

iWAREHOUSE[®] FIELDSENSE

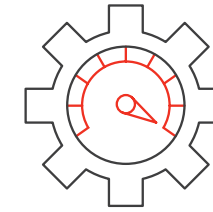
PROXIMITY NOTIFICATION SYSTEM



iWAREHOUSE[®]

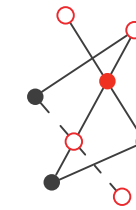
OPTIMIZE, CONNECT, AUTOMATE.

iWAREHOUSE FieldSense (iW.FieldSense) is part of the iWAREHOUSE® Intelligent Warehouse Solutions portfolio and Raymond's intralogistics capabilities – empowering companies to optimize, connect, and automate their operations with a variety of tools and services. We believe this approach is essential to improving your facility functions, as well as creating a culture of continuous improvement throughout your company. Through customized solutions that are the right fit for your business, we provide you with a way to remain productive, efficient, and competitive.



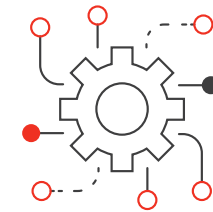
OPTIMIZE your operations, systems, assets, fleet and personnel to ensure everything in your facility provides the most value. Raymond applies the principles of lean management to help you achieve optimization, eliminate inefficiencies, and identify and solve challenges.

Solutions include Lean Management, Material Handling Equipment, Financing, Rentals, Virtual Reality Learning and Maintenance/Service.



CONNECT your facilities with innovative technologies. Smart technologies, like telematics, help operations gather and analyze data — providing actionable insights that can be implemented to deliver measurable business results.

Solutions include Telematics, Operator Assist Technologies, Labor Management Systems, Real-Time Location Systems, Object Detection and Notification Systems and Consulting



AUTOMATE your operations to make production and distribution processes efficient, easily repeatable, consistent and cost-effective. Automation will enhance processes, maximize existing labor and resources, as well as make your warehouse more scalable.

Solutions include Automated Guided Vehicles, Automated Storage and Retrieval Systems, Robotics and Consulting Services.

INCREASE EMPLOYEE AWARENESS IN DYNAMIC OPERATING ENVIRONMENTS.

iW.FieldSense is a robust proximity notification system designed to alert pedestrians and lift truck operators when they come within a predefined distance of properly equipped trucks and pedestrians. The system can also alert vehicle operators to the proximity of properly equipped structural elements in a facility.

Using audible and visual alerts, iW.FieldSense helps increase a user's environmental awareness for other properly equipped users, helping to reinforce training and best practices in today's congested warehouses.

