

iBeacons 101

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1. What are iBeacons?

What are iBeacons?

- ▶ An iBeacon is a precise positioning mechanism that transmits a Universally Unique Identifier (UUID) using Bluetooth 4.0 Low Energy.
- ▶ These signals can be received by Bluetooth LE enabled devices.
- ▶ When the device receives the signal, and a message can be displayed on the user's lock screen.

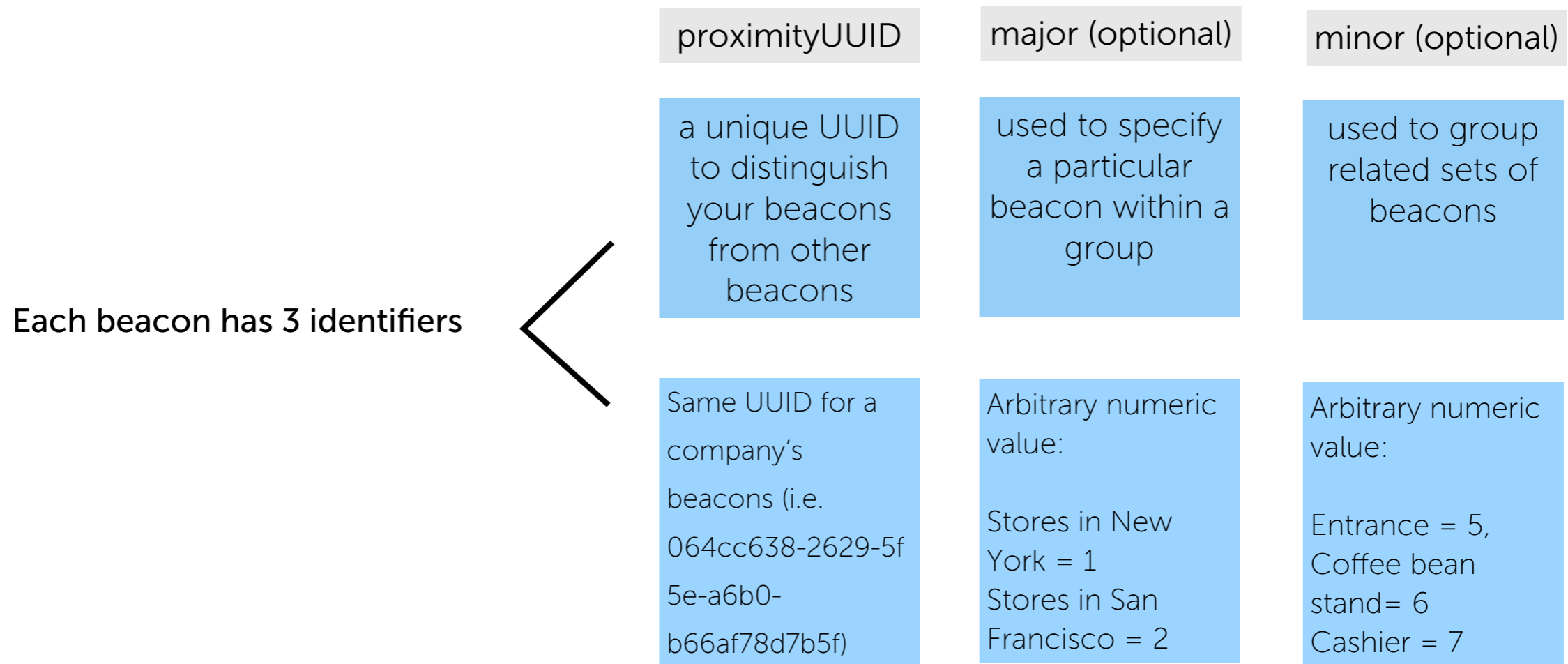


An iBeacon is a micro-location targeting tool that allows extremely precise location based measure that is not possible with GPS.

2. iBeacon Technology

iBeacon Technology

- ▶ iBeacon is part of the CoreLocation framework in iOS.
- ▶ Using an iBeacon is similar to geofencing -- receiving a Bluetooth LE signal based on proximity instead of fixed GPS coordinates.
 - ▶ Beacons can be placed on moving objects (e.g. an ice cream van).

