Arenzi

The indoor geolocation specialist

Our vision

ARENZI offers the most efficient & simple technical solutions on the market:

- Precision despite a light infrastructure (no cable, no electricity, NO WORK)
- Robustness & flexibility for complex environments: IP 65 to 68
- User application customization and interfacing
- Costs: at least 30% less than any other solution
- ATEX certified products
- Installation of the network in 3 hours for 20 000m².
- Management of several floors throughout your building

Use Cases

Guarantee a R.O.I of the geolocalization solution

Technology

Choosing the right Hardware for your needs

Software

Customize the software according to your needs

Organisation

Adapt your organizations to our geolocation technology

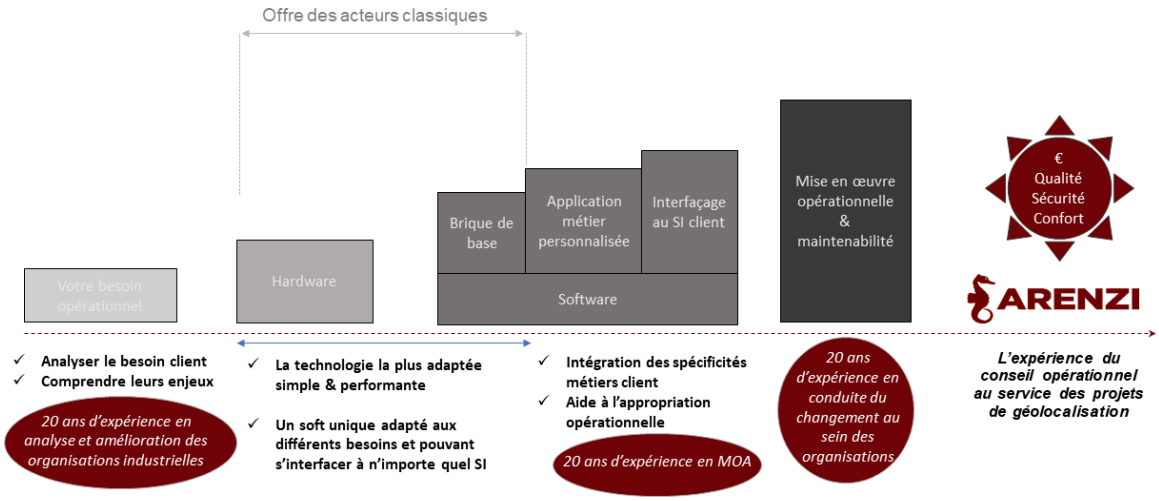
The Human

Train and support your teams to ensure ownership of our solution

Maintainability

Ensuring after-sales service and long-term maintenance of the equipment

Global Approach



Listening to the need :

- ROI
- Organizational change
- Competitiveness
- Quality

Choice of hardware :

- Choice of the right technology
- Basic brick of the Arenzi software (80% of the planned functionalities)

Data intelligence :

Customization of the application :

- Appropriation
- Ease of use
- Data Collection
- Avoid seizures

Technical implementation :

- Network design and installation
- Adaptation to constraints (spatial, networks, environmental, …)

Organizational Implementation :

- Integration in control systems
- Adaptation of the processes thanks to the new data collected

Behavioural implementation :

- Acceptance of the technology
- Comfort provided by the solution
- Change management

Maintainability :

- AFTER-SALES SERVICE
- Hotline
- Change of parts
- Guarantees

Our Solution

Accuracy: 2 meters

Follow-up every 30 seconds

Easy installation: no wiring

Security: encrypted bluetooth network

Accelerometer integrated to the tag

Customizable Led + button

Tag in “credit card” format

85.6 x 54 x 3.2 mm

Geolocation in complex environments :