3 LEVELS OF AWARENESS



TRUCK-TO-TRUCK



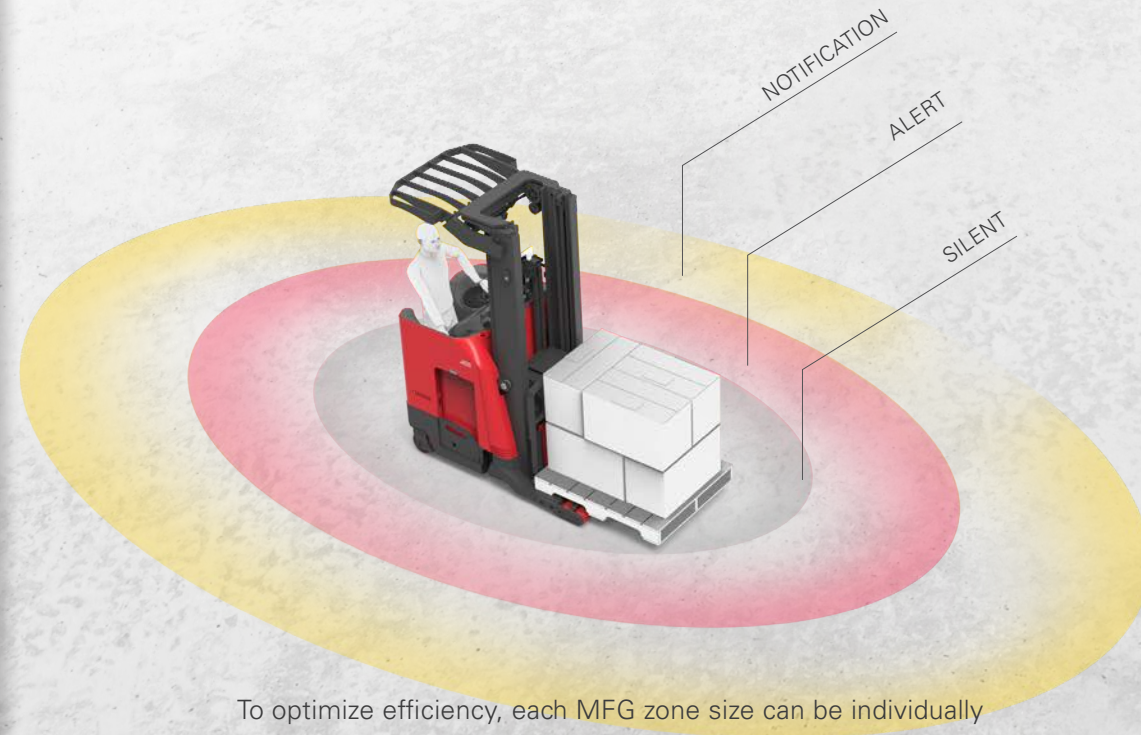
TRUCK-TO-PEDESTRIAN



TRUCK-TO-FACILITY
(WITH INFRASTRUCTURE OPTION)

iW.FieldSense creates three adjustable Magnetic Field Generator (MFG) zones around your lift trucks and other vehicles:

ZONE	ALARM
NOTIFICATION	Moderate intensity light and sound
ALERT	Higher intensity light and sound
SILENT	None



To optimize efficiency, each MFG zone size can be individually adjusted to suit a specific application or facility.

Field size and shape will depend on how the field is configured and may vary when in proximity to some objects.

BENEFITS

TAILORED TO YOUR APPLICATION

Adjustable fields and ranges allow you to customize the system to your operators, applications, and facility layout.

360° DETECTION

Provides a solution for free and dynamic environments that follows trucks and personnel around for greater security and flexibility.

MAGNETIC FIELD GENERATION

Allows the system to see through and around most objects—including racking and corners—for exceptional performance in virtually any environment, including cold storage.

EASY INSTALLATION

Requires little or no major infrastructure changes. Vehicle hardware kits are designed for easy installation. No additional software applications to learn.

VEHICLE COMPATIBILITY

Allows the system to be added to virtually any make and model of forklift—or other vehicle—for use across your entire fleet.

