



Productivity
by **RFID**)))

Consultant - Integrator - Educator

Starting an RFID project

NDIA RFID Seminar - 4 Nov 2005 – McLean, VA

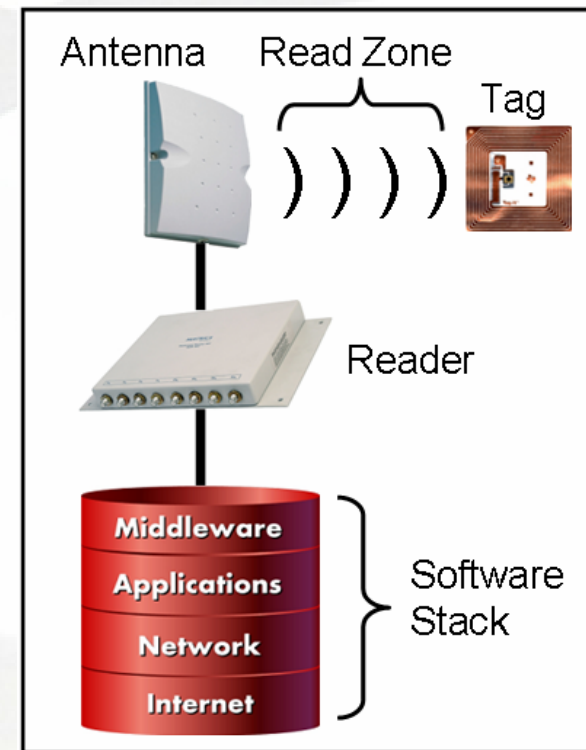
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Productivity by RFID

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How to comply with DoD and Retailer Mandates

- Step 0 Learn YOUR Mandate requirements
- Step 1 Plan RFID strategy
 - Compliance
 - Productivity
- Step 2 Process engineering & Business case
- Step 3 Perform Site survey
- Step 4 Pilot
- Step 5 Scale up



Step 0 Learn YOUR Mandate requirements

Learn the Identity, Requirements and Timetables of Mandates that impact or will impact your company.

