

A framework for developing an RFID and Auto-ID strategy



UPS Supply Chain SolutionsSM

Witness how the headlines are getting more crowded with RFID proclamations and predictions that are causing all concerned to ponder:

- The costs and risks of doing nothing (the defensive approach)
- The costs and rewards of minimum compliance in meeting market dictates
- The total value creation potential an enterprise can receive through this enabling technology
- The total value a trading industry can create through this enabling technology
- An implementation strategy that might combine multiple courses of action in parallel fashion
- How broad the strategy should be:
 - Product centric
 - RFID centric
 - Post RFID

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Separating the headlines from the real potential is difficult but important to address sooner rather than later. Implementing the technology may be a future step, but getting the facts is a task for the near term. In a related white paper, “Demystifying RFID: An overview of the promise and the pitfalls,” UPS Supply Chain Solutions identified macro-level opportunities and issues with RFID in the supply chain, and examined the business case and pilot activities for determining its value.

In this paper, UPS Supply Chain Solutions looks at why it is so important for companies to develop a holistic Auto-ID strategy, not simply an RFID strategy. While broader in scope, this approach is most appropriate for how a family of solutions can work together to streamline or resolve issues across multiple business processes. Nor does it presume that RFID is necessarily the answer before the problem is defined and the right solution fit can be determined.

As a backdrop to developing the Auto-ID strategy, consider the following guiding principles:

- Understand in detail what is absolutely demanded by the markets’ major players and understand the consequences of non-compliance
- Determine if this enabling technology will improve business processes for the root causes that impact enterprise value levers
- Establish if the technology will impact decision-making capability within the organization that manages these processes

- Evaluate the likelihood of regulators to add future requirements that can best be dealt with by this technology
- Base the business imperative in deciding the strategy and implementation plan on facts and trends with the business cases and management of risks driving these decisions.

Also included in this white paper is the application primer “A Day in the Life of RFID” which illustrates key areas of the supply chain that might benefit from its unique characteristics. This primer can be a “strawman” for insights into how business processes might be re-engineered in the future. Deciding whether or how these processes can be modeled in the supply chain is the domain of the Auto-ID strategy team.

Getting started: developing an Auto-ID strategy

The success or failure of a given Auto-ID strategy is often determined before the project begins. Great execution cannot make up for poor strategic planning, and leadership must set the proper agenda for success. UPS Supply Chain Solutions offers the following key success factors for consideration early in the strategic planning process for Auto-ID:

- Top management support is essential and leadership must have the commitment to define the strategy and provide necessary resources.
- Qualified team members are those with intimate knowledge of business processes, knowledge of the technology enablers, and the ability to envision how the processes might be improved.
- The lack of comprehensive facts and data should not be the cause of team paralysis. Informed opinions will be required for reaching proper conclusions.
- Company mission statements and business strategies do not always provide guidance as to how operational strategies should be formed. In most cases leadership must provide the necessary clarity and guidance.
- Deployment decisions should be made during the pilot to allow sufficient time for lessons learned.

Often strategists give the advice to “begin with the end in mind.” This is sound logic, but how does one settle on what the “end” should be? This is where leadership must be organized in expressing a vision of the future state, and defining the alternatives that will result in achieving this vision. The development of this strategy should be led at the executive level and supported by a steering committee. As with all projects, the effort should have a clearly defined timeline, set of deliverables and a project charter that will answer the question of “how do we know when we are done?”

The following guidelines can serve as an early framework for companies considering an Auto-ID strategy:

Process

- The strategy must be holistic, spanning the length of the enterprise and the breadth of the supply chain.
- All processes that require data should be considered in-scope for re-design, before being taken out-of-scope.
- Design of processes should focus upon how to automate decisions and tasks through use of data.

Organization

- Enabling technologies will impact people. Proper change management diligence will be required for successful process and technology re-engineering.
- Auto-ID has great potential for process measurement. These new capabilities must be integrated into performance and reward systems for alignment with company objectives.

Technology

- Auto-ID should not be a technology play — it should be an information play that is focused on business intelligence and the ability to execute.
- Some level of redundancy is desirable to mitigate technology risks and the potential costs of process failure.

