Beyond the Spreadsheet:
How Asset Management Software Can Help Educators Save Time and Money

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RFID-Enabled Asset Management

The Cost of Lost and Damaged School Assets

With technology playing an increasing role in school curriculums, and laptops and other high-tech devices becoming more prevalent in the classroom, it's getting tougher to keep tabs on and manage these assets as they move throughout a school or campus. Lost or damaged assets cost the average school system nearly a quarter of a million dollars a year, including nearly $80,000 a year in technology equipment alone, according to a recent study by the market research firm Quality Education Data (QED). Large districts lose even more, the study says -- some as much as $1.4 million in assets per year.[1]

The study found that educational technology assets, primarily computer and AV equipment, can be most at risk because they're highly valuable and desirable. This problem continues to mount as districts struggle to find the time, money, people and tools to keep track of assets in an efficient and accurate manner. For now, many school administrators are relegated to tracking assets with antiquated spreadsheets that merely list serial numbers. However, these documents lack necessary detail and they're often neglected because schools are short on manpower to track each asset as its status changes and update the spreadsheets accordingly. And because these systems are so accessible and easily changeable, data integrity can be lost along with the assets themselves.

When it comes to asset loss, the pain goes beyond the dollar value of the missing hardware, it also extends to the people, time and energy needed to replace the school assets. Students feel this loss as well when they are deprived of the equipment that has been lost, misplaced or sits hidden in a closet somewhere. Most of those involved in school systems would also agree that efficient asset management is imperative for effectively managing and reporting on budgets.

Automating Asset Management in Education

By instituting a centralized, automated asset management system versus an outmoded manual inventory system, educators can have instant access to their inventory details, as well as the location and status of each piece of equipment. Better visibility of assets within a school or district means better use of school resources – people, budget and time.

Technologies exist that help schools and all types of organizations automate the tracking and management of their high-value assets, and thus, improve their overall operations. Two innovative technologies helping schools rise to the new challenges of high-value asset management – without breaking the bank – are asset management software and Radio Frequency Identification (RFID). When combined, these components allow schools to automate the way they track their assets and overcome the time drain and error issues associated with paper- or spreadsheet-based tracking. What's more, they arm school administrators with detailed accounting of where each piece of equipment has been and where it's currently located, enabling them to better plan for future asset utilization.

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[1] *Asset Management Failure Costs Schools, Robert Brumfield, eSchool News* , June 22, 2006.

RFID 101: Technology to Help Automate the Tracking of Assets

An important element of an automated asset management strategy is RFID, a technology that uses radio waves to store and remotely retrieve information from RFID tags. At a very basic level, an RFID tag is similar to a barcode, but RFID-enabled applications can do things that barcode-based systems cannot. RFID tags can be placed on nearly any object and read from a variety of distances based on the type of tag using either handheld RFID readers or a fixed RFID reader combined with an antenna. And, RFID overcomes some of the limitations of barcodes because the RFID tags do not need to be in the line of sight of a reader to be read, making for a much faster and more accurate inventory-taking process. For example, rather than having to turn over a piece of equipment and scan the barcode with a barcode scanner, users of RFID can wave a handheld RFID reader past the equipment and it will read the tag, even if the tag is on the bottom of the equipment and can't be seen.

There are three components to an RFID-enabled system:

- ◆ Tags that contain unique identification information
- ◆ Readers that scan the tags and read their information
- ◆ RFID software that makes sense of the information on the tag

RFID tags come in three flavors – passive, battery-assisted and active. Passive tags have no internal power source, whereas battery assisted-passive and active tags are usually powered by a small battery to help tags send and receive data to and from a reader. Battery assisted-passive and active tags typically have longer read ranges, but are more expensive due to an onboard battery and their internal complexity.

RFID readers play the same role essentially as a barcode scanner, although a barcode scanner generally captures information one barcode at a time, whereas an RFID scanner can capture several tags within its transmission field. There are two types of RFID readers: mobile and fixed. Mobile readers are usually employed as peripheral devices on a handheld terminal. They can be carried to the scanning location, can be used "out in the field" or in remote locations. Fixed readers may support one or more external antennas and when RFID-tagged items pass the fixed reader (a portal on a doorway, for example), the reader captures data automatically about all tags that pass by the reader (or through the portal).

