

Redpoint

See the moving world

RTLS Solutions for the Enterprise

July 2019

About Redpoint

History: Founded in 2011 by a team of wireless industry veterans

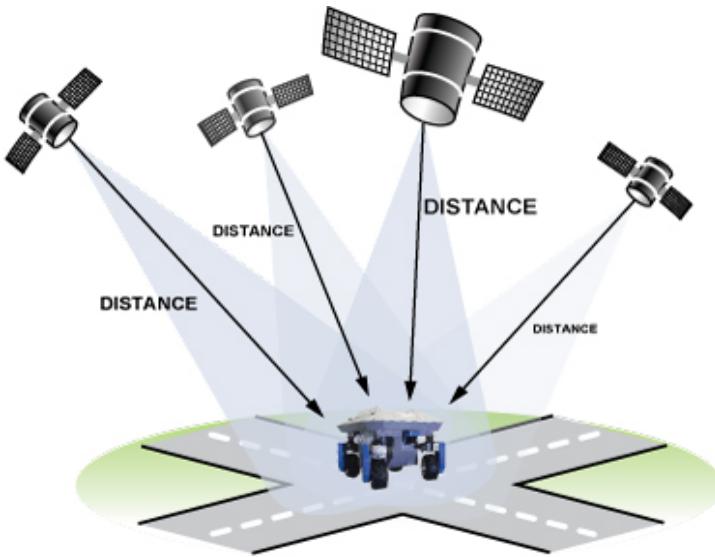
Team: Currently 60+ employees in 3 locations (Boston, Beijing, Kharkiv)

Mission: We build the world's most accurate, responsive, scalable and versatile indoor real time location system to help you see and manage your moving world

Product: an RTLS platform delivers visibility and connectivity in dynamic industrial environments that allows our customers to operate their businesses with high confidence and improved safety, productivity and efficiency



The opportunity for our technology



Challenges for existing location services architecture (RTLS)

- Anchors needs to be perfectly synchronized
- Many solutions require wired infrastructure connections
- Expensive infrastructure
- Costly and difficult to scale
- Over-burdening existing WIFI networks

Redpoint solved these problems

- ✓ UWB high-definition accuracy & low-latency
- ✓ Patented system architecture and position algorithms
 - Anchors transmit timing and location information
 - Tags receive and compute their own locations
 - Extreme low latency scheme
- ✓ Proprietary protocol stacks
 - Maximum bandwidth efficiency
 - Scalability
 - Simultaneous communication, location and data services
- ✓ Reduced cabling & logistics costs

Enterprise RTLS needs

Scalability

Easy adapt to warehouses from < 50,000 sq.ft. to > 1M sq.ft.

Versatility

Meet diverse applications needs including workforce management, safety enhancement, indoor navigation and Digital Twin

Accuracy & responsiveness

High accuracy across industrial Non-Line-of-Sight environments

Sub 200 millisecond response time when tracking high speed vehicles and robotics

Robustness

Resilient to EM interference, network interruptions

Minimize support burden of IT support team

Ease of support & management

Easy to upgrade software and firmware

Infrastructure expandable for new applications in the future

Redpoint system overview

Applications:

