RFID

Key Considerations for Implementing an RFID Project

Key Considerations for Implementing an RFID Project

TABLE OF CONTENTS

Introduction

If you are reading this book, you probably already have a barcode system in place and are considering adding an RFID component to your solution. A properly integrated RFID solution can improve the efficiency of your business and ultimately improve profits in your organization. This book is meant to help you in developing a successful RFID solution.

Here's a list of some of the benefits of RFID:

- Does not require line-of-sight to read tags
- Does not require costly human intervention to scan barcodes
- Tags can be read from multiple angles as opposed to requiring proper optical alignment
- Hundreds of tags can be read "simultaneously"
- Tags can be updated on the fly with additional data
- The chances of a double scan or missed scan are significantly lower
- Accuracy rates approach 100% in a well-implemented RFID solution, which is significantly better than with barcode solutions
- ROIs tend to be greater in spite of higher initial costs

While all of these are true, **RFID solutions** are usually more difficult to implement and require greater expertise from your partners tasked with integrating the solution.

Do not simply select any "system integrator." The integrator you choose needs to know specifically about RFID.

In this eBook, we're going to look into eight different key considerations for implementing an RFID project including what to look for in a trusted RFID system integrator, how to assess your RFID needs and challenges, and how to select the best "tag" for your application.

01

Consideration 1:

CHOOSE THE RIGHT FORM OF RFID

Choose the Right Form of RFID

There are actually many different forms of RFID that you could leverage for a solution.

The most common form of RFID used today for "auto ID" (automatic identification) solutions is UHF (Ultra High Frequency) Passive RFID. You may also hear this form of RFID referred to as EPC, RAIN RFID or often simply as RFID.

Low Frequency (LF) and High Frequency (HF) solutions also exist, but these technologies are generally not suitable for applications such as logistics, manufacturing, inventory and other industrial applications due to the high per-tag costs and low read-ranges.

UHF Passive RFID is now accepted as the best solution based on performance, read-ranges, cost and flexibility.

LF	HF	UHF
LIVESTOCK PET TAGGING ACCESS CONTROL	ACCESS CONTROL "SMART BRANDING" TICKETING DATA TRANSFER APPLICATIONS	LOGISTICS WAREHOUSING RETAIL ASSET TRACKING

02

Consideration 2:

FIND A GOOD SOLUTION PARTNER (SYSTEM INTEGRATOR)

Find a Good Solution Partner (System Integrator)

Before beginning an RFID implementation, it is important to find a good solution partner
(often referred to as a "system integrator").

There are many companies involved with RFID, but only a limited number are truly capable of handling an implementation from start to finish with a single point of contact for support and assistance.

Make sure that you have a single point of contact to guide you through the process and provide support later on.

03

Consideration 3:

BEGIN WITH A DISCOVERY PHASE

Begin with the Discovery Phase

A good RFID solution partner will begin by assessing the needs and/or problems that you want to address with the technology. This is often referred to as the "discovery phase."

What are you trying to accomplish? What problems do you need to solve? What processes could you make more efficient?

Getting as clear a picture as possible before spending any money is not only financially smart, but it is also the correct approach to make sure that the solution works both "today" and "tomorrow."

The solution provider should also conduct a "site survey" as part of the discovery process. RFID solutions need to consider the physical environment as well as the business processes.

What other physical materials are present? What is the facility layout? Can large metal objects, such as forklifts or garbage cans (real-world examples), occasionally interfere? At which moments and locations do you need to collect data?

