



**RAYMOND**

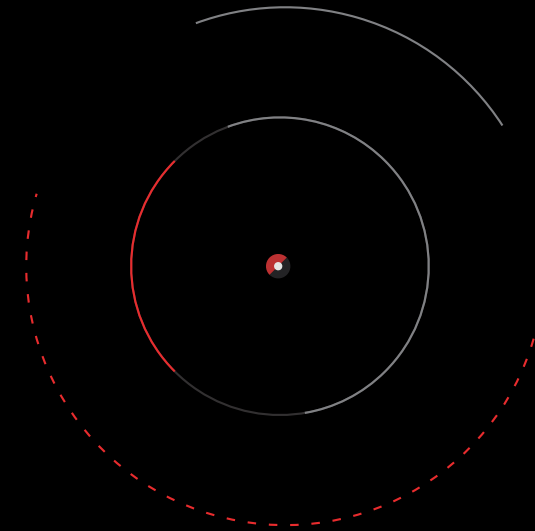
OPTIMIZE, CONNECT, AUTOMATE



# Successfully implementing intralogistics solutions.

The term “intralogistics solutions” is increasingly used in the supply chain, popping up in brochures, webinars and virtual meetings alike. But what does “intralogistics solutions” actually mean? It’s the art of optimizing, integrating, automating and managing the logistical flow of information, processes and material goods within the walls of a warehouse or distribution center. It’s more than just a buzzword, but only if you have the right partner to implement it.

The goal of intralogistics solutions — when applied correctly — is not only to help create greater visibility into a facility and its material handling functions but also to help customers increase effectiveness and efficiency through the optimization of people and processes. How does this happen? Through a mix of best-in-class methodologies, innovative products, and software-based, data-powered solutions that work together to help customers achieve their goals.

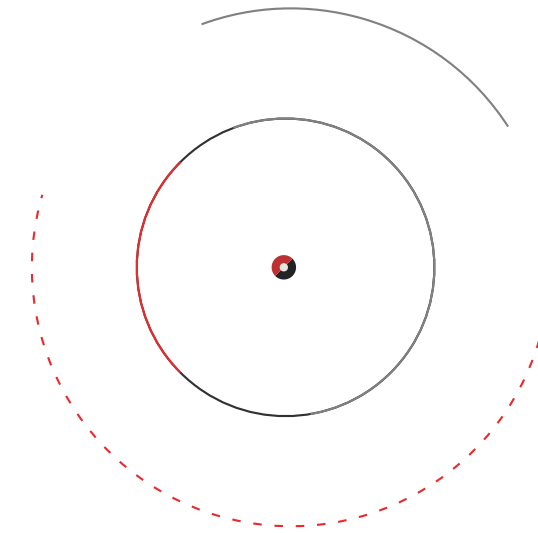


# What makes a good intralogistics solutions provider?

With so many options available to improve operations, you may not know where to start.

The key to successfully implementing intralogistics solutions is optimizing before you automate, not just investing in a “product” because you think it can solve a problem. It’s imperative to find a partner that works with you to find the best solutions and the right process for each specific application and organization — not just the quickest or most attractive one.

The Raymond Corporation suggests looking for a partner that can provide end-to-end solutions. That way, you can get from the beginning of your journey to the end with one reliable source. What does a provider with this capability look like and offer? An end-to-end intralogistics solutions provider can implement a variety of solutions to achieve your goals, depending on your unique application, including material handling equipment, intelligent warehouse technology, automation, support services and business process improvement.



