

Managing Mission-Critical Operational Assets with Cloud-Based, Self-Service Automated Locker Systems

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TABLE OF CONTENTS

Background 3

Scope 4

Application of Automated Locker Systems—A Brief History 4

Factors Driving Early Adoption of Automated Locker Systems 5

Today's Reality 5

Operational And Economic Impact 7

Optimized Future State 9

Opportunities Presented by New Technology 11

- Automated Technology Near the Point Of Use 11
- Considerations in Technology Selection 13
- Considerations in Large-Scale System Deployment 13
- Challenges in Deploying RFID-Reliant Systems 13
- Best Practices 13

The Business Case 14

- Hard Costs 15
- Soft Costs 15
- Economic Benefit 16

Summary And Conclusion 17

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Emerging Trends and Opportunities for Tagless Management of Mission-Critical Operational Assets with Cloud-Based, Self-Service Automated Locker Systems

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This white paper will present a discussion of the latest trends and opportunities for management of mission-critical operational assets with cloud-based, self-service automated locker systems without a requirement for RFID tagging of individual assets.

Background

In virtually every operating environment, productivity and operational efficiency are dependent on the use of Mission-Critical Assets such as equipment, instruments, handheld and other electronic devices, tools and rechargeable batteries. Without reliable, constant access to the assets required to do their jobs, workers cannot perform their assigned tasks, productivity and safety suffer, and operating costs escalate dramatically. Often, operations cannot function at all without these assets. This is why they are often referred to as "mission critical."

The use of Mission-Critical Assets cuts across all industries and operational settings. From logistics and transportation, to healthcare, institutions and retail, to manufacturing, industrial and construction environments, the need is pervasive. However, most systems currently in use to manage, track and control these assets are inefficient, costly and woefully inadequate. This is true for both small and mid-size companies and for the largest global organizations. The result is that billions of dollars are wasted annually in retrieval, management and replacement of these needed items.

This white paper explores the problem in detail and examines the economic and operational impact of current practices and operational methods. It also reviews opportunities for improvement and the experiential results that have been achieved in a variety of settings where cloud-based, self-service automated locker systems have been deployed to streamline and optimize the distribution and management of critical operational assets.

Scope

In this white paper, we will consider the distribution (check out and check in) and management of assets commonly used in the operation of a wide range of commercial and non-commercial organizations. For purposes of this white paper, the wide range of items considered will be referred to as "Mission-Critical Assets."

Examples of the assets included in this cohort include:

- Handheld data terminals/scanners, radios and rechargeable batteries
- Diagnostic equipment, instruments, and gauging
- Tablet and laptop computers
- Communications and IT equipment
- Serialized and calibrated tools and equipment
- Medical equipment, supply kits, emergency packs
- Maintenance kits, safety equipment (breathing apparatus, back harnesses, etc.)
- Hand and power tools

The list above is for illustrative purposes only and is not intended to be comprehensive. A full listing of the possibilities would require many pages. Related areas include: critical spares and components, pre-staged and consigned parts, vendor-managed and vendor-owned inventories and other remote assets. Management and distribution of these materials and assets will be covered in a separate white paper.

Application of Automated Locker Systems—a Brief History

Automated locker systems have been used selectively for management of check out and check in of Mission-Critical Assets for more than 20 years. Early adopters of these systems were predominately found in the aerospace and automotive industries. Applications such as management of certified and power tools, gauges and similar assets were most common.

These early adopters were driven by several business needs:

- Control and accountability for critical tools
- Reduction of "walk and waiting" time
- Elimination of lost tools and replacement costs
- Automated audit trail to support compliance requirements such as Foreign Object Debris (FOD) prevention, ISO, OSHA and regulatory requirements and standards.