Make sure that your solution provider proposes and conducts a site survey.
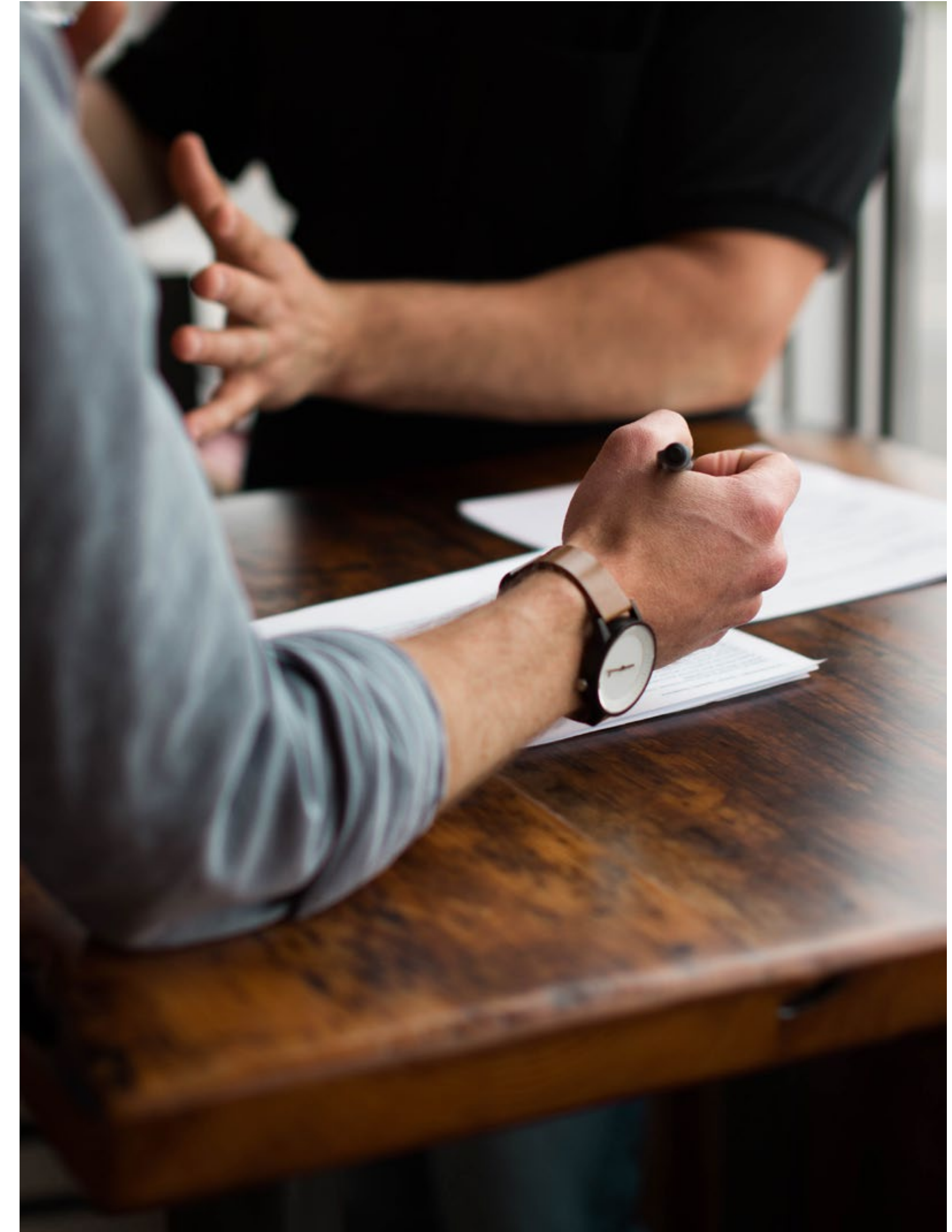
04

Consideration 4:

CHOOSE A SUITABLE "TAG"

Choose a Suitable "Tag"

Upon completion of the discovery phase (including at least one site survey), a suitable "tag" (label with RFID capabilities) needs to be selected.

There are hundreds of existing RFID tags on the market and more are coming every day, but they are definitely not interchangeable.

For example, some RFID tags are optimized to work in the presence of glass, others around metal, others around liquids, etc.

Other factors such as read-range, memory, and encryption also need to be considered. And then there are all of the usual considerations associated with standard labels such as size, material, adhesive, and durability.

If your solution provider does not work through a tag selection process, it's time to find a different partner.

05

Consideration 5:

"POINT SOLUTION" VS. "STRATEGIC SOLUTION"

"Point Solution" vs. "Strategic Solution"

Next, the solution provider should recommend either a "point solution" or a "strategic solution" (you may hear these ideas with different names, but the concepts will be the same).

A point solution is designed to address only a specific problem or problems and generally does not tie into your host system at deeper, fundamental levels.

For example, a point solution might be implemented to track specific, high-value assets – that's it.

A strategic solution, however, will leverage the RFID data you collect, tie the data in with your deeper business systems, and allow you to make informed – even automated – business decisions for many aspects of your business.

An important approach that your solution provider should keep in mind is that even if you need to only address a single point of your business with an RFID solution, whatever system gets implemented, you should be able to expand the solution in the future to address other business processes and eventually tie in the data to your ERP.

