Scaling Data

Location Is Everywhere

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BY TAPTAP DIGITAL

taptap

Context

Location continues to be in demand by small and large advertisers alike - and it should. **If our aim is learning about and communicating with our potential consumers in relevant, value added and engaging ways, then location is a powerful tool.** Location has been a guiding principle and common thread for Taptap in our evolution from a premium mobile ad network to a global DSP and geospatial analytics platform, Sonata.

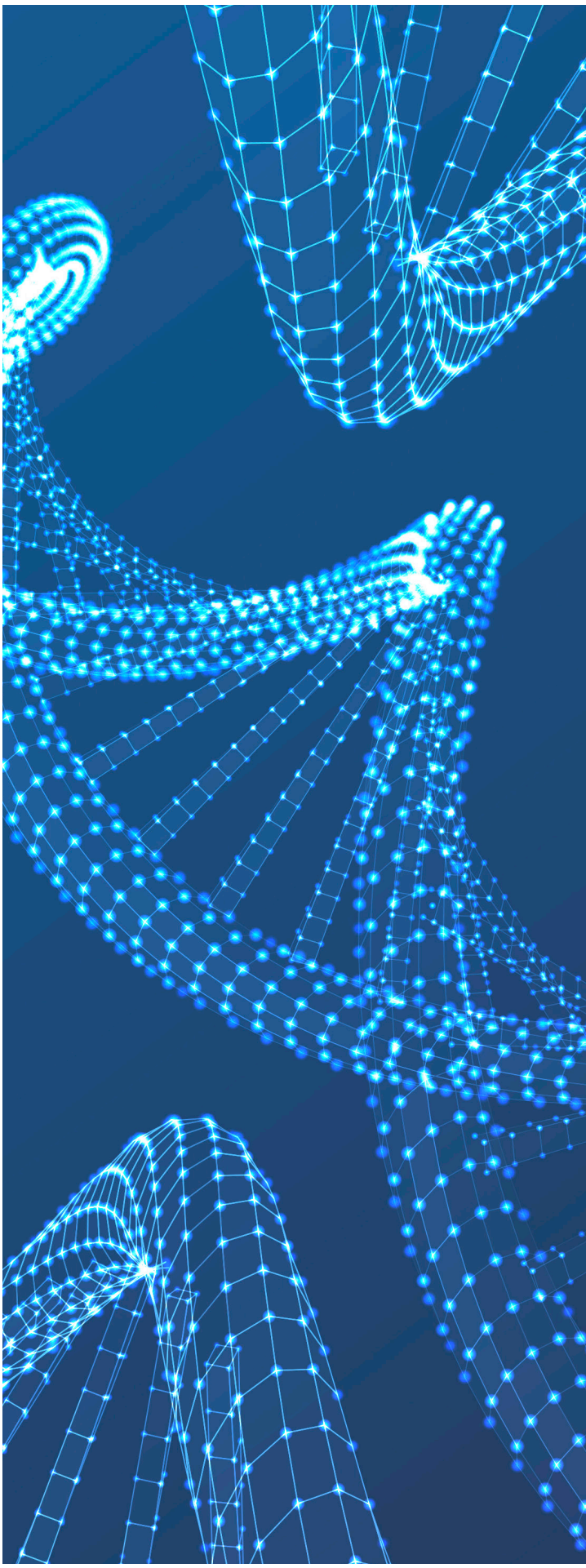
It is ingrained in our technology and has taught us much about how to manage and apply scalable data across all kinds of products for our clients, well beyond geo fencing or hyper local targeting. Location offers new insights and paints a picture more comprehensive than previously thought possible. Our philosophy that everything happens somewhere — and many things are happening at once— has created new opportunities and taken Taptap to where it is today.

Location in the beginning

Location is intrinsically linked to the mobile data ecosystem. It is in our **DNA** from our origins as a premium mobile ad network, and before that, a creator of applications for some of the largest publishers. As the market needed more scale, flexibility and data, we evolved into a demand side platform (DSP), but location remained a critical part of our identity.

From our early days, location represented many things - a way to geo fence and apply granular targeting, but also a way to understand and incorporate context. Initially, we focused on location itself, but over time we realized that it could be used to link more detail to every situation and every impression, making for a better user experience.

