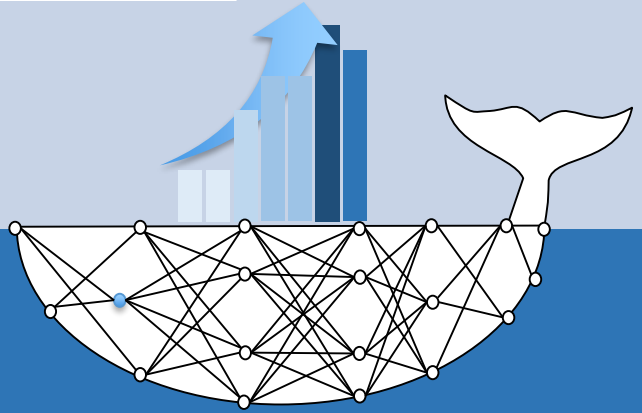


INFO מידע 2022
The 36th Annual Conference & Exhibition
מידע וטכנולוגיה 2022– התפתחויות ברשת

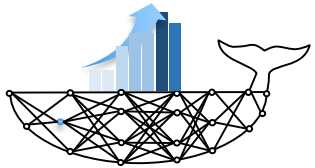
xBiDa

Augmented Intelligence

By: Loai Abdallah

The **FUTURE** of Your Business, **TODAY**

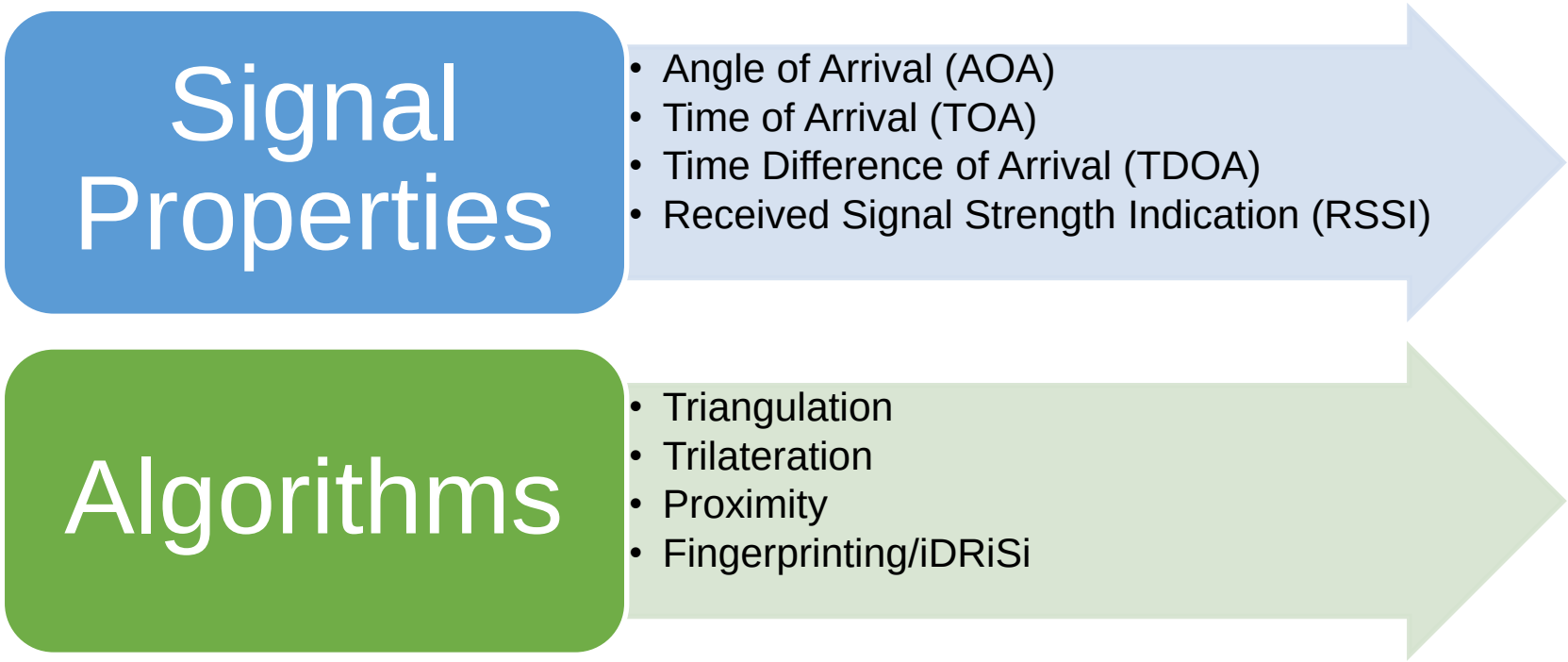
About Us



Using AI methodology to improve on indoor positioning

- Founded in 2017
- Algorithm and fingerprinting process developed
- Indoor location platform package – developed and tested