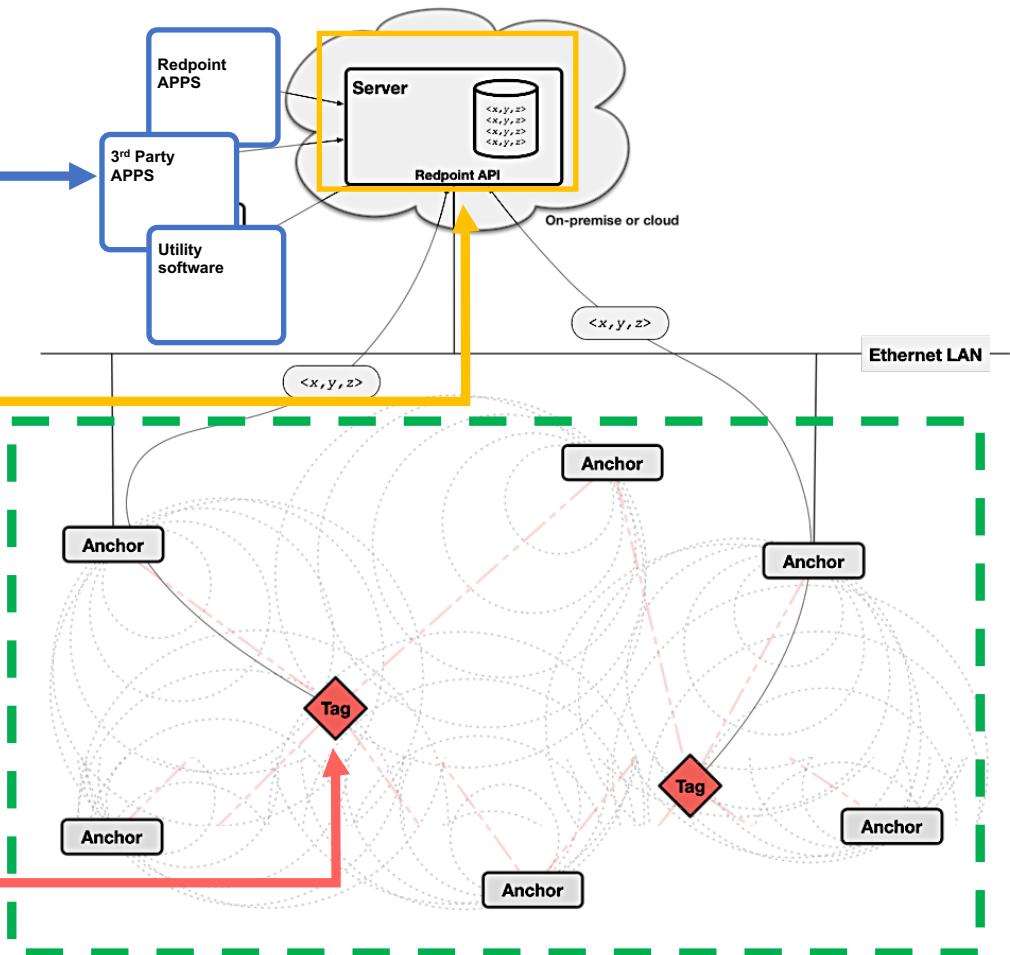
SiteWise, SitePlan & SiteMonitor

Server stores RTLS data

Anchors:

Tags only report within the system borders created by anchors.

Tags to track vehicles, people or assets.



Industries and use cases

Materials Handling (DHL, Amazon, Raymond, Sinopec)

- Vehicle safety, personnel safety, workforce management, asset tracking

Oil, Gas and Energy (Accenture, Chevron, Rio Tinto)

- Vehicle and personnel safety, workforce management

Industrial IoT (Siemens, Panasonic/Omni-ID, China Unicom, Sany Heavy Industry)

