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Putting RFID to Work

May 1, 2006



Building a RFID Business Case

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Putting RFID to Work

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Agenda

- RFID Business Case Overview
- Our Approach to RFID Business Case Development
- Key Considerations
- Lessons Learned

Why do a business case?

- Enables objective, fact-based dialogue and decision making – internally and with trading partners
- Creates a concise, rigorous “case for change”
- Enables effective implementation planning
- Increases probability of full realization of benefits

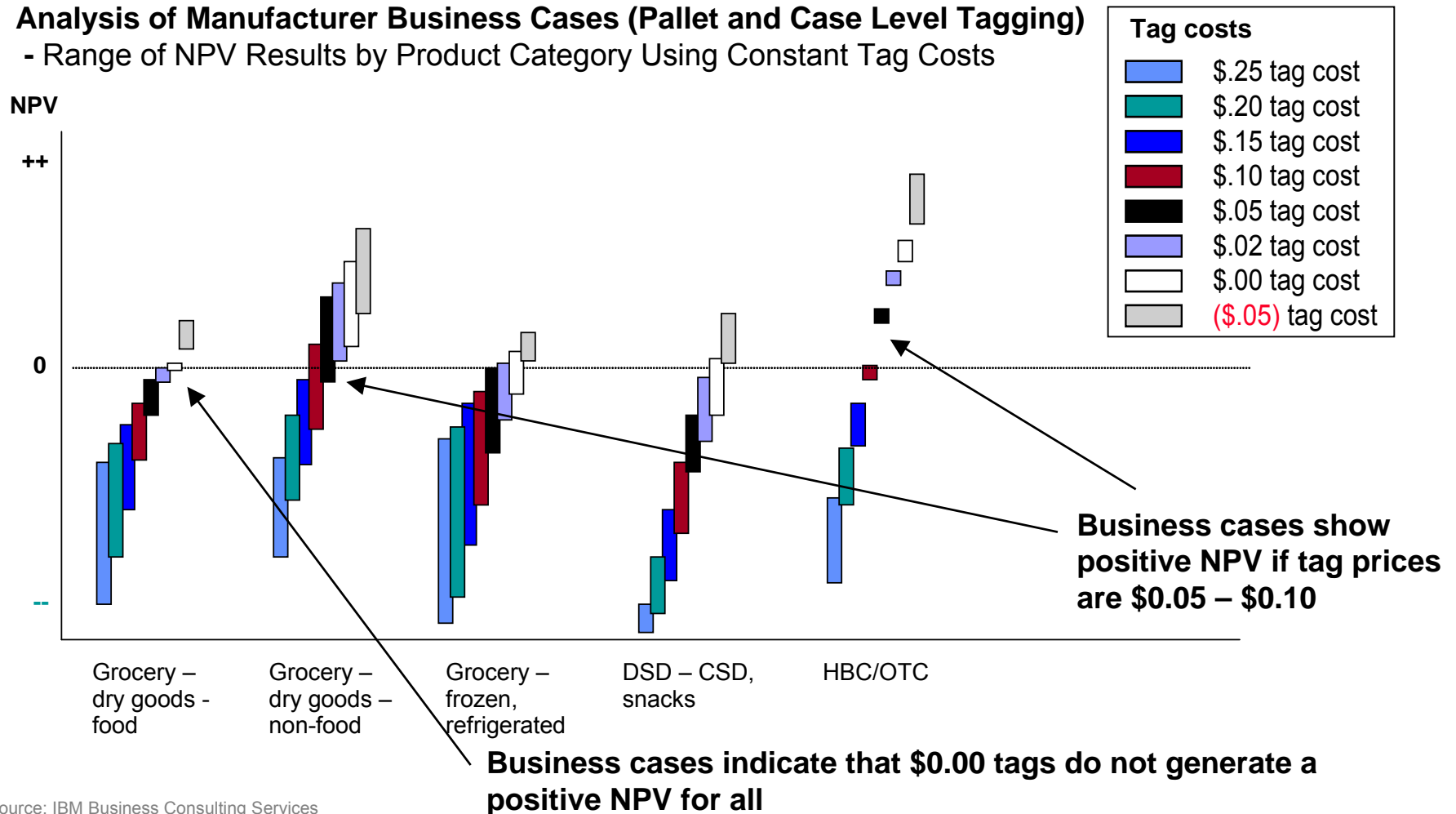
Every company must do some form of business case at some point – when, how and in how much detail varies by company



EPC/RFID is not a “one size fits all” technology

Analysis of Manufacturer Business Cases (Pallet and Case Level Tagging)

- Range of NPV Results by Product Category Using Constant Tag Costs



Source: IBM Business Consulting Services

A business case is therefore a key input to prioritizing investments to generate ROI

Overview of GMA/IBM Three-Tiered Prioritization Framework

EPC Advantaged

- Higher benefit potential
- Good readability
- Ability to tag efficiently or contain tagging costs



- High priority for customer initiatives
- Focus area for broad deployment
- Benefits re-invested to drive other tiers toward EPC Advantaged

EPC Testable

- Some benefit potential *AND/OR*
- Readability challenges *AND/OR*
- Some tagging challenges



- Leverage extensively for internal testing
- Not for deployment based solely on customer request
- Consider including in customer pilots to develop learnings

EPC Challenged

- Little or no perceived benefit potential today *AND/OR*
- Ongoing readability challenges



- Engage technology community to address issues
- Explore other means to gain visibility data
- Lower priority for customer initiatives

Source: EPC/RFID: Proposed Industry Adoption Framework, GMA and IBM

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Typical business case project deliverables