In other words, if you decide on a point solution initially, make sure it can grow with your needs and other future processes.
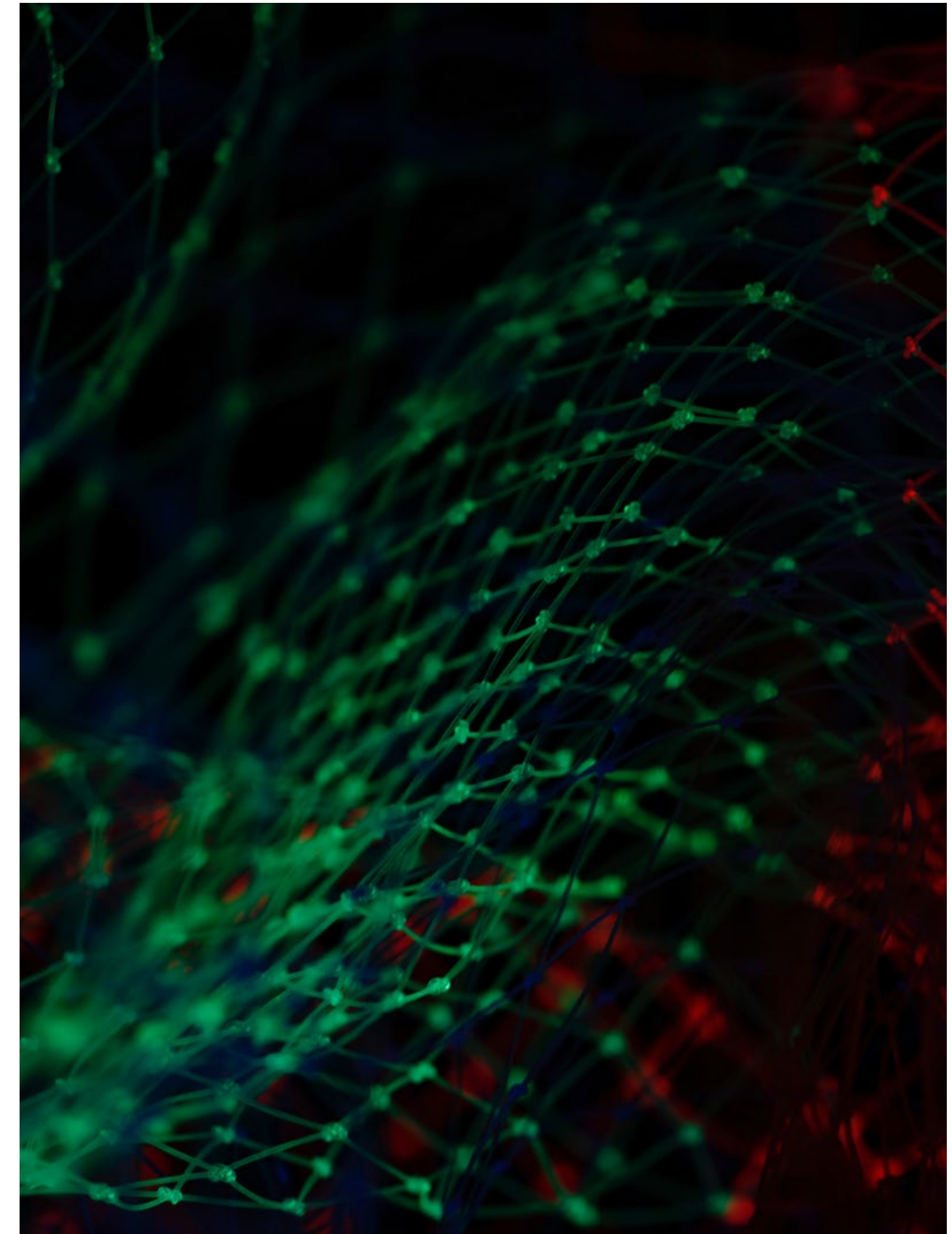
06

Consideration 6:

SELECT ADDITIONAL HARDWARE & SOFTWARE

Select Additional Hardware & Software

Your solution provider will also need to select additional hardware and software suitable for your application.

Which readers should be used?

What algorithms should be running on the readers?

How many antennas and their locations?