Defense



Retail

WAL★MART®

TARGET



Aerospace

Boeing/Airbus, FedEx, Delta, FAA

Retail

P&G, Unilever, Gillette, CVS

Pharmaceutical

Recommendation by 

Other gov't

Passport, Containers, Cadavers, Mail

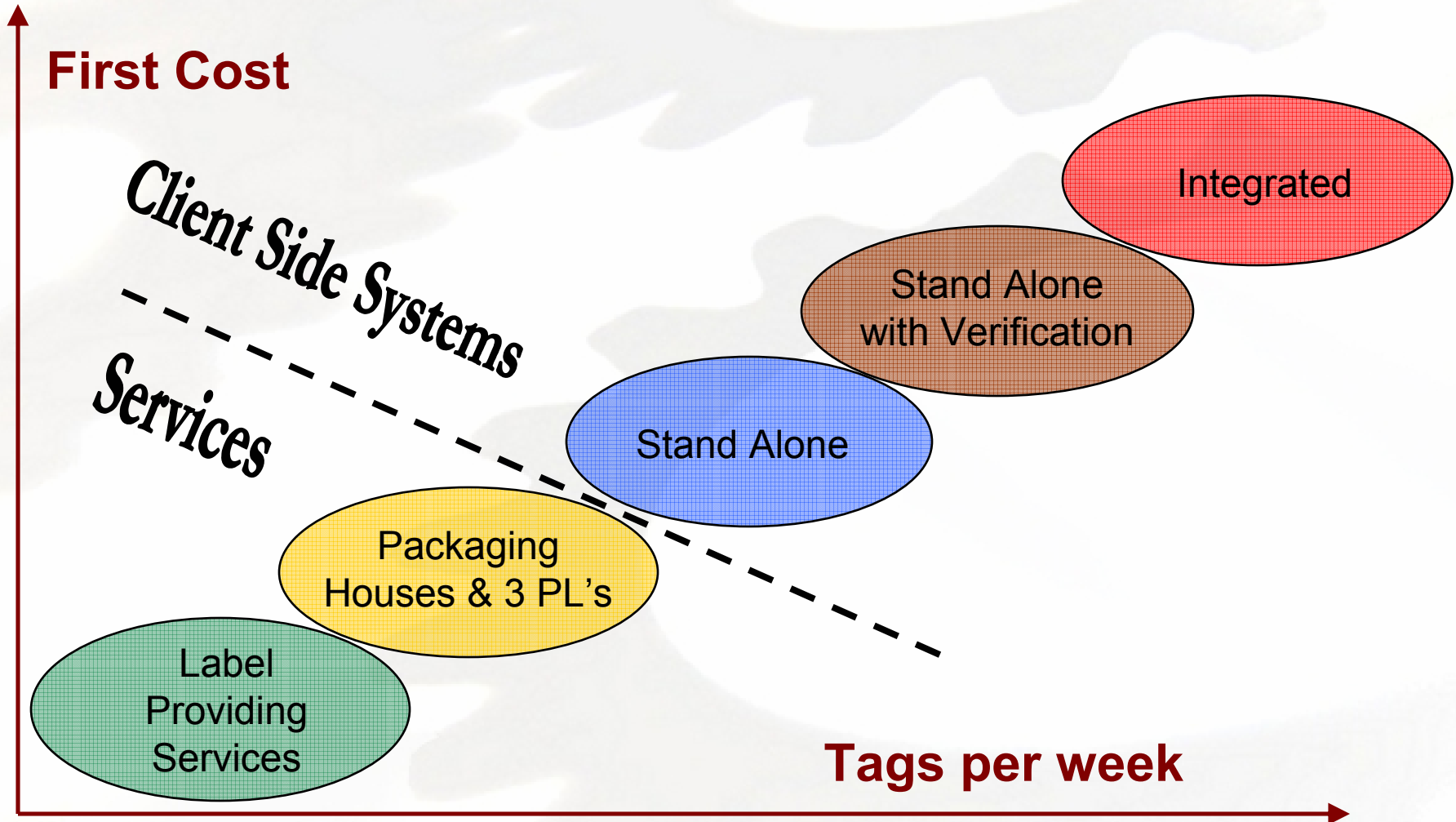
Step 1: Plan RFID strategy

Plan mix and sequence of Compliance and Productivity

A. Identify and Evaluate ALL your Compliance options

*There are many options
