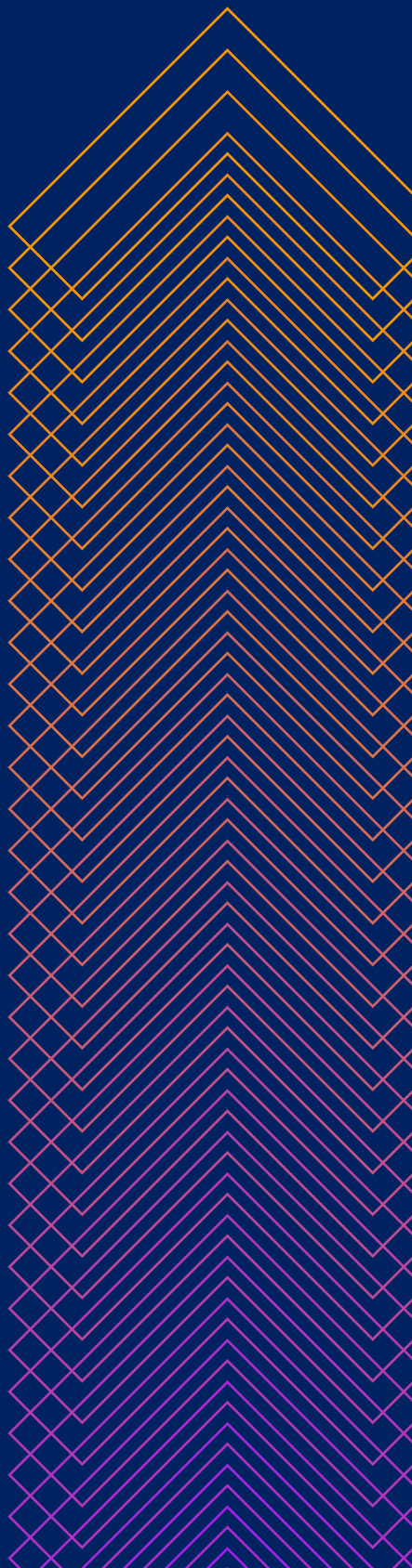
# BEST PRACTICES IN RFID IMPLEMENTATION

## Proven Strategies for Seamless Deployment & Operational Excellence



DecisionPoint TECHNOLOGIES

# INTRODUCTION: MAXIMIZING RFID'S OPERATIONAL VALUE

Radio frequency identification (RFID) technology has become a critical component of modern supply chain management, enabling precise, real-time, item-level tracking across many industries, including food, manufacturing, retail, warehousing and logistics, automotive, and pharmaceuticals.

As retailer-driven RFID mandates expand and regulatory requirements evolve, RFID and related internet-of-things (IoT) technologies are delivering even more value to users for ensuring compliance, improving inventory visibility and control, and streamlining operations throughout the supply chain.

Organizations that adopt a holistic approach that accounts for the complex interactions between processes, people, and technology are better positioned to achieve comprehensive and optimized RFID solutions that deliver measurable results.

This whitepaper was created to guide decision-makers through advanced practices in RFID implementation, helping you navigate the challenge of complexity, improve operational efficiency, and maximize the return on your RFID investment.

# START BY SETTING THE RIGHT EXPECTATIONS

Getting off on the right foot starts with aligning expectations with business goals, operational processes, and technological capabilities. The best way to begin is by defining the challenges you need to solve, and quantifying the potential ROI.

A few key guidelines:

### 1. Define the business challenge(s):

Dig into the financial impacts of inefficiencies, labor costs, and inaccuracies in current processes.

### 2. Quantify ROI potential:

Calculate the anticipated ROI by documenting how accuracy improvements, reduced manual labor and associated errors, and automation opportunities can impact profitability.

### 3. Collaborate with the right partner:

Get expert help selecting systems, technologies, and implementation plans to ensure a smooth go-live, minimal operational disruption, and dependable performance. When relevant to your operations, be sure to engage with experts who are experienced and knowledgeable in data collection and sharing standards—such as GS1Ⓡ, for example.