Information that is collected by RFID readers must be correctly interpreted before it's passed to a software application. When multiple tags are within a reader's transmission range, the result is a cacophony if responses that must be managed and processed in an orderly manner. This is the job of RFID software – to manage readers and how they interact with tags. The exact function that RFID software performs varies according to the application that it is designed to support. A comprehensive asset management application, for example, uses data from the RFID tags, reader and software to make sense of the data and turn it into information that can be used and acted upon when managing assets.

The following table outlines the various systems that can be employed to track high-value, frequently mobile assets in a school, campus or district.

Table 1. Choices for systems to track and manage high-value assets (from least to most automated) and the advantages, disadvantages and cost of each:

Type of Tracking	How it Works	Pros	Cons	Cost
Manual	Information entered into spreadsheets; 100% manual process	Can use existing technology; simple to use; low training curve	Labor- and time-intensive; decentralized information; high error rates; low dependability; version control difficult	Technology investment is low, however the continual labor investment is high
Barcode-Based System	Barcodes placed on high-value equipment; typically handheld devices are used to scan the barcodes; , line-of-sight needed to scan; software is used to capture the scans, date and time	Many systems exist; automation is used to capture the data; data is stored in an application	Labor- and time-intensive to scan – line of sight required	Technology investment is slightly higher than 100% manual and the ongoing labor investment is still high
Passive RFID + Asset Management Software	Tags placed on assets; no line-of-sight required for scanning; used to capture data about asset location and status in near real-time	Automated process to take an accurate inventory; highly accurate; no line of sight needed to scan; 1-10 foot read range; movement captured in near real-time	Up-front capital investment typically required; some up-front system design work needed; slight learning curve to system	Technology investment is higher ($1-3 per tag) than barcodes, however ongoing labor is reduced
Battery-Assisted Passive RFID + Asset Management Software	Tags placed on assets; no line-of-sight required for scanning; used to capture data about asset location and status in near real-time	Automated process to take an accurate inventory; highly accurate; no line of sight needed to scan; 25-100 foot read range; movement captured in real-time	Up-front capital investment typically required; some up-front system design work needed; slight learning curve to system	Technology investment higher ($8-10 per tag) then passive, however ongoing labor is reduced due to longer read ranges
Active RFID + Asset Management Software	Tags placed on assets; no line-of-sight required for scanning; used to capture data about asset location and status in near real-time	Automated process to take an accurate inventory; highly accurate; scanning performed automatically; no handheld needed; 50-1000 foot read range; near real-time capabilities	Large up-front capital investment typically required; infrastructure needed to build system; slight learning curve to system	Technology investment higher ($25-80 per tag) then battery-assisted or passive, however ongoing labor is reduced more due to real-time location capability and longer read ranges

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Asset Management Software + RFID = Better Visibility and Control of Assets

Using RFID to manage assets has definite benefits, but RFID technology alone only tells the user that a tag has been read. It doesn't provide the information necessary for an organization to gain a holistic view of their assets, and as a result, better track their movements and manage how they are used. RFID must be coupled with asset management software to provide true business value.

Fluensee AssetTrack™ is one example of asset management software that is being increasingly employed by schools and other organizations to improve their tracking capabilities and knowledge. Fluensee AssetTrack is cost-effective RFID-enabled software that allows users to monitor and track the movement and status of valuable school assets in real-time, resulting in more accurate physical inventories with less manual labor. This software application works in conjunction with a myriad of RFID tags and readers to provide a school with an end-to-end asset management solution. Because it is completely platform- and hardware-independent software, it is flexible and scalable, and can expand and be reshaped as a school's needs develop and change. And because the software is browser-based, the software can be easily deployed on a central computer and doesn't need to be loaded on each desktop or laptop to use the application. It can be accessed throughout the entire school or district using a common internet browser such as Internet Explorer. And assets can be tracked from multiple contact points throughout the school or district as well. This helps to reduce the training and deployment costs of the application.