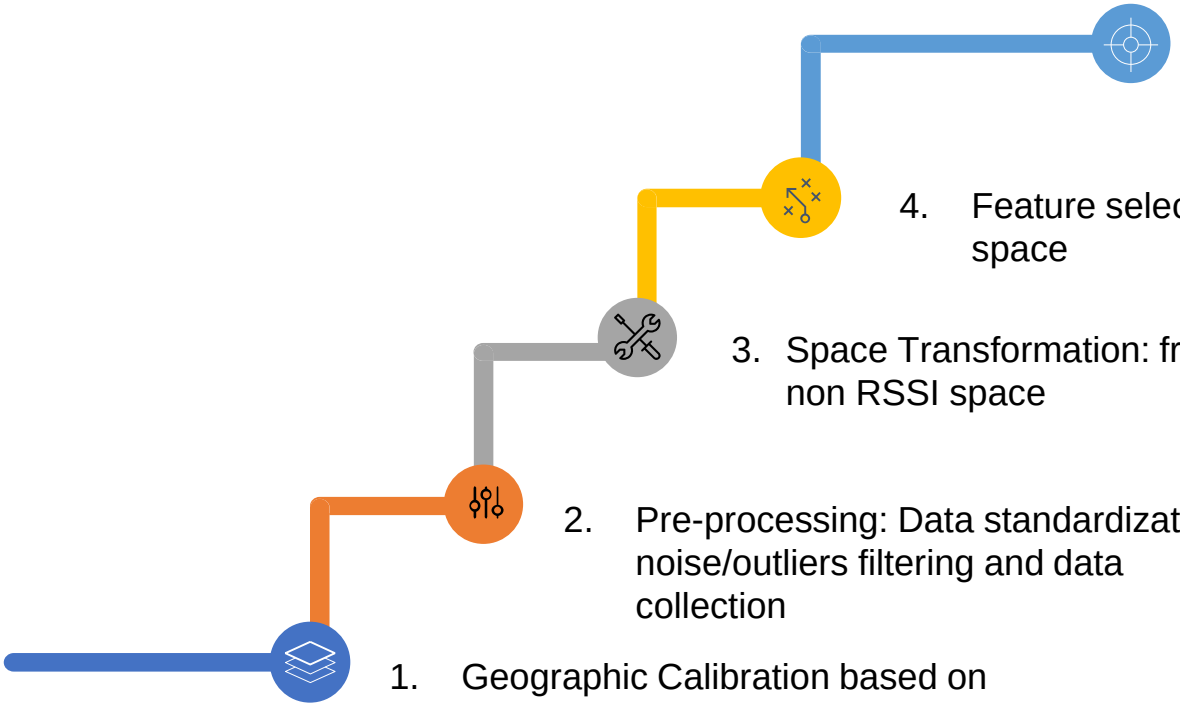
Indoor Positioning Techniques*



* Sakpere, W., Adeyeye-Oshin, M. and Mlitwa, N.B.W. (2017). A state-of-the-art survey of indoor positioning and navigation systems and technologies. South African Computer Journal 29(3), 145–197

The Process

Leveraging preprocessing to improve results



5. Real-time location
4. Feature selection on the new space
3. Space Transformation: from RSSI to new non RSSI space
2. Pre-processing: Data standardization, noise/outliers filtering and data collection
1. Geographic Calibration based on zones

