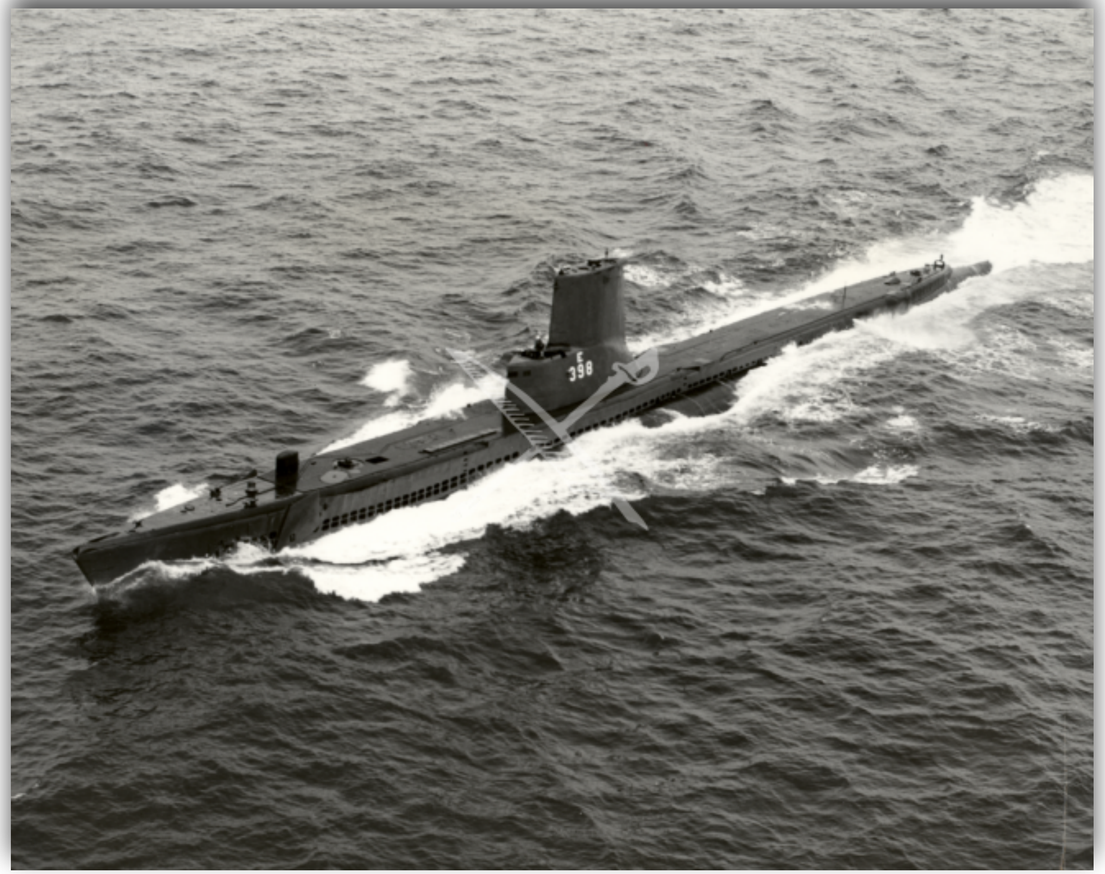
The new era of Location Tracking

CROWD LOC

Celebrating 50 years of location tracking!

Transit A1 Satellite - 1967



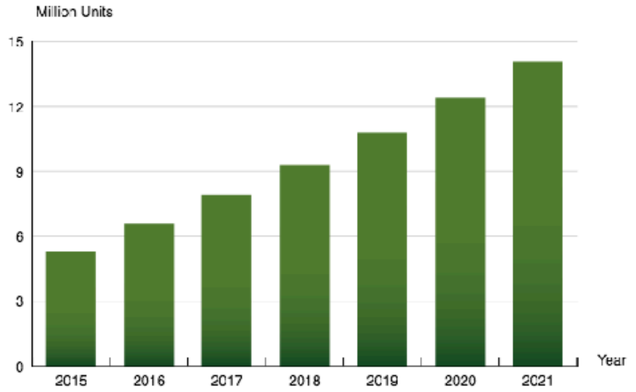
USS Segundo

A new Era for location tracking?

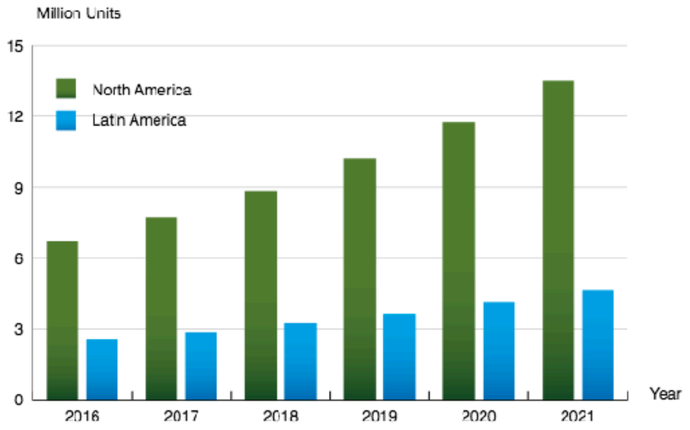
A vivid, growing market in historical segments

New opportunities driven by:

- Market demand (consumer, B2B)
- New, disruptive technologies



Installed base of active fleet management units (EU27+2 2015–2021)

