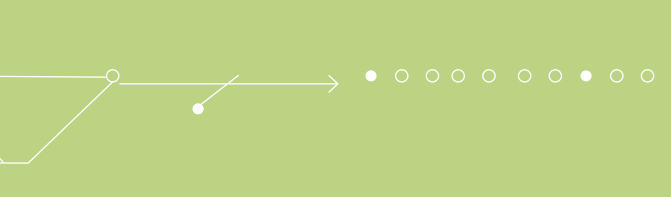
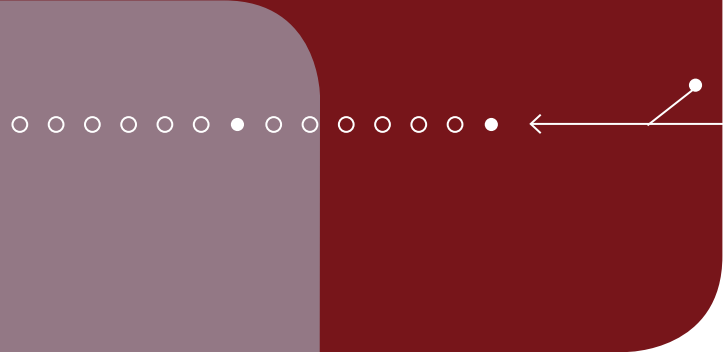


Whitepaper



# Automated Data Collection:

From Cost Justification  
To Vendor Selection



**HighJump**<sup>™</sup>  
SOFTWARE

# Automated Data Collection: From Cost Justification to Vendor Selection

## Introduction

After making the enormous corporate commitment and investment required to implement your ERP system, it is sometimes difficult to justify the purchase of more resources to make the ERP system work better. However, for many companies a relatively modest investment in automated data collection (ADC) technology can provide significant benefits and actually yield a greater ROI than the ERP investment itself. But as with many software-based investments that require time, research and initiative, you may be asking yourself, “Where do I begin?”

If your company is considering an investment in ADC, the following report will provide a solid foundation upon which to make many of the important decisions in the process. The two most important decisions to be made—and the two that this report will cover in detail—are whether or not to make the investment, and how to choose a software vendor once the project is approved.

To guide you in the decision process for what could be the most productivity-enhancing investment your company will make, the following report is segmented into two parts. Part I, The Benefits of ADC, offers a primer on the benefits of ADC, and explains in detail why investing in a data collection system could be the right move for your company. Part II, Strategies for Choosing an ADC Vendor, reviews the art of selecting the right vendor for the job and offers a tangible list of vendor selection criteria for use in the decision process.



## 1 The Benefits of Automated Data Collection

ADC is a term that describes an efficient and effective method of capturing data at the source, along with the subsequent transmission of that data to the required information processing systems; which in this case is your ERP system. The term ADC encompasses both the data collection technology—such as bar code, Radio Frequency Identification (RFID), voice recognition and several others that go beyond traditional keyboard entry—as well as the devices or input terminals used to gather the data in question. As a third component, ADC also includes the data transmission methods used for moving information in and out of the information processing system; including Radio Frequency (RF), LAN/WAN Ethernet, and serial communications.

### The Universal Benefits of ADC

The specific benefits that can be realized by implementing an ADC system will depend on both your business model and the specific ERP that your company has implemented. But regardless of ERP configuration, every organization that implements an ADC system should at a minimum achieve more accurate and timely information, as well as a reduction in overhead.

**More Accurate and Timely Information:** Information loses value over time. By capturing data at the source with the use of bar codes and scanning devices, an ADC system will feed your ERP immediately; thereby making up-to-the-second information available to users who need it. **The Result:** The use of bar coding plus data validation techniques helps ensure that accurate information is available for company-wide use almost immediately.

