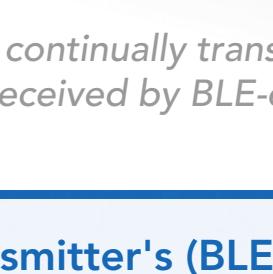


# BLE VS. NFC

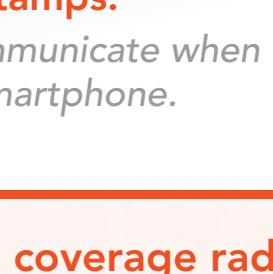
## THE FUTURE OF MOBILE CONSUMER ENGAGEMENT NOW!

Bluetooth Low Energy (BLE) and Near Field Communications (NFC) are playing a key role in helping mobile technologies redefine how businesses and consumers engage with one another.



BLE and NFC are two wireless communication technologies currently being installed in most of today's smartphones.

### BUT WHAT MAKES THEM DIFFERENT?



BLE-enabled smartphones listen for signals from wireless transmitters (BLE Beacons) the size of large match boxes.

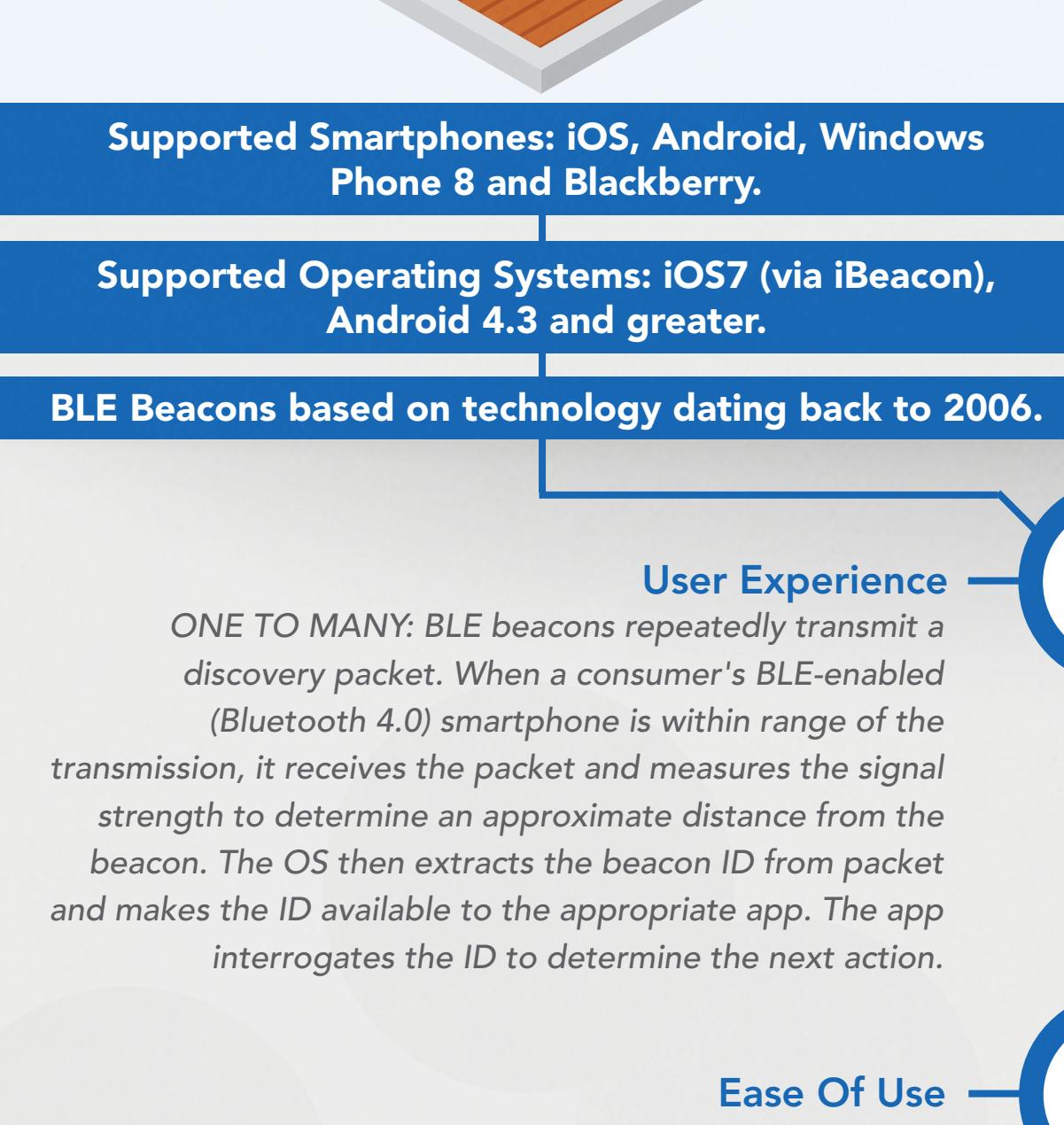
BLE Beacons continually transmit a discovery signal to be received by BLE-enabled smartphones.



