INDOOR LOCALIZATION TECHNOLOGY & EXPERTISE

POSITIONING ➤ TRACKING ➤ NAVIGATION

nextome

Nextome is a software and IoT Technology company leader in indoor location platforms and Real Time Location Systems

Who we are, brief history

Nextome Srl established December, 4th 2013 is an innovative SME under Italian Law (D.L. 3/2015). The company has followed a typical technology startup three phases development path moving from problem / solution fit to product / market fit and is now starting its growth phase.

The company has followed from the beginning a "global born" approach; in 2013 during the early research phase before establishing the company the team worked on extensive international academic and literature research to understand the **state of the art** of approaches, methodologies and technologies used by research and industry to address **indoor positioning and navigation systems (IPNS) challenges**. Already in April 2014 the team enrolled in **Microsoft's Research** IPSN 2014 Competition in Berlin, and later in the year the team was in California on a benchmarking and instruction trip.

The global positioning of the company remained a must of the company in the following two years of development being finalist and winner in several international innovation competitions as **IBM's Global Innovators** in Barcelona and **Young ICT Leaders in Busan (Korea)**, followed by specialized international industry analysts (as **Grizzly Analytics**) and receiving request from interest and technology test by hundreds including large scale international organizations, and completing international patents.

Nextome "going out of the office/lab" has developed its skills, technologies and experiences trough clients use cases

Nov 2013

Demo installation at the **Diocesan Museum of Bisceglie (Italy)**

Apr 2014

First installation in the Puglia Region pavilion on the occasion of **Vinitaly - Verona Fiere (Italy)**

Oct 2014

Installation at the **SFAE (San Francisco Art Exchange) in San Francisco (USA)**

May 2015

People Tracking - supply for **FCA** (Pomigliano d'Arco, Italy) and **ATAC Rome** (lines A and B) contract managed by **Vodafone.**

Use of **BLE 4.0** sensors with **directional antenna** - handcrafted sensors - **patent filing**

Sep 2013

Evolution of technology and introduction of the **"Intelliwalk" algorithm automatic step recognition** based on artificial intelligence algorithms

