



# Contactless ultrasound for security



Dominique PALACCI  
CEO



**In 2025, there will be 25 billions  
IoT's in the world.**

**How to collect data under any  
circumstances in a secure way?**

# How it works?



- STIMSHOP SDK is integrated into any iOS and android app.
- Our ultrasound signals are broadcasted through any speaker (sound system, radio instore, screens, tablets) to create interaction zones matching the place.
- Our HBeacon (Bluetooth + ultrasound) creates specific zone.
- Smartphones « hear » the signals and react according to the app rules (contextualized messages, geolocation, open a service...).



- **Wi-U.s ultrasound** encodes and transfer data under any circumstances: constrained environments (humid, explosive, metallic, electro sensitive, ultra secured).

INSTITUT NATIONAL  
DE LA PROPRIÉTÉ  
INDUSTRIELLE

BREVET DÉPOSÉ

## A topnotch technology

- **UNIVERSAL:** compatible with 100% of smartphones, integrates into any application
- **EASY:** no setup or hardware to install, transparent to users, works without network, without pairing
- **SECURE:** stay confined, exclusive and patented communication protocol
- **LIABLE:** resistant to Doppler effect, noise and jamming, the only technology in the world to do multiplexing, up to 80 meters



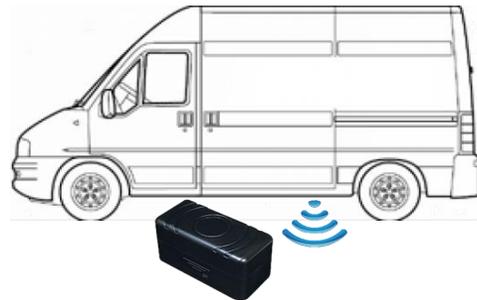
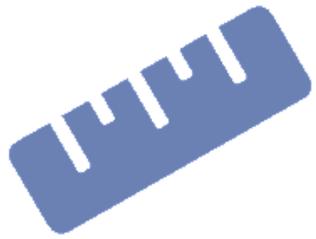
WE USE

**ULTRASOUND**  
TO SEND AND RECEIVE  
**DATA OVER**  
**THE AIR**

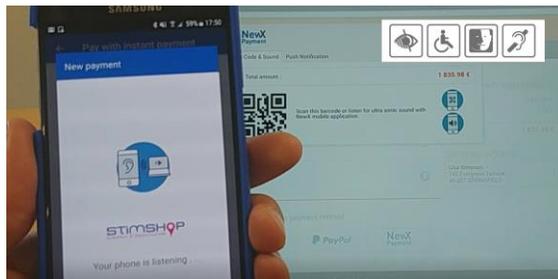


# Secure Industry 4.0, IoT and contactless

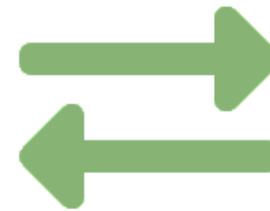
## Measure



## Authentication



## Data Transfer



## Presence Detection



# Business Cases

## Data transfer in constrained environments

### Wi-Us ultrasound erases white zones

- Send data wirelessly without radio waves
- Works under any circumstances, without connection
- In explosive, humid, metallic, electrosensitive environments.



# Business Cases

## Geolocate workers



### Secure submarine maintenance operations

- Check workers positions in the submarine by ultrasound, even in explosive areas
- Send alerts by ultrasound all over the site
- Manage access control in different areas of the submarine

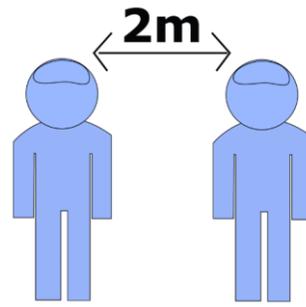


# Business Cases

## Physical distancing

Help to respect physical distance under all circumstances.

- The SECUMETER badge flashes and vibrates and alerts when the distance of 2 meters is not respected.
- Train and secure workers for an everyday watchfulness.



# SECUMETER



# Business Cases

## Tank thickness measure



### Permanent ultrasound thickness measure

- Ask for the thickness measure remotely via an ultrasound IoT instead of having to locally intervene
- Will work ten years thanks to an ultrasound ignition system

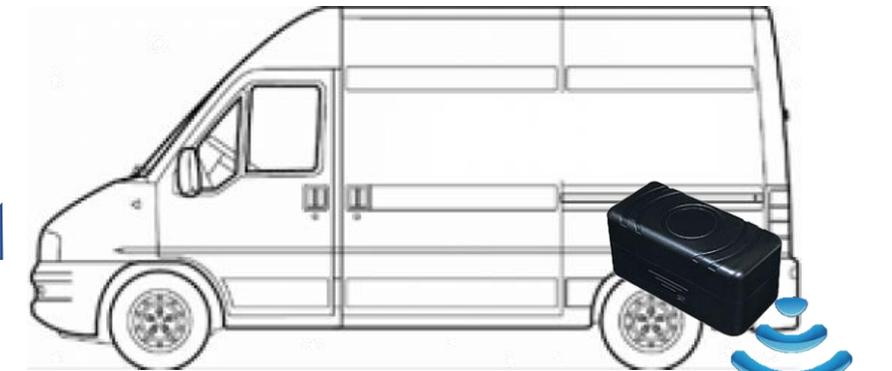
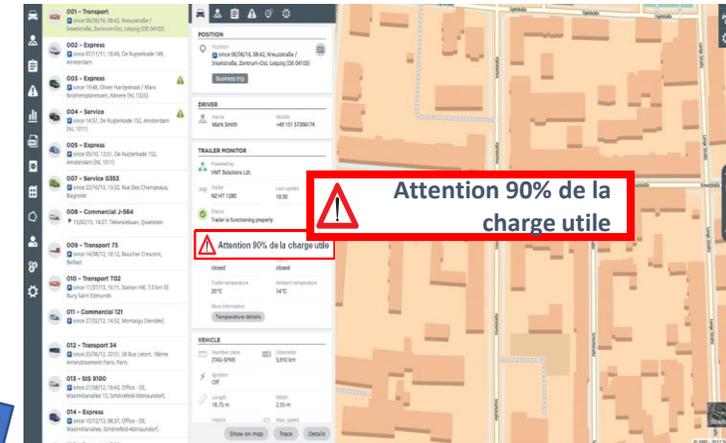


# Business Cases

## Load estimation

### Load estimation via distance measurement

- NSWHEIGHT: watertight ultrasonic telemeter to measure ground distance and derive the load
- Input collected: Brake alarm, Overload alarm, Carbone impact statement, Predictive maintenance



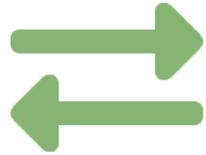
**NSWEIGHT**

# STIMSHOP offer

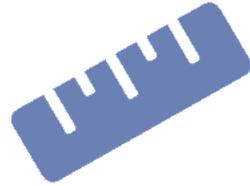
## • ucheck.in



Geolocation



Mobile  
Interaction

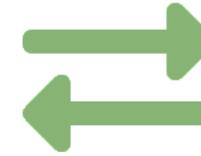


Measure

## • Wi-Us



Authentication



Data transfer

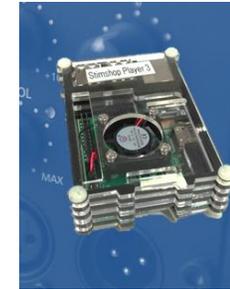
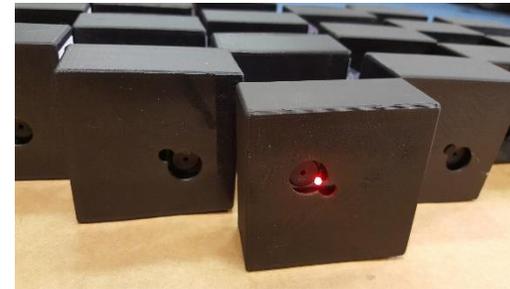


Communication

## 75% Software Licence



## 25% Hardware and studies



# Near-Ultrasonic Airborne Telecommunications

## Benchmark

A few other companies also provide ultrasonic communications, but none as **robust** as STIMSHOP's.



### Unique patent

- Distance
- Multiplexing

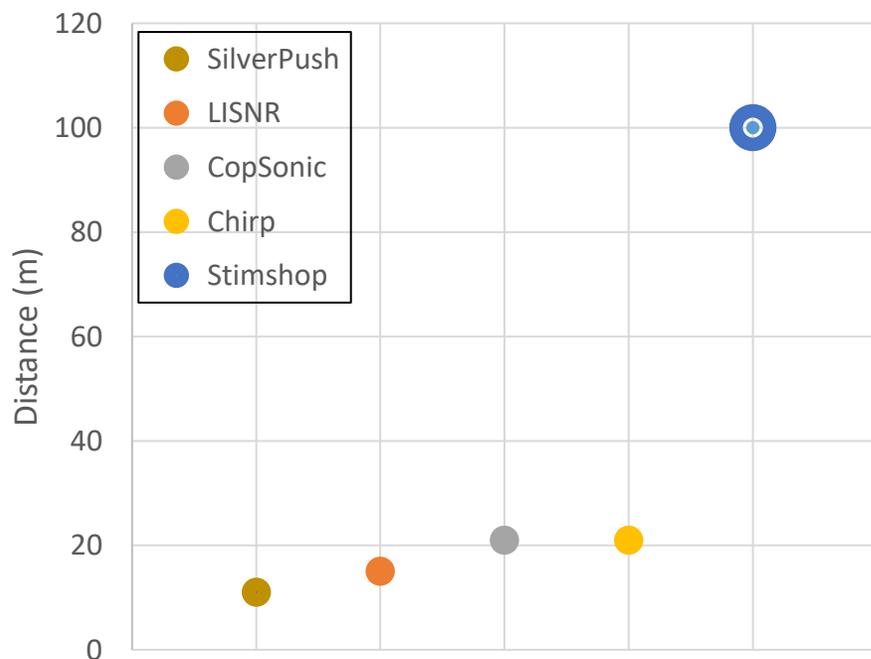


Fig 4: Ultrasonic communication systems comparison in range capacity.