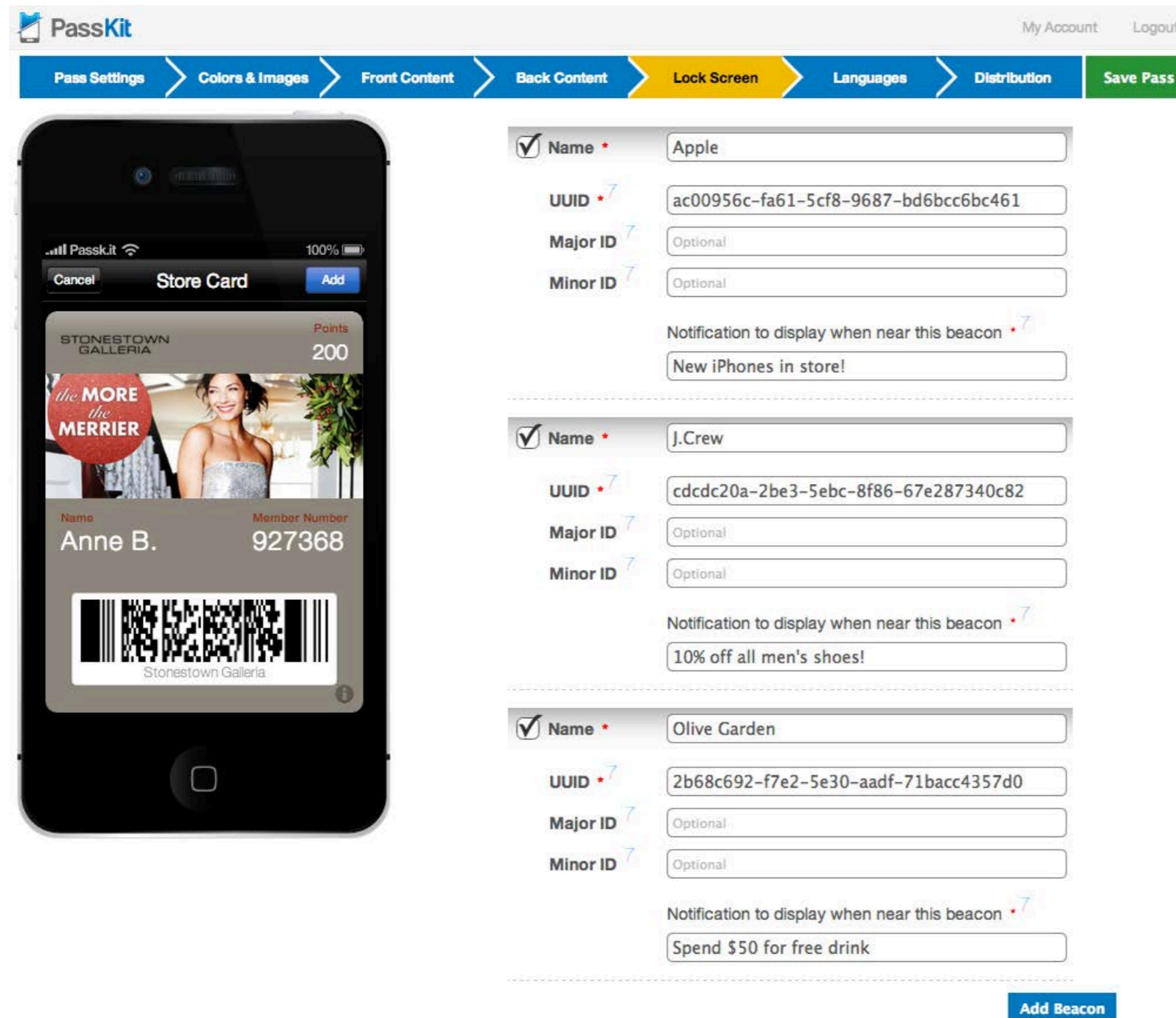


iBeacon Micro Location Targeting

- ▶ An iBeacon will constantly emit its UUID within a programmable range.
- ▶ The programmable range currently varies from a few meters to approximately 50 meters.
- ▶ When Bluetooth is enabled on a customer's device, their Passbook Pass 'sniffs' for iBeacons close-by.
- ▶ If there is a match between the beacon's UUID and one of the UUIDs stored in the Passbook Pass a relevant lock screen message appears on the device.
- ▶ The customer can conveniently swipe the lock screen message and access the location relevant pass, and take a real world action. (e.g. redeeming the coupon, or enjoying the discount offer)

3. PassKit's Solution

PassKit's Solution - You Don't Need an App!