Feb 2014

Introduction of **filtering algorithms for noise removal** with the **SVD technique,** elimination of directional antennas (**use of classic beacons**) and elimination of fingerprinting
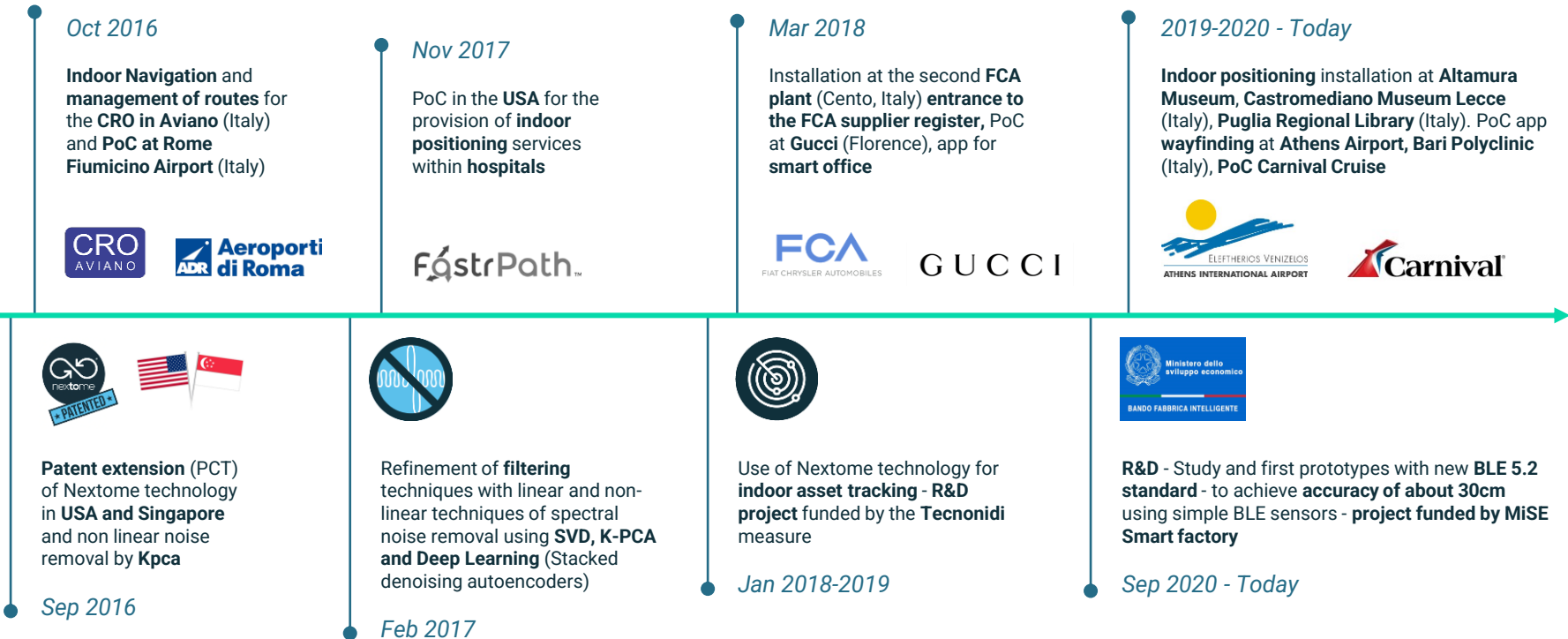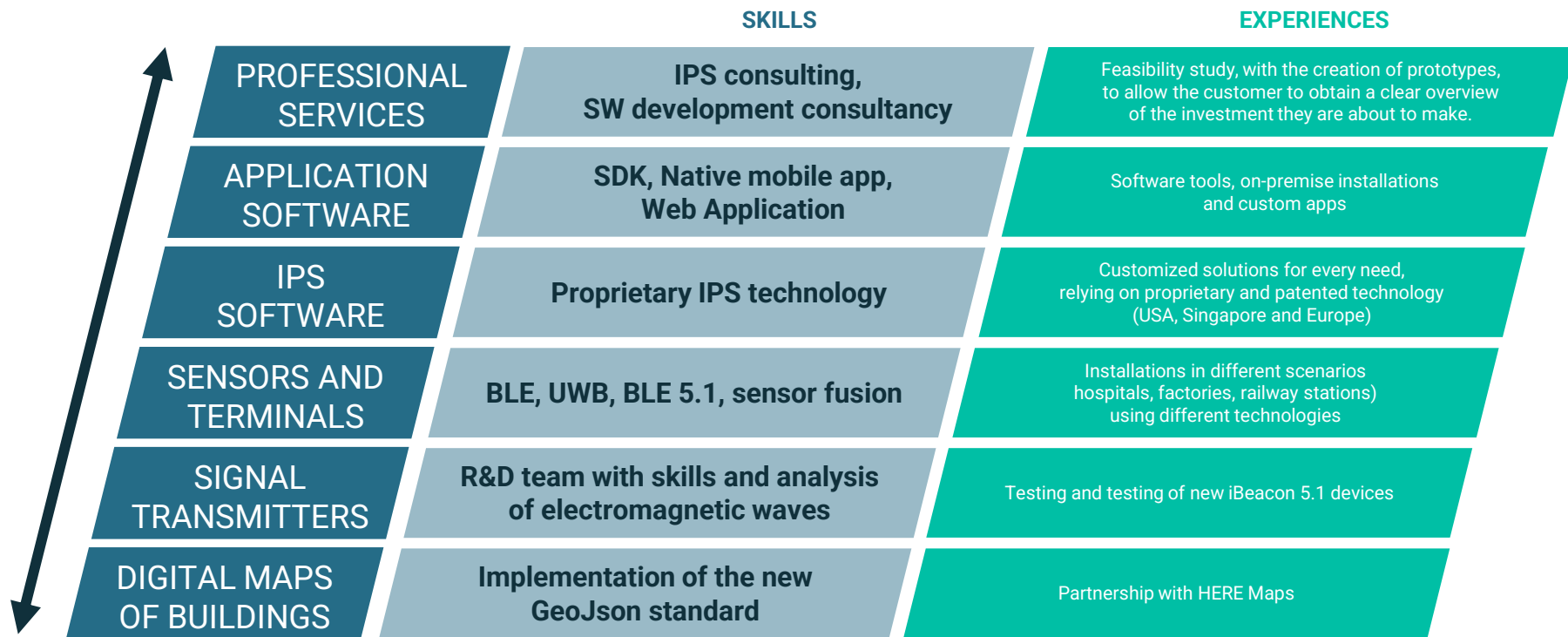
Jun 2014

Development and improvement of the **Nextome CMS** - web portal for acquiring maps, routes and events. Introduction of **particle filtering** and improvement of the technology.