# PREPARE FOR SUCCESS: RFID PROCESS EVALUATION & SITE ASSESSMENT

A comprehensive, expert-led process evaluation and site survey are vital for successful RFID implementations. These steps help minimize disruptions by clarifying workflows, site-specific requirements, and potential sources of interference. Process evaluation strategies should include:

- **Workflow analysis:** Identify key workflows that RFID can optimize, especially in compliance scenarios and inventory management
- **Stakeholder collaboration:** Engage a cross functional team that includes stakeholders such IT, operations, management, quality assurance, supply chain, end users, and more, to identify pain points and align goals
- **Requirements documentation:** Document system requirements covering process flows, hardware, software, network security, and integration

In your comprehensive site survey, be sure to cover:

- **Working environment:** Evaluate temperature, humidity, interior design aesthetics, and layout to optimize RFID reader and antenna placements
- **Radio frequency(RF) analysis:** Using spectrum analyzers, identify potential sources of interference in the 900 MHz spectrum that could disrupt RAIN RFID communication.
- **Labor allocation:** Identify inefficiencies and opportunities for automation and re-allocation of labor resources

A thorough site survey ensures that newly implemented RFID systems align with the technical, environmental, and workforce needs of your organization.


# THINK HYBRID: COMBINING RFID WITH COMPLEMENTARY TECHNOLOGIES

RFID solutions become even more powerful when combined with complementary technologies. Consider integrating the following:

- **Fixed industrial scanning and machine vision:** Improve data accuracy and identification reliability for essential workflows
- **Automated guided vehicles (AGVs) and autonomous mobile robots (AMRs):** Automate repetitive material movement tasks for increased productivity
- **Two-dimensional (2D) barcodes:** An ideal serialized data carrier that can be utilized where RFID may not be feasible

By adopting a hybrid approach, you can identify opportunities for enriching RFID data capture and optimizing workflows for seamless automation and a workplace that makes best use of your human resources.

# DIGITAL MARKERS: LINKING PHYSICAL & DIGITAL

RFID tags, labels, and barcodes are critical for tracking and managing assets, inventory, and data. These digital markers contain serialized data assigned to each unique item. While RFID enables automated data capture, serialization allows products to be tracked at the item level. In some cases, markers may store additional data, such as product origin, batch and lot numbers, expiration dates, etc.

These are critical capabilities in food and pharmaceutical applications, where authenticity and traceability are vital. Serialization also plays a role in meeting regulatory requirements, like those mandated by the Food and Drug Administration (FDA), as well as safety standards in other industries, for enhanced safety, accountability, and transparency.

Tags, labels, and inlays need to adhere to industry-specific material standards to ensure they meet the operational requirements for all trade partners. In some cases, they may need to withstand harsh environments while enabling accurate scanning throughout long lifecycles. Choose appropriate tags (hard mount, labels, tie wraps) and test for reliability and orientation. Ensure tags comply with GS1 and RAIN Alliance guidelines.

## Additional data capture technologies

While RFID enables advanced and automated item-level tracking, serialization can also be applied to non-RFID enabled barcode data capture systems, too. One-dimensional (1D) and two-dimensional (2D) barcodes, such as QR codes, can serve as reliable and cost-effective backup systems in situations where RFID may not be feasible due to environmental constraints.

## Integration with data systems

Digital markers provide a digital link between physical operations and data that enables modern enterprise resource planning (ERP) and warehouse management systems (WMS). This integration enables businesses to leverage real-time data for decision-making.

# STANDARDS, MANDATES, AND COMPLIANCE

Standards lay the foundation for interoperability, consistency, and seamless data exchange, enabling trading partners to unlock even more of RFID's potential.

**GS1® TDS 2.0** (Tag Data Standard) provides a global framework for encoding RFID data. It standardizes encoding structures for product identification across sectors like food, pharmaceuticals, and retail. Adopting GS1 TDS 2.0 ensures interoperability, reduces errors, and enables seamless data sharing. Compliance with the standard minimizes costly disruptions and improves visibility and efficiency.

Updates to **Food Safety Modernization Act Section 204(d)** (FSMA 204) require food manufacturers, processors, packers, and distributors to keep strict records:

- **Key Data Elements (KDEs)** such as traceability lot codes, shipping dates, and product descriptions, must be maintained digitally and provided within 24 hours
- **Critical Tracking Events (CTEs)** including receiving, transforming, and shipping must be documented

FSMA 204 compliance enables rapid traceability and minimizes the impacts of potential recalls to help protect brand reputation, reduce liability risks, and prevent penalties.

