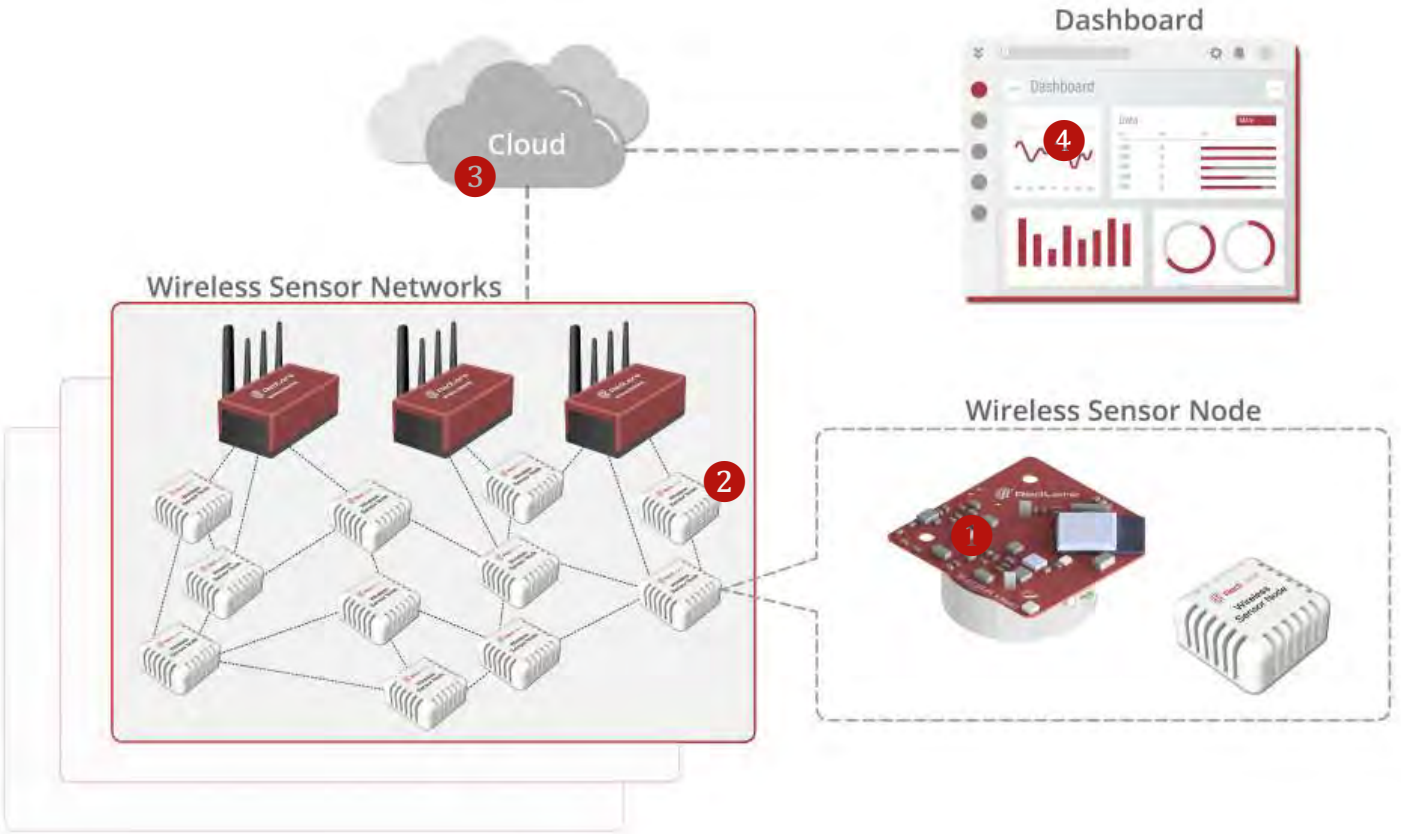
RedLore

C+R Automations- GmbH

Internet of Things Solutions for solving Automation Problems Using Machine Learning



Solution

1. The Wireless Sensor Nodes form a mesh Wireless Sensor Network. Each Wireless Sensor Node uses sensors to capture physical properties and sends these to a Gateway.

