



The Data Collection Software Buyer's Guide

*A guide to finding the right data collection software
solution for your supply chain automation needs.*

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Executive Overview

The Information Age is perhaps one of the most revolutionary eras throughout human history. The number of technological advancements that have impacted, improved and forever changed the way we do business within this period are astounding. As new technologies are developed and adopted by organizations, service standards and performance metrics become increasingly stringent. Competitive advantage is harnessed by those companies that can successfully implement new solutions and competently go live as swiftly as possible. We are in a time where information flows at light-speed and must be processed at a rate that is nearly as rapid. This is an era which is intolerant to organizations doomed with outdated processes and archaic infrastructure.

A prominent hallmark of this genre is the increase in sheer data usage and data requirements which are indirectly proportional to the dwindling cost of storage. In 1990, a used commercial hard disk drive with a storage capacity of 288MB bore a price tag near \$10,000.¹ Today, a new hard disk drive with a storage capacity of 288GB (1,000 times larger) can be purchased for under \$70 (over 100 times cheaper). As organizations generate and collect increasing amounts of data, they realize the necessity to effectively manage, streamline, and automate the acquisition and retention of crucial information. To fulfill this requirement, current data collection processes must be re-analyzed and automated.

Automated data collection (ADC) consists of a variety of technologies such as scanners, radio frequency identification (RFID) tags, mobile devices, voice recognition, etc. Although the cost of acquiring these technologies is steadily declining, the implementation of an ADC system is still quite often impeded due to the trepidation of high project costs. In a global economy that is facing unprecedented financial turmoil, it is expected and wise for organizations to change their behavioral patterns and become more reluctant to spend capital as illustrated by decision makers that are often assigned to analyze projected expenditures with immense scrutiny.

The key to employing cost-effective ADC systems is to be well-versed and properly-informed regarding the technologies that are available and the amount of effort and integration required to successfully implement them. Misinformation is abundant, easy to attain and ultimately leads to unexpected obstacles that can be exceedingly expensive to overcome, should they be encountered. This white paper will examine automated data collection, how it reforms and sharpens the efficiencies of an organization, and the elements to look for in a solution and in a potential provider.

The Information Age introduced groundbreaking advances including the Internet, World Wide Web, email, wireless networking, mobile computing, and inexpensive peripherals.

Automated data collection refers to a set of methods used to automatically collect attributes from objects and input the collected data into an information system with minimal human involvement.

¹Alberts, David S. & Papp, Daniel S. (2007). The Information Age: An Anthology on Its Impact and Consequences

Catalysts for Automated Data Collection

The most prominent factors currently influencing changes within IT are inefficient workers, a continuing growth of data, and the steadily declining cost of computers, peripherals, and accessories. These drivers are encouraging organizations to reevaluate many business processes and implement new systems to improve overall efficiency.

- **Inefficient Workers**

A major challenge for IT has been the improvement of the operational efficiency of the workforce. Manual, paper-intensive methods of completing tasks are inherently flawed since human error is easily propagated in this type of environment. These errors ultimately lead to an increase in costs and a decrease in efficiency.

The IDC, a global provider of market intelligence and market trends, performed an extensive study on this trend and arrived at the conclusion that knowledge workers spend more than 27 hours per week searching, gathering, and analyzing information.² The research also revealed that these workers spend 3.5 hours per week searching for information that is never found and 3 hours per week recreating content. The report contends that the automation of repetitive steps and the elimination of wasteful tasks will increase worker productivity and potentially save organizations millions of dollars.

- **Growth of Data**

Data has been growing in direct proportion to business information. The rate is staggering. According to Osterman Research, the volume of email messages sent alone is growing between 35 and 40 percent annually.³ The IDC also concluded that an average-sized business increased its data storage requirements by 40 to 50 percent in 2007 when compared to the previous year, mostly due to unstructured data.⁴ Data is growing because more information is being tracked, recorded, and analyzed than ever before. Diminishing electronic storage costs promote the collection of additional data and the conversion of paper-based information into a digital format.

- **Declining Technology Costs**

Year after year, technology continues to improve while the cost to procure the technology continues to become more affordable, particularly with computers. Even with inflation and the consumer

Inefficient workers, a growth in data usage, and the continuous decline in technology costs identify the need to implement an automated data collection system.