Deliverable	Definition
RFID Business Case Model	<ul style="list-style-type: none"> • DCF model identifying benefits, costs, timing and key assumptions • Includes ability to perform sensitivity analysis across multiple variables
RFID Process & Systems Blueprint	<ul style="list-style-type: none"> • Identifies key changes required to in-scope business processes required to realize expected benefits of RFID • Provides overview of recommended IT architecture to support RFID
Recommended Deployment Strategy	<ul style="list-style-type: none"> • 3-5 year rollout strategy to leverage RFID within company operations • Identifies key deployment strategy considerations such as anticipated timing of key benefits and costs as well as future process, technology and people capability requirements
Pilot Plan and Budget for Trial/Pilot	<ul style="list-style-type: none"> • Objectives, Scope, Success Criteria and Action Plan • Timeline and resources related to People, Process and Technology Requirements
Final Executive Presentation	<ul style="list-style-type: none"> • Includes senior executive level discussion of all of the above • Includes detailed appendix of all relevant working documents



IBM's RFID Business Case and Deployment Strategy Methodology



Key Activities

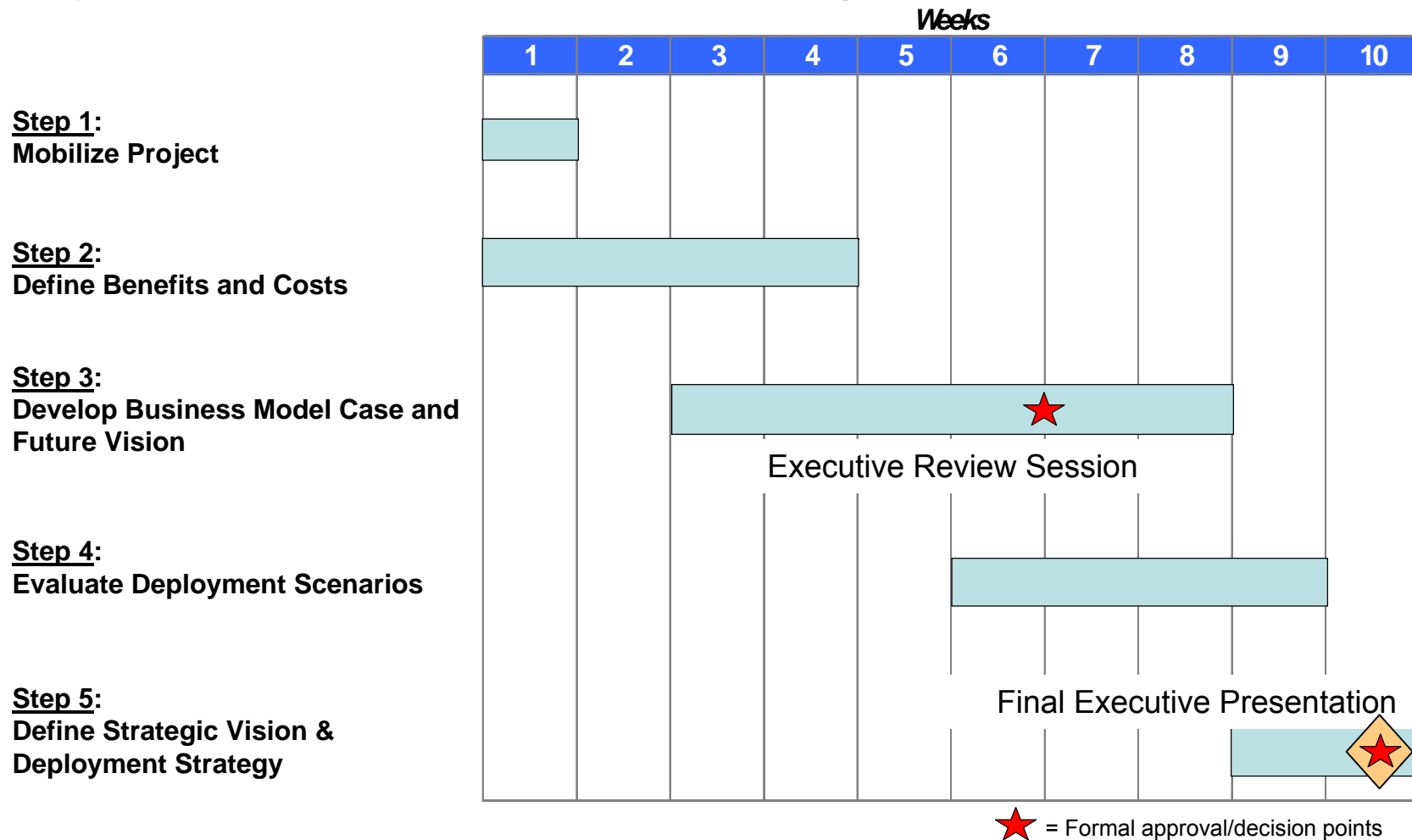
- | Step 1 | Step 2 | Step 3 | Step 4 | Step 5 |
|---|---|--|---|--|
| <ul style="list-style-type: none">■ Identify core team and assign roles■ Finalize scope■ Mobilize core team■ Schedule interviews and workshops■ Issue data requests | <ul style="list-style-type: none">■ Conduct opportunity identification workshops■ Review performance data and agree benefit size/timing■ Conduct cost workshops■ Identify key IT & process changes | <ul style="list-style-type: none">■ Develop business case model■ Define capabilities for future state■ Conduct RFID Solution Definition Workshop■ Complete to-be process & IT overview■ Perform sensitivity analysis | <ul style="list-style-type: none">■ Conduct option review workshop & agree approach■ Refine business model as needed■ Outline implementation requirements■ Perform additional sensitivity analysis | <ul style="list-style-type: none">■ Define 12-month implementation approach■ Prepare executive presentation |

