



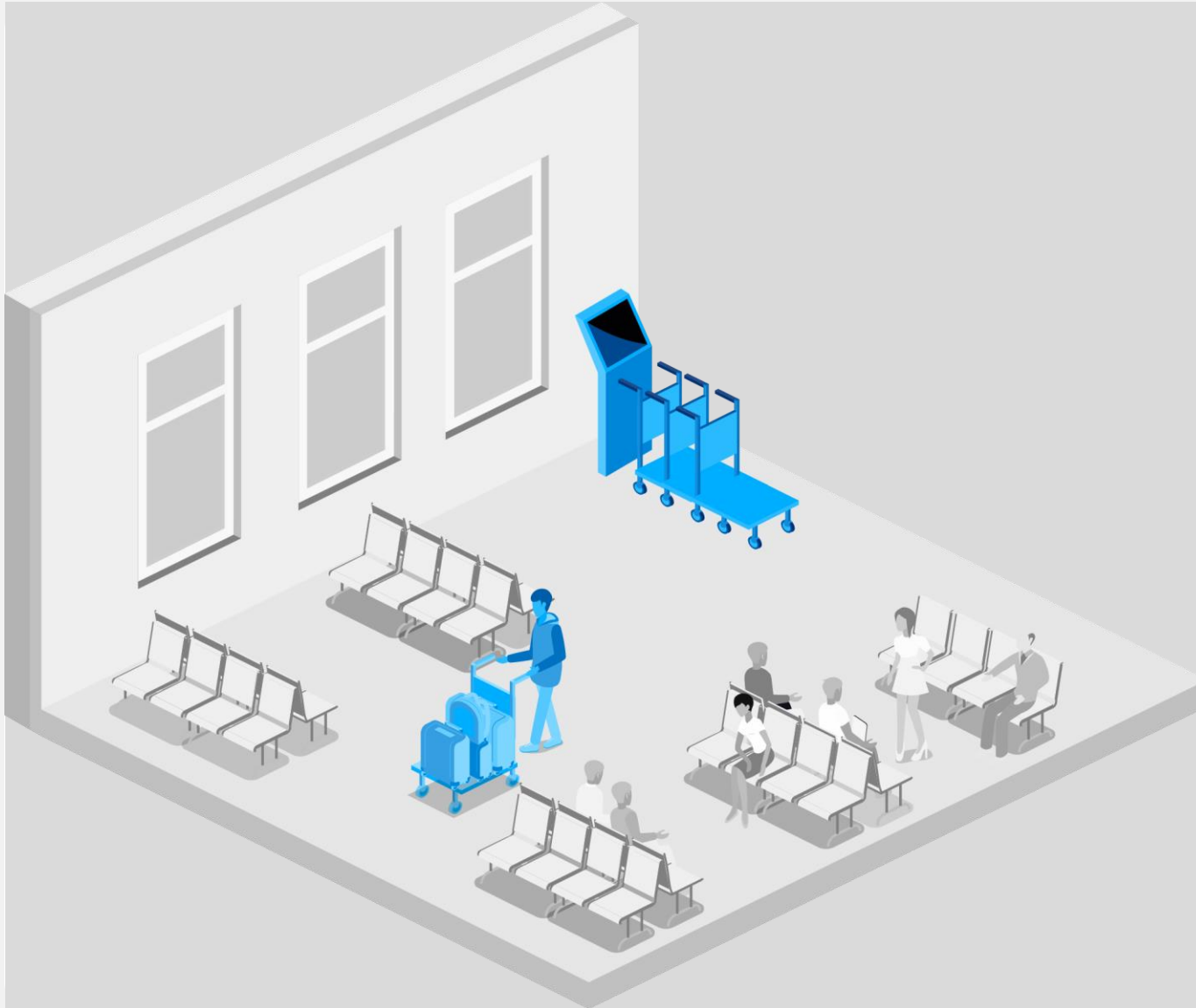
LOC-101 Indoor Location Services with *Bluetooth*[®]



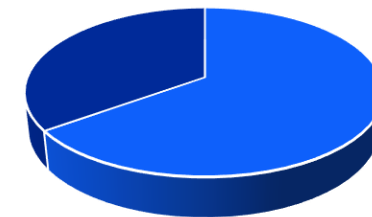
Mikko Savolainen | September 2021



Asset Tracking & Management



The larger the building, the more important it is to track critical resources to create efficiencies. Bluetooth can help staff find the closest assets — from luggage carts to wheelchairs to utility vehicles, even if they are parked in the wrong spot or hidden from view.