Financial

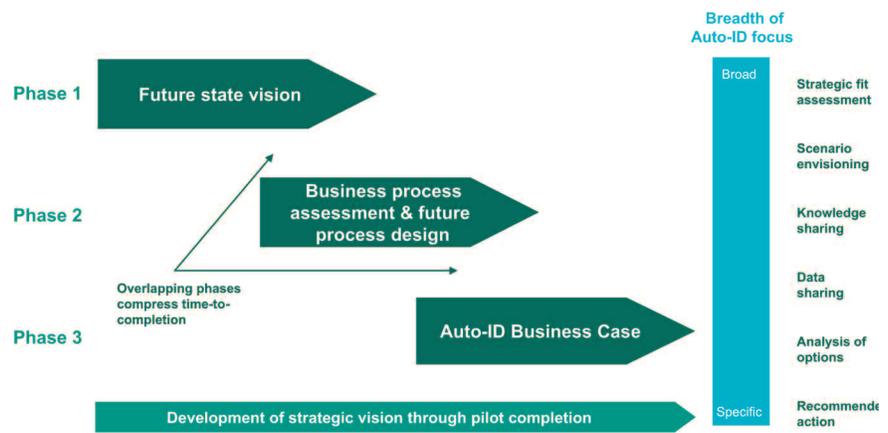
- Decisions should not be purely ROI-based. Strengthening internal capabilities and external supply-chain relationships must be part of the equation.
- Payback should be considered over a long-term horizon — home run projects are too few and far between. Base hits are the key to supply chain success.

The journey should begin with executive representation from major process areas such as customer service, product development, production, distribution and accounting. The comprehensiveness of the vision is important in deciding how the company might differentiate products and services, enhance customer relationships, and wring out latent inefficiencies in the supply chain.

The components of an Auto-ID strategy include the future state vision, business process assessment, and the business case for Auto-ID. While these are ordered phases of work, they can and should overlap “at the ends” to compress the overall cycle time from vision through pilot completion (see Figure 1).

Payback should be considered over a long-term horizon.

Figure 1: UPS Consulting Auto-ID strategy framework



Future state vision

This vision should focus upon how the company will operate differently when infused with new data, and how this data can be converted to useful information that adds value. The vision should:

- Have linkage to the overall corporate strategy or mission statement
- Direct behavior; without directing behavior the vision serves little purpose
- Be longer-term, spanning 5-10 years or more in most cases
- Respect differentiators that allow firms to grow and sustain margins
- Be achievable, given resource and technology constraints
- Include a vivid description of how the firm will utilize data to add value.

Business process assessment and future process design

Closed loop versus open network strategy

The linkage of a future state vision to a broader strategy may point to whether or not the solution will be closed loop (within the four walls) or an open network (shared among multiple parties) as

Auto-ID can foster the flow of information, goods and commerce for multiple supply chain partners who are willing to share data and link business processes.

envisioned by EPC Global, a member-driven organization comprised of leading firms and industries which is spearheading the development of industry-driven standards for the Electronic Product Code (EPC) Network to support the use of Radio Frequency Identification (RFID) in today's fast-moving, information rich trading networks.

The closed loop model has been successfully used for internal asset visibility, sortation, process automation and many other uses. An open network model used for customer and supplier collaboration can yield significant benefits and should be of primary consideration for a holistic Auto-ID strategy. Auto-ID can foster the flow of information, goods and commerce for multiple supply chain partners who are willing to share data and link business processes.

Process analysis

Often, successful companies that control their existing processes through information do not later review them for improvement opportunities. Left alone, the current processes stabilize into predictable patterns, and variations are managed on a continuing basis. If firms are truly to benefit from Auto-ID, they must re-think these processes and introduce change.

It is surprising how often the process of documenting current work methods uncovers hidden variations from established standards or finds that there is no standard process. This discovery effort is the starting point for business process assessment and it often highlights manual tasks and handoffs that may be prime candidates for automation through Auto-ID. Further, human error can be the cause of inefficiency even when a good process is in place; Auto-ID may dramatically reduce this potential error.

Key questions to ask when evaluating a given business process:

- What manual tasks can be automated?
- Where are the decision points and can they be systematized?
- What data or information could be captured and utilized to foster automation or throughput?
- Can efficiency or accuracy be gained in the downstream processes by changing this process?
- Could the process benefit from having information available near real-time?
- What information must reside on the asset and should it be static or dynamic information?
- What information or other safeguards could be introduced to prevent errors?

- Does the process span geographic boundaries that might impact the proposal?
- How could customers and trading partners benefit from this information?
- What process-centric data allows better management of the linked processes?