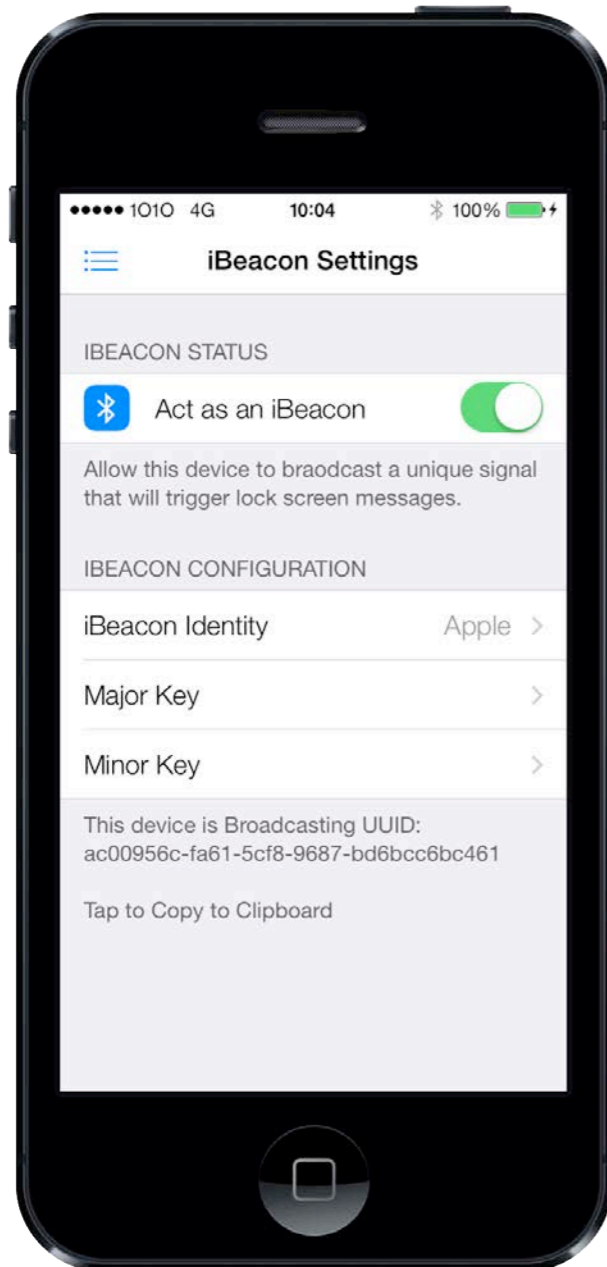


The image shows the PassKit web interface. At the top, there's a navigation bar with options: Pass Settings, Colors & Images, Front Content, Back Content, Lock Screen (highlighted), Languages, Distribution, and Save Pass. On the left, a smartphone displays a 'Store Card' pass for Stonestown Galleria. The pass includes a 'Points' section with 200 points, a photo of a woman with the text 'the MORE the MERRIER', and a name 'Anne B.' with member number '927368'. A QR code is at the bottom. On the right, the 'Lock Screen' configuration panel shows three beacon entries. Each entry has a checked 'Name' field, a 'UUID' field, optional 'Major ID' and 'Minor ID' fields, and a 'Notification to display when near this beacon' field. The first beacon is named 'Apple' with UUID 'ac00956c-fa61-5cf8-9687-bd6bcc6bc461' and notification 'New iPhones in store!'. The second is named 'J.Crew' with UUID 'cdc20a-2be3-5ebc-8f86-67e287340c82' and notification '10% off all men's shoes!'. The third is named 'Olive Garden' with UUID '2b68c692-f7e2-5e30-aadf-71bacc4357d0' and notification 'Spend \$50 for free drink'. An 'Add Beacon' button is at the bottom right of the configuration panel.

- ▶ Apple limits a Pass to store up to **10 beacons** on each pass.
- ▶ Simply input your beacon name and a UUID is automatically generated.
- ▶ If you own a Bluetooth Beacon, input your own UUID (no need for name).
 - ▶ Optional: You can enter Major and Minor ID values to differentiate beacons with the same UUID.
- ▶ Enter the message to display on the lock screen when in range of the beacon.

 No coding required. Add beacon details into the pass template using the Pass Designer.

Configuring a Beacon

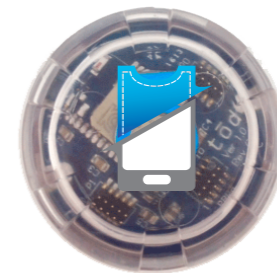


Option 1:

- ▶ Use your iOS device as a beacon:
 - ▶ Download our Pass Manager App.
 - ▶ Input the same Beacon name (and major/minor values if applicable) as the one you typed in the Pass Designer.
 - ▶ Your iOS device will begin broadcasting that UUID.

