



Location-Based Services

Exploring some use cases in Education

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Content

What are LBS?

Technology Overview

Use Cases

What are Location Based Services (LBS)?

Category of services typically offered.



Geopositioning



Wayfinding



Geofencing
notifications



Asset Tracking



Analytics

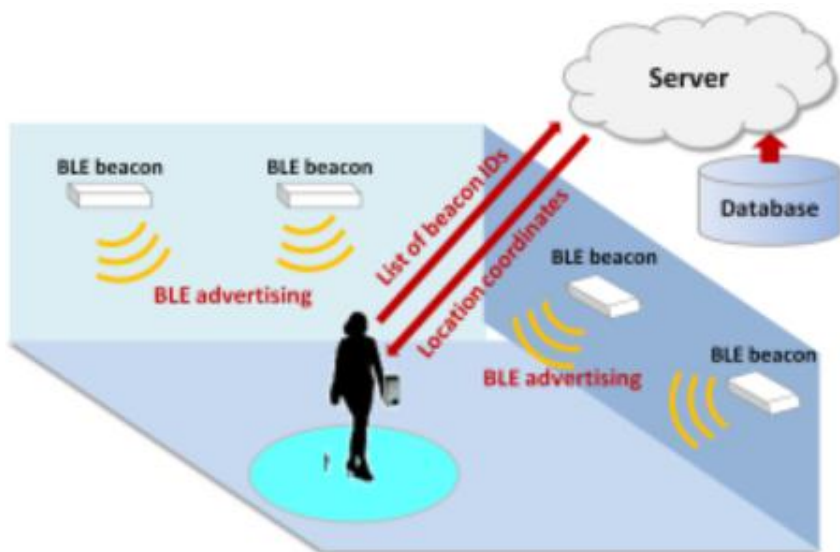


LBS technology

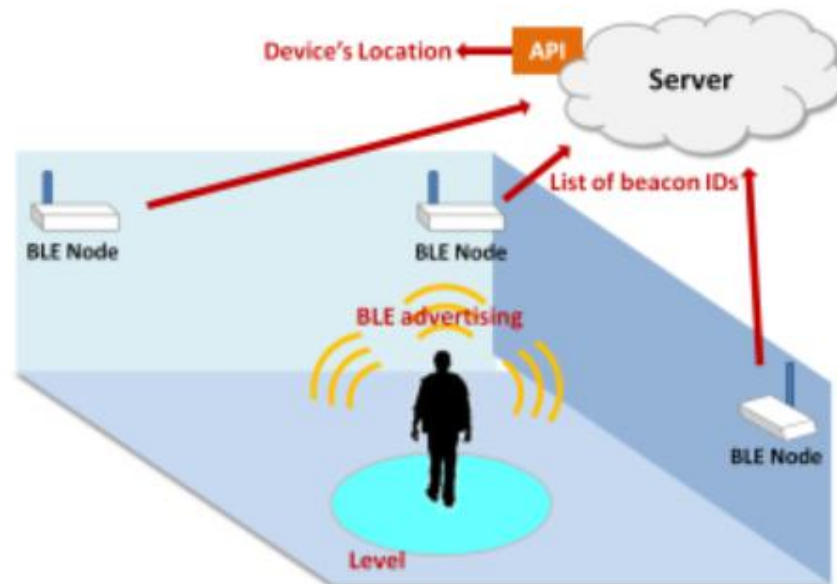
Using BLE

Location vs Asset Tracking Infrastructure

Location Infrastructure



Asset Tracking Infrastructure



Location technologies

Advanced device centric sensor fusion.



The components available

BLE beacons, location SDK and management tools.

Hardware



BLE Beacon
(battery operated)



BLE Dongle



BLE Node



WiFi AP with integrated BLE
(BLE beacon and receiver)