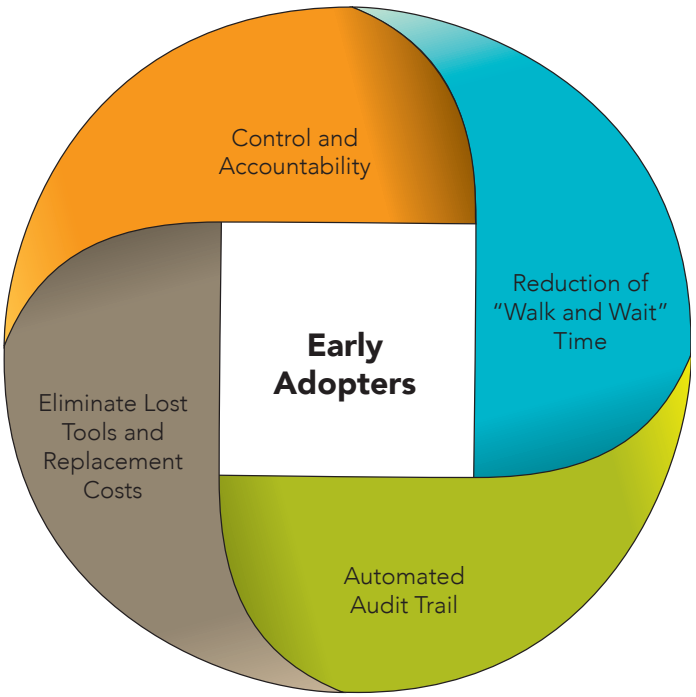


Illustration above shows the business drivers leading to the implementation of automated locker systems by early adopters.

Factors Driving Early Adoption Of Automated Locker Systems

Automated locker systems have evolved a long way from those early systems. The technology used in today's most widely deployed systems is several generations beyond those initial systems. Not only do today's systems offer more robust functionality, the underlying technology is easier to use, easier to implement and far less expensive than previous generations. These systems are also more configurable and more modular than the systems used in early days.

Apex Supply Chain Technologies, the leading global provider of automated locker systems, offers native internet-based technology. Its exclusive Trajectory Cloud™ is a secure, enterprise-grade service that provides a scalable platform to enable large-scale deployments. Implementation of automated locker systems across broad geographic areas was not practical or affordable with previous generations of technology. Accordingly, many early deployments were confined to a single site.

One of the significant technical breakthroughs is that Apex solutions are Microsoft Windows-free internet appliances. The Trajectory Cloud provides the intelligence and does the logical "heavy lifting." Since no software is installed on the user's network and there is no support required by the user's IT department, adoption became much easier for Apex advanced systems than it was for earlier technologies.

Collectively, these advancements provide the groundwork for a new wave of adoption in a variety of application settings. Coupled with the affordability of these next-gen systems, many new application areas have come into focus. Among the fastest growing applications for automated locker systems are control of handheld devices such as data terminals/barcode scanners, two-way radios and computing devices (including rechargeable batteries), diagnostic equipment and special tools.

Accelerated adoption of automated locker systems for the management of Mission-Critical Assets is expected to continue over the next ten years or longer. Driven by the pervasive need to reduce costs and optimize productivity in virtually every organization, the use of automated locker systems for additional applications including, but certainly not limited to, control and management of medical supplies, critical spare parts, pre-staged kits and components and many other areas will undoubtedly increase as well.

Today's Reality

Systems and processes for handling the check-out, check-in and management of Mission-Critical Assets have not kept pace with the modernization and technological advances widely seen throughout commerce and industry. Most current systems rely on labor-intensive processes and inefficient data capture. Often, in otherwise sophisticated organizations, Mission-Critical Assets are still distributed in much the same way as they have been for the past 50 years.

Historically, process improvement and cost-saving initiatives have been focused on areas directly affecting primary organizational activities such as production and service delivery. Great strides have been made through the implementation of Lean, Six Sigma and other productive-focused methodologies. More recently, enlightened C-suite management has recognized that the failure of support systems to efficiently and consistently deliver the necessary equipment, tools, parts and supplies needed for operations to run smoothly directly impacts productivity, resulting in wasted time, disruption to critical workflows, and sharply elevated costs.

In addition to the direct costs associated with the management of Mission-Critical Assets, inefficient asset management processes affect more than just the direct costs. Improving the systems that support operations delivers dramatic and immediate returns. This is why senior management in a wide variety of industries and organizational settings is placing increased emphasis on fixing the problems and putting effective systems in place.

