impressions.

### 3.5.2   IVT Filtration

All metrics subject to audit by MRC or certification auditors are expected to comply with the MRC's *Invalid Traffic and Filtration Guidelines Addendum*. This includes location-based metrics, which should be filtered for known General Invalid Traffic (GIVT) as required by those guidelines. Furthermore, like other metrics, application of Sophisticated Invalid Traffic (SIVT) detection processes is strongly encouraged for location-based metrics. While application of SIVT detection processes are strongly encouraged for monetized traffic, digital audience and persons level measurement requires a higher degree of precision and accuracy. As such, digital audience measurement and reporting requires filtration inclusive of both GIVT and SIVT. Location measurement applied to audience reporting must include SIVT filtration, however, location measurement as a service or functionality without audience reporting generally can be limited to GIVT filtration.

However, while location-based measurement vendors may have the ability to utilize granular data to conduct General and Sophisticated Invalid Traffic detection, third-party aggregators or users of API data may be limited in their visibility into granular data and therefore limited in their ability to filter. In situations where such parties utilize data from upstream platforms or location-based data collectors with accredited filtration techniques, this should be confirmed and disclosed by the aggregator with no further requirement for additional filtration. However where such accredited upstream filtration techniques are either not present or unknown, such parties should make reasonable efforts to either obtain platform data that allows them to comply with these guidelines or perform additional downstream analytical procedures to serve as a proxy for more granular analysis. It is not sufficient to solely rely on location-based data attributes and activity as an Invalid Traffic filtration source. See the *IVT Addendum* for more details on respective responsibilities concerning IVT filtration by those in the ad/measurement chain.

## 4   Location-Based Universe Estimates – Basis for Projection

### 4.1   Universe Estimates

Generally a demographic/geographic universe or coverage definition stated on the basis of population amounts is required for digital audience measurement. These may be customized (or limited) based on the specific attributes of the measured audience.

The source used for such universe definitions must be referenced and should be from generally accepted and preferably audited independent Industry or governmental third-party sources, but may also be derived by measurement vendors directly as part of high quality observation or surveys. These figures are critical for the projection of audiences. This data should be updated at regular periodic intervals and preferably be stated on a basis that corresponds to the audience targets and weighting variables being employed by the measurement organization.

Any adjustments to universe estimates (such as enumeration surveys to update them or obtain more granular estimates than available from generally accepted source) should be supported

by empirical evidence (if based on model or projection), subject to robust quality control and disclosed.

The Universe used for calculating a GRP must be based on the total audience measured. The Universe must be considered when determining the coverage of measurements (see section 4.2 below) as well as when projecting measurement estimates.

Use of total US population is preferred (for US measurement) given eventual input into cross-media audience-based measurement (total population is required for cross-media GRPs). However, in certain digital measurement, specific population subsets may be used (such as a specific geographic segment of the population with location measurement, the Internet population for digital only measurement and the mobile population for mobile-only measurement). Where specific populations subsets are utilized, ability to access (such as digital access) should be considered and accounted for.

The Universe used in GRP calculations and estimate projections must be appropriate for the measurement and be fully disclosed to users.

## 4.2   Coverage

Digital ads and content can be consumed from a browser or from within a digital application. Both consumption methods can be measured through census-like counting techniques, essentially tracking instances of consumption through tracking assets such as a JavaScript tag, beacon or application code (such as an SDK or API) for all measurable accesses.

In these cases, despite the inference of complete "census" there are likely to be certain limitations of coverage (incompatible types of players or browsers, functionality limitations in certain mobile devices, etc.) as well as other potential measurement instrument limitations among a subset of the population (such as non-English speakers if a collection instrument is English-only). It is important for the measurement users to fully understand the true coverage of the reported estimates and what may be excluded from the measurement organization's ability to measure.  Therefore, the coverage of, and material limits or exclusions to, coverage of digital audience measurements is required to be described by the reporting entity.

Any limitations (including any that result in systematic biases) in measurement of the intended Universe (either in sampling such as geographic areas, demographic segments, languages and certain respondent types not sample/measured or due to technical limitations of measurement) should be fully disclosed and quantified (where known and quantifiable). Measurement organizations must periodically and continuously assess any measurement limitations and resulting biases. Measurement organizations are encouraged to consider additional industry guidelines in this area. Additionally, measurement organizations seeking MRC accreditation are required to adhere to relevant *MRC Minimum Standards* in this area.

Measurement organizations should disclose the operating systems and major browser types that are not measurable using meters and/or measurement assets. The impact of these

exclusions on the reported measurements should also be estimated and disclosed if the measurement organization is projecting its results to the entire universe of browsers and/or users, regardless of operating system or browser type.

As discussed in the *IAB Mobile Application Measurement Guidelines*, mobile applications can have varying coverage across the user population because of popularity, distribution methods, hardware and operating system compatibility limits or other factors (such as platform availability). Therefore it is important that in-app measurement consider the coverage of the application itself. This is particularly important if any form of sampling is used in the measurement of application impressions or other measured metrics. Limitations in coverage should be considered in decisions about projectability of sampled results originating in applications. These guidelines require disclosure (and, if projection is used, quantification) of application coverage to users of advertising measurements.

Digital audience can be measured through taking samples of consumers and/or devices and projecting the activities of these samples to the population of users and/or devices. This is traditionally known as panel-based or sample based measurement. Herein we reference the IAB's *Audience Reach Measurement Guidelines* as an existing source of acceptable practices for this type of measurement. Additionally, the *Minimum Standards for Media Rating Research,* published by the Media Rating Council, are also applicable to this type of measurement methodology. Measurement organizations seeking MRC accreditation are required to adhere to relevant *MRC Minimum Standards.*

For sample based measurement of any kind, the measurement organization should be diligent about ensuring valid projections are made and that the sample is representative of the population targeted for measurement. Methods for weighting or adjusting data to ensure projectability should be supported by empirical study, and these empirical studies should be updated periodically. Standard errors around sample-based projections should be disclosed.

### 4.2.1 Device Identification

Measurement vendors are required to identify devices used to access digital ads and content including determining device type, platform and operating system. Enumerating audiences by device should be used as an input into determining coverage of the universe measured. Further, device audience measurement and coverage determinations should be considered in techniques to account for duplication, as discussed below.

The source used for device classification must be disclosed, supported and subject to periodic review and update. Such classification should be granular enough to distinguish different device types within manufacturer or platform. In situations where a measurement vendor assigns a default device for sessions or impressions for which device cannot be determined, such assignments should be disclosed, quantified (if material) and empirically supported. See the *MRC Digital Audience-Based Standards* for further guidance in this area.

### 4.2.2   Accounting for Duplication

A user should only be counted once (unduplicated through direct measurement or analysis of overlap) for unique measurement, despite the fact that a user can have multiple visits during a reporting period. Furthermore, in all instances related to the reporting of audience measurement, the use of the qualifier word "Unique" should be limited only to references to records that have been de-duplicated within the entire reporting period. See section 5.1.2 for further guidance on the technical aspects of tracking users and uniques as well as accounting for duplication. See the *MRC Digital Audience-Based Standards* for further guidance in this area.

## 5   Data Preparation and Quality Checking

### 5.1   Digital Audience Reach Guidelines

The classification details of unique measurements must be properly explained for reporting purposes by measurers of audience (including location), because understanding the nature of the underlying data used as the basis for the reported unique measurement is a fundamental part of properly using the measurement. Therefore, each reporting entity is required to prominently label on the face of any report that includes unique measurements, or through a prominently available linking mechanism on the face of the report, the basis for the calculation of the unique measurement involved. Discrete details of the basis of the calculation should be included in methodological supplements.