Jan 2015

Nextome journey has been international from day one in terms of scientific research benchmark and customers standing

Oct 2016

Indoor Navigation and **management of routes** for the **CRO in Aviano** (Italy) and **PoC at Rome Fiumicino Airport** (Italy)

CRO AVIANO — ADR Aeroporti di Roma

Nov 2017

PoC in the **USA** for the provision of **indoor positioning** services within **hospitals**

FástrPath™

Mar 2018

Installation at the second **FCA plant** (Cento, Italy) **entrance to the FCA supplier register,** PoC at **Gucci** (Florence), app for **smart office**

FCA FIAT CHRYSLER AUTOMOBILES — GUCCI

2019-2020 - Today

Indoor positioning installation at **Altamura Museum, Castromediano Museum Lecce** (Italy), **Puglia Regional Library** (Italy). PoC app **wayfinding** at **Athens Airport, Bari Polyclinic** (Italy), **PoC Carnival Cruise**

ELEFTHERIOS VENIZELOS ATHENS INTERNATIONAL AIRPORT — Carnival

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Patent extension (PCT) of Nextome technology in **USA and Singapore** and non linear noise removal by **Kpca**

Sep 2016

Refinement of **filtering** techniques with linear and non-linear techniques of spectral noise removal using **SVD, K-PCA and Deep Learning** (Stacked denoising autoencoders)

Feb 2017

Use of Nextome technology for **indoor asset tracking - R&D project** funded by the **Tecnonidi** measure

Jan 2018-2019

Ministero dello sviluppo economico
BANDO FABBRICA INTELLIGENTE

R&D - Study and first prototypes with new **BLE 5.2 standard** - to achieve **accuracy of about 30cm** using simple BLE sensors - **project funded by MiSE Smart factory**

Sep 2020 - Today

Nextome's team has gained in-depth and consolidated skills and experience for indoor localization

	SKILLS	EXPERIENCES
PROFESSIONAL SERVICES	IPS consulting, SW development consultancy	Feasibility study, with the creation of prototypes, to allow the customer to obtain a clear overview of the investment they are about to make.
APPLICATION SOFTWARE	SDK, Native mobile app, Web Application	Software tools, on-premise installations and custom apps
IPS SOFTWARE	Proprietary IPS technology	Customized solutions for every need, relying on proprietary and patented technology (USA, Singapore and Europe)
SENSORS AND TERMINALS	BLE, UWB, BLE 5.1, sensor fusion	Installations in different scenarios hospitals, factories, railway stations) using different technologies
SIGNAL TRANSMITTERS	R&D team with skills and analysis of electromagnetic waves	Testing and testing of new iBeacon 5.1 devices
DIGITAL MAPS OF BUILDINGS	Implementation of the new GeoJson standard	Partnership with HERE Maps

The founder's team technical and business knowledge, skills and experience received international recognition

VINCENZO DENTAMARO

PhD in Pattern Recognition; Degree in Computer Science from the University of Bari (Italy), MSCS A.I., Georgia Tech (USA).

Work experience in **IBM** (Rome Tivoli Lab, Italy) where he invented the MxBridge (software used in the Burj Tower); Software engineer at **Johnson Controls Inc.**

Vincenzo won **1st prize as Busan Smart City Innovator** in South Korea.

DOMENICO COLUCCI

Executive MBA and Degree in Computer Science at the University of Bari (Italy).

Domenico was named **best Young Web Entrepreneur** in 2015 by the **European Commission**. Domenico won the prestigious "**Innovators Under 35**" award of the year from the **MIT Technology Review magazine.**

Forbes places him among the **best Under 30,** Manufacturing & Industry category.

GIANGIUSEPPE TATEO

Degree in Computer Science from the University of Bari (Italy).

Selected for the **Erasmus IP** (Intensive Program) SURGEOM 37 students from 6 European countries.

Forbes places him among the **best Under 30**, Manufacturing & Industry category.

MARCO BICOCCHI PICHI

Degree in Economics and Commerce University of Turin (Italy) and **MBA** Nyenrode (NL)**.**

> 30 Y.rs **International Business Experience** (Bull, EDS now HP, E&Y, Booz Allen Hamilton, A.T. Kearney). **2nd President of the Italia Startup Association** (2015/18).

Italian Business Angel of the Year in 2014. **Professional Excellence Award** Booz Allen Hamilton 2004.