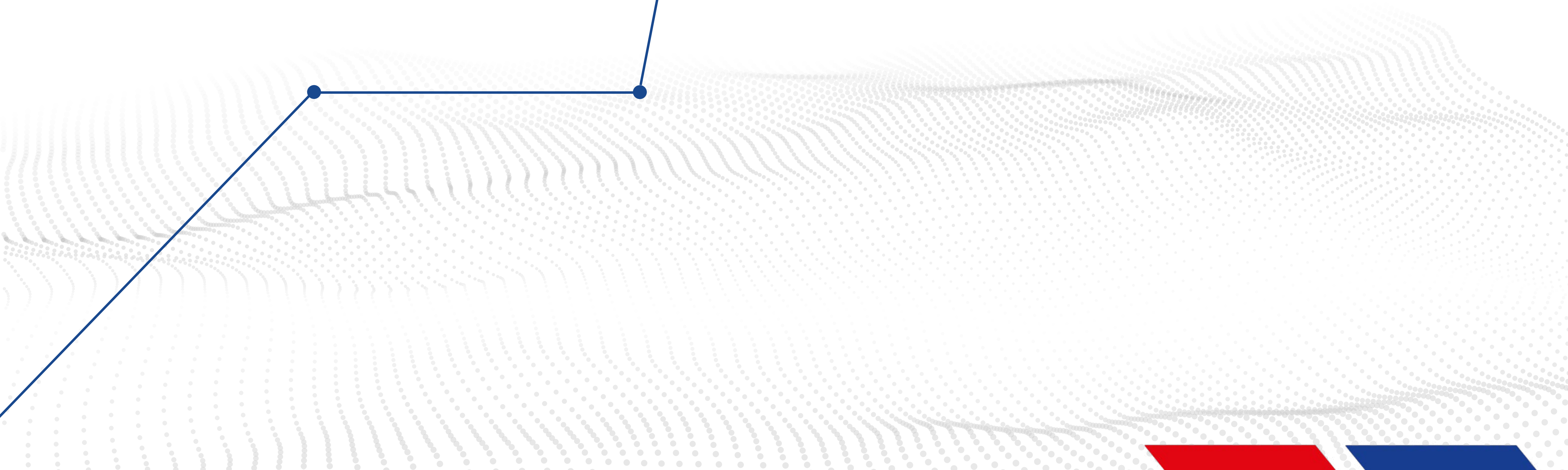Should you use fixed readers, handhelds or a combination?

Is a middleware needed to connect your RFID data with your ERP?

Which RFID printers are the best for your needs (encoder configuration, print volume, durability, budget, etc.)?

07

Consideration 7:

PROOF-OF-CONCEPT

Proof-of-concept

Once the solution logic, hardware, and software have been selected for the solution, you will want to proceed with a proof-of-concept.

This normally involves very limited hardware and software, so the investment will be minimal.

This stage is to make sure that what you have in mind works under all possible scenarios. For example, what happens when someone uses the microwave oven in the break room? Yes, this has stopped an RFID solution from working – and there are many other possible scenarios that need to be checked.

08

Consideration 8:

RUN A PILOT PROGRAM

Run a Pilot Program

Following a successful proof-of-concept, you should run a pilot program. This will be the complete solution, fully implemented but only for a select site or two and without any critical ties to your business.

If the pilot fails, it should not bring your business to a halt. Pilot programs usually also bring in any relevant suppliers and/or customers, so the solution needs to be coordinated and tested with them at this stage.

Make sure to conduct a successful pilot program before going live.

Printronix Auto ID Solutions

Printronix Auto ID is a global manufacturer of RFID printers and supplier of RFID media (labels). We can assist with the printer and label selection processes.

We also work closely with many companies in the RFID industry and can connect you with various partners who are experts in other aspects of the technology.

If you need assistance finding a qualified system integrator, we can connect you with qualified solution providers who offer a single point of contact to handle an implementation from start to finish. Please feel free to contact us for assistance with your RFID project.

Printronix currently offers three RFID printers.

T6000e RFID Enterprise-Level Industrial Printer

The T6000e RFID printer is designed for high-volume RFID label applications of up to 10,000 labels per day. The printer includes an internal and external antenna giving it the flexibility to support a huge range of RFID applications including on-metal and standard RFID labels. This versatile series is available in 4" and 6" print widths with 203/300/600 dpi print resolution and includes a full suite of communication options.