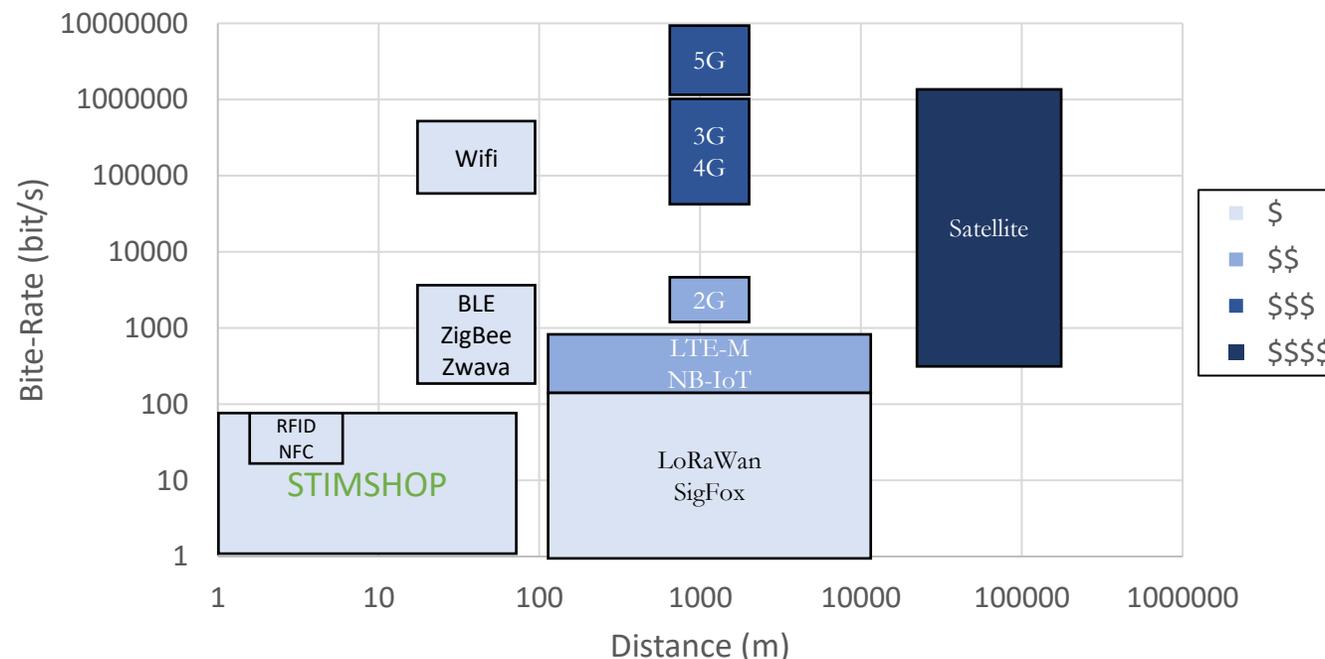


Fig 5: STIMSHOP and RF communication systems comparison in bit-rate, range and cost.

# Team



**Dominique PALACCI**  
56 years - CEO  
edhec 1986



**William SCHLEGEL**  
50 years - CTO  
Efrei 1991



**Bruno JAUFFRET**  
53 years – Business  
Developer EMP 1985



**Arthur AUBERTIN**  
28 years - R&D  
Paris VI, PhD  
Acoustic engineer



**Cédric COPPIN**  
24 years –  
Electronic engineer  
ESIEA



**Joséphine MASINI**  
22 years –  
Electrical engineer  
Sorbonne University



**Ilya FRANCIOSI**  
28 years –  
Acoustic engineer  
Paris VI

## Acceleration

RéIndustry

Milkshake Valley



## Development

Multisonic Module

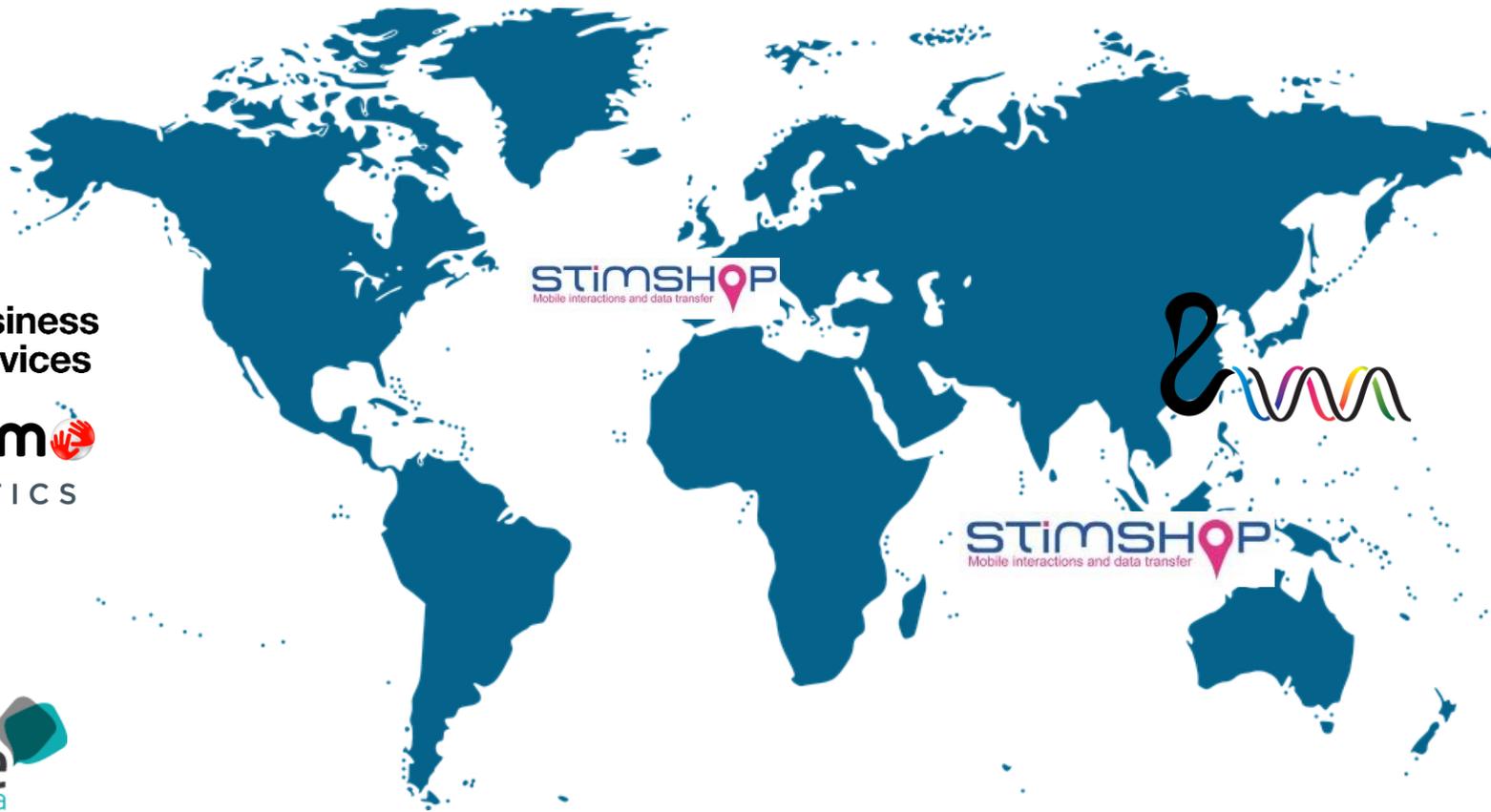


## Research

Multi elements ultrasound



# Presence in Europe and Asia



# Customers, partners and supports

## Customers



## Partners Distributors



## Certifications



## Awards

New Shopping Experience 2015, 2016

Vivatech 2016, 2017, 2018, 2019

IT Innovation Forum 2017, 2019

2018 : CEBIT Road Show, Airbus Développement  
Total Développement Régional  
Digital Day Nuclear Valley  
Forum Innovation CETIM

2019 : Global Leader IE-Club – HPE Startups  
e-Payments Worldline

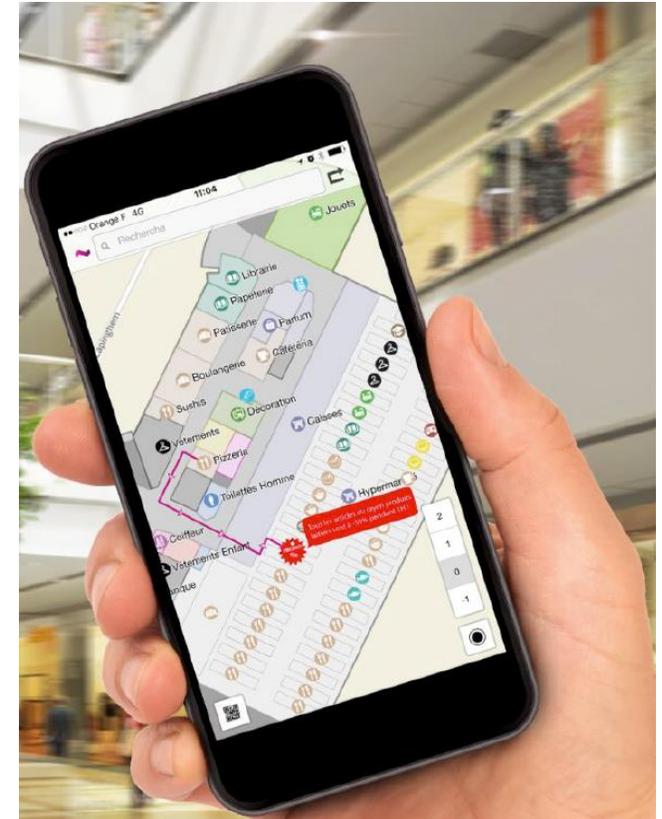
2020: Global Industry, Slingshot



Business Cases

Contactless  
situation

STOP  
COVID



STIMSHOP  
Mobile interactions and data transfer

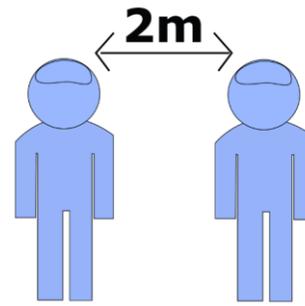
STIMSHOP  
Mobile interactions and data transfer

# Business Cases

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Help to respect physical distance in all circumstances.

- The SECUMETER badge flashes and vibrates and alerts when the distance of 2 meters is not respected.
- Train and secure workers for an everyday watchfulness.



# SECUMETER



# Business Cases

## Check-in

### Electronic signing by ultrasound

- Instead of signing a list, the presence is certified by “earing” the ultrasound signature of the place via the app.
- Ultrasound matches the place.
- Nothing else to do when the app is downloaded.