Managing Mission-Critical Assets: Common Systems and Their Impact

Central Distribution Points	Workers leave workplace to retrieve Mission-Critical Assets; cumulative "walk and wait" time is significant.	Non-value activities spent retrieving Mission-Critical Assets are costly and drain productivity. This is wasteful and is contrary to Lean methodologies.
Labor-Intensive Check-Out/ Check-In	Attendant or manager issues Mission-Critical Assets and accepts returned Mission-Critical Assets. This approach is commonly used for rechargeable batteries, handheld data terminals/scanners and other handheld devices, calibrated and certified tools, gauges and equipment.	In certain operations the job of checking out and checking in Mission-Critical Assets is a full-time position for one or more individuals. In other cases it is a part-time position. When viewed on a "per transaction" basis, this is a very expensive process and a poor use of employee productivity.
Self-Service Systems	Workers check out and return Mission-Critical Assets from unattended storerooms, cabinets or other storage places. No supervision or observation.	Self-serve systems reduce the labor involved in attended systems; however, the loss of control of Mission-Critical Assets, inaccurate or incomplete data capture makes effective management of Mission-Critical Assets almost impossible.
Manual Recordkeeping	Check-out and check-in transactions are recorded manually in a "sign-out" log book or scanned manually via handheld data terminals/scanners.	In addition to inaccurate or incomplete data due to errors or omissions in logging or scanning, most current systems are not digitally searchable. Flipping through pages of logbooks is time consuming and does not readily identify historical patterns or trends
Inefficient Tracking & Accountability	Current systems do not provide adequate visibility to whereabouts of Mission-Critical Assets or accountability for individual workers responsible for Mission-Critical Assets.	Inaccurate tracking and accountability has many implications in terms of lost productivity, replacement cost and lack of ability to provide and audit trail for purposes of compliance with safety, quality and regulatory standards
Mission-Critical Assets Not Ready To Be Used	Mission-Critical Assets are not properly charged, calibrated or serviced when needed. Frequently applies to un-recharged batteries as well.	When Mission-Critical Assets are not properly charged, serviced, calibrated or otherwise ready for use, work can be delayed.
Little or No Control of Access to Mission-Critical Assets	Ineffective or non-existent access control for Mission-Critical Assets.	Lack of control of Mission-Critical Assets leads to "hoarding" and outright loss of Mission-Critical Assets. With two-way radios, power tools and other items, which can readily be used or sold outside the work environment, this can lead to high replacement costs and loss of productivity due to insufficient supply of Mission-Critical Assets.
Frequent Searches For Mission-Critical Assets	Individual workers, supervisors or managers frequently search throughout a facility or in storage cabinets, toolboxes or similar locations for Mission-Critical Assets.	When accurate real-time data is not available on the whereabouts and custody of Mission-Critical Assets, both individual workers, supervisors and managers spend significant amounts of time searching for or retrieving Mission-Critical Assets. Estimates identify this as one of the top productivity drains on supervisor time, often reaching 30-40%.

Operational and Economic Impact

It is common practice today for workers to leave their primary work areas to go to a designated location to retrieve the Mission-Critical Assets they need to do their jobs. Depending on the size of the facility, the trip to check out and return Mission-Critical Assets may be a relatively short distance or, in the case of larger facilities, as long as a half-mile or more. The time away from their work assignments can be as little as a few minutes or it may be as long as half an hour in extreme cases.

Often, Mission-Critical Assets are checked out and returned to an attendant or manager. This is the most labor-intensive method commonly used. Two valuable employees—the one using the Mission-Critical Asset and the one managing the check-out/check-in process—are both involved in the transaction, yet there is no value added through the transaction. It is not made better, more efficient or enhanced in any way through the process. Time is diverted from productive work activities, cost is incurred, but no value is added. This type of activity is the "low-hanging fruit" often targeted in Lean initiatives designed to drive waste out of an operation.

Frequently, the Mission-Critical Assets a particular worker needs are not immediately available when they are needed. This further disrupts workflows and compounds the financial impact on operations. Sometimes, lack of visibility to which Mission-Critical Assets have been checked out, who checked them out and when they were checked out results in Mission-Critical Assets being unavailable. In other cases either batteries or devices are not fully recharged and ready. In yet others, Mission-Critical Assets have not been inspected, calibrated, certified, serviced or otherwise properly made ready for use.

Process Inefficiencies in Current Systems



Examples of how the lack of Mission-Critical Asset availability can negatively affect operational efficiency:

Time Away From Task When workers are away from their primary areas of responsibility to check out or return Mission-Critical Assets, they are not doing the work they are hired to perform.

Search for Mission-Critical Asset In cases where supervisors or managers become involved to search for Mission-Critical Assets, the effect is even more profound.