Software such as AssetTrack provides access to historical data, validates asset utilization, maintains asset inventories, allows users to identity deviations from expected asset location or condition, and when combined with the appropriate RFID hardware, can even trigger alerts when deviations occur. The advanced reporting features of software such as AssetTrack can be especially valuable for schools that receive government funding and must account for their spending and submit budgets for upcoming school years.

Issues of scalability and flexibility are addressed by Fluensee AssetTrack as well. Built on a very robust, independent platform, AssetTrack can help organizations migrate from barcode-based systems because it reads barcodes *as well as* RFID tags (and can do so simultaneously). The system remains flexible as an organization grows and its needs change. For example, looking ahead, the potential exists in the near future for schools to track students and attendance as well. The possibilities with automating asset management are vast.

Example: RFID-Enabled Asset Management for Education

One Denver-based high school is using Fluensee's AssetTrack to automate the tracking and management of student laptops, servers, digital cameras, DVD players and computer peripherals. Before AssetTrack, the school's IT department was using a barcode-based system and spreadsheets to track the status of equipment. When students would bring in a laptop that needed repair, it was a tedious and error-prone process to fill out the work tickets and track the status of the work being done. The school also had issues tracing whether the work had been paid for by the students and when the warranties were due to expire on each piece of equipment.

By implementing a Fluensee asset management system enabled by RFID, the high school is decreasing the time and labor spent tracking down and inventorying equipment and determining its status. With an automated system and a robust database of its school equipment, the school knows exactly how many assets it has and where those assets are located. This knowledge not only streamlines processes – it helps bring peace of mind as well.

Considerations for Selecting RFID-Enabled Asset Management Software

RFID is a cutting-edge solution that answers age-old business problems. However, before an organization dives head first into an RFID-enabled asset management solution, it should spend time evaluating and understanding the various options.

Is RFID Right for Me?
RFID may seem too advanced for some organizations. If they only have a handful of assets to manage or their assets are not of high value, they might want to stick with a barcode-based system, since it is a less expensive option. These organizations can easily upgrade to a flexible RFID-based solution when the time is right. The first step in moving ahead with RFID and asset management software is to develop a firm grasp of its components, benefits, challenges and applications. For schools that want to save long-term time and money when managing assets, understanding which assets need to be managed and the workflow and processes around these assets helps serve as a starting point if they're deciding upon an RFID-enabled asset management solution. Many organizations are amazed that once an efficient system is found, how many items they have that can be tracked, and what an advantage it is to do so.

Scalability is Imperative
If an organization is ready to take advantage of the automated asset-tracking benefits of RFID, it should absolutely invest in a scalable solution that will grow and evolve with its needs. Some RFID-based solutions have a sweet spot in terms of the number of assets they can capably manage, number of sites they can support, etc. Organizations should evaluate their current and future needs and map them to the competencies of the solution prior to opening their checkbook. This way, they can avoid any unexpected and costly overhauls or rip-and-replace situations down the road.

Opt for Open and Agile Technology
RFID and asset management technology is anything but stagnant, so it can be risky and expensive for organizations to invest in proprietary technology, as opposed to a more open solution. Since proprietary technology only works with certain systems, it diminishes the pool of software and hardware options available to an organization. As a result, it might not be able to mix and match the best technologies for its particular situation. Organizations should focus on finding technologies that can support their needs today, but be flexible enough to address their needs tomorrow. Ideally, schools and school districts should find an RFID-enabled asset management solution that is flexible enough to work with barcodes, passive, battery-assisted, and active RFID, is hardware and platform agnostic, requires little integration and is compatible with their existing IT systems.

Summary

Going beyond a spreadsheet-based system to track and manage assets gives schools instant access to the location and status of their inventories. With comprehensive visibility of their assets, schools and districts can better utilize their personnel, budget and time. Asset management combined with RFID is one technology solution that helps automate this inventory management process in schools and can help reduce auditing and budgeting headaches. This combination is a long-term investment proposition that should be evaluated in the context of the entire school or district. An asset management solution eliminates time-consuming, labor-intensive, error-prone processes and gives detailed accounts of the location and status of each piece of equipment, enabling schools to streamline operations and better plan for the future.

For more information on RFID-enabled asset management for education, please contact:

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