Typical project timeline is ~8-10 weeks

Project Steps

Timing and Milestones

Illustrative



Scope will drive actual timeline

Six Key Drivers of Scope

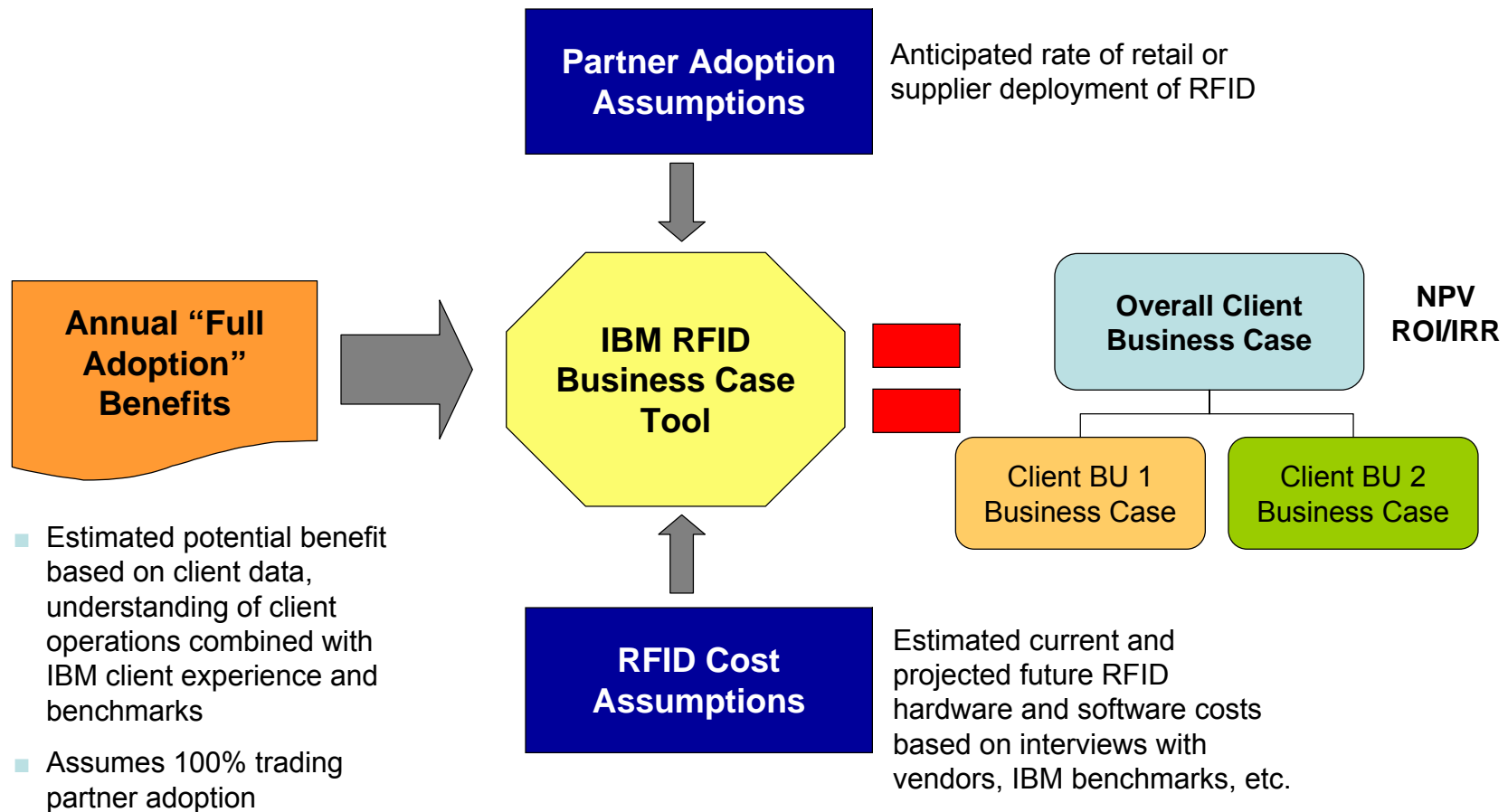
1. Geography
2. Product categories/SKUs/ business units
3. Facilities
4. Processes
5. Trading partner involvement
6. Level of analysis

Scope must balance breadth vs. depth of analysis to ensure meaningful extrapolation of results while staying within the project timeline and budget

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Approach to our discounted cash flow analysis



Identification of “pain points” requires a deep understanding of current processes

Receiving/ Putaway



- All boxes are weighed upon receipt
- Exceptions are manually resolved and boxes are re-weighed
- Boxes are palletized for putaway
- Individual boxes are putaway to locations selected by the equipment operator

Replenishment



- Replenishment tasks are created when orders are released
- Replenishers retrieve boxes and stage in stocking area
- Boxes are scanned to move inventory to “Active”
- Stocker scans boxes to confirm replenishment
- Stocker moves boxes to picking location

Picking



- Picker uses picklist to identify, product, location & quantity
- Picker uses one container per pick list
- Picker closes container and applies shipping label when pick list is complete
- Closed containers are staged adjacent to the takeaway conveyor
- Containers are later placed on conveyor