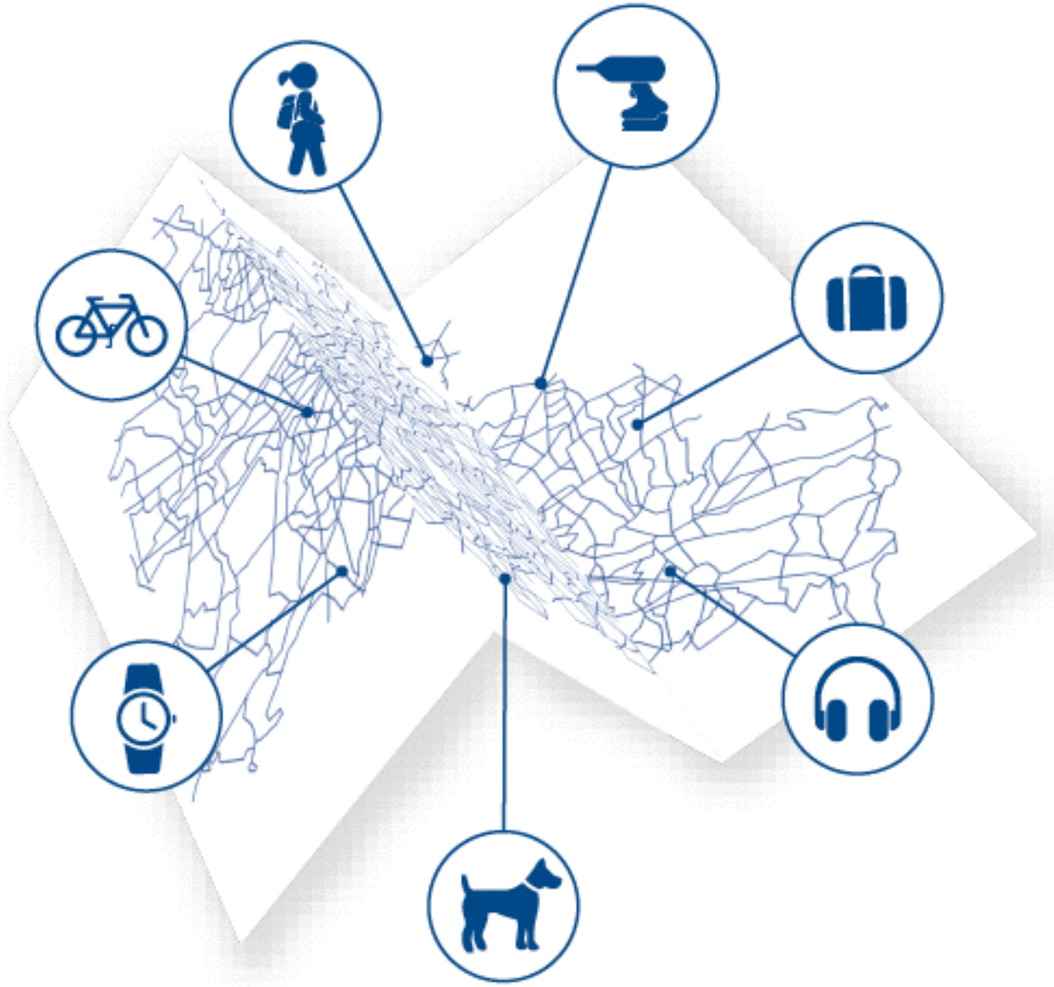


Installed base of active fleet management units (Americas 2016–2021)

New markets for location tracking

A few examples with 100+ million trackable items markets

- Bicycle
- Pets
- Luggage
- Consumer Electronics
- B2B



Bicycle Theft

France
- 1 million stolen bicycle / year stolen cars

United Kingdom
- 500 000 stolen bicycle / year
- UK insurance data 17% of claims (Direct Line)

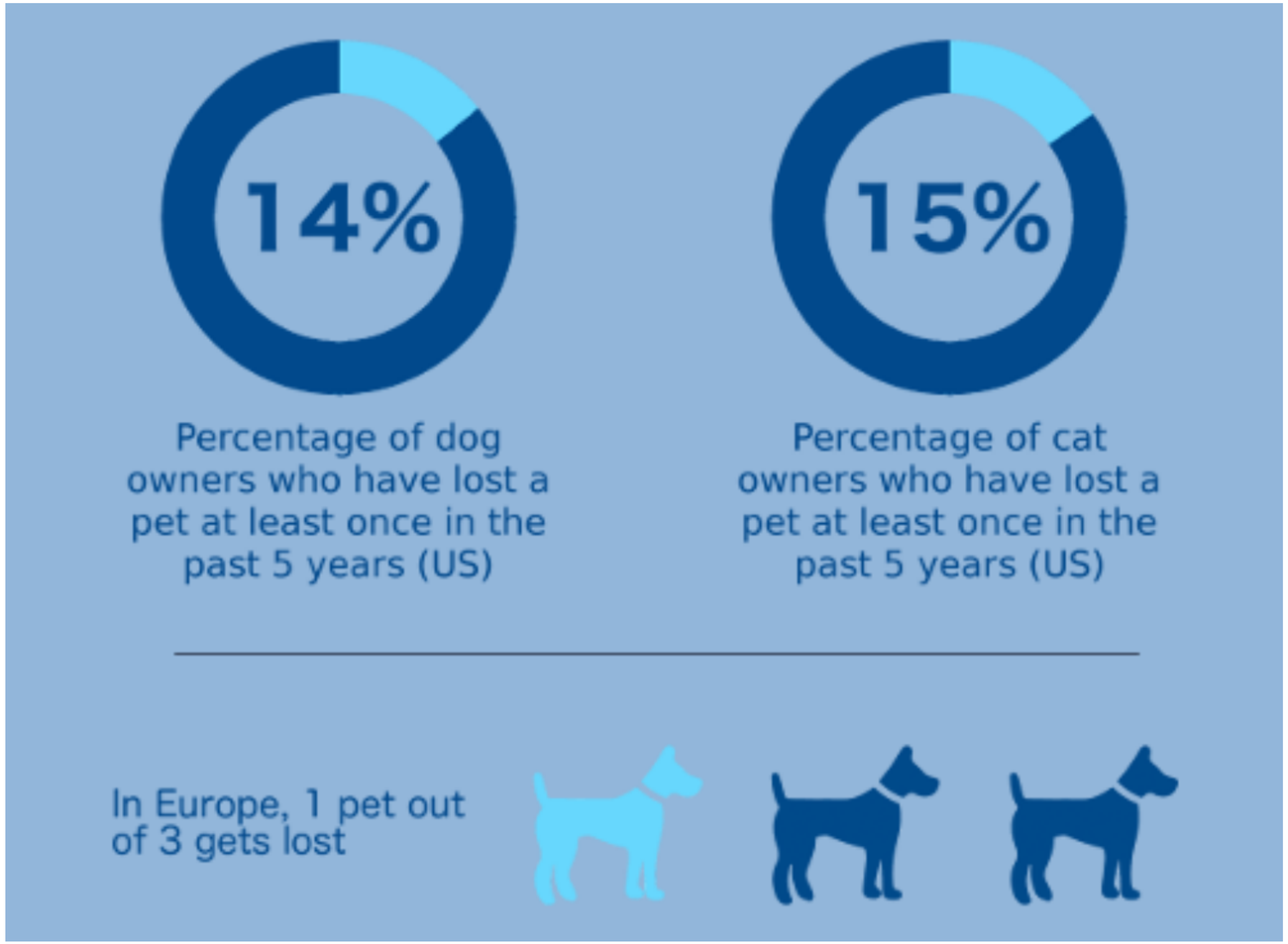
Germany
- 300 000+ per year?

