



RFID – Improve Your Tool Tracking

The magic (and physics) of RFID in your toolroom

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What's the Business Problem?

- Current toolroom process
 - Some rooms manned, some unmanned
 - Large maintenance facilities manned 24x7
 - Line stations manned only during the day
 - Tools disappear – lost, misplaced, taken home
 - Little tracking or accountability
 - Tool calibration - may/may not be followed closely
 - Maybe someone's job – until he goes on vacation...
 - FAA fines are severe

What's the Business Problem?

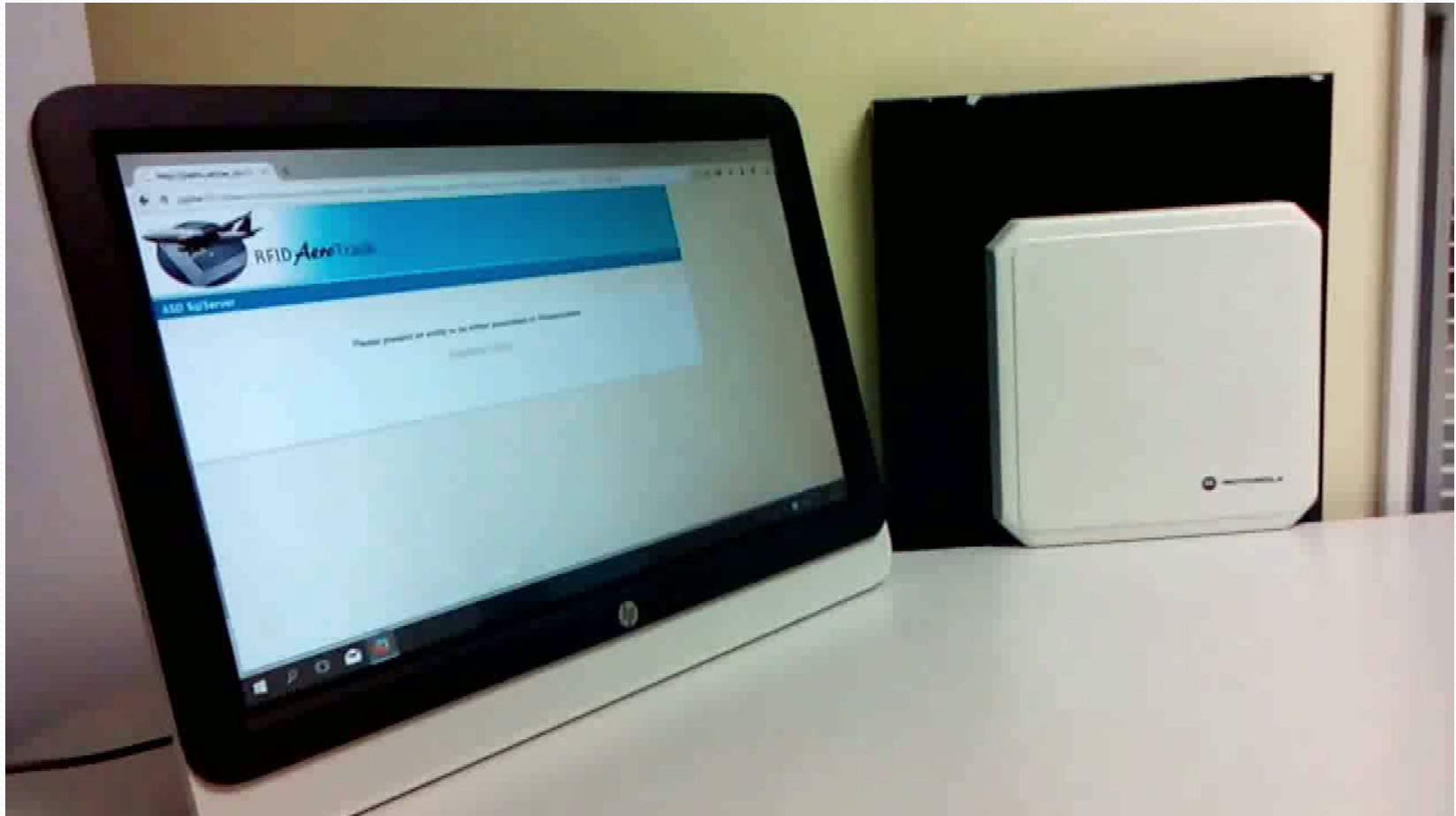
- Barcode has been used in some systems – helps some
- **Upside** is that all tools probably have a unique ID assigned
- **Downside** of barcode:
 - Barcodes get dirty or damaged - unreadable
 - Have to touch each tool to read barcode
 - Very slow
 - Easy to miss a tool
 - It doesn't find tools that are hidden or missing

How does RFID Help? – Check-in/out

- **Current toolroom**
- **Manned room - Checkout/in process** – very manual
 - Mechanic leaves his chit and gets handed a tool
 - Chits get lost, hung on the wrong tool location, etc.
 - Tracking what really happened is difficult
 - Distractions in the process causes mistakes
 - Sometime long queue times
 - losing productivity
- **RFID process**
 - All requested tools placed on counter with employee badge
 - All tools associated with that mechanic, time/date stamped
 - Mechanic/lead can be reminded if tools not returned before shift



Check –in/out is easy!