Metallic: works in the presence of many metallic obstacles

Magnetic : operates in an interference-rich environment

Universe with a high density of objects and obstacles

Compatible with the presence of all network frequencies

Signal robustness

Indoor and outdoor environment coverage in total mobility and continuity

Tag in “mini loyalty card” format

56 x 30.6 x 2.4 mm

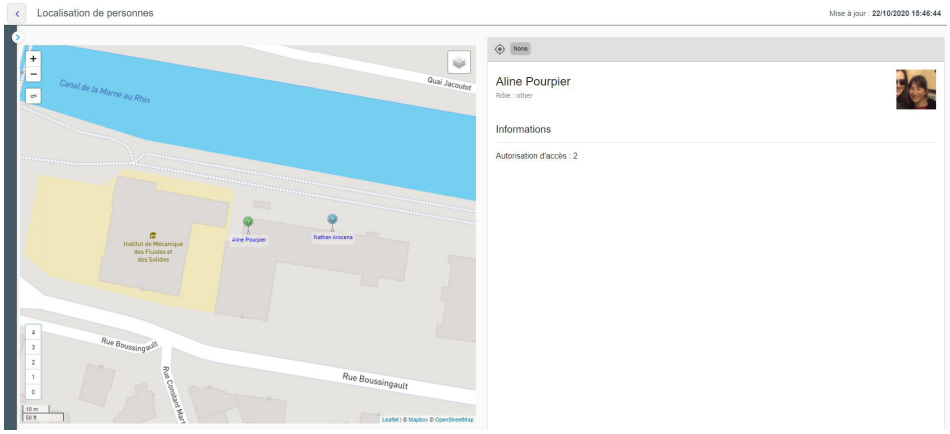
Anchor glued to the wall

70 x 48.6 x 22 mm

This solution allows us a fast installation, without cables, totally modular and adaptable according to the environment to be geolocated.

Our Software

We have designed a multi-faceted, ergonomic, easy-to-use and fully customizable user application to make the most of your data to give it intelligence and meaning.



Real Time :

Track your assets on a personalized plan

Search the position of an asset or a group of assets

Get the battery level of the tags...

Filter and parameterize requests such as :

What are the objects that have not moved for a given period of time?
Which items have entered forbidden zones?

Alert in case of drifts or change of status :

Production delay

Intrusion into a hazardous area

Moving from one production stage to another

Have real-time dashboards for :

Monitor the density of assets in a given area
Consult stock levels

Administration :

Interfacing with any information system
Customizable access rights
Compatibility of the application with any type of database
Asset database management: no double entries
The pairing between the tag and the element can be done by QR Code, Barcode, NFC, etc.
History of your data: possibility to store all your data collected by the system

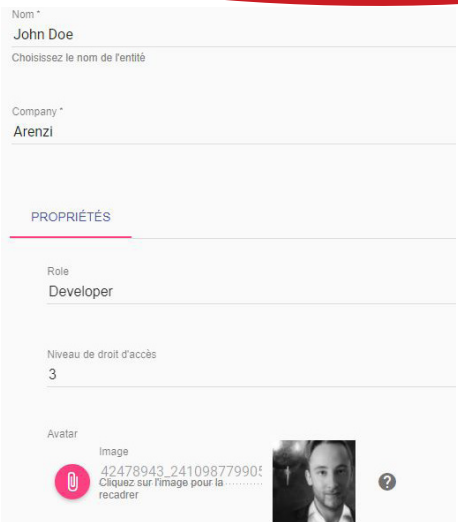
Data intelligence :

Modeling motion information to give it meaning
Target path modeling to compare actual movements to the requirement levels defined by the target path

Indicators :

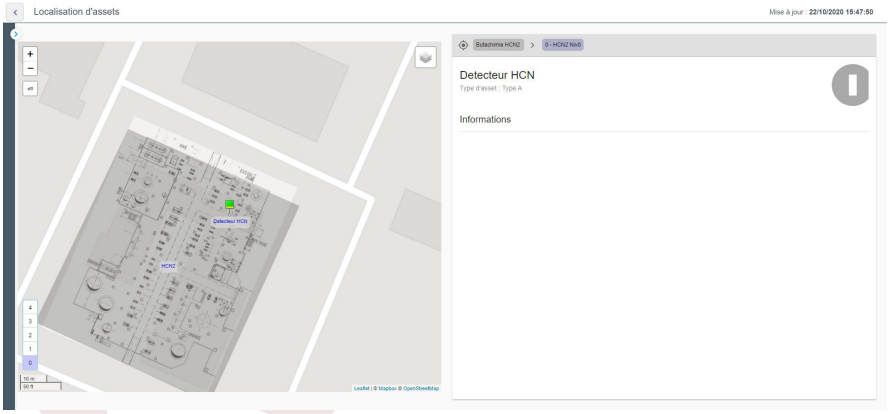
KPI's and dashboards in any form :
Histograms, pie charts, spaghetti diagrams, ...
Creation of files and databases

