Qualcomm Retail Solutions Inc.

THE GIMBAL™ CONTEXT AWARE PLATFORM – DIGITAL INSIGHTS INTO THE PHYSICAL WORLD

The Advantages of Gimbal for Retailers, Brands and Application Developers

Revision 1

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Summary

The Gimbal platform lets retailers, brands and mobile application developers send their customers the right content or offer in the right place at the right time, with the security and privacy they demand.

Now that many consumers have a smart mobile device at their side almost constantly, the context aware capabilities in Gimbal set the stage for enriching the mobile experience and capturing digital insights into the physical world of customers and prospects. With Gimbal, developers create applications that are more relevant and more useful in retail, brands deepen their knowledge of their customers, and retailers enjoy opportunities to increase customer engagement and loyalty. Through personalized content, these businesses can realize opt-in scenarios such as these:

• A shopper looking at dresses in the women's department receives a digital coupon for a matching pair of her favorite brand of shoes.

• Loyal fans at a sporting event get notifications for a free drink with the purchase of a meal at the concession stand nearest their seat.

• An art museum sends multimedia content to a visitor, describing the works of art closest to him and suggesting other pieces of likely interest.

• Tourists passing a digital kiosk receive different signage and advertisements depending on their profile.

As commercially appealing as these scenarios are to both businesses and their customers, they require the kind of coordination that comes only with the Gimbal platform's end-to-end approach. One-off products and point solutions continually pop up in the contextual awareness landscape with individual functions – interest sensing, geofencing, proximity detection, communication, analytics and privacy protection – but Gimbal is the only unified offering with all of those functions.

Retailers, brands and developers can use Gimbal to communicate with iOS® and Android™ devices based on context and send the right content to the right kind of customer at the right time. This paper describes the contextual awareness functions available in Gimbal along with their advantages for retailers, brands and developers.

Gimbal Overview – What Goes into Contextual Awareness?

Gimbal is a contextual aware platform that makes it possible for retailers, brands and content owners to engage their customers with relevant, timely and personalized communications sent to their mobile devices at the right time and at the right place.

The platform is built around three main concepts:

• Location – Where are the customers?

• Proximity – What are the customers near?

• Interest – Who are the customers and what is important to them?

The components of Gimbal contextual awareness include geofencing, proximity using *Bluetooth*® Smart, profiles, communication and consumer privacy controls. Using these features alone or in combination, brands can increase customer engagement, sales and loyalty. Successful trials in Japan showed that users were three times more likely to click through and respond to contextually aware notifications and offers compared to non-contextualized offers.

Gimbal Manager – How Do I Set Up Contextual Awareness?

Available as both a Web portal at gimbal.com and a set of APIs, Gimbal Manager is the tool for managing, provisioning, controlling and reporting on Gimbal-enabled applications.

Developers can implement one, some or all of the modular functions displayed in the Gimbal Manager portal, depending on what they already have in place and how the user experience of their application grows (see Figure 1).

The layout and ease of use of Gimbal Manager demonstrate the end-to-end structure of Gimbal – a uniquely comprehensive way for businesses to build contextual awareness into their relationships with customers. The functions in Gimbal Manager represent the different capabilities required in contextual awareness, and only Gimbal encompasses all those capabilities in a single, unified, easy-to-use offering.

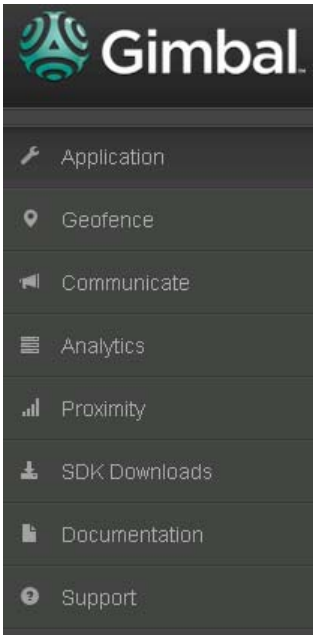

Figure 1 - Gimbal Manager

Developers submit details about the application that will run on customers' mobile devices. They obtain the client and server API keys required for the app to communicate with Gimbal Manager.

Geofence - Is My Customer Close to a Relevant Location?