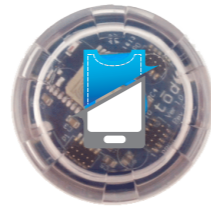
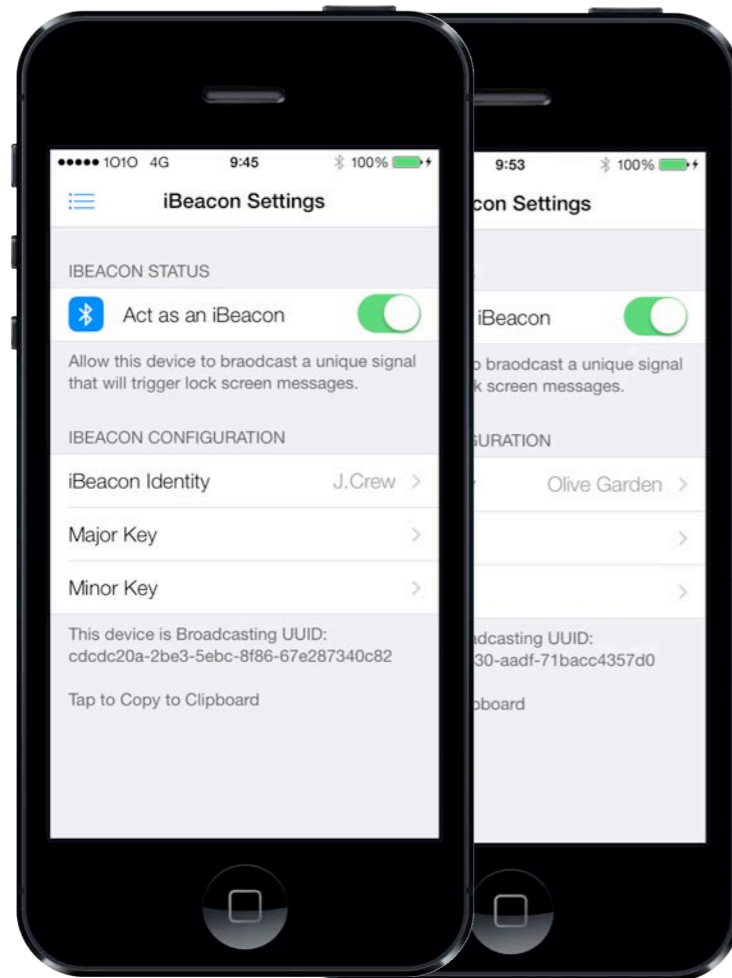
Option 2:

- ▶ Purchase Bluetooth Beacon hardware:
 - ▶ Flash the Beacon with the UUID from the Pass Designer or;
 - ▶ Use the pre-programmed UUID.



How it Works

- ▶ Beacons are programmed to emit signals which only compatible Bluetooth 4.0 LE enabled devices can read. Beacons' range can be programmed to be immediate, near, and far (up to approximately 50 meters / 150 feet).



- ▶ When a device is in range, passes with the corresponding UUID will receive the beacon's signal.
- ▶ A lock screen message then appears on the user's device.