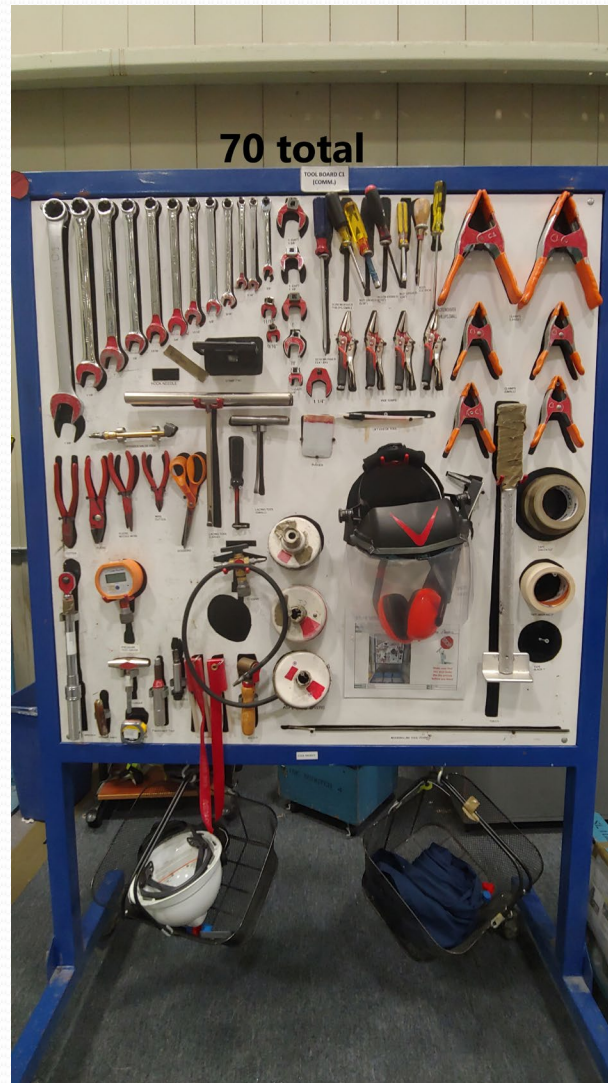
How does RFID Help? – Check-in/out

- **Current toolroom**
- **Unmanned room - Checkout/in process** – very manual
 - Mechanics take tools as needed – no tracking or accountability
 - Many tools don't return
 - New tools purchased regularly – big expense
- **RFID process**
 - Mechanic takes tools as needed
 - RFID portal automatically record tools and mechanic as he leaves and later when he returns – everything timestamped
 - Complete tracking and accountability

How does RFID Help? – Inventory Check

- **Current toolroom** process – **Inventory Check**
 - Close the toolroom so things stop changing
 - Print out known tool inventory
 - Have 3-4 people looking for every tool on list
 - Record tools not found/wrong tool
 - Type all the all tool information back into the computer
 - Open up the toolroom again after several hours
- **Using RFID:**
 - Use handheld reader to scan entire toolroom in 4 minutes
 - Boards, bins, shelves, drawers, etc.
 - Take inventory often because it is so easy

Tool Inventory - Small Sample



Manual inventory will
take 15 minutes

RFID inventory scan
should take 15 seconds

- 60x faster
- 100% accurate

How does RFID Help? – Calibration Compliance

- **Current toolroom** process – **Calibration Compliance**
 - Have system report which tools are due for calibration
 - Look for those tools and pull them from circulation
 - If currently being used, remember to this later
 - When shipped out, track where those tools went and when they'll be back
- **Using RFID:**
 - RFID system provides calibration alerts automatically
 - Automated warnings increase as date gets closer
 - System prevents mechanic from checking out tool

How does RFID Help? – Locating Tool

- **Current toolroom** process – **Locating tools**
 - Manually look everywhere inside the toolroom – hours
 - Manually look everywhere in other toolroom – hours
 - Manually look everywhere the tool was used – hours
 - Hope it didn't get left on an airplane – safety / big fines
- **Using RFID:**
 - Select the tool being looked for from Handheld reader list
 - Turn on Geiger counter mode - reader searches for tool