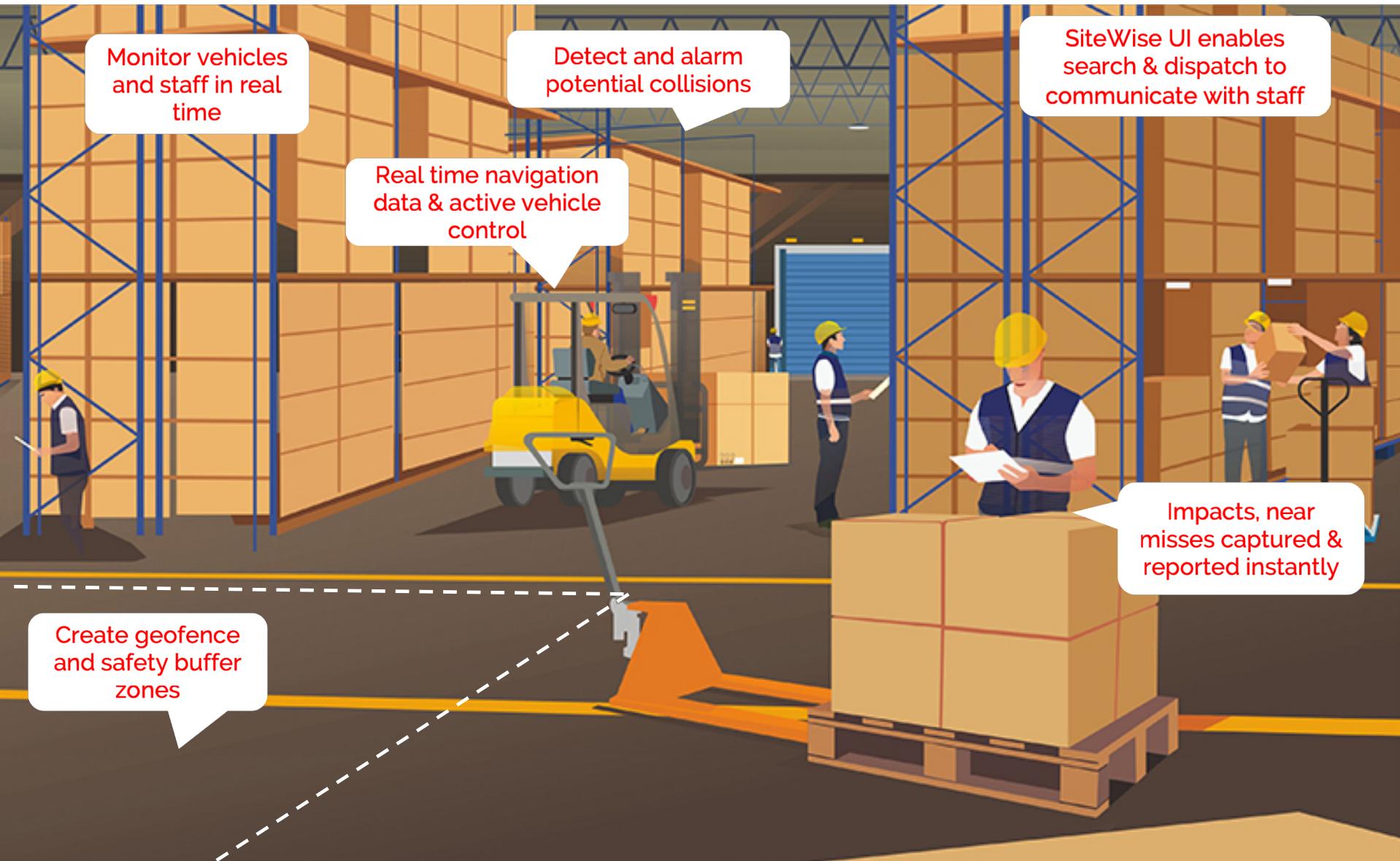
- Process control and optimization, asset tracking, safety