## Beginning the journey.

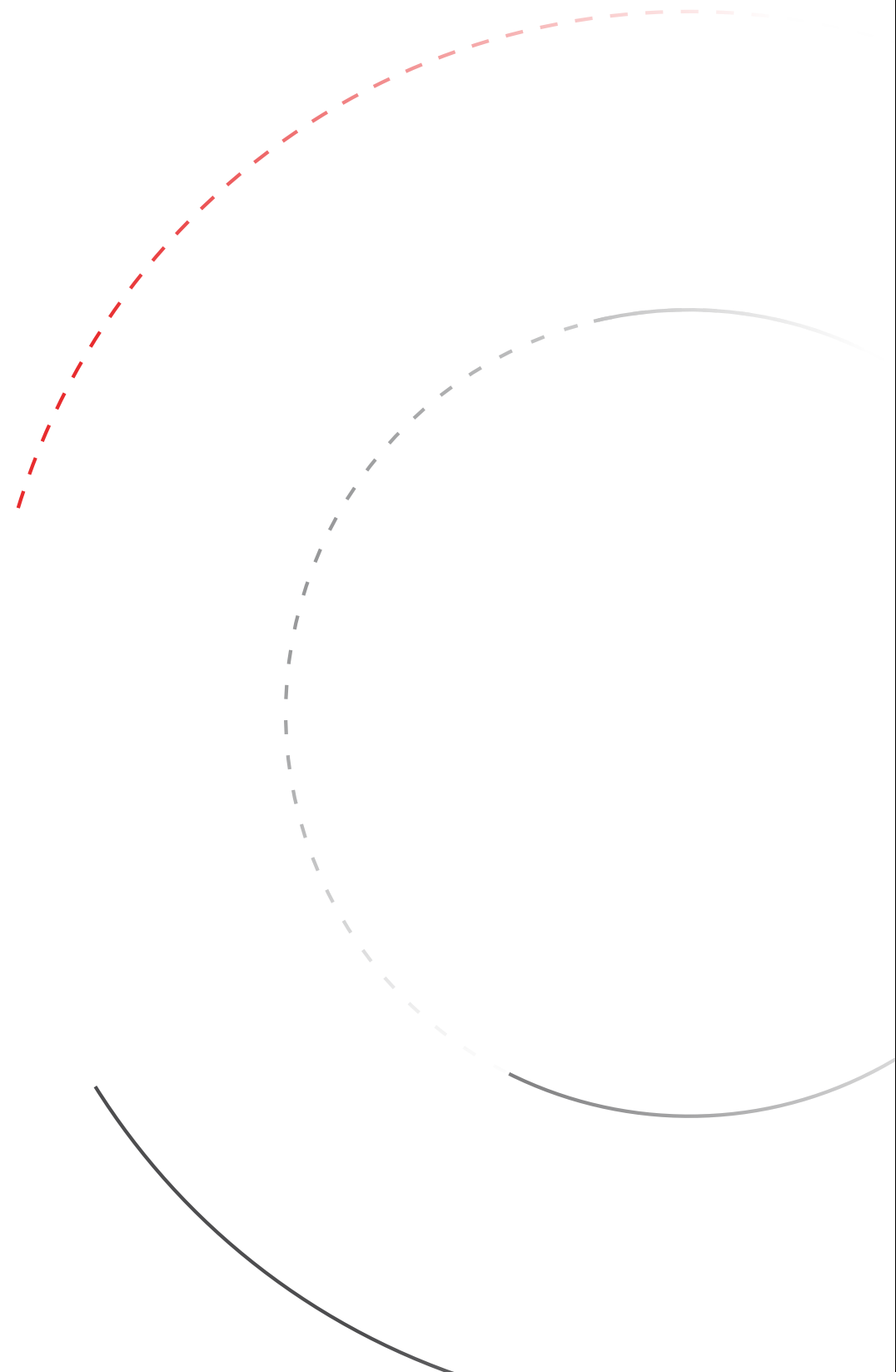
There are three key steps to creating an optimized workplace with end-to-end intralogistics solutions in mind: optimize, connect and automate. These steps in succession will improve your warehouse functions, as well as create a culture of continuous improvement throughout your company.

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# OPTIMIZE CONNECT AUTOMATE

Optimization is a crucial first step before investing in the latest material handling products and technologies. Ways to achieve optimization include:

- Utilizing the principles of lean management — a long-term discipline that helps eliminate inefficiencies and identify challenges — can help visualize improvements, root out inefficiencies and continuously improve your operations.
- Gathering and analyzing data to identify inefficiencies and wastes. Finding waste can help fund that next level of investment when you're ready.



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# OPTIMIZE CONNECT AUTOMATE

Running your business better also means finding ways to connect your entire operation with technology, including:

- Addressing pain points with smart, leading-edge technology to maximize operational performance and analyze data.
- Gaining actionable insights with telematics, allowing you to improve your operation and pinpoint inefficiencies.
- Utilizing an advanced technology platform that can help you integrate material handling equipment and automated systems and provide oversight into warehouse efficiency and processes.
- Reinforcing confidence with technology and education opportunities, like virtual reality simulation.

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## OPTIMIZE CONNECT **AUTOMATE**

Finally, it's time to identify activities that make sense to automate. To some, automation can seem overwhelming. But, if implemented properly, automation can help your operation increase productivity and accuracy — while answering your need for labor support. Before choosing an automated solution, be sure to:

- Leverage data gathered in the optimize and connect stages to help determine which automated solution is right for you.
- Be diligent in evaluating new technologies, such as operator assist technologies and robotics.
- Implement solutions such as automated towing, stacking, storage and retrieval to improve your warehouse functions. Remember: Not all automated solutions are created equal.

## What's the takeaway?

We encourage working with an end-to-end partner that is able to provide solutions that meet your operation's unique challenges every step of the way. Now is the time to create greater visibility of facility and material handling functions, as well as increase efficiency, visualize changes and continuously improve your operations.





**OPTIMIZE**  
**RAYMOND LEAN MANAGEMENT**



**RAYMOND**

## Instilling a Culture of Continuous Improvement With Lean Management Principles.

In business, even small enhancements in productivity and efficiency can have a big impact on your bottom line. Whether it is through reduced lead times, reduced waste, minimized downtime or improved quality, operations are looking for any advantage at every turn.

The Raymond Corporation's innovative intralogistics solutions can help you achieve all of the above by optimizing, connecting and automating your operation by applying lean management principles.

We believe this approach is essential to developing the right customized solution for your business. It's not a one-size-fits-all approach. The experts within Raymond's Solutions and Support Centers tailor recommendations to help your unique business run better and manage smarter — and it all starts with lean management.

# RAYMOND

## LEAN MANAGEMENT

Raymond Lean Management (RLM) procedures and techniques are based on the world-renowned Toyota Production System (TPS), which focuses on waste reduction through visualization, standardized work, target-based key performance indicators (KPIs) and continuous improvement activities to provide the best possible solutions. When applied correctly, RLM can effectively and efficiently produce optimized processes of sound quality that fully satisfy customer demands.

# Optimization Begins With Visualization.

Lean management methods are based on the philosophies of reduced waste in pursuit of the most efficient methods. This process begins with visualization. Visualization aims to make a situation easily understood merely by looking at it. The goal is to obtain as much relevant information as possible as efficiently as possible. This can be accomplished throughout a facility by:

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## TELEMATICS

Collecting data to allow for lean-based problem-solving methods to address process abnormalities.

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## DATA DISPLAYS

Putting data such as production rate, quality defects and machine status on display on the shop floor via graphs, charts or computer screens.