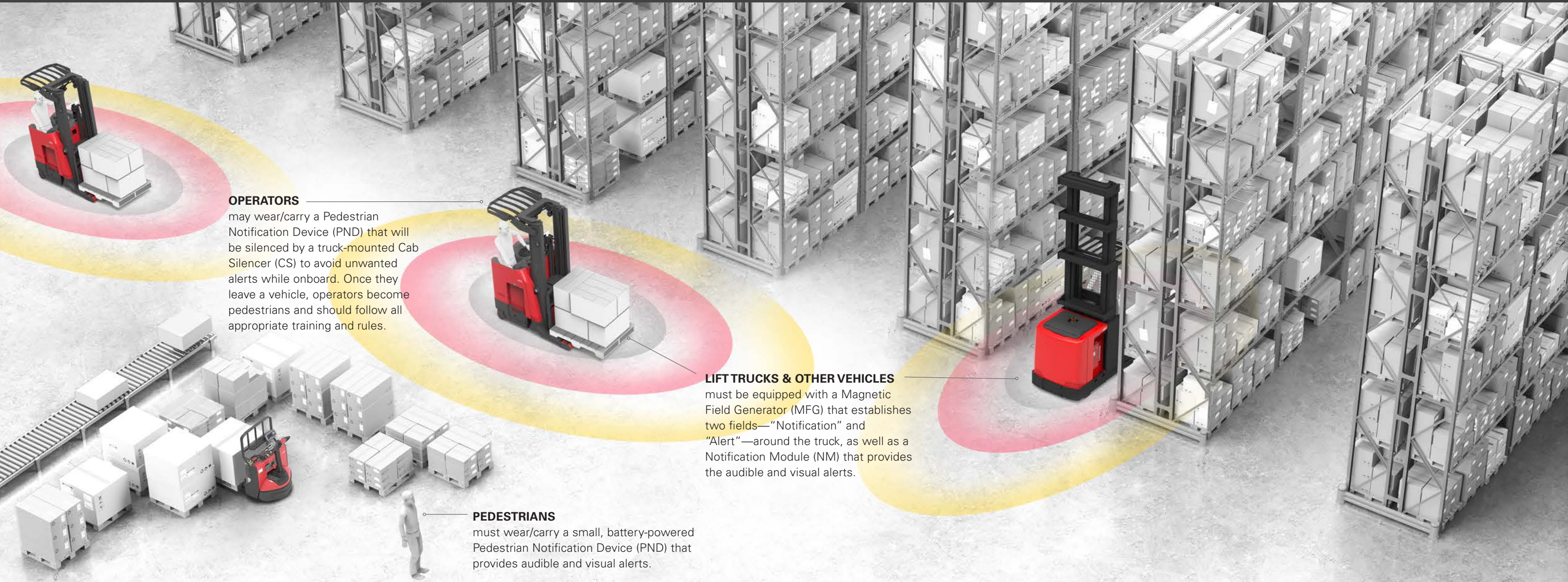


This system is intended to reinforce facility rules through audio and visual alerts. It is not intended as a replacement for operator or pedestrian training. It is the sole responsibility of the operator, at all times and under all conditions, to remain vigilant and constantly maintain control of all aspects of the lift truck's operation.

PRIMARY SYSTEM COMPONENTS:

iW.FieldSense uses Magnetic Field Generators to create adjustable fields around each truck. If the system detects another vehicle or person within its range, it alerts both parties with an audible and visual notification.

In order for the system to work, vehicles, operators, and pedestrians need to be equipped with specific iW.FieldSense components:



OPERATORS

may wear/carry a Pedestrian Notification Device (PND) that will be silenced by a truck-mounted Cab Silencer (CS) to avoid unwanted alerts while onboard. Once they leave a vehicle, operators become pedestrians and should follow all appropriate training and rules.

LIFT TRUCKS & OTHER VEHICLES

must be equipped with a Magnetic Field Generator (MFG) that establishes two fields—"Notification" and "Alert"—around the truck, as well as a Notification Module (NM) that provides the audible and visual alerts.

PEDESTRIANS

must wear/carry a small, battery-powered Pedestrian Notification Device (PND) that provides audible and visual alerts.



SPECIFICATIONS

Factory Settings (Max)	Range
Notification Zone: ~43 ft. (x34)	~23-50 ft.
Alert Zone: ~30 ft. (x24)	~16-35 ft.
Cab Silencer: up to 6 ft.	
Detection Response Time: 1 second	
PAD Battery Run Time: 12 hrs. minimum at room temperature with new battery	
Works in Cold Storage: Tested to -40C and +55C	

OPTIONAL BUILDING-INSTALLED EQUIPMENT FOR ENHANCED FUNCTIONALITY

+ CREATE SILENT ZONES:

Proximity alerts can be silenced to minimize distractions and enhance productivity in certain locations and applications.

+ PROVIDE ADDITIONAL ALERTS, HELP SUPPORT VEHICLE ACCESS AND ADJUST ZONE SIZES:

Lights and alarms can be activated when when equipped vehicles are in near proximity. Door locks and gates can be activated and/or deactivated when PNDs are in close proximity, to allow access to high traffic areas. Zone sizes can also be shrunk in areas of high visibility to avoid constant alerts.