If we know where a user is, we can use location to see what is happening around them, both online and off. For example, at particular coordinates, we can answer questions like, what is the weather? Is there traffic? Is it a weekend or a weekday? We can also map media efforts and campaign performance for even greater insight. These connections were the first steps towards incorporating variables beyond site or app inventory **—beyond an ecosystem where the common denominator is always the individual.**



Location, from less to more

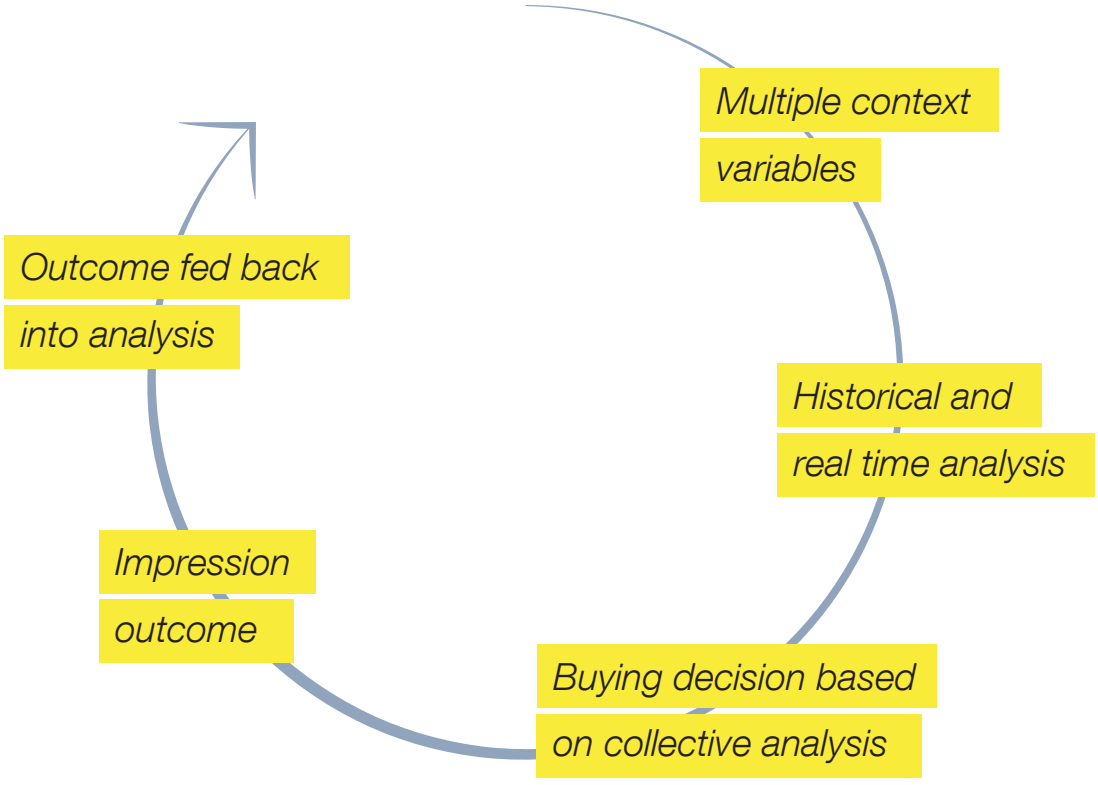
As location took on greater significance, we needed to rapidly analyze and verify the data, which led to Sonata Location Quality Index. LQI plays an important, practical role in our products, verifying location in real time, but has also served as a learning experience that uncovered new ways to process and analyze data, influencing much of our technology.

Sonata aggregates many sources of location data, including SDKs, bid stream, WIFI and others. LQI leverages machine learning to cross reference every signal (the most precise being a single GPS pinpoint with nine decimal points) to determine its accuracy and precision. Instead of a binary methodology that accepts or rejects location data based on fixed variables, like type (read: GEOIP, bad; GPS, good) it indexes, or scores, data on a scale. LQI uses deterministic and high precision location to perform this impression analysis and to enrich location data signals in real time when possible (through ID matching with partners who update location every few minutes). As part of a DSP, LQI registers the performance of each impression to learn how particular location signals, in conjunction with other variables like supply, influence KPIs.

Depending on the use case, this methodology allows us to make a greater percentage of data

actionable, supplying scale and precision in a space where data is scarce. Instead of a detriment, the highly variable nature of location data (and most events tied to an ad impression) gives us additional reach and visibility. By aggregating and scoring rather than employing a binary system, we can use more location data - making activations more cost effective for brands. This methodology has laid the foundation for other products and technology in Taptap.

The Sonata ID, our DMP's identity solution, employs similar techniques. Rather than source from a single panel, set of SDKs or browser cookies, the Sonata ID gathers variables from several sources to form a complete picture of the user - one that includes location but also context. Through location data, the IDs connect online and offline environments (such as digital affinity with historical visits and mobility) to form three-dimensional audiences instead of two-dimensional. Combining data in this way broadens our scope beyond impressions and clicks towards a cycle of learning much more advanced:



While decisions are made based on many factors, location and multivariable modeling provides a way through which we tie everything together. Over the years, we have used this logic to build a robust location-based, multipurpose ecosystem.