2. The Gateways forward Wireless Sensor Node data to the cloud via a cellular (4G/LTE), WIFI or Ethernet connection.

3. The cloud servers store the sensor data and executes application-specific algorithms, analytics, and Artificial Intelligence to transform the data into knowledge.

4. The Dashboard visualizes the sensor data and generates insights.

Data Flow

Wireless Sensor Node

RedLore

Gateway

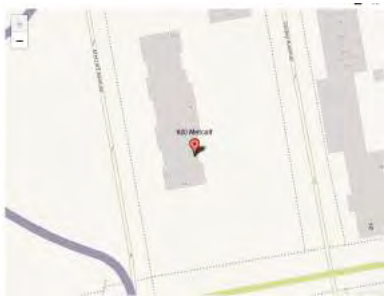
RedLore

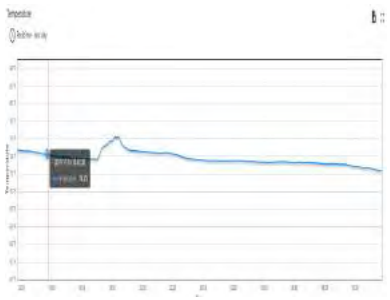
Ingestion & Storage

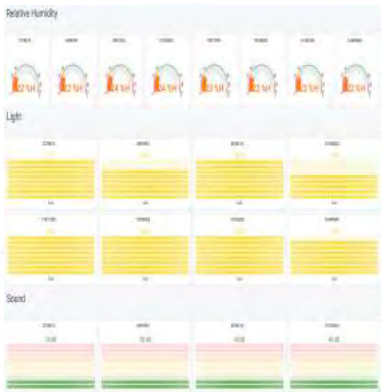
RedLore cloud