While the bases used for these measurements in mobile in-application environments may differ from those used for traditional and mobile web environments, the same principle of prominent disclosure should apply. At minimum one of the following terms should be utilized when describing the foundation for the reach measures:

Machine-Based Measures:
• Unique Cookies
• Unique Browsers
• Unique Devices

People-Based Measures:
• Unique Users or Visitors (both terms are acceptable and equivalent)

*While the IAB Audience Reach Measurement Guidelines establish certain levels of unique measurement, digital audience assignment (including location) should only be done at the device or, more preferably, user level. As a result, a location measurement vendor must have a robust methodology to identify and deduplicate unique devices and/or users for such assignment.*

It is critical, and a compliance requirement, that the measurement organization does not misrepresent machine-based measurements as people-based measurements. The measure's

status as either a people-based or a machine-based measure should be clearly disclosed. Inherent in this disclosure requirement is a recognition that deriving unduplicated audience people-based measures from digital activity and other research is the most difficult of the metrics; however, it is also inherently the most valuable to users of measurement data. In no instance should a "uniques" metric be represented in reporting and elsewhere as "Unique Users" without appropriate foundation in a measurement of people.

See the *IAB Audience Reach Guidelines* as well as the *MRC Digital Audience-Based Standards* for further guidance on general digital audience measurement.

## 5.1.1   Adjustment of Uniques

While it is possible for census-based measurers to produce counts of Unique Users under the *IAB Audience Reach Guidelines*, the threshold of measurement difficulty for achieving this measure in a census-based environment is quite high (generally because of the difficulty of being able to identify a cookie as a unique person persistently during the measurement period).

The measurement organization may utilize algorithms and other data adjustment procedures, utilizing means such as cookies (or mobile advertising IDs and unique device identifiers), as well as other possible identification methods such as online or offline studies, to calculate Unique Browsers and Unique Devices. Likewise, census-based measurers may similarly have procedures that ultimately can result in a Unique User metric. However, in order to report a Unique User, the measurement organization must utilize in its identification and assignment processes underlying data that is, at least in a reasonable proportion, attributed directly to a person.

For instance, data collected from registrants is one possible source that can be utilized in creating a Unique Users measure by a census-based measurement organization, if registrants represent a reasonable proportion of the total user-base and when appropriate scientific projection methods are used for non-registrants.

Activity of tracked users should originate from actual records of user activity or collection procedures sourced from users.  If this data is inferred, the nature and extent of inference as well as the inference techniques should be disclosed.  If location information is gathered from users directly through registration, panels, surveys or other techniques, these methods should be disclosed.

*In no instance may a census measurement organization report Unique Users purely through algorithms or modeling that is not at least partially traceable to information obtained directly from people, as opposed to browsers, computers, or any other non-human element.*

A measurement organization may use passive techniques to associate Unique Users to infer a virtual household as a stand-alone reporting unit or for the purpose of cross-media combinations or comparisons. For example, IP addresses may be used to link users and infer a household, but are subject to many challenges that must be accounted for. Such use of IP addresses must account for availability, granularity and reliability of collected IP address data as

well as household members or devices that never connect to these IP addresses and also guests that may not be part of the household, but do connect to these IP addresses. Further, device portability and the potential for a device to connect to multiple IP addresses must also be accounted for. Inferences used to determine households from user records must be empirically supported, disclosed and demonstrated to be materially complete.

Further, to the extent that models are used to adjust uniques, it is critical that robust empirical support is used to develop these models and that such models are granular enough to account for differences in media usage (in digital this includes but is not limited to site category, differences by device, language, location and local considerations such as maintaining the diversity of local audience behaviors). These models should be subjected to ongoing validation and any learning data or source of truth used should be empirically supported and consider and reflect the population being measured.

## 5.1.2   Accounting for Duplication

A user should only be counted once (unduplicated) for unique measurement, despite the fact that a user can have multiple visits during a reporting period. Furthermore, in all instances related to the reporting of audience measurement, the use of the qualifier word "Unique" should be limited only to references to records that have been de-duplicated within the entire reporting period.

The foundation for the initiation of unique user counting is a measurable incidence of audience activity, unduplicated for that user, respectively, and related to the applicable web-site, property or application, during the reporting period. In addition to accounting for duplication when reporting unique audience metrics such as Reach, when determining coverage of the measured universe, a measurement vendor must account for duplication across devices or platforms within the same universe. Measurement vendors are encouraged to develop and utilize robust tracking assets that can identify users across devices and platforms for purposes of de-duplication. Alternatively, vendors may measure device or platform audiences independently and estimate/remove duplication across them. Such techniques must be empirically supported and disclosed.

It is critical that thorough descriptions of how "users" are actually determined and how de-duplication during measurement periods is accomplished are provided to users of unique user measurements. Tracking methods should be subject to internal testing and validation upon original implementation as well as periodic internal verification testing.  Tracking methods and disclosures will be the subject of intense procedural verification if external certification is sought by the measurement organization.

It is likely that methods for linking "identity" (individuals and households) across digital devices and platforms to account for duplication require robust assets and techniques. Further, accounting for duplication across media will need to account for unique situations such as concurrent usage and "casting" (use of a mobile device to broadcast content to TVs). With regard to cross-media comparability considerations, as stated above, this document represents

the digital input into a Cross-Media Audience-Based Measurement Standard, which will soon follow.

As was discussed above with regard to adjusting uniques, to the extent that models are used to account for duplication, it is critical that robust empirical support is used to develop these models and that such models are granular enough to account for differences in media usage (in digital this includes but is not limited to site category, differences by device, language, location and local considerations such as maintaining the diversity of local audience behaviors, where reporting is at the local level). These models should be subjected to ongoing validation and any learning data or source of truth used should be empirically supported and consider or reflect the population being measured. See the *MRC Digital Audience-Based Standards* for further guidance in this area.

## 5.2   Time Data Collection

Location measurement data accuracy may vary depending on whether the data collection technique consists of snapshot or point in time data compared to behavioral analyses over time.

Passively measured (other than first-party data) location data representing home or work location may require observation of several data points over time in conjunction with behavioral analysis to assign "home" or "work" location. Measurement organizations should seek to establish robust data collection and editing rules including a minimum level of quality data observations when assigning home or work location based on passively collected data. Actively collected or first-party location data (such as registration data) should be periodically refreshed or analyzed for "freshness". See Section 6.2.1 for further discussion of registration data and required quality control.

Furthermore, measurement organizations should consider establishing empirically supported number and length of place connection, proximity minimums, or other qualifying criteria or edit rules when measuring point in time location and visitation which should be disclosed and periodically assessed. Likewise, if advertising information (such as bid requests) is used to assign location, the time lag between ad-exposure and proximity indication should be considered.

Measurement organizations should institute specific "inactivity rules," by which a user session is terminated and thus excluded from additional contributions to Time Spent after a pre-determined level of consecutive inactivity. Inactivity rules that result in the termination of a location session or visit are encouraged and should be fully disclosed by the measurement organization; these disclosures should include both the time thresholds utilized to trigger the inactivity rules, as well as the amount of time spent to be credited in those situations where the inactivity rule is activated. It is expected that inactivity rules may be modified in the future based on evidence from empirical study of the evolution of users' browsing habits. For mobile application measurement, 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 the mechanisms used to detect inactivity may be user configurable.