United States
- Estimated 2 million bicycle stolen

Pets

455 Million

Cats & Dogs
Across Europe & US

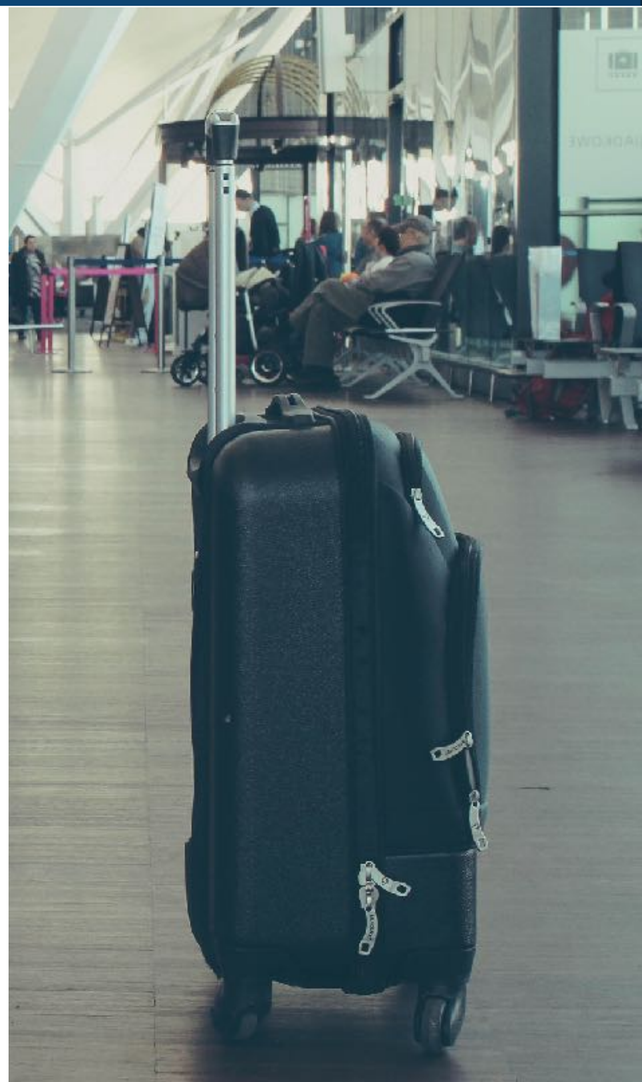


Luggage

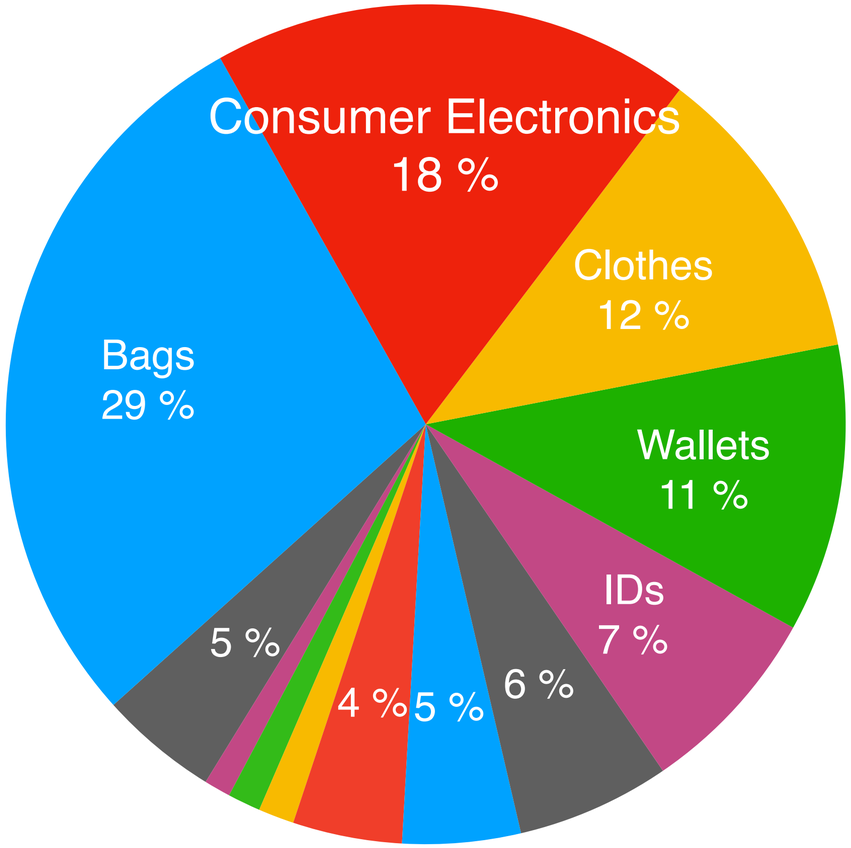
21.6 Milllion luggages lost in 2016

75% of passengers want to receive information about the location of their bags on their smartphones

Source: SITA



Consumer Electronics devices get lost

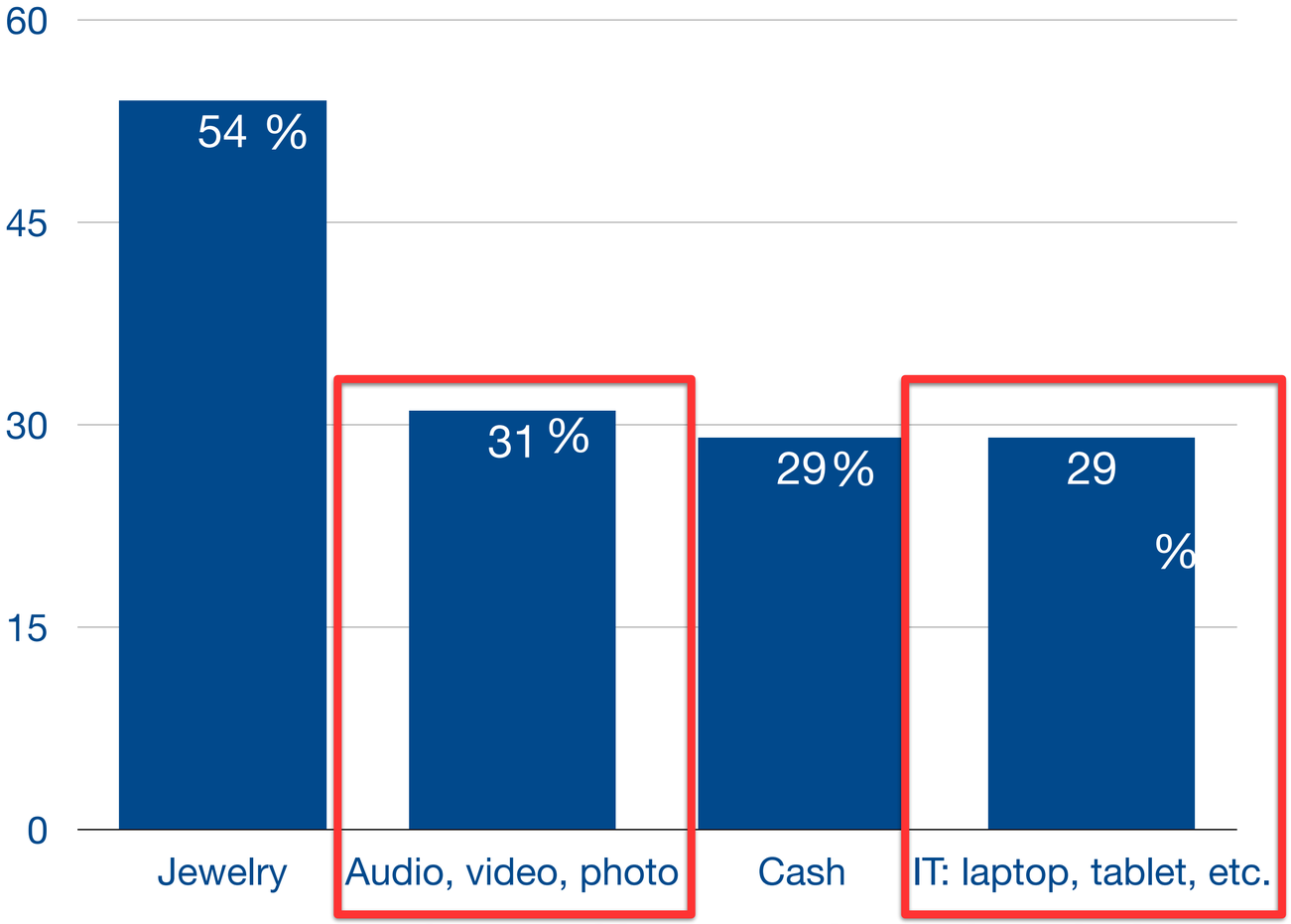


Consumer electronics is the second largest lost item category in public transports after bags.