xBiDa's Algorithms

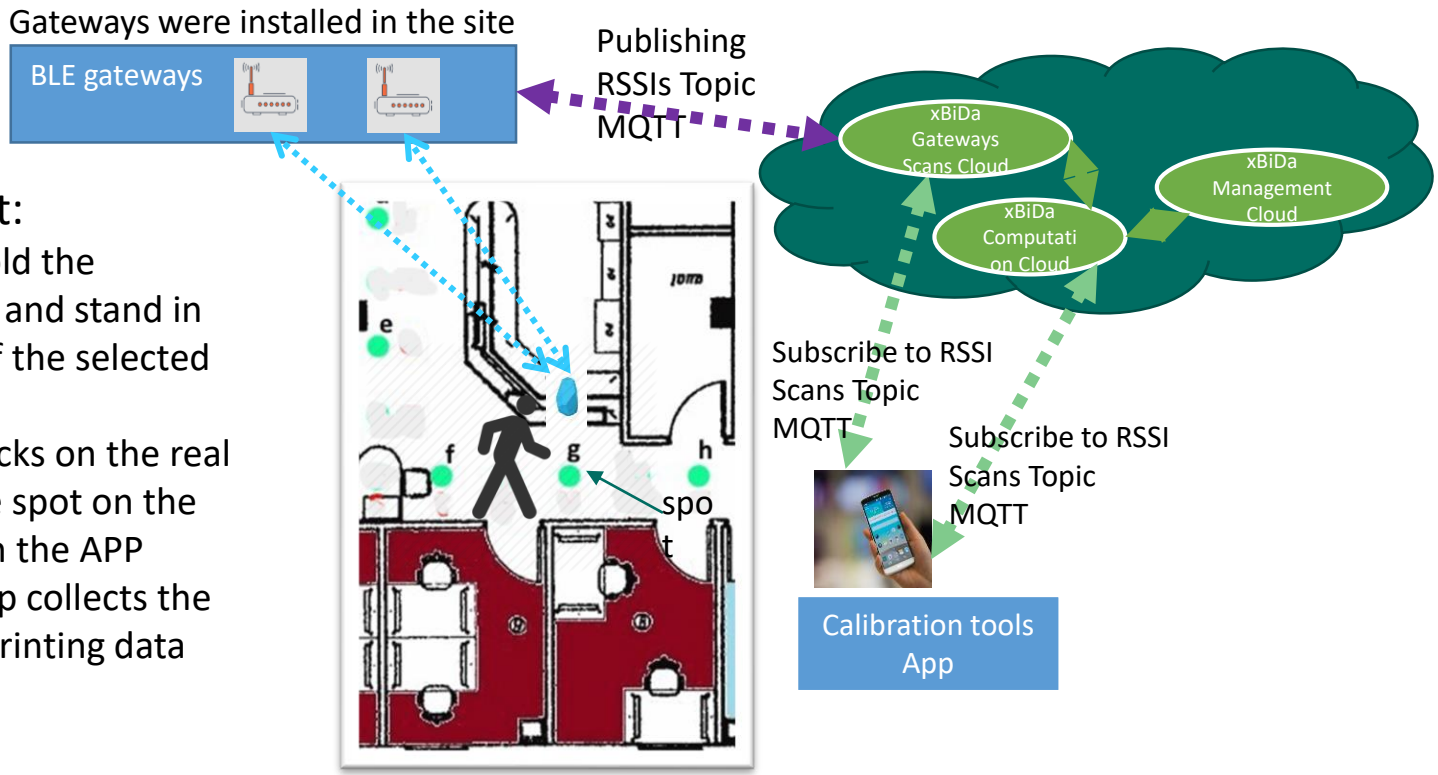
Integrating AI improves location calculation