These inactivity rules may vary based on the type of application involved. For instance, some applications are designed for long periods of inactivity (such as long-form video, or scoreboards, to name two examples), 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. Or, as another example, while an application that is not in focus on the screen would usually be considered inactive (if out of focus for the pre-defined inactivity duration), in certain limited cases, such as with applications that contain audio ads, the inactivity rules may allow for the application session to be considered as still active. In all cases, inactivity rules applied must be fully documented and disclosed.

The mobile environment may allow for differing options for determining user activity than are available in traditional online environments, and these should be leveraged in making inactivity determinations. For instance, screen dims and darks, or screen touches, can be used in helping to make inactivity determinations.

The basis for determining Time Spent at a location (is measured as part of visitation) should be disclosed to data users. Likewise, disclosures should also include information on the methods used to determine the precise time at which a session is terminated, and its contribution to the calculation of Time Spent for that session.

## 5.2.1   Validation Procedures

*General*

It is likely industry organizations such as MMA, IAB or others will help administer tools, resources and lists that will allow for uniform application of certain location validation. To the extent these resources arise in the marketplace, location measurement vendors are encouraged to consider their use and application in the context of validation and location data quality.

Measurement vendors should apply robust validation and quality control techniques continuously to collected and reported data including cleaning and editing functionality. Such techniques should be periodically monitored and assessed. Accordingly, validated location measurement precision and accuracy information should be disclosed in location measurement reports.

Accuracy generally refers to the ability or degree to which a measurement can ascertain actual location, place and visitation correctly (the difference between measured and true location or place; relative accuracy of specific data and techniques are discussed further in this document). Precision refers to the level of granularity of location measurement, typically reflected in the number of digits following the decimal point in latitude and longitude (for GPS measurement).

Proximity technology, like beacons, may measure precision in distance to a known sensor/context.

For example, a latitude and longitude comprised of two decimal points may pinpoint a mobile user's location to within approximately one kilometer, while four decimal points may enable accuracy to within approximately ten meters (5 decimal places enables accuracy of approximately one meter). While higher levels of precision may allow for more accurate location, place and visitation measurement, the number of digits following the decimal should neither be equated with superior accuracy, nor does it necessarily reflect the reproducibility of the measurement. Measurement vendors are encouraged to obtain first-party "ground truth" data under conditions as close as possible to those in real-world use to verify accuracy of measurement against such data.

Accuracy is an estimate of how likely the measured location represents the true location of the device/user/place/visitation and Precision is how specific and granular a measurement of location is stated (in terms of decimal points, etc.). Accuracy and precision are independent concepts, but both are necessary disclosures for location measurement.

However, collection of more precise data may impact device data usage and battery life and may lead to latency (as more device resources may be devoted to more robust measurement technology) in both measurement and user experience. Measurement vendors are recommended to use the most precise measurement that is fit for the intended purpose of it and to disclose the relative precision of collected and measured data as well as any limitations or impacts on accuracy such precision may exhibit. Further, measurement vendors should employ validation procedures at as precise a level as technically feasible commensurate with reported precision.

Android and iOS Location Service APIs, include parameters for accuracy, time of reading, speed, altitude etc., and vendors are highly encouraged to collect and utilize as many or all of these where possible. Sensor data that can be obtained via smartphones such as accelerometer, compass and gyroscope data should also be collected and considered where feasible.

Polling granularity or collection frequency influences the accuracy of location and visitation (including Dwell Time) measurement. While these guidelines do not mandate a specific minimum collection frequency for location and visitation measurement, vendors are required to adopt collection frequencies and measurement granularity that at least supports the level of granularity of reporting.

Second-level granularity of Dwell Time based on at least 200 millisecond polling granularity, is encouraged consistent with the requirements related to time threshold measurement within the *MRC Mobile Viewability Guidelines*. If the measurer can empirically validate that 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 conditions and in consideration of user experience and device battery life) will result in no material differences in

measurement, this less frequent interval is allowable for. If a measurer chooses to poll 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.

Urban density (concentration of venues/places within physical areas or close proximity as well as multi-level buildings made up of varying discrete places) can impact location signals and affect accuracy. Vendors should include consideration of available urban density data (such as Census data as well as whether a place is a residence or a business) and employ validation procedures that focus on precision of collected data with regard to the relative accuracy of location and visitation measurement in dense areas. In areas where businesses are tightly clustered (e.g., malls), in addition to location distance, valuable signals for inferring the place of visit can be derived from other sensors on a device such as accelerometer, gyroscope, compass, as well as the Wi-Fi signal strength of nearby routers.

*Altitude*

With regard to multi-level buildings or altitude, measurement vendors should collect and include altitude data (or other data to disambiguate places on different floors of the same building) where feasible and consider this when validating and processing reported results. The presence or absence of such data at a precise level can have a direct impact on the accuracy of location and visitation measurement. Z coordinates or elevation data included with GPS coordinates may be less precise than latitude and longitude (X and Y) coordinates due to the nature of the GPS system (satellite collection orientation of this data). Limitations of this data should be understood and considered when factored into measurement with any known limitations disclosed to users.

Altitude data may also be used to determine edit rules (empirically supported) that may be applied to validate or filter data to avoid visitation false positives versus actual visitors.

*Speed*

Measurement vendors should also use a speed or duration indicator to improve assignment where feasible, especially when using radius based boundary and proximity methodologies for visitation or targeting. Speed can be inferred indirectly from mobile accelerometer and gyroscopic measurements, but generally requires analysis of location over time, with reasonable measurement frequency. Speed and duration data should be used to determine edit rules (empirically supported) that may be applied to validate or filter data to avoid visitation false positives such as "drive-bys" or other types of momentary proximity not meeting the requirements of a visit, versus actual visitors. Speed and duration edit rules should be supported by empirical analysis, correlated to the purpose and use of data and be fully disclosed. Use of raw altitude data without appropriate editing is discouraged, but may be necessary in situations of data sparseness or infeasibility of more precise measurement. In such situations, the conditions necessitating raw altitude data usage should be fully disclosed to users.

*Coordinate granularity and errors*

Data validation should also consider inaccurate coordinate interpretations when using alternate or less precise data fields. Location data that is translated into latitude and longitude coordinates could come from a variety of sources as GPS or Wi-Fi, IP and registration data. Measurement vendors should include consideration of the number of coordinate digits (minutes and seconds) or "coarseness" in source data and also employ robust data quality and cleaning procedures to account for truncated, transposed or mislabeled coordinates, as well as incomplete or corrupt data. Static or hard coded coordinates passed from applications should not be used for dynamic location measurement. Likewise, the use of centroid or the center-points of geographic areas such as zip codes, DMAs, or states should not be used to represent precise location and visitation unless intended to be reported at the same granularity (market-level).

*First-party freshness*

The use of first-party or registration data should be subject to periodic review and update along with appropriate recency or "freshness" rules such as time to live policies. Measurement vendors utilizing registration data are encouraged to employ leading practices suggested by the Council for Research Excellence or CRE (http://researchexcellence.com/files/pdf/2015-02/id97_can_publisher_data_play_a_role_4_3_12.pdf) when designing registration collection and maintenance procedures. Such practices include, but are not limited to:

- Data edits/validations at the time of collection to determine if the response is valid in the context (e.g., a valid ZIP code based on reference to a USPS database).
- Review of declared data for illogical or suspect responses. For example:
  - Selection of 12345, 90210, or other common ZIP codes for location.
  - Selection of the first option in any drop-down selection field, etc.
- Data validation techniques initiated by and focused on user changes to their profile data.
- Cross-validation techniques employing external or alternate data sources.
- Defined process to address data conflicts across collection methodologies and parties.
  - Data quality procedures that pre-identify potential conflicts among multiple sources, and a policy such as a data hierarchy.
- Ability of users to review their collected user data, so they can update or correct it, if necessary or possibly remove it from their profile.
- A data "Time To Live" (TTL) policy that considers the different data types, association (first or third party sources) and derivation (declared or inferred) for each element and establishes a TTL for that data, at which point the data must either be refreshed or discarded.
- Centralized function to oversee data collection, quality and use across the organization, such as a research or CRM function.