Other

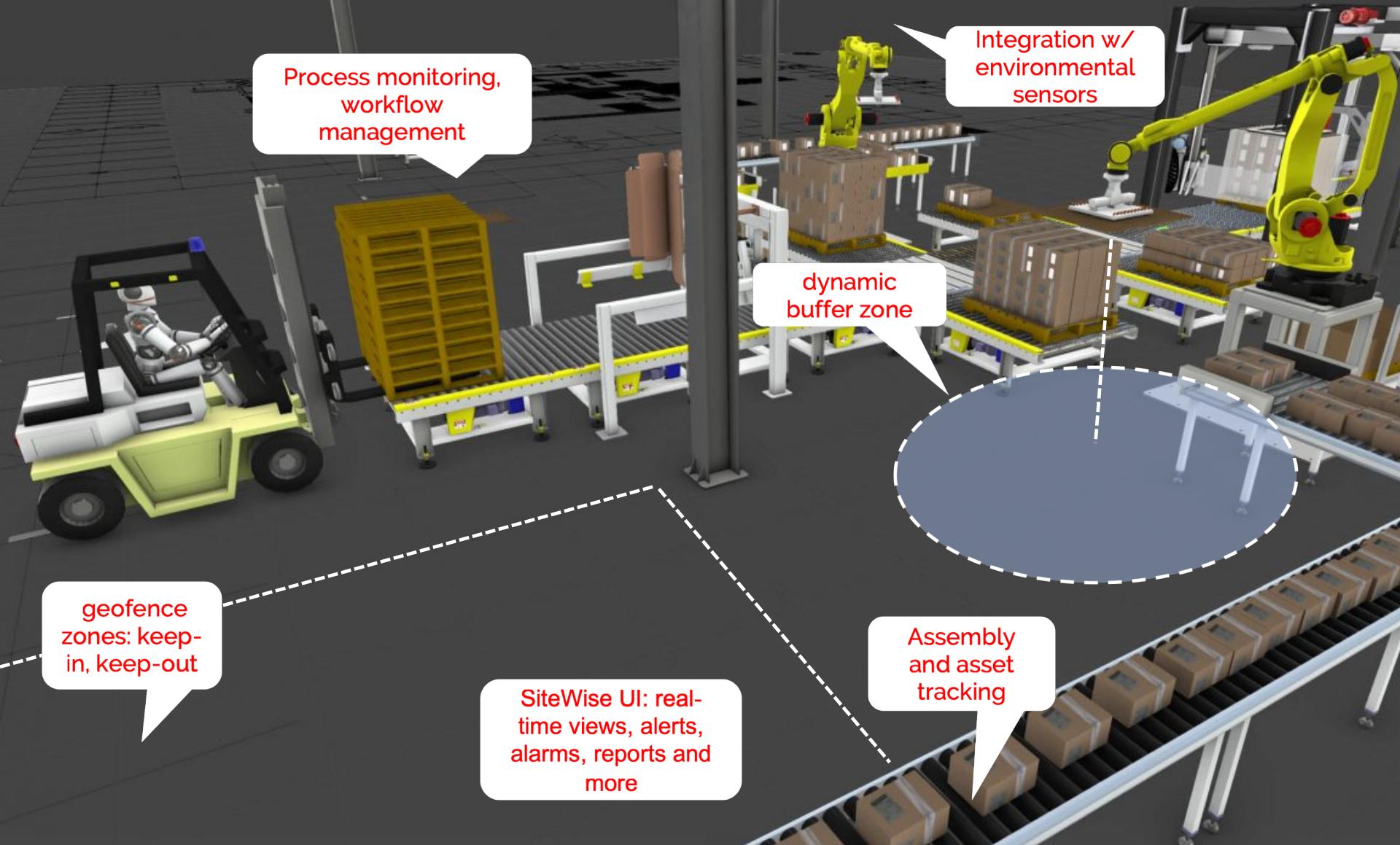
- Healthcare (Fuji-Xerox, Stanley Healthcare, Neusoft)
- Data center (Beijing)
- Indoor navigation (public building, parking)