## Retail source-tagging mandates

A growing list of retailers requires supplier RFID source-tagging. Supplier compliance strengthens retail partnerships and can help minimize chargebacks and penalties.

Investing in standards compliance and adopting best practices positions your organization to maximize operational benefits and ROI:

- Improved supply chain visibility and traceability
- Enhanced collaboration with trading partners
- Reduced errors and manual interventions
- Faster problem resolution and root cause analysis
- Minimized risk of penalties and chargebacks
- Increased customer satisfaction and loyalty

# DIGITAL PRODUCT PASSPORT (DPP) REGULATIONS

The European Union's Digital Product Passport (DPP) initiative introduces a standardized, digital framework for sharing detailed product information across the supply chain—from origin to end-of-life. DPP is a prime example of the global trend toward government-regulated, tech-enabled traceability. While currently enforced in the EU, it applies to all goods sold within the region, regardless of manufacturing origin.

DPP aims to support sustainability and transparency by empowering consumers to make informed decisions about the products they buy, use, and dispose of. It utilizes serialized data carriers—such as QR codes and RFID tags—to deliver product-specific information digitally. With similar mandates expected to emerge in the U.S., organizations can rely on DecisionPoint's RFID and data capture solutions to automate data collection, streamline compliance, and strengthen supply chain visibility.

# TESTING AND GO-LIVE: DO YOU REALLY NEED AN EXPERT?

It's not enough to select the most appropriate RFID markers, readers, IoT equipment, and software. System testing confirms a seamless integration with existing infrastructure.

## Best practices for testing, go-live, and ongoing support and maintenance

**Simulate real-world scenarios:** Performance testing should use realistic workflows and exceptions to ensure the RFID system functions accurately under typical operational conditions.

**Test all integrations:** Verify that the RFID system integrates properly with existing ERP, WMS, and other critical software applications, to protect data integrity and support operational continuity.

**Train, train, train:** Equip super users and operators with the skills they need for proper configuration, data management, and troubleshooting, so teams can manage the system efficiently and proactively address issues.

**Manage proactively:** Continuously monitor system health, timely application of necessary patches, and configuration updates to prevent disruptions.

**Plan for the lifecycle:** Well-planned hardware replacements and software upgrades keep systems robust and responsive.

**Automate alerts:** Minimize downtime, maintain operational efficiency, and protect data integrity.

# GO-LIVE IS EASIER WITH GOLIVE SERVICES™

DecisionPoint's GoLive Services bring a comprehensive approach to selection, design, implementation, and launch, for a smooth transition with minimal disruption. Our goal is to minimize risks, optimize training outcomes, and ensure every team of users has the knowledge they need.