*Other Validation Considerations*

Measurement vendors should consider whether other data validation processes should be included as part of routine and ongoing data inspection, validation and editing. Such considerations may include blacklisting known invalid or out of bounds coordinates, known bad devices or applications as well as pattern and outlier analysis related to over or under-represented locations and users. All location measurement data should be subject to invalid traffic filtration as required by the *MRC Invalid Traffic Detection Guidelines.*

Additionally, measurement organizations should seek to establish robust data collection and editing rules including a minimum level of quality data observations as well as time bounds within which data observations are considered valid. Measurement organizations are also encouraged to make use of all available sources of location and place data and establish rules for either a minimum level of sources in agreement or how to treat and weight sources that may be competing or contradictory with respect to the relative level of accuracy and precision of each source. All such rules should be empirically supported and fully disclosed.

See the *MRC Digital Audience-Based Standards* for further guidance and requirements related to data editing and validation of audience data, including location.

# 6 Location-Based Advertising Measurement Guidelines – Technical Details

## 6.1 Tracking of Advertising Access – Technical Details

### 6.1.1 Client-Initiated (and Viewable)

These guidelines rely on the central concept that counting should initiate on the client side, not the server side (measurement counting may happen at the server side as long as it is initiated based on client-side events.), and that counting should occur as close as possible to the delivery of an advertisement or content to the measured user. Records evidencing longitudinal consumption of content during the measured time period should be based on active user affirmation, or at minimum periodic confirmation with the device that content and ads continue to be delivered with an opportunity to see (for example, remain viewable).

Filtration and invalid traffic detection methods are necessary to ensure that invalid activities are excluded from measurement counts. Caching and Pre-Fetch/Pre-Render activity must be appropriately accounted for to ensure that content not actually accessed by a user is excluded from counts. Ads that are blocked at the device level through the use of ad blocking technology should not be included in impression or viewable counts. See section 7 for further guidance.

All counted activity that contributes to audience measurements (including location) should meet parameters of the MRC's *Viewable Impression Measurement Guidelines*, to ensure opportunity to see is present.

Ad or content impression activity not meeting Industry quality standards (filtration, viewable parameters, etc.) should have associated audience activity removed.

### 6.1.2 Script-Based Tracking Method/Assets

For digital measurement of advertising, measurement methods may include a tracking asset such as a tag.

The following details are key components of existing IAB Measurement Guidelines:

1. An ad impression may only be counted when an ad counter receives and responds to an HTTP request for a tracking asset from a client. Permissible implementation techniques include (but are not limited to) HTTP requests generated by <IMG>, <IFRAME>, or <SCRIPT SRC>. For client-side ad serving, the ad content itself could be treated as the tracking asset and the ad server itself could do the ad counting as long as counting does not occur until ad content has been loaded.

2. The response by the ad counter includes but is not limited to:

   a. Delivery of a "beacon," which may be defined as any piece of content designated as a tracking asset. Beacons will commonly be in the form of a 1x1 pixel image, but these guidelines do not apply any restrictions to the actual media-type or content-type employed by a beacon response.

   b. Delivery of a "302" redirect or HTML/JavaScript (which doubles as a tracking asset) to any location, and

   c. Delivery of ad content

## 6.2 Tracking of Device and User Location (Sources and Assignment) Technical Details

### 6.2.1 Measurement Techniques

Activity of tracked users should originate from actual records of user activity or collection procedures sourced from users. If this data is inferred, the nature and extent of inference as well as the inference techniques should be disclosed. If location information is gathered from users directly through registration, panels, surveys or other techniques, these methods should be disclosed.

As discussed above, accuracy generally refers to the ability or degree to which a measurement can ascertain actual location and visitation correctly (relative accuracy of specific location data and techniques are discussed further in this document). Precision refers to the level of granularity of location measurement. In general, higher levels of precision allow for more accurate location and visitation measurement.

Organizations gathering user information should have regular internal testing of accuracy and these processes should be subject to audit.  Generally a very low tolerance for error exists with primary reported characteristics (for example, a general expectation of less than 5% error).  If error rates are expected to be in excess of expectations for these characteristics these estimated error rates should be disclosed.

Measurement of device and user location may use GPS, Wi-Fi, IP Address, Cell Antenna Trilateration and Registration Data to produce Longitude/Latitude coordinates. Some sources are more accurate than others, and the method as well as relative accuracy of each should be disclosed.

The following measurement techniques are described in terms of their relative accuracy:

*Data passed in an ad or bid request:*

Measurement vendors may also use location data passed as part of bid or ad requests (such as OpenRTB) when assigning location or visitation. Protocols such as OpenRTB may include information about an impression, User or Device. The OpenRTB spec defines Geo objects, which represent physical locations that can be attached to data objects, but User and Device location information may differ for the same request and should be inspected and analyzed. Location parameters passed may represent current, home, work or last-known location or may represent the location of a fixed point such as a cellular network antenna or even the geographic center of a city. These values should be understood and considered appropriately in measurement and reporting. Further, the type of attribute (method of collection) and relative accuracy and precision can be included and should be factored into location determination where available.

As ad or bid request data may be subject to manipulation and may carry differing levels of accuracy and precision (depending on the source and method used to derive and transmit location data), it should also be subject to robust validation edit rules/qualifying criteria. The use of multiple data sources to corroborate and inspect ad or bid request data and accuracy/precision parameter requirements is encouraged. Vendors using ad or bid request data for location determination are strongly encouraged to also employ alternate data sets and algorithms to detect patterns of inaccurate/fraudulent location data and filter it out, with empirical support and disclosure.

The recency of the location measurement (or last fetch time), and whether it indicates current location or the last well-known location should be considered and disclosed. Data from

individual publishers/apps should be inspected to ensure there are no anomalies and for accuracy since different publishers/apps may report location from different sources or with different accuracy and/or precision.

The actual number of active devices reporting ad or bid request data or users observed daily, weekly, or monthly, the fraction of time they are observable, and the number of measured visits should be disclosed. Where, how, when, and what accuracy verification data is collected and how it is used should be disclosed to users.

*Beacons*

Beacons, or devices that broadcast identifiers (generally Bluetooth low energy signals) that can trigger certain actions in a beacon-enabled app on a mobile device, may be used for targeting and visitation measurement. Such measurement may be very accurate and precise data, within a matter of meters, but consideration of scale (ability to install, manage and maintain beacon equipment) should be part of use of such information. Robust onboarding and monitoring of place determination should be applied to such data and vendors should apply such procedures consistently to all measured places. Such procedures include, but are not limited to:

- Formalized and documented configuration, onboarding and installation procedures.
- Initialization checks and verification procedures.
- Formalized and documented technical guides and reference materials for both installation technicians and client users.
- A robust equipment management system that includes deployed beacon inventory by hardware and firmware version (where applicable).
- Ongoing monitoring and testing procedures.
- Formal and documented hardware and firmware update procedures.
- Ability to track and mange user-set parameters (recorded and included in data transmissions back to the measurement organization if changed).
- Quality control procedures to ensure data transmissions from applications (whether real-time or batched) are complete, accurate and protected from modification.
- Systems to ensure errors and data rejected for quality purposes are logged, evidence supporting the error is retained and errors are followed up on to correct potential cases of systematic or recurring issues.
- Formalized and documented obsolescence policies.