Typical improvement opportunities:

- Reduction in cycle time (start-to-stop times for a given process)
- Improvement in accuracy (actual versus planned results)
- Reduction of labor (time required for human inputs)
- Improvement in efficiency (work inputs compared to the outputs)
- Improvement in customer interface (how customers could benefit from the information).

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The output of the business process assessment and future process design should include a set of opportunities with operating assumptions that can be further investigated in the business case phase. The most difficult component of the Auto-ID strategy is likely to be the future process design. The application examples at the end of this paper offer a glimpse into how these processes might be enabled by Auto-ID.

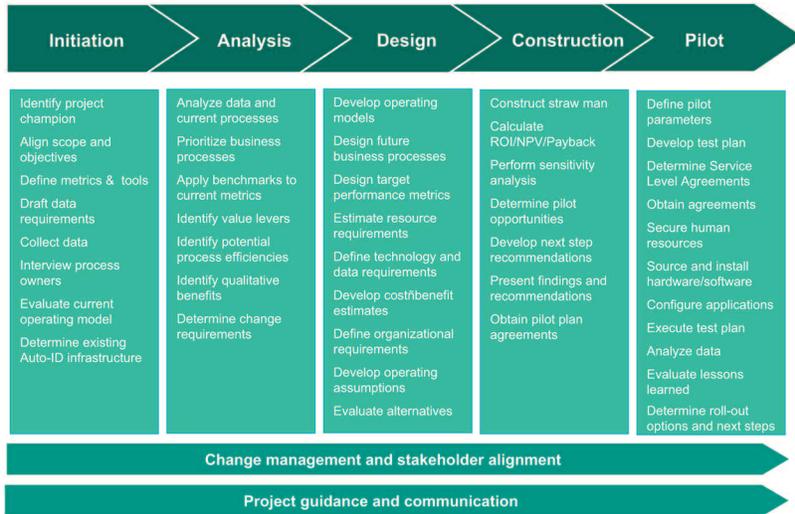
The business case for Auto-ID

Once the strategy team has developed an initial vision and evaluated business processes for potential benefit, the focus should shift to the business case. It will likely be necessary to charter a sub-team for developing the business case for Auto-ID with feedback into the steering committee.

As noted in Figure 1, the outputs of the business process assessment and future process design are the inputs for the business case. It is desirable to have some overlap in the phases leading up to the business case. Such overlap can ensure common understanding, reduce time-to-completion and allow resource sharing.

UPS Supply Chain Solutions has developed the following Auto-ID business case methodology to guide the determination of the business value of these technologies and processes. This approach presumes that team members are versed in the benefits, costs and issues associated with various Auto-ID options (linear bar-codes, 2-D codes and RFID).

Figure 2: UPS Supply Chain Solutions Auto-ID business case methodology



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The Auto-ID business case requires disciplined creativity in that values must be assigned to new process steps or the displacement of existing ones. Will the new combination result in greater profits for the enterprise, or is there an opportunity cost to be considered? What are customers and suppliers doing that might impact our decision? These are important questions that the business case should answer in addition to the obvious ROI question. By sampling the costs, benefits, dos and don'ts of the broader implementation, the pilot project can be very helpful in determining some of the answers.

The business case and pilot should result in a set of recommendations for both the short-term and long-term (5-10 years).

Summary

Executive leadership owns the decision for the Auto-ID strategy and must decide if the new capabilities or foundation for new capabilities justify the effort required. ROI should be a major but not the sole criterion for decisions. The strategy decision should be based upon where the company will be in the future, not where it is now, nor where it has been. Getting the answers to strategic questions is a continuum, and companies need to adopt strategies of design — deliberate action to anticipate probable outcomes and adjust capabilities accordingly.

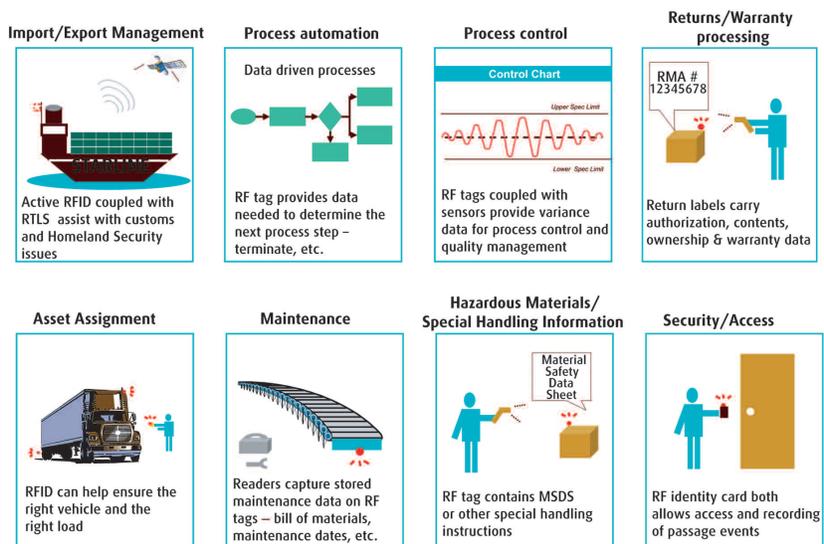
UPS Supply Chain Solutions will continue offering thought leadership on RFID and Auto-ID throughout 2004 in a series of related white papers to help companies navigate the complex supply chains of the present and future.