# Business Cases

## Access control



### Authentication by ultrasound

- Send access rights via the app
- Contactless access control up to 3m with a smartphone, without connection
- Monitor the route on the back office



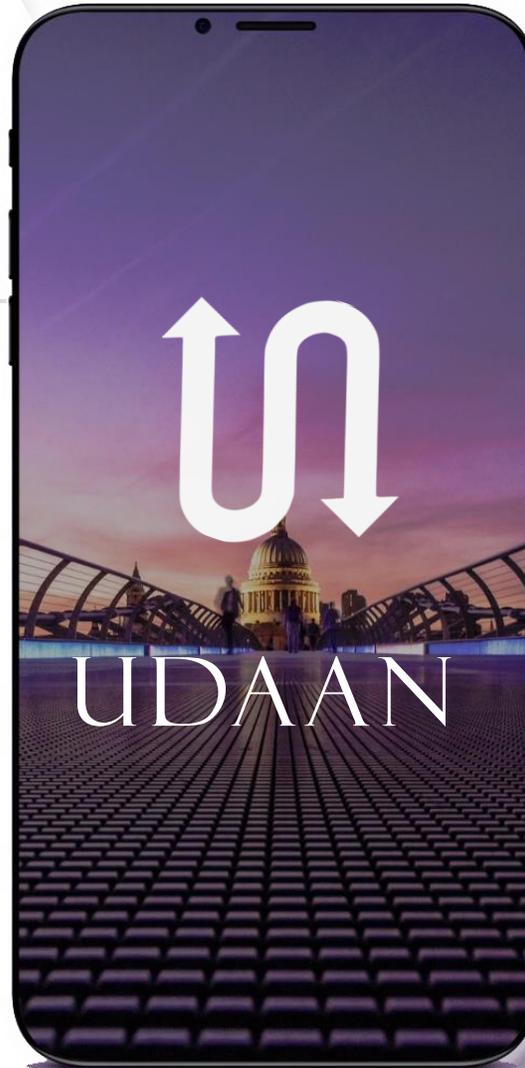


# Business Cases

## Monitor elevator

### Contactless Call for a lift by ultrasound

- Ask for an elevator on the app, without touching the button
- Choose the floor on the app

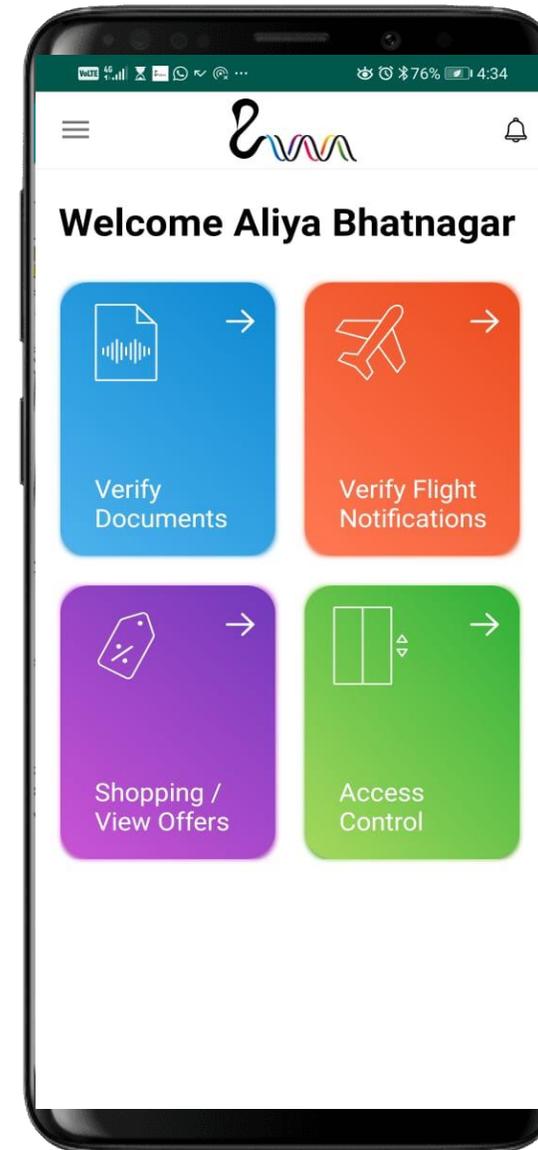


# Business Cases

## Frictionless Smart Terminal

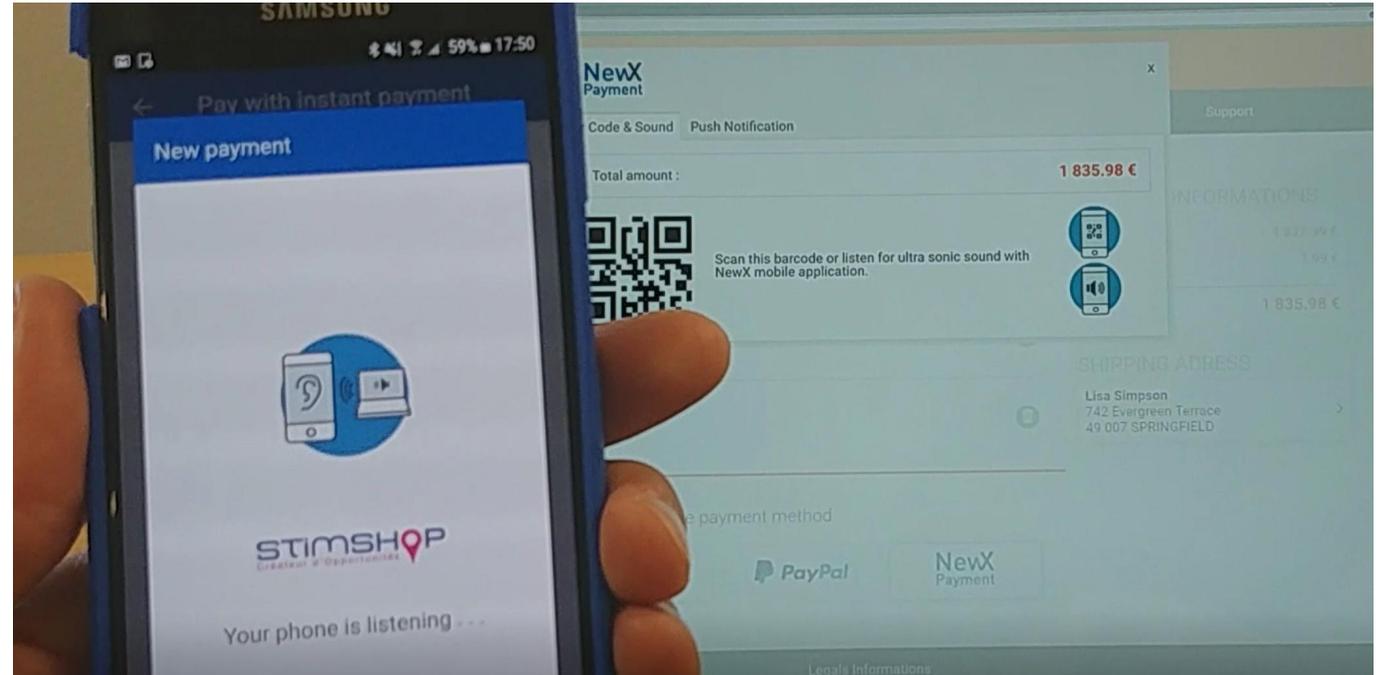
### Airport Passenger journey via ultrasound

- Remote Control of documents (Id, ticket)
- Send fly notifications via sound system
- Duty free Incentive
- Airlines companies Loyalty program



Business Cases

Mobile payment  
by ultrasound



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# Business Cases

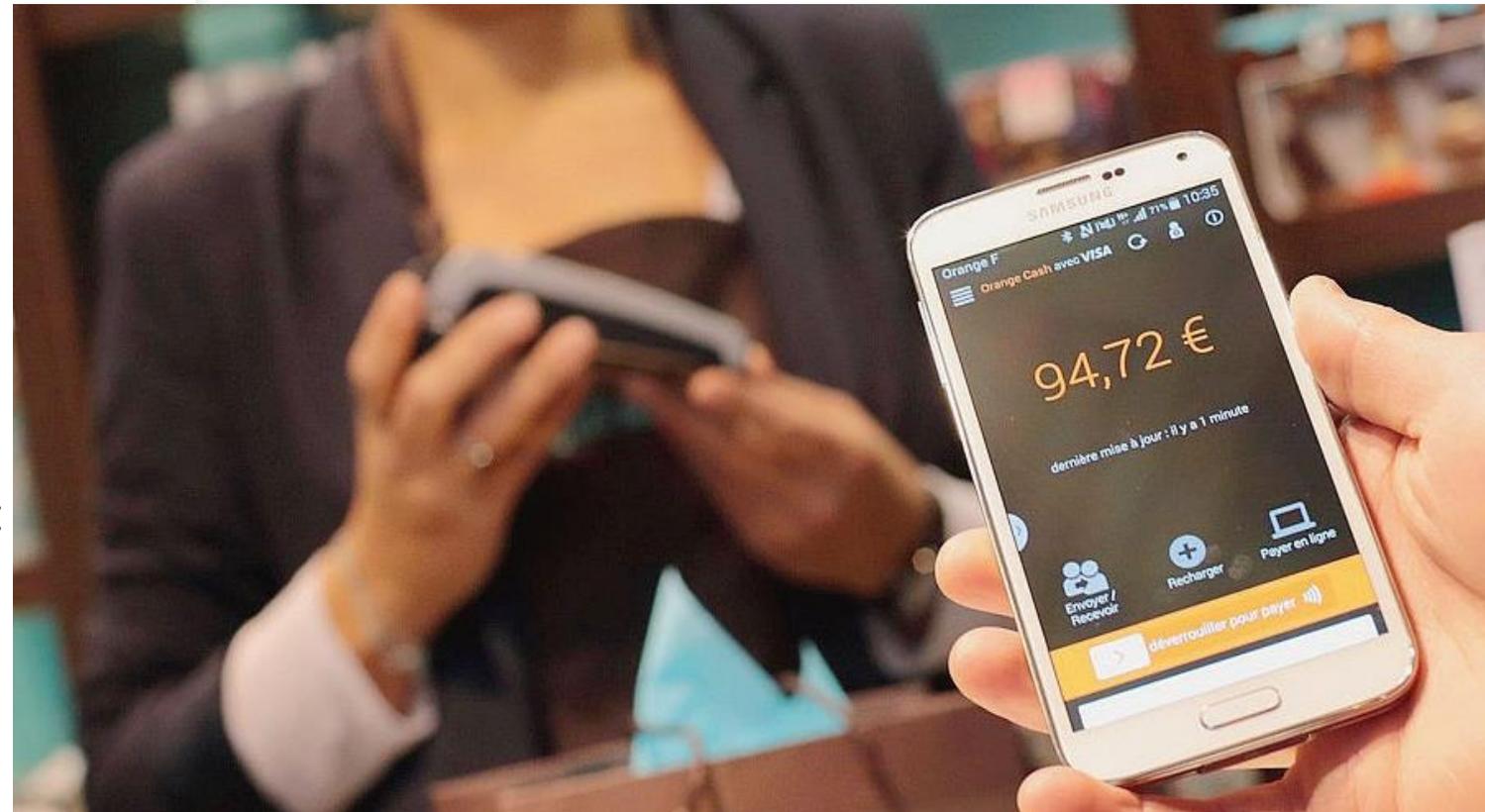
## Payment assistance for blind people



**worldline**  
e-payment services

### Help blind people to pay in complete autonomy

- What is displayed on the payment terminal is sent by ultrasound.
- The app will dictate the instructions for the blind customer to make the payment by himself, in total discretion