2016

AUDIENCE UNIVERSES

Include offline variables like historical location when building audiences

DYNAMIC CREATIVE OPTIMIZATION

Change the creative unit in real time based on location

HEAT MAP REPORTING

See campaign delivery and events on a heat map

POI MAPPING/DATABASE

Matching the coordinates with the business or environment located there

2018

OMNICHANNEL CAMPAIGNS

Use location to connect offline campaigns (like out of home) with online screens for more lift, engagement and storytelling

2019

SONATA LOCATION INTELLIGENCE 1.0

A geospatial analytics platform that onboards and normalizes hundreds of data signals for the collective analysis of audiences, context and digital affinities without PII data

2020

ADVANCED CARTOGRAPHY

Divide planning, activation and reporting into additional cartographic levels, country, region, state / province, city, zip code, tile

2021

A+ FOOT TRAFFIC ATTRIBUTION

Measures foot traffic using mixed modeling with deterministic and probabilistic data, correcting for extreme values and unstable data. Reports volume of visits and dwell time.

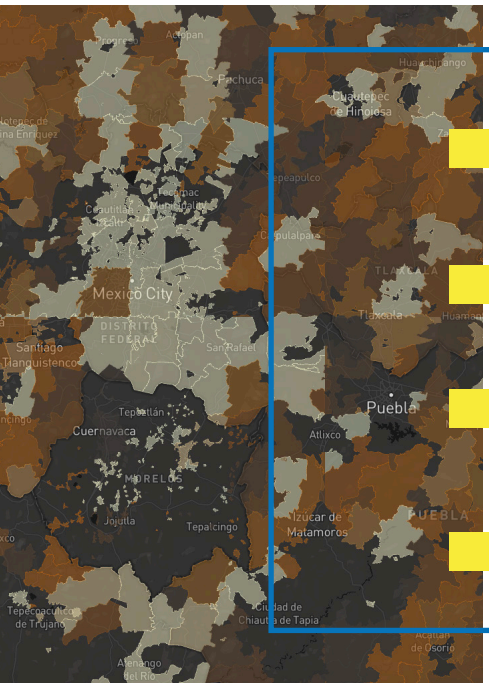
SONATA LOCATION INTELLIGENCE 2.0

New solutions like OOH True Reach to measure on-target reach of OOH campaigns, DOOH planning and Geo Buckets, a privacy-safe audience indexing tool. Direct bridge to the omnichannel DSP for activation

Normalization, location and privacy

The timeline culminates in our most advanced use of location to date, Sonata Location Intelligence (Sonata LI); however, upon closer inspection, it follows a familiar approach. **Sonata LI is the result of creating a new, location-based unit for data aggregation. Instead of using an ID or a cookie to consolidate data, we use location.** As we know, everything happens somewhere, and location is the common denominator used to connect and map these events. The more data gathered and analyzed at a particular location, as small as a tile or as large as a country, the more accurate the inferences about the audience and context. We can break down the entire globe this way, while entirely protecting privacy by bucketing data together rather than targeting one to one.

While the obsolescence of IDs and cookies appears to be a great loss, these identifiers are themselves limited. We benefit from unique user information, but lack the context and a holistic perspective. **Location gives us the tools to understand our audiences without relying on PII**, but also,