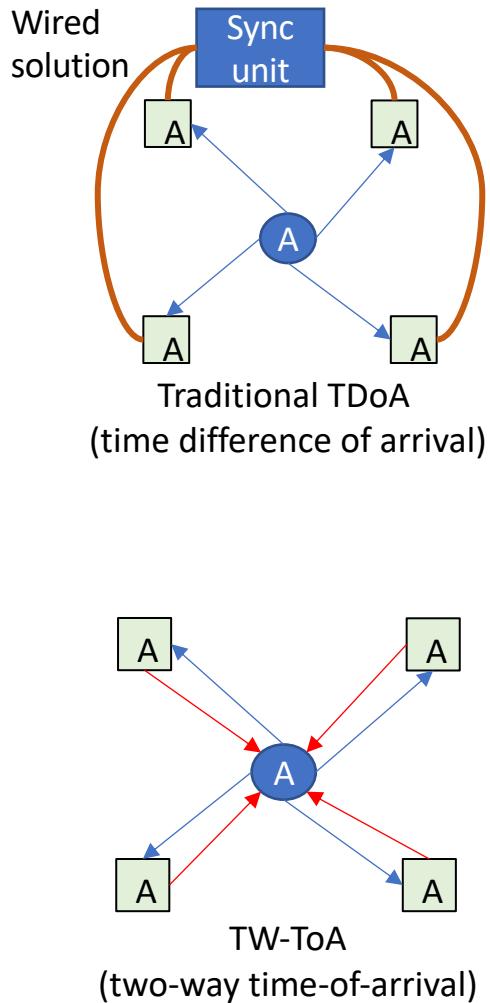
Material handling & warehouse applications



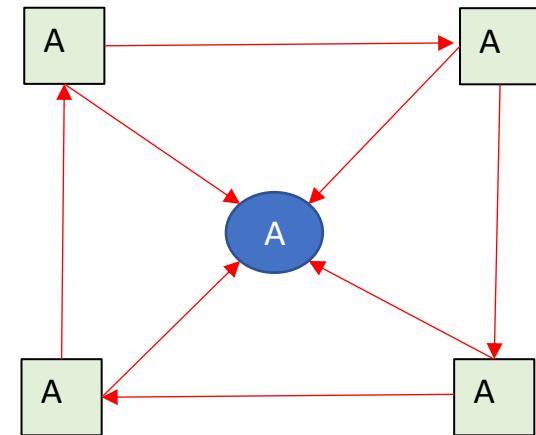
IoT applications



UWB technologies for RTLS



Traditional Ultra-wideband (UWB) systems can provide excellent accuracy but face limitations: poor scalability and high cost



Redpoint Downlink TDoA (DL-TDoA)

Redpoint has solved the challenges facing traditional UWB RTLS through extensive research and systemic design

Developed for robust high accuracy (20cm) and low latency, our proprietary UWB platform delivers the highest value and performance for today's industrial client

Anchors (infrastructure hardware)

Power-Over-Ethernet: anchors are PoE-powered, which means easy integration into warehouses' existing infrastructure

- Many warehouses already have a PoE setup
- This cuts down on cabling and installation costs

Ultra-Wideband System: using the UWB spectrum means the system is very accurate, low-latency and super scalable

- RTLS using UWB gives accurate positions with fewer infrastructure devices needed
- Supports up to 5,000 anchors and 20,000 tags

Indoor Ceiling-Mounted Anchor



PoE Wall-Mounted Anchor



Basic Tags

General Purpose Tag

- Highly configurable for different use cases
- Sensor interface for external sensor connection
- Configurable push button and alarm control interface
- Magnetic charging
- Vehicle mounting bracket available



Personnel Badge

- E-ink display for messaging
- Emergency push button



Asset Tag

- 3-year battery life
- IP67 rated
- Multiple mounting options



Specialty wearables

Vehicle control tag

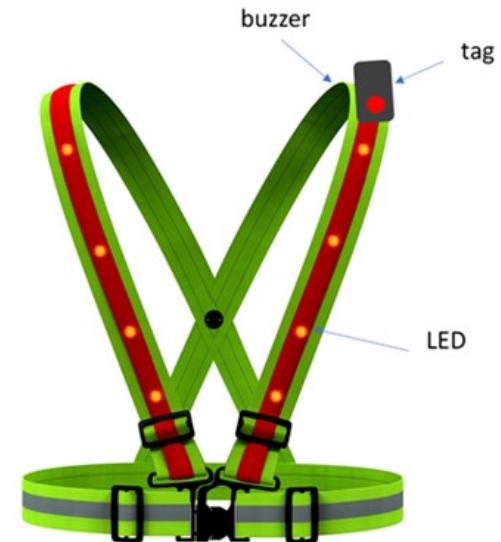
- IP67
- Dual CAN bus interface to vehicle control system
- Visual and audible alarm