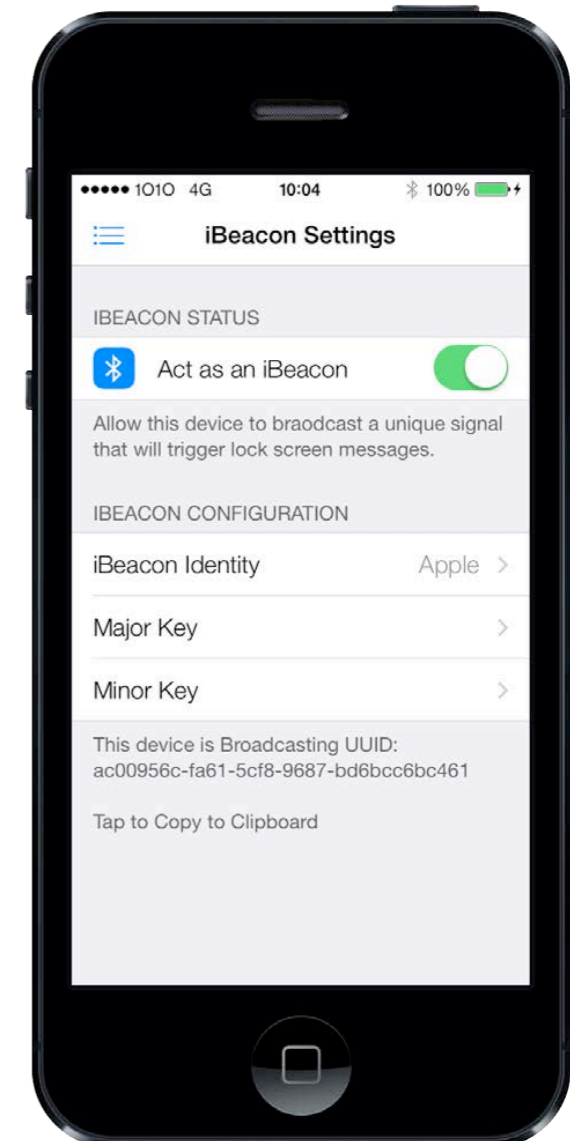
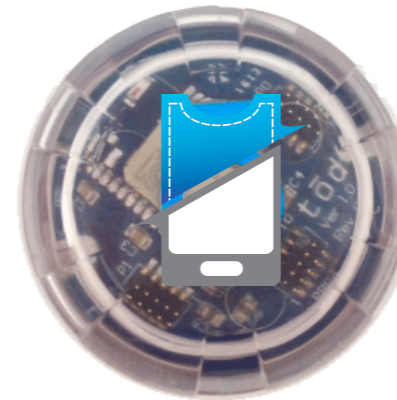


The ability to add beacon parameters to each pass enables you to utilize micro-location targeting easily, without the need of an app.

4. iBeacon Compatible Devices

iBeacon Compatible Devices

- ▶ Transmitters: Hardware device running Bluetooth 4.0 LE or configure a compatible iPhone or iPad:
 - ▶ 3rd Party Bluetooth LE emitters
 - ▶ Coin-cell powered gadgets
 - ▶ USB sticks
 - ▶ Computers
 - ▶ Custom hardware
- ▶ Receivers: iPhone 4S and newer and iPad 3 and newer running iOS7 (can receive Bluetooth 4.0 LE).
 - ▶ For a full list, see this: <http://www.bluetooth.com/Pages/Bluetooth-Smart-Devices-List.aspx>.



5. iBeacon Capabilities

iBeacon Capabilities

- ▶ **Proximity marketing:** Beacons work seamlessly with a store's pass or app; Customers can walk around a store or mall (or airport, town, city, or anywhere) and receive additional information as they move in the vicinity of relevant beacons.
- ▶ **Micro-location targeting:** A store can transmit information and promotions directly to a device based on a user's location and proximity to a beacon.
- ▶ **Customized marketing:** By combining Passes and iBeacons a business can send targeted lock screen messages based on consumer behaviors, preferences and location to increase in-store purchases.
- ▶ **Indoor-mapping:** Navigating through large areas such as malls, stadiums, and airports are easier with micro-location information.
- ▶ **Self-guided tours:** Information and links on landmarks and attractions throughout the city or in a museum can be sent to devices.



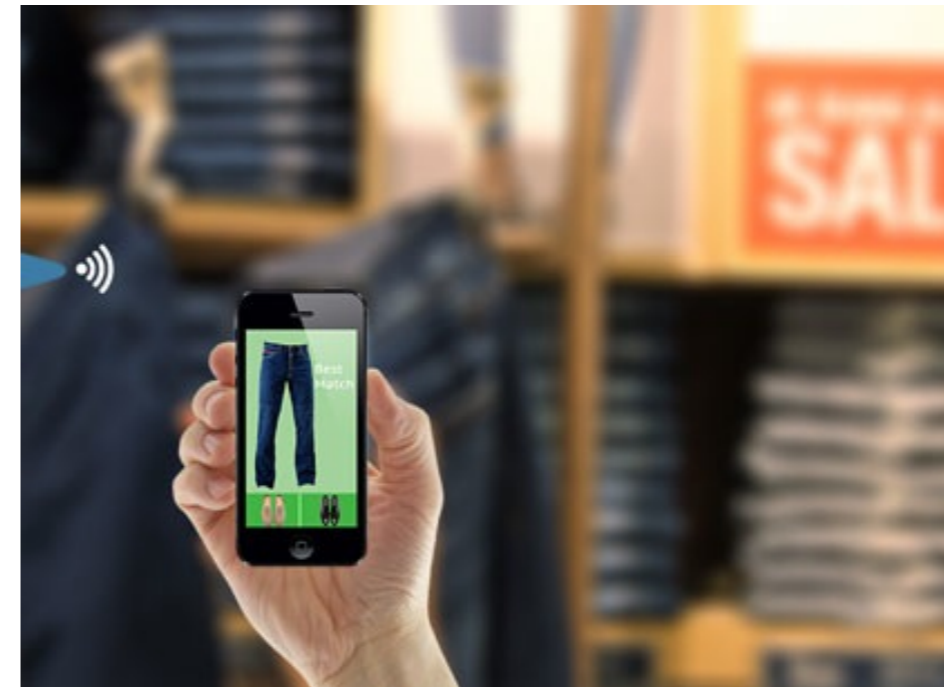
iBeacon Possibilities (in the future)