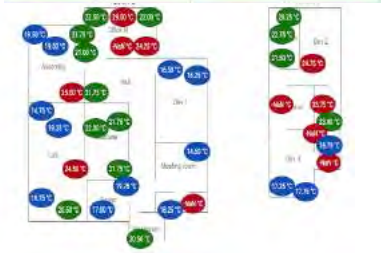
Dashboard

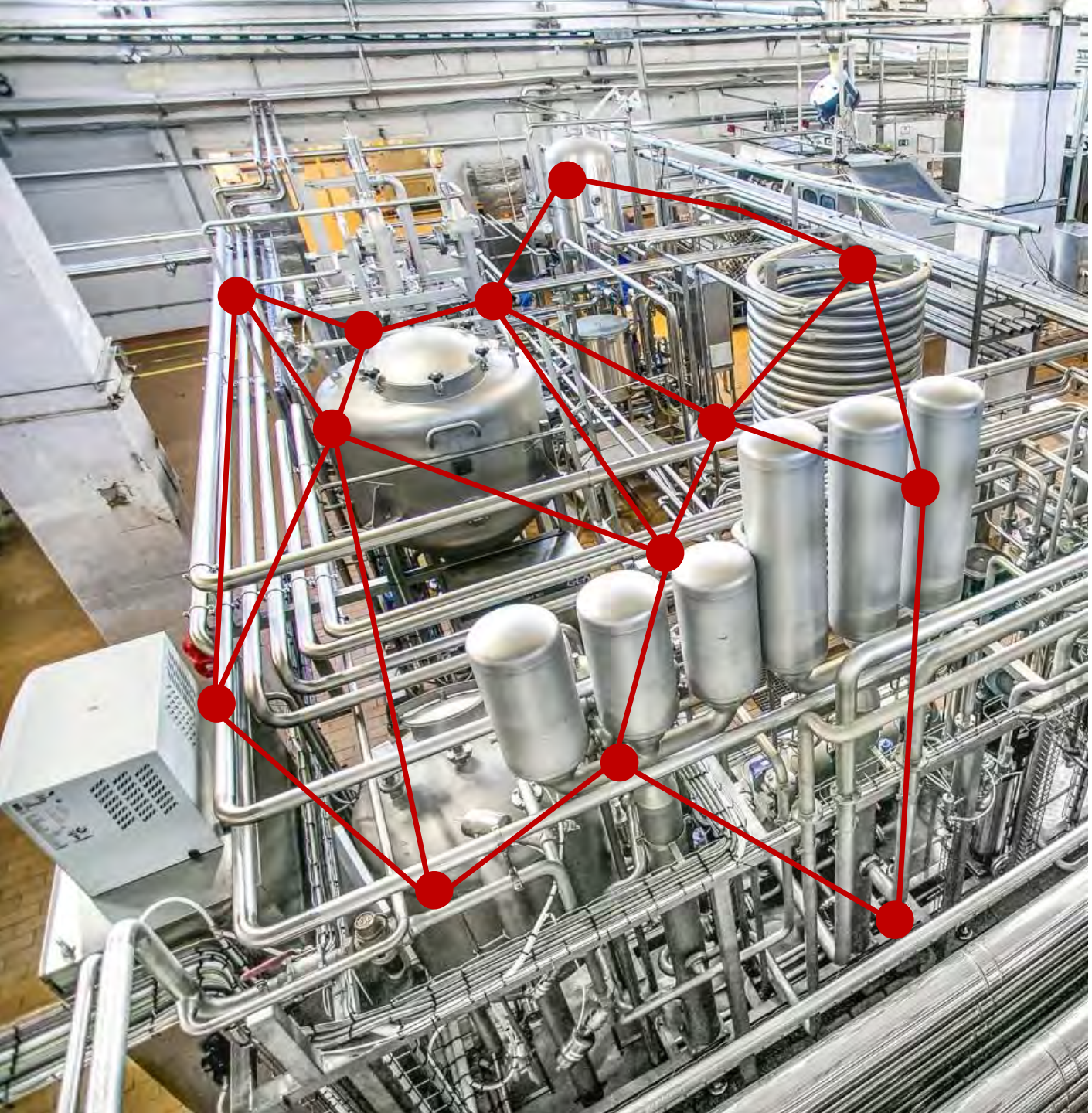
RedLore dashboard











Low Power Wireless Mesh Network

In a mesh network, a message hops from one wireless node to the next until it finds its way to the gateway. Networks can grow practically unlimited in size as long as there is another node in sight, typically 25m (80ft) indoors and 100m (300 ft) outdoors.

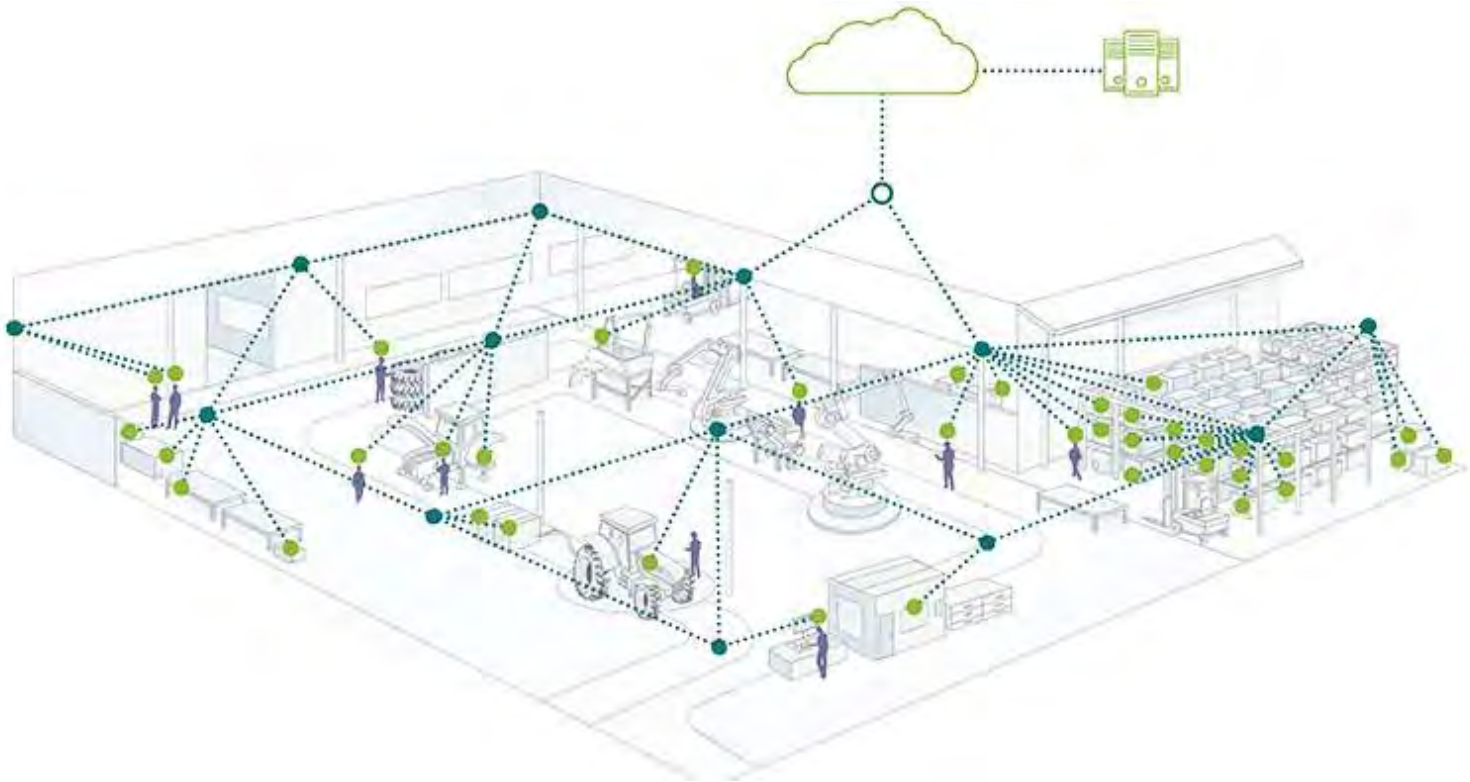
All nodes can be ultra-low-power and still act as repeaters for other nodes. Device authentication and end-to-end encryption provide secure communication.