Delayed Jobs and Services When workers can't perform their assigned responsibilities on a timely basis, jobs and services are delayed. These can range from late order picks in logistics environments to maintenance delays in aerospace and vehicle operations to delayed patient care to manufacturing delays.

Elevated Labor Costs and Overtime The further effect of these inefficiencies is to increase the cost of labor for workers, supervisors and management and sometimes leads to the need to employ overtime workers at even higher wage levels.

Unplanned Costs for Expediting Delayed Processes/ Orders/Services When jobs and services are delayed, additional costs over and above direct labor, such as costs to expedite outbound shipments, may be incurred.

Consider the following scenarios:

Distribution Center A busy distribution center encounters delays because handheld data terminals/barcode scanners were not available when needed due to lack of recharged batteries. Dozens or possibly hundreds of order picks are late.

Aircraft Maintenance Facility An aircraft maintenance facility cannot complete maintenance turnarounds on schedule because calibrated or certified tools are not available when needed. Flights are delayed at a cost of tens or even hundreds of thousands of dollars per hour.

Medical Clinic Diagnostic equipment is not available when and where needed for clinicians to provide timely patient care. The financial implications are severe and patient health can be compromised.

Warehouse or Logistics Facility The battery in a two-way radio dies midway through a shift in a large warehouse or logistics facility. The worker loses minutes or hours of productivity and operations are delayed by a similar amount of time.

Copper Mine A worker in a remote location in a copper mine needs a certified breathing apparatus. It is not available when and where needed. The cost of delays can be tens of thousands of dollars per incident.

Retail Store A retail store cannot complete inventory as planned because some of its handheld data terminals/ barcode scanners are "lost." The reordering cycle is disrupted, resulting in stockouts, lost sales, and dissatisfied customers.

The direct and indirect impact on operations and financial performance resulting from inadequate or ineffective controls for Mission-Critical Assets should no longer be considered as either trivial or inconsequential. Without effective control and management of Mission-Critical Assets, other initiatives to improve productivity and reduce costs cannot be optimized.

Optimized Future State

In an optimized future state, Mission-Critical Assets are tracked, managed and controlled by automated systems, which are strategically placed in areas easily accessible by the workers who need them. Rather than distributing Mission-Critical Assets from a central point, an analysis is conducted to determine which Mission-Critical Assets are used in particular operations or areas of the facility. Those Mission-Critical Assets used in that operation or area of the facility are placed in automated locker systems conveniently located near to where those Mission-Critical Assets are used.

Workers present an ID card or enter a code on the keypad or touch screen. The automated locker system then grants access to Mission-Critical Assets that are authorized for a particular user by opening the appropriate locker compartment. The system can also capture process- or activity-based data as appropriate for that operation. Data capture can be tailored to the needs of each area. Typical examples of data captured during transactions include department number, work order, cost center, department number, etc. Mission-Critical Assets can be returned or "checked in" to the automated locker system in a similar manner.

Advanced automated locker systems such as those available from Apex Supply Chain Technologies can also manage loan periods for each Mission-Critical Asset, including sending automatic notifications if particular items are not returned within the predetermined loan period. Recharging periods and calibration intervals can be managed automatically by the system as well. Additional functionality, such as capturing reasons for return for Mission-Critical Assets in need of inspection or service, warranty management and other essential functions, is a part of today's advanced systems. All data, reports and audit trails can be viewed on demand from any computer or mobile device or sent as prescheduled reports whenever users want to see them.

In advanced systems such as those available from Apex Supply Chain Technologies, control and accountability are achieved without a need to affix RFID tags to the assets being managed. Each transaction (opening or closing of a locker compartment) is linked to the individual requesting the transaction prior to the compartment door being released. This "tagless" approach provides many advantages without the cost of operational RFID-reliant systems.

The optimized future state replaces inefficient (and costly) manual processes with automated technology. Typical benefits received by organizations deploying automated locker systems include:

- Automate check-out/check-in processes.
- Provide 24/7 access and availability at point of use.
- Improve control and accountability.
- Eliminate lost Mission-Critical Assets and need for replacement.
- Provide electronic audit trail.



Objectives in Designing Future State Automated Systems for Management of Mission-Critical Assets





Opportunities Presented by New Technology

Automated Technology Near the Point Of Use

Just as self-service technology has transformed banking, airline and retail sectors, an automated locker system can transform the distribution and management of Mission-Critical Assets. Automated transactions are more efficient, less costly and more accurate than either manual person-to-person transactions, such as when Mission-Critical Assets are checked out and returned to an attendant or manager, or a manual self-service transaction in which users are responsible for manually logging or scanning check-out and check-in transactions.

