On Mobile Bluetooth Tags

Dmitry Namiot  
Lomonosov Moscow State University  
dnamiot@gmail.com

Manfred Sneps-Snepe  
Ventspils University College  
manfreds.sneps@gmail.com

FRUCT 2015
About

Hyper-local data sharing.

• A new approach for hyper-local data sharing and delivery
• Based on the discoverable Bluetooth nodes
• User-defined data associated with network nodes
• Network proximity for Bluetooth
Contents

Introduction

Bluetooth tags

Bluetooth Data Points

Data persistence models

Use cases
Introduction

• Location in LBS systems – do we really need it?
• How can we replace the location?
• Network modules as the most widely used sensors
• Network proximity: Bluetooth (Wi-Fi) distance
Related works

I see 2 iBeacons

Here I am!

Dedicated hardware

iOS device

iOS device
Related works

**Spot expert. Rules:**

- **m1_net:**
  - Huge discounts in section B2
- **m1_net:**
  - Best cafe in San Francisco
- **acin:**
  - See my offers
- **wifi-acin:**
  - Test
- **dsaz:**
  - See my offers
- **Home**

**IF** Access_Point with SSID Café IS visible **AND** RSSI (signal strength) is within the given interval **THEN**

{activate some predefined content for mobile users}
Bluetooth Data Points

- Bluetooth node in discoverable mode
- Bluetooth node as a tag
- Reuse existing Bluetooth nodes
- Mobile Bluetooth nodes: cars, phones
Bluetooth Data Points

An application on your phone is requesting permission to turn on Bluetooth and to make your phone discoverable by other devices for 120 seconds. Do you want to do this?

Yes  No

Browse local data

Refresh

Discounts for visitors @abava

cheap taxi +7 (123) 456-7890

Please, get you coupon from http://servletsuite.com
Data persistence

- Tag’s ID -> content
- MAC-address as a key
- Key-Value model
- Apache Accumulo as a basic storage
- Cache, based on Bloom filter
Use cases

• Retail – information, coupons
• Personal classifieds
• Indoor information systems (e.g., campuses, museums, etc.)
• Public events – personal advertising and check-ins
• Information systems in transport
• Smart Cities
Conclusion

• A new another approach for hyper-local data sharing and delivery
• Our model is based on discoverable Bluetooth nodes
• The discoverable data-hubs (Bluetooth Data Points) allow customers to associate any user-defined data with the programmatically created wireless network nodes
• A distributed store of localized data
• A special mobile application (context-aware browser) or service (in case of M2M applications)
• Data will “follow” mobile nodes
About us

International team: Russia - Latvia (Moscow – Riga – Ventspils). Big history of developing innovative telecom and software services, international contests awards

Research areas are:

open API for telecom,
web access for telecom data,
Smart Cities,
M2M applications, context-aware computing.