French railways SNCF open data on lost items
(statistics on 126,153 items collected between Jan-Aug 2017)

- Bags
- Clothes
- IDs
- Keys
- Kids stuff
- Sport items
- Consumer Electronics
- Wallets
- Glasses
- Books
- watch & jewelry
- Others

Consumer Electronics devices get stolen



percentage of type of items stolen in burglaries

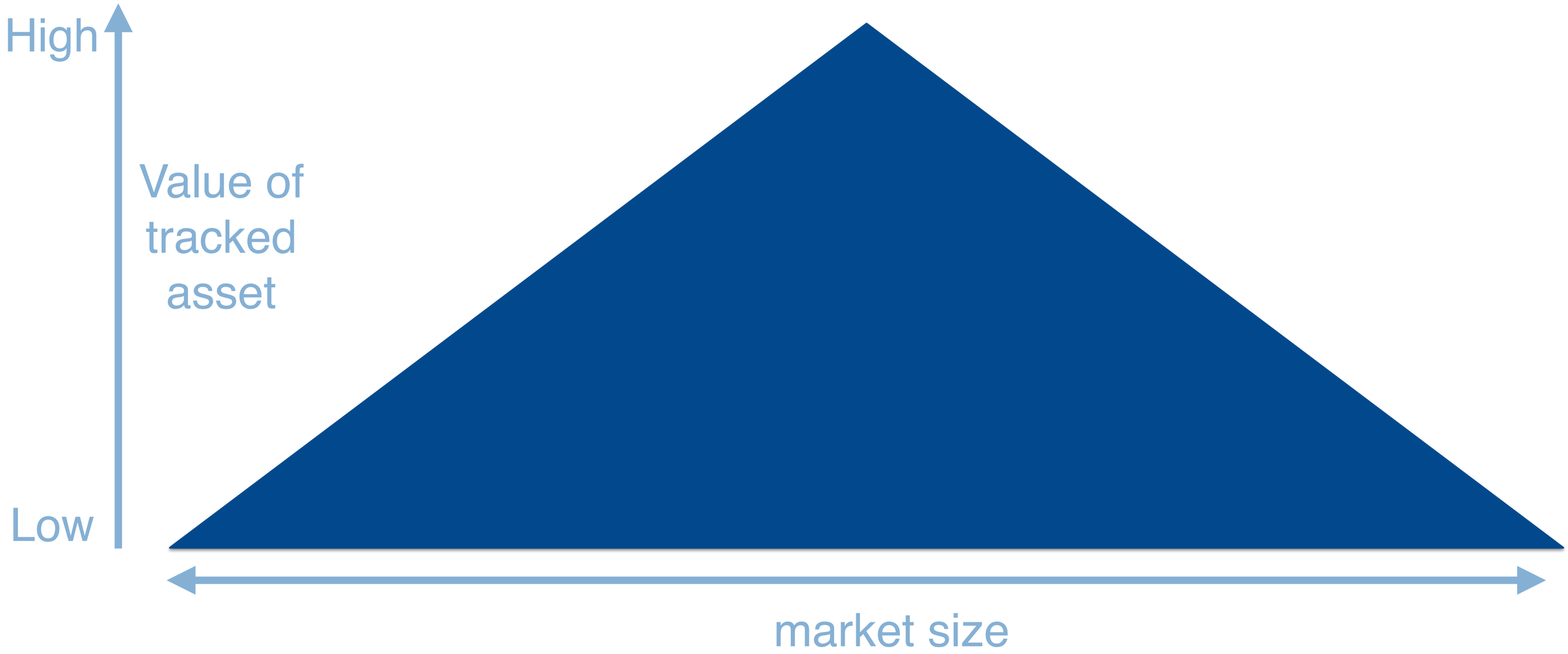
Consumer Electronics are stolen in 1/3 of burglaries

French police statistics - 2013-2015
panel of 16,000 respondents.

Insurance claims for burglary cost an average €1.6B/year to insurers across UK, Germany & France.