- ▶ **Secure building access:** Doors would unlock and open for authorized users (can incorporate fingerprint scan on iPhone).
- ▶ **Contact-less payment:** iBeacons' ability to track a specific phone, linked to an Apple ID (or store card balance, membership card, etc.) enable purchases to be automatically deducted from a customer's card balance.
- ▶ **Automatic check-in:** iBeacons' ability to recognize users' devices allows for automatic check-ins when within the beacons' proximity.

6. iBeacon Integration

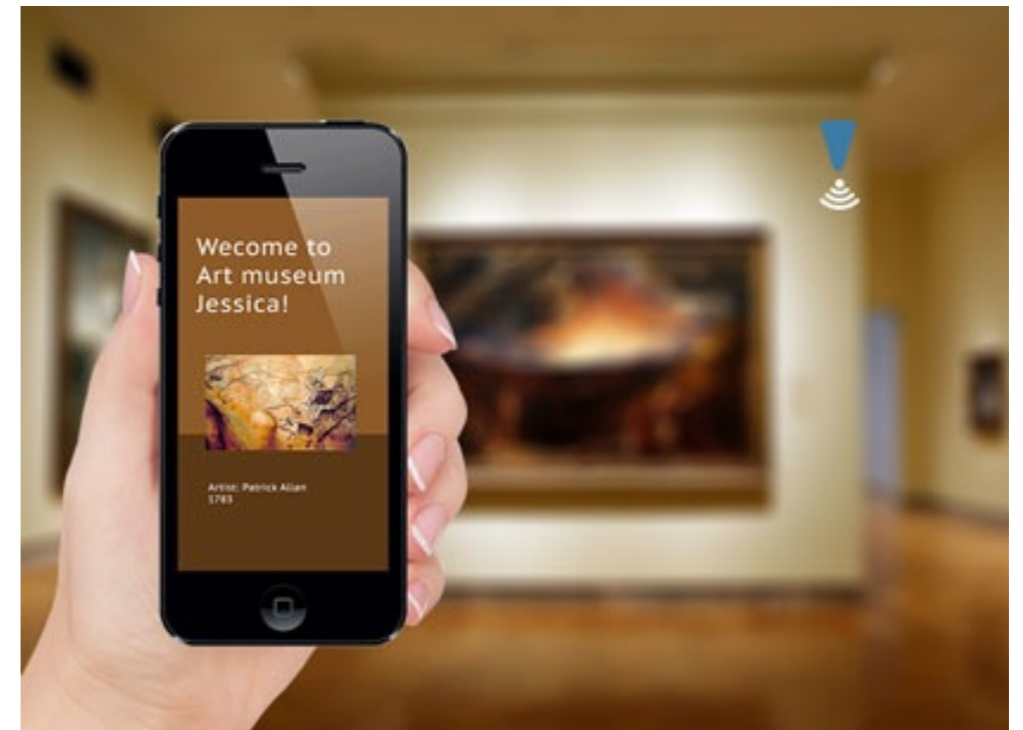
Retail Store

- ▶ A new shopping experience:
 - ▶ Customer has your 'store card pass' in Passbook.
 - ▶ Customers receive a personalized welcome message upon entering a store.
 - ▶ Beacons placed around the store send location specific information and potential promotions to devices when customers are in its proximity.
- ▶ Users can be guided to specific locations within a store, such as the changing rooms or cashier, or even roaming sales assistants (who could also carry a Beacon).