Firmware updates are done wirelessly, over-the-air. No need for local intervention.

RedLore partner

WIREPAS

Indoor Asset tracking
(coming soon)



Anchor nodes

- Serve as the reference locations for positioning engine
- To be installed across the facility roughly on a square matrix. The exact location is not important, just roughly.
- With a matrix of 15m x 15m, the positioning accuracy is approx. 5m. A more dense matrix provides higher accuracy.
- Anchor nodes are battery powered or externally powered.

Asset tags or Sensor Nodes

- To be attached to an asset.
- Battery powered, autonomy typically a few years

Gateway

- Connects wireless network to the cloud Positioning Engine
- Large installations will have rough 1 gateway for 200 to 1000 tags.

Cellular Gateway (4G/LTE)

The gateway collects messages from the wireless sensor nodes, sends them to your cloud. In addition the gateway can implement your analytics locally.

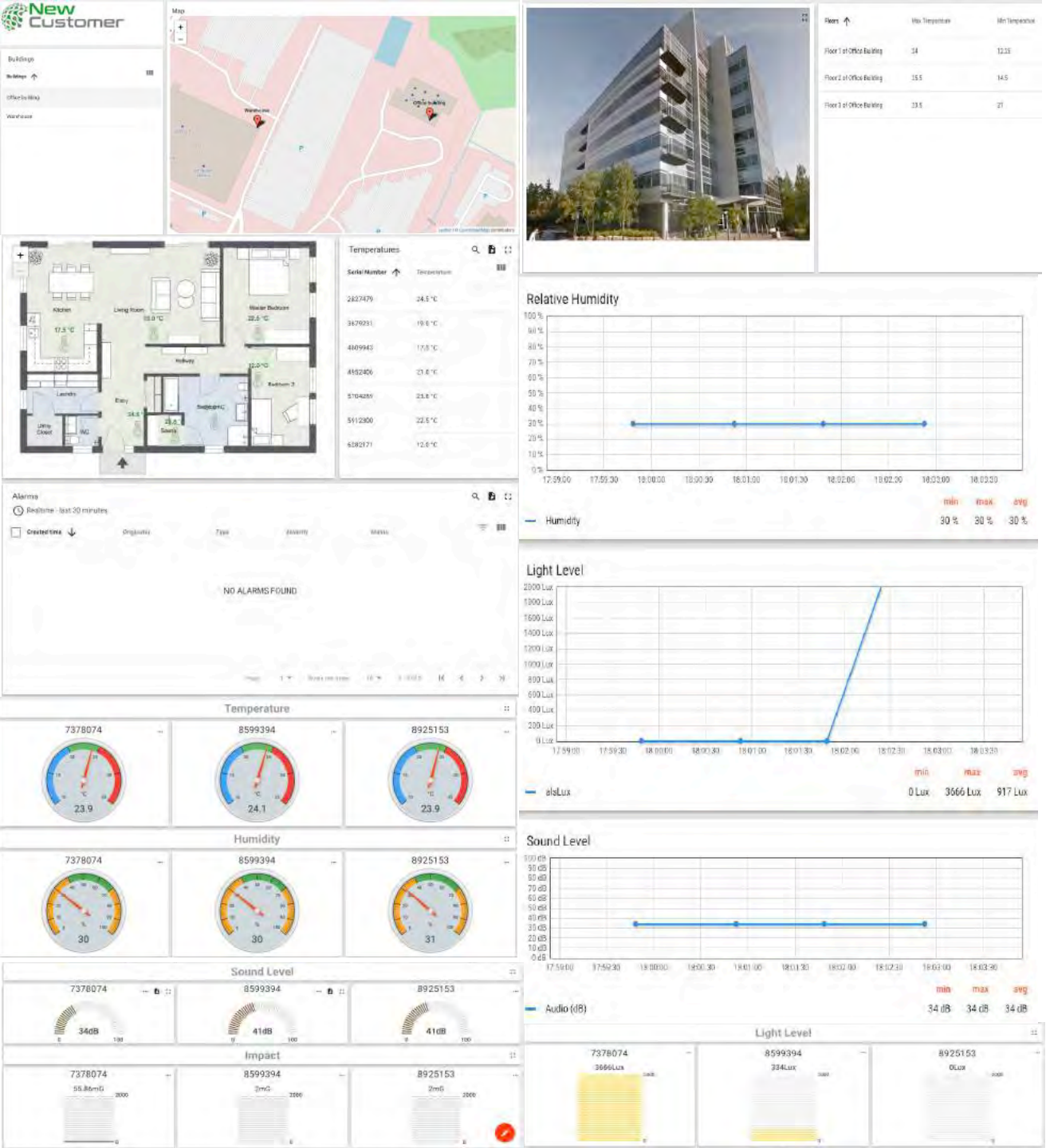
The gateways are managed, i.e. their health status is constantly monitored and reported to the cloud.

The gateway provides a cellular, 4G and Ethernet connection to the cloud. So you don't depend on access to the on-premise network.

FIELD DEPLOYMENT USING NEAR FIELD COMMUNICATION APP

Deployment of Wireless Sensor Nodes has never been easier. All nodes are equipped with Near Field Communication (NFC). An NFC-equipped smartphone has now become a powerful interface to the Node.