A geofence is a virtual enclosure that a developer sets up around a geographic area in the real world; for example, a store, a street, a parking lot or a plaza (see Figure 2). Geofencing is a macro-location technology for areas 50 meters or greater in radius.

When customers opt in to the features Gimbal enables in a retailer's application, Gimbal Geofence tells the application when they enter (i.e., "breach the geofence") and leave the area and how much time they spent there. When a business knows that customers are inside the geofence around its location, it can send them relevant, real-time notifications and content.

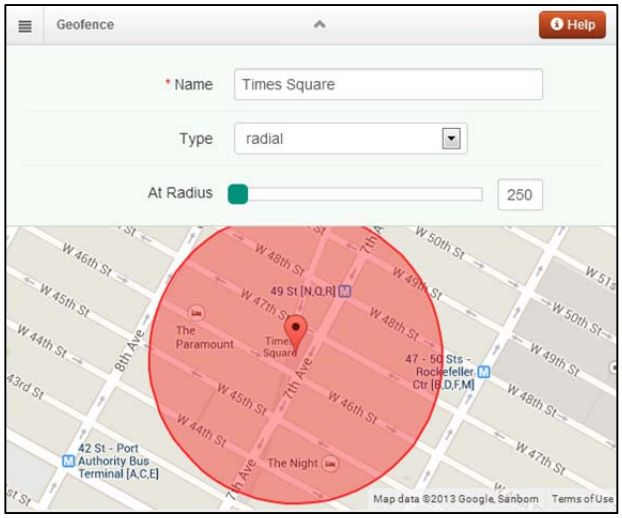

Figure 2 - Geofences

Gimbal advantages

• Support for multiple radios – For greater accuracy with lower power consumption, Gimbal uses a combination of GPS, Wi-Fi®, cellular and proprietary algorithms to manage and detect geofences. Unlike other products, Gimbal allows applications to run with geofences in the background, without impacting the battery life of your mobile device.

• Radial and polygonal geofences – The world is full of non-circular areas – parks, stadiums, school campuses – so Gimbal allows businesses to draw geofences of their own preferred shape (see Figure 3).

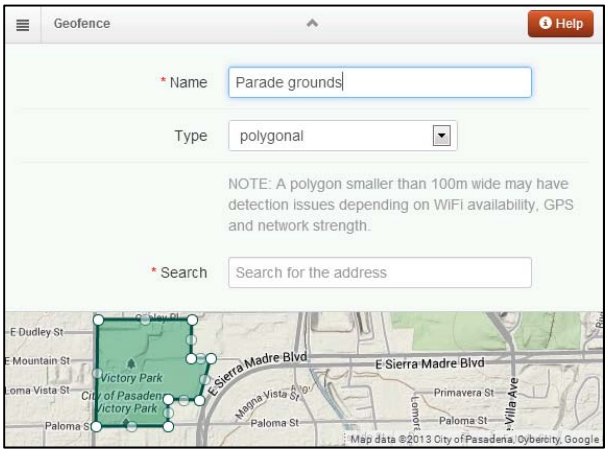

Figure 3 - Polygonal geofence

• Unlimited number – High-level operating systems like iOS and Android include tools for limited, per-app geofencing, but Gimbal imposes no limit on the number

of geofences a business can maintain. This allows a restaurant chain, for example, to create dozens or thousands of geofences and to react to a customer's arrival at any store in the chain.

• Updates – Even after millions of customers have installed and used the application, the business can add, edit and delete geofences from Gimbal Manager.

• Per-app and per-user geofences – Gimbal supports per-app (applicable to all users of the app) and per-user (specific to the individual user) geofences. This allows a travel application, for instance, to create a per-application geofence around an airport and send a "Welcome to JFK" greeting to all arriving users. The same application can create a per-user geofence around the home and send a "Welcome home" greeting as each user approaches the front door.

Proximity - How Do I Locate the Customer in My Place of Business?

A proximity beacon marks a radio-based enclosure that a developer sets up around a smaller geographic area; for example, a department within a store, a specific street address, a section of a parking lot or a landmark in a plaza. Proximity is a micro-location technology for areas 50 meters or less in radius.