**Reduced Overhead:** Time that is spent manually recording data, collecting data and keying data into an ERP system is costly to begin with. If any errors should happen to occur in the data entry process, additional clerical time will be required to track down the source of the errors and re-key incorrect data. With ADC, information is input into the ERP system automatically and in a standardized format—with little or no key entry. **The Result:** ADC can reduce, if not eliminate, overhead costs associated with bad data.

## Automated Data Collection: From Cost Justification to Vendor Selection

### Cost-Savings on the Shop Floor

If your company is a manufacturer or distributor, a number of significant ADC-related benefits can be achieved on the shop floor in areas like inventory, shipping, warehouse management and training.

**Increased Inventory Accuracy:** We all know that carrying inventory is the equivalent of storing hundred dollar bills on a warehouse shelf. An excess of inventory ties up capital—but too little inventory can bring production to a grinding halt and result in lost sales opportunities. With ADC, every movement of material is recorded with the simple scan of a bar code, allowing the creation of a real-time snapshot of inventory position. With this real-time snapshot, material managers can proactively manage inventory levels to reduce carrying costs, avoid unanticipated stock outs and eliminate inventory obsolescence. **The Result:** Immediate cost savings through improved inventory management.

**Reduced Shipping Errors:** In today's highly competitive business environment, every customer expects to receive the right product in the requested quantity at the designated time. After all, why shouldn't they? But paper-based picking systems inherently enable incorrect orders to be shipped to customers. As if re-shipping the correct product were not expensive enough, handling customer complaints and coordinating the return of mis-shipped goods are even more costly. An ADC system, when used in place of a paper-based one, can significantly reduce shipping errors by immediately verifying both the product and the quantity as the pick is being performed. **The Result:** Reduced shipping errors and happier customers.

**Increased Productivity:** Moving through the warehouse in an efficient manner is key to the productivity of material handlers. With an ADC system, paperless procedures can be implemented which will lead material handlers through the picking and put-away process, while taking into account the warehouse layout and the current location of inventory items. Material handlers can even access inventory location information from their portable bar code terminal when unplanned movements occur. **The Result:** Increased productivity through reduced search time, optimized workflow, and logically dispatched tasks.

**Faster Start-Up Time:** Training new material handlers due to turnover or peak period operations can be costly and time consuming. By automating various warehouse procedures through the ADC system, new employees can become productive more quickly by simply following instructions displayed on the data collection terminal. **The Result:** Employees become more productive quickly, and with less cost.

### Company-Wide Implications

Although the immediate impact of an ADC system will be recognized in the warehouse and on the shop floor, an ADC system's benefits will eventually reach beyond the operations-related departments and to the entire company. This is through increased production visibility, better quality control and more accurate part and shipment traceability.

**Production Visibility:** In the manufacturing arena, knowing what is happening in real-time on the shop floor can be critical. An ADC system will feed your ERP with real-time, accurate data to track work-in-process and capture manufacturing costs and efficiencies. **The Result:** Real-time shop floor data can be made readily available to Management, Customer Service and the customers themselves.



**Quality Control:** One of the most costly errors that can occur is for material to be delivered to production—or shipped to customers—before quality control has inspected and released it. An ADC system will immediately detect this type of exception at the time the material is being handled, and warn the operator before non-inspected product enters the supply chain. **The Result:** Improved customer satisfaction through quality control verification.

**Traceability:** Knowing which materials go into each product and which products are shipped to the customer can be elusive. At many companies, this type of information is captured manually and stored in a cumbersome paper-based system. An ADC system simplifies the capture and aggregation of this data and automatically passes it to the ERP system for storage and subsequent retrieval. **The Result:** Recalls are run more smoothly, warranty work can be traced to the component level and potential problems with customers are minimized.

## Automated Data Collection: From Cost Justification to Vendor Selection

### The Next Step

This portion of the report only scratches the surface on the uses of ADC to improve operations, reduce costs, and increase customer satisfaction. A close examination of your operation would almost certainly yield numerous areas that could benefit from ADC. ADC not only provides a better return on your ERP investment, it can also help ensure competitive advantage. In today's marketplace, getting better is not an option, it is a strategic imperative.