Further, unsecure beacons may be susceptible to manipulation or hijacking. As such, vendors deploying beacons should take steps to ensure unauthorized parties cannot use their infrastructure. These steps include the use of unique IDs, preventing the decoding of beacon information (such as through rotating encryption keys), and utilizing secure and private passwords.

*GPS*

Device and application location services that feature GPS may be utilized for user and device location and may be collected through use of an API or SDK. Consistent with the IAB Audience Reach Guidelines, specific machine based tracking of users – such as unique browsers or cookies – should be specified and distinguished from actual user based tracking (which requires more advanced adjustments, registration, etc.).

De-duplication of user tracking (into "uniques") for reach measurements is desirable – but is recognized to be a difficult metric to capture accurately.  If a measure is labeled "unique" de-duplication is required.  It is critical that thorough descriptions of how "users" are actually determined and how de-duplication during measurement periods is accomplished are provided to users of unique user measurements. We refer the user of these guidelines to prior IAB guidance on Audience Reach Measurements with regard to the hierarchy of unique metrics (cookies, browsers, etc.). See section 5.1 for further detail on classification of uniques for the purpose of assigning location.

Tracking methods should be subject to internal testing and validation upon original implementation as well as periodic internal verification testing.  Tracking methods and disclosures will be the subject of intense procedural verification if external certification is sought by the measurement organization.

GPS data may be very accurate and precise data, capable of identifying user location to within 10-100 meters, but is dependent on quality control and monitoring. The quality of a GPS signal degrades significantly indoors or in locations that do not have an unobstructed view of multiple GPS satellites. Such limitations should be considered and disclosed. Further, measurement vendors should collect and include altitude data where feasible and consider this when validating and processing reported results. The presence or absence of such data at a precise level can have a direct impact on the accuracy of location and visitation measurement.

GPS data collection may be battery and data intensive and vendors are encouraged to optimize such techniques to minimize impact on measurement latency and user experience.

*Wi-Fi*

Use of Wi-Fi location measurement (where available) can also be very accurate and precise and may be capable of identifying user location to within 30-100 meters. Such data may be better suited for micro-location measurement indoors when compared to GPS and is not subject to provider/carrier limitations compared to other techniques such as Cell Antenna Trilateration (discussed below). However, IP switching and VPN/Firewall/Proxy considerations may impact data accuracy (the former due to inconsistency in data points collected and the latter in mis-assigning location to devices or users that are obfuscated or grouped) and availability and should be considered in data quality control and validation procedures. Like beacon

measurement, robust onboarding and monitoring of place determination should be applied to Wi-Fi data and vendors should apply such procedures consistently to all measured places.

*Cell Antenna Trilateration*

The use of cellular network location and Antenna Trilateration between cell towers is generally less accurate (maximum resolution generally at the zip or neighborhood level) than other techniques listed above. The availability and capabilities of such data may be subject to a specific wireless carrier and limitations to certain carriers will impact the coverage of Cell Antenna Trilateration techniques. The relative coverage of wireless carriers and any apparent limitations should be disclosed to users via penetration data or geographic coverage information.

Further, Cell Antenna Trilateration measurement may be susceptible to gaps in transmission or signal loss, particularly during driving or commuting (speed should be considered). Measurement vendors should consider these factors in validating and cleaning such data. The use of centroid or the center-points of geographic areas such as zip codes, DMAs, or states should not be used to represent precise location and visitation unless intended to be reported at the same granularity (market-level) absent other signals to refine this data.

*IP Addresses*

The use of mobile IP addressed is generally not accurate or precise for mobile location (this data may be more accurate and precise for location of static devices such as desktop PCs, connected TVs or OTT devices) and is subject to VPN challenges such as VPN spoofing or corporate IPs. Data center IPs should be filtered from measured traffic consistent with *MRC Invalid Traffic Detection Addendum* guidance. IP addresses may also be based on an application server, which can vary significantly from the actual location of a device or user. IP addresses may be mapped to country, city, state, postal code, and carrier information through an IP-to-geo database or geo-location vendor, but it is recommended that such datasets and vendors be audited and MRC accredited data sources.

*Registration and Other First-Party Data*

The use of registration data may be used to determine location, but generally such data is limited to the establishment of home or work location as opposed to actual point-in-time location. The use of first-party or registration data should be subject to periodic review and update along with appropriate recency or "freshness" rules such as time to live policies. Measurement vendors utilizing registration data are encouraged to employ leading practices suggested by the Council for Research Excellence or CRE (discussed as part of validation procedures in Section 5.2.1 of this document) when designing registration collection and maintenance procedures.

First party data such as opt-in panel data (see considerations for panels below) and social media check-ins may also be used to determine user location, but such data may subject to human error and falsification that requires robust controls and data quality control analysis.

*Behavioral analysis*

Home or work location may also be derived based on analyzing a specific user's location history. Analysis of geo-behavioral patterns to infer location should be empirically supported and disclosed. The use of third-party data (purchase data, media consumption, car ownership etc.) may be joined to behavioral data to assign location. The source of such third-party or data integration data should be known and is encouraged to be audited and accredited. See the following sections related to specific data integration considerations.

### 6.2.2  Tracking Method – Panel Methods, etc.

Syndicated measurement organizations have complex methodologies for selecting, recruiting, and maintaining panels (or other methods of user-tracking based methods of assignment, for example data enrichment methods based on tracked activity and user linkages); collecting data; editing; projecting and weighting data and reporting audience activity.  One strength of these organizations is the ability to assign audience activity to users and the known demography of users in a panel or some other user-assigned data source.  This information is gathered through a combination of manual and automated techniques, some of which can involve direct contact with panelists and some involve the use of software metering techniques or other data-collection methods such as SDKs within applications or data enrichment processes.

Whether or not a formal panel exists through direct contact, selection, and recruitment of users, all of the following considerations apply. For instance, tracking methods relying on large-samples of users can behave effectively like a panel. Biases exist in who generates such activity and how. The rate at which users generate activity in different geographic areas or specific places may vary, mimicking panel response rate limitations. Where samples are used the sample design must, to a reasonable degree, accurately reflect the statistical population targeted for measurement (such as certain geographic or demographic segments measured). In each report, the statistical (target) populations to which measurements are projected must be clearly defined and the sample base for the reporting of any separate audience data must be disclosed.

Similar to census-based, client-initiated tracking methods, the quality of the user assignment process (logging, activity assessment, etc.) is critical to measurement accuracy.  The following other areas are critical to accuracy among user assigned tracking measurement organizations are required to be considered:

- Completeness of frame for selection of panelists
- Completeness of assignment data-source (if non-panel)
- Panelist selection procedure
- Panelist characteristic updating

- Panel refresh and turnover-replacement procedures
- Panel cooperation and incentive techniques
- Panel representation versus population
- Panel calibration methods
- Measurement coverage issues (inclusive of local considerations where applicable)
- Characteristic assignment techniques, including modeling, ascription, etc.
- In-tabulation qualification rules
- Accuracy of software meters and/or other data collection tools
- Completeness of data collection
- Information processing controls
- Reasonableness and support for data editing, adjustment, modeling and/or ascription techniques
- Reasonableness and support for weighting variables and models
- Appropriateness and quality source of universe estimate data
- Accuracy of data calculations and reporting
- Overall rates of response
- Disclosure of standard errors

If organizations use a data enrichment process to assign location, static device information should not be used and the following additional matters must be considered.
- Completeness
- Coverage of data integration source
- Accuracy of data integration source data
- Testing and quality control of data transfer between the measurement service and data integration source
- Privacy considerations, if passive to the public
- Assessment of any adjustments, if any, that need to be made of the data integration source data
- Processes for on-boarding and terminating data integration sources as well as disclosing these changes to customers.