and much vaporware!*

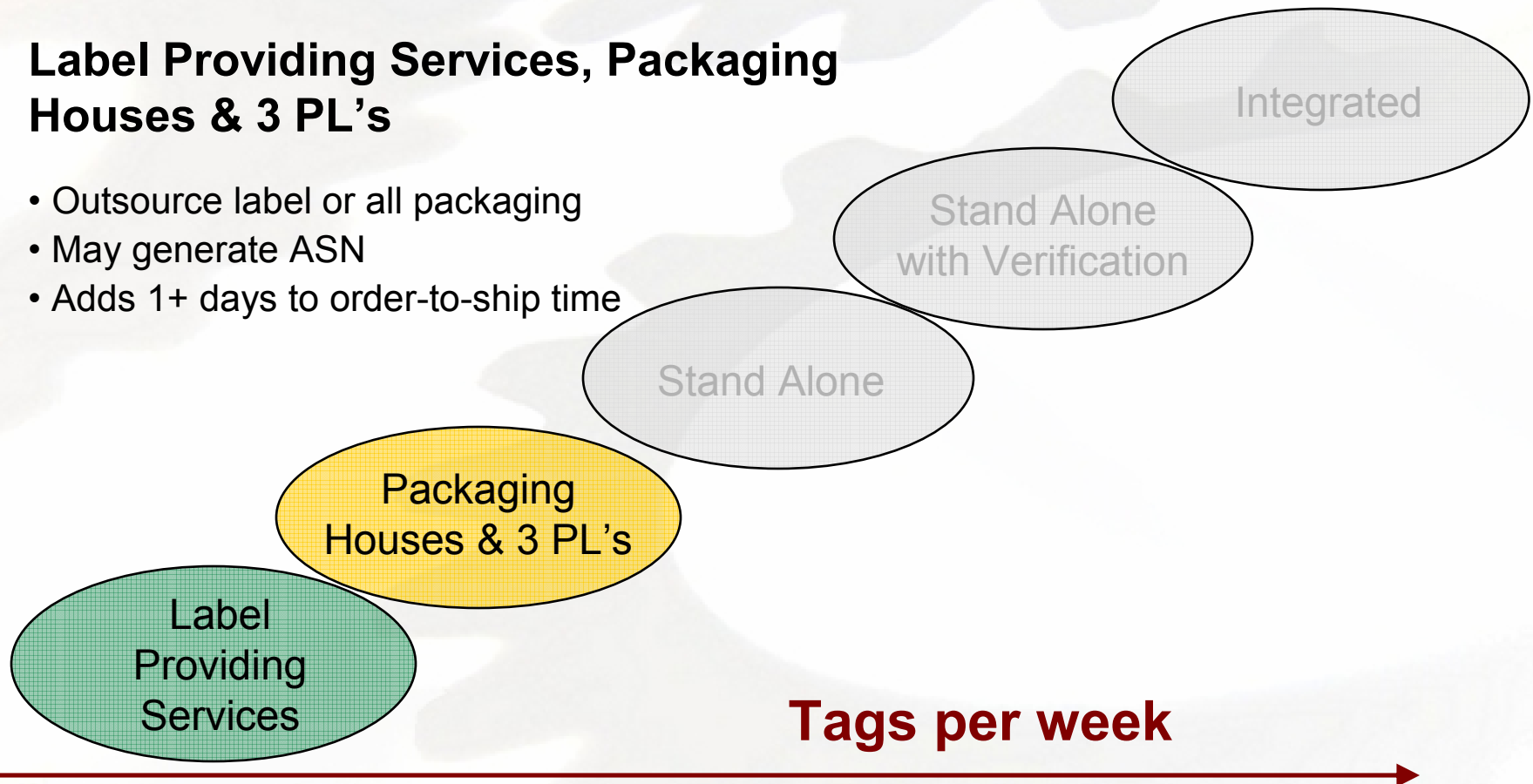




First Cost

Label Providing Services, Packaging Houses & 3 PL's

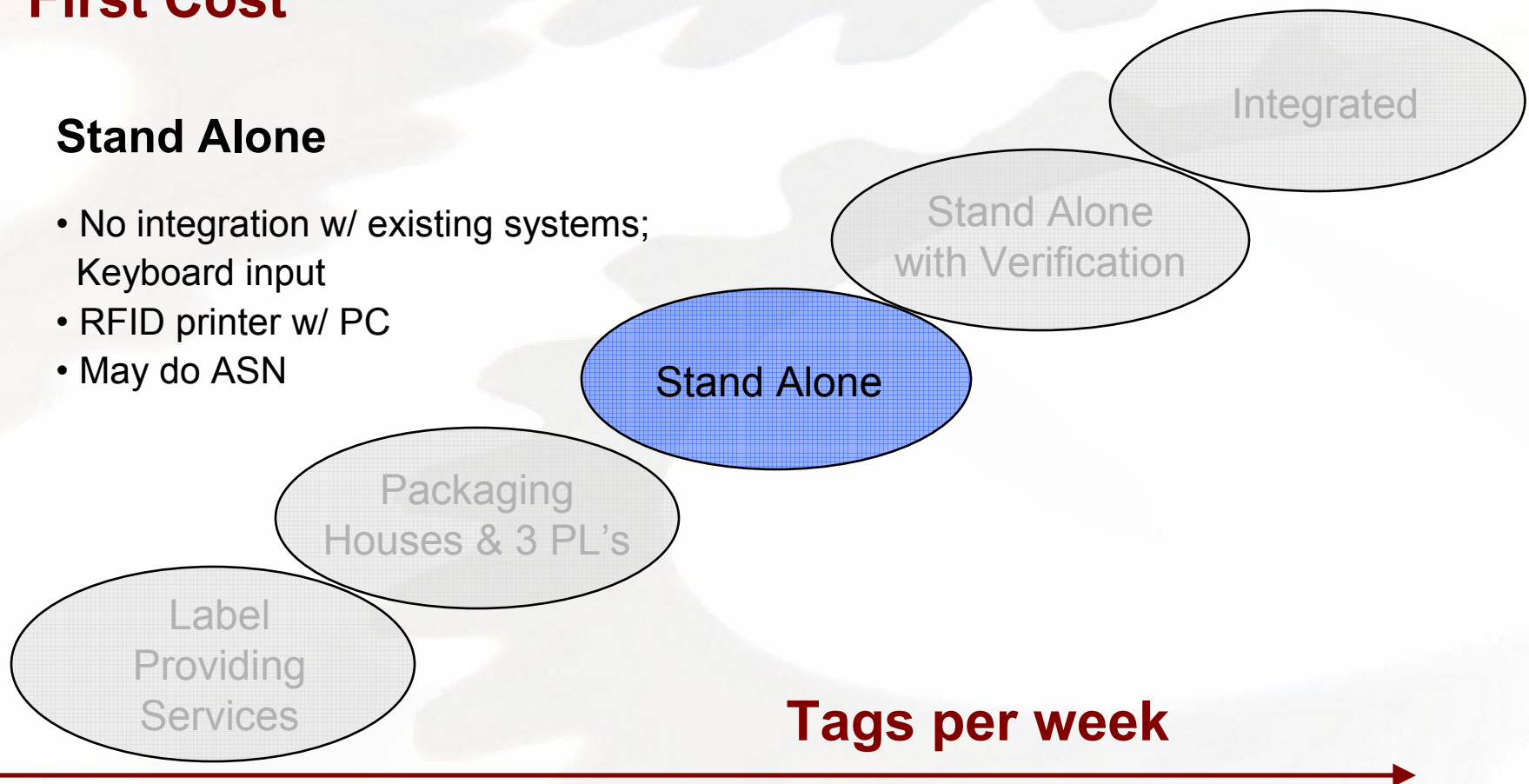
- Outsource label or all packaging
- May generate ASN
- Adds 1+ days to order-to-ship time



First Cost

Stand Alone

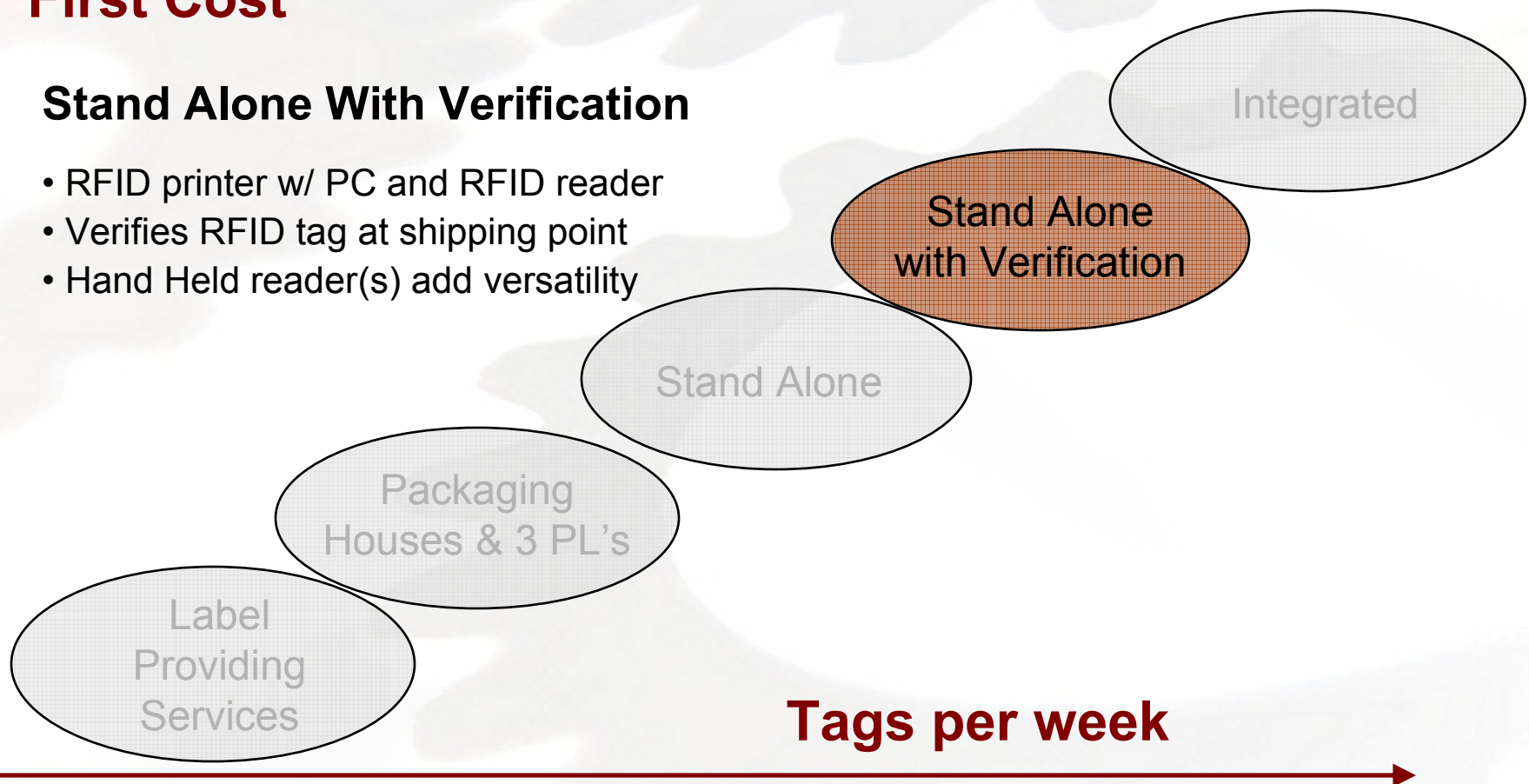
- No integration w/ existing systems;
Keyboard input
- RFID printer w/ PC
- May do ASN