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## MARKINGS

Marking and labeling locations on the shop floor. Using different colors, you can mark where items are located and label the places so these items maintain a home location.

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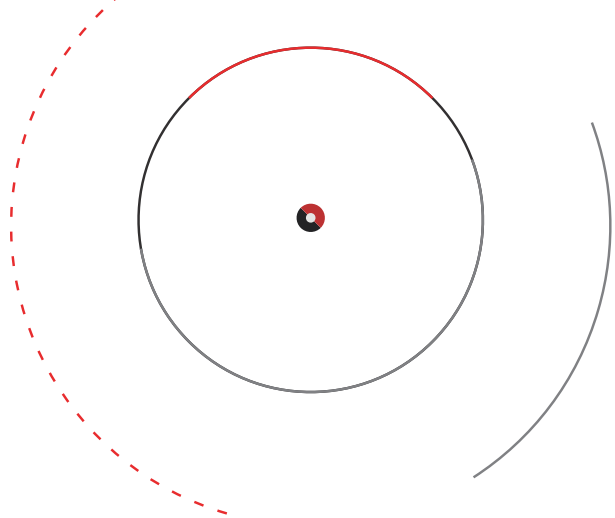
## TOOL DISPLAYS AND SHADOW BOARDS

Allowing employees to see immediately which tool or part goes where and which is missing.

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## FACILITY LAYOUTS

Displaying where your material is, how much more work there is and other details on your process.



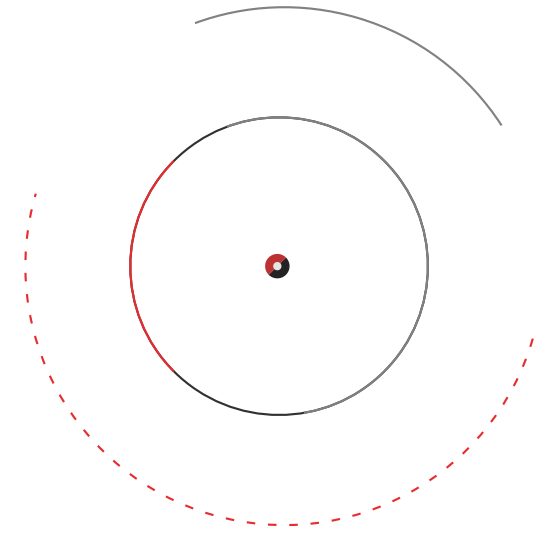
Visualization helps ensure operations act upon the concepts of continuous improvement, quickly recognize current conditions and stabilize a process.

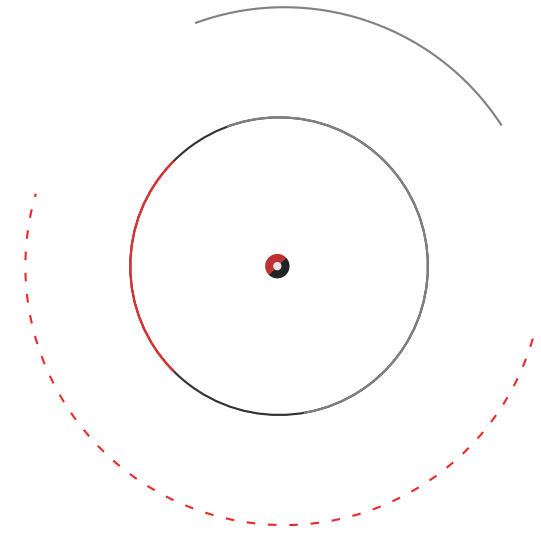


# Empowering Your Workforce to Identify and Solve for Waste.

Lean management adds value to an organization by empowering employees to make improvements and take ownership of the tasks they accomplish on a daily basis. By teaching workers to spot inefficiencies or potential errors in their work, lean management provides them with practical tools to share their ideas and develop impactful, long-term solutions. A key component of lean management is “kaizen” or “change for the better,” a strategy in which employees at all levels of a company work together proactively to achieve regular, incremental improvements. Employees throughout an organization are taught to identify wastes in their processes and come up with solutions to address those wastes by submitting improvement suggestions (kaizens) to management. If a kaizen is found to be successful, it will then be implemented throughout the operation. This opportunity to impact organizational change creates a more engaged employee culture, resulting in higher morale and workforce retention.

Collaboration between teams is a vital part of RLM’s cultural philosophy. Departments participate in daily meetings to review yesterday’s disruptions and errors and to give shoutouts to employees who are doing exceptional work. This helps stimulate a culture of continuous improvement throughout an organization





## Embracing Standardized Processes.

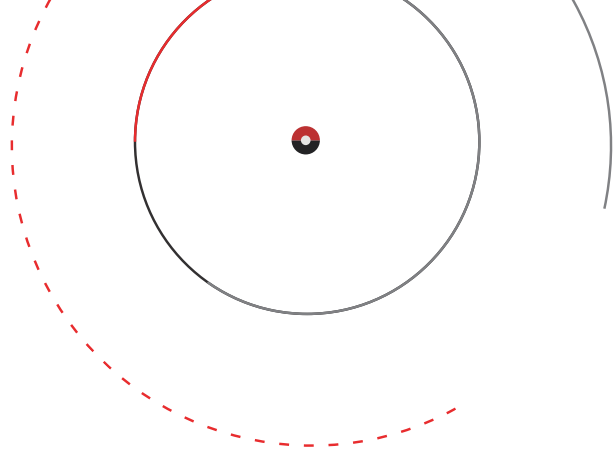
Standardization is the basis of continuous improvement. Once there is a standard in place, targets can be established and variances can drive continuous improvement activities toward target conditions. Much like visualization, standardization is a key philosophy of TPS and any successful lean culture.