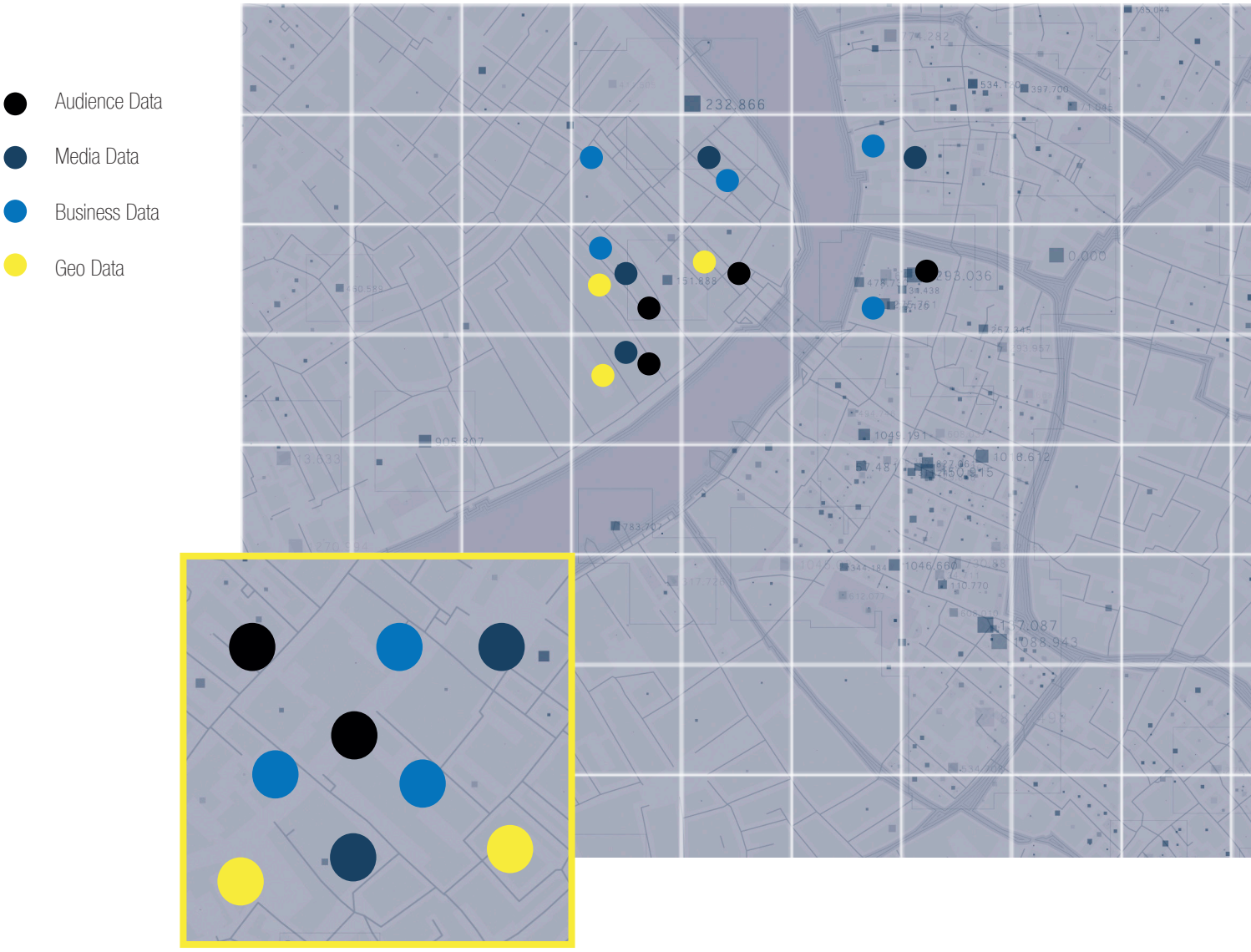
1/ *The cross channel media mix happening in a given area*

2/ *Population mobility - origins and destinations*

3/ *Classification of points of interest and coordinates (urban, rural, bus station, highway)*

4/ *Store density, sales and competition in a catchment area*

This amplified view facilitates new kinds of analysis and insights reports for decision making that are a better reflection of the real world, since an impression based on online browsing behavior does not decide an outcome alone; rather, many factors both digitally and physically, influence our buying decisions. Location intelligence helps large and small brands make more informed decisions about their ad campaigns, audiences, store locations and more, **understanding the why, not just the result, for better future planning.**



But does it work?

Technology designed to amass data for location intelligence is complex, making it difficult to measure with traditional tools as they often capture only a piece of the puzzle. However expertly captured, methodology matters. For example, we are reminded of our binary location analysis - GEOIP versus GPS. It is true that some data is unequivocally more precise or more reliable than others, and we want the best quality for ourselves and our clients, but analyzing data through a single lens can eclipse the numerous other variables that enrich or support an activation. Measuring viewability or display ad attribution are other examples. Google found in a study from several years ago that despite popular belief, page position is not always the best indicator of viewability. Not all above the fold impressions are in view, and many below the fold impressions are (Google, 5 factors of display viewability). Likewise, the dispute between click through versus view through conversions or even first click versus last click attribution still exists today.

Unlike binary systems, technologies that aggregate and enrich allow us to achieve client goals at scale with the greatest independence and neutrality. Performance always comes first, and having more information leads us to the best possible outcomes and KPIs more efficiently. In rejecting or accepting some portion of data, we miss out on the insights and possible value it has when combined with other variables. Creating systems to merge data for increased visibility rather than isolation, has led Taptap to where we are today and where we are going in the future.

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