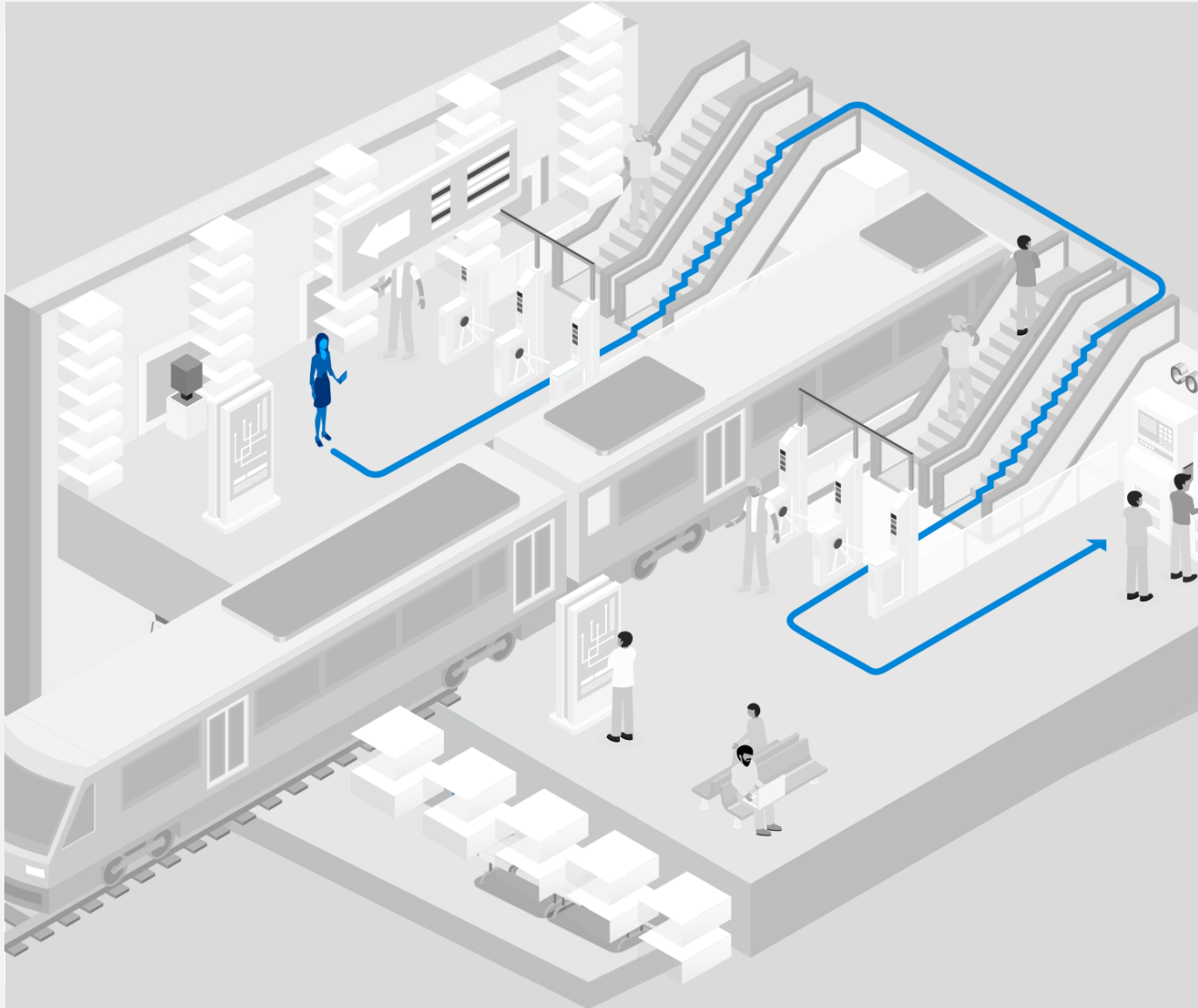


65%

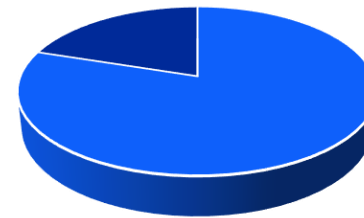
Of enterprises will require indoor location asset tracking by 2022