Disclosure and auditing is strongly recommended for these complex syndicated measurement organizations.

See the *MRC Digital Audience-Based Standards* for further guidance and requirements related to panels and DEP when used as a source of audience assignment, including location.

## 6.3  Tracking of Place (Sources and Assignment) Technical Details

Place measurement involves the determination of the physical location of a business or other place for the purpose of correlating this location to user/device location measurement to derive foot traffic or visitation data as well as to target users/devices based on proximity to a specific place or location.

Such place measurement may involve geo-fencing (or establishment of a "virtual barrier"), which may be done manually via direct measurement or beacon placement (discussed above) by a measurement vendor, as well as via acquisition or subscription to a location directory or third-party data and other means. Geo-fencing may involve either Point-Radius or Boundary methodologies. In a Point-Radius measurement, a circle of data is utilized with a certain radius around latitude and longitude coordinates of a place. In Boundary measurement, a complex polygon or boundary is established that is generally a more precise and granular representation of a place

In each case, it is important to validate that the geo-fence representation accurately reflects not just the location and dimension of the physical place, but accounts for how a mobile device would report its location when at that place, to ensure correct conclusions about visitation. In general geo-fencing cannot represent multi-story structures.

Place measurement may also include probabilistic assignment based on user-behavior measurement via the ability to survey users about their location during periods of behavior or through use of check-ins (such as through social media activity). While use of such techniques may be viable, when properly supported, it should be recognized that a user device's reported location may not correspond to their physical location on a map and as such, place measurement may not align completely with the map location and dimensions of the place. As a result, use of probabilistic assignment techniques for establishing place boundaries requires empirical support and appropriate accuracy/precision tolerances.

Regardless of which methodology is used, location derived from device-level location services should be used to identify user's device location with respect to geo-fenced locations and less precise data, such as IP, should be avoided. Consideration of scale should also be part of use of such information. Robust onboarding and monitoring of place determination should be applied to such data and vendors should apply such procedures consistently to all measured places.

Any inferences used in location or visitation measurement with regard to place data should be thoroughly tested and supported as well as disclosed. Place data may be subject to manipulation (hijacking) and all place data should be subjected to filtration as required by the *MRC Invalid Traffic Detection Addendum*. The capabilities and limitations (precision/accuracy) of the respective place methodology should be disclosed.

*Place databases*

Large third-party data sets, maps or place databases may also be used to determine and map physical place location and boundaries. Vendors that utilize such information should consider the potential limitations of such databases (and whether/how they align with the provider's location measurement approach), including out-of-date and incomplete information and coverage. Vendors using such data sources are encouraged to make use of multiple independent sources of data, with formalized and empirically based procedures to handle and resolve conflicts or discrepancies among these sources. Third-party or Demographic Enrichment

Provider (DEP) data should be known and is encouraged to be audited and accredited. See other sections of this document related to specific DEP considerations.

## 6.4   Measurement on Applications

The application measurement organization should have sufficient controls to determine that:

- The application was downloaded, opened and initialized as designed on that Client User prior to the measured Session.
- The application itself (or measurement assets within it) was functioning as intended during the session.

Application transaction records, can be derived and transmitted to the application measurement organization: (1) on a real-time basis during application execution, (2) in batched groups that are transmitted periodically (in whole or in part) during an on-line application Session or, (3) first stored during off-line application use and later transmitted during a subsequent on-line Session (not necessarily associated with the same application) of the applicable Client-User.

See the *IAB Mobile Application Measurement Guidelines* for further guidance related to application measurement, particularly API and SDK measurement, which should be applied to measurement vendors utilizing this technology to measure location.

# 7   Enhancing Tracking Accuracy

## 7.1   Enhancing Advertising Tracking Accuracy

For measurement of location associated to ad exposure, existing key concepts of ad impression counting should be followed, as detailed in previously issued IAB Measurement Guidelines. These include:

- Client-Initiated Counting
- Mobile measurement for downloaded, opened, and initialized applications
- Inclusion of off-line application activity during a campaign reporting period
- Filtration of 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 (for viewability)
- Disclosing Material Internal Traffic (if not filtered)
- Full Disclosure of measurement methods and key metrics by Publishers, Portals, Ad-Servers, Ad Networks and Exchanges

- o 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.

## 7.2   Filtration for Invalid Traffic

Filtration of site or ad-serving transactions to remove invalid activity is highly critical for accurate, consistent counting. All metrics subject to audit by MRC will be expected to comply with the *MRC's Invalid Traffic and Filtration Guidelines Addendum*. This includes location-based metrics, which should be filtered for known General Invalid Traffic (GIVT) as required by those guidelines. Furthermore, like other metrics, application of Sophisticated Invalid Traffic (SIVT) detection processes is strongly encouraged for location-based metrics. While application of SIVT detection processes is strongly encouraged for monetized traffic, digital audience and persons level measurement requires a higher degree of precision and accuracy. As such, digital audience measurement and reporting requires filtration inclusive of both GIVT and SIVT. Location measurement applied to audience reporting must include SIVT filtration, however, location measurement as a service or functionality without audience reporting generally can be limited to GIVT filtration.

## 7.3   Internal Traffic

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

Testing computer environments should be logically segregated from production environments as to not commingle test and production transaction.

Specific to location measurement, secret shoppers or other known "unnatural" location and visitation data should also be segregated. Material internal traffic not filtered should be fully disclosed.

## 7.4   Inactivity Considerations and Limits

An application Session is measured from the start of the application to the end-time of use of the application, as long as the application does not encounter inactivity (see the *IAB Mobile Application Measurement Guidelines*) of a pre-defined duration. As noted in the *IAB Mobile Application Measurement Guidelines*, these inactivity rules may vary based on the type of application involved; for instance, some applications are designed for long periods of inactivity (such as long-form video, or scoreboards, to name two examples), 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 fully documented and disclosed.

The mobile environment may allow for differing options for determining user activity than are available in traditional online environments, and these should be leveraged in making inactivity determinations. For instance, screen dims and darks, or screen touches, can be used in helping to make inactivity determinations.

## 7.5 Targeting

Targeting is defined as delivering ads based on users' location, typically involving proximity to specific place(s). It is critically important that the accuracy and precision of location data as well as the source and meaning (real-time location vs. home or work location) is disclosed and considered when using such data to target advertising. Empirically supported proximity ranges should be established for location targeting and these ranges should be disclosed to users. Further, vendors enabling delivery of location-targeted ads should include first-party verification (such as user prompts) of location to gauge effectiveness and further fine-tune measurement. The results of such verification procedures should be disclosed to users of the data.

Development of these functions is encouraged; however, privacy regulations should be considered. Privacy regulations as they emerge should be monitored and staged for the application measurement organization as soon as known. Publicly available privacy policy documents are encouraged.