Nextome's *thought leadership* has received numerous international awards since its foundation

Nov 2014

WebSummit 2014 in Dublin as **The Most Awesome Alpha Startup of the Year**

July 2015

Nextome presented its technology at The **Place Conference 2015 in NY** and **Hello Tomorrow! in Paris**

Sep 2016

First prize of the Smart City Innovators Award of Busan Metropolitan City from Young ICT Leader's forum

Jun 2017

Finalist MassChallenge accelerator program (Switzerland)

FINALIST

Oct 2017

Nextome technology, included in the **5G network infrastructure experiment**. Main partner: TIM, Fastweb and Huawei

Nov 2017

Seal of Excellence (phase II) - H2020 framework by European Commission

Mar 2018

Nextome's team selected by Polytechnic of Bari as an **expert for technologies in Industry 4.0**

Feb 2020

Domenico Colucci and Giangiuseppe Tateo, co-founders of NEXTOME, have been selected as **in the top 30 under 30 by Forbes**

Microsoft's Research IPSN 2014 competition in Berlin

Apr 2014

Nextome was selected among the first four startup in the **IBM Smart Camp competition** in 2015

Jun 2015

Finalist of the "Global Mobile Innovators tournament" at Mobile World Congress 2016

Feb 2016

Nextome was selected within the **GTEC lab space** - Berlin (DE)

Jan 2017

Award for Best Growth organized by Euro-Asia Economic Forum and Polytechnic of Milan - Xi' An (China)

Sep 2017

Best solution for Cybersecurity category by Startup Europe Award and European Commission

Nov 2017

Nextome selected to participate in the world's largest consumer technology trade show - **CES 2018 Las Vegas, USA**

Jan 2018

Finalist GALILEO 5G IoT Challenge by AZO Space and ESA

Nov 2019

We help organizations within different industries to enhance their services and streamline their processes by **localizing, guiding** and **tracking users and assets** with a simple to install, **ready-to-use and cost-effective solution**.

What we do, our solutions for different industries

Manufacturing & Industry 4.0

Smart Building & Office

Retail & Hospitality

Healthcare

NAVIGATION

POSITIONING

ASSET TRACKING

Smart city
(Station, Metro Station, Airport, Security services)

Manufacturing and Industry 4.0
Improve productivity and working conditions

The manufacturing industry is increasingly facing **unique challenges** to constantly **improve** its **processes**. Companies are looking for tools able to provide **Real time awareness** to support better decision making. **RTLS** are a key technology being leveraged to offer a wider range of location-based solutions that can improve operational **safety** and **efficiency** creating **smart factories.**

▶ Provide a **safe working environment** for your employees and comply with safety regulations

▶ **Improve** and **optimize workflows** with accurate, real-time data

▶ **Reduce operating** and service **costs** by integrating location tracking technology into your production

▶ **Minimize loss** and shrinkage and **o**ptimize usage and space** with real-time asset tracking

▶ **Improve** employee **productivity** with AI integrated smart systems
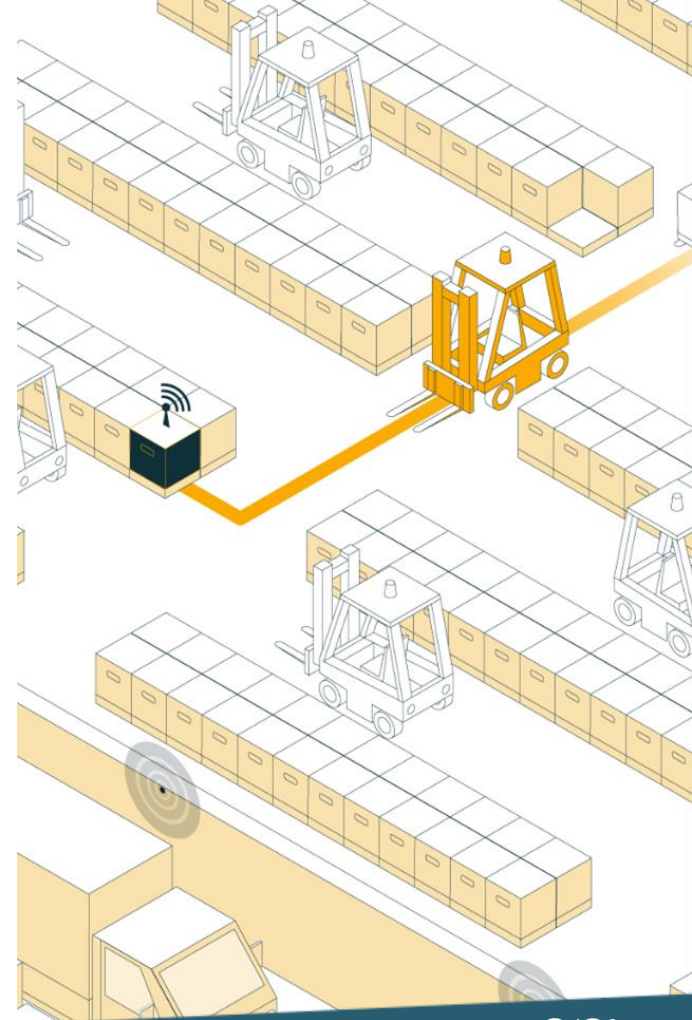
Healthcare
Save lives and money