How does RFID Help? – Tracking Tools

- Practical needs void theoretical plan
 - **Theory**: tool gets checked out/in to same toolroom
 - **Practical**: Unless something changes in daily plan
 - Mechanic needed to fix plane at the gate
 - Mechanic re-directed mid-job to a different hangar
 - Mechanic forgets that tool is in back pocket and leaves
 - Etc., etc.
- **Using RFID**:
 - Tool can end up in different toolroom and still be easily found
 - Mechanic gets automatic text reminder 15 minutes before shift end
 - RFID reader at exit can remind mechanic tool is in back pocket

Reading tests - standard metal mount RFID tags on various tools

DoD Portable tool kit in Pelican case



Reading tests - standard metal mount RFID tags on various tools

RFID tag on
underside
Read successfully

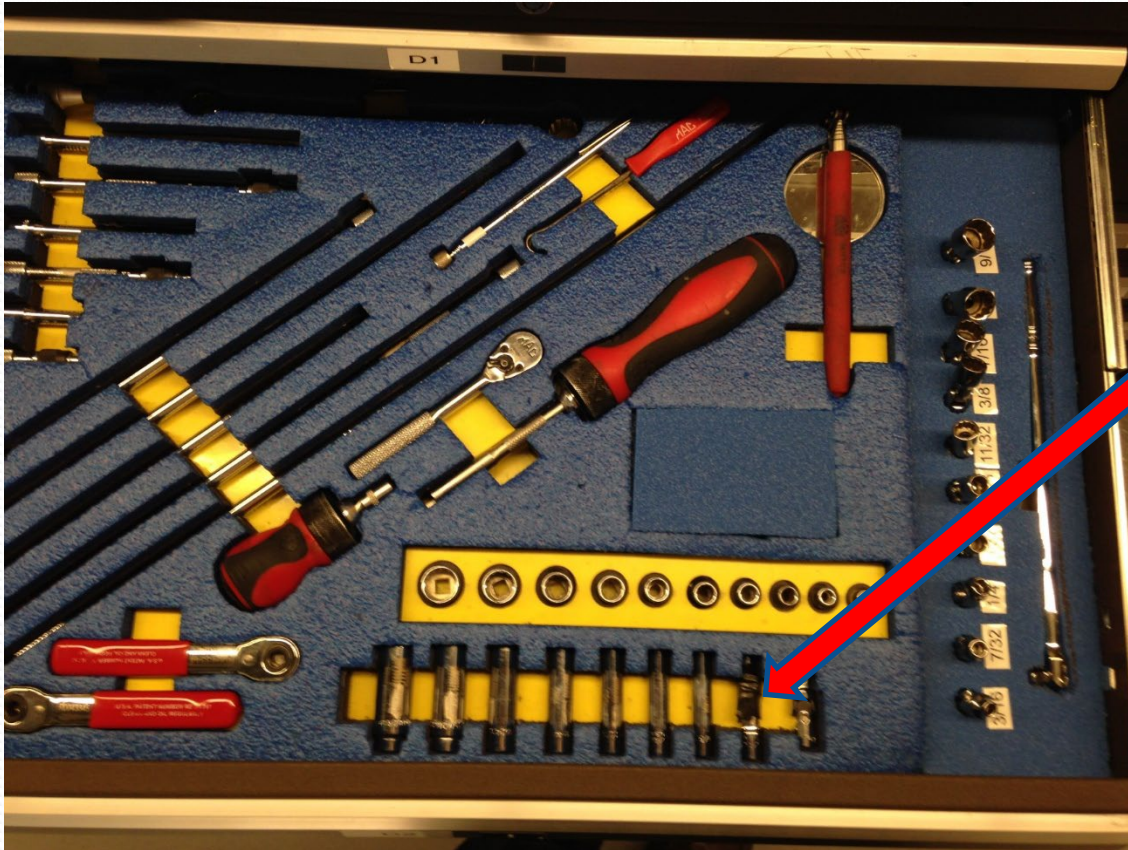


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Reading tests - standard metal mount RFID tags

Larger, roll-around toolbox



Is it really Transparent?

- Ultimate test – used cheap consumer tools
 - Industrial quality tools gives better reads
 - Live scanning Demo with toolbox...
 - All tools
 - Calibrated tool
 - Missing a tool
 - Locating a tool
- 



Conclusions

- RFID is not magic (but sometimes looks like it)
- RFID does not require line of sight
- RFID can read dozens of tags per second
- RFID tag reading is based on physics of where the signal can read or can bounce to
- RFID on metal tools generally only reads 5-10 feet because the tags being used are so small
- RFID tracking is 60 – 100 X faster than manual
- RFID is best for confirming what you expect to be there
- RFID can be 100% accurate



Thanks for your attention!

Any questions?

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