Pre-processing

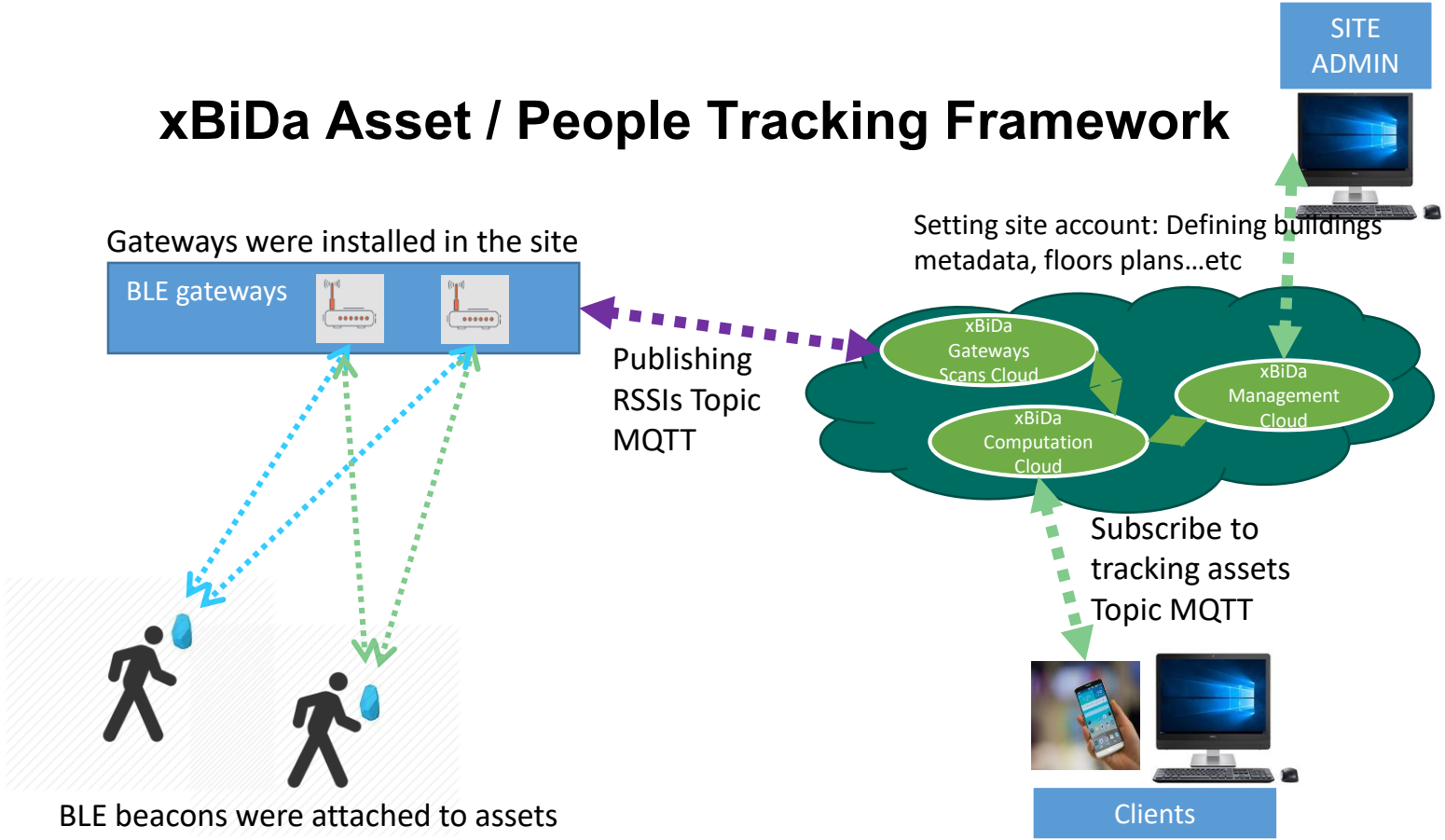
1. Calibration process
   - **ALG: Hierarchical Areas Division algorithm (HAD)**
     - For accurate and stable computations
2. Noise/outliers filtering
   - **ALG: Recursive Noise Elimination (RNE)**
     - Pure data brings accurate results
     - Control the needed purity
3. Missing RSSI's
   - **ALG: Classification Based Missing Detection (CMD)**
     - Detecting Failed AP in the calibration process
     - Dealing with missing RSSIs values in the real time computation
4. Data space expansion
   - **ALG: Computation Signature Space (CSS)**
     - Building empirical space based on RSSI values caused better similarity reflection
5. Location Computation
   - **ALG: Ensemble Random Computation (ERC)**
     - Ensemble location computation decrease errors and decrease the affect of the outliers/noise values

Fingerprinting Concept

- For each spot:
  - The user hold the beacon/tag and stand in the place of the selected spot
  - The user clicks on the real place of the spot on the floor plan in the APP
    - The App collects the fingerprinting data