An example of standardization is the 5S process, a system for organizing spaces so work can be performed efficiently, effectively and safely. This process focuses on putting everything where it belongs and keeping the workplace clean, which makes it easier for people to do their jobs without wasting time.

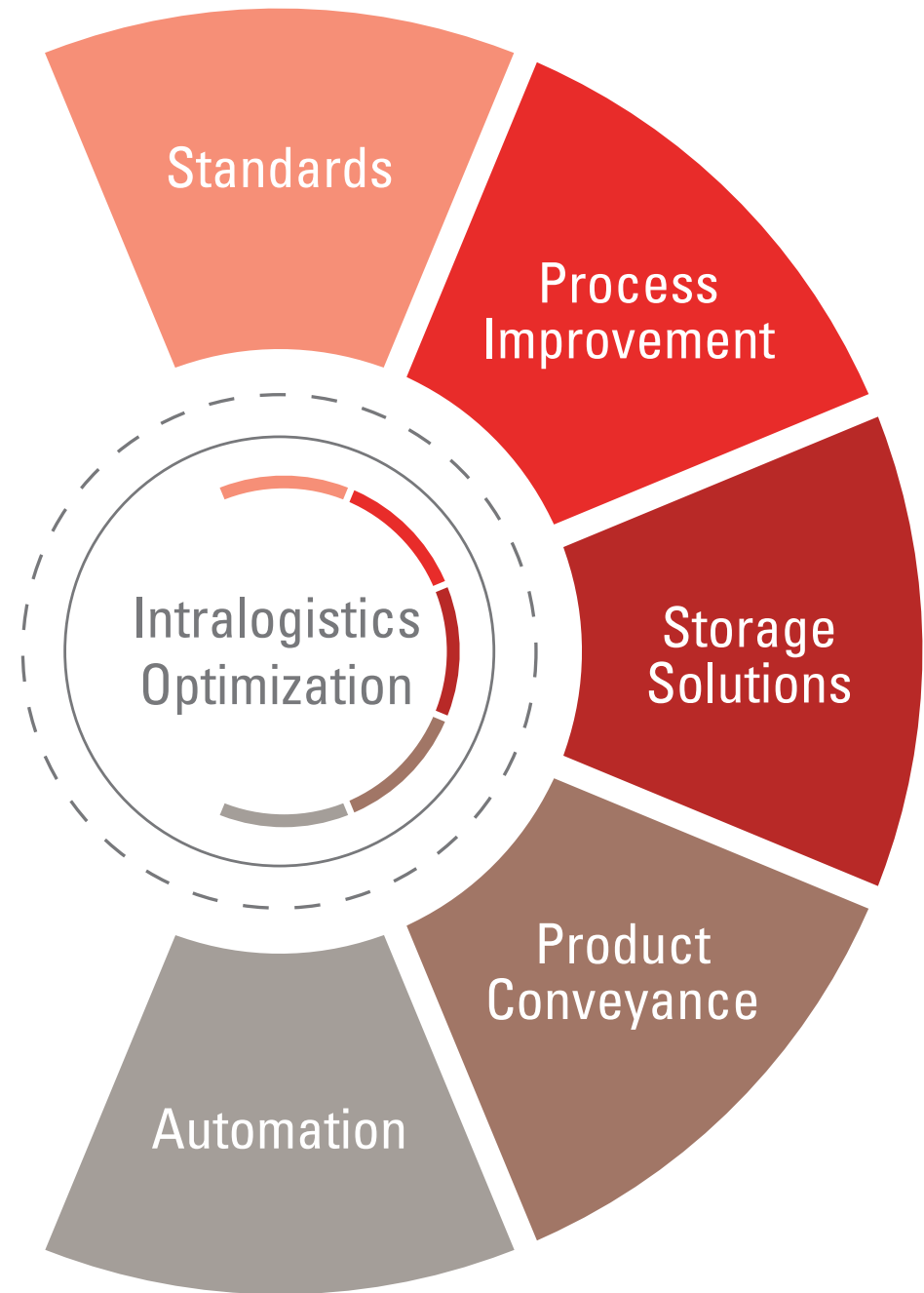
# The Stages of 5S

1	<b>SORT</b>	Determine what needs to be present in each workstation and what can be removed.
2	<b>SET IN ORDER</b>	Arrange remaining tools or materials in an order that creates the least waste.
3	<b>SHINE</b>	Maintain good cleaning practices, which means sweeping, mopping, dusting, wiping down surfaces, putting tools and materials away, etc.
4	<b>STANDARDIZE</b>	Systematize the first three steps to turn one-time efforts into habits.
5	<b>SUSTAIN</b>	Maintain standardized procedures and update them as necessary.





The final steps of “standardize” and “sustain” are perhaps the most crucial as an organization looks to instill long-term change in its culture. A key component in standardization is identifying waste by pinpointing the value-added and non-value-added steps of processes. Once this distinction is made, operations can begin to develop standardized work processes that create clearly defined customer expectations, leading to consistency of labor and materials. Through standardized processes, operations can eliminate waste, ensure processes are safe, identify root causes of defects and build in quality.





## Fostering a Culture of Continuous Improvement.

For any lean initiative to be sustainably effective, a culture of continuous improvement needs to be adopted throughout an organization. This includes top-level executives buying into lean philosophies and instilling creativity in their entire workforce to embrace their new roles and actively seek better solutions. This culture of continuous improvement can often extend beyond the warehouse floor and help identify wastes in other departments, including sales, marketing and human resources/training.