Some of the common benefits of deploying automated locker systems in proximity to where Mission-Critical Assets are used include:

Point Of Use Many facilities using large quantities of Mission-Critical Assets such as handheld data terminals/ barcode scanners, two-way radios and rechargeable batteries are large facilities, often ranging from hundreds of thousands of square feet to over a million square feet. These are often referred to as “large footprint” locations. In addition to single buildings, “large footprint” facilities may include campus facilities (university, healthcare, corporate), mines, railroad, ship and aircraft maintenance facilities and other operations spread over a broad geographic area.

In both "large footprint" locations and smaller locations, a significant amount of non-productive time is spent "walking"—leaving one's workplace and traveling to a central point where Mission-Critical Assets are distributed, "waiting" for Mission-Critical Assets to be checked out, and returning to the workplace—more "walking." The duration of each trip can range from a few minutes to as much as an hour in some facilities. Cumulatively, this "walking and waiting" time represents hundreds and, in the case of larger facilities, thousands of nonproductive hours away from primary work responsibilities each year. Much of this lost productivity can be reclaimed by deploying self-service automated locker systems in strategic locations, thereby making Mission-Critical Assets conveniently available near where they are used.

Process Consistency and Usage Standards Another benefit that can be achieved through the deployment of automated locker systems to control Mission-Critical Assets is by controlling access to Mission-Critical Assets (who gets what). Through the system's intelligent control functions, management can assure that the Mission-Critical Assets are used for the purpose intended and at the times they are expected to be used. Examples of this would include:

- A worker in a hazardous mining environment needs to check out a particular breathing apparatus. The breathing apparatus is required to meet an exact requirement (appropriate filter for the environment and correct size as pre-determined by a fitting). The automated locker can be set to provide that particular worker only with the correct breathing apparatus thereby ensuring correct use as required by safety processes.

- In a manufacturing operation, workers are required to verify characteristics of parts and components using precision measuring equipment. In some operations, there can be hundreds of gauges used for this purpose, many of which are visually very similar. Mistakes can occur when incorrect gauges are used. The control capabilities available in today's advanced automated locker systems can ensure that the correct gauge is used for each job as specified in the manufacturing process requirements.

Compliance Management and Documentation Advanced automated locker systems can manage pre-determined standards to ensure compliance with regulations, quality and safety standards.These might include:

- **Re-calibration** In some operations, tools, equipment and instruments must be re-calibrated after a certain number of uses or periodically at certain time intervals. Automated locker systems can manage these standards automatically. Mission-Critical Assets can be checked out and checked in until the calibration limit is reached. They are then locked down and a notification is sent to the appropriate individual(s).

- **Inspection** In some environments, Mission-Critical Assets must be inspected when they are damaged, dropped, or when certain conditions occur. During a check-in transaction, workers can be required to enter a status code. If the status code triggers an inspection, the Mission-Critical Asset is locked down and a notification is sent to the appropriate individual(s).

An electronic audit trail is available for all transactions. Both the management of compliance becomes streamlined and automated and the process of providing documentation for compliance audits is also automated.

Notifications and Alerts The intelligence that powers advanced automated lockers systems such as those provided by Apex includes a robust notification and alert capability. This enables automated notifications or alerts to be sent to any number of appropriate/accountable individuals when significant events occur. Examples of commonly used notifications and alerts include:

- Notification of Mission-Critical Asset not returned when due back.
- Alert when item reaches calibration/certification limit.
- Notification when a particular Mission-Critical Asset is used.
- Alert when Mission-Critical Asset requires inspection or service.

Visibility and Decision Support Through Apex's exclusive Trajectory Cloud, its automated locker systems provide reports, audit trails and other data which may be viewed from a desktop, laptop, tablet or smartphone. This provides management with answers to simple, but important, questions which are very difficult to answer with most systems currently in use, such as:

- Who has a particular Mission-Critical Asset?
- When was it checked out?
- When was a particular Mission-Critical Asset last used?
- What job/cost center/operation was this Mission-Critical Asset used on?

Considerations in Technology Selection

Following is a short list of questions a prospective user may want to ask when considering which automated locker system to choose for a particular application.