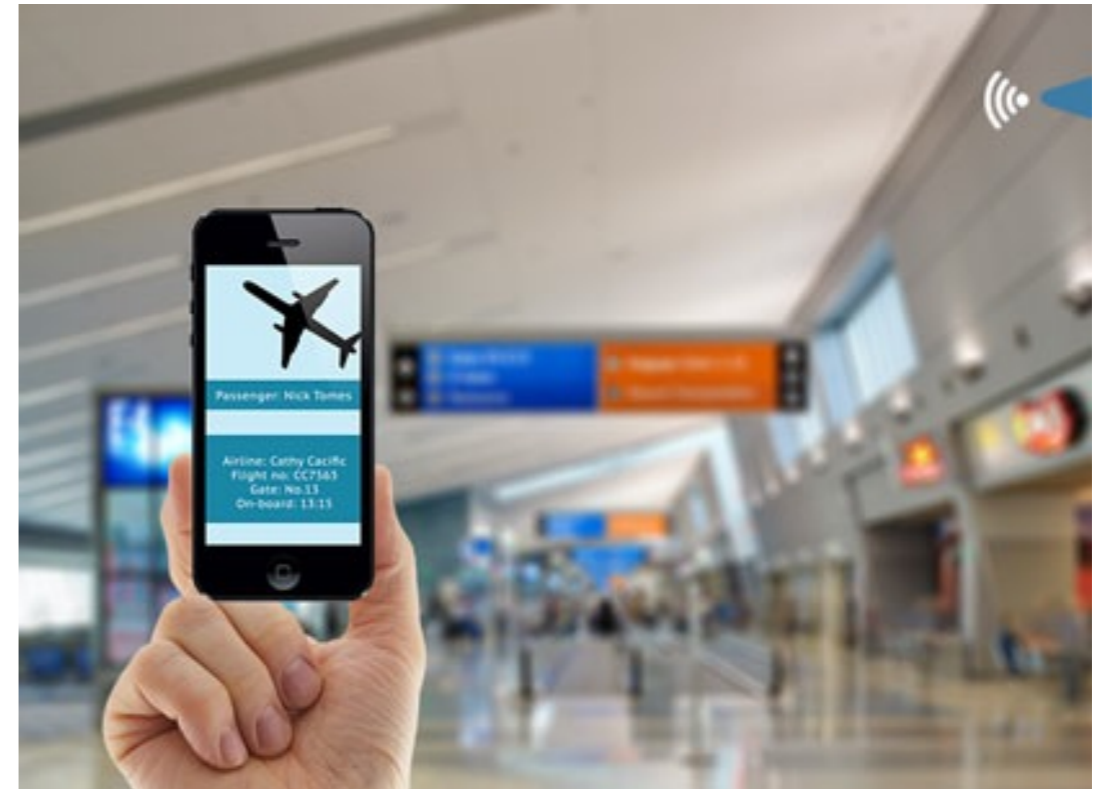
Museums

- ▶ Customized museum experiences:
 - ▶ Customer buys a museum ticket and adds the Pass to their Passbook.
 - ▶ Customers receive personalized greetings as they arrive in the museum lobby.
 - ▶ Beacons located in different galleries and exhibits serve as indoor-mapping functionality.
 - ▶ Visitors experience personalized tours and are guided through the museum based on preferences.
 - ▶ As visitors approach specific exhibits, additional information on artwork and sculptures can be sent to a user's device.
 - ▶ Visitors in the gift shop receive special discounts.
 - ▶ Information on upcoming exhibitions and ability to pre-purchase tickets alert users as they leave the museum.



Airport

- ▶ Experience first-class service:
 - ▶ Passenger checks-in and receive the boarding pass as a Passbook Pass.
 - ▶ Passengers receive information on airline check-in counters upon entering an airport.
 - ▶ After checking in, passengers receive flight confirmation information, such as boarding time and gate number.
 - ▶ Beacons placed throughout the airport guide passengers by directing them to the right boarding area and informing users of where the nearest cafe or restaurant is.
 - ▶ Discounts and promotions are pushed to users' devices in shops and Duty Free sections.
 - ▶ Upon landing, passengers can receive lock screen notification of baggage claim area and relevant offers (taxis to the city, accommodations, etc.).



Stadium

- ▶ Enhance an event's experience by engaging with customers:
 - ▶ Attendees purchase their event ticket and add the Pass to their mobile wallet.
 - ▶ Attendees receive greeting messages upon entering a stadium.
 - ▶ Beacons located around the stadium guide attendees to their seats.
 - ▶ Indoor-mapping functionality - attendees are directed to the location of food stands, gift shops, and restrooms.
 - ▶ Discounts are sent to customers when they near the gift shop.
 - ▶ Attendees receive information on upcoming games or events upon leaving the stadium.