While ADC systems are significantly smaller in scope than your ERP system, they can play an important tactical role in achieving and maintaining a world class operation. The array of hardware and software technologies available today can deliver tangible results with minimum risk and cost—assuming you choose the right one for your business. Part II of this report, Strategies for Choosing an ADC Vendor, will assist you in doing just.

## 2 Strategies for Choosing an ADC Vendor

When your company finally does decide to add Automated Data Collection (ADC) to its ERP system, it is entirely possible that the potential vendor list will include two, three, or even five software vendors. For those companies already in this stage and looking for a quantifiable way of separating the 'haves' from the 'have-nots,' good news is just around the corner. By making a conscious effort to educate yourself on the capabilities of ADC vendors, you will accomplish the first and most important step in the vendor selection process. If you can follow the simple recommendations outlined in this report, your ADC software implementation is guaranteed to support your company's ability to achieve and maintain a competitive advantage in the marketplace.

### Separate the Facts from the Hype

When researching automated data collection systems, an important principal to remember is this: there are basic minimum requirements that all vendors should be able to meet. In an effort to 'simplify' your search, many vendors use terms like Real-Time Information, Scalability and Seamless Integration to differentiate their offering from the rest of the products in the marketplace. What you may not realize, however, is that most every ADC software vendor meets these minimum requirements; and companies who use these terms to differentiate themselves are simply promoting the most basic functionality. To ensure that the first step in selecting an ADC vendor is successful, it is important to make yourself aware of these minimum requirements early in the research process; and set your benchmarks accordingly.

**Real-time Information:** Today, any ADC software vendor can provide real-time information. In this technologically unparalleled period of network enabled devices, wireless terminals and high speed networks, there is no excuse for vendors to NOT provide customers with information in realtime. Although there are times when batching data to an ERP system will be necessary—and we will review these shortly—you will be hardpressed to find a system that does not provide data in real-time. Real-time information is not an end, but merely a starting point in the selection of an ADC software vendor.



**Scalability:** The term 'scalability' as used in the ADC realm can have a variety of meanings, including volume of data collected, number of users supported and expansion of functionality. Due to this broad range of definitions, software vendors inherently tout their systems as scalable. The key for you, the purchaser, is to determine which definition of scalability fits your particular situation—then ask the right questions.

**Seamless Integration:** 'Seamless Integration' is one of the most commonly used terms in the software development world. Does it mean that two applications have the ability to appear as one? Does it mean that two applications can easily share data? Does it mean both? Or neither? To clarify the definition of seamless integration, most ERP systems have defined and published approved standard interface methodologies and technologies. All leading data collection solutions offer this seamless integration, but do so in different ways. By definition, any system that communicates with an ERP system using this defined methodology is inherently seamless, whether the software resides on the server (often referred to as 'bolt-in') or on a networked server (defined as 'middleware'). The seamless integration trap is a popular one—don't fall into it.

## Automated Data Collection: From Cost Justification to Vendor Selection

### Actively Seek Enhanced Functionality

Now that you have a list of minimum requirements—the features that all vendors should be able to offer—it is time to consider enhanced functionality. Whether you realize it or not, the ability of a software vendor to provide functionality and features over and above those defined in the previous section will directly impact both the flexibility and the long-term cost of your ADC system. When making an investment of this magnitude, wagering the ongoing success of your business on a vendor's solution that cannot adapt to your ever-changing needs is quite simply not smart business. At this stage in the decision process it is not critical to anticipate the exact nature of change, but simply to recognize that change can and will occur. With this in mind, following is a list of the most valuable enhanced functionality to actively seek in an ADC software vendor.

**Uninterrupted Data Collection:** In the real world, systems go down. ERP systems are, by definition, systems. Get the picture? When patches are installed, backups are performed or network hardware fails, ERP systems can become temporarily unavailable. Simple logic dictates that if an ADC system relies on a server to operate, data collection activities will come to a grinding halt each time the ERP system is down. If it is important for your data collection system to continue operating even when your ERP is not, it is imperative to actively seek a system capable of continuous operation. Currently, solutions exist that provide transaction execution, data storage and data validation regardless of ERP availability. This feature ultimately can have a significant impact on overall productivity.