Our Software



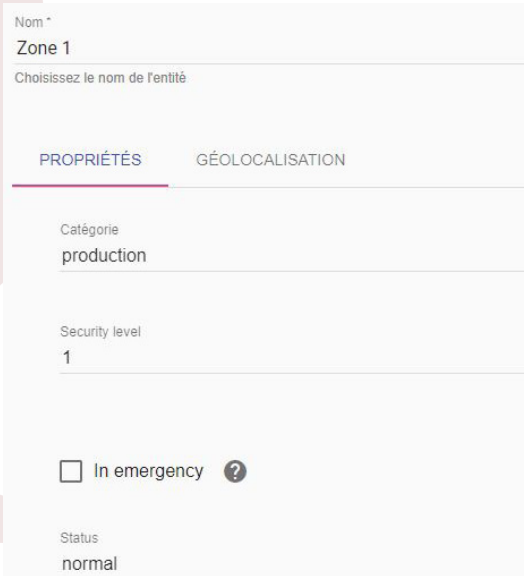
Example of employee record creation

The fields are 100% modifiable and adaptable to your processes.



Geolocation of assets

In addition to the geolocalization of people at risk, our tool offers an interface dedicated to the geolocalization of assetss



The creation of zones

It allows you to build your own zones and to add a personalized status (production, out of production, forbidden zone, ...).

Then just click on the map to create the points defining the desired zone.

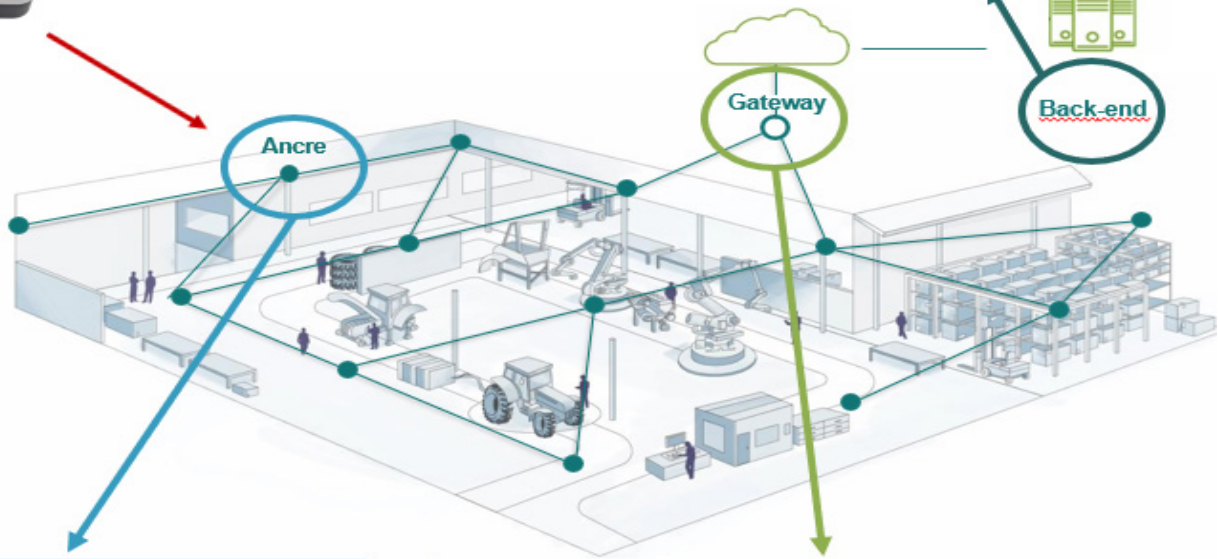
Alerts

For this use case, an alert is issued when an asset is detected.

in motion, they are reported as notifications on the application and can be sent by email, sms, ...