First Cost

Stand Alone With Verification

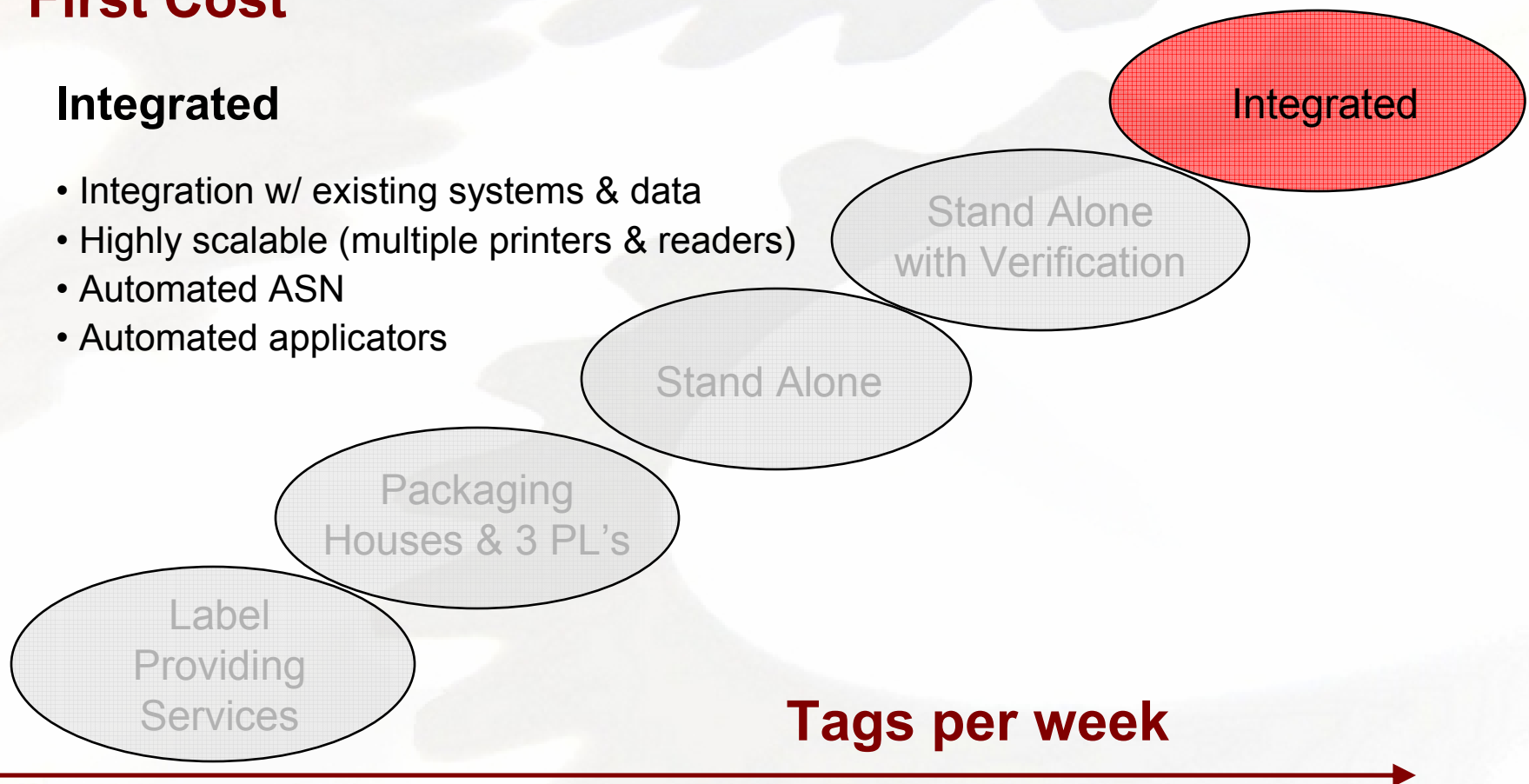
- RFID printer w/ PC and RFID reader
- Verifies RFID tag at shipping point
- Hand Held reader(s) add versatility



