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RFID Inventory Management System

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Problem Statement and Background

The Bonita Springs Fire Control and Rescue District has a non-transport ALS (advanced life support) license and runs emergency calls with six different apparatus. Approximately 75% of our 6200 calls per year are medical. These units are stationed at five different locations throughout the city of Bonita Springs. Each apparatus carries an abundance of medical equipment and each station has a medical supply room. There is also a main supply room that acts as a distribution center for all stations and trucks. The inventory system currently used is almost non-existent and is extremely inefficient. It is based on periodic manual inventory which results in missed items, expiration dates and costly mistakes. We were in need of an inventory system to increase efficiency and reduce spending.

RFID Inventory Management System

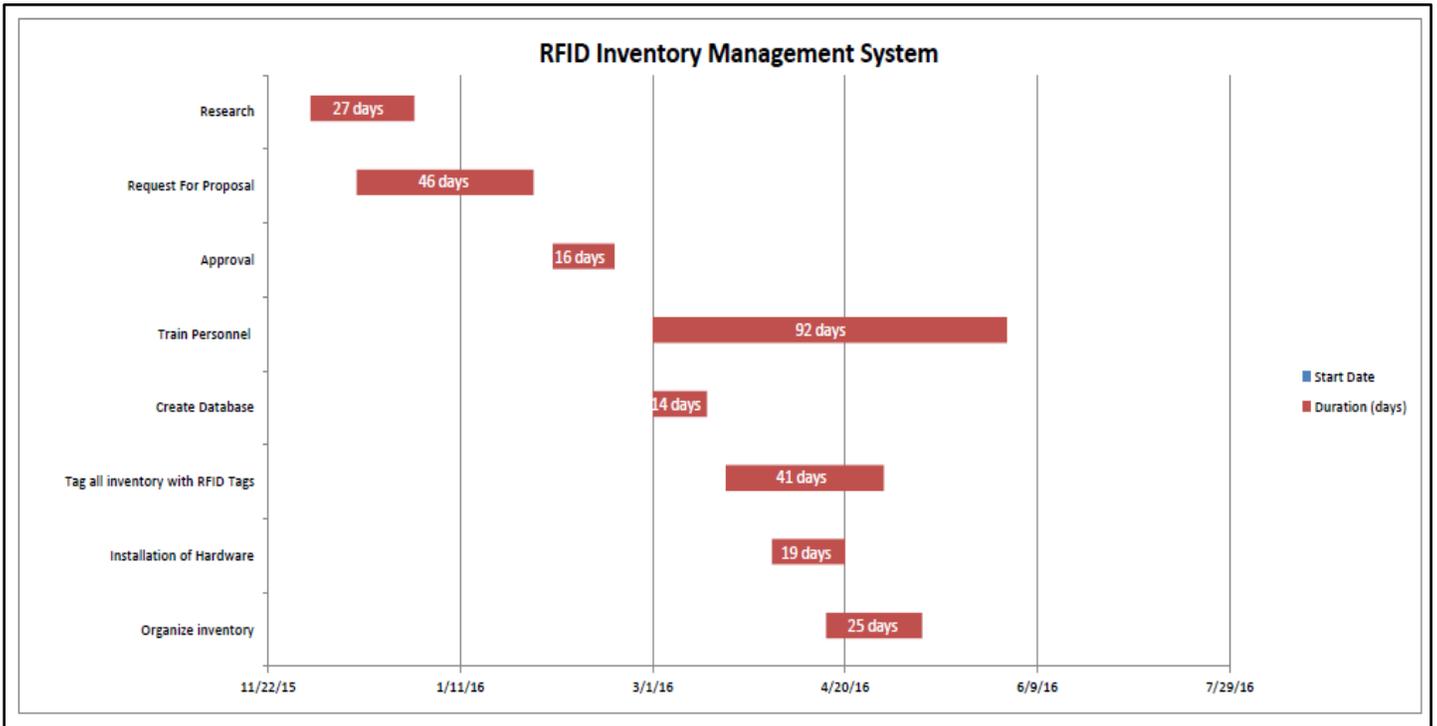
I looked into many inventory systems which all still involved visiting all locations on a regular basis to scan or count inventory. We needed a dynamic system that reacted to the needs of our organization. The RFID (radio frequency ID) system counts and tracks items continuously at all locations. The system works by reading items that are tagged with radio frequency stickers. Readers and antennae are installed in medical supply rooms and continuously monitor quantities, expiration dates and even send alerts when quantities get low or are expired. Inventory can be seen from any computer or smart device from any location.

Work Breakdown Structure

Implementing a new Inventory System:

1. Research:
 - a. Research and look into different types of inventory systems
 - b. Must become educated on the specific type including estimated price
 - c. Time and commitment of personnel to implement the project
2. Request for proposal:
 - a. Contact at least three vendors or suppliers that sell like systems
 - b. Meet with each one to ensure needs
 - c. Collect accurate pricing from companies
3. Approval:
 - a. Discuss project with Chief and staff
 - b. Presentation to Fire Board including cost and benefit to the organization
4. Budget:
 - a. Propose project at budget workshop and fund the project
5. Decide on a system and vendor.
 - a. Plan out timeline for implementation
6. Create data base:
 - a. Each type of item has to be put into a database for ID later
7. RFID tags are placed on each item
 - a. Details of item including type, expiration date, vendor and price are entered into the inventory database to coincide with tag ID number assigned.
8. Vendor installs hardware including readers and antenna to monitor inventory.
9. Organize storage areas to ensure that all items are being read by system.
10. Train personnel to use software

Gantt Chart: Progress and Timeline for RFID Project



Project Management and Teamwork

The implementation of this project took an entire team requiring coordination between staff and installation of hardware. One of the most challenging tasks was to reorganize each supply room at each fire station. All items had to be labeled and separated so that the readers could identify each item. Our team consisted of at least 4 personnel to label, do data entry and organize items into individual containers which were also labeled. This was all necessary to reduce future time and labor to restock and so that station personnel could find items in a timely manner. While the company was installing readers we also had to ensure that all the items in the rooms were being read. Some reorganization of inventory was also necessary.

Board and Public Relations

Approval by the Fire Board was necessary before this project could start. I made a presentation at a scheduled board meeting outlining the cost and details of the system. Potential savings and efficiency were the main points of the presentation. We have periodic inspections by the Florida Department of Health. A deficiency such as expired medications or missing piece of equipment could result in a failed inspection and also very severe fines. The worst penalty could be loss of our ALS (advanced life support) license. These subjects were also addressed in the presentation.

Now that the system is installed and being used, I am preparing a follow up presentation to show the success of the project at an upcoming board meeting. Our public information officer is also involved with planning a story for the local media. It will showcase this unique technology that saves tax dollars while increasing efficiency.

Success of the Project

The project is now completed and the system is amazing. It has met and exceeded our goals and expectations. Inventory is monitored almost daily by visiting the website via computer. Projected savings of 30% on purchasing will pay for the initial cost in the first year. This is possible because of a much more efficient system that reduces excess inventory and waste. There are now very few errors because all counts and expiration dates of all items are monitored. Inventory is ordered well in advance of expiration dates, and very rarely does any station run out of any item. The amount saved in personnel hours is hard to measure. Manual weekly and monthly inventory by crews is no longer necessary. Frequent trips to deliver medical supplies have also been greatly reduced saving time, fuel and wear on vehicles. We are in a business that does not allow us to run out of emergency equipment or have expired medication on an apparatus or in a supply room. Saving money is only a small part of the benefits of the RFID inventory system.