RFID SYSTEM	**Encoder** - GS1 / EPCGlobal UHF Gen2 **Antenna** - Internal adjustable & external fixed **Printer Languages** - PGL, ZGL, STGL, MGL
SUPPORTED LABELS	**Inlay Type** - Standard Label / On-Metal **Label Sizes** - Standard Pitch 2.0 in 　　　　　　　　Short Pitch 1.0 in 　　　　　　　　On-Pitch 0.625 in **RFID Label Calibration** - Automatic
SUPPORTED CHIP (IC) /INLAYS	Latest-generation chips & inlays from leading manufacturers, including support for on-metal tags. For validated inlays & tags visit the Printronix Auto ID website.
RFID DATA VALIDATION	**RFID Encoding Failures** - Full / Partial Label Overstrike (Depends on label length) **RFID Label Counter** - Tracks good/bad labels
PRINT RESOLUTION	203 dpi, 300 dpi, 600 dpi
MAX PRINT SPEED	4": 14 ips @203 dpi, 12 ips @ 300 dpi, 　　6 ips @ 600 dpi 6": 12 ips @ 203 dpi, 10 ips @ 300 dpi
MAX PRINT WIDTH	4.1 in, 6.55 in
MEDIA HANDLING	Cutter, Peel/Rewind, Batch Rewind
COMMUNICATIONS	**Standard** - Ethernet 10/100, USB 2.0 Host/Device, Serial RS232 **Optional** - 802.11 a/b/g/n/ac, Parallel, GPIO

T4000 RFID Mid-Level Industrial Printer

The T4000 provides excellent flexibility, supporting both standard labels and tags, as well as 'on-metal' tags (that can operate on metal surfaces). It is designed to support mid-volume applications of up to 5,000 labels per day. With a smaller footprint and metal enclosure, it can operate in tight spaces yet still provide the durability needed for enterprise applications.

RFID SYSTEM	**Encoder** - GS1 / EPCGlobal UHF Gen2 **Antenna** - External Fixed **Printer Languages** - PGL, ZGL, STGL, MGL
SUPPORTED LABELS	**Inlay Type** - Standard Label / On-Metal **Label Sizes** - Standard Pitch 2.0 in 　　　　　　　　Short Pitch 1.0 in 　　　　　　　　On-Pitch 0.625 in **RFID Label Calibration** - Automatic
SUPPORTED CHIP (IC) /INLAYS	Latest-generation chips & inlays from leading manufacturers, including support for on-metal tags. For validated inlays & tags visit the Printronix Auto ID website.
RFID DATA VALIDATION	**RFID Encoding Failures** - Full / Partial Label Overstrike (Depends on label length) **RFID Label Counter** - Tracks good/bad labels
PRINT RESOLUTION	203 dpi, 300 dpi
MAX PRINT SPEED	10 ips @ 203 dpi / 7 ips @ 300 dpi
MAX PRINT WIDTH	4.1 in
MEDIA HANDLING	Cutter, Peel/Rewind
COMMUNICATIONS	**Standard** - Ethernet 10/100, USB 2.0 Host/Device, Serial RS232 **Optional** - 802.11 a/b/g/n/ac, Bluetooth 4.2

T800 RFID Enterprise-Level Desktop Printer

Designed for lower volume applications of up to 2,500 labels per day, the T800 provides a cost effective solution for encoding and printing of RFID labels. It has an adjustable, multi-position, center-justified antenna enabling it to work with a wide range of label constructions.

RFID SYSTEM	**Encoder** - GS1 / EPCGlobal UHF Gen2 **Antenna** - Adjustable / Multi-position **Printer Languages** - PGL, ZGL, STGL, MGL
SUPPORTED LABELS	**Inlay Type** - Standard Label **Label Sizes** - Standard Pitch 2.0 in 　　　　　　　　Short Pitch 1.0 in 　　　　　　　　On-Pitch 0.625 in **RFID Label Calibration** - Automatic
SUPPORTED CHIP (IC) /INLAYS	Latest-generation chips & inlays from leading manufacturers, including support for on-metal tags. For validated inlays & tags visit the Printronix Auto ID website.
RFID DATA VALIDATION	**RFID Encoding Failures** - Full / Partial Label Overstrike (Depends on label length) **RFID Label Counter** - Tracks good/bad labels
PRINT RESOLUTION	203 dpi, 300 dpi
MAX PRINT SPEED	8 ips @ 203dpi / 6 ips @ 300 dpi
MAX PRINT WIDTH	4.1 in
MEDIA HANDLING	Cutter, Peeler
COMMUNICATIONS	**Standard** - Ethernet 10/100, USB 2.0 Host/Device, Serial RS232 **Optional** - WiFi 802.11 a/b/g/n/ac, Bluetooth 4.2