**Disconnected Mobility:** Is your ADC system going to be used for inventory management at remote sites? Field service operations? Asset management? If so, your search for ADC software must include applications that are purpose-built to be frequently disconnected. When remote users are not always in RF range or do not have continuous coverage, data will need to be stored for batch transmission into your ERP. ADC vendors offering 'terminal emulation' systems simply cannot provide this type of mobile data collection, unlike those who market client server-based systems. Handling this remotely collected data is no small task; which makes it critical to find a software vendor who can handle the job.

**Web-Enabled:** A web-enabled ADC solution is mandatory to those employees who administer the system or use it to make business decisions. With a web-enabled system, events can be monitored via the Internet as they happen. Users can view graphical data, access management information and generate a variety of reports; giving the user a real-time 'dashboard' view into the heart of the data collection system. For IT managers,

web-enabled also means there will be no software to load and virtually no administration at remote user sites; making administration, maintenance, upgrades and support exponentially easier.



**True Internet Integration:** If your corporate logistics system includes remote locations, third-party warehousing or international sites, Internet integration will likely be key to the success of your ADC system. In the context of ADC, Internet integration means that data collection can be supported across virtually any device that connects to the Internet. This allows an ADC system to support mobile terminals and desktops in places where LANs or WANs are not available. As a result, remote data collection terminals can run from any location where operators have access to a phone line and an Internet browser. The net effect of Internet integration is the ability to deploy an ADC system over multiple remote sites, including public contract and outsourced warehouses, using existing Internet infrastructure and data collection devices.

**Touchscreen Options:** In many instances it is difficult to accommodate special end-user requirements with a standard handheld terminal. In situations where operators are wearing gloves, entering long strings of data or do not have access to a keyboard, the ability to utilize touchscreens is paramount. Touchscreen-enabled systems take advantage of the Windows® graphical user interface (GUI) to interact with the user, as opposed to utilizing text-based prompts. This ensures that drop-down menus, task bars and "clickable" icons can all be used in the entry and manipulation of data. Additionally, touchscreen functionality utilizes the existing hardware and computers on the shop floor, and is designed to interactively operate with other production tools such as CAD programs and machine control systems.

## Automated Data Collection: From Cost Justification to Vendor Selection

**Paperless Capabilities:** In virtually every manufacturing environment, there exists essential paperwork that travels from work cell to work cell or department to department. When researching ADC software providers you will no doubt find yourself placing vendors into one of two categories: those that can provide a completely paperless option and those that cannot. One of the primary benefits of a paperless ADC solution is that the system provides the operator with all necessary information, as opposed to the operator having to rely on paper-based work instructions. In this way, the need for paper documentation and instructions is completely eliminated. Utilizing a paperless ADC solution also cuts down on errors and makes training new hires far easier, as the system takes the responsibility of directing employees through their jobs. Implementing a new ADC system provides a great opportunity for your company to take a proactive approach to data collection. Make sure your vendor can handle it.

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### *There's No Point in Resisting— Change is Inevitable.*

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#### Realize Adaptability Is Key

As the potential buyer of an ADC system, it is a given that the solution must fit the needs of your business as they stand today. But what about the needs of tomorrow? The key component necessary to bridge the gap between the present and the future can be summed up in a single word—Adaptability. Your ability to select a truly adaptable data collection solution can and will be the difference between long-term success and impending failure.

**There's No Point in Resisting—Change is Inevitable.** Your business will not stay the same forever. It will add employees, production capacity and warehouses. Customers will continue to push your company to deliver higher quality products in less time. A new version of your ERP system will inevitably be released. Consider the changes in your business that have occurred over the last year. The reality of change means that selecting the wrong ADC vendor could subject your company to years or even decades of being at the mercy of others to write additional custom software. When your ERP is upgraded—and it will be upgraded—can you be sure that you won't have to rewrite some (or all) of the data collection system? Or purchase a brand new version? It is critical to ask the right questions.