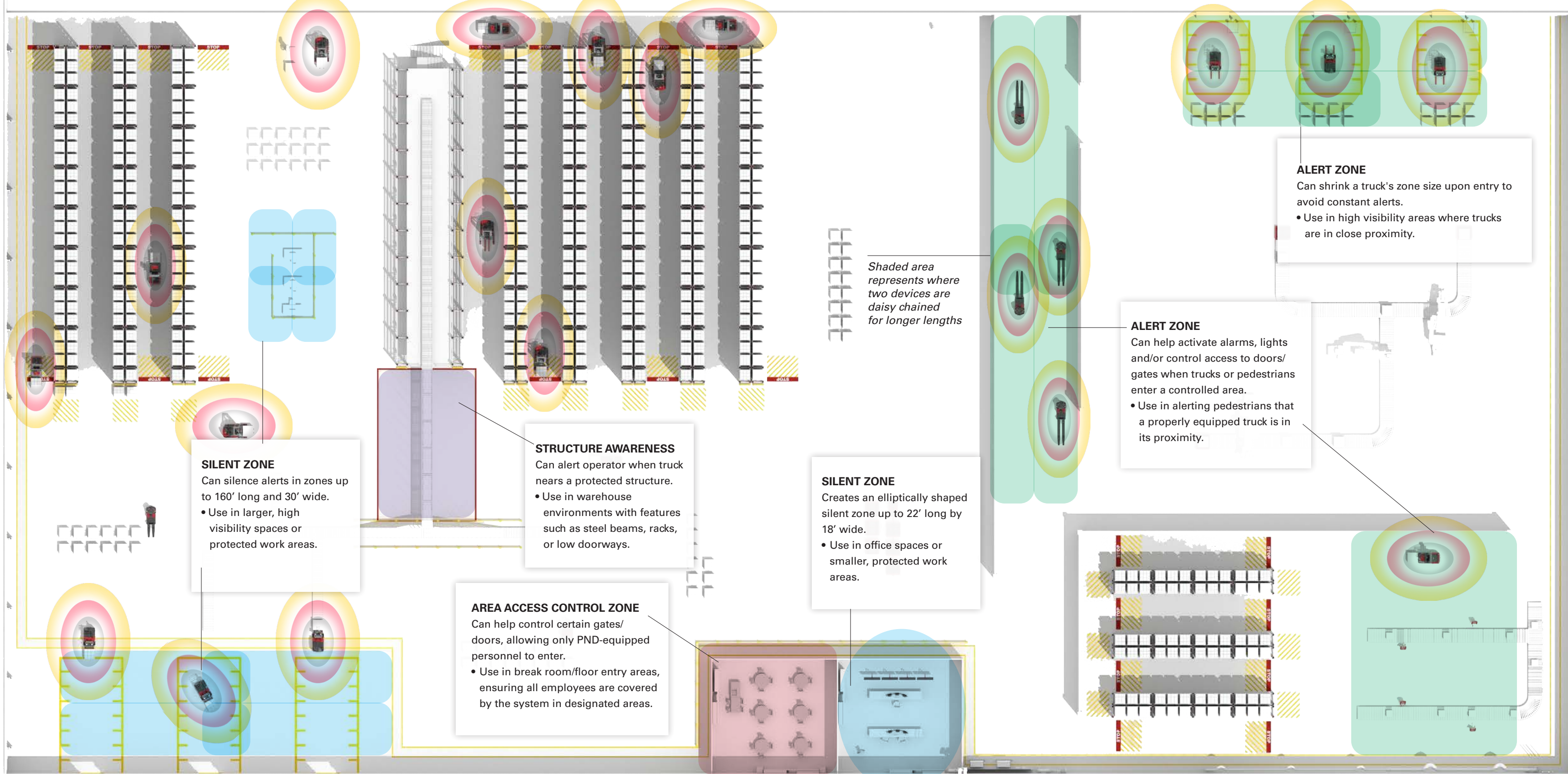
+ HELP LIMIT PEDESTRIAN ACCESS TO DESIGNATED AREAS:

Certain gates and doors can be controlled, allowing only PND-equipped personnel to enter

+ ALERT OPERATORS TO PROPERLY EQUIPPED STATIONARY STRUCTURES:

Certain structures can be tagged to alert operators when their truck nears a protected structure.

OPTIONAL EQUIPMENT:			
SILENT ZONES	ALERT ZONES	AREA ACCESS CONTROL ZONE	STRUCTURE AWARENESS
Large areas of space: MAC-Z up to 160' long and 30' wide	Large areas of space: MAC-A up to 160' long and 30' wide	Access Monitor	Structure Monitor
Smaller areas of space: Room Silent Zone up to 22' long by 18' wide	Smaller areas of space: Area Monitor		
PND ACCESSORIES:			
10-Port PND Charger Offers convenient, localized storage and charging.		PND Checkout System Verifies proper operation of your Pedestrian Notification Devices.	



SILENT ZONE
 Can silence alerts in zones up to 160' long and 30' wide.
 • Use in larger, high visibility spaces or protected work areas.

STRUCTURE AWARENESS
 Can alert operator when truck nears a protected structure.
 • Use in warehouse environments with features such as steel beams, racks, or low doorways.

AREA ACCESS CONTROL ZONE
 Can help control certain gates/doors, allowing only PND-equipped personnel to enter.
 • Use in break room/floor entry areas, ensuring all employees are covered by the system in designated areas.