Shipping



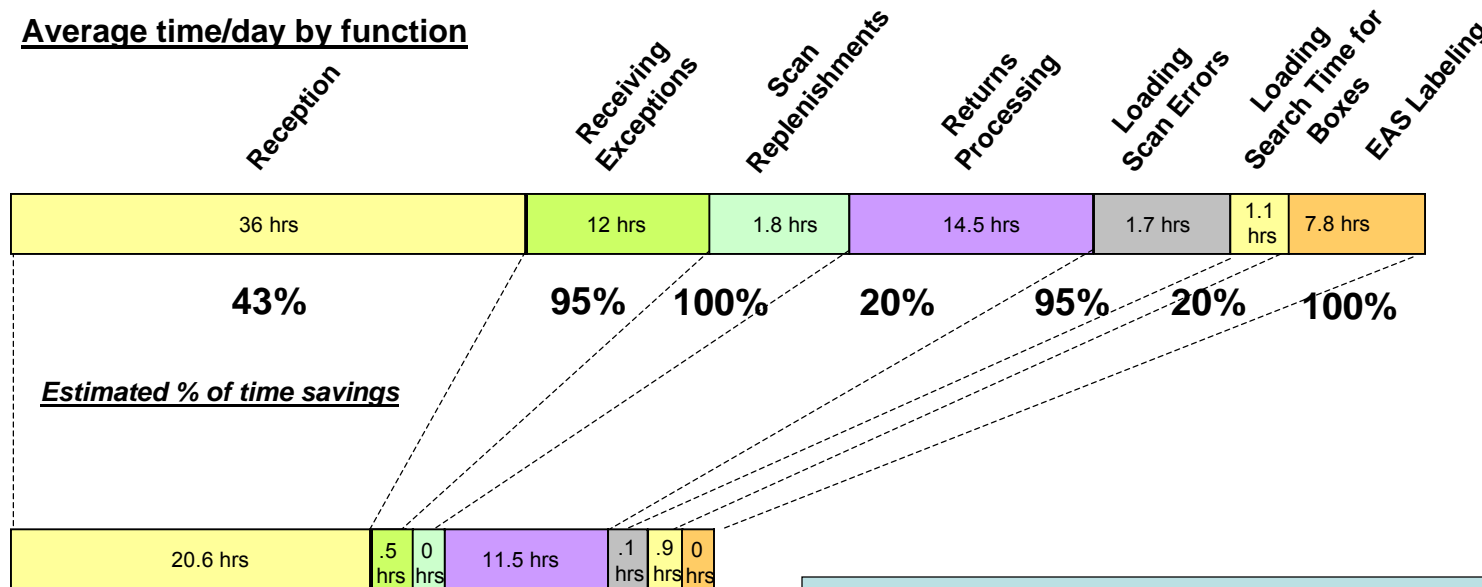
- Containers for customers requiring price labeling are diverted to pricing stations
- All containers are banded or shrink wrapped
- Containers are sorted and staged by order
- Containers are loaded by invoice and shipping labels are scanned to confirm shipment

Quantification of benefits requires a detailed understanding of process and data

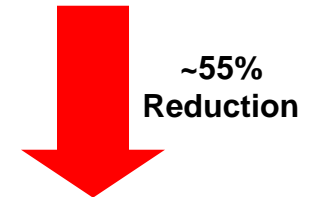
Client Example

Potential RFID Impact Area– Labor Savings W/REENGINEERED PROCESS

Average time/day by function



Current Total:
~X hours



New Total:
~X hours

Annual "Full Adoption" Savings (\$U.S.)

~X hours/day = ~XFTEs = ~\$Xday

RFID-enabled Cycle Counting and Year-End Physicals can save an additional X hours annually = \$X/year

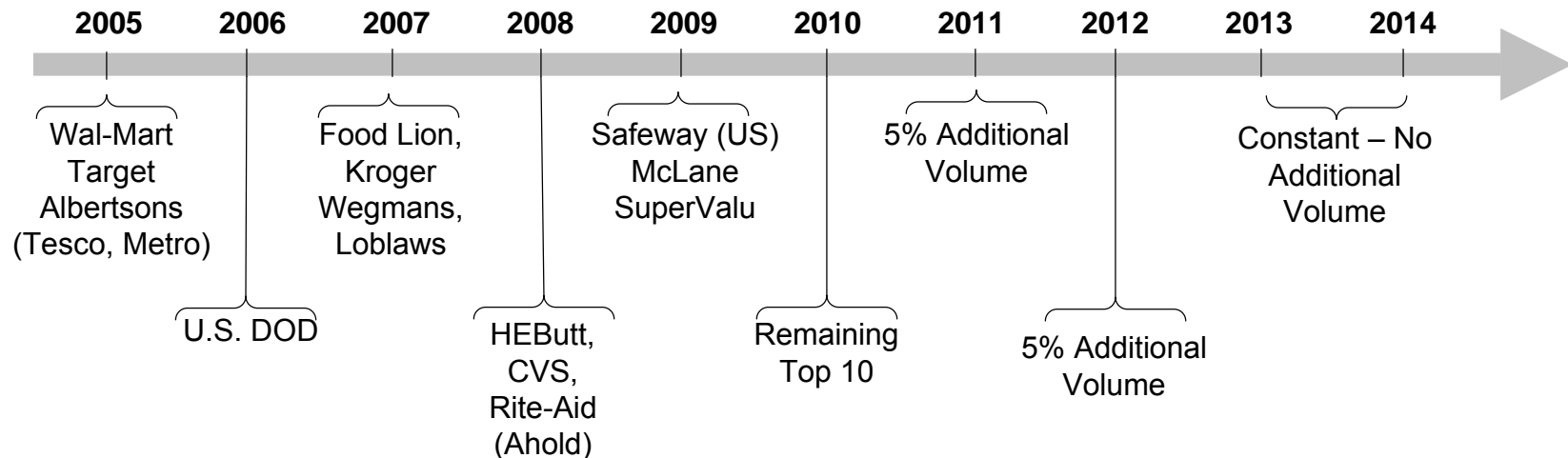
Estimated time/day by function with RFID

Assumptions

- Elimination of reception conveyor
- Boxes carried through dock door portal at reception
- Product palletized on reception dock for putaway