With the collective goal of reducing waste throughout the organization, lean management transforms a company's culture to focus on improved quality by constantly searching out optimization opportunities. An optimized material handling business creates more space for product, increases workforce productivity and leverages lift trucks and best intralogistics solutions for the task at hand. Ultimately, this will lead to cost savings that can be reinvested throughout the organization.

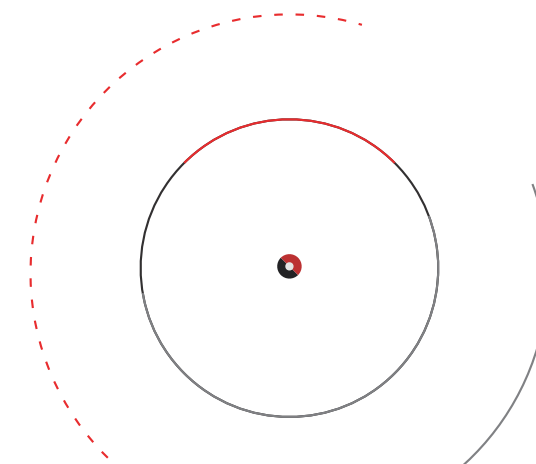
It is important to remember that RLM practices need to be continually monitored, analyzed and adjusted to ensure waste identification becomes ingrained in all aspects of the company's core business functions. This is the only way to achieve sustainable long-term business improvements.



## The Raymond Advantage.

Continuous improvement is a core principle of Raymond. As a member of the Toyota Industries Corporation (TICO) family, Raymond has studied and implemented TPS throughout its organization. By leveraging its own experiences with TPS, Raymond has expanded upon its teachings to offer RLM, a one-of-a-kind lean management system.

Lean management has played a pivotal role in Raymond's commitment to addressing customer challenges in the supply chain and logistics industry with smart, leading-edge technology. As technology evolves, the advantages of using semi- and fully automated solutions to increase productivity and address the labor shortage are clear. But before getting too invested in the latest material handling trend, optimization based on operational data and lean management philosophies is a crucial step that must happen first.



# Optimize Conclusion

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## Identifying Inefficiencies Through Data-driven Insights

Our experts leverage data to recommend the most appropriate and efficient solution to meet your goals. Accelerate order fulfillment, streamline inventory management and improve productivity through data-driven insights.

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## Charting a Path Forward

Raymond has the expertise and knowledge to help you identify the current areas of waste in your operation and educate your workforce. Contact us today for a free consultation that will help you better understand your current operation and how it can be enhanced to achieve greater operational efficiencies and keep your operation competitive and profitable.

Contact us at: [www.raymondcorp.com/optimization/lean-management](http://www.raymondcorp.com/optimization/lean-management).