- Is the system designed as a native Cloud-based system or does it rely on replication of data between servers?
- How much support will be required from the IT department of the user?
- Is the system the latest technology or is it based on older technology such as Microsoft Windows?
- Is the technology nearing the end of its life cycle?
- Does the system provide enterprise-level scalability and security? Can it be deployed across an entire enterprise or is each site an "island"?
- Is the technology proven and in wide use?

Considerations in Large-Scale System Deployment

Users considering broad enterprise, regional or global deployments should carefully consider the scalability of the system.

- What is involved in preparing for deployment (pre-implementation, data pre-load, and site preparation)?
- What services does the technology supplier provide? What is the cost of the services?
- What activities will be the responsibility of the user?
- How much time and effort will this require?
- What ongoing maintenance, data management and service costs are involved?
- What is the technology supplier's experience with a large deployment? What resources are available to support your geographic footprint?

Challenges in Deploying RFID-Reliant Systems

Some tracking systems for Mission-Critical Assets rely on RFID tags and readers to identify individual Mission-Critical Assets. Readers then verify the particular Mission-Critical Asset either when it is present or not present. Recently, power tools and other Mission-Critical Assets equipped with RFID tags have become available.

RFID tags identify the presence or absence of a particular item in much the same way as a barcode scanning system does; however, they do not control access to particular items. There are a number of challenges in implementing RFID-Reliant systems for tracking Mission-Critical Assets.

Among these are:

- Cost of RFID tags and readers.
- Cost and effort required to apply and maintain RFID tags.
- Vulnerability of RFID tags to harsh usage environments.
- Potential for shielding RFID tags from readers or removing tags.
- Available software for RFID-Reliant systems is often limited in function and difficult to use. Support and scalability are sometimes lacking.

Best Practices

Following is a list of best practices in deployment of automated locker systems for management of Mission-Critical Assets.

- Automated locker systems are strategically deployed at locations near where Mission-Critical Assets are used.
- Check out and check in of Mission-Critical Assets is highly automated.
- System is secure and easy to implement and support.
- System provides physical control as well as information relating to check-out and check-in transactions.
- System is scalable and easy to deploy.



The Business Case

Calculating the economic benefits or the ROI on a deployment of automated locker systems for managing Mission-Critical Assets is straightforward and uncomplicated. In most instances, the business case is compelling and will compare favorably to alternative corporate investments. Often, the return on deployment of automated locker systems will equal or exceed the very best investment alternatives.

Following is a discussion of areas that should be considered when developing a business case for deployment of automated locker systems. For purposes of this white paper, economic benefits are classified as hard costs (those items that are directly related to distribution and management of Mission-Critical Assets) and soft costs (those items that result in productivity gains, organizational efficiency or otherwise affect the performance of an organization).

Both hard costs and soft costs should be considered when modeling a business case for deployment of automated locker systems. The examples and related assumptions can be easily adopted to model the prospective cost savings and economic benefits for any operation scenario.

Apex Supply Chain Technologies has developed an automated economic benefits calculator that enables users to enter a few elements of data and then automatically calculate the benefits and ROI a particular user might expect to achieve. The calculator requires just a few quick entries and can be used to develop multiple scenarios for assessment and planning purposes. Following is a link though which the Apex automated economic benefits calculator can be accessed:

http://apexindustrial.com/solutions/roi-calculator/

Hard Costs

Among the hard costs that can be positively impacted (reduced) as a result of the implementation of automated locker systems for managing Mission-Critical Assets are:

Retrieval Time The following method can be used to calculate the cost of retrieval time for Mission-Critical Assets. Multiply the average amount of time in minutes required for workers to leave their primary workplace to travel to the location where Mission-Critical Assets are checked out ("walk and search" time) by the number of trips per month or year and then multiply the product of the first calculation by the average fully burdened labor cost. The example below contemplates a smaller department or facility (such as a retail store) in which 20 trips per day are made to retrieve Mission-Critical Assets with average total time for a round trip being 15 minutes including the waiting for the Mission-Critical Assets to be checked out or returned. A check out is considered one trip and a check in (return) is considered a separate trip.

> Calculation: Walk/Wait Time X Number Trips/Year X Avg. Fully Burdened Wage Cost / 60 Minutes per Hour
>
> Example: 15 minutes per trip X 4,000 Trips per Year X $25.00 per hour / 60 = $25,000 per-year savings

Transaction Cost To calculate the transaction cost for distribution of Mission-Critical Assets, divide the total cost of operating the check-out/check-in facility by the number of transactions over the same period.