### 7.5.1 Privacy and Consumer Perception

Vendors and publishers must make efforts to obtain the end user's permission, and to provide concise, clear privacy policy notices describing how their app products and/or web services use and share data and what the consumer's choices are. Use of clear opt-in practices is required and vendors are encouraged to establish first-party relationships for collection of location data where feasible.

Entities employing mobile web location collection must include the functionality to provide prompts when visiting a web site requesting current location data, with a clear opt-in as well as the website hostname, and the option for the consumer to accept or deny permission.

Entities using mobile application location services must get the user's permission via a pop-up at application initialization or during use and request this access again each time a user changes the permission in the location services setting within the device settings.

A publisher or vendor must clearly state in their privacy policy why they are collecting this information and how it may be shared. If respondents have been led to believe, directly or indirectly, that their anonymity will be protected, their names, addresses and other such identifying information shall not be made known to anyone outside the measurement service organization. Measurement organizations are encouraged to consider additional industry and regulatory guidelines in this area. Specifically:

The *IAB's Mobile Location Data Guide for Publishers***:**
(http://www.iab.com/wp-content/uploads/2016/04/IAB_Mobile-Location-Data-Guide-for-Publishers_Feb2016-Revised.pdf)

The *Digital Advertising Alliance's Self-Regulatory Principles*:
(http://www.aboutads.info/principles)

The *Network Advertising Initiative's Code of Conduct*:
(http://www.networkadvertising.org/code-enforcement/code)

Additionally, measurement organizations seeking MRC accreditation are required to adhere to relevant *MRC Minimum Standards* in this area.

Privacy regulations must be considered. Privacy regulations as they emerge must be monitored and staged for the measurement organization as soon as known.

Finally, if a vendor or application collects data that is intended to be used for behavioral analysis to determine home location or other user location heuristics, this must be made known to users as part of permissions, terms and conditions and privacy policies. Tracking location throughout a day and combining sessions to determine location has privacy implications that must be considered in disclosures and user-facing policies or terms and conditions.

# 8    Reporting Parameters

## 8.1   General Parameters

General reporting parameters (dayparts, week parts, time zones, etc.) provide for consistency and comparability.  These should be based on the logical application of information about the usage patterns of the medium.

In order to provide for more standardization in digital media measurement reporting, the following general reporting parameters are recommended.  Note that these are only several of the possible reporting parameters that may be used.  If parameters in addition to these are reported, similar rules should be defined and applied.  Many of these have been specified on a consistent basis with prior MRC/IAB measurement guidelines.

## 8.2   Time

Day — 12:00 midnight to 12:00 midnight

Time Zone – Full disclosure of the time zone used to produce the measurement report is required.  It is preferable, although not a current compliance requirement, for certified measurement organizations to have the ability to produce measurement reports in a consistent time zone so buyers can assess activity across measurement organizations. For US-based

reports it is recommended that reports be available on the basis of the Eastern Time, for non US-based reports this is recommended to be GMT.

Daypart — Digital media usage patterns need further analysis to determine the usefulness of establishing effective and logical standardized reporting dayparts (such as working hours and non-working hours normalized across time zones). We encourage such analysis to determine the need for standardization of this measurement parameter based on marketplace needs and behaviors.

To the extent that audience measurement is specific to a media vertical (e.g., TV), measurers are encouraged to conform to existing and standardized dayparts (e.g., broadcast day), especially with regard to cross-media comparisons or GRPs. However, it is likely that media-agnostic measurement will need to be further studied to determine traffic and usage patterns. Digital specific dayparts should be supported by empirical traffic analysis. Custom dayparts should be fully disclosed

Week — Monday through Sunday

Week-parts — M-F, M-Sun, Sat, Sun, Sat-Sun

Month – Three reporting methods: (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.

## 8.3   Qualification of Data Adjustment Procedures

Section 5 of this document discussed various data preparation and quality checking procedures that may be applied to location-based data. Such procedures may result in Editing or Adjustment to raw data.

Data Editing and Adjustment procedures can be critical to processing location measurement data.  These procedures can be a part of best practices for ensuring complete and consistent measurement results over time.  However, the specific data adjustment and editing parameters used should be supported by empirical justification based on prior study.

The volume/extent of editing and adjustment to originally collected traffic and respondent data should be disclosed, where this volume is material to the total (generally if that exceeds 5% of records).  These disclosures should be granular by type and reported on the basis of weighted and reported characteristic.

If editing or adjustment rates are only periodically measured, this measurement should be frequent enough to be pertinent to reported data.

## 8.4   Minimum Reportability Standards

Measurement vendors are encouraged to establish empirically supported minimum requirements for reporting (for specific measured properties or metrics) and if established, are required to disclose the minimum requirements.

## 8.5   Data Retention Requirements

Detailed collected data (pre and post-processing) supporting digital location-based measurement should be retained for a sufficient period – at least one year after the release of data.  Obfuscated or truncated data may be maintained to satisfy this requirement, should there be Personal Identifying Information (PII) or privacy concerns, but should be available in a transparent manner to accreditation/certification auditors and at a detailed level to allow reprocessing of reported estimates where necessary.

Different metric/transaction types and varying risks associated with transaction types should be considered. PII legal restrictions may dictate eliminating one or more of collected fields from retained records or altering the content of fields for identity protection purposes. Further, privacy or contractual restrictions on raw data may stipulate shorter retention periods. Such restrictions may still allow for alternative levels of retention that are still sufficient to support reprocessing of data. In these cases deviations should be supported by the measurement organization's privacy policy and should be available for review by auditors.

# 9   Disclosure Guidance

Locations reported can be the actual physical location of the content consumer or the home location.  If assumptions are made about physical locations of audience members or devices, these should be described.  Accuracy of assumptions made should be established by empirical study and disclosed to users of measurement data.

If electronic means are used to establish the location of audience members, the accuracy of these functions should be established and disclosed.  These methods should be validated to be appropriately accurate at the levels of granularity being reported.

User disclosures should distinguish how place data is assigned as well as the relative performance of a methodology. Also, where mixed or hybrid assignment methodologies are used, vendors should disclose what percentage of assignment is used for each respective method as part of general disclosures.

User disclosure materials should outline the assignment methodology in detail including the use of probabilistic assignment (using proximity or algorithmic approaches) or deterministic (using actual visitation) assignment.

Digital location-based measurement organizations should disclose their location measurement activity recording process to buyers, sellers and other users of the measurement data.  An

organization's methodology for accumulating digital advertising location measurements should be described to users of the data, including methods for calculating unit audiences where applicable. Specifically, the nature of counts and/or measurements, 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.

Further, privacy and security policies, user permission methods and protection of collected data discussed as part of section 7.5.2 should be prominently disclosed to users of the data.