The accompanying smartphone app will interrogate the node for monitoring and configuration, even without having the full network installed and deployed. This boosts the efficiency of installation and troubleshooting.



DASHBOARD

- Custom branding
- Wide selection of widgets: gauges, floorplan, maps, charts, tables, free HTML,…
- Fully configurable and programmable with custom logic
- Widgets fully extendable in function and look & feel
- Sensor diagnostics built-in
- Downlink channel to configure Wireless Sensors
- Alarm generation, email alerting
- Built-in concept of hierarchy, e.g. site/building/floor/room. Multiple hierarchies possible in a single dashboard
- Built in roles: administrator vs user

RedLore

C+R Automations- GmbH
Nürnberger Straße 45
90513 Zirndorf

Tel. +49 (0)911 656587-0
E-Mail: info@crautomation.de
www.crautomation.de

FOCUS APPLICATIONS

LOGISTICS AND ASSET TRACKING

SMART LIGHTING

INDUSTRIAL AND GENERAL IOT

SMART METERING

WIREPAS

ONE MESH, MANY USE CASES

SIMPLIFY WITH ONE CONNECTIVITY LAYER

Lighting – Few milliseconds latency per hop

Sensors – Low power networks with auto routing selection

Asset tracking – High data throughput

Switches – Reliable, ultra-low power control

Collect data, manage and control devices, and track location with connectivity for multiple applications.