First Cost

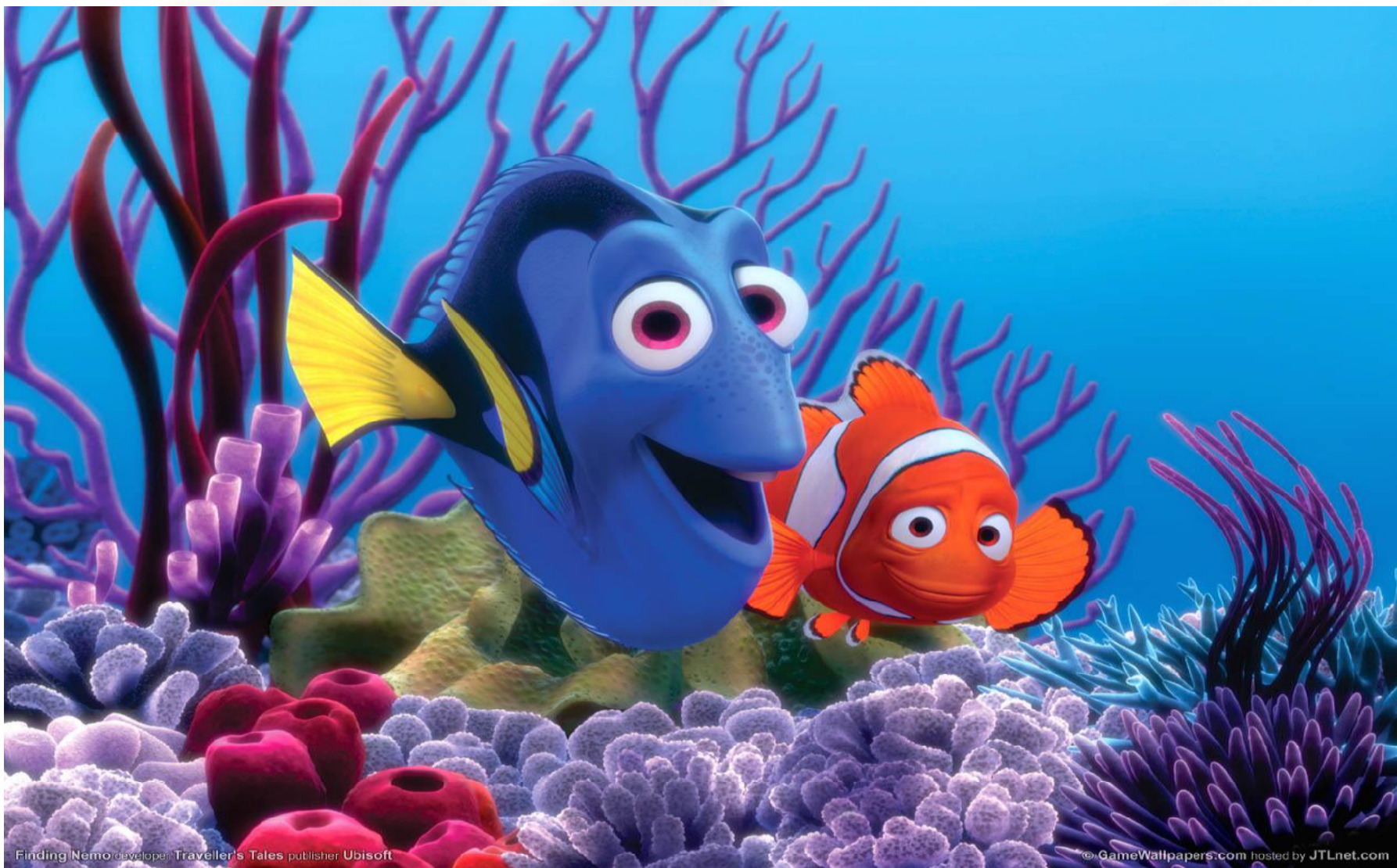
Integrated

- Integration w/ existing systems & data
- Highly scalable (multiple printers & readers)
- Automated ASN
- Automated applicators



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Finding ROI



Step 1 B: Identify Opportunities for Gain

Select one or more depending on your business needs.

- a) **Decrease Inventory costs**
- b) **Reduce Shipping & Receiving expenses**
- c) **Improve Operations**
- d) **Design new Products**



a) Decrease Inventory Costs

Opportunity for Gain	Data to collect	Items to tag
Decrease safety stock	Inventory data	Raw Materials WIP Finished Goods
Reduce Loss & Pilferage	People in/out Goods in/out	People Goods
Reduce spoilage	Expiration dates Utilization rates	Life limited materials
Improve Vendor Managed Inventory	Inventory data	Finished Goods



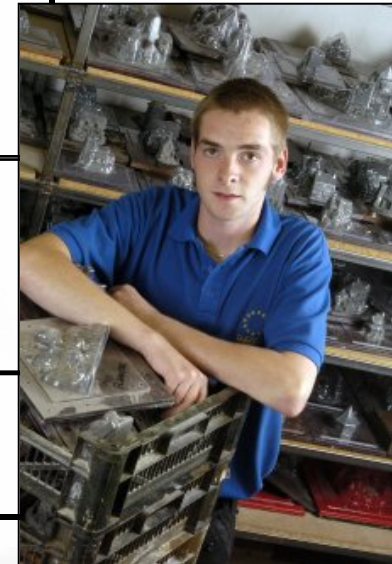
b) Reduce Shipping & Receiving expenses

Opportunity for Gain	Data to collect	Items to tag
Reduce lost items & missed schedules	Date & Time in/out	'Farm out' & 'Farm in' Parts
Decrease manual handling Reject improperly received goods before opening Decrease customer returns due to shipping errors	Manifest data	Received & Shipped Goods



c) Improve Operations

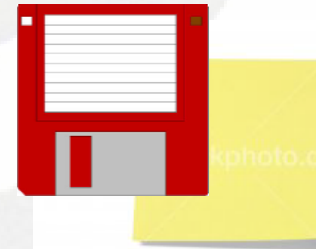
Opportunity for Gain	Data to collect	Items to tag
Decrease down time from misplaced tooling	Identity & location of tooling	Tooling, Dies, Molds, Cutters
Decrease down time from material out-of-stocks	Identity & location of Raw & WIP inventory	Raw Material WIP
Reduce defects from uncalibrated instruments	Date & duration of calibration	Measuring instruments
Increase utilization of mobile assets	Identity, location & utilization rates, qty	Tractors, forklifts, PC's



d) Design new products which exploit RFID as ...

A **'floppy disk on a post-it'** to carry:

- Operating or Maintenance information
- Warranty information
- Assembly information



A **'handshaking'** device to match:

- Patient w/ medicine, dose or meal to prevent errors
- Tool, cartridge, key w/ your equipment, machine, car



A **diagnostic** tool:

- Anti-counterfeit device for purchases or returns
- RFID coupled with sensors for temperature, shock, humidity, leakage, pathogens, motion



Step 2: Process Engineering & Business Case

- A. Map the old Operating Process
- B. Design the new Process and
RFID Concept of Operations
- C. Perform Business Case Analysis



Perform Business Case Analysis

Evaluate RFID as an Investment

- a) Calculate costs of Current Process
- b) Estimate costs of New Process
- c) Quantify all Productivity & Quality benefits
- d) Calculate ROI

A manufacturer can expect to*:

- Decrease inventory 10-30% by cutting safety stock
- Reduce shrinkage 10%
- Boost sales 1-2% by reducing out-of-stock items

* Accenture research



RFID Price Ranges

Approximate, BARE Price Ranges

Passive Tags	Price Range	
LF: 125 KHz	\$ 1	\$ 8
HF: 13.56 MHz	\$0.45	\$ 3
UHF: 915 MHz	\$0.129	\$ 2
Micro: 2.45 GHz	\$0.25	\$ 8
Active Tags	\$15	\$90
Readers		
Fixed	\$2,000	\$ 5,000
Hand Held	\$1,500	\$ 6,000
CF (card only)	\$ 500	\$ 800
Tunnel	\$4,000	\$ 6,000
Portal	\$7,000	\$12,000
Antenna	\$ 50	\$ 250