Hospital and clinics are information-intensive organizations operating in a daily **high emergency** and risky environment now facing an increasing pressure to improve patient's care while achieving operational **efficiency**. **RTLS** Go beyond traditional indoor **wayfinding providing** a data-driven platform able to improve the overall quality of care while streamlining processes and **reducing operating cost**

▶ **Guide patients** to their destination **avoiding** personnel **waste of time**

▶ **Improve care** ensuring the right person and equipment are in the right place at the right time

▶ **Improve** and Keep control over **facility** and equipment **services**

▶ **Control** and **manage** patient **access** to **specific areas**

▶ **Improve** Hygiene and infection control **measures**

Smart Building & Offices
Enable the next generation workplace and office

A building is any structure with a roof and walls. **A Smart building** on the other hand needs to leverage technology to quickly disseminate information between building systems in order **to improve business and the occupant's lives**

RTLS allows to develop an **in-depth understanding** of the **traffic** and ultimately **usage** pattern of the building to **optimize space and flows, increase** the energy **efficiency and security** of the building while **improving visitor satisfaction** and **empowering** employees to **work more effectively**

▶ **Improve safety** and **security** with **access control**, **emergency procedures** automation, safety inspection control and **first responder empowerment**

▶ **Increase energy efficiency** without affecting performances

▶ **Improve** control over **facility management** and **maintenance services**

▶ **Optimize** use of **floor space** and occupants **routes** based on daily patterns

▶ **Empower visitor experience** and **encourage employees cooperation** enabling wayfinding, room booking services
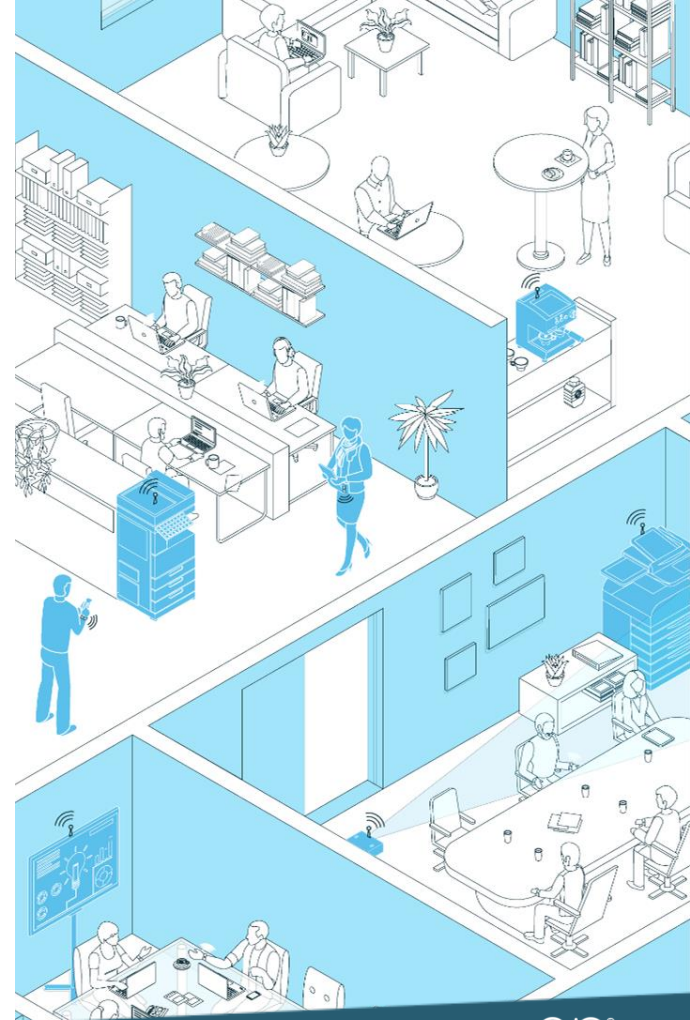
Retail and Hospitality
Delight Customers while improving security and profitability

Shopping centers are facing an **increasing pressure** due to the rise of the **e-commerce**. With the new omnichannel shopping paradigm physical stores are more and more requested to **rethink their shopping experience** with an innovative, integrated digital solutions.