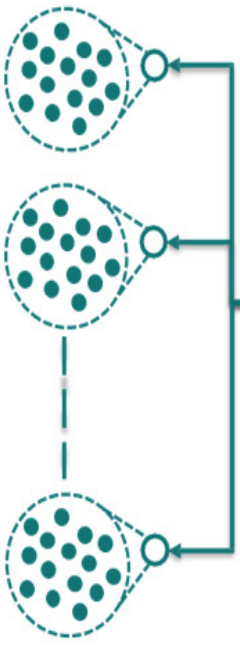
Infrastructure

ARENZI Backend :
- ARENZI Network Tool pour le "monitoring" du réseau et de l'administration
- ARENZI Positioning Engine : le positionnement



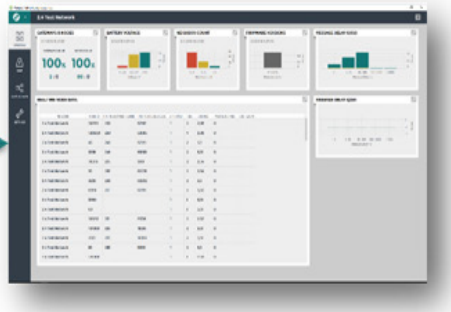
Ancre :
- **Sur batterie**
- Forme et maintien le réseau ARENZI Mesh
- Fournit la couverture réseau pour la connexion des Tags mobiles
- Positions fixes pour l'algorithme de positionnement

Gateway :
- Passerelle entre le réseau ARENZI et Serveur
- Le seul objet alimenté dans le réseau
- N'importe quelle connexion (WiFi, Cellulaire, Ethernet …)



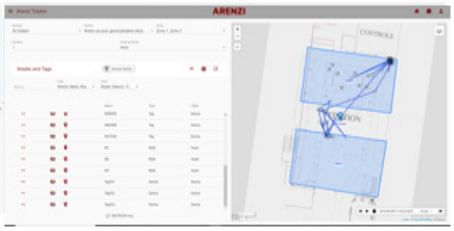
- Le Backend ARENZI est fourni sous forme d'images Dockers
- Peut fonctionner en local ou dans le cloud
- L'hébergement est assuré par l'intégrateur
- Une API GRPC est utilisée pour communiquer

ARENZI Network Tool



- Outils complets de monitoring et de gestion du cycle de vie

User Application



- Positionnement
- Alertes
- Règles de gestion de flux
- Interfaçages...

Global Security

Security elements of our network :

- Message integrity, confidentiality and protection against re-broadcasting
- Authenticity of the knot
- High availability

Cryptographic algorithms used :

- AES128 mode
- Integrity of OMAC1 messages

Message integrity :

- Each message may be accompanied by the OMAC Message Integrity Code (MIC)1

Confidentiality of messages :

- Each message can be encrypted in CTR AES128 mode using nunces.

Protection against replay :

- The MIC of the message is calculated using a nunce specific to the message.

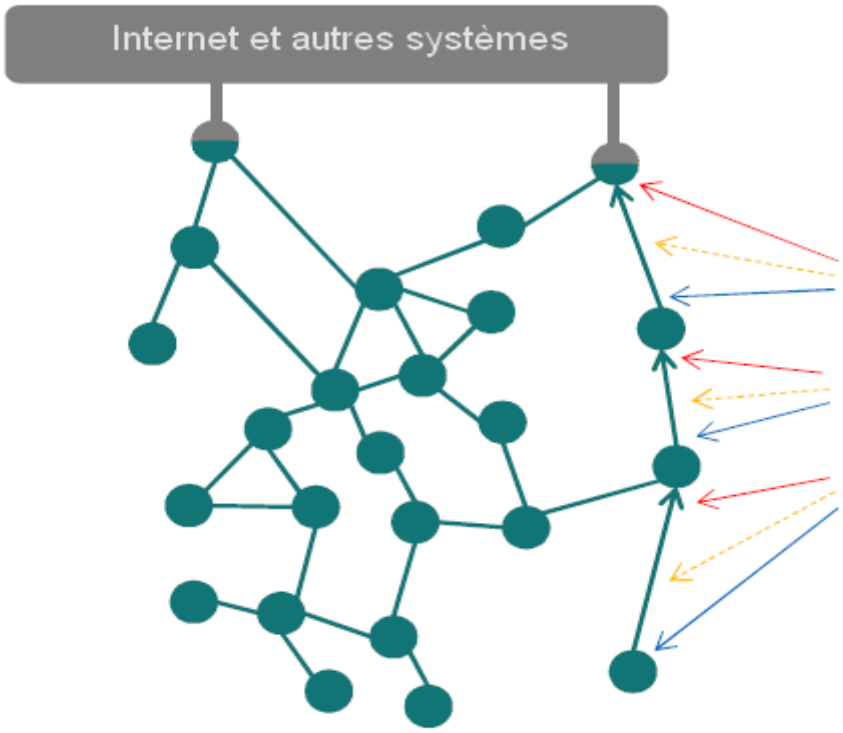
Authenticity of the node :