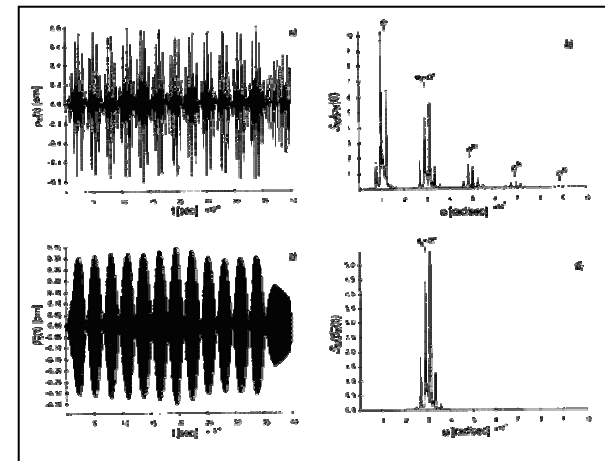
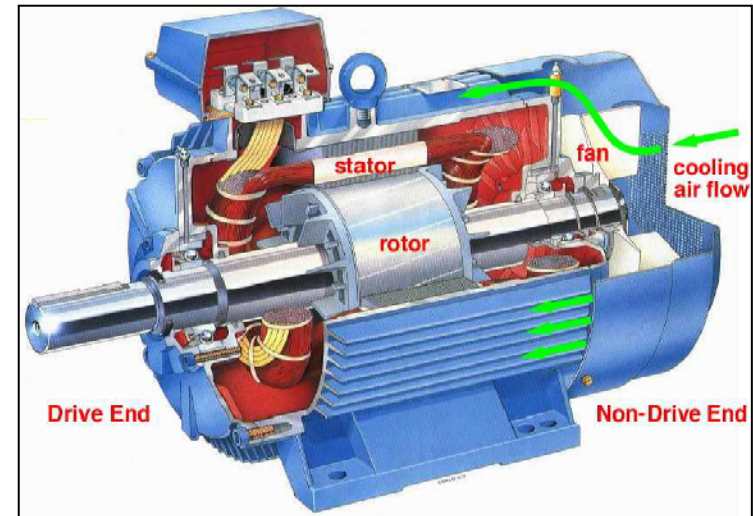
Other Hardware	Price Range	
RFID Label Printer	\$ 4,000	\$ 6,000
RFID Label Applicator	\$ 15,000	\$ 20,000
Software		
Middleware	\$5,000 per project	\$100,000 per project

DOES NOT include any essential services such as business case, system design, integration, customization, documentation or training.

Actual price varies with Quantity, Frequency, Durability, IC type, etc.

Step 3: Perform a Site Survey

1. Evaluate Materials of environment
 - Metals reflect RF
 - Destructive Interference
 - Constructive Interference
 - Liquids absorb RF
2. Review Building layout
3. Analyze sources of RF interference
 - Equipment radios
 - Wireless computers/phones
 - Harmonics from motors
 - Fluorescent ballasts
4. Content being tagged
 - Metal parts, Foil packages
 - Fuel, Oil, Beverages, Wooden pallets



Step 4: Select, Implement and Evaluate RFID Pilot(s).

Pilots are an excellent 'toe in the water'.

- Demonstrate technological feasibility
- Prove out business case
- Remove fear factor
- Bring 'nay-sayers' on board
- Produce in-house learning

Develop list of potentials & select 'right' pilot(s)

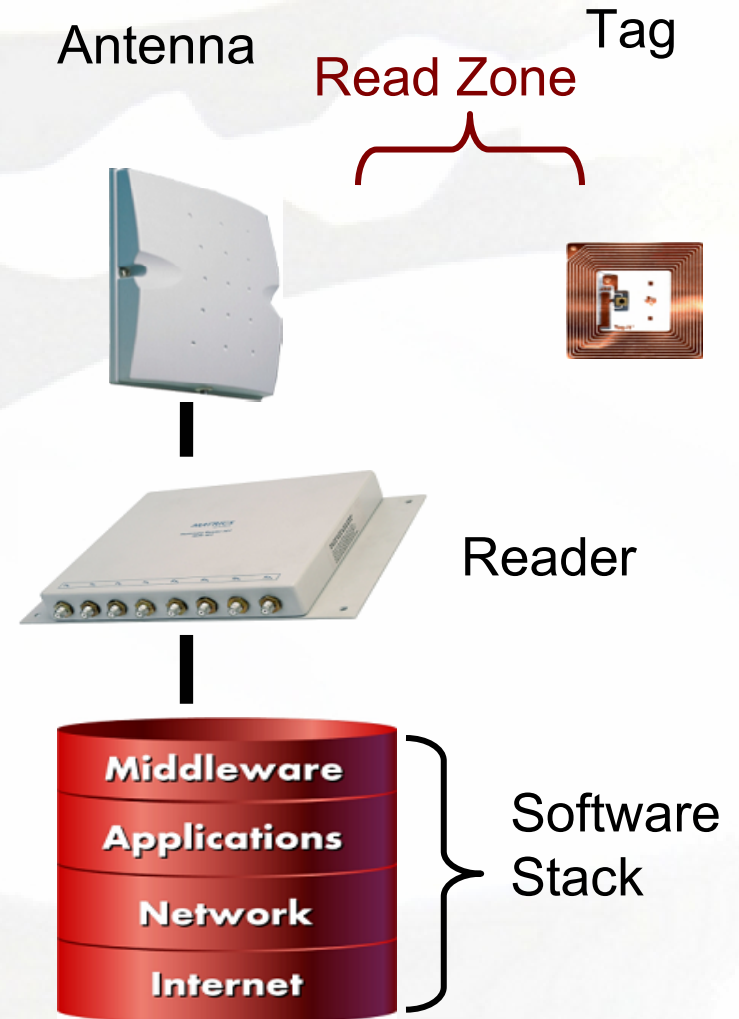
- Scaleable
- Measurable results
- Short
- Inexpensive
- High probability of success

Test, Test, Test



Design the Read Zone

1. Place Readers and Antennas
2. Optimize Tag Presentation
3. Optimize Tag Orientation
4. Avoid Tag Collision
5. Avoid Reader Collision
6. Select Tag Attachment



Readers and Antennas need to be placed so they:



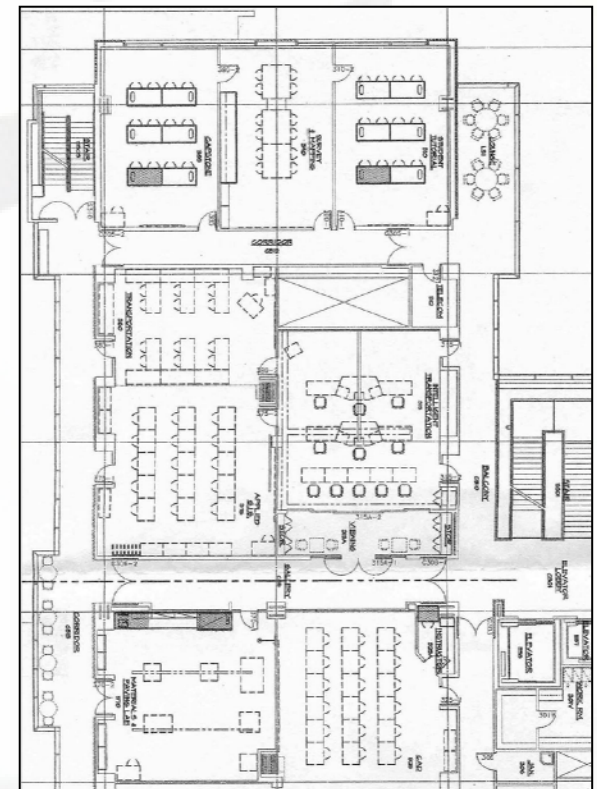
DO NOT interfere with operations
Are **OUT** of Traffic patterns



Aren't **BLOCKED** by Operators

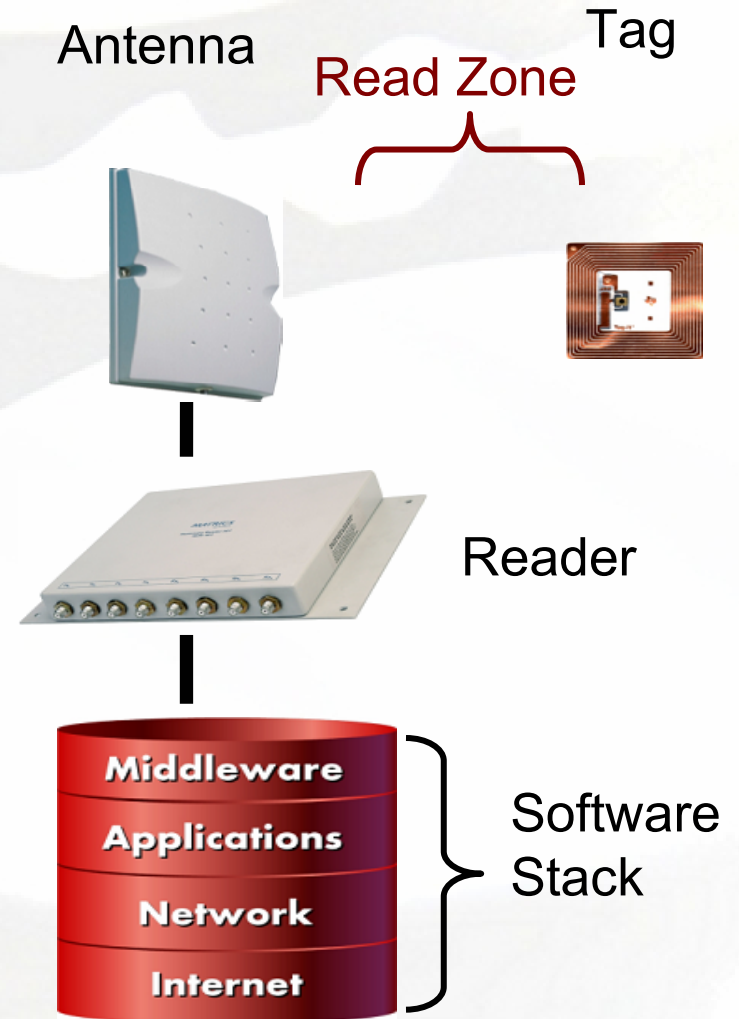


Are **IN** range for reader-tag coupling



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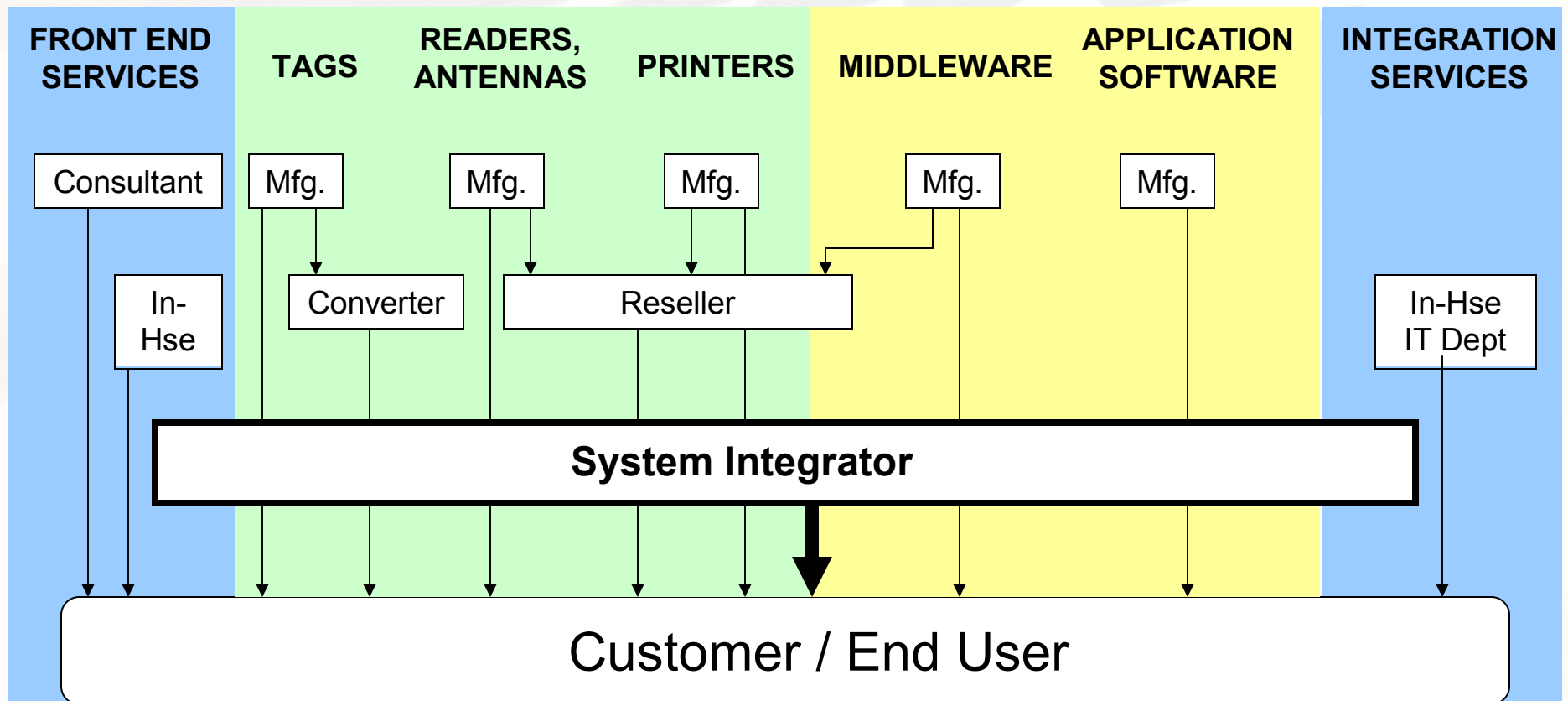