Indoor Location and Navigation Systems works as foundation to provide a **seamless customized** shopping **experience** to customers while providing the business with data and tools to attract more customers, **increase** the space **profitability** and improve the overall **security**

▶ **Enrich Customers experience** with indoor navigation

▶ **Drive** targeted **traffic in-store** with proximity marketing features

▶ **Redesign** and **optimize use of space** based on customers behaviours

▶ **Increase** overall **security** and provide emergency & Evacuation Support

▶ **Manage** and **audit facility** management **services**

Smart city
Shape the smart mobility ecosystem of tomorrow

Growing populations, aging and inefficient transport systems, and rising car ownership in the world's biggest cities are leading to **greater congestion and reduced productivity.**

The goal is to **improve the journey** for passengers**,** while **optimizing** operators and public authorities **resources** in **airports**, **stations** and all along the **inter-modal transportation** chain.

Real Time Location Systems by sustainably managing the movement of people across different modes of transport provide the basis for cities to dramatically **improve the overall travel experience**.
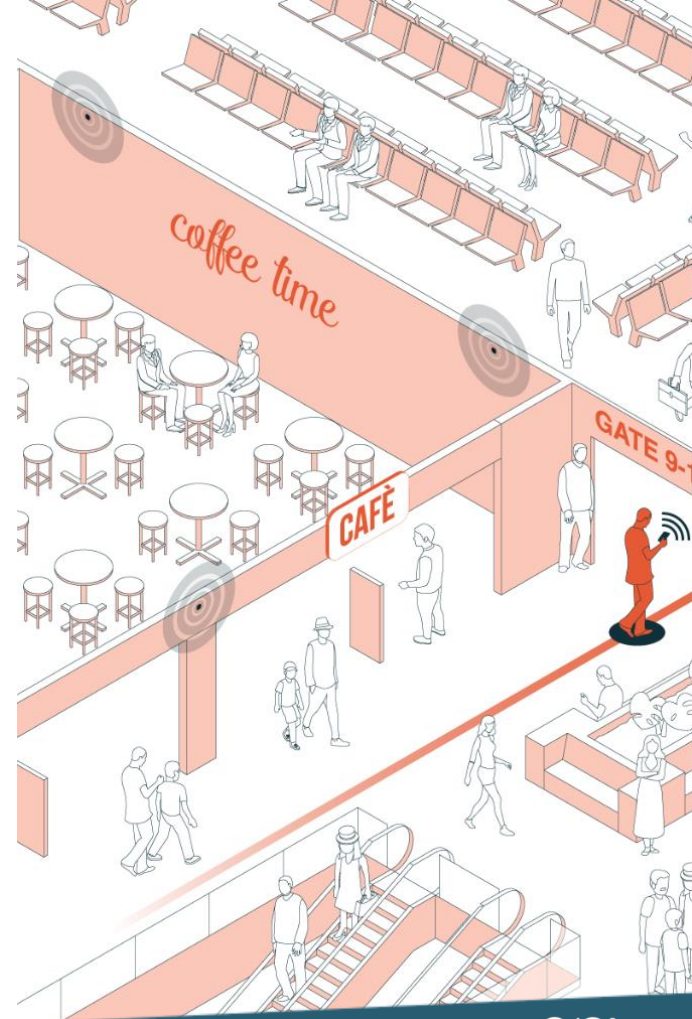
Airports & Stations

Contribute to create more agile, safer and more productive Airports & Stations.

For travellers, **airports** are always synonymous with some form of **stress**. Long queues at security or a last minute gate change, uncertain paths can make an otherwise well planned trip stressful and unpleasant.

Reducing the stress and time travellers spend looking for their gate, **increases** the amount of **time available for shopping and dining** (non-travel revenues that account on average for 40% on airport revenues) with an increased overall travel experience.

