

# BLE, NFC, QR? OH MY!

## M-Commerce Demystified

### What



#### BLE beacon

*Bluetooth Low Energy (BLE)* is a wireless personal area network technology. BLE beacons transmit the same static message to all recipients within their range.



#### NFC tag

*Near-Field Communication (NFC)* is a technology allowing for radio communication between devices that are brought within very close proximity or contact with each other. NFC tags store static information that can be retrieved by a reader (e.g. an NFC-enabled smartphone).



#### QR code

*Quick Response (QR)* codes are machine-readable barcodes with superb data storage capability and high data fault tolerance. QR codes can be placed virtually anywhere and can be read by all modern smartphones with built-in cameras.



### Top usage



location-based advertising

payment data retrieval (automated in-store checkout)

couponing/loyalty



interactive advertising (NFC posters)



interactive advertising (posters, catalogs)

payment data retrieval (in-store checkout, remote orders)

ticketing (event ticketing, public transport)



### Fixity



proximity (on-site)



proximity (on-site)



proximity (on-site) and remote (off-site)



### Interaction required



user opts in once, data is received automatically

1x

user activates NFC reader on phone and taps it on each tag individually

1+

user launches scanning app and scans each code individually

1+

### Power required



beacons need battery



passive tags require no battery, but drain the reader's power source



no power needed



### Device required



Bluetooth 4.0 support on phone + newer OS (Android 4.3, iOS 7)

NFC chip in phone

built-in camera

### Range



large coverage radius (approx. 20 meters)



small radius (approx. 10-20 centimeters)



depends on camera and visibility conditions



### Cost



ranging from \$5 to \$20 per beacon

requires licensing



around \$2 per tag



practically free, only printing cost

public domain



### Pros



automated process

low power requirement

personalized and interactive experience

fast transmission of data

large storage capacity

no power requirement

low cost, public domain

works with phone's built-in features

### Cons



limited data storage

reading requires dedicated hardware and OS

costly, requires licensing

limited data storage

reading requires dedicated hardware

standards not fully universal

more data makes it harder to read

reading requires good visibility conditions

widely regarded as unaesthetic