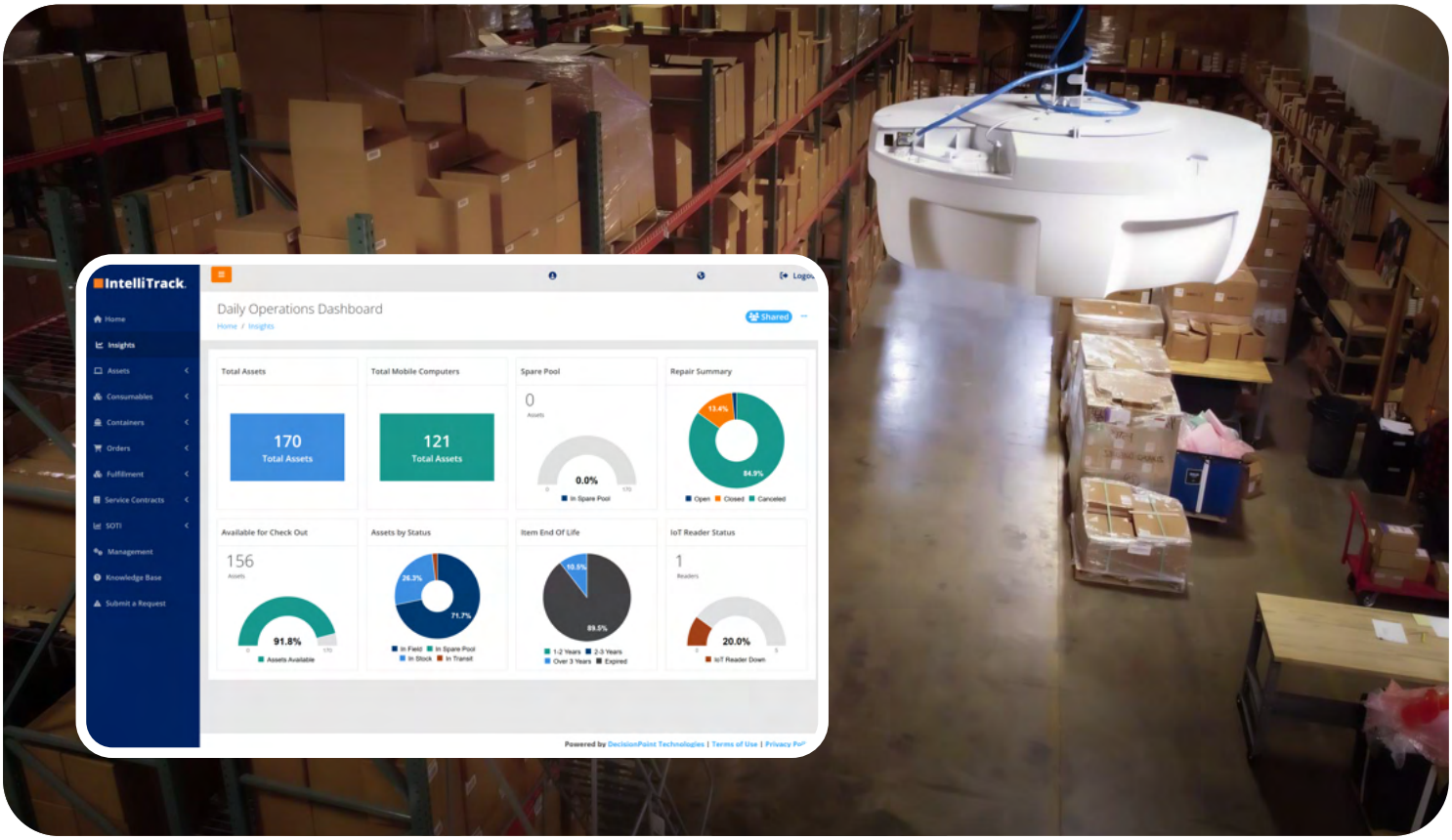
## Keep systems up and optimized with StayLive Services™

As complex and dynamic as go-live can be, deployment is just the beginning. It takes continuous, proactive involvement to keep systems running optimally. With StayLive Services, DecisionPoint customers can more easily adapt as business needs evolve and technology advances, ensuring their RFID infrastructure remains robust and responsive.

## Powered by our IntelliTrack® enterprise platform

DecisionPoint's IntelliTrack platform underpins our GoLive and StayLive Services, providing a robust foundation for deploying and maintaining RFID solutions. IntelliTrack integrates seamlessly with leading WMS and ERP systems—delivering real-time data access to stakeholders when and where they need it.

IntelliTrack's capabilities enhance our GoLive Services by equipping your teams with easy-to-use tools and data analytics for proactive issue resolution. Once operational, the platform powers our StayLive Services, delivering automated alerts and actionable insights to maintain efficiency and uptime—maximizing the longevity and ROI of your tech investment.



# REALIZING ROI: THE VALUE OF EFFECTIVE SOLUTION DESIGN

Maximizing return on investment comes down to crafting a solution that's tailored to meet your unique operational and compliance needs.

## Consider a case study

**Challenge:** A retail supplier urgently needed to mitigate costly chargebacks and penalties from its customer, a major North American retailer.

**Solution:** Our DPT team helped design a solution that enhanced RFID reader effectiveness on conveyor lines to improve verification and shipment accuracy.

**Outcome:** Reduced chargebacks and penalties led to significant long-term savings and strengthened the relationship between supplier and customer.

## Key takeaways

**Understand ROI impact:** Balance initial investment with tangible long-term benefits.

**Design for compliance:** Design a solution that meets retailer mandates and regulatory requirements.

# READY TO MAXIMIZE YOUR RFID ROI?

Your journey toward seamless RFID deployment and operational excellence starts with the right partner. Whether you're navigating compliance, improving traceability, or driving automation, our experts are here to help you design a future-proof solution tailored to your needs.

**REQUEST YOUR CONSULTATION**

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**Call** 1.888.412.SCAN (7226)

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