



# Lockheed Martin

## RFID Initiatives

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# Agenda

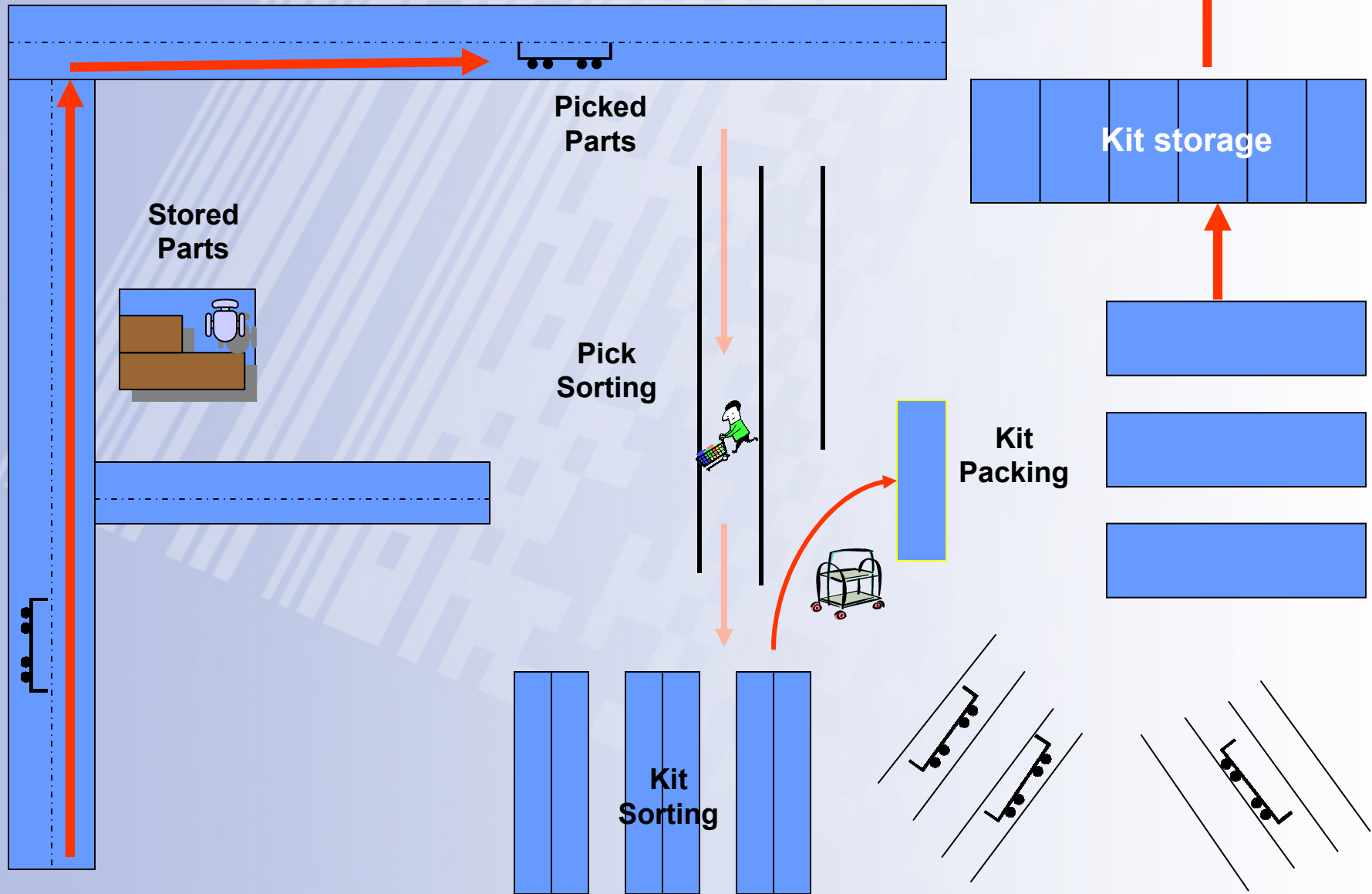
- **Kitting Pilot**
  - Issues
  - Before/After layouts
  - Challenges Solved
  - Improvements Made
- **Supplier to Prime Shipping Pilot**
  - Issues
  - layout
  - Challenges Solved
  - Improvements Made
- **Conclusion**