- Network signalling messages can be encrypted and added using OMAC1
- Message Integrity Code (MIC) = Node without proper encryption and/or MIC keys cannot join the network

High availability - Robust and reliable Mesh protocol:

- No single point of failure: multi-sink support, each node can route data
- Self-healing operation: Automatic routing and re-routing
- Avoid Interference: Short transmissions, multi-channel operation, blacklisting of local channels
- Confirmation and retransmission of line levels

Nodes Security



Decrypt and verify the MIC

Generation and exchange of Nonce

Encrypt, calculate and add the MIC

- Mesh network security secures the data exchanged in the network at the link layer level.
- All frames, including data and acknowledgements, are encrypted and verified.
- Security link layer: Messages are encrypted/decrypted and their integrity is checked, jump by jump.
- End-to-end security: (e.g. from the node to the back end) can be implemented in the application layer if required

References and use cases

They trusted us recently:

SAINT-GOBAIN FLENDER GRAFFENSTADEN Aptargroup GHMF L'INSTITUT MUTUALISTE MONTSOURIS

Industry

Production process: make production processes more fluid, reduce production lead times, manage production delays

- Eliminate asset search time

- Track production in progress in real time

- Parameterization in the geolocation system of target processes, level of progress of an order on a process, evaluation of delays and deviations from imported production schedules

- Sending alert messages in real time, based on geolocation parameters, status changes, delays or non-compliant behaviour

- Analysis of cycle times according to the movements of the parts tracked and the standards integrated in our application.

Change of series

- Reduce changeover times by tracking and managing the movement of operators and reduce time-consuming activities.

People management: optimizing the allocation of resources in real time

- Reallocation of men to work sites and relevant activities

- Locating men in high-risk areas (isolated workers)

Inventory management: real-time inventory of stocks

- Better traceability and reliability

- Anti-theft with anti-tearing system

Moves and movements

- Locating and monitoring the movement of a part or order in real time on a graphic plan - Detecting the entry or exit of a part from a service area

Use cases

Logistic

Improve inventory management

- Reliability of stocks and supplies in automatic real time– Rationalisation et traçabilité du stock

- Disappearance of inventory discrepancies

- Reduced purchasing volumes due to tighter inventory management

- Improved security: reduced risk of loss or theft

Improve flow efficiency and equipment productivity

Implementation of rotating audits for :

- Analyze the movements of handling equipment

- Identify full and empty utilization rates

- Map areas of high or low activity (hot zones and cold zones)

- Assessing capitalization rates

- Quantify the distances travelled by machines

Retail

Improve knowledge of customer behaviour

Implementation of rotating audits for :

- Analyze customer journeys by adding a tag on the carts

- Map areas with a high or low propensity to buy (hot and cold areas) in relation to the number of visitors to the area (per metre travelled)

- Link shelf times and shopping carts with customer journeys

Improve inventory management

- Real-time monitoring of the movements of the machines in reserve

- Geolocalization and real-time tracking of pallets

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Expérience : After 10 years of experience in the implementation of complex projects with large firms (Ineum, Deloitte…), Loïc co-founded the Alteo group (in 2008), specialized in the improvement of private & public organizations. 3 years ago he co-founded Arenzi which is becoming a reference in geolocation projects. His ability to simultaneously manage all project needs and his knowledge of large projects will make him a major asset for the project.

Formation : Master 2 ingénierie des risques sorbonne / IHESIP (anciennement IHESI, ministère de l'intérieur). MBA Georgetown, Washington DC (USA)

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Expérience : After 4 Years of project management specializing in the installation of new technologies at a major online retailer. Benjamin has managed as a consultant / project manager digital transformation projects at Saint Gobain, Airbus… His versatility between operational management and 360° technical knowledge for complex digital projects will be a major key to success.

Formation : Diplômé de L'IESA Paris spécialisation pilotage digitale