Source: Gartner

Indoor Navigation



Visitors can easily navigate a facility while seeing if a favorite coffee shop is nearby or locating the closest restroom. Giving travelers the fastest route to their destination helps improve traffic flow and eliminates congestion in the terminal.



80%

Of airport CIOs see indoor navigation as a major technology program by 2021

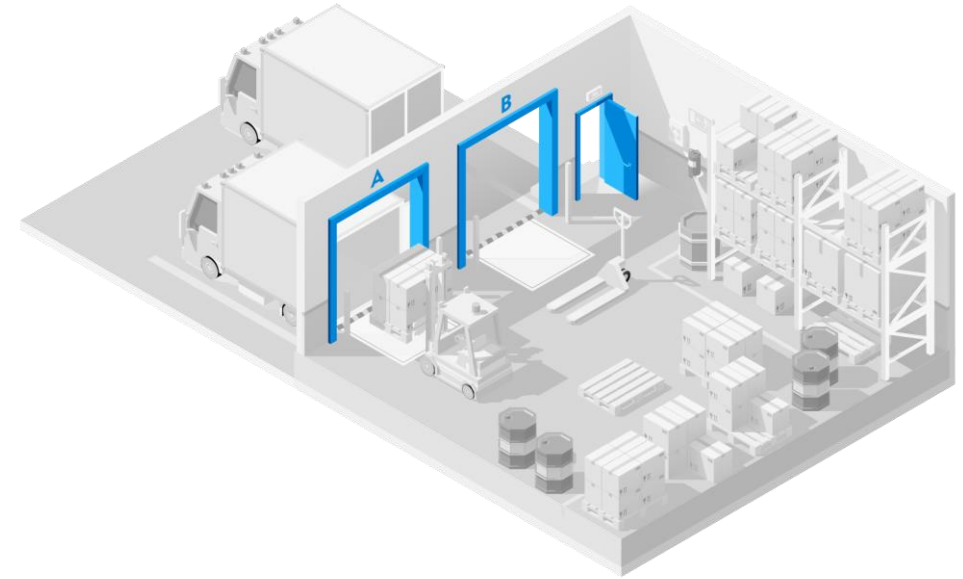
Source: SITA, 2018

Point-of-Interest and Access Control



Point of Interest Information

Creating interactive points of entertainment enhances the visitor experience. Visitors in venues like airports, museums, and tourist attractions can use apps on their smartphones to learn about pieces of art, historical monuments, and other points of interest.



Access Control

With Bluetooth enabled access control, a smartphone can provide employees with secure access to controlled areas of a building. Adding access control to a device that is less likely to be lost or misplaced, such as a smartphone, enhances overall security for the facility.