Vehicle mount tag

Safety vest

- Detachable tag interface
- LED and buzzer



Smart hard-hat

- Built-in RTLS module
- Vibration and visual alarm
- Plug-in ear-bud
- Removable battery



Smart hard-hat

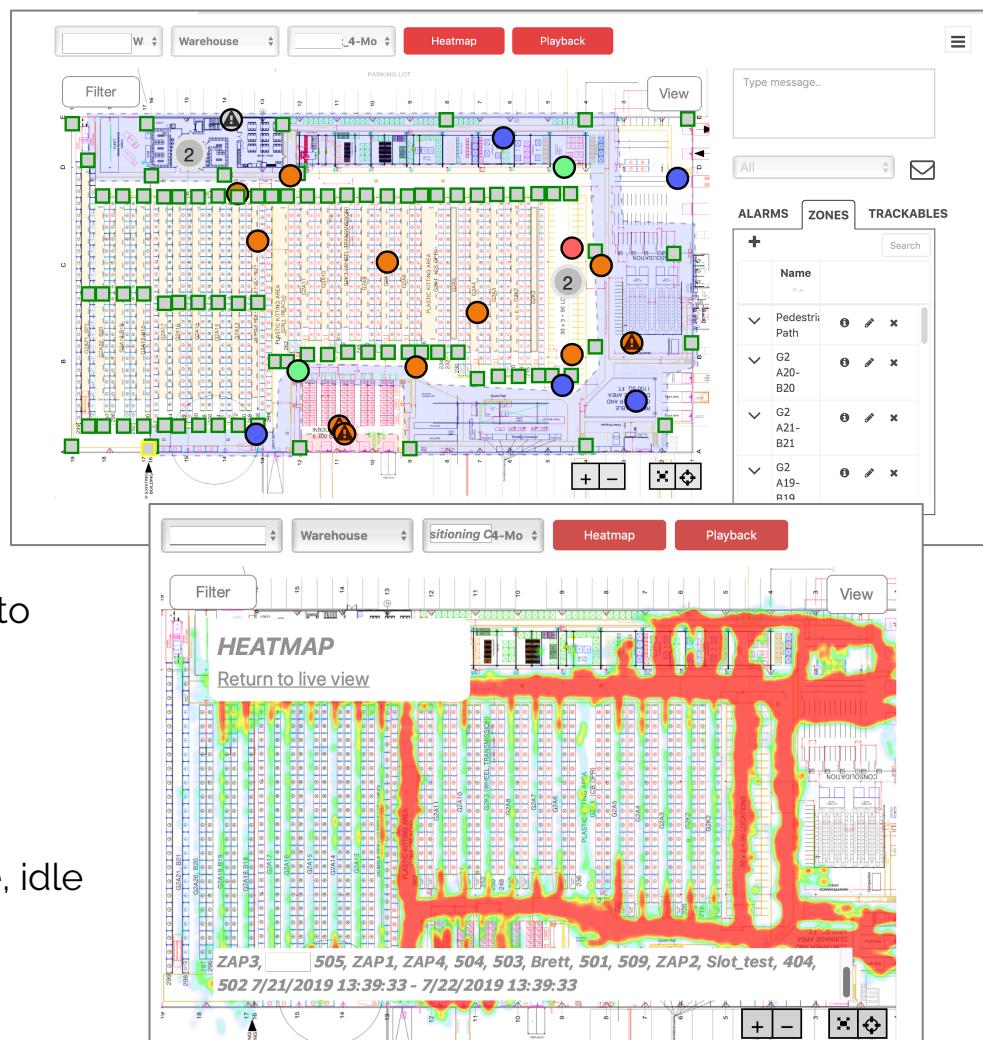
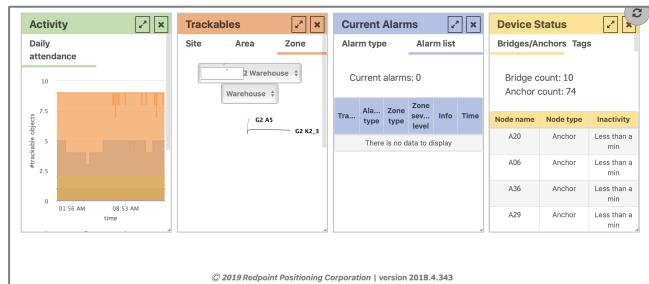
Outdoor solutions