NFC-enabled smartphones communicate with wireless transmitters (NFC Tags) the size of postage stamps.

NFC Tags only communicate when close to an NFC-enabled smartphone.

Wireless transmitter's (BLE Beacons) coverage radius varies according to signal strength. Measured in Feet.



Supported Smartphones: iOS, Android, Windows Phone 8 and Blackberry.

Supported Operating Systems: iOS7 (via iBeacon), Android 4.3 and greater.

BLE Beacons based on technology dating back to 2006.

Wireless transmitter's (NFC Tags) coverage radius is very small. Measured in centimeters.



Supported Smartphones: Android, Windows Phone 8 and Blackberry.

Supported Operating Systems: Android 4.0 and greater, Windows Phone 8 and Blackberry X.

Based upon RFID technology dating back to the 1940's

#### User Experience

ONE TO MANY: BLE beacons repeatedly transmit a discovery packet. When a consumer's BLE-enabled (Bluetooth 4.0) smartphone is within range of the transmission, it receives the packet and measures the signal strength to determine an approximate distance from the beacon. The OS then extracts the beacon ID from packet and makes the ID available to the appropriate app. The app interrogates the ID to determine the next action.



#### User Experience

ONE-TO-ONE: The consumer observes an NFC Tag affixed to an object with which they wish to engage. They place their NFC-equipped smartphone within 4 centimeters of the NFC Tag. Radio waves from the smartphone cause the NFC Tag to power-up its internal microprocessor. Once powered-up, it executes a stored program. The program typically transmits the contents of the Tag's internal memory to the smartphone. The smartphone executes an action based upon the received content.

#### Ease Of Use

Consumer responds to notifications that are generated from being in the presence of a BLE Beacon.



#### Ease Of Use

Consumer controls the timing and engagement with an NFC Tag.

#### Location Services

Measured by signal strength of BLE Beacon as received by BLE-enabled smartphone. Measures are close, near and far.



#### Location Services

A consumer's location can be ascertained if they engage with a unique tag that is affixed to a stationary object.

#### Energy Efficiency

Each BLE Beacon contains a battery that can last up to two years before it will need replacing.



#### Energy Efficiency

Each NFC Tag creates its own power when in the presence of an NFC-enabled smartphone. No batteries to replace.

#### Privacy

More intrusive - a smartphone app can be configured to continuously monitor a consumer's movements as they move among BLE Beacons -- regardless of who deployed the beacons.



#### Privacy

Less intrusive - a consumer's movements can only be monitored based upon the NFC tags with which they have engaged. No third party can monitor engagements unless they supplied the tag contents.

#### Security

BLE Beacons broadcast outbound signals. There is no inherent security risk embodied in these transmissions. Any risk will lie within the app that uses these signals.



#### Security

NFC supports both secured and unsecured data communication sessions. Secured sessions are designed to emulate contactless cards, e.g. credit cards, ID cards, etc.

#### Price

Price is \$20 - \$35 per BLE Beacon sensor depending on volume purchased.



#### Price

Price is \$0.10 to \$0.60 per tag depending on volumes, branding, programming, quality, etc.

#### Mobile Payment

Upon entering a store, the consumer's payment app senses a BLE Beacon. The app responds by passively "checking-in" to alert the retailer's POS of the consumer's presence. At checkout, the consumer tells the checkout clerk to post the sale to their mobile payment account, which is visible on the clerk's POS terminal. The clerk verifies the consumer's identity and completes the transaction. Note: This solution requires changes to the retailer's POS and changes to the checkout process.



#### Mobile Payment

Upon checkout, the consumer tells the checkout clerk that they wish to pay for the sale via credit card. The consumer opens their mobile wallet, selects the desired card and then taps their smartphone on the retailers payment terminal. Note: This solution only requires that the retailer have a contactless payment terminal. All other infrastructure remains unchanged.

#### Coupons, Offers & Product Info

Upon entering a store, the consumer's shopping app senses a BLE Beacon. Their app checks for the availability of an offer. If one exists, it sends the consumer a notification. The consumer acknowledges the notification and then either saves the offer to their mobile wallet or disregards it.



#### Coupons, Offers & Product Info

A consumer observes a marketing oriented call-to-action presented on a static or digital sign. The consumer places their NFC-enabled smartphone on an NFC Tag that is either affixed to or placed near the signage. The offer is presented to the consumer, which they may optionally save to their mobile wallet.

Best for settings in which the consumer will be passively notified of information/offers that is relevant to a general location.



Best for settings that require a one-to-one, secure delivery of information between the consumer and another entity.

#### HIGH TRAFFIC AREAS



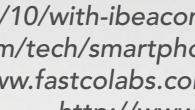
#### TRANSPORTATION PASSES

#### PUBLIC VENUES



#### EVENT TICKETING

#### EVENTS



#### ACCESS CARDS

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<http://www.tested.com/tech/smartphones/457481-why-apples-bluetooth-ibeacon-could-be-big-deal/>  
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