Target Markets and Use Cases



HOSPITALITY & RETAIL

Asset tracking

Way-finding & Indoor navigation

Consumer behavior analytics

Electronic Article Surveillance



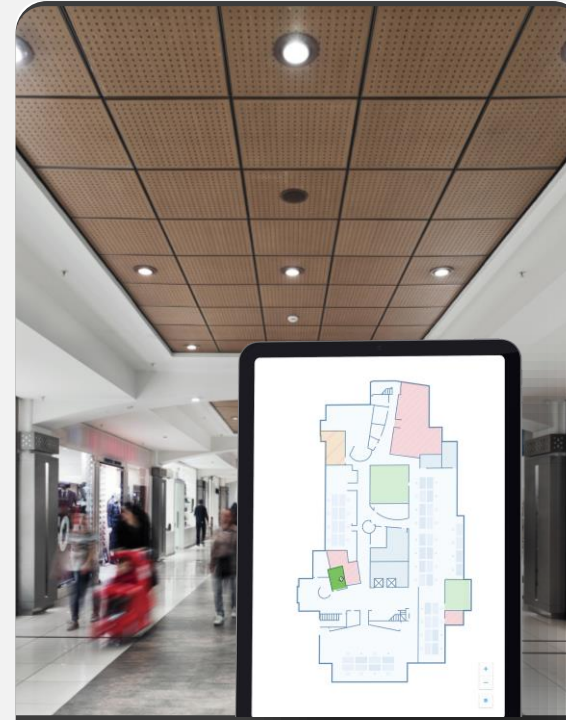
HEALTHCARE

Equipment tracking

Staff & patient tracking

Hygiene compliancy

Social distancing



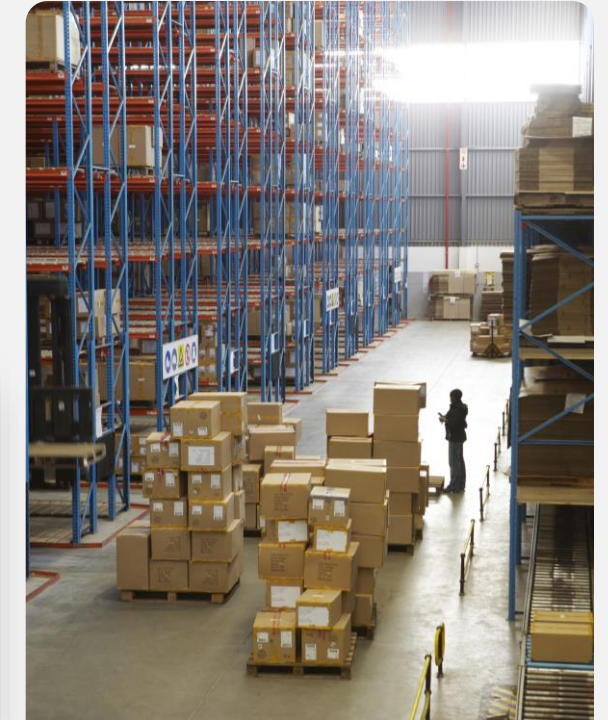
SMART BUILDING

Space optimization

Automated surveillance

Employee safety

Social distancing



MANUFACTURING & LOGISTICS

Process optimization

Inventory management

Quality assurance

Real Life Examples



Why Bluetooth Makes Sense for Indoor Location Services?



- Bluetooth tags can deliver 5–10-year lifetime on a coin cell batteries
- The BoM of a Bluetooth tags can be reach <\$1 in high volume
- Bluetooth Direction Finding can deliver sub meter accuracy at reasonable infrastructure cost and complexity
- Bluetooth enables 2-way data transfer
- Bluetooth mesh enables wireless commercial lighting with location services

Other Indoor Location Services Courses at Works With '21



1:00 PM - 1:45 PM CDT / 9:00 PM - 9:45 PM Your local time (45 Min)

LOC-201: Locate your Things with Bluetooth Direction Finding

In this course we discuss Angle of Arrival (AoA) and asset tracking systems which are the cornerstones of Bluetooth Direction Finding. With AoA, assets send Bluetooth beacons that are captured by locators that contain antenna arrays. We will demonstrate a new high performance antenna array reference design in a



2:00 PM - 2:45 PM CDT / 10:00 PM - 10:45 PM Your local time (45 Min)

LOC-202: Design Custom Bluetooth Direction Finding and RTLS solutions

Bluetooth Angle-of-Arrival (AoA) and Angle-of-Departure (AoD) require a lot of advanced technology including antenna arrays and the Real Time Location (RTL) software. Developing antenna arrays and matching RTL software requires dedicated skills, tools and experience.



10:00 AM - 10:45 AM CDT / 6:00 PM - 6:45 PM Your local time (45 Min)

ESL-101: Electric Shelf Labels and Store Location Tracking

Electronic Shelf Labels (ESLs) enable retailers to update prices automatically in real-time across the store, eliminating days of tedious and error-prone manual activities. With ESLs, retailers can increase pricing efficiency, pricing accuracy, optimize click'n collect, and simplify replenishment.



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