Location SDK



Mapping SDK



Management Tools



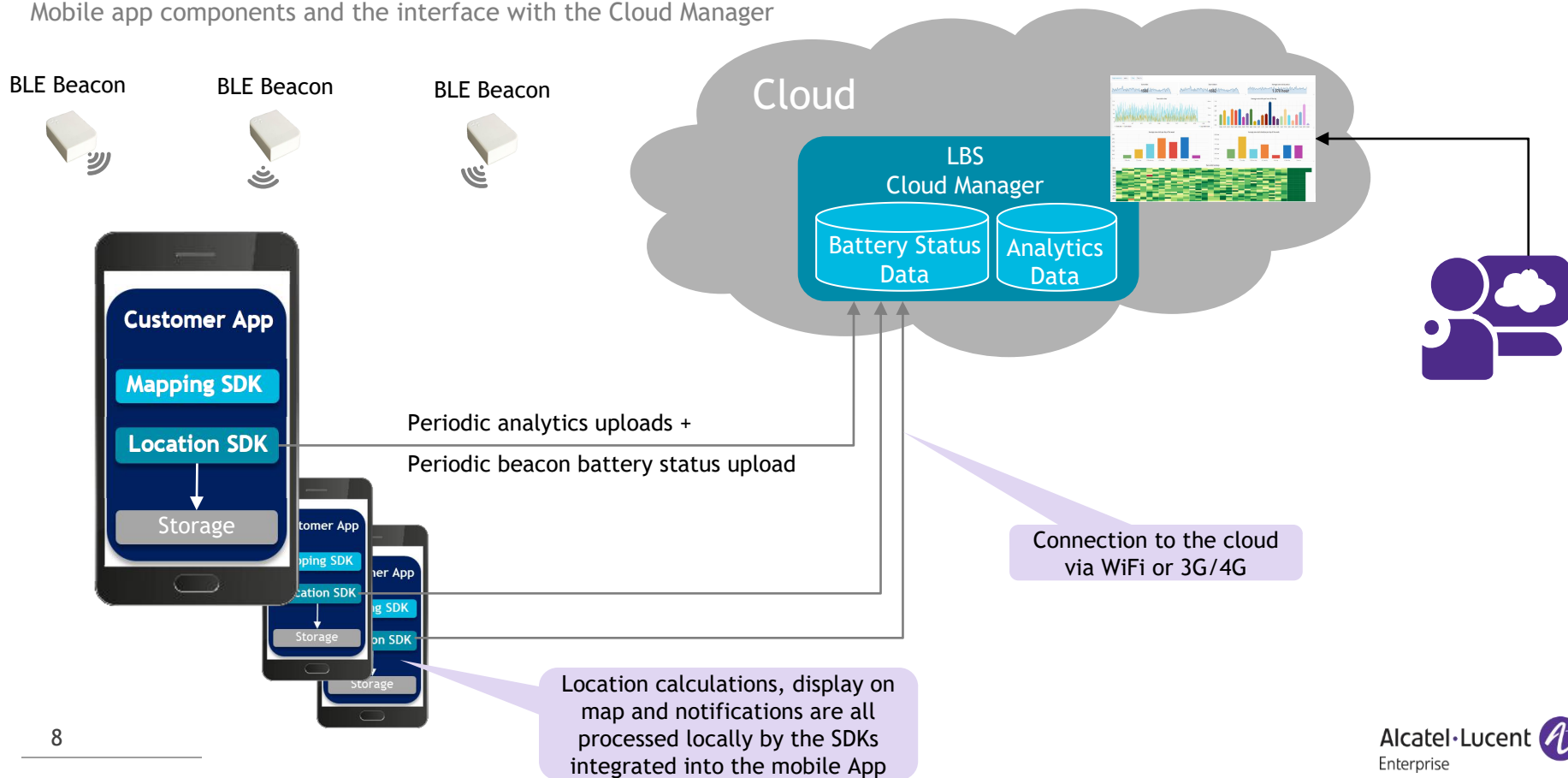
LBS Installer



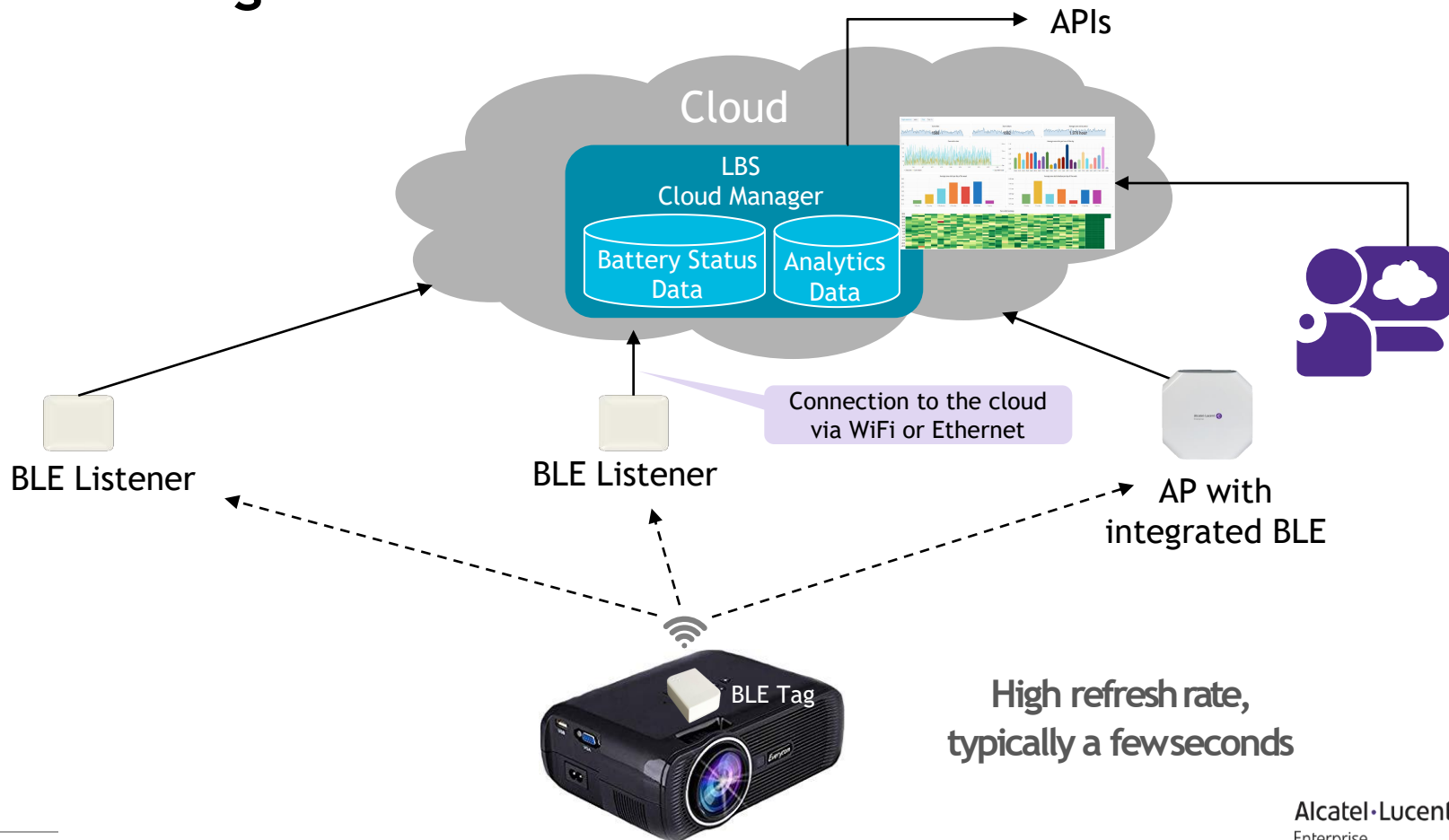
LBS Cloud Manager

LBS System architecture

Mobile app components and the interface with the Cloud Manager

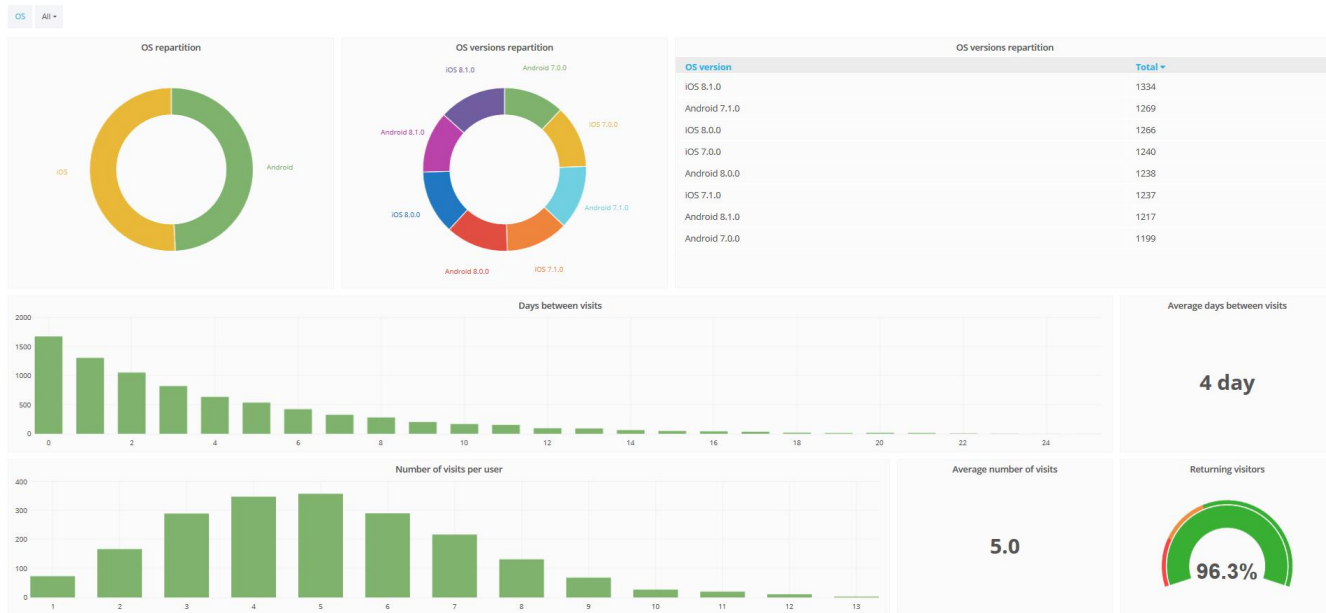


Asset tracking architecture



Analytics

Users Dashboard



Users dashboard

- OS distribution
- OS versions distribution
- Days between visits
- Average days between visits
- Number of visits per user
- Average number of visits
- Returning visitors

Note: In order to offer user privacy the LBS system implements a rotating pool of user IDs. Each user is assigned a user ID for a limited period of time, configurable in hours. After that period the user IDs are put back into a pool of IDs which become available for other users.

Metrics related to customer loyalty depends on the expiration of user IDs (which is configurable depending on the privacy regulations of each business/country; default is 24 hours; use -1 to disable ID rotation). The affected metrics are Days between visits, Average days between visits, Number of visits per user, Average number of visits, Returning visitors.