7. iBeacon Benefits for Businesses

Enhanced Business Strategies

- ▶ Precise micro-location targeting.
- ▶ Indoor mapping and navigation capabilities.
- ▶ Deliver location-specific greetings, offers and valuable information to your customer's lock screen.
- ▶ Engagement - highly relevant interactions to customers' phones.
- ▶ Beacons help with customer service - may reduce minor requests that normally occupy staff.
- ▶ Optimise foot traffic.
- ▶ New ways to drive in-store traffic and buying behaviour by re-defining the customer experience.

iBeacon Benefits

- ▶ Range awareness - determine how far a user is from something.
- ▶ One beacon can cover several locations.
- ▶ Beacons can be placed on moving targets.
- ▶ Compatible phones can act as beacon transmitters and receivers.
- ▶ Beacons can be constructed easily and effectively with simple hardware such as a USB Bluetooth dongle and self-powering hub.
 - ▶ Batteries last for at least 6 months.

8. iBeacon Comparisons

iBeacon vs GPS

iBeacon	GPS
Micro-location targeting	Macro-location targeting
Works indoors and underground	Cannot receive signals underground
Within 150 feet - very accurate	GPS signals - precision is mediocre
Low cost, low energy	Battery draining
No signal obstructions	Signals easily obstructed by walls or roofs

 iBeacon is a more precise location awareness tool than GPS and allows for greater coverage overall.

iBeacon vs NFC

iBeacon	NFC
Works on Bluetooth 4.0 LE enabled devices	Works on NFC enabled devices
Sends signals within 150 feet	Device must be within 4 inches
Opportunities for in-store marketing, indoor mapping	Only handles transaction
Easy to construct Beacons or turn compatible devices into beacons	Heavy investment of NFC at POS systems

9. Considerations

Delivering Valuable Content

- ▶ Your business has the ability to deliver targeted content to consumers when they are in specific areas of a store, which eliminates the need for customers to proactively open an app to search for information.
- ▶ iBeacons make it easy to deliver content but businesses must ensure that the content is valuable and relevant to customers.
- ▶ Consumers are willing to share personal information with retailers as long as they receive value in return.
- ▶ **83% of women** are willing to share their location information in return for some level of value offered by the retailer.
- ▶ The content you deliver should create real value for your customers and drive them to your store, not away from it.

11. FAQs

FAQs

- ▶ What is iBeacon?
 - ▶ iBeacon is an API that uses third party Bluetooth 4.0 LE devices as beacons. It allows businesses to add micro-location features and the ability to send location-specific information to devices within its range.
- ▶ What is Bluetooth Low Energy (BLE)?
 - ▶ Bluetooth 4.0. Low Energy is the latest Bluetooth wireless technology used in applications such as mobile phones, computers, medical equipment, and home entertainment devices. Bluetooth enables devices within a prescribed range to interact and communicate with one other. The latest version has enhanced range functionality, is low energy and low cost.
- ▶ What devices are compatible with Beacons?
 - ▶ All Bluetooth 4.0 LE enabled devices can pick up beacon signals. These include the iPhone 4S, iPhone 5, iPad 3, Samsung Galaxy S III, and more. Check <http://www.bluetooth.com/Pages/Bluetooth-Smart-Devices-List.aspx> for a full list.
- ▶ Does Bluetooth need to be turned on to receive beacon signals?
 - ▶ Yes. Beacons run on Bluetooth 4.0 LE and can only send signals or information to devices that have turned Bluetooth on. Users who don't want to interact with beacon-enabled apps can simply disable Bluetooth for particular apps or turn it off completely.

FAQs

- ▶ Do I need to develop an app in order to use iBeacon?
 - ▶ Nope! If you distribute mobile wallet content through PassKit, you don't need to spend additional time and money developing an app. Apps can be programmed to work with iBeacon, but if time is of the essence you can quickly distribute mobile wallet content and allow customers to interact with your beacons. PassKit's mobile wallet solution allows you to embed up to 10 beacon locations on each mobile wallet item (membership card, stored value card, coupon, stamp card, etc.).
- ▶ How do I integrate beacons with my app?
 - ▶ Give us a call or send an email to support@passkit.com
- ▶ Does an app need to be active on the screen in order to pick up signals?
 - ▶ No, the app could run in the background and still receive beacons' signals. Bluetooth 4.0 LE does not drain the battery from devices.