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1

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Achieving A Real Return On Investment Using RFID

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Discussion

 How the USPTO achieved real Return on Investment (ROI) using RFID to track assets.

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Who is the USPTO?

- We are a fee funded performance-based federal government agency.
- Our mission is to administer the laws and regulations related to patents and trademarks.
- We carry out this mission by examining patent and trademark applications and issuing patents and registering trademarks.
- We have nearly 13,000 employees and approximately 2,000 contractor personnel.



Who is the USPTO?

Our main campus is located in Alexandria, VA, with four regional offices located in:

- Detroit, MI
- Denver, CO
- Dallas, TX

San Jose, CA And a underground storage facility/data center located in Boyers, PA.







Patent or Trademark or Copyright.....

Trademark



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Problem

How do we reduce the cost of a labor intensive manual process that is vulnerable to error due to heavy reliance on human interaction with over 800 Property Custodians (PC) and 150 Property Accountability Officers (PAO) involved in tracking over 122,500 assets worth over \$159,000,000 including laptops, servers, routers, PDAs, etc.?



Project Background

- Concept pitched in 2008
- Return on Investment (ROI) Developed FY 2011
- June 2012, a budget initiative was approved and included in the FY 2014 President's Budget
- September 2014, a contract was awarded to:
 - Perform site surveys/develop cost estimate (Phase 1)
 - Procure software (Phase 2)
 - Purchase/install the hardware main campus (Phase 2)
 - Purchase/install the hardware regional offices, including Boyers (Phase 3)



Project Goals & Requirements

• Goals

- ➢ Reduce number of PAOs and PCs
- ➢ Reduce inventory cycle time
- ➢Increase accuracy
- ➤Increase asset visibility
- ➢Reduce asset loss
- Requirements
 - ≻ Minimally invasive
 - ➤Cost effective
 - ➢Integrate with ITSM-Remedy







• Process Overview

- Define specific business needs
- Define expected business benefits
- Conduct and document a RF site survey
- Define and document project requirements
- Define and document processes ("As-Is" and "To-Be")
- Design the solution (Where the magic happens)
- ➤ Implementation & integration
- ➢ On-going support



- Engineering is the key
 - Environmental Conditions
 - ➢ Physics of Radio Frequency
 - Asset Characteristics
 - ➤ Hardware
 - ➤ Tags and their performance
- 20 Buildings
- 181 Floors
- 6 States





- We have a total of 466 Readers with 1,150 Antennas
 - > 2 Impinj Speedway xPortal R640 readers
 - > 23 Impinj xArray R680X readers at building entrances
 - > 236 Impinj Speedway R420 readers
 - > 205 Impinj Speedway R220 readers
- 10 Alien Technology ALH-9001 handheld readers which we use to scan for fixed assets.



Impinj xArray R680X Installed



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SEPTEMBER 30 - OCTOBER 1, 2020





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14

Return on Investment – Original Estimate

- Approximate Cost: \$3M
- Annual Savings: \$1.1M
- ROI: 2.75 years

Category	Annual Cost	Annual Savings	Notes
PC Labor	\$726,214.64	\$653,593.18	Est. 90% reduction
Asset Mgmt Labor ~ Errors	\$443,184.33	\$332,388.25	Est 75% reduction
Loss Prevention	\$411,616.04	\$399,267.56	Est. 97% reduction
Total	\$1,581,042.01	\$1,391,316.97	Est. 88% cost reduction



15

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Return on Investment – Results

Goals

- Reduce number of PAOs and PCs Reduced 148 PAOs to 113 and 804 PCs from to 275
- Reduce inventory cycle time

Reduced monthly cycle time from 10 to 5 business days

• Increase accuracy

100% improvement due to data from RFID

• Increase asset visibility

Better monitoring of contractor performance Our users (PCs and PAOs) greatly appreciate the reduced workload

• Reduce asset loss

Reduced to near zero on campus



Return on Investment – Results

Total Number of PC Report Change Requests



SEPTEMBER 30 - OCTOBER 1, 2020

Return on Investment – Results

- Approximate Cost: \$3M
- Annual Savings: \$1.2M (est. \$1.1M)
- ROI: 2.5 years (est. 2.75)



Category	Original Annual Cost	Annual Cost as of 1/31/2020	Actual Cost Savings	Actual Cost Savings
PC Labor	\$726,214.64	\$167,035.58	\$559,179.06	Actual 77% (est. 90%) reduction
Asset Mgmt Labor ~ Errors	\$443,184.33	\$203,864.79	\$239,319.54	Actual 54% (est 75%) reduction
Loss Prevention	\$411,616.04	\$6,979.27	\$404,636.77	Actual 98% (est. 97%) reduction
Total	\$1,581,042.01	\$377,879.64	\$1,203,162.37	Actual 76% (est. 88%) reduction



Post Deployment Activities

- Implemented automatic check/flag for location data
- Implemented automatic asset verification
- Implemented new PC reports
- Migrated to the latest ItemAware release
- Implemented additional RFID tag designs (total of 5)



Future Activities

- Increase automation (i.e., auto assign location and user data)
- Deploy ItemAware and extend RFID to our supply warehouse to increase efficiency
- Upgrade Handheld Scanners to ALR-H460
- Extend RFID to track conference attendees



Lessons Learned

- Managing expectations
- Gaining buy in and support from senior management is critical
- If you have union employees, engage the unions early
- Flexibility
- Patience
- Tags...you will need more than one type!



THANK YOU