Trading partner adoption is a key driver of benefit realization

Client Example



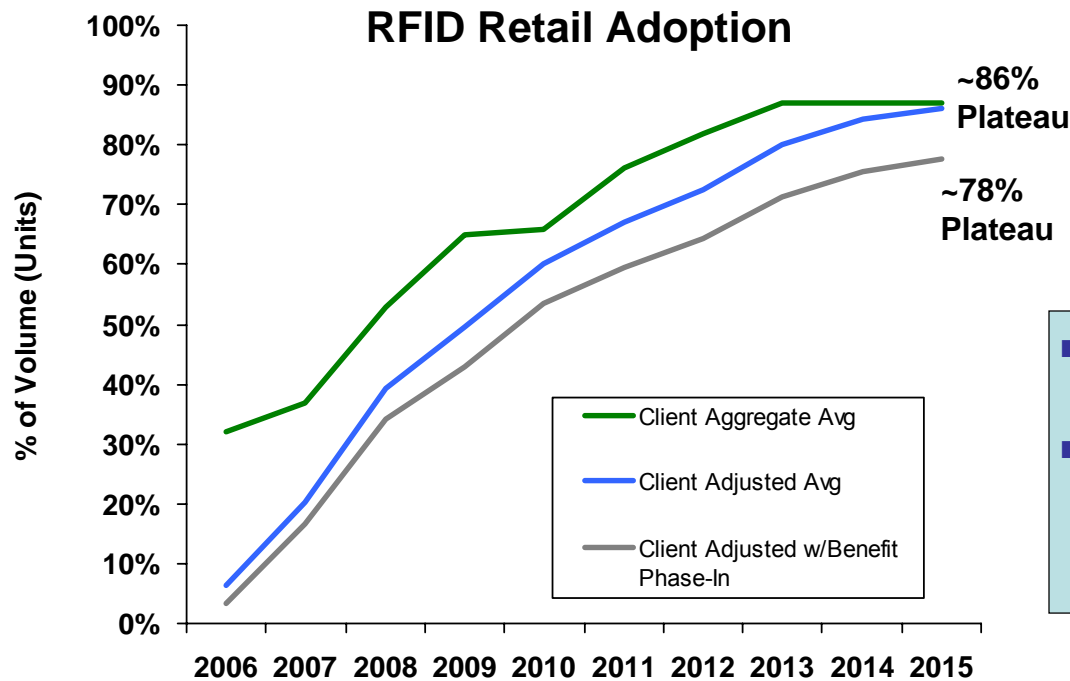
Other Key Retail Adoption Assumptions

- Phase-in of retailer volume: Year 1 = 20%; Year 2 = 40%; Year 3 = 40%
- Phase-in of retail-driven benefits: Year 1 = 50%; Year 2 = 50% (of adoption for each retailer)

Note: The current business case model is U.S. only; therefore, company names in parentheses are for illustration only of known and anticipated global retailer activity

The anticipated trading partner adoption rate drives both costs and benefits

Client Example

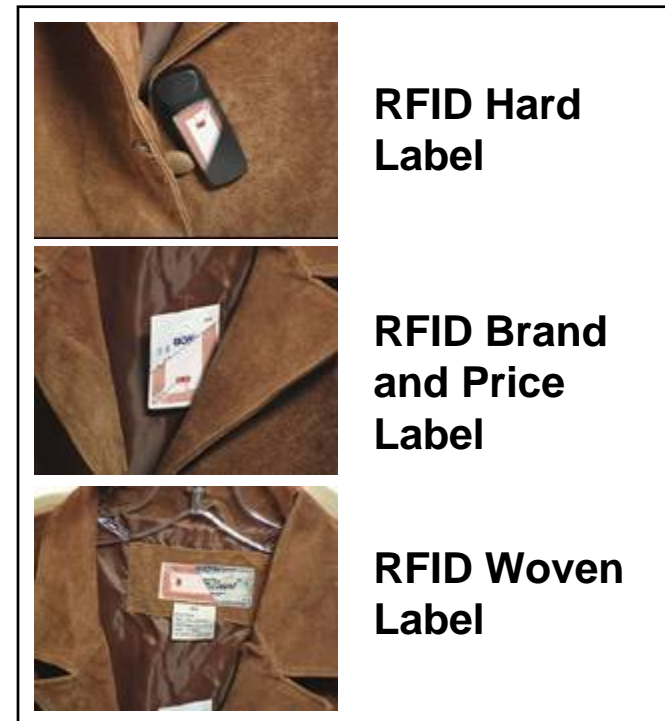
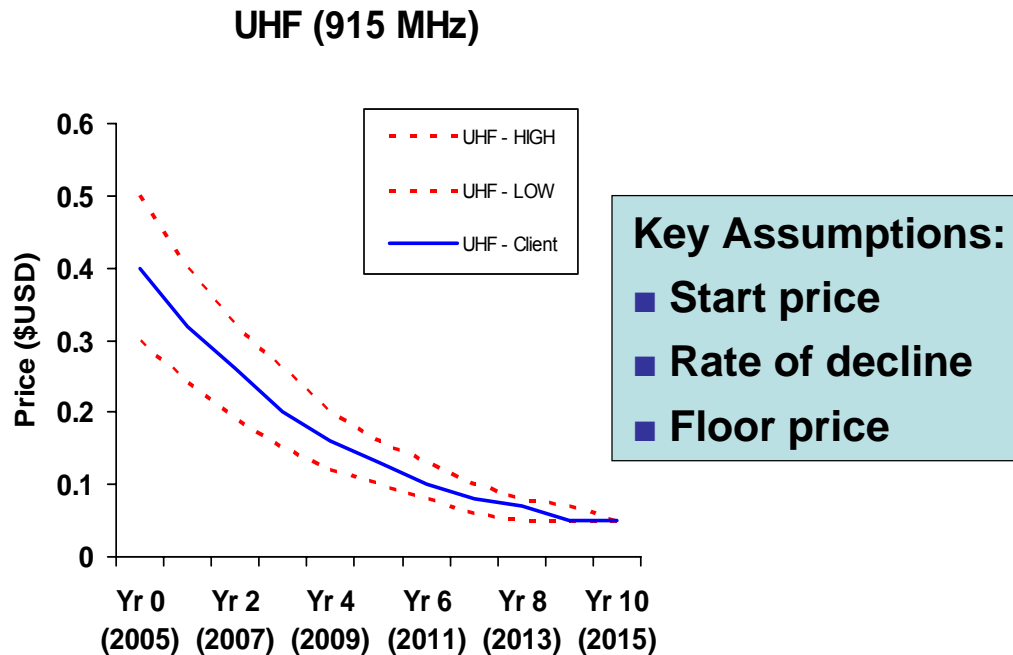