▶ **Enhance** travellers **experience** and loyalty by guiding them with seamless wayfinding

▶ **Optimize** passengers and **workforce flows** based on accurate geo data

▶ **Increase** non-travel **revenues** (commercial space profitability)

▶ **Increase** overall level of **security** and support security operators during emergency

▶ **Increase** control over **facility** management **services** and **maintenance**

Railways and Cross-modal Transportation
Meet the challenges of Intelligent/Sustainable Cross-Modal Transportation Systems

RTLS thanks to their ability to collect location based Real-time data are at the **heart** of **Intelligent transport systems** helping operators to better **meet passengers' demand** and better **predict maintenance** and repairs providing a more sustainable and **smoother travel experience**.

▶ **Adjust service** based on **real time demand** (enhance traffic management)

▶ **Enhance security** by real time congestion monitoring

▶ **Reduce shutdowns** with predictive maintenance and **save repair cost** pinpointing systems stresses /failures

▶ **Offer** customized **smart ticketing** solutions based on passenger real utilization (seamless check in-check out)

▶ **Optimize** Cross-modal and **reduce bottlenecks** by incentivize underutilized modes

Nextome Technology

SMARTPHONE'S AND GATEWAY SENSORS + BLUETOOTH BEACONS + PHYSICAL MODEL + A. I. ALGORITHMS = nextome PATENTED
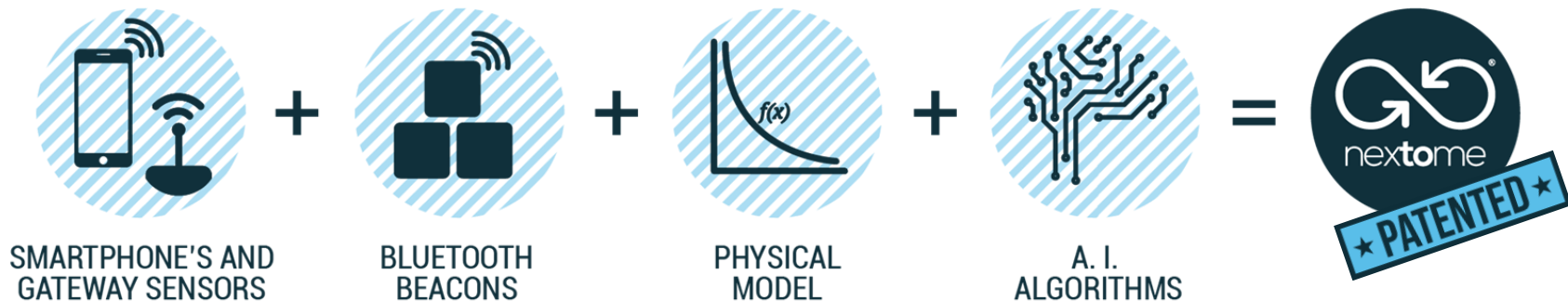
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Our Offer

WAYFINDING & NAVIGATION

Nextome Technology has over 5 years of research in order to achieve **high accuracy (1.5 meter),** scalability and extreme simplicity.

Nextome IPS: It is the library that contains all the needed algorithms and interfaces to provide a **state-of-art indoor positioning system.** It's designed to be seamless integrated into third party mobile application.

The SDK (Software Development Kit) provides the core functionality of location and navigation, the list of POI (point of interest) on the map and lets you handle events related to the positions.

The localization algorithm of Nextome is already fully implemented on **Android and iOS**.

NEXTOME
LOCATION ENGINE

BLUETOOTH
BEACON

SMARTPHONE'S
SENSOR
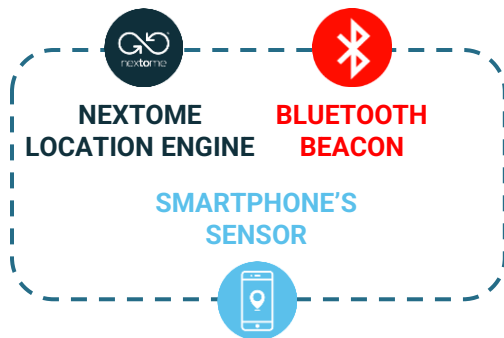
Our Offer

People and Asset TRACKING

Our BLE mesh acts as digital and IoT infrastructure, and provides the basis for **asset tracking and our Real Time Location System Engine.**

Select the specific asset you want to track and monitor it in in real-time or select all assets at once. Select specific **time windows** to monitor **your assets.** Always keep track of missing assets and know where to they are located

Collect the position in real time in order to monitor a specific user or to locate the user in a specific position in order to react to an event.All employees and **authorized staff members** can be tracked for service purposes, restricted areas **access control and security.**

The system can be designed to meet the specific local regulation in force.