Gimbal Proximity is the micro-location complement to Gimbal Geofence. Customers who opt in to the proximity features Gimbal enables in smartphone apps can receive personalized content as they move among departments, sections and aisles, both indoors and outdoors.[1]

With Gimbal Proximity, businesses place small hardware beacons where they want to mark points of engagement with customers (see Figure 4). The beacons broadcast *Bluetooth*® Smart (also known as *Bluetooth*® Low Energy, or BLE) signals with a maximum range of approximately 50 meters. When a Gimbal-enabled application on a customer's mobile device detects the signal from a beacon, it reacts according to rules the business has set up in Gimbal Manager.

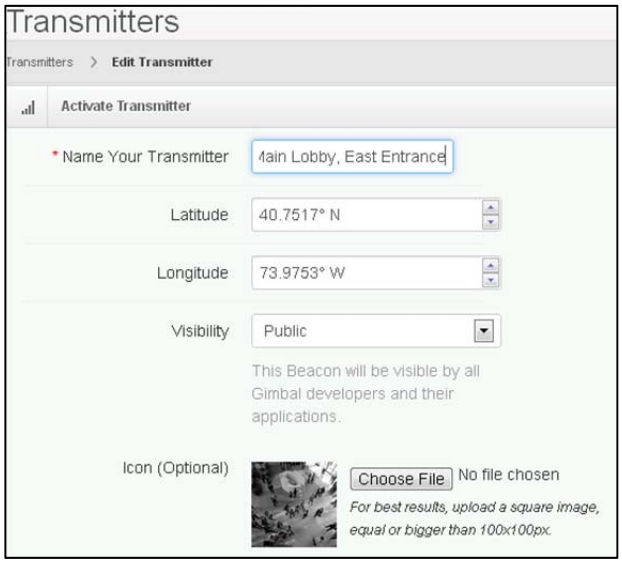

Figure 4 - Transmitters (beacons)

Gimbal advantages

• Inconspicuous beacons – Beacon transmitters mark zones for customer engagement from a few inches up to 50 meters in radius. The developer can decide whether to use the built-in omnidirectional antenna to create a spherical zone or directional antenna for a directional zone. Beacons may run for months or years on their battery, and there is no limit on the number of beacons a business may deploy and maintain.

• *Bluetooth*® Smart – This feature of *Bluetooth*® 4.0 is supported in a significant installed base of mobile devices. With its low energy profile, it can run constantly in the background on a customer's device with negligible impact on the device's battery life.

• Central management – Gimbal Manager maintains all beacons, allowing businesses to activate, edit and delete them; update their physical placement and metadata; and monitor their battery life.

• Secure transmissions – The Gimbal beacon transmission is a secure transmission and is intended to prevent an eavesdropper from associating the signal with the beacon. This feature makes it difficult to identify the location of both the beacon and the

[1] *Proximity in Gimbal requires a* Bluetooth® *smart ready device. As of November 2013, Gimbal Proximity supports iOS 5-or-later devices that are Bluetooth smart ready; e.g., iPhone® 4S or later, iPad® 3 or later, iPod touch® 5 and iPad mini or later. Consult http://www.bluetooth.com/Pages/Bluetooth-Smart-Devices-List.aspx for a complete list.*

customer, and is designed to prevent an outsider from imitating or spoofing the signal.

For more details on Gimbal Proximity and *Bluetooth*® Smart proximity beacons, see "The Customers Are in the Building. Give Them a More Engaging Experience," a white paper at gimbal.com.[2]

Profile - What is the Profile of My Customer?

The Gimbal SDK resides on the mobile device and, once the user has opted in, passively develops a profile of mobile usage and other behaviors. The profile ensures that retailers and brands deliver much more personalized, relevant content based on:

• Demographics – age, gender, income, ethnicity, education, presence of children.

• Interests – sports, cooking, politics, technology, news, investing, etc.

• Personal places of interest (PPOI) – top 20 locations where user spends time (home, work, gym, beach, etc.), around which developers can create per-user geofences.

Gimbal respects the user's privacy and is TRUSTe certified (see Privacy and Security, below).

Gimbal advantage

• Zero effort – The traditional method of determining a customer's profile through questionnaires is annoying for the customer. By sensing interests and passively creating a profile, Gimbal vastly improves the user experience.

Communicate - How Do I Deliver Relevant Content to My Customer?