xBiDa Asset / People Tracking Framework



xBiDa Technology: *From concept to reality*

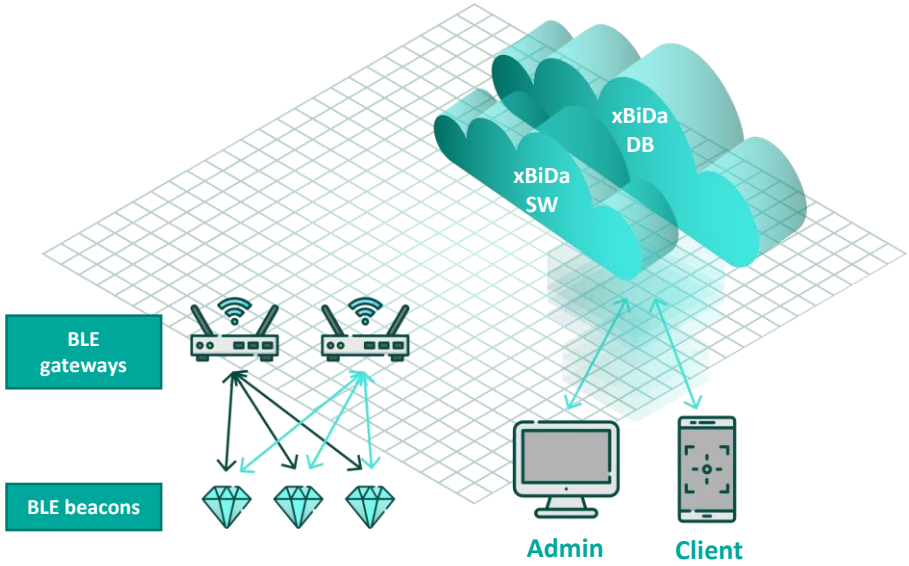
Wireless Signals

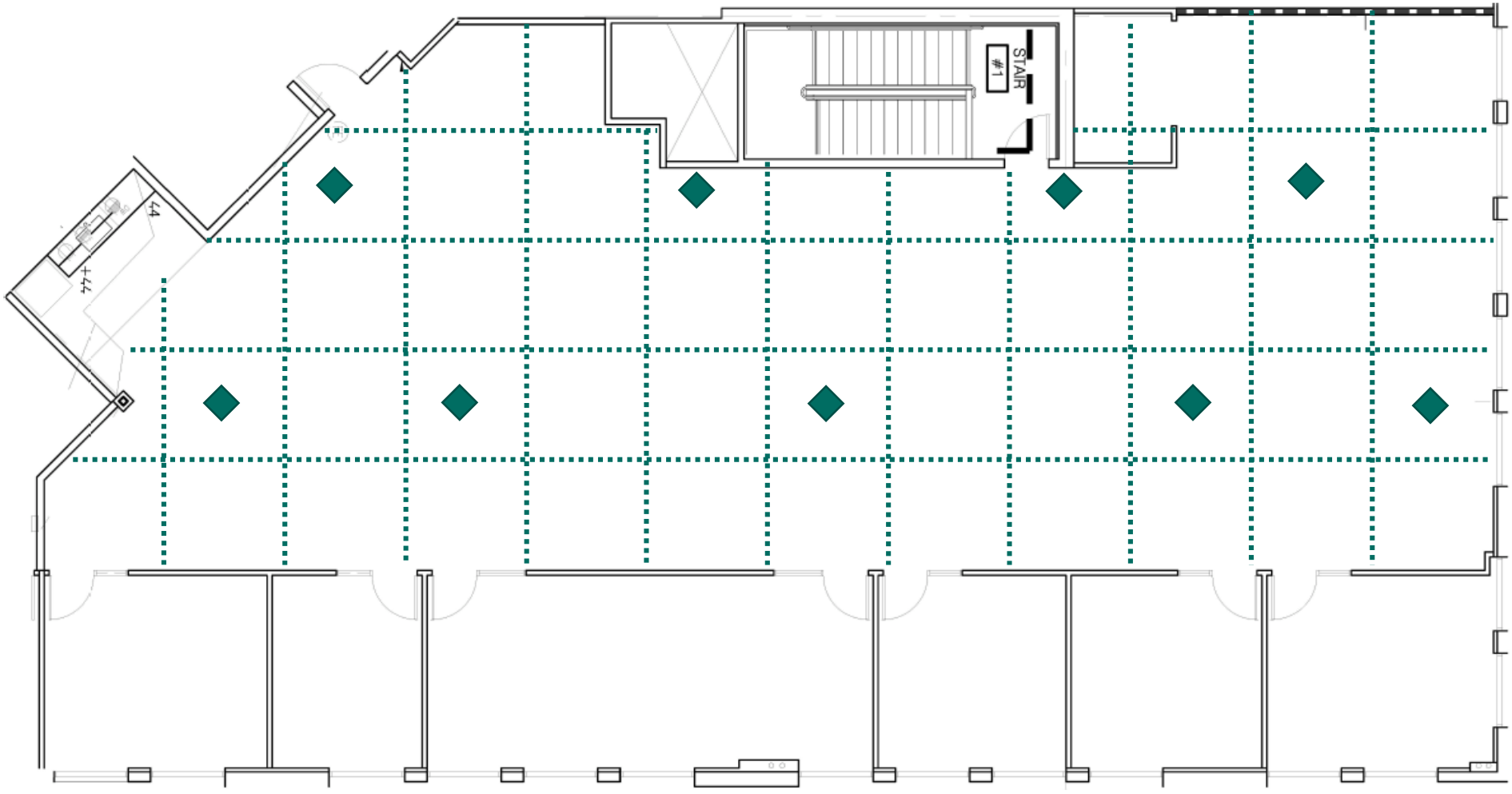
+

Machine Learning

=

Real time knowledge

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