Analytics

Building Visits and Zone Visits (within a building) dashboards



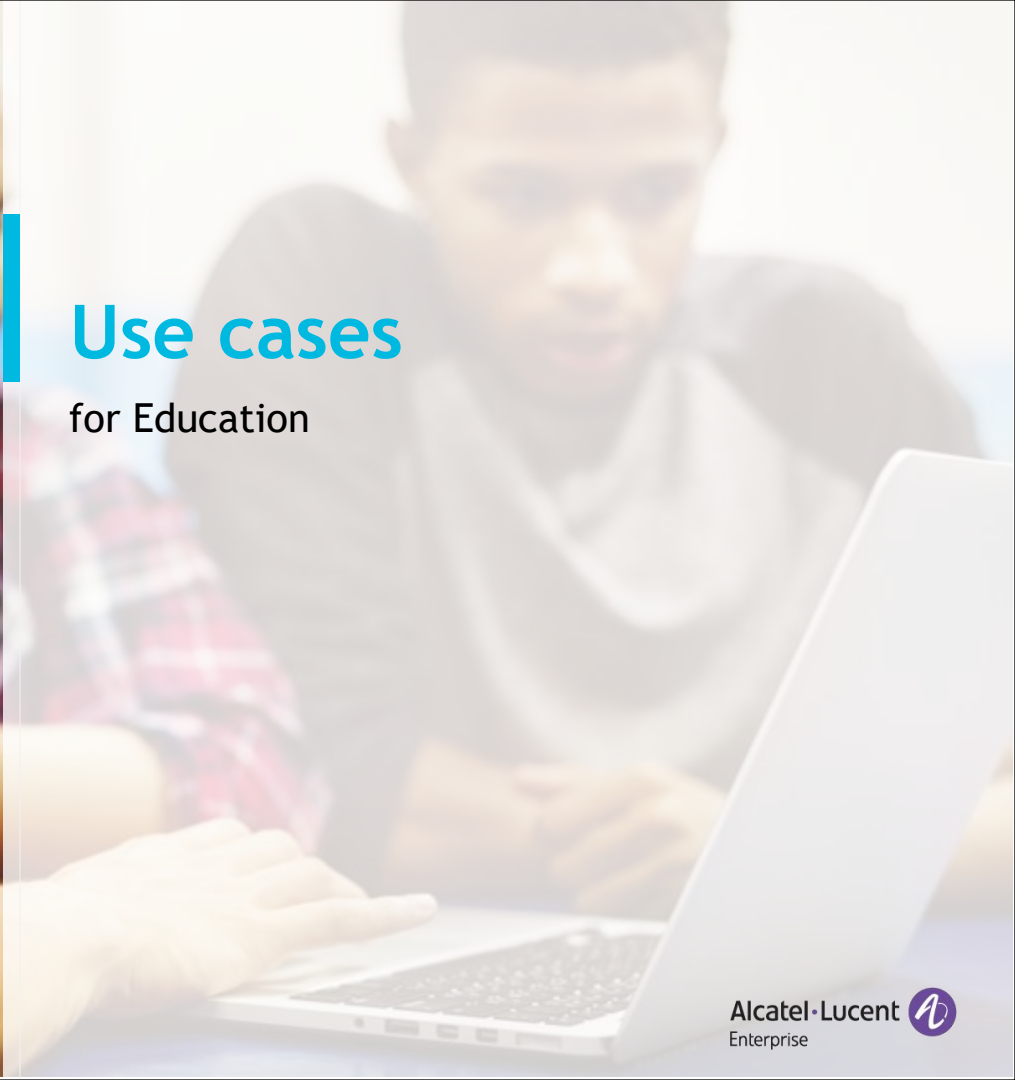
Visits/Zone dashboards

- Visits
- Visitors
- Average visit duration
- Average visits per hour of the day
- Average visits per day of the week
- Average visit duration per day of the week
- Visits heatmap



Use cases

for Education



Example of university mobile app

Providing a superior experience for students.



1- Find the closest available parking spot to your class



2- Students arrives at classroom and finds a notification that the class has been moved to another building due to repairs. Student use the university app to get directions to the classroom and is also informed of the time to reach it.



3- Class attendance is taken automatically from all students entering the room and remaining there for a certain period.



4- During the class teacher assigns a new book to read. From the university app student reserves the book and get directions to the aisle and shelf in the library where the book is located.



5 - Students share their location with a friend on Facebook, Wechat or LinkedIn in order to find the best place to meet.



6- As student passes by the food court area, he/she receives notifications of lunch specials



7 - On his way to the afternoon class there is an art exposition on the wall. Using the app, student can get information as he/she approaches the artifact.



8 - During class students get emergency notification of gas leak close to their building and shows best evacuation route

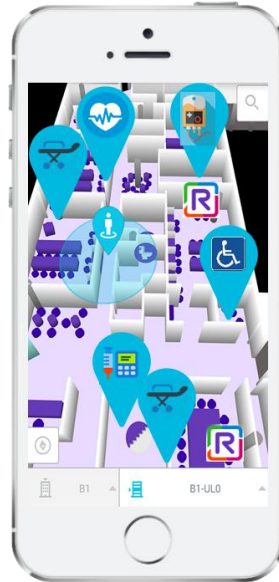