Step 5: Scale Up

An RFID project consists of...
many components from many suppliers.

CONSULTING SERVICES	HARDWARE	SOFTWARE	INTEGRATION SERVICES
Business Case Analysis	Passive & Active Tags	Middleware	Project Mgt
Planning	Chip	Applications	Installation
Site Survey	Inlet	Database, WMS, ERP	Legacy system
System Design	Packaging	Integration software & web services	Integration
	Readers, Antennas	Network services	Training
	Hand Held		Documentation
	Fixed		
	Printers		

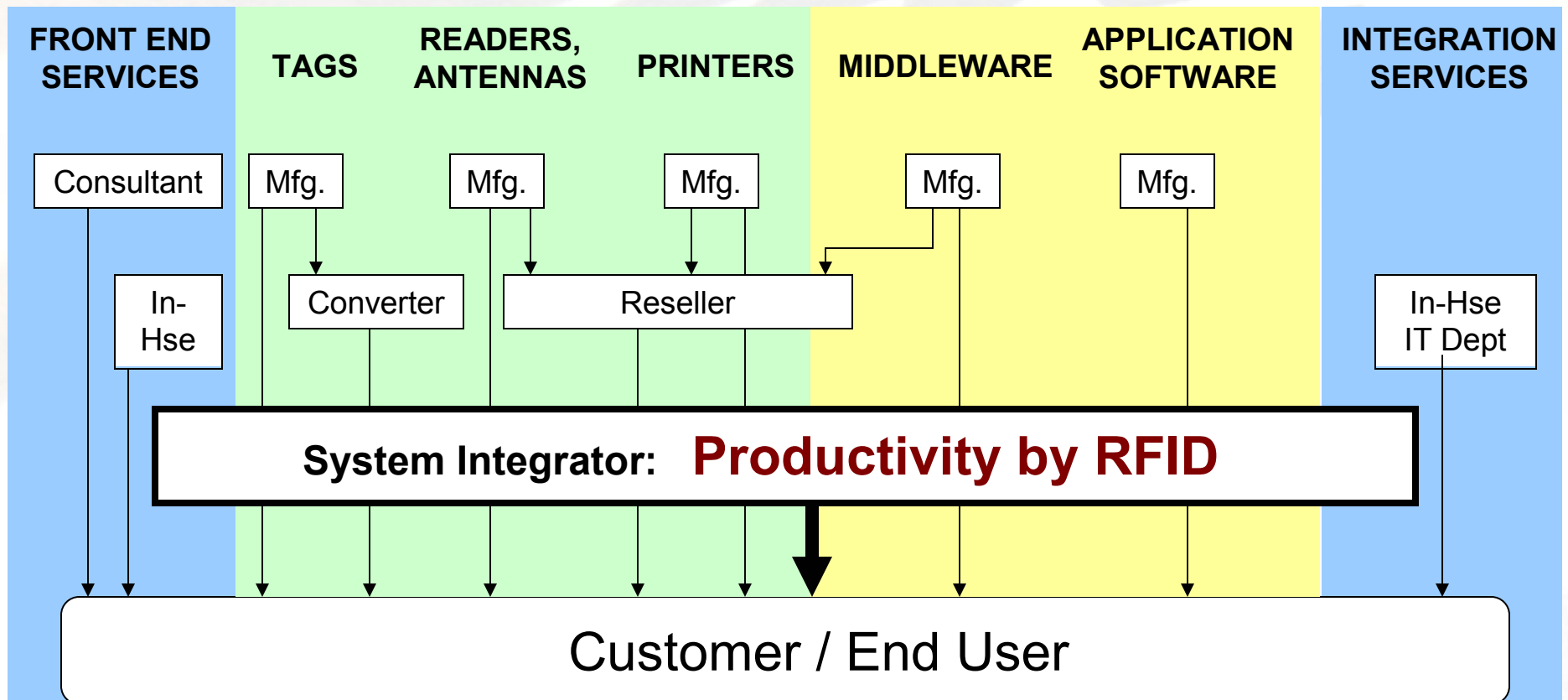
Each piece has many procurement options.



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System Integrator

A System Integrator is responsible for ALL the pieces.



A skilled **System Integrator** assembles ALL the pieces.

Look for one that...

- Is NOT a Value Added Reseller
- Does NOT sell or promote any one brand or brands
- Provides unbiased “best fit” solutions

Be sure to consider **Productivity by RFID**.
Our Consulting and System Integration services are
the same high quality as our RFID education!

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Questions?



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