- Phase-in of retailer driven benefits to reflect retailer learning curve, etc.
- Client averages shown for illustration only – brand specific business cases incorporate brand specific retail adoption assumptions

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Aggregate Avg.	32%	37%	53%	65%	66%	76%	82%	87%	87%	87%
Adjusted Avg.	6%	20%	39%	50%	60%	67%	73%	80%	84%	86%
Adj. w/Benefit Phase-In	3%	17%	34%	43%	54%	60%	64%	71%	76%	78%

RFID label cost assumptions are another primary driver of business case results

Client Example



	Base Case	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Cost per tag	\$ 0.40	\$0.40	\$0.32	\$0.26	\$0.21	\$0.16	\$0.13	\$0.10	\$0.08	\$0.07	\$0.05	\$ 0.05
Decline rate in cost per tag		0%	20%	20%	20%	20%	20%	20%	20%	20%	20%	0%

Deployment alternatives can be analyzed within the context of four main factors

Key Consideration	Description
1. Product	<ul style="list-style-type: none">• Which product categories/SKUs?• How many cases/pallets/items?
2. RFID Label Application Method	How will the RFID labels be applied to cases/pallets/items?
3. RFID Label Application Location	When in the manufacturing/distribution process will RFID label application occur?
4. Distribution Network Locations	In what distribution locations will label application take place?

Four typical short term tagging alternatives

Alternative 1: Slap & Ship

Alternative 2: Maintain Separate Inventories (tag in DC)

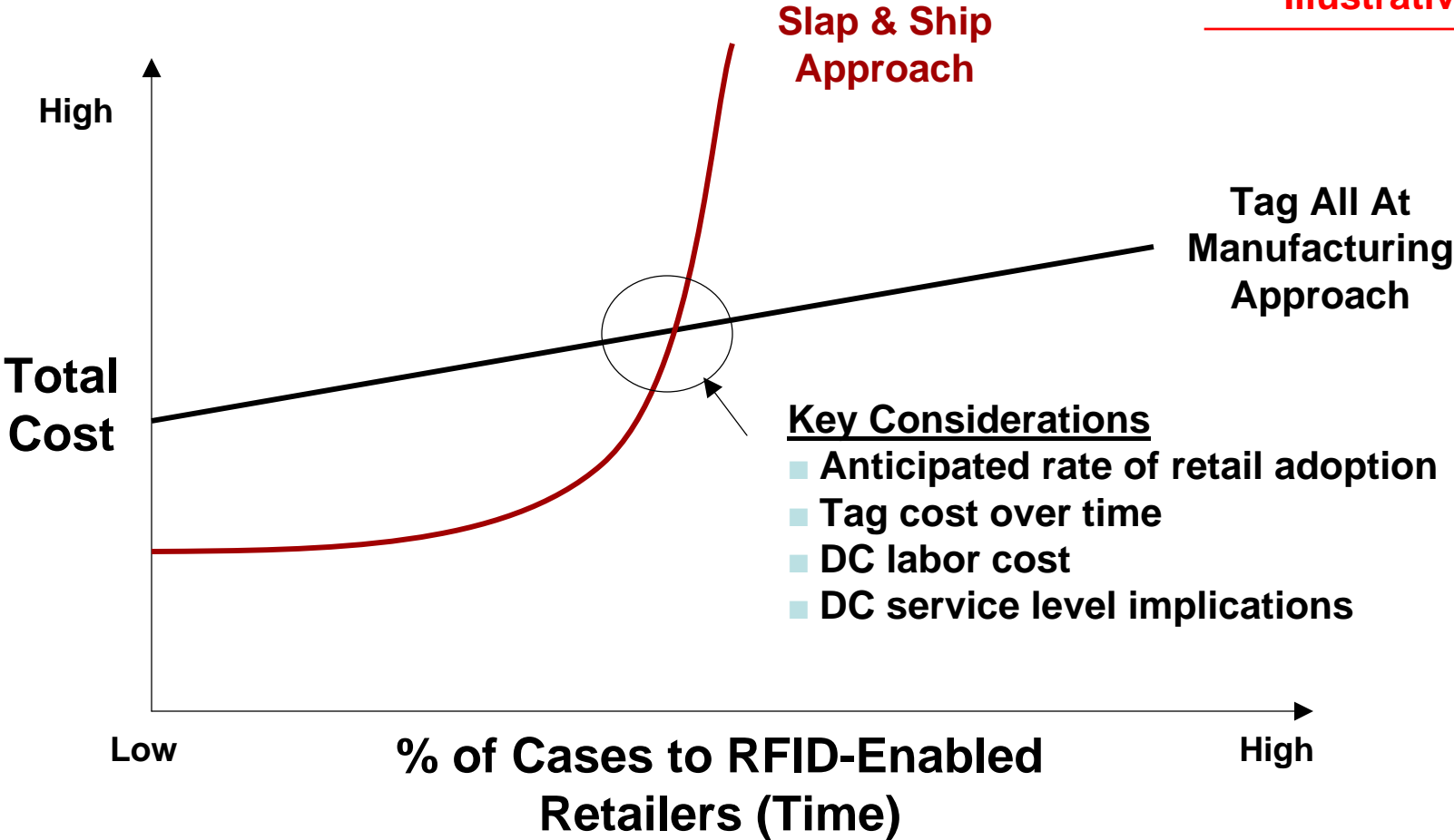
Alternative 3: Maintain Separate Inventories (tag in Mfg.)