WIREPAS

DESIGNED FOR RESILIENT COVERAGE & RELIABILITY

PROVEN RELIABLE CONNECTIVITY

Over 700 000 devices per network thanks to patented routing algorithm which allows millions of decisions in parallel.
100% coverage without infrastructure
> 99.99% availability in large-scale installations

DEMANDING IOT

Designed to work in environments with thousands of other wireless devices producing interference, metal surfaces reflecting and harsh environmental conditions.

WIREPAS

DESIGNED FOR EXTREME SCALE AND DENSITY

COLLISION-FREE COMMUNICATION

Up to 1,500 devices in one cubic meter can have 2-way communication with no collisions

NO LIMIT IN SCALE

Deterministic performance at any scale point.

ACCURATE INVENTORY

Wirepas Mesh can detect & identify up to 5,000 devices in one minute

WIREPAS

DESIGNED FOR EASY INSTALLATION

EASY TO INSTALL AND COMMISSION

Installation requires zero configurations on the field.

Any maintenance person is capable to commission a device to customer back end system.

No specific skills are required in planning, installation or maintenance.

WIREPAS

DESIGNED TO MAKE IOT AFFORDABLE

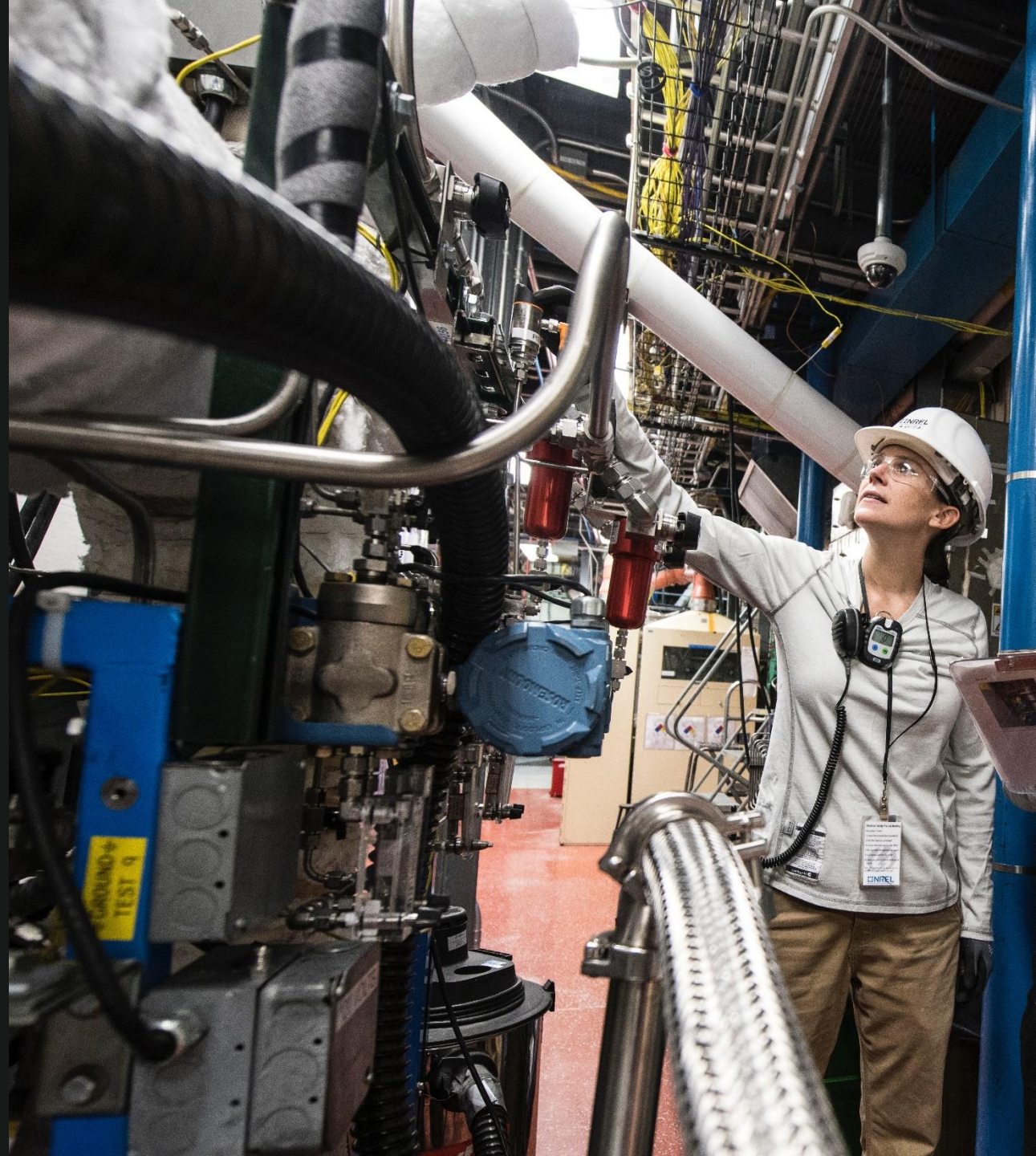
MINIMIZE THE TOTAL COST OF OWNERSHIP FOR IOT CONNECTIVITY

Wirepas Mesh runs on off-the-shelf 2.4GHz hardware. A large ecosystem provides interoperable products.

The de-centralized, dynamic routing requires no configuration, which enables easy and fast installation.

Self-healing operation of Wirepas Mesh enables minimal maintenance.

There are no recurring fees for the connectivity.



DESIGNED FOR LONG BATTERY LIFETIME

YEARS OF OPERATION FOR BATTERY POWERED ROUTERS

24/7 operation, continuously connected and routing data.

Over 5-year lifetime with 4000 mAh battery (1,5 packets per second), including basic sensor power consumption.

Greater than 10-year lifetime can be achieved with lithium primary batteries.

IN-BUILT POSITIONING

ASSET TRACKING

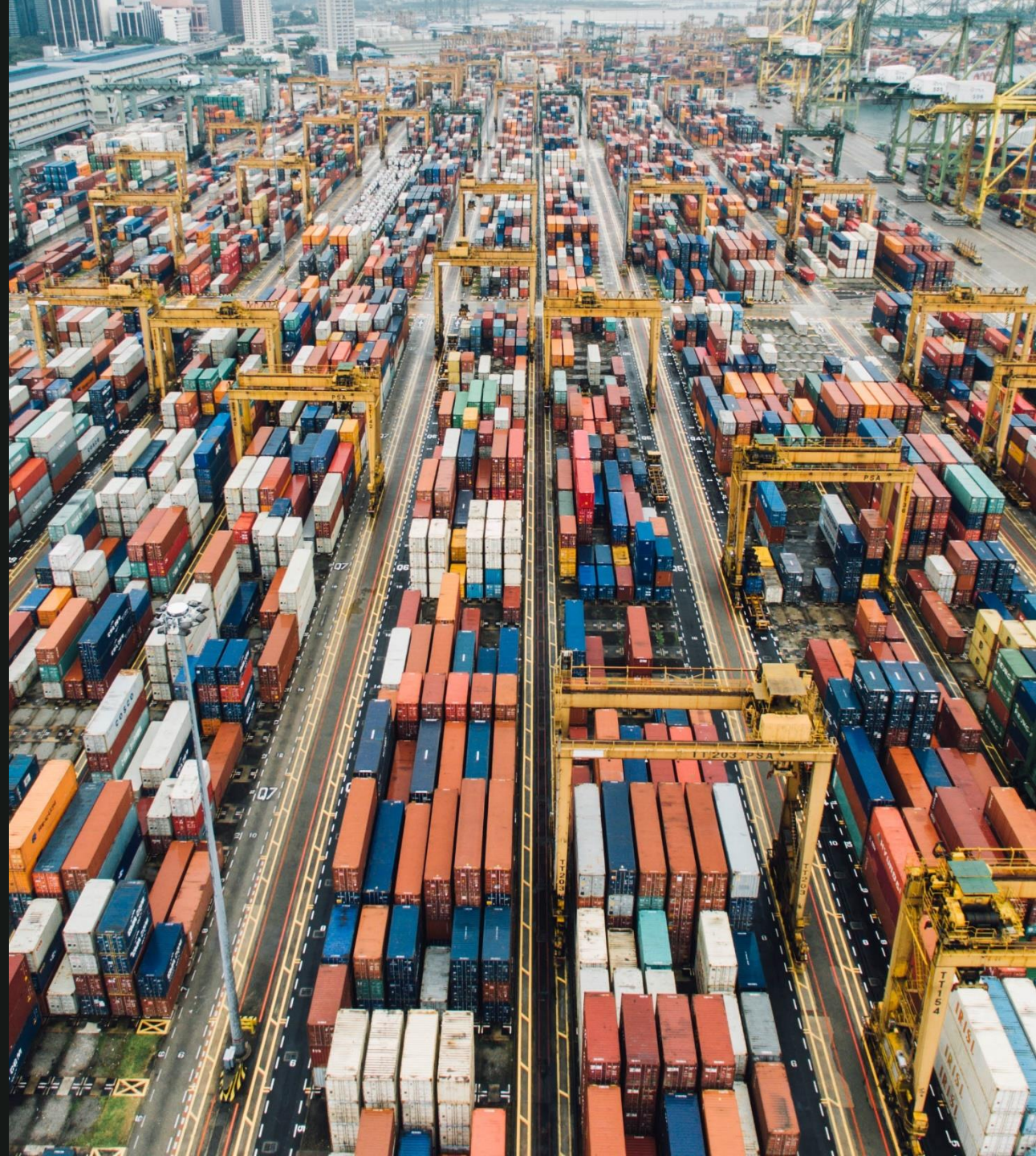
Add a wireless tag to an asset and it becomes part of the network. Wirepas Mesh uses fixed battery-operated devices called anchors as a reference to locate assets.