²Feldman, S., et al. (March 2005). The Hidden Cost of Information Work

³Cook, R. (November 2004). The Chief Executive. Electronic Dilemma: The Email Explosion Poses Tricky Challenges to CEOs

⁴DuBois, L. (November 2005). Viewpoint: Unstructured Data Classification Mitigates Compliance and Security Risks

price index (CPI) as factors, you can purchase a better computer today with less money as compared to a few years ago. The number of transistors that can be placed inexpensively on an integrated circuit has increased exponentially, doubling almost every two years since the invention of the integrated circuit in 1958.⁵ Industry experts agree that this trend is expected to continue in the years ahead.

The Consequences of an Ineffective Data Collection System

There are two prominent and notable consequences of operating an organization with a poor data collection system—inefficient processes and inaccurate data. A failure to address these consequences in a rapidly-developing competitive arena can manifest colossal damage.

1. Inefficient Processes

Using paper as a staple medium for business information is becoming increasingly costly. Documents are routinely copied and stored in unwieldy filing cabinets that are situated at expensive physical locations which are not immune to natural disasters such as fires and floods. In addition, the retrieval and delivery of these documents is time consuming and cumbersome. Even with the implementation of a computerized system, manual data entry, weak data validation, and a compromised architecture can prove to be harmful to an organization. The lack of efficient business processes creates bottlenecks within an organization that can lead to a loss of business and loss in revenue.

2. Inaccurate Data

Inaccurate, incomplete, or irrelevant data is as useless as having no data at all. Raw data drives the decisions that are made within an organization at all levels. It is one of the most valuable assets that a company can possess. Without accurate data, an organization is unable to operate competitively and maintain integrity with stakeholders. Data requires constant real-time updates, processing, and retrieval via a solid data management system that is integrated with other data collection and data-related systems. Ignoring the needs of an asset of this magnitude implies dire straits such as lost opportunities, liability issues, decreases in productivity, decreases in customer satisfaction, compliance problems, and a bottom-line decrease in revenue and value.

Inefficient processes, and inaccurate data, are the two most common and severe consequences of an ineffective data collection system.

⁵ Moore, Gordon E. (April 1965). Electronics Magazine. Cramming More Components onto Integrated Circuits

The Solution: Automate the Data Collection Process

The risks of operating an organization with a poor data collection system are precarious. In contrast, the benefits associated with operating a strong ADC system affect and improve performance and financial metrics. The decision to implement an adaptable ADC system can pay huge dividends. The only pre-cursor is to acquire an ADC system that offers and can substantiate the appropriate benefits which can spell out the difference between strategic, long-term success or a continuous erosion of ROI.

ADC systems improve accuracy, increase productivity, improve customer satisfaction levels while reducing errors and reducing costs associated with labor and inventory.

- **Improve Accuracy/Reduce Errors**

Miscommunication and inaccurate data are prime catalysts for errors. These errors can be painfully costly to endure and some even have potential consequences that are irreversible. Utilizing pre-printed bar-codes and RFID tags in combination with mobile devices that update real-time metrics and software that is written and designed to validate user entry and maintain data integrity ensures that accuracy is being upheld and adhered to as a directive. With accurate information, an organization is in an ideal situation to make informed decisions and confidently commit to vendors, customers, and stakeholders with a minimized potential of erroneous actions.

- **Increase Productivity**

The automation of data collection is an efficient and faster method of performing a variety of routine and, otherwise, time-consuming tasks. The result is a higher productivity level from an empowered workforce that is enabled to effectively perform and complete more work in less time. The presence of this condition immediately affects the overall efficiency of an organization as a whole.

- **Improve Customer Satisfaction**

Customers seek satisfaction by expecting a quality product or service at a reasonable price that can be delivered on time. ADC promotes quality by giving organizations the ability to analyze data in real-time and allowing them to act upon the results, immediately. As accuracy and productivity are increased, errors are reduced amongst various other overhead expenses that attribute to the cost of a product/service. An ADC system streamlines processes and reduces the amount of time that is allocated to specific activities. The result is an organization that is lean, agile, and punctual.

- **Reduce Labor Costs**

Labor costs provide for the most common class of savings. As manual tasks become automated, a workforce is able to accomplish higher levels of efficiency and performance; throughput is increased. The result is a higher yield in less time per labor cost dollar. This enables the restructuring of a workforce to further reduce labor costs and reallocate human capital.

- **Reduce Inventory and Holding Costs**

Another common type of savings created by automating the data collection process comes from the reduction of inventory and holding costs. Inventory often includes safety stock. Carrying safety stock is a strategic measure to protect against out of stock scenarios. However, high inventory levels equate to proportionately high inventory holding costs. The right ADC system provides accurate inventory quantities that are updated in real-time as inventory is received, created and/or shipped. Accurate inventory counts provide for better assessments of safety stock levels and inventory holding costs. A lean and intelligent inventory produces the best results when analyzing the costs associated with holding and maintaining this inventory.