> Calculation: Annual Cost of Wages and Associated Overhead to provide check-out/check-in Services / Number of Annual Transactions
>
> Example: $40,000 fully burdened salary cost/2,000 transactions per year = $20.00 per transaction

Annual Replacement Cost For Mission-Critical Assets The replacement cost is the amount spent for replacing Mission-Critical Assets that are lost each year.

> Calculation: Annual Cost to purchase replacements for Mission-Critical Assets lost each year
>
> Example: (5 Handheld Wireless Barcode Scanners X $3,500 per scanner) + (10 batteries X $200 per battery) + (5 Two-way radios X $3,000 per radio) = $34,500 per year

Recap of Hard Cost Savings (Example) Following is a recap using the calculations from the examples above.

Retrieval Time	$25,000
Annual Transaction Cost Savings[1]	$40,000
Annual Replacement Cost for Mission-Critical Assets	$34,500
Annual Economic Benefit	$99,500

[1]Assumes attendants no longer required after process is automated.

Note: Additional hard-cost savings and/or cost avoidance may be realized due to reduction or elimination of overtime.

Soft Costs

Among the soft costs that can be positively impacted (reduced) as a result of the implementation of automated locker systems for managing Mission-Critical Assets are:

Operational Efficiencies Deploying at strategic locations near to where Mission-Critical Assets are used enables workers to be more efficient. In addition to dramatically reducing or eliminating retrieval time, convenient access to needed Mission-Critical Assets reduces disruption in workflows, reduces human error and allows related or dependent operations to operate more smoothly.

Productivity Gains By converting non-value-add activities like "walking and waiting," manual check out/check in, supervisor/manager involvement in searches for Mission-Critical Assets, and expediting problems encountered in managing Mission-Critical Assets to more productive activities, overall organizational performance can be improved dramatically.

Cost Avoidance In addition to the potential to reduce or eliminate overtime costs, the deployment of automated locker systems for managing Mission-Critical Assets can also enable operations to avoid costs such as delayed orders/ shipments, production delays, expediting costs and administrative costs.

Data Accuracy All transactions are tracked, managed and controlled by the automated locker systems. This results in accurate physical inventories, data collection and Mission-Critical Asset usage data accuracy rates of 99%+.