Application Primer: A day in the life of RFID

The current industry focus on meeting RFID mandates will accelerate the adoption of the technology, as did mandates for EDI and bar-coding decades ago. The mandates for pallet and case tagging are also causing firms to examine how they use information to operate their businesses beyond the minimum requirements for compliance. For this effort, companies need to evaluate automation and error-proofing opportunities from inception through closeout of business processes. The examples we present below may assist in determining where these applications could add value.

Illustration # 1 A day in the life of the factory

The following applications are not limited to a factory environment and are not an exhaustive list of options for Auto-ID. Rather, they are presented as ideas to stimulate creative thought around the use of supply chain data in business processes.



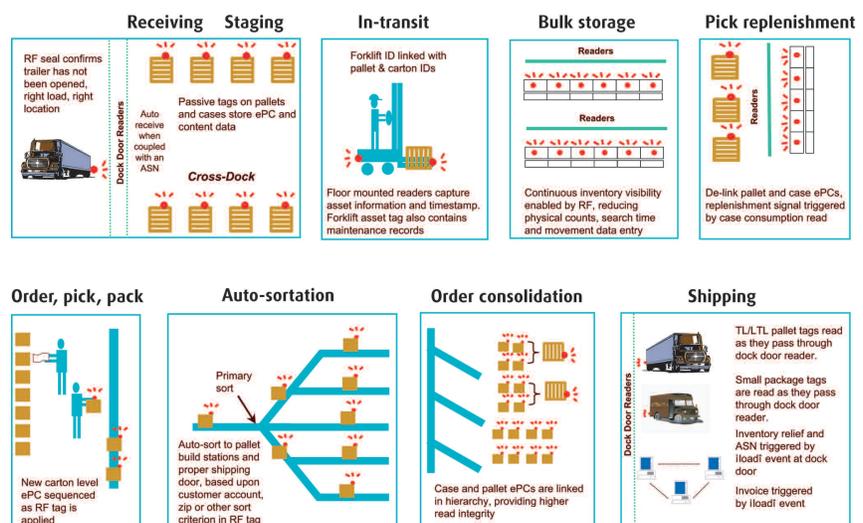
Companies should be looking for Auto-ID not only to reduce costs, but to grow revenue. How can this be done? One major opportunity for companies is to improve the customer experience through leveraging information. The increased visibility that Auto-ID can provide to the supply chain can be a differentiator for many firms

that are creative in harnessing information value. Spoken plainly, companies should find a way to improve customer relationships. Some examples might include:

- Providing order status information proactively — don't wait for "where's my order?" A status notification triggered by reading a tag at a specific interval is possible and may strengthen relationships among trading partners.
- Using exception management techniques (based upon supply chain data) to prevent service failures
- Using proactive service recovery — contact the customer before they are affected by the service issue
- Providing expedited fulfillment options — based upon knowledge of where the inventory is right now
- Collaborative program management — improve forecast accuracy based on actual data, reduce cycle time based upon true measurements, and improve decisions based upon facts and data
- RFID enabled products — for parts maintenance records, anti-counterfeiting, sensor coupling for temperature, humidity and other environmental monitoring, etc.

Illustration 2: A day in the life of the warehouse

In addition to the scenarios below, warehouse operations with or requiring significant search time for parts, inventory, equipment or other assets could benefit from RFID. Often, this search time is not measured and can represent a major embedded process cost. The potential of knowing where things are at all times is a prospective RFID application for reducing or eliminating search time.



Finding the value of Auto-ID requires significant effort and willingness to change procedures in fundamental ways. Like other types of business infrastructure, the payback for this technology may be longer term and require large-scale change.

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