# Internal Pilot To Track Status of Kits

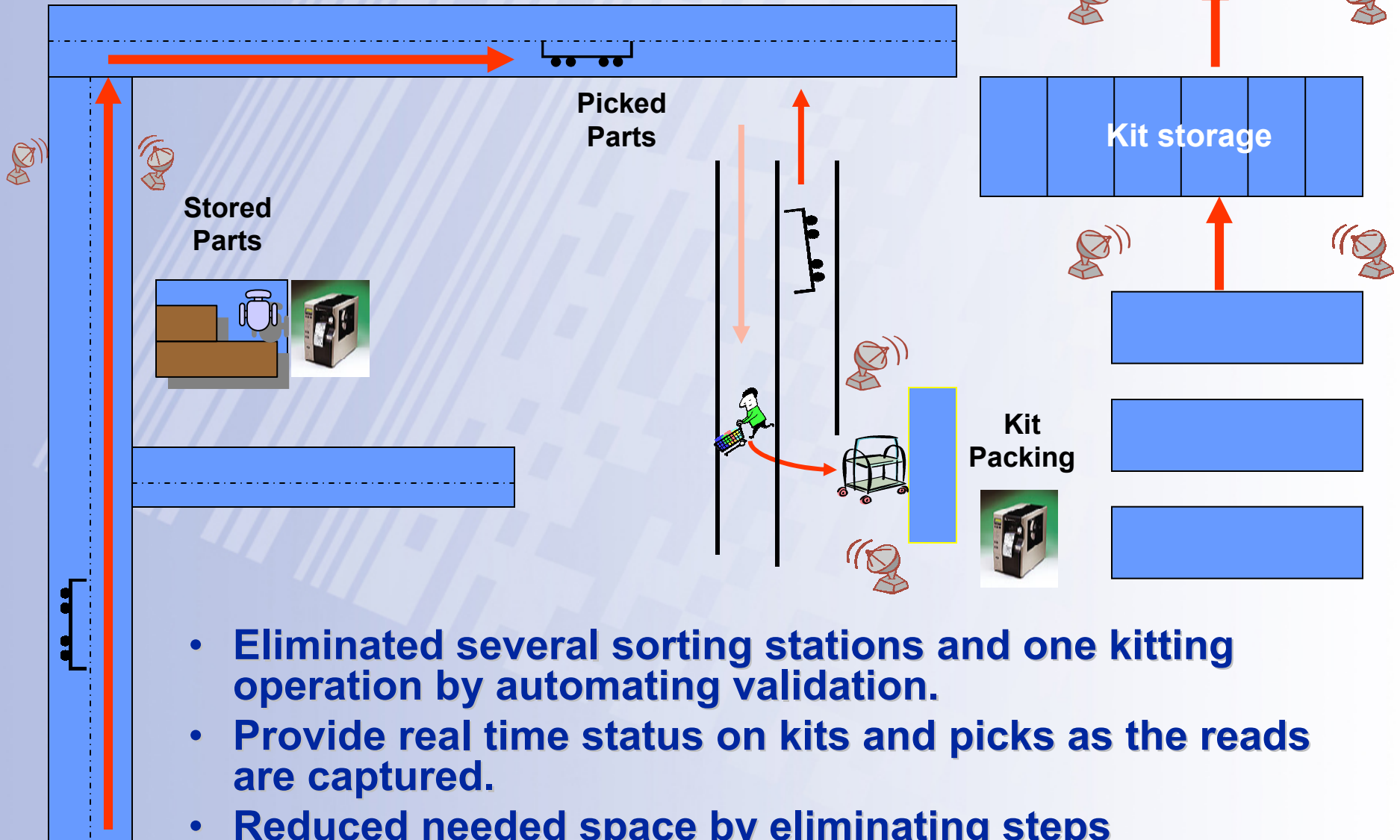
- **Challenge**
  - **Kitting requires multiple transactions and requires lots of sorts to bring to production**
- **Issues**
  - **Older legacy infrastructure**
    - **One monument to the pilot was that the existing MRP system was not to be changed**
    - **How to automate transactions to see real benefits**
  - **Part sizes**
    - **Dealing with rather large parts required two entry paths to the kitting area depending on the size**
  - **Physical Layout**
    - **Parts travel on Metal Carts as well as some have ESD requirements**
  - **Internal Security Requirements**
    - **Technology not allowed in certain areas**
    - **Highly protected data environment**

# Before Scenario

## ASSEMBLY AREA



# After Scenario



# How we resolved the issues

- Existing legacy infrastructure
  - Looked for a point where we could send batch transactions as the existing system accepts them (a stuff point).
  - Utilized middleware to create the XML transactions in the schema required by the MRP.
  - Ensured that IS was involved and got buy in to support this over the long haul.
- Part Sizes
  - Created to entry points that work as one collection point, one for small and one for large.
  - Middleware ensures no chance for collision on duplicate tag reads.
- Physical Layout
  - This is a work in progress to ensure no obstruction or interference occurs.
  - Works with the laws of physics so needed to walk to process and do a site survey and work each issue.
- Internal Security Requirements
  - Technology
    - Leveraged buy in on wireless already in use such as private VPN.
    - Asked external partners to work with our internal security about EMI and its effects to leverage active tags at a later date.
  - Engaged security to be part of the decision team so we did not make any wasted efforts.