INDOOR POSITIONING

Wirepas Mesh utilizes the native network signaling to detect the location of the assets. 2-5m location accuracy with 10m anchor separation.

LOCATE AT ANYTIME

Existing low power sensor network enables positioning of the moving assets at any time anywhere. Alternatively wireless lighting can be used as positioning network.



WAREHOUSES

CASE PROLOGIS

Prologis is the world biggest logistic warehouse owner with 83 million m^2 footprint.

Their IoT platform, powered by Wirepas Mesh connectivity, has tens of use cases.

- Real estate condition monitoring
- Lighting control and energy saving
- Asset tracking
- Goods in, goods out identification

WIREPAS

PALLET TRACKING

WORLD LEADER IN TRACEABLE PALLETS:

- End-to-end pallet tracking as a service.
- Real-time inventory of pallets at service centers and gates
- Real time condition monitoring of goods
- Dimensioned for individual goods tracking
- >100,000 pallet per service center
- Goods in, goods out identification

WIREPAS

SMART LOCKER SOLUTION

CASE POSTI GROUP

SOLUTION AND BENEFITS

Finland's main postal service, utilizes Wirepas Mesh enabled Haltian Thingsee platform in their smart locker solution.

With the new solution provided by Haltian, Posti will get reliable control over the lockers wirelessly. This means more real-time information about the status of the lockers, their use will be more efficient, and the security of the system will be improved. In the future, the wide self-service network will also enable recycling better than ever before.

In the new solution, the data-flow goes both ways, which enables efficient controlling of the lockers directly from Posti’s system. The two-way data-flow will also make customer service faster and more flexible. The lockers can also be filled a lot faster and more easily when the couriers can open the lockers faster and with better control.

WIREPAS

LIGHTING CONTROL AND HEAT MAPPING IN OFFICE

CASE ORGANIC RESPONSE

SOLUTION AND BENEFITS

- Utilising Wirepas Mesh over the lighting system to monitor space utilisation and to control the lighting system.
- 2,500 nodes
- Lighting control
- Heat mapping
- Data collection to cloud

WIREPAS

EMPATHIC BUILDING

CASE TIETO

SOLUTION AND BENEFITS

- Tieto Empathic Building features a mobile and desktop application visualizing your physical space, environment, work and the people within – in real-time.
    - Transfer to cloud
    - 1000’s per building
    - Lighting control
    - Heat mapping
    - Environmental monitoring

WIREPAS

Contact
C+R Automations- GmbH
Nürnberger Straße 45
90513 Zirndorf

Tel. +49 (0)911 656587-0
E-Mail: info@crautomation.de
www.crautomation.de