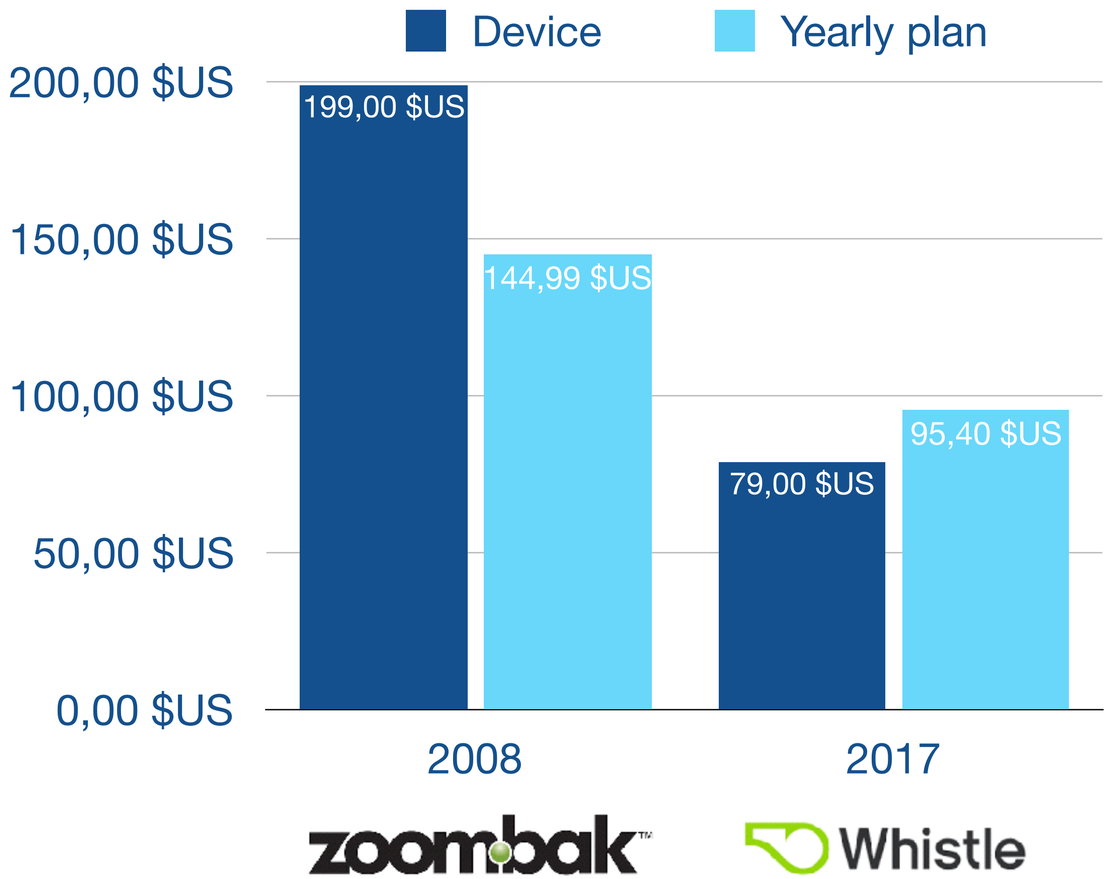
B2B tracking

Market size driven by cost



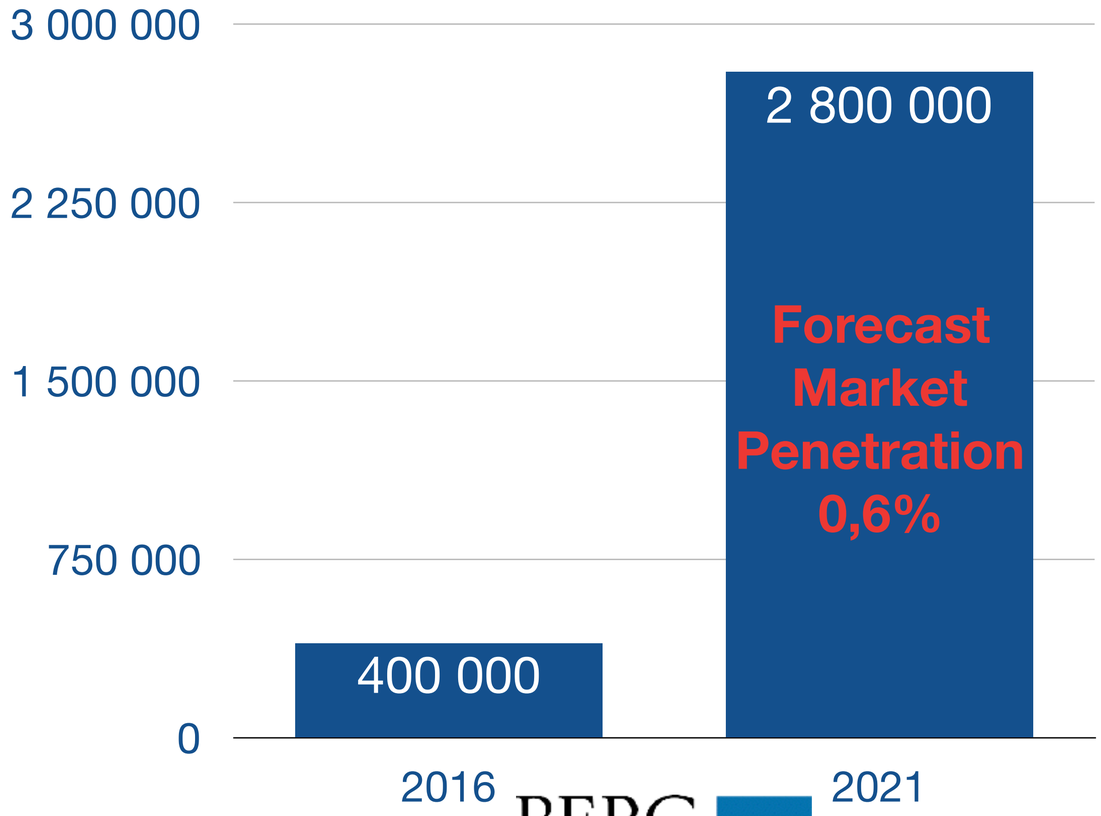
Deep Diving in Pet Tracking

Cost



zoombak™ Whistle

Pet tracking US+ EU



BERG INSIGHT

Power consumption problem

zoombak™

BATTERY /

Standby Time	120 h
Rechargeable Battery	rechargeable

2008

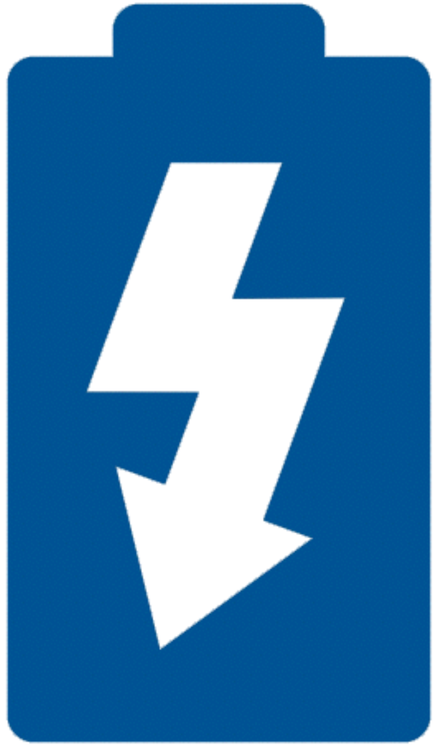
Whistle

How long does Whistle 3's battery last?

On average, the battery lasts up to 7 days depending on the strength of Wi-Fi and cellular coverage. The Whistle 3 app will tell you when it's time to charge. The more time your pet spends out of Wi-Fi range, the quicker the battery will drain. We recommend charging every 2-3 days to ensure they are always covered. We will send you a notification when your battery needs to be charged, and a full recharge only takes 2 hours!