# Business Cases

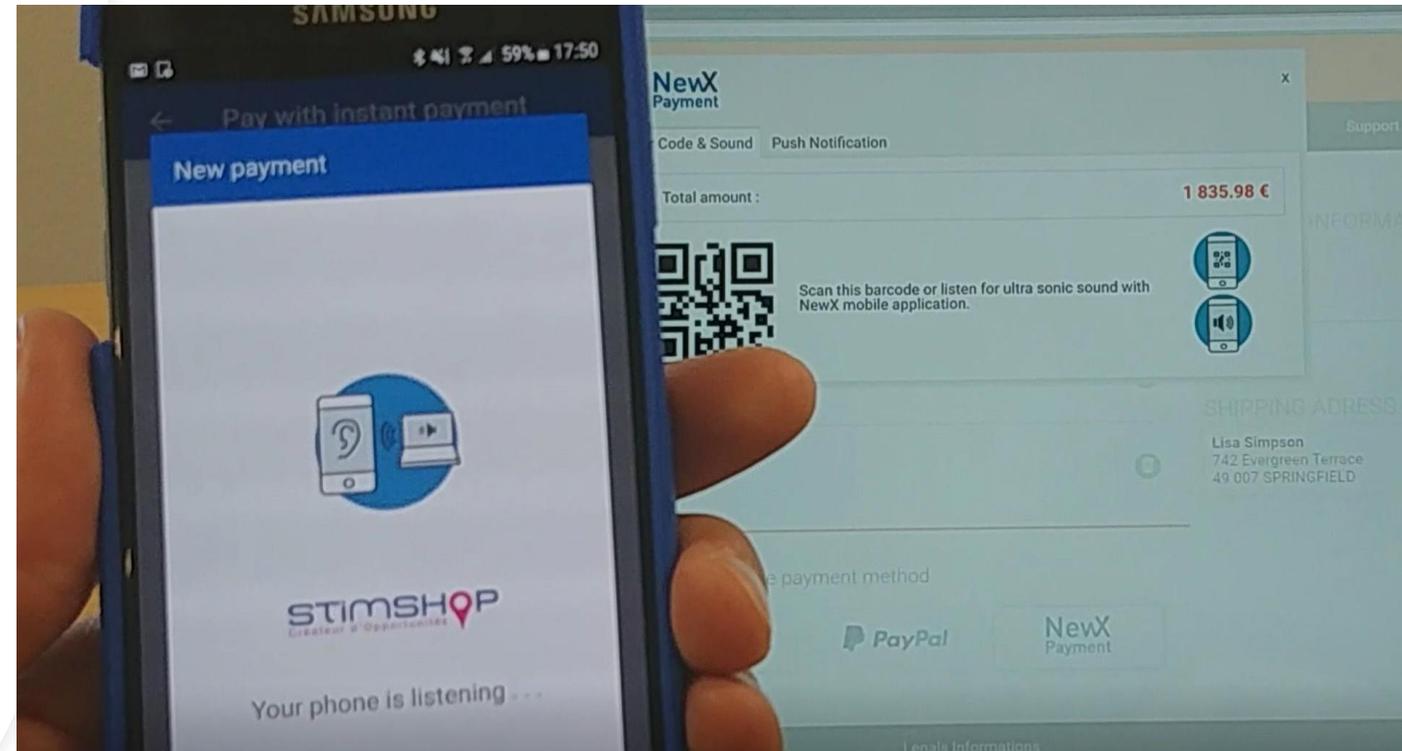
## Payment validation



**worldline**  
e-payment services

### For a fluid and secure payment validation

- The device send the bill locally by ultrasound.
- The bank app display the amount on the smartphone for acceptance.
- Then send the validation code of the payment by ultrasound.
- The device answer to finish the transaction.
- All this in 10 seconds, without connection.



## Business Cases

Data transfer  
in constrained  
environments

**Explosive environments**  
**Electro sensitive areas**  
**Humid environments**  
**High security issues**



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Mobile interactions and data transfer

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Mobile interactions and data transfer

# Business Cases

## Data transfer in constrained environments

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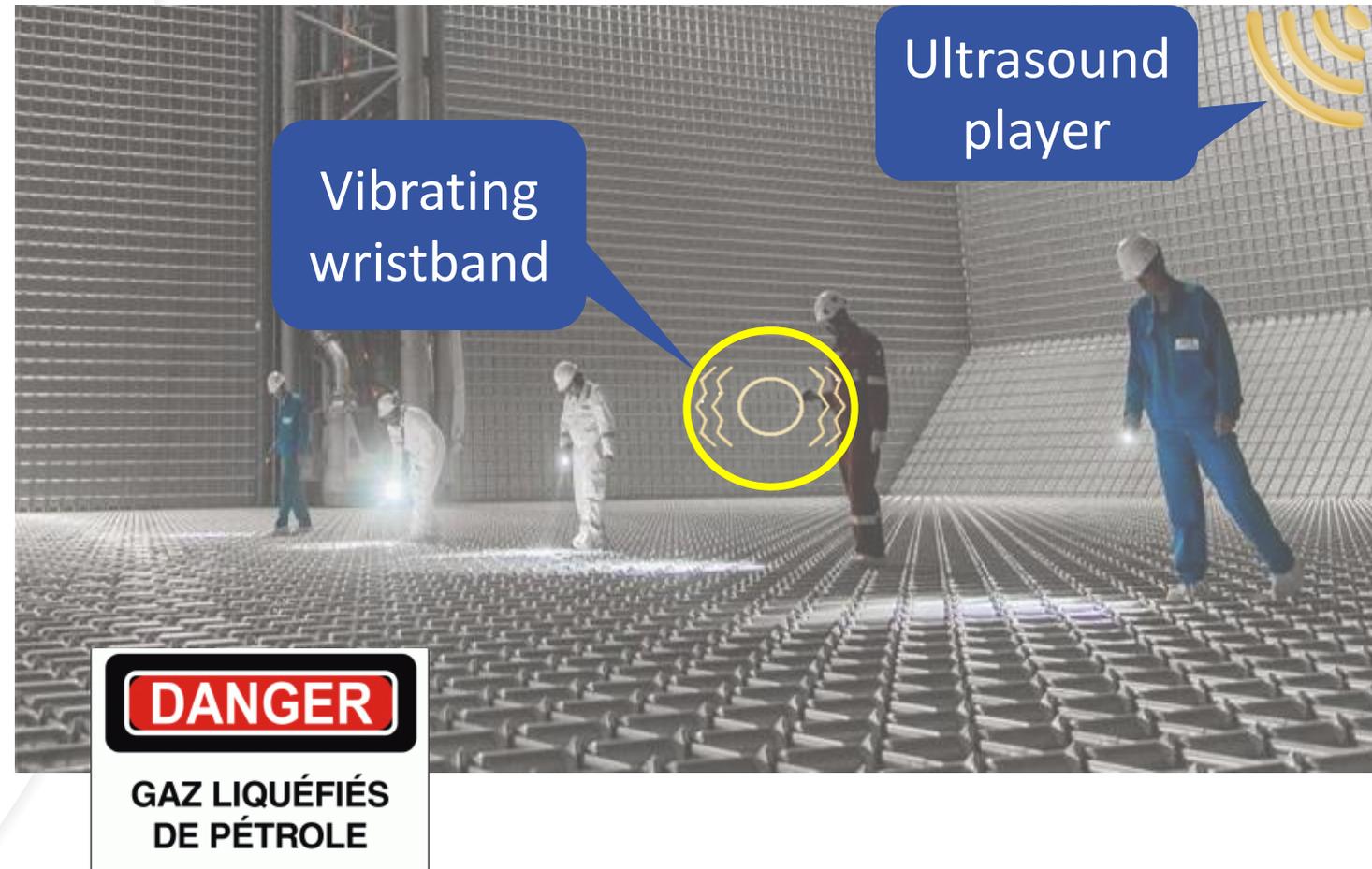
# Business Cases

## Secure isolated workers



### Transfer alerts without explosion risk

- Even in a Faraday cage, the ultrasound will alert workers of a danger.
- Works with any existing device with a speaker and a microphone.



# Business Cases

## Geolocate workers

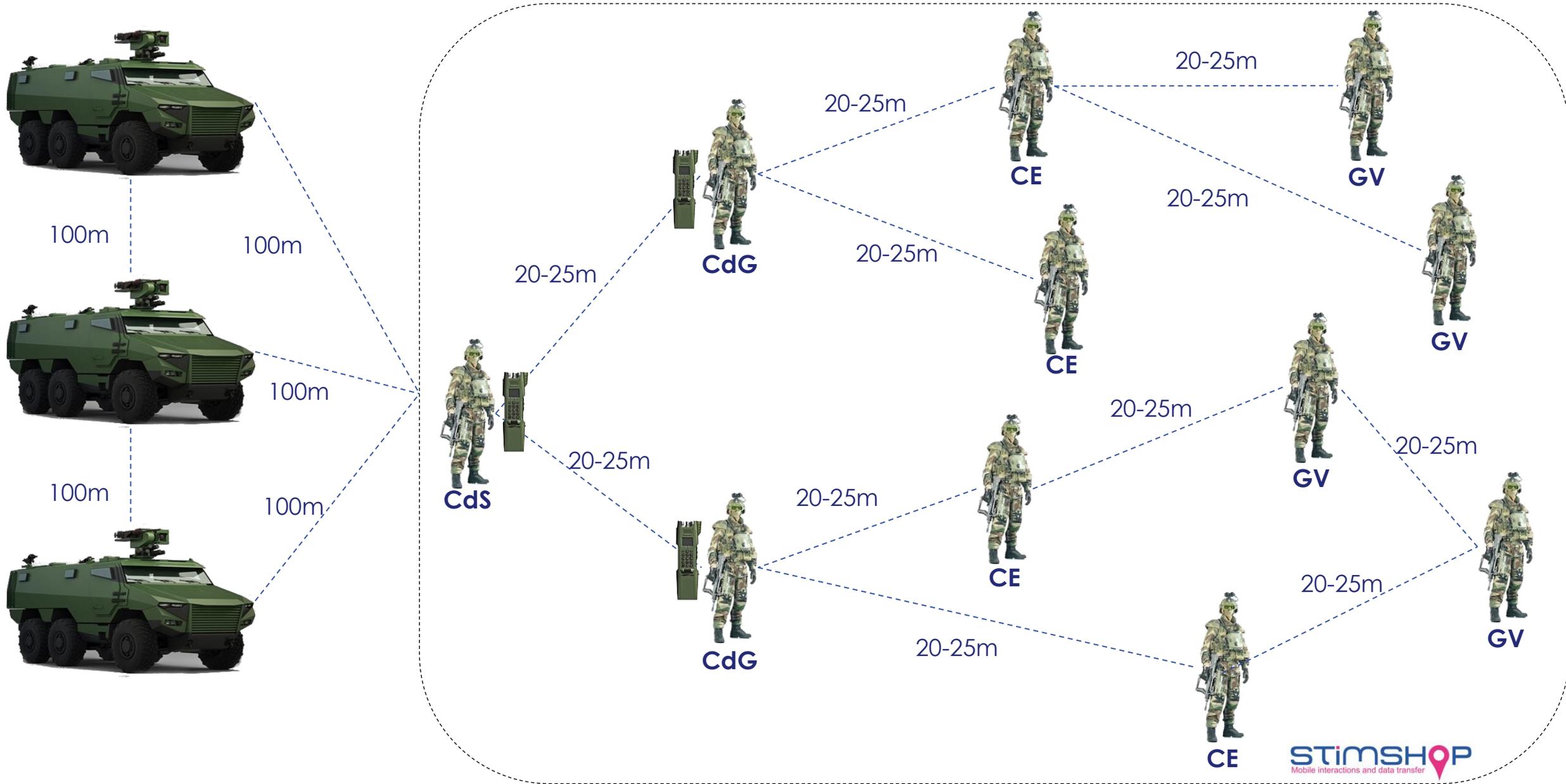


### Secure submarine maintenance operations

- Send workers positions in the submarine by ultrasound, even in explosive areas
- Send alerts by ultrasound all over the site
- Manage access control in different areas of the submarine



# Send instructions in a « Radio silence » mode with Wi-Ur Mesh



# Business Cases

## ultrasound virtual markup

### Mark dangerous zones for personal alerts

- Ultrasound signals are emitted when there is a danger.
- The badge will alert the worker for a very relevant personal alert that will be more taken into account.