**Seeking an Adaptable Solution.** The fact is, the very best ADC solutions are highly adaptable, allowing changes to be made quickly, easily and cost-effectively. And while most ADC solution providers will promise their solution can easily and cost-effectively adapt to ever-changing business requirements, customers are often shocked when they later discover the true cost and time to make even simple modifications. To protect yourself from expensive upgrades and redevelopment, arm yourself with the following three questions when researching ADC vendors:

- 1. Is the architecture truly adaptable?** Can the ADC software be modified without expensive and time-consuming custom coding from outside vendors to make even simple changes? Can your IT department make changes to the system without assistance? If so, will these changes be supported by the vendor? If not, the system's total cost of ownership will rise exponentially. Today some vendors offer object-oriented solutions that allow configuration changes without using custom code. These solutions offer the adaptability and flexibility you need without the pitfalls that custom-coded solutions can entail.
- 2. Does the product have "upgrade insurance?"** When the ERP is upgraded, will you have to re-install your ADC system or even rewrite it? This could mean paying for a new implementation with all the associated costs each time you wish to upgrade.
- 3. Does the system architecture provide uninterrupted data collecting even when your ERP is down?** Many vendors tout the benefits of their system as sitting "on top" of the ERP. Although this type of architecture suggests enhanced integration into APIs, it cannot possibly provide the mission critical, uninterrupted data collection demanded by so many businesses. By its very nature, this type of data collection solution is down each and every time your ERP server is. Having a separate server for your ADC solution provides insurance that operations can continue uninterrupted, regardless of the ERP's server schedule.

## Automated Data Collection: From Cost Justification to Vendor Selection

### Find the Complete Vendor

Now that you have reviewed and absorbed all of the information in this report, there is one more piece of advice for you to consider; one that is as important as anything you have read thus far.

**The advice is this: finding the right vendor will make your life exponentially easier.** In terms of defining the term “right vendor,” we encourage you to focus on two aspects of vendor quality: 1) experience, and 2) after-sale support.

**Experience Matters.** When researching vendors for your data collection system, there couldn't be a more important piece of advice than “Experience Matters.” Your vendor must have relevant experience to your particular situation. This experience should include longevity in the marketplace, a large installed base, proven implementation methodologies and a complete offering of hardware, software and consulting services; as well as long-term support for all three. Given the number of ADC software companies in existence today, can you think of a single reason why you would need to work with one that does not have a string of satisfied customers?

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***The advice is this: finding the right vendor will make your life exponentially easier.***

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**What Happens After They Leave?** Once the system is installed and the vendor's developers have walked out of your facility for the last time, the question of support becomes paramount. Selecting a custom-code solution means you will be relying on someone else's development staff to maintain and migrate your system for years to come. On the other hand, choosing a non-custom code solution means having the option of migrating the data collection system at your own pace, with your own staff.

It is also important to find a vendor with a demonstrated ability to be in business over the long-term. This type of longevity will manifest itself in a diverse business model, a robust product offering and a comprehensive set of solutions for your ADC issues. It is predicted that consolidation in the ADC marketplace will occur at a record pace. Will your ADC vendor be standing when the smoke clears?

### Conclusion

In these uncertain economic times, companies are under constant pressure to lower overhead and manage ever-shrinking budgets. Can your company afford the risk of purchasing an ADC solution that will require significant development and support dollars in the future? If not, then you are encouraged to think very carefully about the information presented in this special report. By 1) successfully separating the facts from the hype, 2) actively seeking enhanced functionality, 3) realizing adaptability is key, and 4) finding the “complete vendor,” you will realize an outcome that most companies will not. That is, a truly successful data collection initiative that supports your company's ability to achieve and maintain a competitive advantage in the marketplace.