The following presents examples of the types of information disclosed:

*Nature of Digital Audience-Based Measurements*
- Name/Type of Location Activity Included in the Measurement
- Name of Measurement Report
- Type of Measurements Reported
  - Time Periods Included
  - Days Included
  - Universe Estimates and Coverage Estimates used for Projection
  - Basis for Measurement (Measurement Unit)
  - Geographic Areas
  - Significant Sub-Groupings of Data
    - Demographic categories
- Formats of Reported Data
- Special Promotions Impacting Measurements
- Auditing Applied and Directions to Access to Audit Report
- Sampling/Projections Used
  - Sampling Methods Used
  - Explanation of Projection Methods

*Data Collection Methods Employed*
- Method of Data Collection
  - Cache Busting Techniques Employed
  - First-Party or Registration
  - Exposure or Assignment Level Data
  - Audience Data Sources
  - Viewable Criteria Employed, i.e., MRC Viewable Impression Guidelines
  - Audience Qualifiers, Inclusion Specifics, etc.
- Types of Data Collected
  - Census Tagging, Surveys, Diary, Observations, Electronic Measurements, etc.
  - Frequency of Collection
  - Procedures to Detect and Report Pre-fetch/Pre-render as well as Auto-Play/Auto-Refresh (where applicable)

- Contacts with Users (if applicable)
- Research on Accuracy of Basic Data
    - Latency Issues with Periodic Measurement, As Applicable
- Rate of Response (if applicable)

*Editing or Data Adjustment Procedures*
- Checking Records for Completeness
- Consistency Checks
- Accuracy Checks
- Rules for Handling Inconsistencies
- Circumstances for Discarding Data
- Filtration Procedures
- Handling of Partial Data Records
    - Ascription Procedures

*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 or Error Correction Rules

*Reporting Standards (if applicable)*
- Requirements for Inclusion in Reports, Based on Minimum Activity Levels
- Demographic and Geographic Breaks Reported

*Reliability of Results*
- Sampling Error (if applicable)
- Validation of Accuracy and Precision and disclosures related to these

*Data retention rules*
- Maintaining sufficient data or processes that allow for audit trail

*Limitations on Data Use*
- Non-sampling Error
- Errors or Unusual Conditions Noted in Reporting Period
- Limitations of Measurements

# 10 Auditing Guidelines

## 10.1 General

Third party independent auditing is encouraged for all digital location-based measurements used in the buying and selling process. This auditing is recommended to include counting methods, measurement methods and assignment for location and processing/controls 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 procedures and measurement recalculations.
2. Panel/Census/Assignment Methods:  Independent verification of activity to assign location.  These procedures generally include process reviews, methods to ensure accurate representation, qualifiers applied and testing of application of these qualifiers for inclusion in audiences, transaction authentication, validation of weighting and projection procedures and measurement recalculations.
3. Processes/Controls: Examination of the internal controls surrounding all phases of the measurement process.  Process auditing includes examination of the adequacy of applied counting and qualification techniques.

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.

## 10.2 U.S. Certification Recommendation

All digital location-based measurement products used in the buying and selling process are recommended to be certified as compliant with these guidelines, at minimum annually.  This recommendation is strongly supported by the 4As and other members of the buying community, for consideration of measurements as "currency."

In addition to MRC, there are a number of other certifiers and types and levels of certification available to organizations involved in media measurement.

A number of digital location-based products exist in the US and some of these products have been accredited by the MRC in some fashion. Upon finalization of these guidelines, in addition to timely evaluation of each of these products for compliance, a reconciliation process will likely need to take place that accounts for the differential data collection, editing and projection techniques employed by the respective vendors and the potential impacts on reported estimates.

*Special Auditing Guidance for Advertising Agencies or Other Buying Organizations:*

If buying organizations modify or otherwise manipulate measurements from certified digital location-based audience measurement organizations upon receipt, auditing of these activities should be considered.

## 10.3 International Certification Recommendation

The MRC encourages non-U.S. measurers of activity to adopt the practices spelled out in these guidelines. While certification regimes may vary on a country-by-country basis, we encourage measurers to be audited for compliance annually by independent, third-party auditing organizations.

# 11 References

http://www.iab.com/guidelines/iab-mobile-location-data-guide-for-publishers/

https://www.iab.com/wp-content/uploads/2015/06/AudienceReachMeasurementGuidelines.pdf

http://www.mmaglobal.com/documents/demystifying-location-data-accuracy

http://www.researchexcellence.com/files/pdf/2015-02/id97_can_publisher_data_play_a_role_4_3_12.pdf

http://www.aboutads.info/principles

http://www.networkadvertising.org/code-enforcement/code

# 12 Supporting Associations and Participating Organizations

*About the Interactive Advertising Bureau (IAB)*

The Interactive Advertising Bureau (IAB) empowers the media and marketing industries to thrive in the digital economy. It is comprised of more than 650 leading media and technology companies that are responsible for selling, delivering, and optimizing digital advertising or marketing campaigns. Together, they account for 86 percent of online advertising in the United States. Working with its member companies, IAB develops technical standards and best practices and fields critical research on interactive advertising, while also educating brands, agencies, and the wider business community on the importance of digital marketing. The organization is committed to professional development and elevating the knowledge, skills, expertise, and diversity of the workforce across the industry. Through the work of its public

policy office in Washington, D.C., IAB advocates for its members and promotes the value of the interactive advertising industry to legislators and policymakers. Founded in 1996, IAB is headquartered in New York City and has a West Coast office in San Francisco.

*About the Mobile Marketing Association (MMA)*

The MMA is the world's leading global non-profit trade mobile marketing association comprised of more than 800 member companies, from nearly fifty countries around the world. Our members hail from every faction of the mobile marketing ecosystem, including brand marketers, agencies, mobile technology platforms, media companies, operators and others. The MMA's mission is to accelerate the transformation and innovation of marketing through mobile, driving business growth with closer and stronger consumer engagement. Anchoring the MMA's mission are four core pillars; to cultivate inspiration by driving innovation for the Chief Marketing Officer; to build the mobile marketing capabilities for marketing organizations through fostering know-how and confidence; to champion the effectiveness and impact of mobile through research providing tangible ROI measurement; and to advocate for mobile marketers. Additionally, MMA industry-wide committees work collaboratively to develop and advocate global best practices and lead standards development.

*About the Media Rating Council (MRC)*

The MRC is a non-profit Industry association established in 1963 comprised of leading television, radio, print and Internet 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's *Minimum Standards For Media Rating Research*; 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. Currently, approximately 110 syndicated research products are audited by the MRC. For more information, visit www.mediaratingcouncil.org.

Participating Working Group Organizations:

| | | |
|---|---|---|
| 4info | inMarket | RTBiQ Inc |
| A+E Ole Communications | Joingo, LLC | Schurz Communications |
| Acxiom | Joule | SenseWhere |
| Adara | Katz Media Group | Sito Mobile |
| AOL | KTVN - Sarkes Tarzian | Skyhook |
| AOL-Convertro | Local Search Association (LSA) | Starcom MediaVest Group |
| Apple | Mbooth | TAB Online |
| Audited Media | MEC Global | TenthAvenue/Joule |
| Beeby Clark +Meyler | Media General | The Marketing Arm |

| CBS Interactive | Medialets | The Weather Company |
|---|---|---|
| Chapell Associates | Meredith | Thinknear by Telenav |
| comScore | Microsoft | Tribune Broadcasting |
| Criteo | MNI | Triton Digital |
| Cuebiq | Mobext | Turner Broadcasting |
| EY | Mobile Marketing Association (MMA) | txtsignal.com |
| Eye Corp Media | Near | Ubimo |
| Facebook | Nielsen | Unacast |
| Factual | NinthDecimal | Univision |
| Federated Media | One Mobile | Verizon Wireless |
| Fleishman Hillard | Pandora | Verve Mobile |
| Foursquare | Parkour Method | VMob |
| GasBuddy | Placecast | Walmart |
| Gimbal | Placed | Walmart Stores, Inc. |
| Google | PlaceIQ | Weather Channel |
| Havas Media | PromoMap | XAd |
| Horizon Media | Radio Research Symposium (RRC) | Yext |
| IAB | Razor Fish | YP |
| IgnitionOne | Reveal | |

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