# Business Cases

## Tank thickness measure



### Permanent ultrasound thickness measure

- Ask for the thickness measure remotely via an ultrasound IoT instead of having to locally intervene
- Will work ten years thanks to an ultrasound ignition system



## Business Cases

# Optimize helicopters maintenance



### Receive sensors measures under any circumstances

- Send the sensors' measures by ultrasound
- Will work in explosive, metallic and electro sensitive environments.



Business Cases

Authentication and  
measure for  
automotive



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## Business Cases

# Ultrasound key via smartphone

**Unlock the vehicle by an ultrasound key broadcasted via the speakers of the smartphone**

- More secure than radio waves
- Possibility of temporary sharing rights for car sharing



# Business Cases

## Ultrasound debitmeter

**Non-intrusive ultrasound system to measure the exhaust flow.**

- Can be easily installed on aftermarket vehicles.
- Permanent installation for measures on demand.
- Monitoring for car maintenance.



**faurecia**

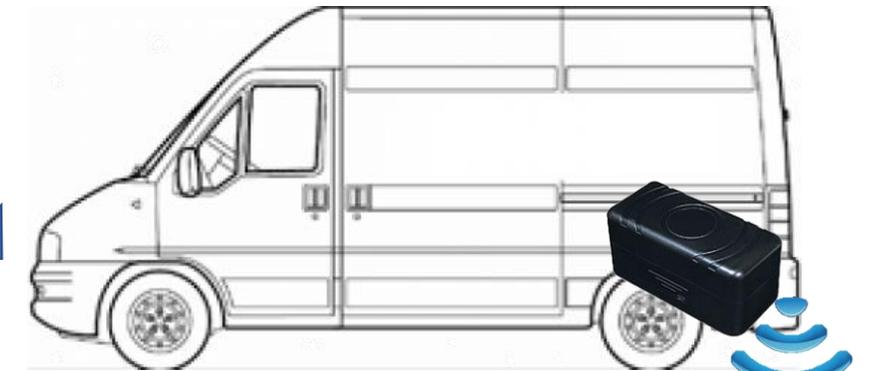
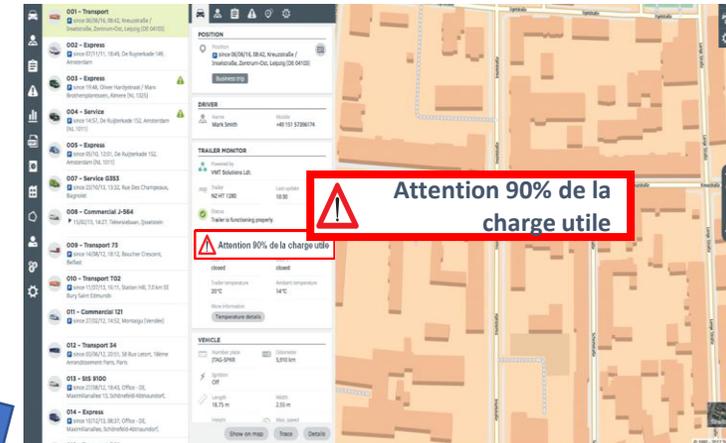


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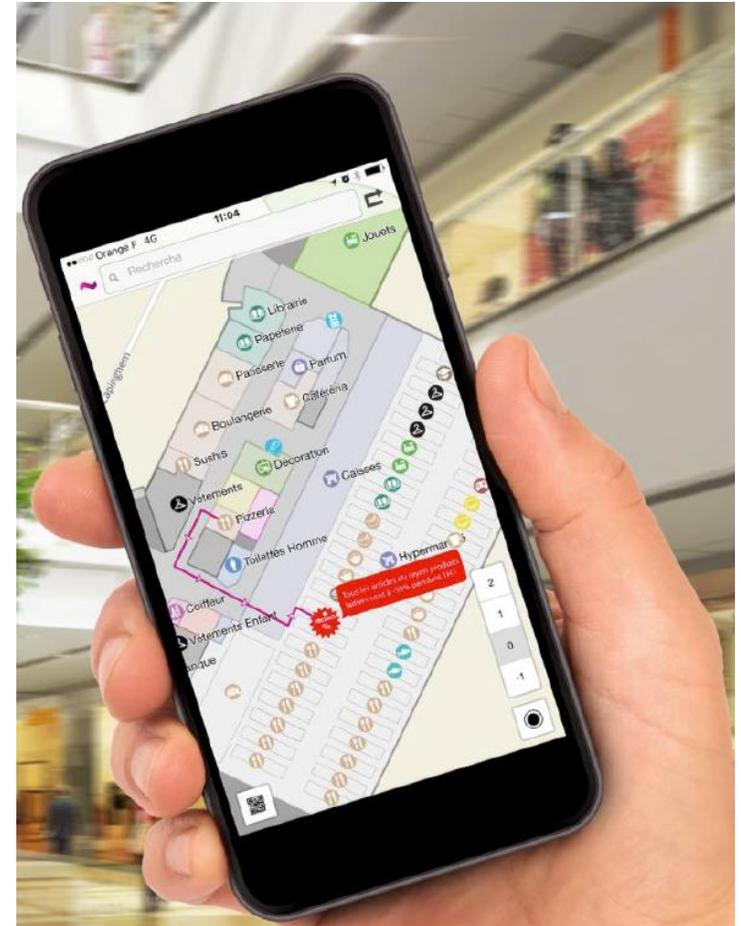


**NSWEIGH**

Business Cases

Geolocation  
by ultrasound

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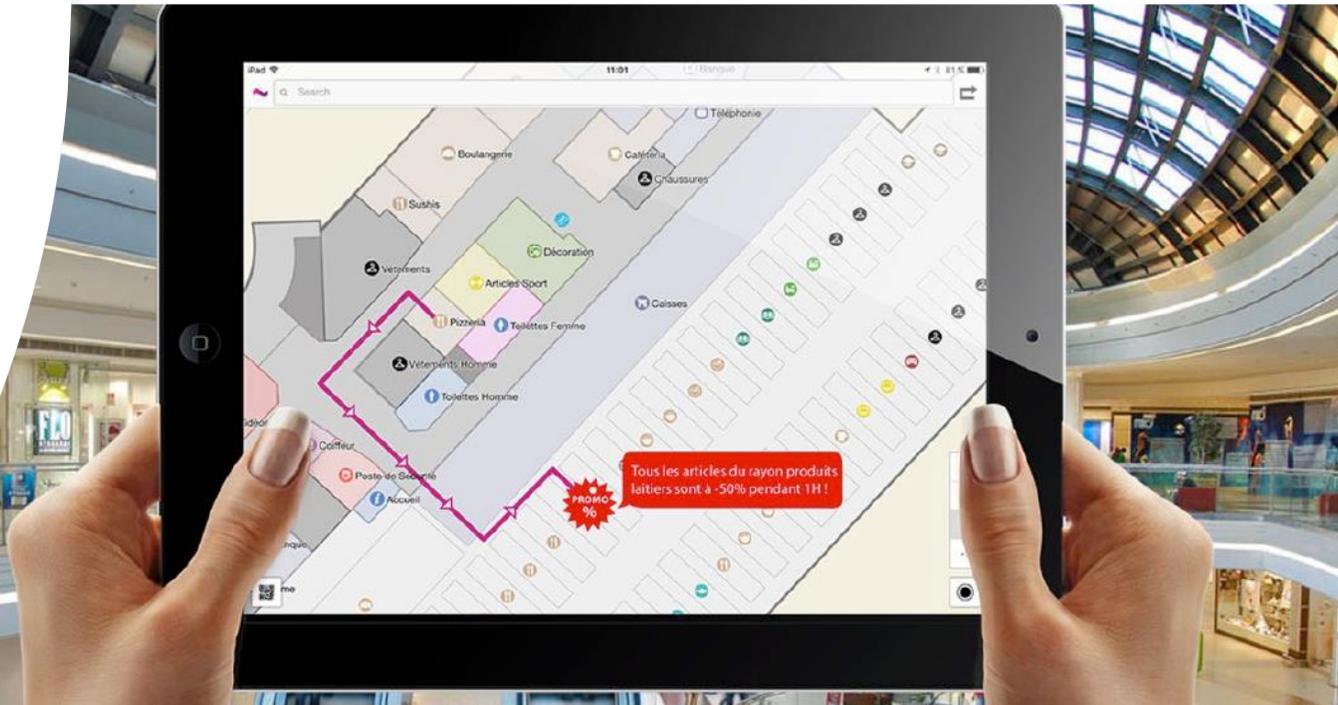
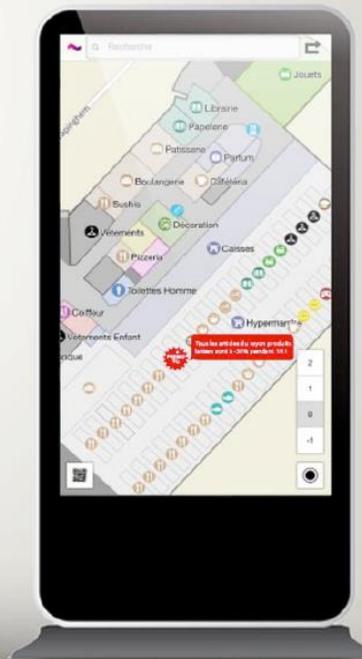
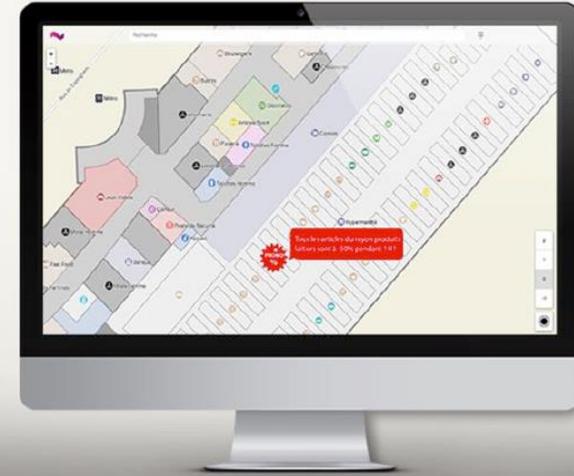


**STIMSHOP**  
Mobile interactions and data transfer

# Easy to use

## Ultrasonic GPS indoor without radio waves

- STIMSHOP SDK is integrated into any iOS and android app.
- Our ultrasound signals are broadcasted through any speaker (sound system, radio instore, screens, tablets) to create interaction zones matching the place.
- Visitors' smartphones « hear » the signals and react according the app rules (contextualized message, geolocation, open a service...).