Alternative 4: Tag All Manufacturing

	Alternative 1: Slap & Ship	Alternative 2: Maintain Separate Inventories (tag in DC)	Alternative 3: Maintain Separate Inventories (tag in Mfg.)	Alternative 4: Tag All Manufacturing
Advantages	<ul style="list-style-type: none"> • Low capital investment • Minimizes tag cost • Small systems impact • Increases outbound shipping accuracy 	<ul style="list-style-type: none"> • Will not delay outbound shipments • Minimizes tag cost • Increases outbound shipping accuracy 	<ul style="list-style-type: none"> • Will not delay outbound shipments • Will not impact DC labor cost • Minimizes tag cost • Increases outbound shipping accuracy 	<ul style="list-style-type: none"> • Enables all plant and DC benefits • Will not impact productivity, inventory, or DC storage space
Disadvantages	<ul style="list-style-type: none"> • Labor intensive • Could delay outbound shipments • Short term option only - will only be viable until volume increases 	<ul style="list-style-type: none"> • Labor intensive • Will require limited ERP and WMS modification to manage separate SKUs • Will increase inventory • Requires additional DC storage space 	<ul style="list-style-type: none"> • Will require ERP and WMS modification to manage separate SKUs • Will increase inventory • Requires additional DC storage space • Will require modification to production lines & palletizers (lines are space constrained) • Could impact production line speed 	<ul style="list-style-type: none"> • Will require modification to production lines & palletizers (lines are space constrained) • Could impact production line speed • Will result in "wasted" tags for product shipped to non-RFID retailers • Larger impact to plant and DC systems

