What is Automated Data Collection (ADC)?

A technology network designed by both hardware and software vendors in which devices and software may work independently or together to automate processes within warehouses, distribution centers and manufacturing facilities. When used together, the devices and WMS software can provide you with the real time accurate data needed to run your business more effectively and make critical decisions using timely information. These networks are typically comprised of technologies including warehouse management software (WMS), voice technologies, RF, RFID, mobile and fixed mount computers, and automated storage and retrieval systems.

Having a single vendor manage all of the ADC network components is a key differentiating factor in that it reduces the amount of “touches” and communication required to manage and update your network.

Key Drivers Increasing Adoption of ADC

The adoption of automated data collection has increased in recent years due to factors such as:

- Increased compliance required by customers, regulatory agencies and government organizations
- Popularity of omni-channel fulfillment
- Order fulfillment complexity
- The critical need for real time, accurate information
Where is ADC Used Most Often?

The warehouse management system is the basis for a powerful ADC network and functions as the framework upon which the ADC can be developed and customized to fit your operations. Beginning with a functionally robust WMS, in turn, will improve the overall functionality of your ADC network. Some of the necessary functions your WMS must perform efficiently to assist your ADC are:

- Tracking movement of product within your facility
- Inventory and order management
- Customer communication
- Task planning

**ADC Components – Voice Technology**

Many facilities are beginning to implement “voice directed warehousing” due to its increasing popularity associated with lower costs and advancing technology.

These voice technology solutions are being utilized for picking because of increased picking and inventory accuracy and the elimination of printed pick documents. Users can perform multiple tasks simultaneously, increasing the productivity of your workforce.
ADC Components – RF/RFID

RF network implementation allows for real-time data to be shared and updated with a connected network spanning your facility.

Your RF network enables mobile devices and printers to communicate seamlessly with your WMS solution. Your RF network, similar to your WMS, is a much needed building block for your ADC network.

RFID devices and tags utilize this RF network to transfer data. These tags, typically attached to inventory items, contain inventory data which is transferred through the network once it passes through the reader.

ADC Components – Vehicle Mounted Computers

Vehicle mounted mobile computers are being implemented in many facilities where work is segmented between vehicle operators and employees working strictly on the floor.

By mounting devices directly to a specified vehicle operators’ hands are left free. This has helped to create safer working conditions. These devices also allow these operators to be more connected and have access to data in real time.

ADC Components – Handheld/Mobile Computers

Similar to vehicle mounted computers, handheld and mobile devices keep your staff connected to real time data. These devices are used to capture data throughout your facility and direct staff to their next activity, ensuring maximum workforce productivity levels. All data collected is transferred directly into your WMS.
ADC Components – Mounted Barcode Scanners & Automated Retrieval Systems

Many facilities that utilize automated machinery such as conveyor systems pair them with mounted barcode scanners. The scanners are mounted on the conveyors and scan barcodes as inventory items pass.

This eliminates the need to have staff manually scan these items as they pass and helps to reduce missed scans. Barcode scanner selection will vary based on type of barcode being used in your facility and type of automated retrieval system.

ADC Components – Barcode Labels

Barcode labels are used to transmit data about weight, manufacture date, expiration date, LOT, SKU and much more. Using barcode labels in unison with data capture devices allows you to capture all available inventory data quickly and efficiently.

Multiple label options are available and vary based on preference. The most frequently used barcode types are 1D and 2D.
ADC Components – Industrial Printers

Facilities that process high volumes of inventory require high capacity printing solutions in order to print barcode labels, BOMs and much more. These documents help to capture, share and transmit inventory data to both your staff and customers. The type of industrial printer used in any given process will vary depending on the type of document being printed and how long that document must last. The two most frequently used types of printing solutions are:

- Thermal transfer printing
- Direct transfer printing
WMS and Data Collection Devices

The main functional relationship within your ADC network is between your warehouse management software and your data collection devices. These data collection devices including vehicle mounted computers, mobile computers and barcode scanners are integrated into your WMS through a User Interface (UI). This UI allows for all data collected through these devices to be transferred automatically into the appropriate fields within your WMS.

This data transfer is in real time. Users can access and utilize detail immediately on connected devices.

The automated storage and retrieval systems assist in data collection for these devices as they bring inventory items closer to users and fixed devices. They act as a supplement to the functional relationship between your WMS and data collection devices.

Using data collection devices along with a WMS can help you maximize your workforce productivity by reducing manual processes and errors.

Mobile Data Collection Devices and Industrial Printers

Within your ADC network your printing solutions act as a secondary functional layer, interacting with your WMS once data has been transferred from data collection devices throughout your facility. When specified tasks are completed, your WMS can trigger automated printing of documentation such as barcode, labels, BOMs, BOLs and other items.
Benefits of Implementing Automated Data Collection Systems

Higher levels of integration within your ADC network can provide your business with significant benefits

- A fully integrated ADC network may provide a better ROI for your overall technology investment by helping to eliminate manual processes, streamline operations and optimize your workforce.

- These devices working together can increase workforce productivity – The integration between data collection devices and your WMS can help reduce manual data entry and time spent searching for and correcting errors.

- Selecting ruggedized data collection devices and printing solutions designed for your specific facility needs can reduce your total cost of ownership with reduced repair costs and device down time.

- When all aspects of your ADC network are integrated seamlessly, business processes can be streamlined using automation. This can help to eliminate inefficient processes.

- Most ADC networks are designed to increase system usability. Users can more quickly and easily collect and share data and perform tasks, all while maintaining compliance.

NOTE: The benefits received from the implementation of your ADC network will vary based on the technology selections you make and the level of network integration achieved.
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