# Easy to deploy

- Play our “**ucheck.in**” signals through an existing sound system
- Install our ultrasonic “**HBeacon**” to create points of interest
- Manage contextualized mobile interactions for instant messages, security alerts, announcement translation...
- Wi-Ultrasound code data and transfer it in any circumstance: wet environment, explosive, metallic, electro sensitive, ultra secured.



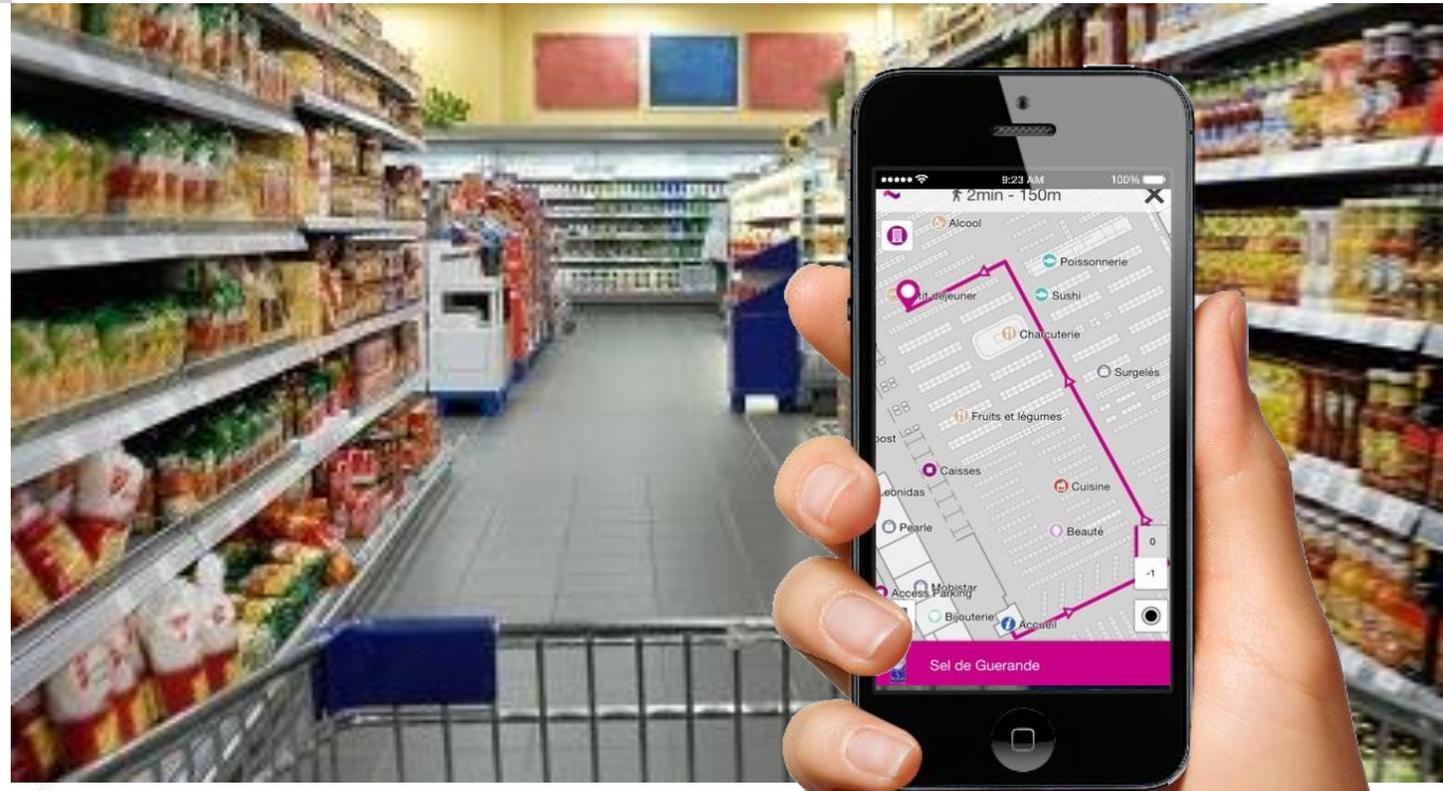
# Business Cases

## Guiding



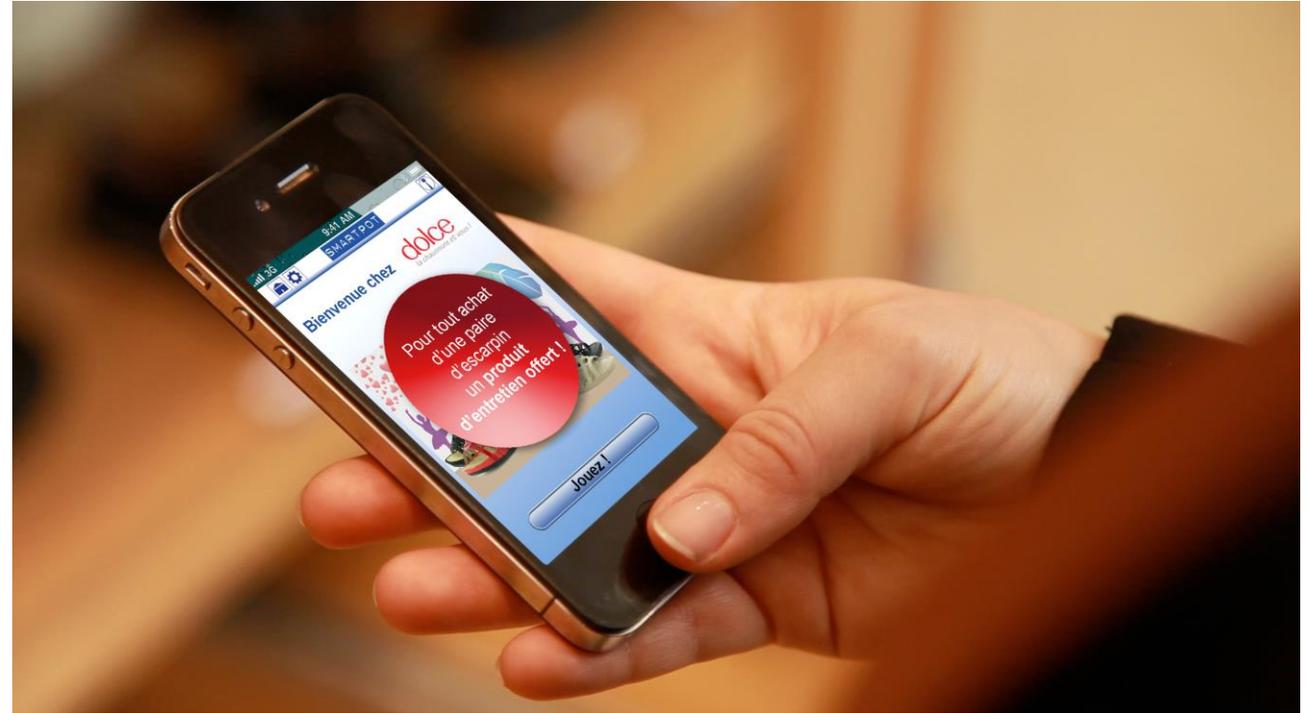
### Be guided to products

- Plan of the shop is published on Mapwize
- HBeacons play ultrasound signals to create interactive zones in the alleys.
- Service is integrated in the shop app that will determine the customer position in the shop and calculate the way to a product.



Business Cases

Proximity Marketing  
for retail and  
entertainment



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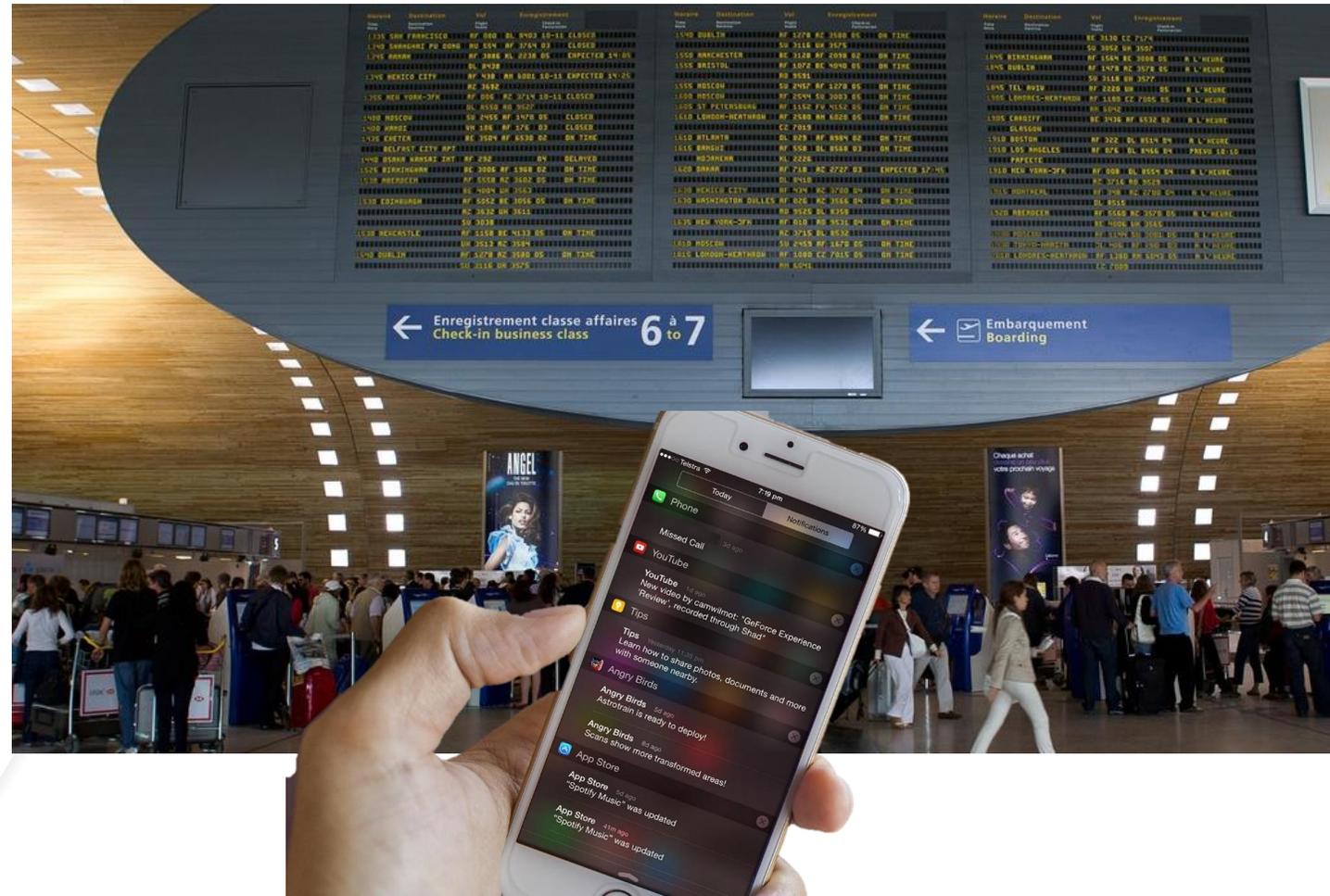
# Business Cases