SILENT ZONE
 Creates an elliptically shaped silent zone up to 22' long by 18' wide.
 • Use in office spaces or smaller, protected work areas.

Shaded area represents where two devices are daisy chained for longer lengths

ALERT ZONE
 Can shrink a truck's zone size upon entry to avoid constant alerts.
 • Use in high visibility areas where trucks are in close proximity.

ALERT ZONE
 Can help activate alarms, lights and/or control access to doors/gates when trucks or pedestrians enter a controlled area.
 • Use in alerting pedestrians that a properly equipped truck is in its proximity.

HOW IT WORKS

BENEFITS OF MAGNETIC FIELD GENERATOR TECHNOLOGY

The Magnetic Field Generator (MFG) at the heart of the iW.FieldSense system, emits low frequency pulses that create an adjustable field around each piece of mobile equipment. If the field is detected by a pedestrian-worn Pedestrian Notification Device (PND), both the pedestrian and vehicle operator are alerted of each other's proximity. A similar response is created by Structure Monitors to alert vehicle operators.

Unlike other proximity notification solutions, MFG pulses can pass through most obstructions, allowing the technology to see through walls and around corners. The system also offers the benefits of:

- + Flexible, adjustable ranges
- + Truck-mounted and employee-carried mobile components, ideal for dynamic environments
- + Easy installation
- + 360° field of detection*
- + Flexible, reliable operation in ambient, cooler, and freezer applications

*In most cases, some environmental structures can impact field shape and functionality.



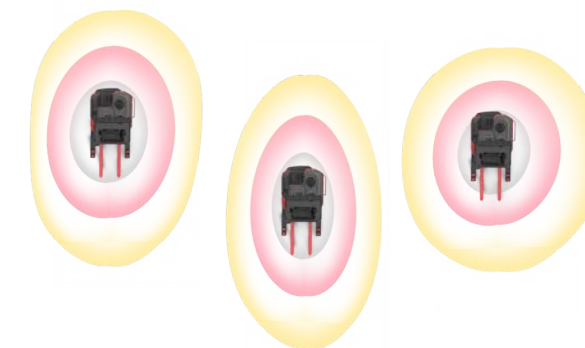
APPLICATION CONSIDERATIONS

To optimize the use of iW.FieldSense, you need to customize the size of the MFG zones around each truck to suit your equipment, facility, and application.

During this process, it should be noted that:

- + Each vehicle—depending on its make and model—will have a unique field shape and size due to MFG mounting variations.
- + Field shape may be influenced by environmental elements such as high intensity, non-LED strobe lights, high EMI signatures, specific RF signals, and/or metal structures.

Example of field shape change:



Operators should also be aware that one truck may sense the proximity of another more quickly—depending on direction of travel and size of the configured field—creating a slight difference in timing between alerts.

A SYSTEM WITH EXPERT SUPPORT SERVICES

iW.FieldSense can be tailored to the unique needs of your operation and application, and our team of experts is here to support you every step of the way:

iW.FieldSense Application Engineers work with your organization to understand your expectations and the problems you want to solve. Our Application Engineers determine the right solution by analyzing your facility, fleet, traffic patterns, and labor movements to ensure a proper and successful implementation.