# Improvements Made

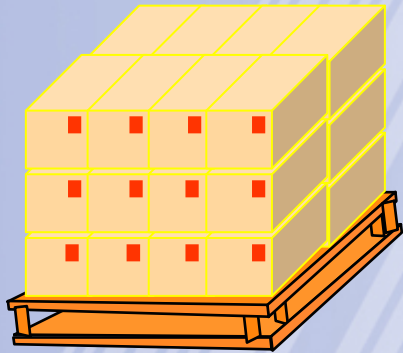
- **Eliminated 3 manual sorting steps in place for an automated sort based on tag read.**
  - **Utilized a light to kit system to read tag and provide a visual queue for the operator to build kit.**
- **Automated 3 types of transactions**
  - **Picks, Building the Kit, Validation of the kit**
- **Created a real time automated floor tracking system**
  - **Eliminated the need to manually update the tracking system at each process**
  - **Eventually want to go to active tags and a more GPS like system.**
- **Did it on a small scale with all improvements going through a validation to see if its feasible to ramp up to a full scale implementation.**

# Supplier to Prime Pilot

- **Challenge**
  - Customer required LM to associate serial numbers on RFID tags and deliver ASN to prime to automate receiving.
- **Issues**
  - No existing RFID infrastructure in place
    - No hardware
    - No Data management to generate a automated ASN
  - Tag Placement
    - Could not place tags on assemblies
    - Interference on totes
  - Shipping Concerns
    - Tag Damage
    - Totes delivered to customer are always configured in same manner
    - Totes are used on round robin basis



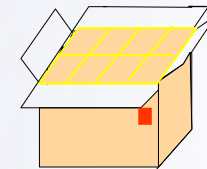
# Solution for Reusable tags/totes



18 totes to a shipment



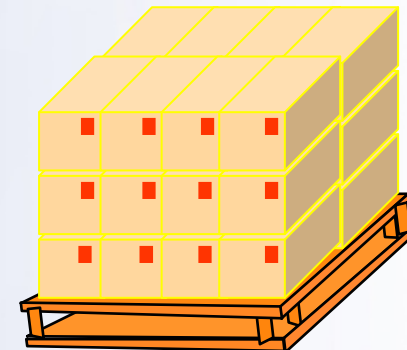
Delivery of New Assemblies



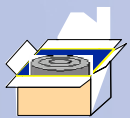
10 Assemblies To a tote, RFID the tote.



Return of Empty Totes



Empty Totes



Completed Assembly

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# How we resolved the issues

- **No Existing RFID in place**
  - Created tags at customer location and reuse the tag ID eliminating need to rewrite to tags.
    - Ensure thru shipping process no chance of tag collision twice
  - When building tags, added barcode on the tags to streamline our process of building the ASN.
  - Used existing shipping file from Excel with a new field that we scan in as we build the data.
- **Tag Placement**
  - ESD totes would not allow tag to be placed inside totes
    - Carbon fibers in ESD coating were blocking the waves.
    - Had to place tag on outside of tote using 1 inch standoff made out of dense foam.
- **Shipping Concerns**
  - Had to make sure totes were configured the same way each time so all tags were facing out for clear reads.
    - Created a standard pallet layout to ensure all tags were facing outside.
  - Standoffs had to be tested for durability in shipping process
    - Did several dry runs of empty totes to see how it worked.

# Improvements Made, Future Ideas

- Customer automated their receiving process with little impact on our supplier side.
- Leaned out shipping process
  - Standardized pallet process which inherently reduces labor over time.
  - Sets a standard schedule for us to work to upstream.
- Met customers requirements
- Future initiatives
  - Integrate RFID hardware to push the tracking of these items upstream in our process.
    - Once hardware is in place, look to integrate into other programs going through same shipping warehouse.
  - Look at tagging the assemblies

## **In Conclusion!**

**Although the new technology provides many opportunities to improve our current part marking, traceability, supply chain and logistics processes....**

**It is important Lockheed Martin remains focused on fulfilling our contractual requirements!**