Indoor tracking

Warehouse-project

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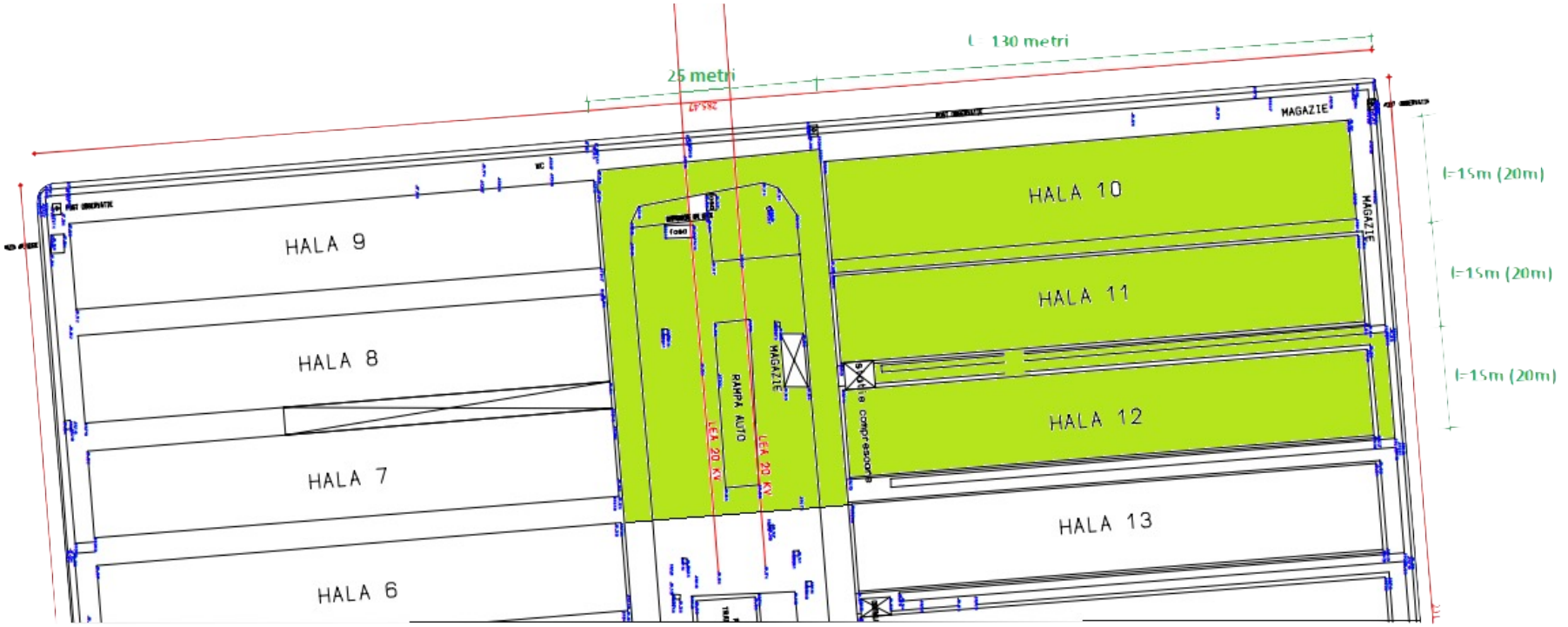
REDANS