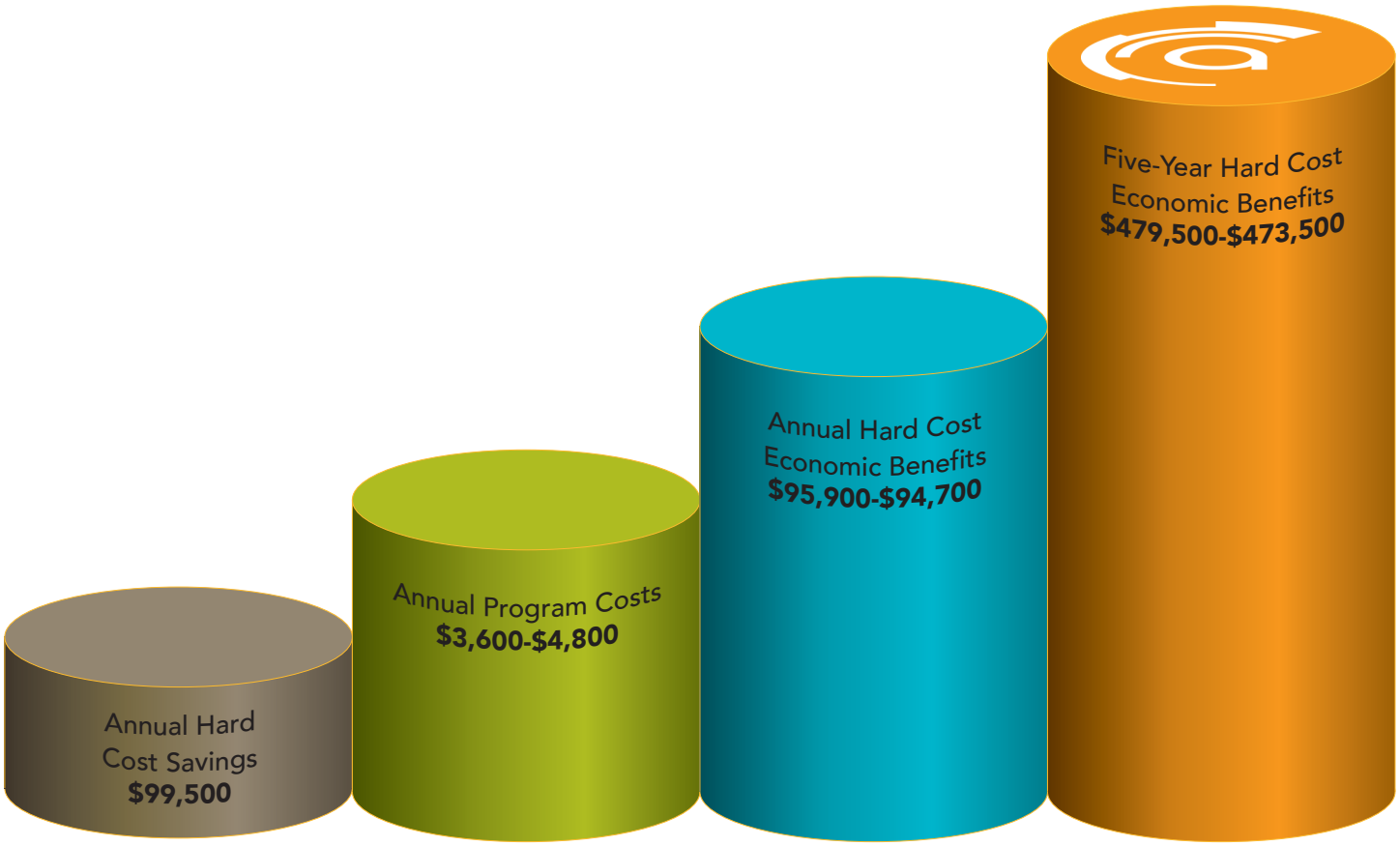
Compliance Management and Documentation Both the direct labor and management costs of managing compliance (Foreign Object Debris [FOD] prevention, ISO, OSHA and regulatory requirements and standards) related to the use of Mission-Critical Assets can be dramatically reduced.

Economic Benefit

Considering only the hard cost savings in the examples shown on previous pages, an annual cost savings of $99,500 is achievable. Apex automated locker systems are often leased. Lease costs will vary based on system configuration, optional features, lease term and size of deployment.

For purposes of illustration only, let us consider a representative system for a single point of use with 36 small locker compartments capable of storing Mission-Critical Assets such as handheld devices, rechargeable batteries and the like. The lease cost for such a system, including software and data management services, might be in the range of $300-400 per month or $3,600-4,800 annually.

Assuming a five-year program life with a corresponding lease term, an economic benefit calculation for this example would be:



Summary and Conclusion

The movement toward automating and streamlining the management of Mission-Critical Assets with automated locker systems is accelerating in large and small companies around the world. This is being driven by the demonstrated opportunity to realize immediate cost savings and the potential to gain operational efficiencies and improve productivity.

Combating ever-increasing competitive pressures and the need to reduce costs will continue to be ongoing priorities for management in virtually every industry and operational environment. Intelligently deploying automation technology is not only good business, it is rapidly becoming necessary for organizations to remain vital and prosperous.

Managing Mission-Critical Assets with tagless automated locker systems is a heretofore untapped opportunity. Over the next 24 to 36 months we believe the playing field will evolve to a point where the use of automated locker systems to manage Mission-Critical Assets will become the norm. As in most technology shifts, early players will gain a competitive advantage and laggards will eventually race to catch up.

Apex Supply Chain Technologies has emerged as the global leader in the deployment of automated locker systems with the largest installed user base and the highest rate of new system deployments each month for 37 consecutive months*. By providing highly scalable, secure and affordable systems with advanced technology and features, Apex makes it easy for new users to deploy automated locker systems and realize their desired economic and operational benefits quickly and painlessly.

In addition to the advanced technology of Apex systems and its proprietary Trajectory Cloud software and data management service, Apex offers a full range of program design, pre-implementation and rollout support services. These can be tailored and scaled to accommodate any size implementation from single site to massive global deployments.

*As of May 2014



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available from Apex Supply Chain Technologies, contact us at:
info@apexsupplychain.com or 1.800.229.7912.
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