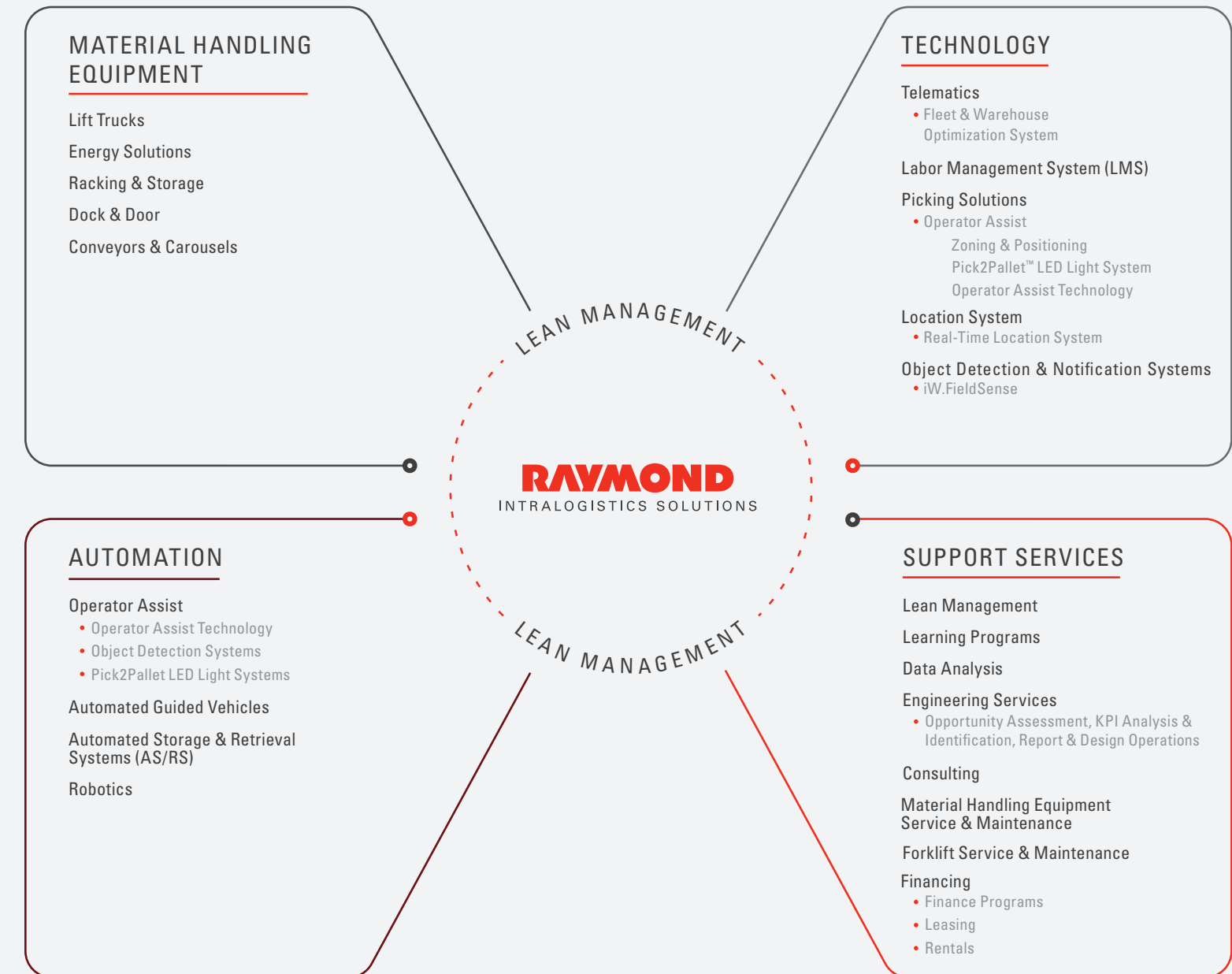
- + Pre-visit information gathering
- + Define equipment and support requirements
- + Determine implementation strategy
- + Define coverage areas/types
- + Identify potential facility-mounted option locations
- + Recommend MFG ranges/zone sizes for all vehicles
- + On-site visit and validation



YOUR COMPLETE INTRALOGISTICS SOLUTIONS PARTNER

Raymond is your single source for complete intralogistics solutions – offering customers the technology and know-how needed to provide warehouse operations, distribution centers and manufacturing facilities with a competitive edge. Our innovative solutions can help you optimize, connect, and automate your operation to cut lead times, reduce waste, minimize downtime, and improve quality.

By combining industry expertise and lean management principles with advanced material handling equipment, intelligent warehouse technology, labor management tools, automation, and support services, we can provide tailored solutions that optimize your people, processes, and facilities, and drive your business forward.





For 100 years, The Raymond Corporation has helped companies be the best at what they do through an intense focus on innovation, quality and service. That focus has never wavered, only grown. Today, Raymond is global and local. Forward-thinking and experienced. Focused on specific offerings and total solutions. As part of the Toyota Industries Corporation (TICO) family, Raymond offers the breadth and depth of systems, technologies and experience to be your global material handling resource. And as a full-service partner, we offer a total-solutions approach that empowers you with smarter, more efficient and more effective processes and technologies.

If you're looking for a partner with the tools and experience to help you run better and manage smarter, let's talk.

PO Box 130
Greene, New York 13778-0130

Toll free 1-800-235-7200
Fax 1-607-656-9005

www.raymondcorp.com

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SIFB-1089 622

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