

To: committed partners Amsterdam open beacon network
From: Ron van der Lans, Jasper Soetendal City of Amsterdam
C.c.: Tijds Roelofs City of Amsterdam
Date: June 19th, 2016
Concerning: Use Case Exploration for Amsterdam open beacon network

Use Case Exploration for Amsterdam open beacon network

The City of Amsterdam is exploring the opportunities of a city wide, open beacon network. At the current stage, we want to involve app developers in the use case exploration for such a network. We would like to know what kind of opportunities you see for your business, using an open beacon network.

Context

- As one of the smart city partners of Google, the city of Amsterdam is the first municipality worldwide that examines the possibilities of open beacon technology in recent months. The focus is on application in public transport.
- The objective is to offer a "seamless journey" throughout their complete trip. For this, it is crucial that location based services can be offered at the right time in the right place.
- To enable this, you need to know exactly where a traveler is in most cases; traditional GPS positioning might be not enough. This is where beacons can help. Examples:
 - Indoor locations like metro stations where traditional GPS positioning is not available.
 - At bus stops, to be sure whether the traveler is waiting at a specific bus stop; not at the other bus stop across the street for the bus in the different direction.
 - In case you want to be sure that the traveler is in a certain bus and not in another adjacent one.
 - Etc.
- The City will not invest in location based services itself. This should be done by the market. The City will – together with its partners – invest in an open beacon infrastructure that is free to use by everyone, for at least a period of 3 years.
- Potentially the network will hold thousands of beacons:
 - At static locations like all bus, tram and ferry stops and at metro station
 - In moving objects like all busses, trams, metro's and ferries.
- The start of the network is limited and will be rolled out step by step:
 - In the last months a team of transport partners and the municipality carried out a pilot test to determine the technical and financial constraints of the network. For this purpose about 100 beacons were installed at all types of locations mentioned before. Since these beacons are not configured the way we will configure the actual beacons, they will be removed and are not available for test purposes.
 - In the coming weeks we will launch a network of approximately 1.500 beacons. At the same time we'll work together with a group of relevant app developers to

determine what the potential value is of the network for the market and the citizens in particular.

- When the outcome of this second step is positive we will scale up to the full network, hopefully before the end of the year.

Technical details

At this stage, only parts of the technical details are available. More information will be available in the coming months. For now, these sources are relevant:

- **Type of beacons**

We will use one type of beacon on the whole network. This is the JCDBeacon from JCDecaux, manufactured by Accent. The beacon will use three of its channels to submit messages compatible with iBeacon and Eddystone technology. (An iBeacon ID, an Eddystone ID and an encrypted Eddystone TLM). More information on the hardware is available in the attachment of this document.

- **Open beacon network infrastructure**

While the beacons are sending both iBeacon and Eddystone signals, the network will be managed by the Google Beacon Platform. Using the Proximity Beacon API, app developers will be able to add their own attachments to the open beacon network, for use in their own application. Using the Nearby Messaging API, app developers can detect beacons and get attachments for the detected beacons; both the 'general, open' attachments as their own attachments.

Please visit <https://developers.google.com/beacons/> for all detail information.

Additionally, this video from the Google I/O-conference provides a great overview of the open beacon network infrastructure we are using:

<https://www.youtube.com/watch?v=3nYyApSiSLQ>

- **Detailed specs**

Detailed specs like locations, ids, namespaces etc. will be available in the coming months. As soon as the beacons are in place, we can provide access to the Proximity Beacon API and you'll be able to use the Nearby Messaging API to retrieve attachments for detected beacons.

What we want to know

For now, we would like to know:

- What kind of opportunities you envision for your applications and business, using the open beacon network infrastructure.
- Any ideas, suggestions or tips for implementing the use of the open beacon network, at your side and/or at our side. (For example, if you have suggestions about what data, apart from the obvious, to add to the general, open attachments, let us know!)
- Whether you would be interested to use the open beacon network as soon as the first part of the roll-out is finished. Before we officially launch, we would like to see some developers already using the network, providing use cases, proof of concepts or even actual new features and applications.

We're looking forward to see amazing applications to be developed, using the open beacon network infrastructure. We hope you want to be part of it!