NEXTOME LOCATION ENGINE

BLUETOOTH BEACON

GATEWAYS

WEARABLE BLE TAG

BLE OR RFID TAG ON ASSET
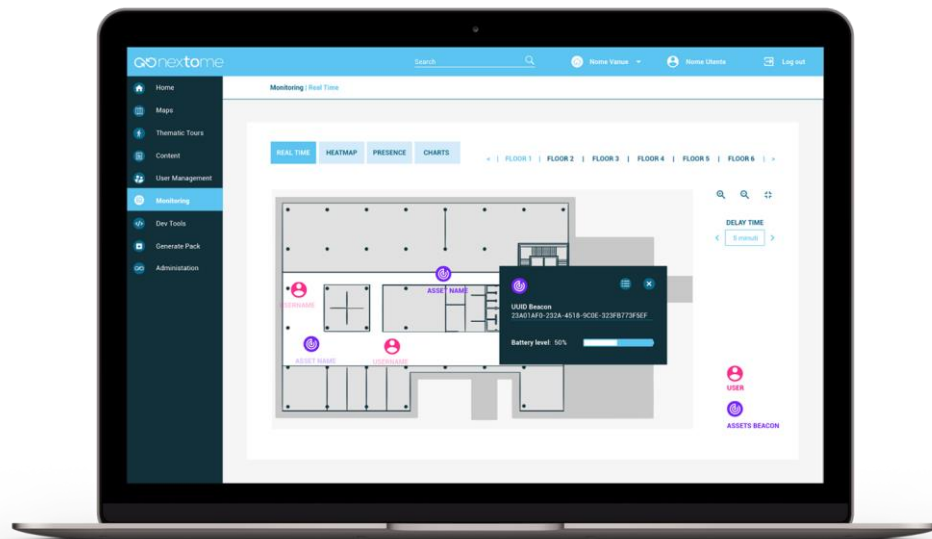
Our Offer

CMS - CONTENT MANAGEMENT SYSTEM

Every Venue mapped by Nextome **can be managed by the Nextome web CMS** or by the **Nextome API**. Both of them allow to manage (add, delete, modify) beacons, POIs, event along with maps' and venues' data and provide **access to the Venue analytics dashboard.**

Beacon Management: The Nextome CMS tool simplifies the **management of the beacons within a specific location .** Maintain and register beacons, check their position within the map and **monitor the battery status.**

Nextostats – Analytics Engine: Nextome analytics service, stores monitored **staff behavior data** and provides location based insights. **According to privacy and labor control laws** and union agreements different levels of accuracy can be achieved.

Some of our recent projects

	REFERENCES	USE CASE	PRODUCT DEVELOPMENT
HEALTHCARE	CRO Aviano Policlinico di Bari	**Indoor Navigation**	Indoor tracking system for patient monitoring and indoor asset tracking.
MANUFACTURING & INDUSTRY 4.0	FCA Cento (VM Motori) Bosch (Italia)	**People and Asset Tracking**	Asset tracking for indoor / outdoor tracking - Workforce Location
SMART BUILDING & OFFICE	Gucci I.OT Solutions S.p.A.	**Indoor Navigation**	Indoor tracking inside of coworking space and pedestrian flow analysis system
RETAIL & HOSPITALITY	Museo Castromediano Lecce (Noovle S.p.A.)	**Indoor Navigation**	Indoor Navigation for visitors
SMART CITY (Airport and Stations)	Aeroporto di Atene ATAC - Metro Roma	**Indoor/Outdoor Navigation** **Workforce Tracking**	Indoor navigation for travelers and integration with augmented reality system for retail promotions - People tracking for security

APPENDIX
Use cases

FCA
FIAT CHRYSLER AUTOMOBILES

▶ Real time tracking
of maintainers
in a 70.000 m^2
production plant

▶ $500 for every
minute saved
in fault recovery

NEXTOME > Success cases

vodafone

atac ROMA

▶ Real time tracking
of Security Guards
in Rome Metro Stations

▶ Increasing performance
and response time
of security agency
in 53 stations (so far)

Teca del Mediterraneo
Biblioteca multimediale e Centro di documentazione

infinite

▶ Collects data to measure the distancing and behaviors in the workplace

▶ Booking the desk and monitor the use of spaces

Policiclinico di Bari | Ospedale "Giovanni XXIII"

CRO AVIANO

▶ Route optimization
and navigation
in hospitals

▶ Nurse and Physicians
in Admission and ER
saved 500hrs/week

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