## Accessibility



### Service for the hearing impaired

- Ucheck.in SDK is embedded in Paris Aéroport app
- Audio announcements are tagged with ucheck.in signals
- Broadcasted through existing sonorization, ucheck.in signals write down local messages in the app



# Business Cases

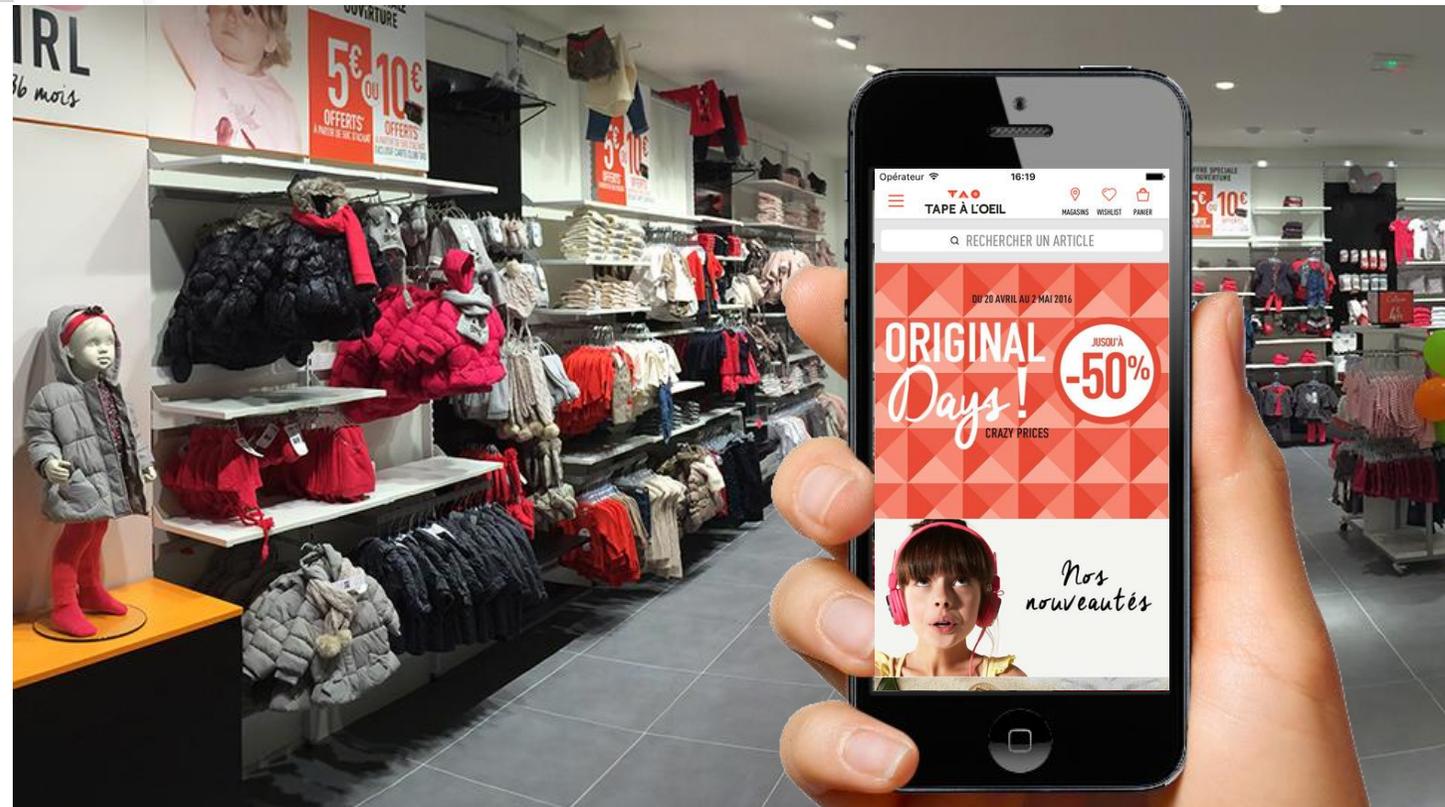
## Loyalty



tape à l'œil...

**Associate geolocation context with customer knowledge for a personalized journey**

- HBeacons create interactive zones to localize the customer in the shop.
- The app is linked with the loyalty program.
- Messages will pop up only if the message is relevant for this customer.
- Physical cookies are sent to the loyalty program to enrich customer knowledge.



# Business Cases

## Wait marketing

**BRICO** MARCHÉ  
Pouvoir tout faire **Moins cher**

Keep on shopping instead of waiting to be served

- Service booth is equipped with a tablet to send queue number. The number is broadcasted by ultrasound through the sonorization.
- Customer enter in number in the shop app and keep on shopping.
- He is alerted when it's time to be served.



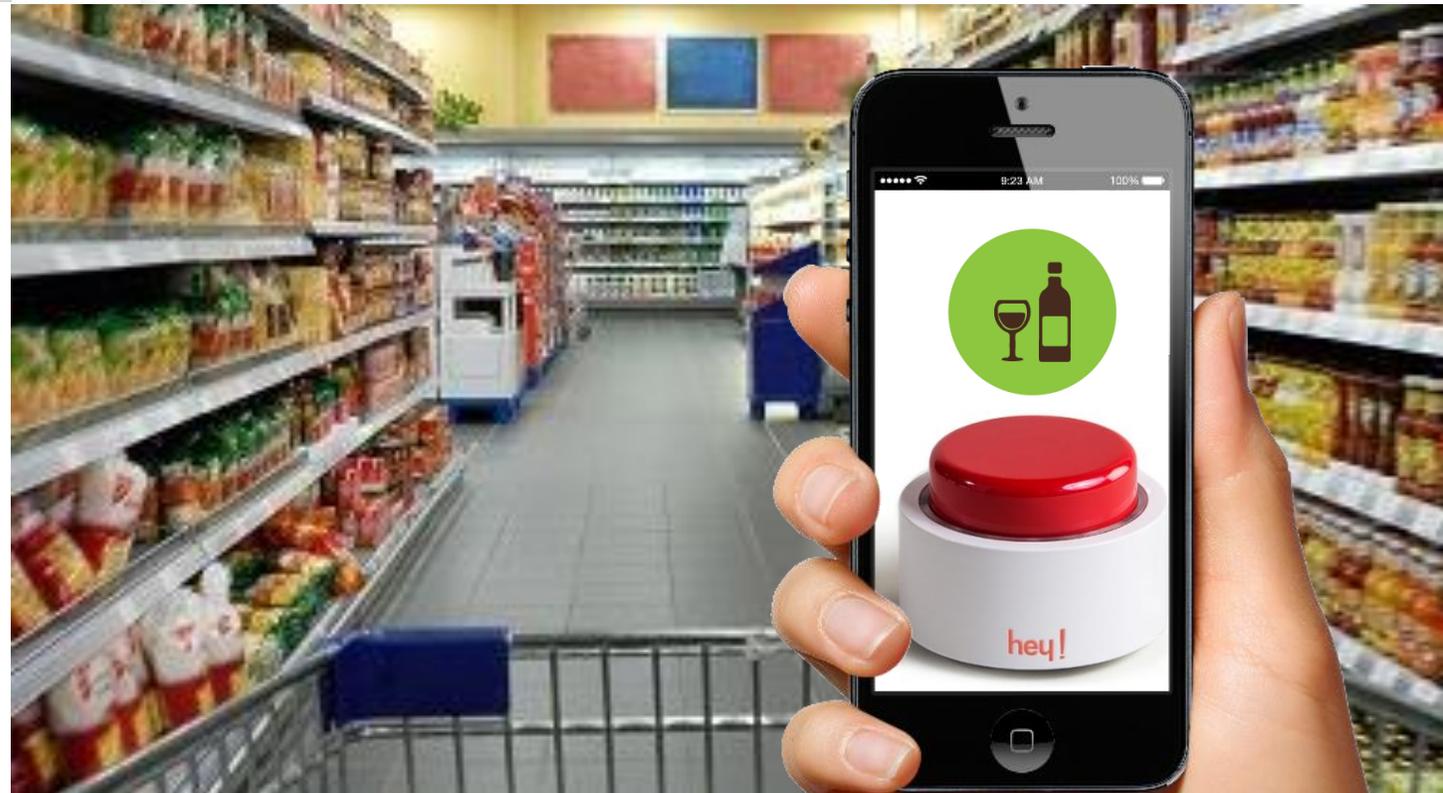
# Business Case

## Help call



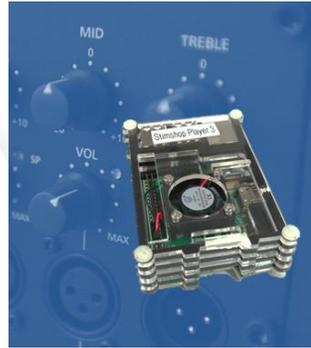
### Be advised when needed

- HBeacons match the alleys.
- In the shop app, customer asks for assistance.
- The app geolocalizes him and send a message to the appropriate seller.