2017

Solving Cost & Power Consumption



Cost & power reduction Opportunities

Connectivity

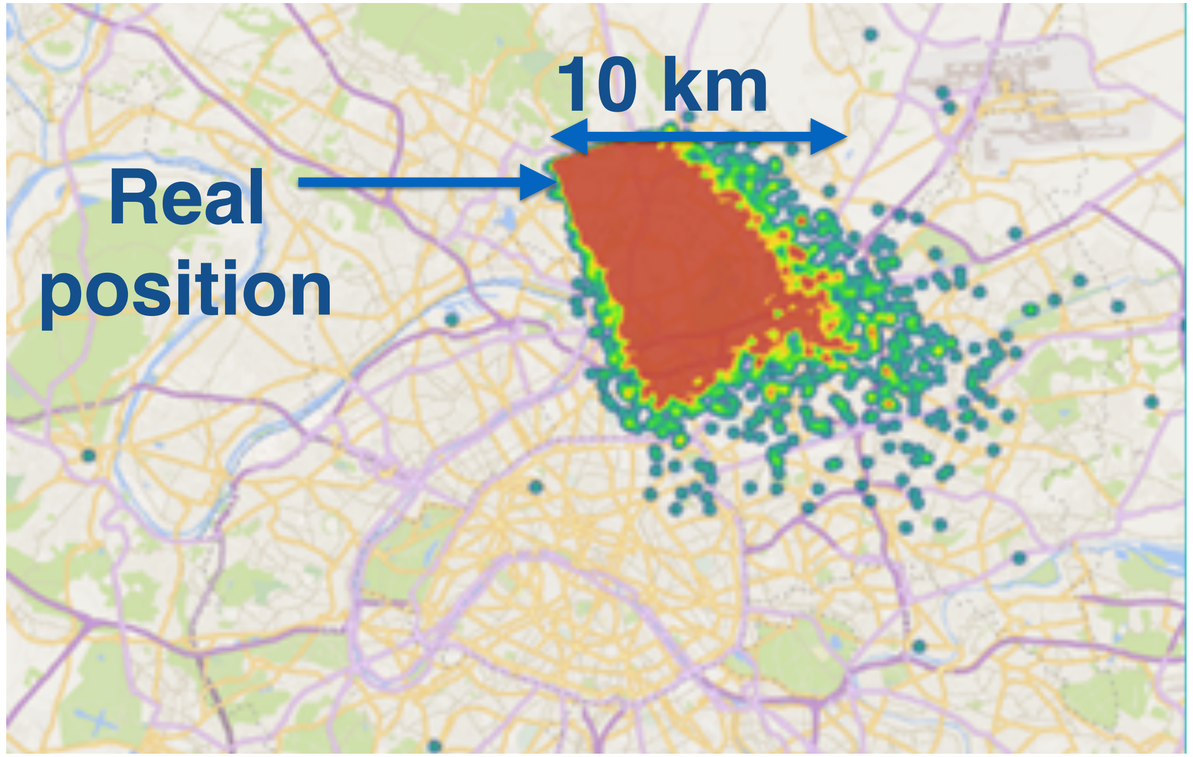
Location Tech

Low Power Wide Area Networks

- Small bandwidth networks
- Lower infrastructure cost
- Low power consumption for receiver

LPWAN location problem

Roadie - €99
LoRa+ GPS+ Wifi
Up to 8 months battery (?)

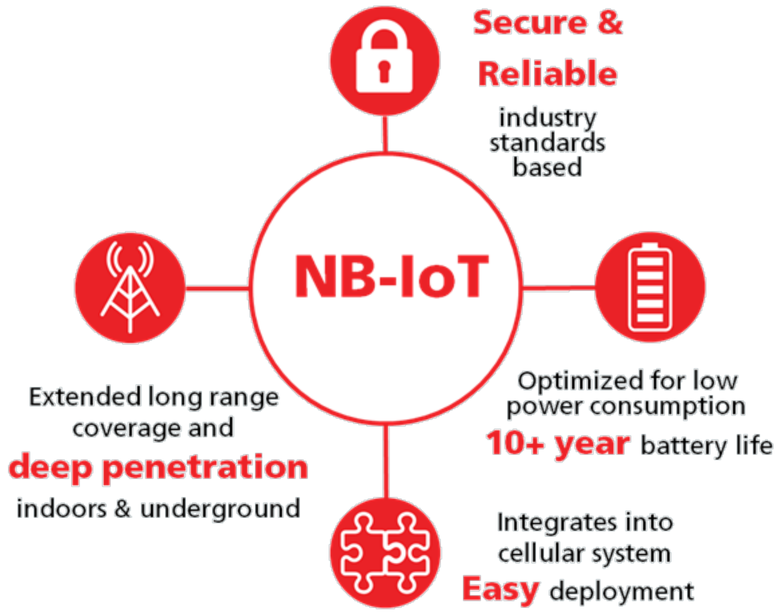


Network-based positioning accuracy

3GPP Standards: LTE-M & NB-IOT

- Next big things in IoT driven by cellular infrastructure vendors & wireless operators.

- But
  - Coverage not yet available
  - Competition of 2 standards
  - Receiver still very expensive
  - Location problem similar to LPWan



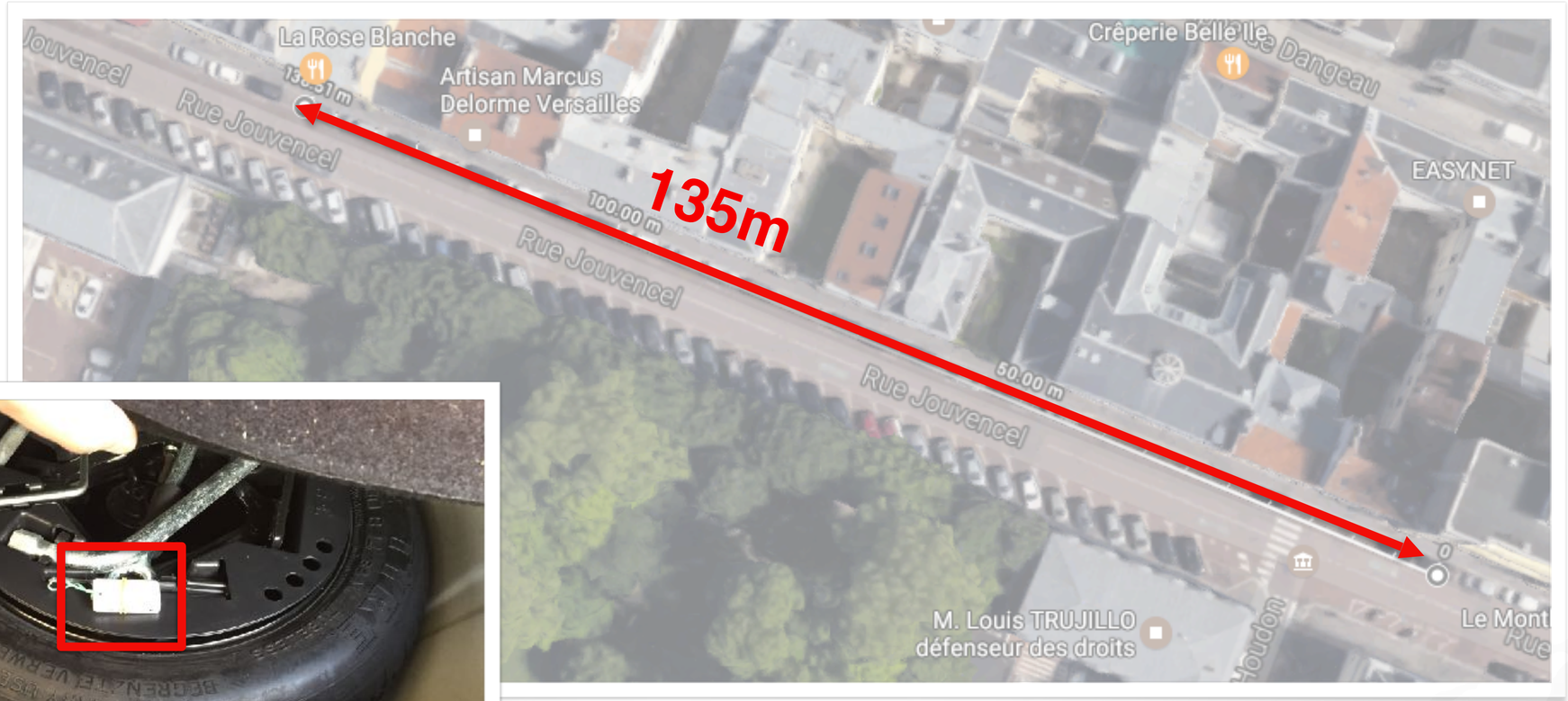
Bluetooth Low Energy

- Mature technology
- Wide ecosystem

Bluetooth®
SPECIAL INTEREST GROUP

- BLE in Smartphones
- Consumer Electronics
- Widely available, very affordable beacons