- IP66 rated anchor
- IP67 rated asset tag
- IP67 rated vehicle mount tag
- IP65 rated personnel badge (2019/Q4)



Outdoor solar powered
Redpoint anchors (Flour
safety pin project, 2016)

SiteWise user interface



Live view

Real-time notification

- Alarm notification to supervisors
- Send site-wide alarm and text message to individuals

Interactive search

Analytics – heatmap, spaghetti diagram, route playback

Reporting – time & attendance, travel distance, idle time, alarms, events

Site operation management

- Tag assignment
- Network monitoring

SitePlan

Utility for Redpoint PICO process

Planning

- Project setup, floorplan and coverage definition
- Anchor layout, IT network and wiring
- generates sales/project documents

Installation

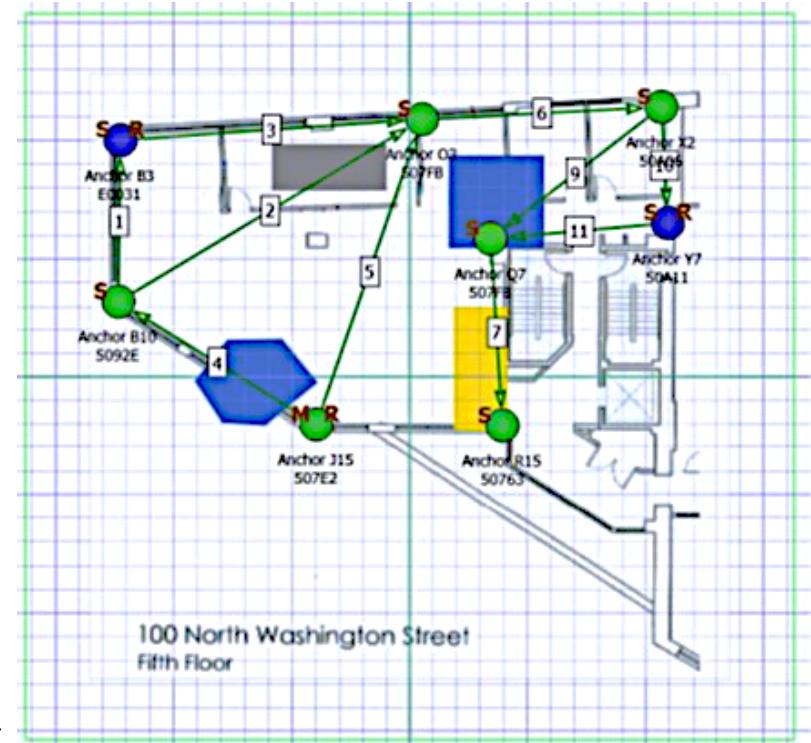
- IT network verification
- Anchor installation/configuration and position calibration/adjustment

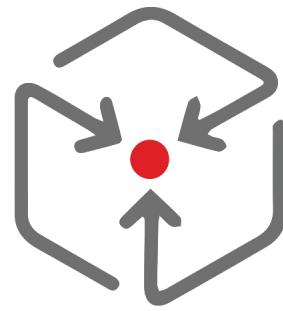
Commissioning

- Location service configuration and management
- Performance evaluation and monitoring

Operation

- System performance monitoring and debugging





Redpoint Positioning

Ready to help you manage your **moving world**