Asset tracking makes people and things easy to find

Know where your staff and equipment are located in real-time.

March 2019



People Tracking



Education value proposition and use cases

Improve student success and campus experience

- Navigation to the classroom (decreases tardiness)
- Find closest parking garage
- Find a friend
- Library services: locate a book, find/reserve an empty desk or meeting room

Streamline operations, improve safety

- Emergency notification accurate position
- Evacuation routes on emergency (ex. Mass shooting)
- Class attendance
- Campus information for parents and visitors
- Understanding students and guests flow during events
- Teachers and staff contribution to building management
- Managing students to stay inside campus
- Staff coordination

Boost revenues and reduce costs

- Discounts for restaurants and shops
- Tracking lab equipment

ALE collaboration program with universities

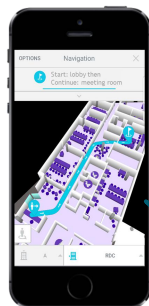
Supporting the development of new applications and entrepreneurship

OmniAccess®
STELLAR
— LBS —



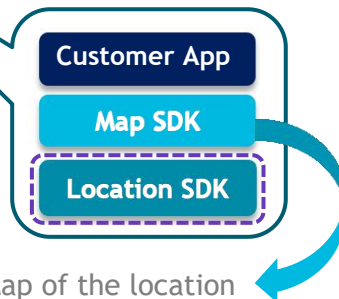
BLE infrastructure

- BlueSpot beacons
- BLE dongles for Stellar or Aruba APs
- Built-in BLE support in Stellar AP (*Future*)



Customer App with LBS

- Offline & background operation capability
- Non-blocking data synchronization



Cloud management

- Setup of indoor location
- Beacons monitoring
- Define and manage geonotification campaigns
- (Location analytics)

LBS Solution = Hardware + Mobile App Software Integration + Management





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