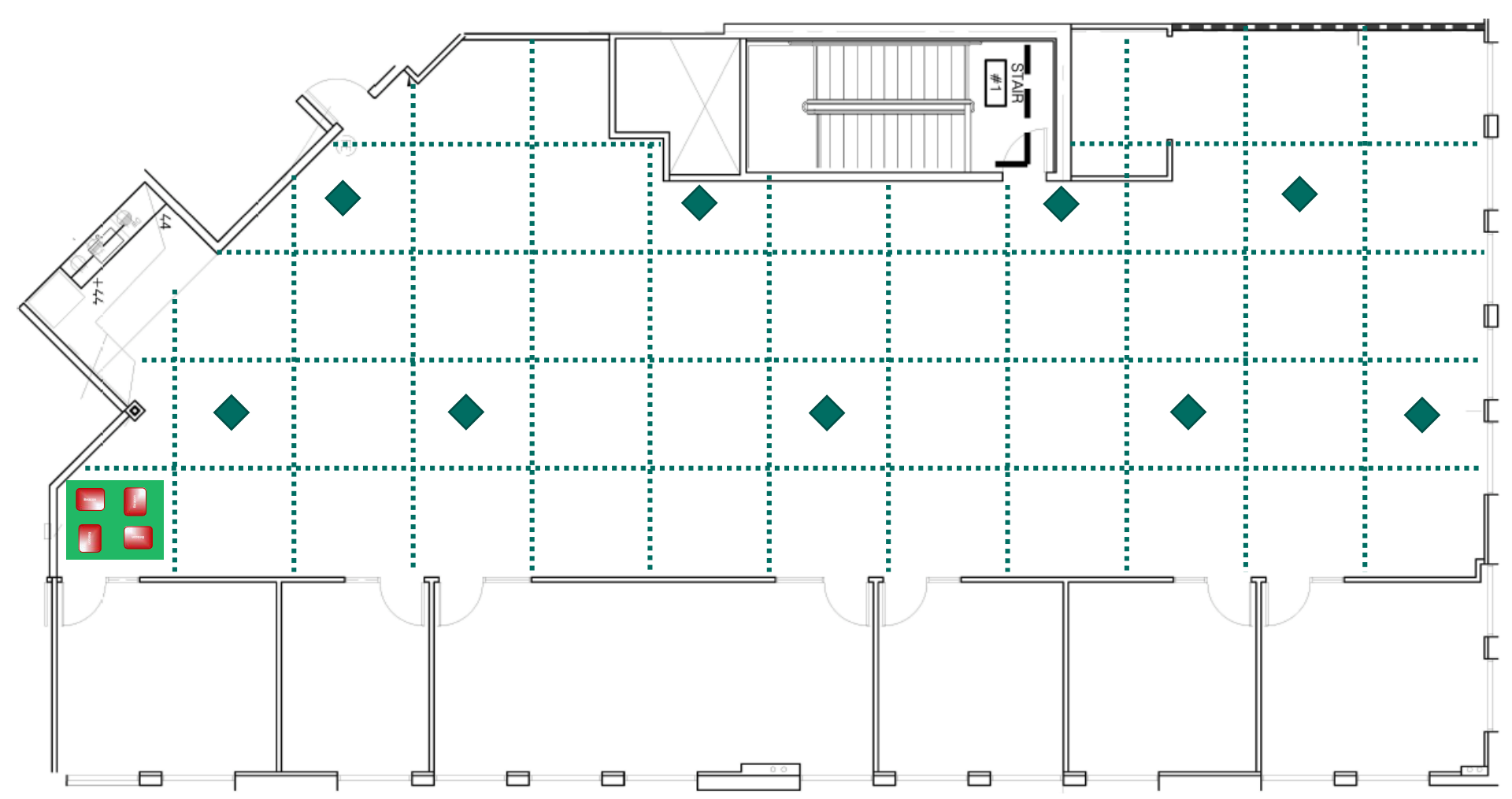
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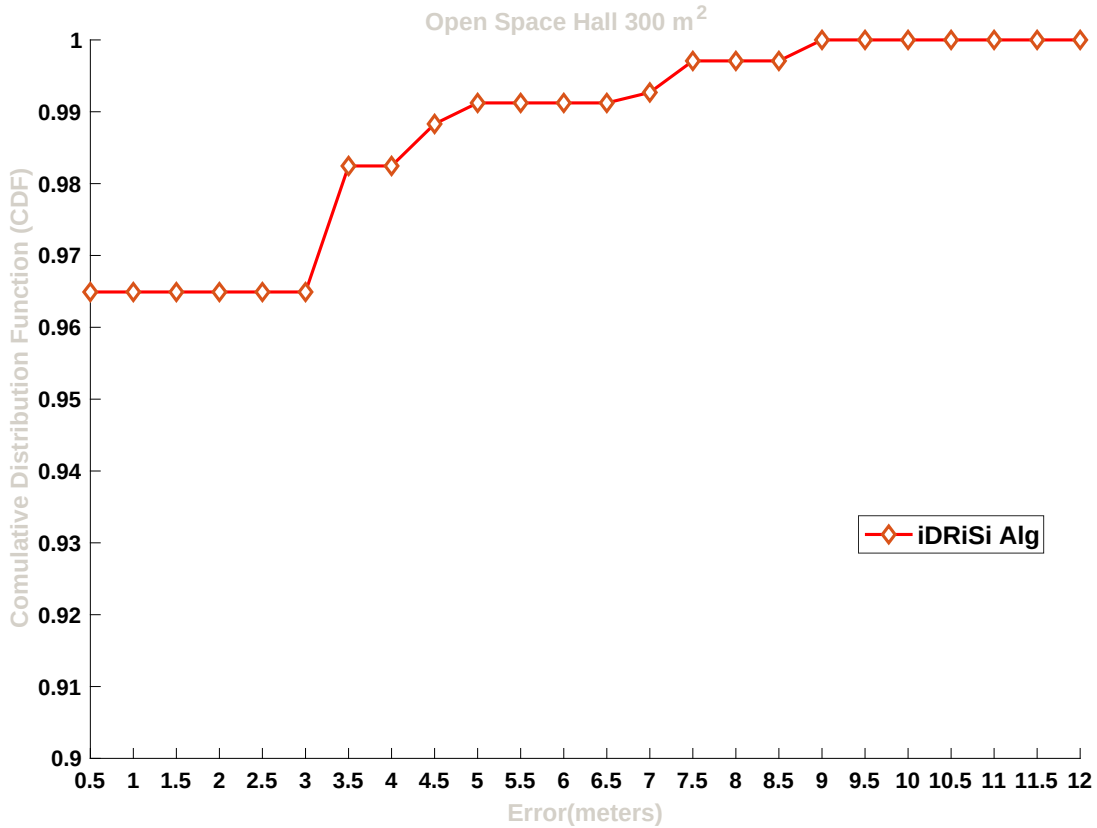
Experimental Results

Experiment

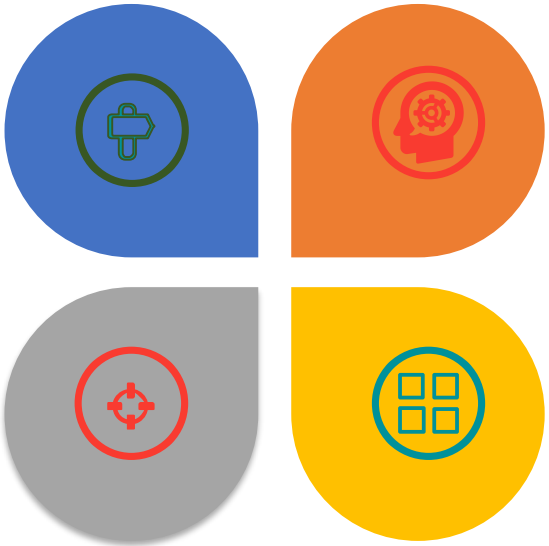
- Building:
  - An open space hall with 300m^2
  - Ceiling height 3m
- Infrastructure:
  - 15 gateways from Kontakt io comp.
  - Using BLE - a standard beacons from Kontakt io
- Calibration process:
  - Manually calibration based on HAD algorithm
- Results:
  - More than 96% success to detect the indoor position of a beacon within 1 meter