Bluetooth myth: short distance



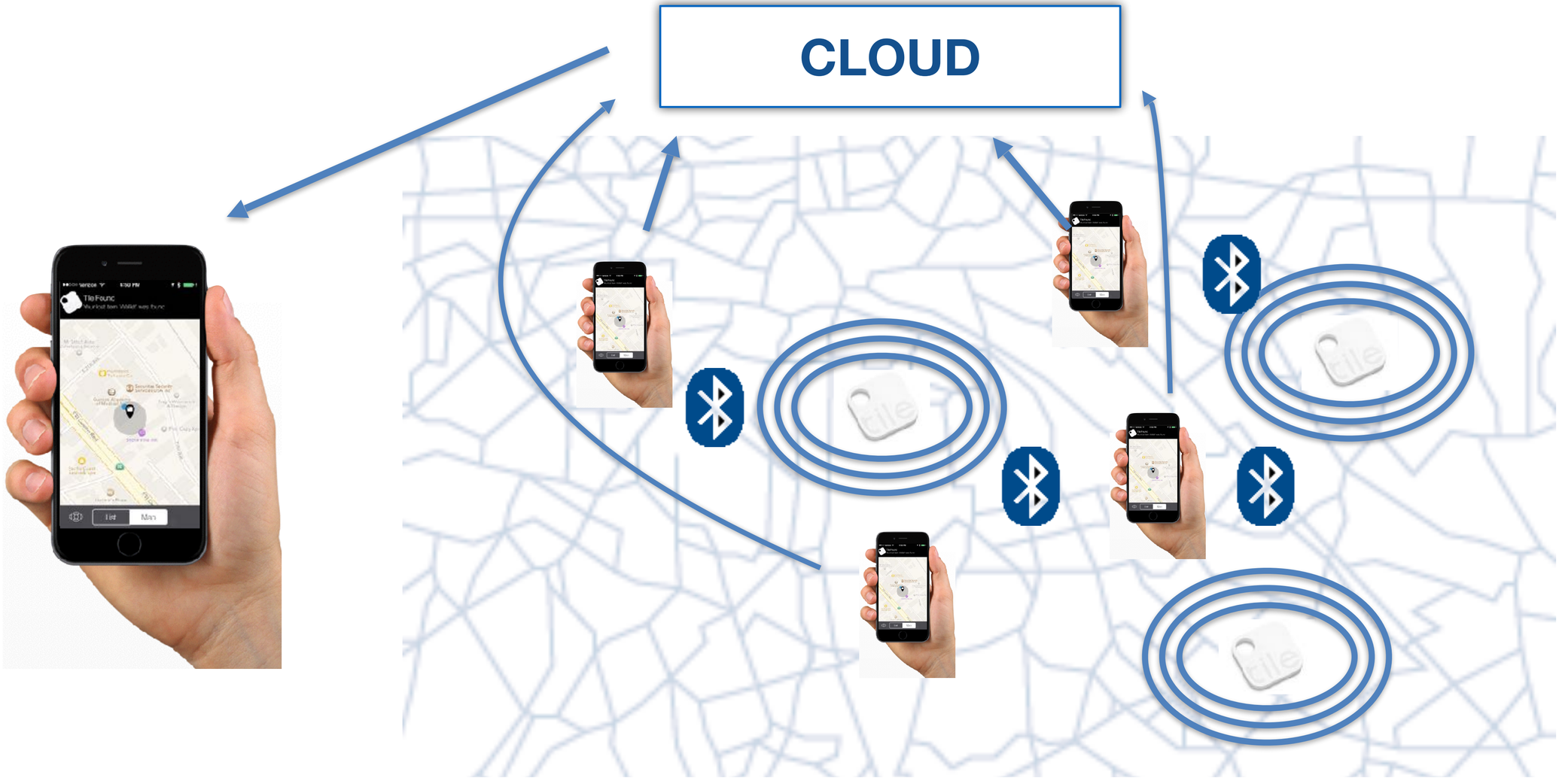
- Bluetooth 4.0 Beacon (TI chipset, PCB antenna)
- Hidden in spare wheel compartment of car trunk
- Signal received by iPhone 6 at 135m distance in an urban street