**CONNECT**

**Intelligent Warehouse Solutions**

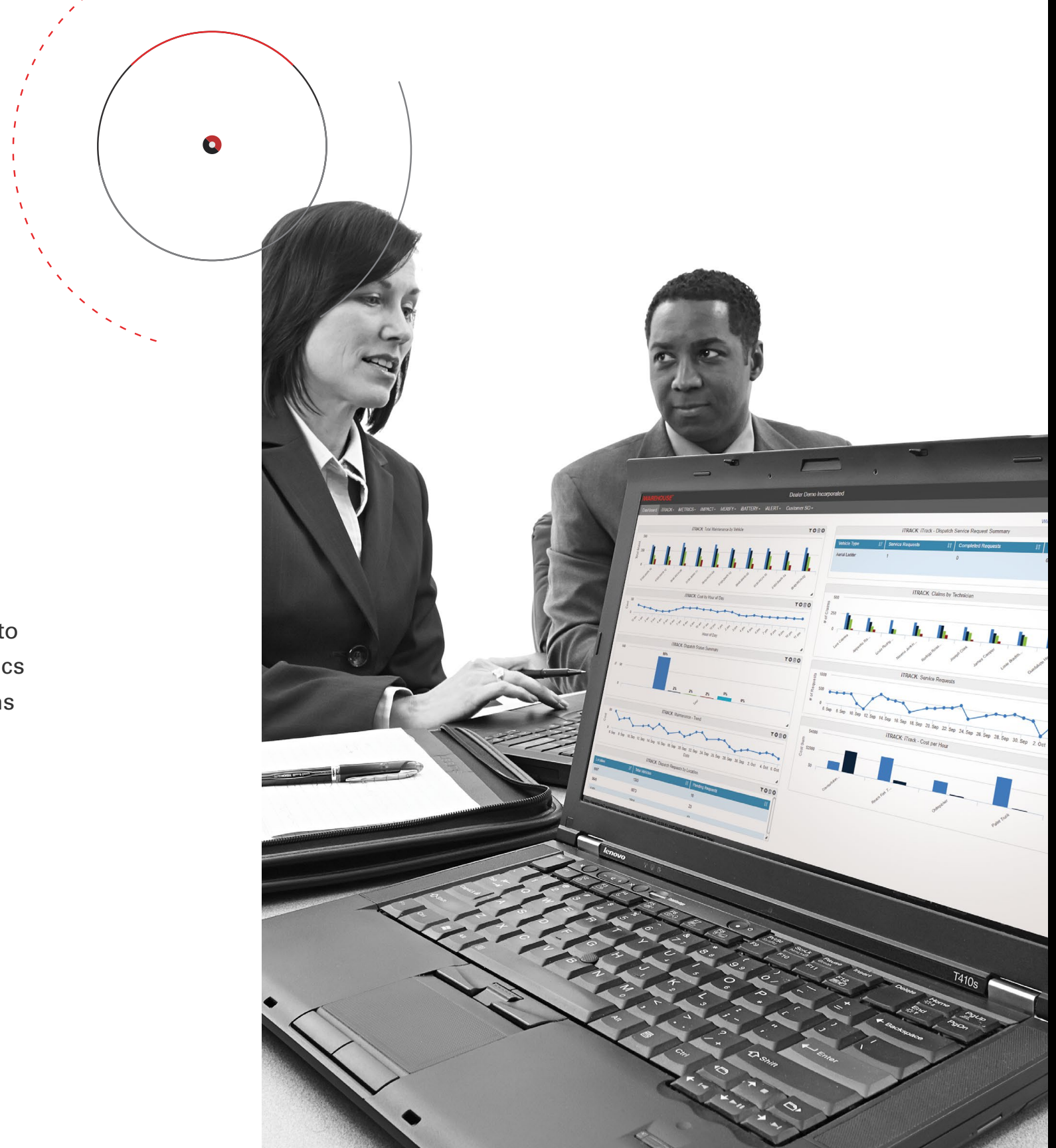


# Achieving Warehouse Optimization Through Connected Technologies.

The effect of multiple generations and age groups embracing e-commerce has placed an unprecedented amount of demand on the supply chain. Current material handling protocols are having difficulty keeping pace with the explosion of SKUs, increased demand and lead times from online orders. Intralogistics solutions that help optimize, connect and automate processes and equipment offer warehousing, fulfillment and distribution centers a way to remain productive, efficient and competitive.

# Telematics: You Can't Optimize What You Don't Measure.

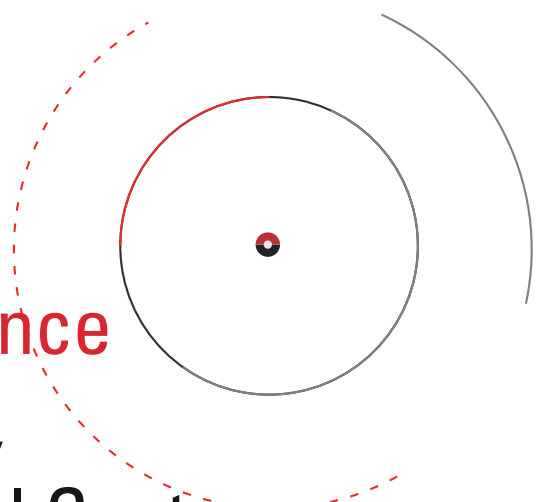
The telematics from The Raymond Corporation's iWAREHOUSE® Fleet Management and Warehouse Optimization System provide a full suite of tools to enhance the productivity of both operators and vehicles while supplying actionable fleet and personnel data to help drive down costs. This facility data can reveal inefficiencies to guide future decisions about which solutions to implement to solve existing problems. Raymond's iWAREHOUSE telematics platform can manage any size fleet, across multiple locations and multiple makes and models, to provide real-time fleet information at managers' fingertips. Operations can then apply this information to increase performance, reduce impacts and analyze trends for fleet, labor and warehouse optimization.





## Asset and Maintenance Management: Track, Measure and Control Costs.

Raymond's iTRACK® Fleet Asset Maintenance Management System is the most comprehensive maintenance tracking solution in the industry and an ideal introductory solution for any facility considering telematics. This unique web-based system allows organizations to precisely track all of their fleet and associate materials, service and maintenance costs through the Dispatch module, Consolidated Invoicing module and reporting tools — regardless of who performs the service. Request service, track technicians and view reports online, anytime. Utilizing the data from iTRACK, organizations can gather insights into their total cost of asset ownership and expenditures.





# Operator Assist Technologies: Increase Efficiency Through Process Optimization.

Raymond offers operator assist technologies designed for a variety of lift trucks to help create efficiencies that can improve operator productivity and accuracy. In addition, these solutions offer organizations a good entry point into automation. Some of these solutions include:



The Raymond® Pick2Pallet LED Light System is an industry-exclusive operator assist technology. This patented pick-to-light system uses LED technology to visually reinforce product placement in batch picking applications, reducing picking errors, improving fulfillment times and enhancing operator training. The system maximizes operator productivity by directing operators to the desired pallet — enabling them to quickly move to the next pick with confidence.



Raymond's Zoning and Positioning (ZaP) options ensure more reliable, repeatable forklift operation. Zoning technology allows facilities to control and restrict truck behavior (such as lift heights and speeds) in defined facility areas or parameters, while Positioning technology helps guide the truck to the next pick location through the optimal path. These solutions allow operators to focus on their surroundings and the task at hand, meaning they can learn more quickly, execute more accurately and work more efficiently.

# Operator Assist Technologies: Increase Efficiency Through Process Optimization.



## OBJECT DETECTION SYSTEM

This training reinforcement tool provides notice regarding a truck's proximity to other objects. It uses light detection and ranging (lidar) sensors to detect objects; provides the operator with both visual and audible alerts; and then decelerates the truck to a controlled stop if necessary.