Knowing their customers' location and interests, businesses can use Gimbal Communicate to deepen the retail experience. They can send relevant notifications through the device to display content in their app or link to a URL (see Figure 5).

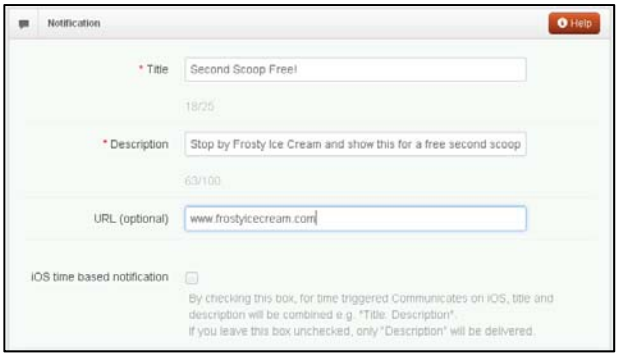

Figure 5 - Communicate

Gimbal advantage

• Multiple context triggers – Businesses can trigger notifications ad hoc, or by location (geofence, proximity), time, profile or a combination of these. (see Figure 6 and Figure 7).

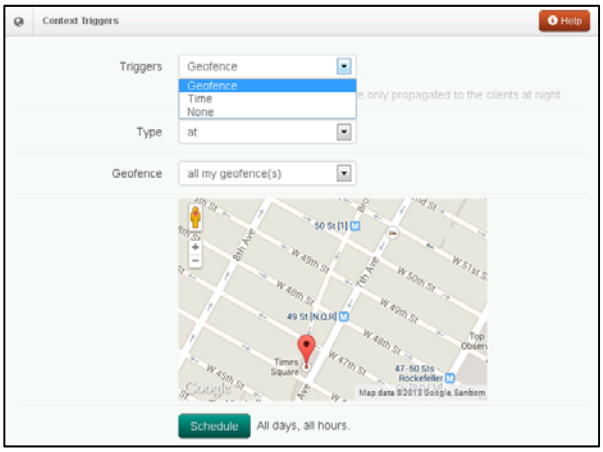

Figure 6 - Geofence trigger

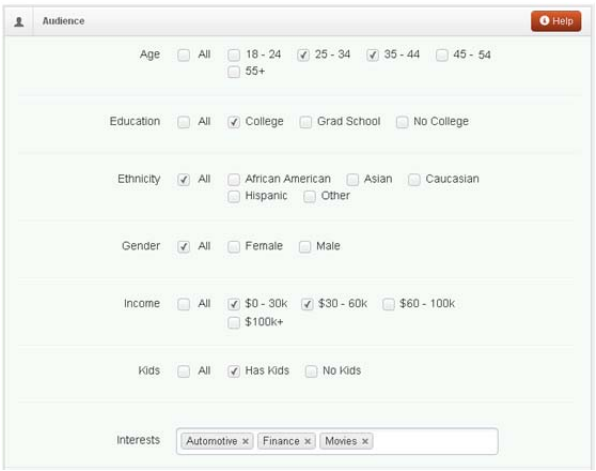

Figure 7 - Audience demographics and interests

[2] *ABI Research places Qualcomm among the top three vendors in indoor location. See "Indoor Location Technology OEMs."*

Analytics - How Many Customers Have Visited?

Gimbal Manager stores data on each customer visit (e.g., geofence breach or beacon visit) and makes it available through analytics. Businesses can view a report and download the raw data associated with their applications, including total visits, unique visitors, enter time, exit time and average dwell time (see Figure 8).

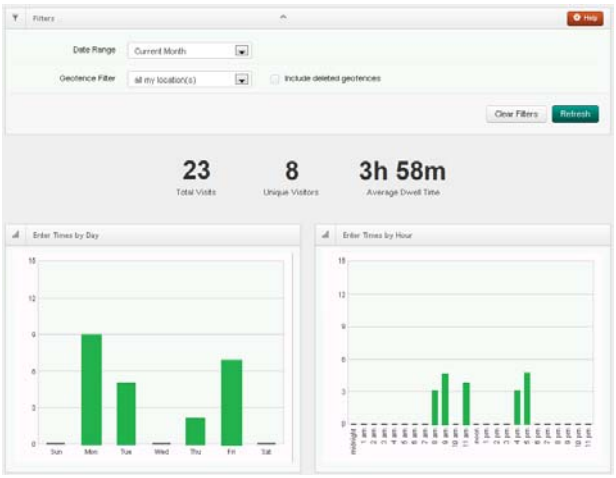

Figure 8 - Analytics

Gimbal advantages

• Anonymous statistics – Integrated analytics make it possible to understand users' real-world activities in a privacy-friendly way: how many customers visited which location, and how long they stayed.