Collaborative Location with Bluetooth

tile

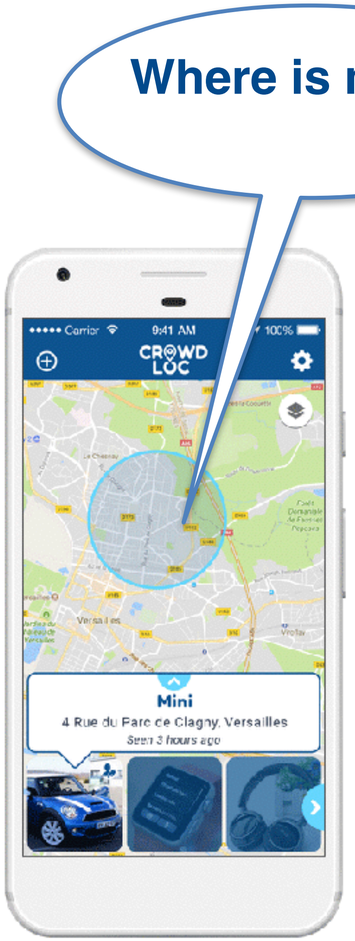
TrackR™

Crowdsourcing Bluetooth location

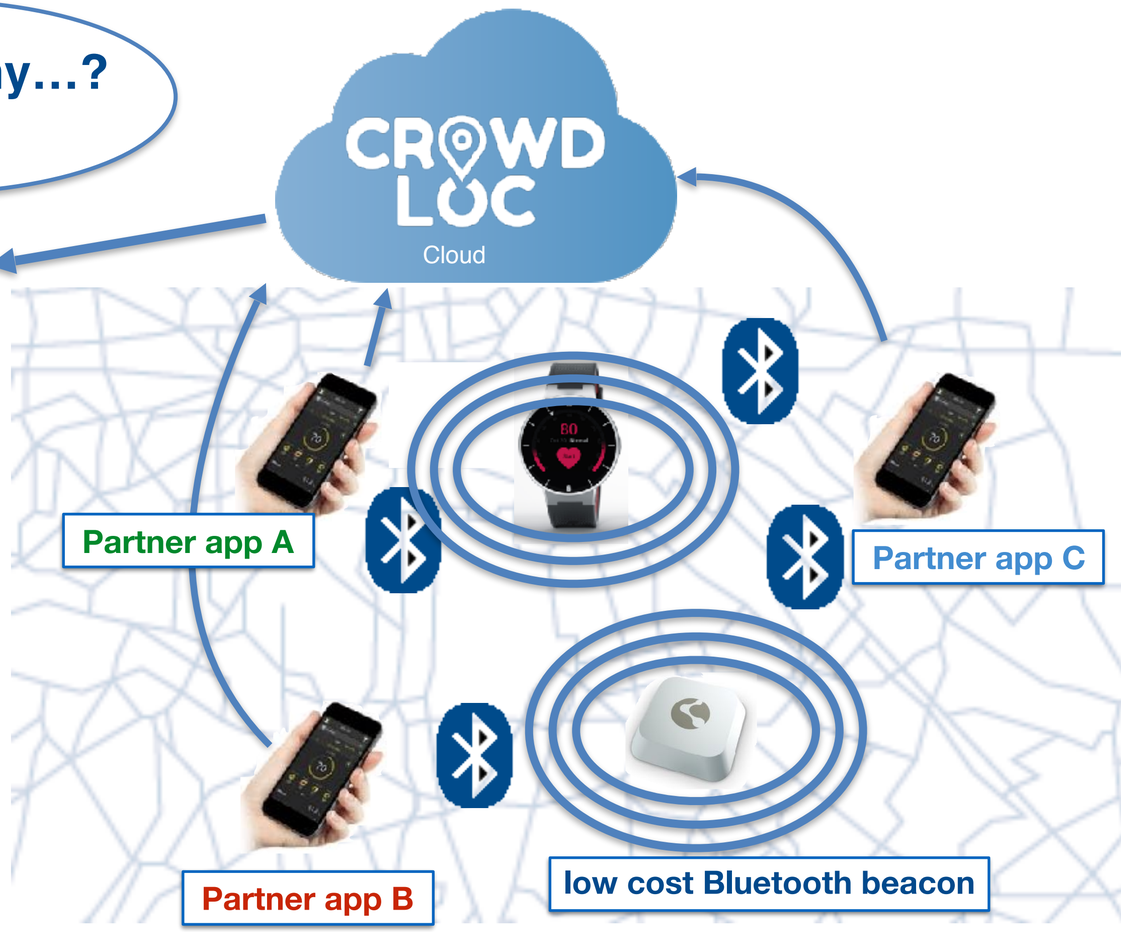


CROWDLOC

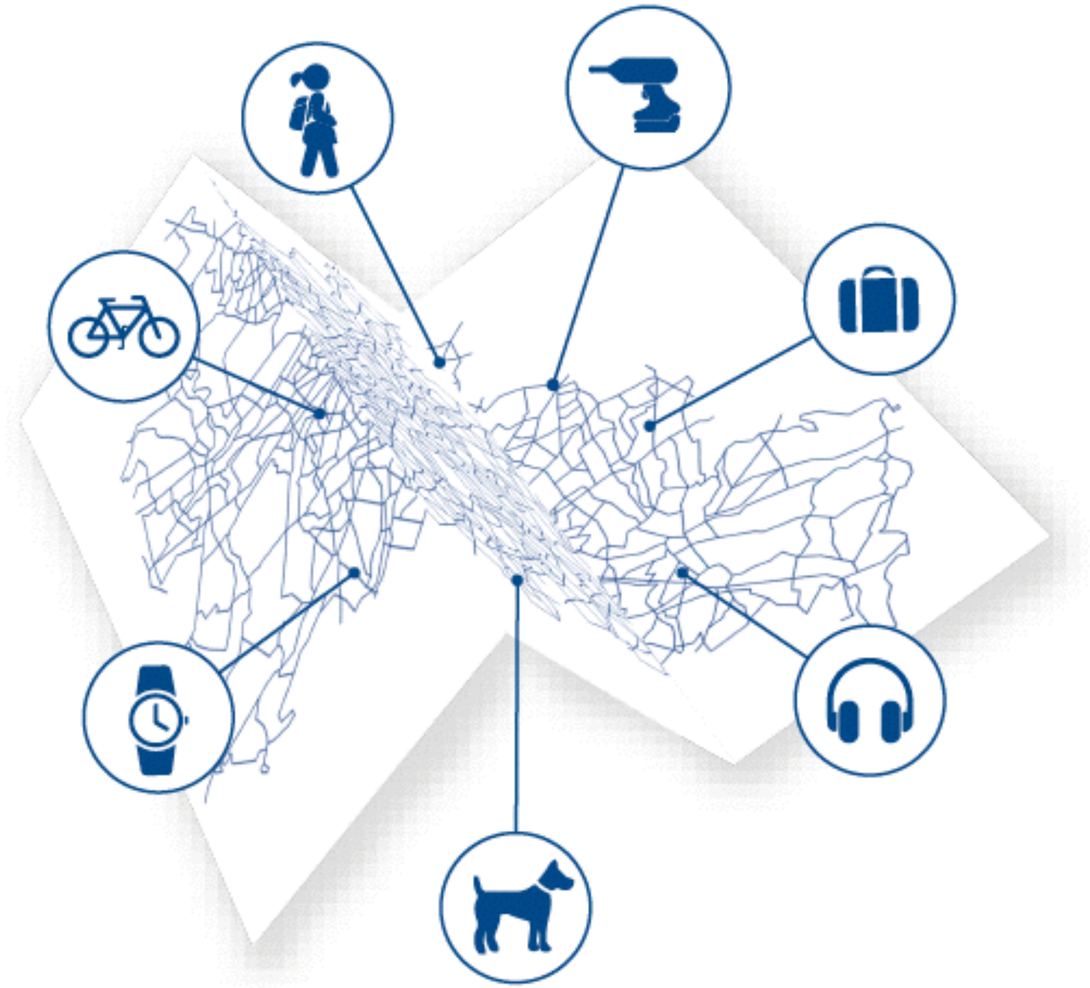
- Low power Android & iOS SDK
- Supporting all BLE devices (beacons & consumer electronics)
- 100% software & B2B



Your app



CROWDLOC Alliance

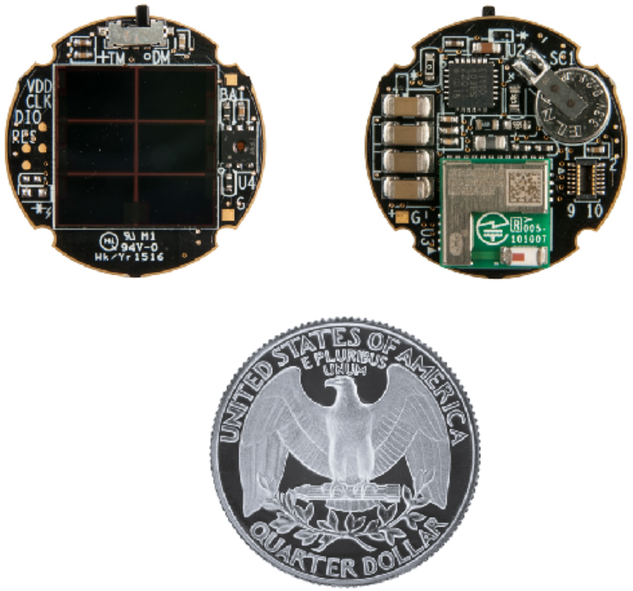


Fully Mutualized network among CROWDLOC Alliance partners.

Each app in the network is searching for all Bluetooth devices of the partners.

Bluetooth developments

Bluetooth: Low Power to No Power



Startup Wiliot Promises No-Battery Bluetooth Beacons in 2019

By Samuel K. Moore

Posted 6 Nov 2017 | 14:30 GMT

Wiliot

Key Takeaways

- Huge, untapped market for location tracking in many verticals: The Internet of Lost Things
- Many new technologies but reality is often different from marketing (LoRa network-based location)
- Not a one fit all approach - different use cases, different technologies.
- CROWDLOC is open for business ;-)

Thank you!

ludovic@crowdloc.com

+33 6 22 05 61 38