Benefits

it’s about creating real value

Simple



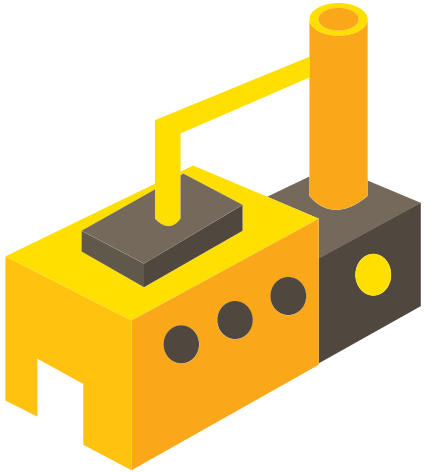
Learning

Accurate

Interoperable

The Industry Need

Asset tracking is a major need for the next industrial (r)evolution

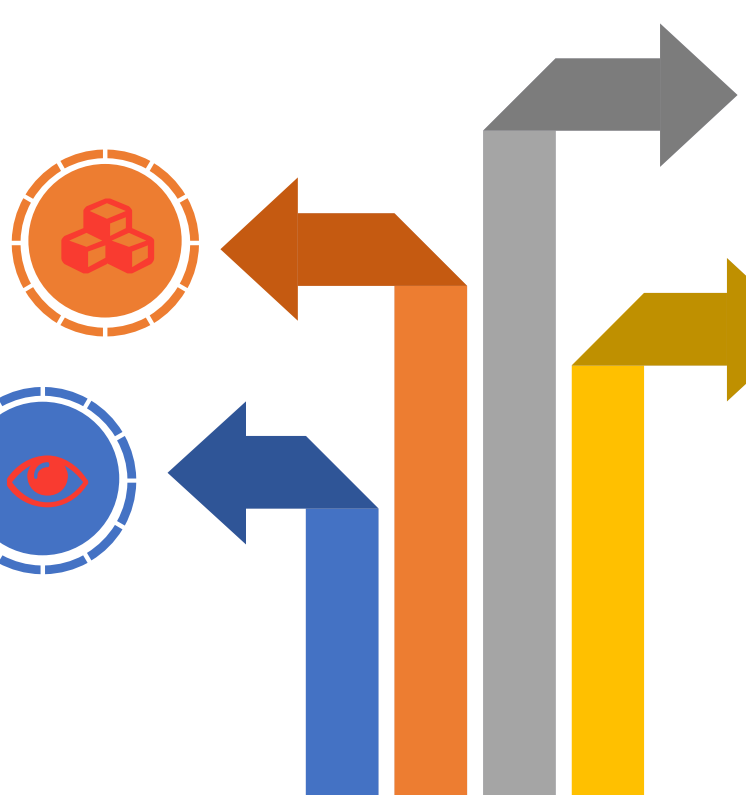


- Tracking to save money
- Tracking to increase productivity
- Tracking to improve safety compliance

xBiDa's first product will provide a solution of industrial asset tracking

xBiDa's Asset Tracking Platform

An easy to implement platform to accurately track assets on a massive scale



Location-based notification server

Automatic geo-fencing-enabled messaging system

Analytics suite

Collection of analytical and predictive analytics tools

Indoor location software kit

A full SDK and Server API to enable easy integration to any 3rd party application and service

Indoor tracking system

Accepts wireless signals from hardware sensors, maps the area and provides real-time positioning information

Competitive Landscape

RTLS technologies that can be used to provide asset tracking

Features / Technology basis	xBiDa	Fingerprinting	Triangulation
Easy setup	✓	✗	✗
Few access points	✓	✓	✗
Smart calibration	✓	✗	✗
Runtime zero complexity	✓	✗	✓
Failed AP notification	✓	✗	✗
Environment change notification	✓	✗	✗

xBiDa is a paradigm shift in the real-time location systems' market

THANKS!

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