The challenge is to determine the most cost effective RFID deployment strategy

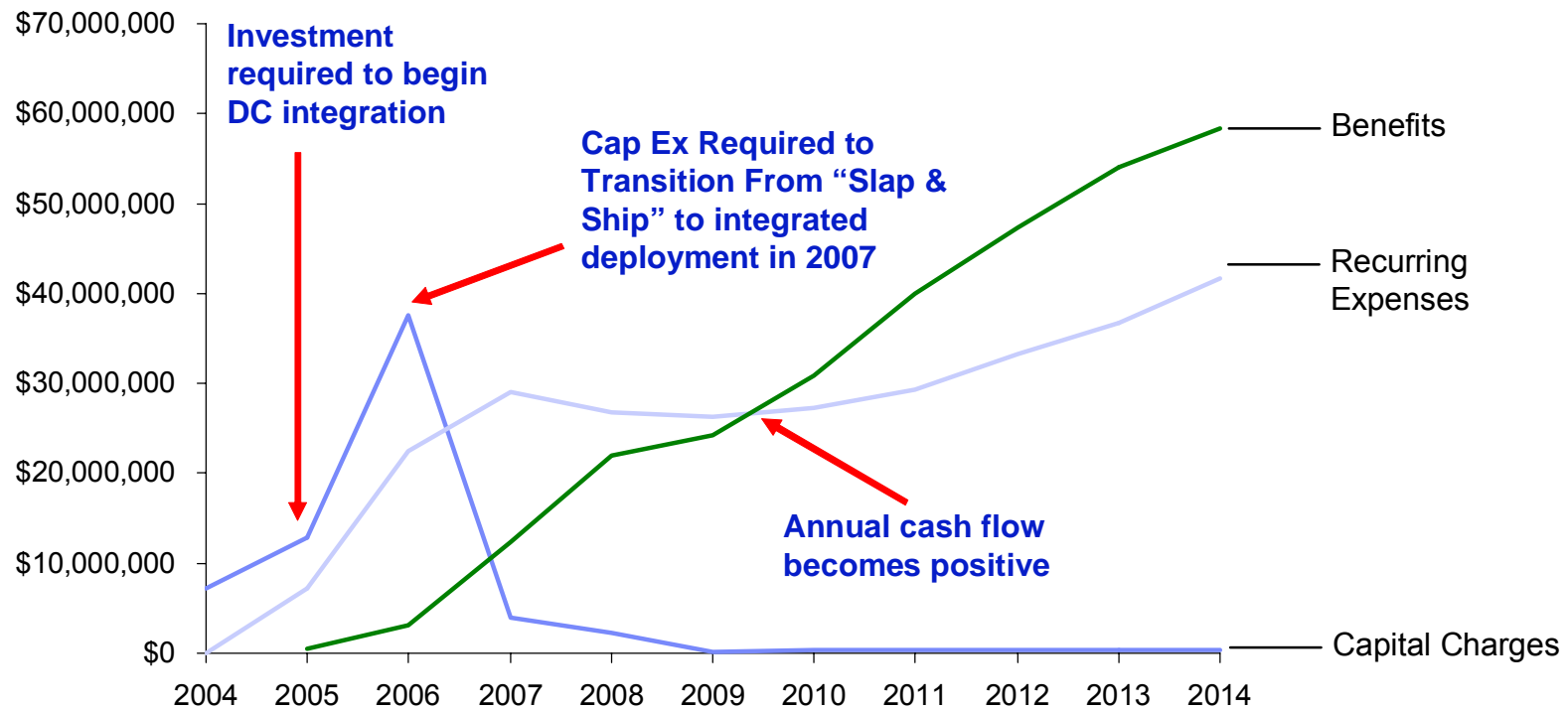
Illustrative



Cash flow analysis drives deployment strategy

Client Example

Client Overall Cash Flow



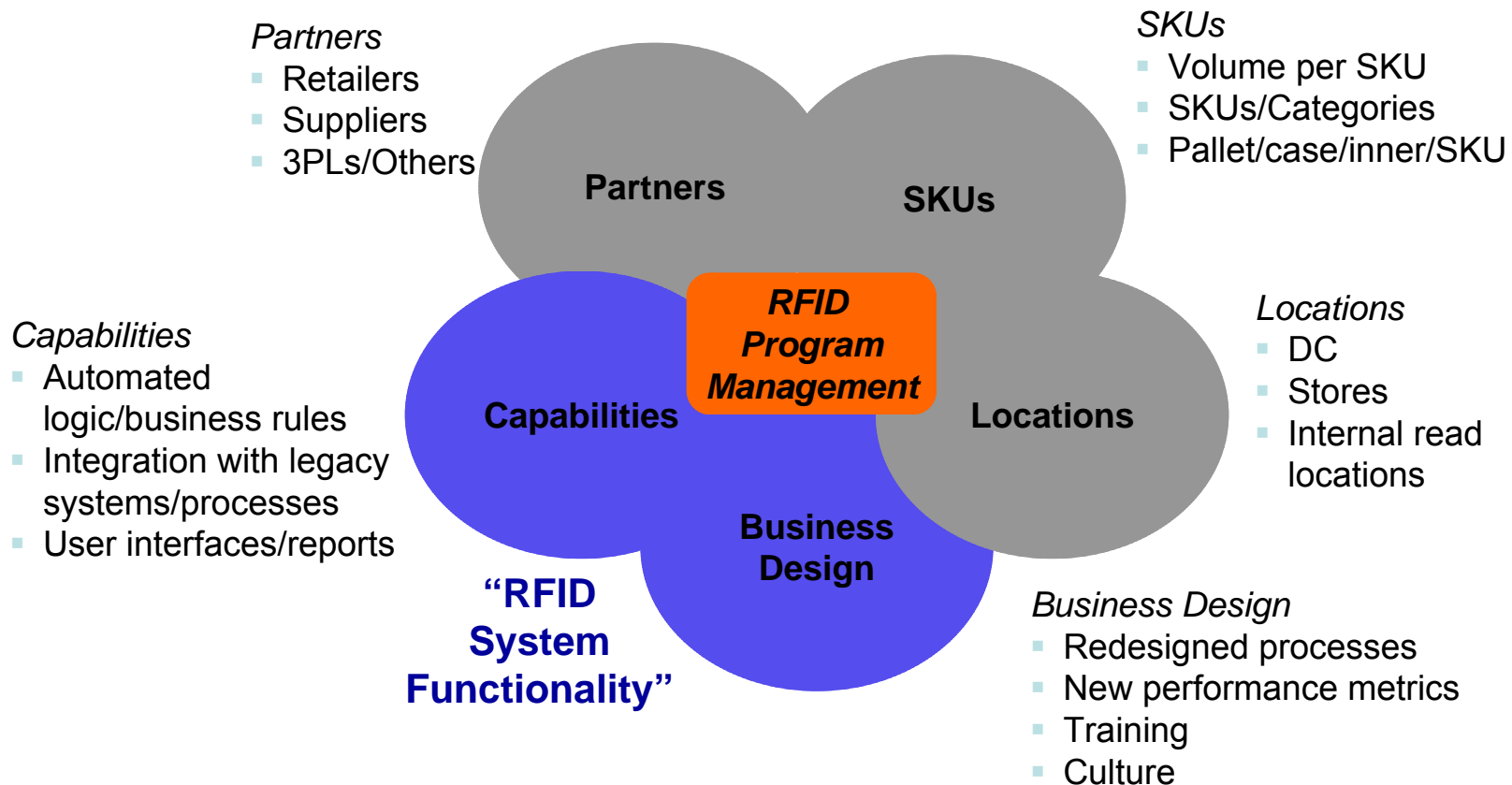
Note: Metrics do not include soft benefits

A variety of sensitivity analyses can be run to highlight key business case drivers

Client Example

Sensitivity Variable	Client® Brand	Client® Brand	Client Total
Base Case	NPV = (\$XXX)	NPV = \$XXX	NPV = \$XXX
RFID Label Prices Decline at 50% Faster Rate	NPV = \$XXX Delta = + 213%	NPV = \$XXX Delta = + 113%	NPV = \$XXX Delta = + 10,916%
Retail Adoption Decreased by 50%	NPV = (\$XXX) Delta = (485%)	NPV = (\$XXX) Delta = (337%)	NPV = (\$XXX) Delta = (27,506%)
OOS Benefit Increased by 50%	NPV = \$XXX Delta = + 336%	NPV = \$XXX Delta = + 242%	NPV = \$XXX Delta = + 19,376%
Source Tagging Begins in 2008	NPV = (\$XXX) Delta = (23%)	NPV = \$XXX Delta = (13%)	NPV = (\$XXX) Delta = (1,214%)
Source Tagging Begins in 2012	NPV = (\$XXX) Delta = + 6%	NPV = \$XXX Delta = + 3%	NPV = \$XXX Delta = + 322%

Maintaining strategic progress and balance across multiple dimensions will be a key challenge to deployment



Other key considerations

- Be realistic and objective – push the boundaries of the possible but remember that there is no bonus \$ for coming up with a high ROI
- Get stakeholder validation often and early – stakeholder input and ownership is key
- Understand other current/planned company initiatives – don't double count benefits
- Implementation planning should be benefits driven – don't forget that benefits drive technology needs which drive costs
- Pilots must be focused on specific use cases and business scenarios

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Every business case is unique

- Product category and unique company factors drive business case
 - “Pain Points” (e.g., Do you really have a shrink or counterfeiting issue?)
 - Distribution method (e.g., DSD vs. DC)
 - Shipping configurations (e.g., full pallet vs. mixed vs. innerpacks)
 - Current process capabilities
 - Product margins and brand loyalty
- Every business case needs to consider the transition
 - Trading partner adoption over time
 - Decreasing costs (tags, readers, software, etc)
 - Transitioning from one tag application strategy to the next
- A sound business case must be strategic...but balanced with near term operational realities

Finding the ROI in practice is not easy – EPC/RFID is not a silver bullet

- Tags + readers \neq Transformation
- Tags + readers = More efficient data collection & New Visibility
 - + Business Process Change
 - + Proactive Decision Making
 - + Integration to enterprise systems and infrastructure

= Transformation

RFID should be considered as a single enabler among many within the context of a broader business and supply chain strategy

Keys to RFID success

- Learn by doing!
- Companies must do three things – when, where and how is company specific
 - Develop a business case
 - Conduct proof of concept test(s) and trial(s)
 - Conduct scalable pilot(s) focused on driving business value
- Develop a consumer privacy strategy/message from Day 1
- Build a cross-functional team
- Gain and maintain senior executive support ASAP

Thank You – Questions?

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