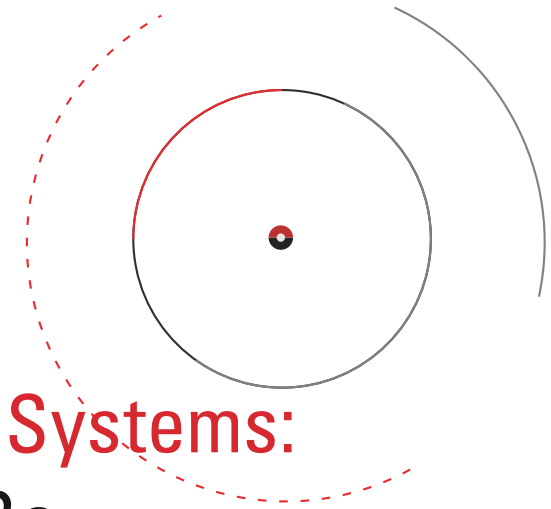
## RAYMOND ADVANCE OPERATOR ASSIST TECHNOLOGY

This technology allows the operator to move the truck forward in the tractor-first position with a small, ergonomic hand-held wireless remote control. The operator is able to remain in the optimal picking position at all times, increasing confidence, reducing physical demands and, ultimately, increasing productivity.



## Labor Management Systems: Work Smarter and Be More Productive.

A facility's workforce is its biggest asset and highest cost. Visibility surrounding unaccounted or missing time for each associate's daily work can quickly make a difference to a bottom line. Our iWAREHOUSE Labor Management System merges multiple data sources for 100% visibility, increasing productivity and providing you valuable insights into process costs and workflows, so you can understand the true cost of doing business with each of your customers.



# Location Systems: Monitor Movement in Real Time.

iWAREHOUSE Real-Time Location Systems can optimize your processes, reduce operational costs and deliver a fast return on investment through accurate (+/- 3') geofencing, zoning and tracking capabilities. Operations can recognize optimization opportunities, including reducing misplaced pallets, ensuring proper equipment use, eliminating bottlenecks and inefficient workflows and minimizing unproductive hours.



## iWAREHOUSE REAL-TIME LOCATION SYSTEM (RTLS)

- RTLS lets you know where your trucks are, where they have been and how they are being utilized through the ability to accurately (+/- 3') monitor and identify movements. These insights help to enhance the security of lift trucks, personnel and assets — reducing lost inventory and making better use of your operators, space and equipment.
- Keep your trucks in the right place at the right time and minimize vehicles and pedestrians in the same area by creating custom zones tailored to your unique layout and application.
- See which truck or employee last handled a specific asset and see when and where the asset was put away. Knowing the location of every pallet will help you streamline and optimize the flow of goods throughout your facility.



## Identify the Right Technology at the Right Time.

It can be difficult for you to know what materials will work for your operation. By working with your Raymond Solutions and Support Center, you get a single point of contact that can help you evaluate your organization to identify the right technology solutions for you, the best ways to keep your facility connected and, when you are ready, technologies that can automate processes to enhance your productivity. Raymond's uniquely integrated network ensures consistency of service and support to recommend and implement the best solutions for your business challenges.

Learn more at [www.raymondcorp.com](http://www.raymondcorp.com).



**AUTOMATE**  
**AUTOMATED SOLUTIONS**

# Increase Efficiency and Productivity With Raymond's End-to-End Automated Solutions.

If implemented properly, and with the right partner, automation can help your operation increase productivity and reliability — while maximizing your labor resources. The Raymond Corporation's connected network of Solutions and Support Centers maintains a singular focus on customized solutions that help companies optimize, connect and automate their operations. Raymond offers automated solutions that create a complete integrated system for product movement. From automated guided vehicles (AGVs) to conveyors and carousels to automated storage and retrieval systems and even robotics, finding a partner that can help you determine the appropriate solution for your business is imperative. The results are efficient, effective and innovative solutions tailored to meet each customer's unique needs.





## A Single Source You Know and Trust.

Enhance the efficiency, reliability and productivity of your operation with the most complete intralogistics capabilities in the industry. Raymond has the experience and expertise to help customers create intelligent, automated warehouses with more than 100 key Solutions and Support Center locations across North America.

From AGVs to conveyors and automated storage and retrieval systems to robotics, Raymond offers you a comprehensive, single-source solution that covers the manufacture, design, integration and service of your automated equipment. These automated, integrated system solutions create complete system solutions for pallet/product movement, freeing up your labor to focus on value-driven tasks.



# Operator Assist Technologies: Increase Operator Productivity, Accuracy and Efficiency.

Order picking accounts for 55% of operating costs and up to 70% of operating time, so finding efficiencies in these processes can dramatically improve your bottom line. Advanced operator assist technologies and cutting-edge order picking solutions can be added to the base layer of a lift truck to create integrated systems. These tools help companies further increase operator proficiency, accuracy and productivity, providing you with a sustainable competitive advantage while reducing overall operating costs. By providing operators with tools that help them in their daily work, they can successfully pick product more efficiently and with fewer mispicks and operator errors.