- **Other Benefits:**

- Increased sales
- Improved overall efficiency
- Competitive advantage
- Higher organizational value

Essentials of an Automated Data Collection Solution

The following list of attributes should be sought when seeking an ADC solution. These elements are identified as those providing the highest level of ROI per implementation dollar.

- **Real-time performance**

Real-time functionality greatly eliminates errors and has the potential to provide accurate metrics across an entire organization.

- **Usage of mobile/wireless technology**

Organizations are expected to perform better than ever before. Mobile/wireless devices are now able to connect to an infrastructure that can provide access to real-time data. Automated data collection solutions that do not take advantage of mobile/wireless technology are severely crippled in their offering and limited.

- **Integration with multiple host systems**

An ERP system can serve as the primary operating system of a company. The vast amount of information processed and managed by an ERP system is a crucial resource that automated data collection systems must be able to interact with. In addition, automated data collection systems must be able to integrate with a variety of database management systems, mainframes, and servers.

- **Notification/warning system**

The leading automated data collection solutions can generate instant, real-time notifications via email, voice mail, and/or SMS text message. These notifications can be sent from almost any device when a certain event has occurred which triggers a notification.

- **Scalability**

Invest in a solution that allows for the addition of new transactions and increasing transactional volume.

- **Elimination of paper**

Only a select few data collection solutions eliminate the burden of paper-based transactions and, instead, rely upon repeatable and automated transactions that leverage electronic storage.

Essentials of a Solution Provider

Look for the following requirements when seeking a software company to implement and configure an automated data collection solution.

- **Minimal impact on existing systems**

Seek a solution that can be implemented with minimal disruption and configuration to existing systems. This will reduce the need to change current business processes and business systems.

- **System integration expertise**

Look for a company that specializes in integrating its solution into existing infrastructure.

- **Automates existing procedures**

The best solution will automate processes which were once manual. The solution should leverage existing technologies such as email notifications and database integration.

- **Extensive support**

Consulting, implementation, training, and support should all be elements that the solution provider should offer and include with the estimate.

- **Strategic relationships**

Work with a provider that is aware of and understands the range of available technologies that are currently available. The solution provider should offer the best mix of products from various vendors.

- **Licensed partner**

Solution companies should have strong and knowledgeable relationships with their suppliers. Seek a provider that is licensed to implement the technology which is being proposed.

- **Experience**

Seek a company that has extensive experience and has served a diverse customer base that can be contacted for reference purposes. Speaking with existing customers provides rare information that can be useful during project planning and provides an opportunity for service provider validation.

About the Author

Deep Gréwal is a Senior Systems Analyst at RFgen Software. He has been a consultant, systems analyst, software developer, researcher and educator in the IT field for more than 10 years. Having worked with numerous companies to automate supply chain process workflows, Mr. Gréwal possesses extensive first-hand knowledge and industry best practices in the supply chain automation arena.

RFgen Software—The Data Collection Experts

RFgen Software, a division of the DataMAX Software Group, helps organizations reduce supply chain implementation costs and increase accuracy and efficiency with the industry's most reliable and flexible wireless and mobile automated data collection (ADC) software and open source supply chain solutions.

In business since 1983, RFgen is known in the manufacturing and distribution industry for its solid, high-quality products and high customer satisfaction ratings among its more than 2,600 customers. With a global reach and local touch, RFgen and its network of more than 125 certified solution partners can service and support your organization no matter where your operations are located around the world.

With RFgen, you can easily connect wireless and mobile devices (e.g., RFID, barcode scanners, mobile phones, tablets, handheld computers, speech recognition devices, label printers, and more) to your back office ERP systems and databases—enabling you to increase productivity by providing your mobile workforce with real-time and on-demand access to enterprise data.

Offering a suite of integrated solutions, RFgen provides pre-written, pre-tested, proven and certified open source transactions and integration expertise for Oracle E-Business Suite, Oracle's JD Edwards, SAP, Deltek Costpoint and Microsoft Dynamics.

Whether you are looking for solutions to automate your warehouse and better manage your inventory, comply with government regulations, ensure 24/7 warehouse operations, track and trace your products, voice-enable your warehouse, or manage your remote inventory, RFgen is the smart choice.

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Reduce supply chain implementation costs with RFgen Software—one of the industry's most reliable and flexible mobile and wireless automated data collection solutions on the market today.

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