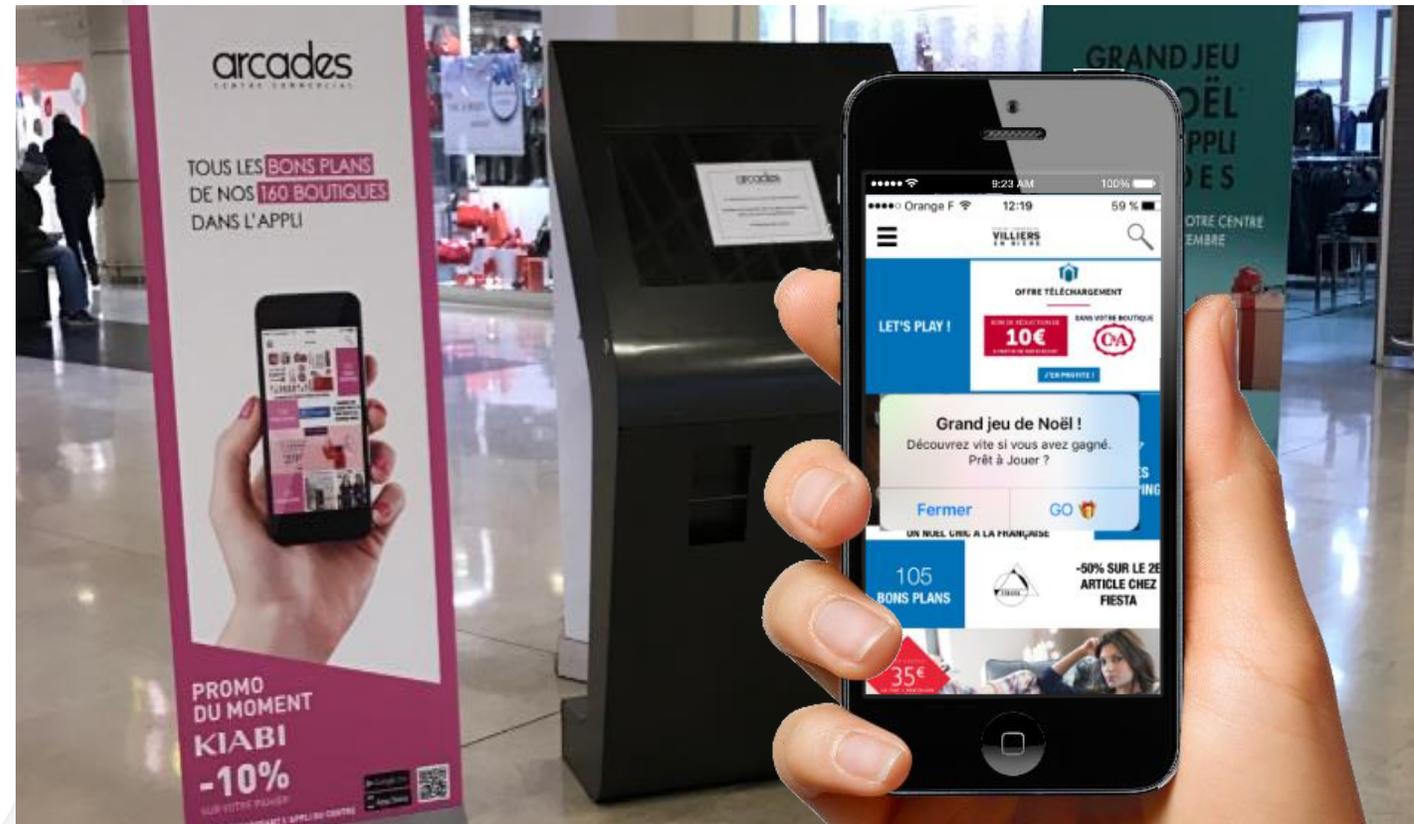
# Business Cases

## Gaming



### Propose a fun experience

- Our UMIX box mixes ultrasound signals with existing music flow of the mall.
- Customers receive alerts in the mall's app while they are shopping in the mall.
- Instant win, withdrawal, make all smartphone flash together, drive traffic to a specific shop...



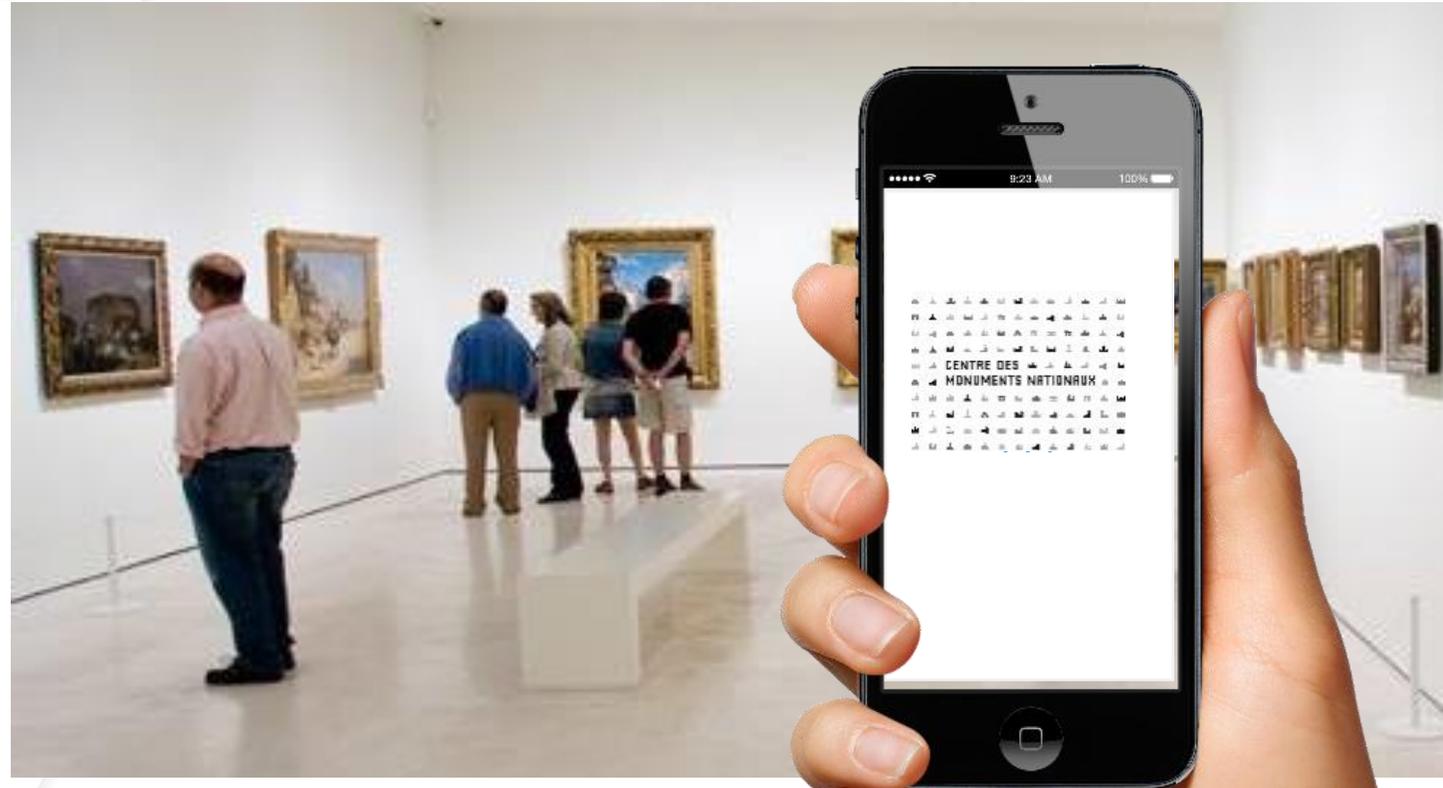
# Business Cases

## Interactive visit



**Information is shown on the smartphone when approaching a point of interest**

- Each point of interest is equipped with a HBeacon.
- Like an audio guide, the museum's app broadcasts information linked with the ultrasound signals on the smartphone.
- No need to borrow a hardware or type a number.



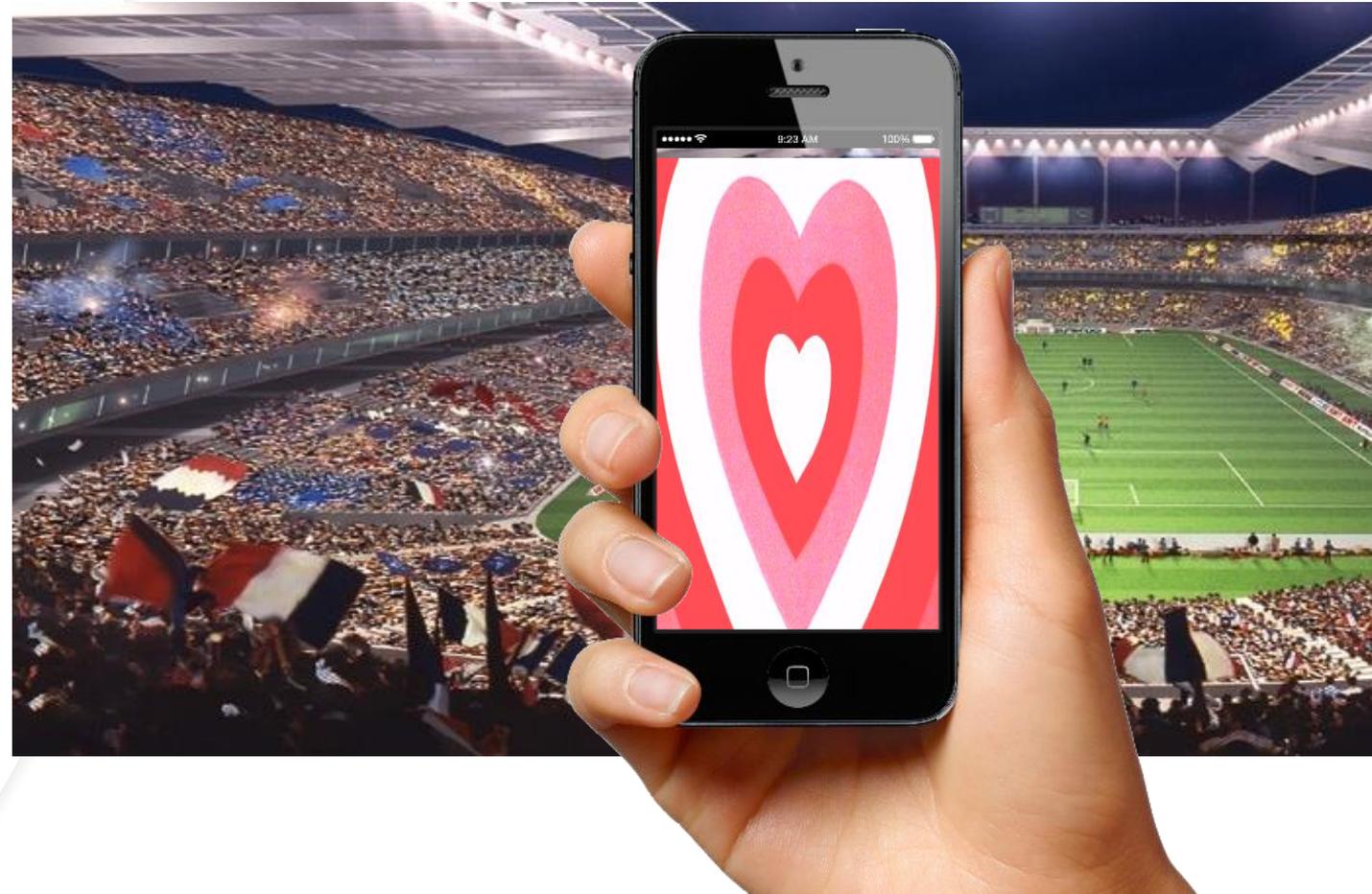
# Business Cases

## Smartphones pairing



### Synchronize smartphones for an unforgettable event experience

- Mix ultrasound signals in the sonorization.
- The fan app will display color show for a wide Tifo
- All the fan smartphones will start flashing together, for a collective experience.



*“If you want new results,  
stop doing the same things.”*

Albert EINSTEIN



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