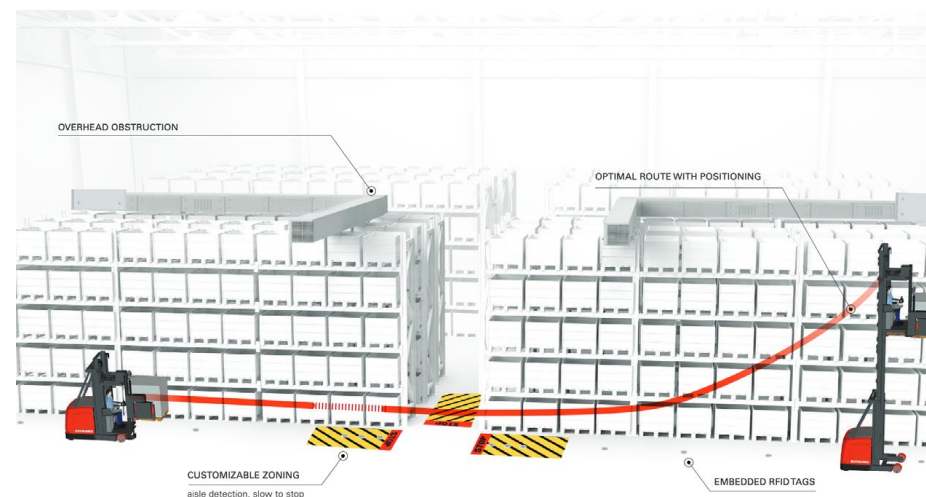
## PICK2PALLET™ LED LIGHT SYSTEM

Raymond's Pick2Pallet LED Light System is an industry-exclusive operator assist technology. This patented pick-to-light system uses LED technology to visually reinforce product placement in batch picking applications, reducing picking errors, increasing operator productivity, improving fulfillment times and enhancing operator training. The Pick2Pallet LED Light System works in conjunction with voice-directed picking systems, allowing selectors to work hands-free.



## ZONING AND POSITIONING

Raymond's Zoning and Positioning (ZaP) options ensure more reliable, repeatable lift truck operations by automatically controlling many order picking and turret truck functions. This allows operators to stay focused on their environment and the task at hand.





## Automated Guided Vehicles: Flexible, Scalable and Reliable.

When you are ready to implement fully automated solutions, AGVs offer a way to add efficiency to repetitive tasks to meet today's labor challenges, rising operational costs and e-commerce demands. By efficiently and reliably performing a variety of repetitive transportation and pallet handling tasks, AGVs reallocate labor to more value-added tasks with greater flexibility, helping to raise worker engagement and reduce turnover.

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## RAYMOND COURIER™ AUTOMATED GUIDED VEHICLE

The Raymond Courier Automated Guided Vehicle line offers a range of easy-to-implement vision-guided vehicles. The Raymond Courier AGVs efficiently perform repetitive horizontal transportation and pallet handling applications, freeing your labor for more value-added tasks. They're quickly commissioned and operational from Day 1 and, of course, highly dependable so you can immediately start moving more product while driving down labor costs. Factor in low overall cost of ownership and remarkably fast return on investment, and you'll see what a difference these AGVs can make in your operation.



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## CONVEYOR SYSTEMS AND CAROUSELS: MOVE GOODS QUICKLY AND EFFICIENTLY

Raymond® conveyor and carousel systems are capable of moving and sorting individual products or complete pallets without the need for employee oversight to enhance the efficiency and productivity of virtually any warehousing or distribution operation.

# Automated Storage and Retrieval Systems: Improve Efficiency and Save Space.

Automated storage and retrieval systems (AS/RS) offer a faster, more efficient way to move goods through your facility by using horizontal and vertical storage carousels. By eliminating forklift trips down storage aisles and wasted travel time between widely placed racking, AS/RS allow you to run more efficiently and adjust your racking to save storage and floor space.

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## RAYMOND'S RADIOSHUTTLE™

An innovative pallet storage and retrieval system, Radioshuttle maximizes warehouse space by offering ultra-high-density storage with access to individual storage lanes. Radioshuttle effectively detects, lifts and moves pallets into, through and out of a storage system. Easily managed with a remote control, this semi-automated system allows operations to load or unload pallets, store more pallets in a lane and independently move pallets through a rack, increasing pallet throughput and reducing product damage.



# Robotics: Automate a Variety of Tasks.

AS/RS offer a faster, more efficient way to move goods through your facility by using horizontal and vertical storage carousels. By eliminating forklift trips down storage aisles and wasted travel time between widely placed racking, AS/RS allow you to run more efficiently and adjust your racking to save storage and floor space.

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## ROBOTIC PALLET ASSEMBLY & DISASSEMBLY

Pull multiple products to assemble a kitted pallet with an end-of-arm tool for mixed product handling.

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## PICK-TO-PLACE AND CASE PACKING

Place items in a case to be packaged, palletized and shipped; Raymond's strategic partnership with Bastian Solutions offers a robotic solution to reduce your fulfillment times and labor costs.

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## LEAN ON US

Raymond can design, program and maintain a custom robotic system to help you streamline operations. Experts at your local Solutions and Support Center can consult on your robotics needs and put together an integrated solution complete with software, controls and vision systems. With our help, we can make sure these robots integrate with your existing equipment and technology.

## Create an Intelligent, Automated Warehouse.

Raymond's professional team composed of application engineers, automation system experts and data analysts and tailored technologies will help automate your operation. Raymond takes pride in being a trusted partner. Our experts take the time to understand your unique application needs before recommending solutions, helping ensure they're a good fit for your facility and a good investment for your business. Raymond Solutions and Support Centers deliver integrated automated solutions backed by the industry's most comprehensive telematics. Talk with a Raymond Solutions and Support Center to see if, when, how and where automation would make the most sense — and have the biggest impact — in your operation.



The background features several abstract geometric elements: a large white circle on the left with a red dot on its top edge; a dashed grey arc at the top; a dashed red arc at the top right; a solid red circle with a grey center and a red dot on its top edge; a solid white arc on the right; a dashed red arc at the bottom right; and a dashed grey arc at the bottom right.

For more information, visit [www.raymondcorp.com](http://www.raymondcorp.com).

Due to continuous product improvement, specifications are subject to change without notice or obligation.

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