• Raw data – Businesses can also download the source data on visits and build their own reports and charts.

Privacy and Security - How Safe Is My Customer's Data?

Contextual awareness depends on customers' data, which they will share only if they are confident that they retain control over it. Gimbal has been designed and built around this control of privacy.

Gimbal advantages

• Simple, transparent controls – Users must opt into any Gimbal-enabled features in their applications and must be able to opt out (i.e., turn on or off) of any Gimbal features in use, such as location detection (Geofence and Proximity) and personalization (Profile sensing). Furthermore, each application must include a privacy policy that explains what data is collected and how it is used. Lastly, each application must provide a means of deleting from the device any personal data collected by Gimbal (see Figure 9 and Figure 10).

• TRUSTe certification – Gimbal's transparent and consumer-friendly privacy practices have merited certification by TRUSTe.

• Anonymity – Gimbal does not collect UUIDs (universally unique identifiers) such as name, phone number, email address and social network ID.

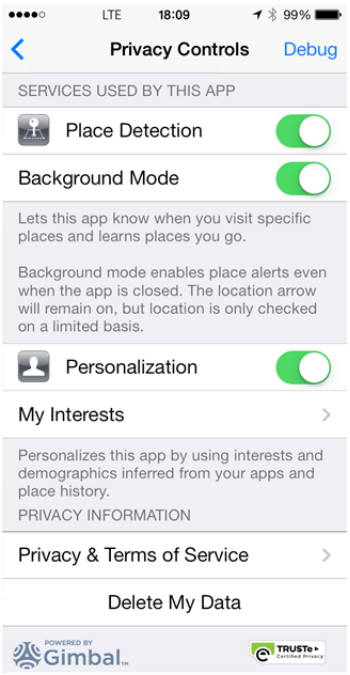

Figure 9 - Gimbal privacy (iOS)

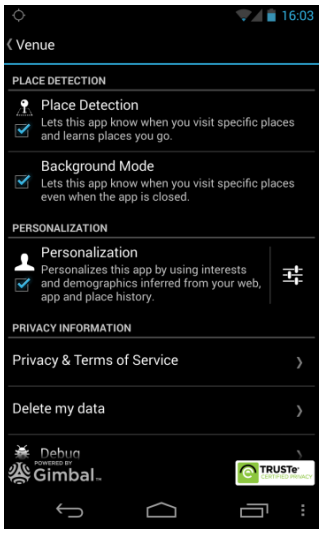

Figure 10 - Gimbal privacy (Android)

Conclusion

As contextual awareness plays an increasing role in mobile user experiences, retailers and brands need new tools for sending offers, content and promotions to their customers and prospects. One-off tools for geofencing, proximity and communication are emerging quickly, but only Gimbal offers a secure, comprehensive way of building contextual awareness into mobile applications through location technologies and profile sensing.

Based on Qualcomm Retail Solution's expertise, Gimbal puts the full range of mobile device capabilities to work for businesses looking to build loyalty and grow sales without compromising the customer experience.

Businesses can easily use Gimbal Manager to create geofences, configure proximity beacons, queue up relevant notifications using profile and review analytics, giving them digital insights into the physical world of their customers and prospects.

Follow Us

The Gimbal™ context aware platform for Android and iOS enables application providers to deliver more timely, personalized and relevant content to mobile audiences. Follow us at gimbal.com.

Businesses can get started on their own tour of Gimbal by visiting www.gimbal.com. Besides the functions described in this paper, Gimbal Manager offers access to the Gimbal SDK , technical documentation and the support forum.

Visit the Qualcomm Developer Network (QDN) for developer tools, announcements, support and blog posts. Find us on YouTube, Facebook, Twitter and other points of contact on the Web.