www.redans.eu

Project requirements



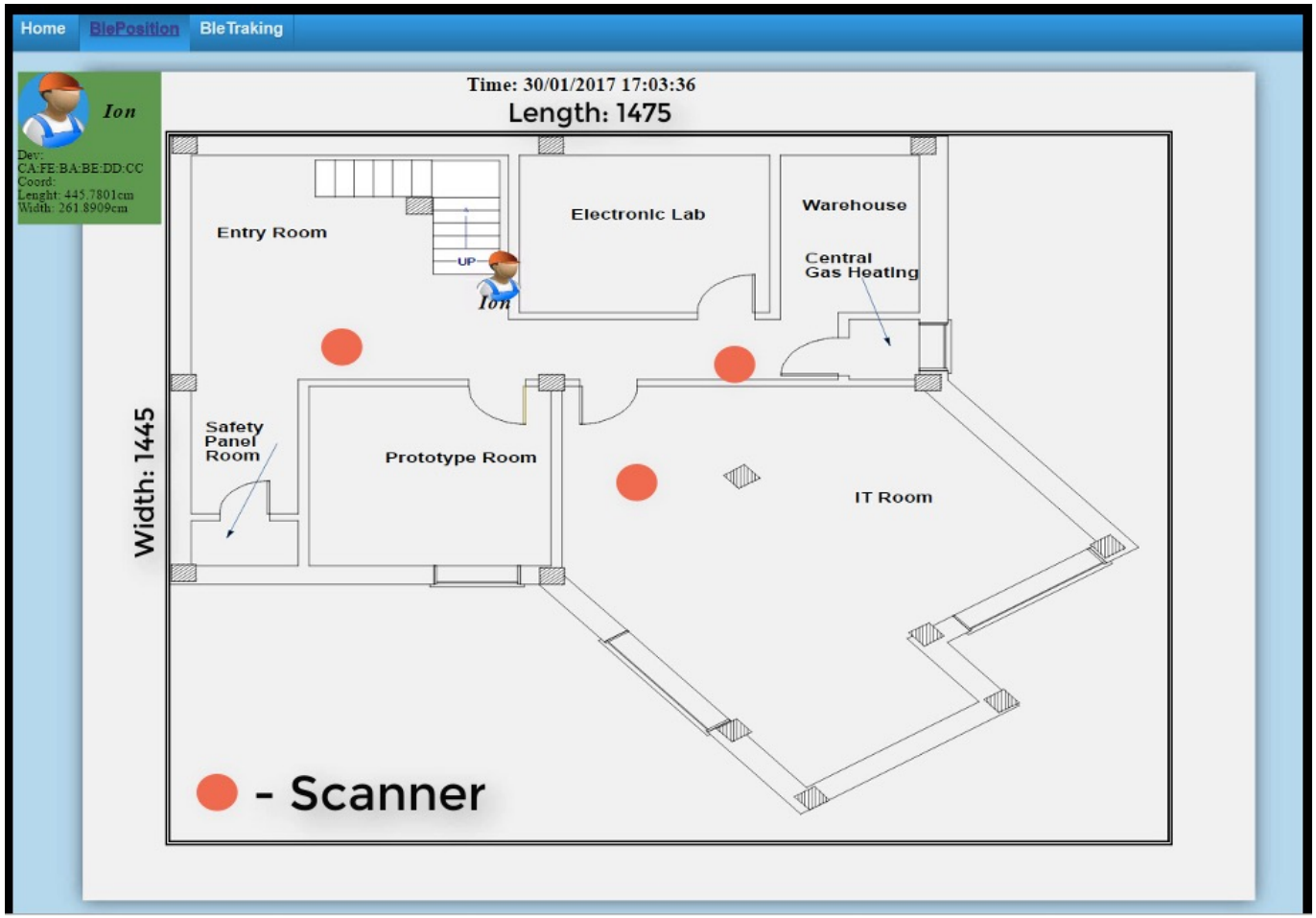
- Track of: cca. 50 forklifts + people: position/timestamps
- Analyse data offline in order to optimise the warehouse activity
- Precision: as much as possible

Solution

- Server based tracking
- Mobile beacons
  - mounted on forklifts, or carried by people
- Fixed based-stations (scanners)
  - interconnected to the network and the server that does position tracking, storage and further analysis
- Management software for the entire architecture:
  - Beacons (registration, power-status, lifecheck);
  - Scanners (lifecheck, network delay);
- Software that analyses historical data and make suggestions,
- Software that shows data on a visual interface for interactive analysis

Experiment

RPI3 – scanners (3pcs)
Redans-AIR beacon nodes (custom hw-design)
Location: basement of building (concrete/brick walls)



Demo: https://www.dropbox.com/sh/s65rdj3nwjfvw1k/AADcb3ZYrsu88VItU3jaC2BPa?dl=0

Summary

- Precision: 1-5m (depends very much on the environment). A good design taking into account proper amount of scanners and their calibrations => can get higher precision at the costs of growing scanners.
- Only RSSI measurement is not sufficient:
  - Use beacons with accelerometers for data annotation
  - Use software filters such as Kalman
- Redans-AIR nRF beacon-nodes:
  - 60m in open-field
  - 5-10m in basement (concrete, bricks, underground)
- Other beacons:
  - https://store.kontakt.io/
  - http://www.onyxbeacon.com/
- Higher precision (cca. 30cm) exists, but costly: UWB