

# Improving The Raw Stock Process



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Integrative Project – SELP

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# Agenda

- Project Introduction / Definition
- Examples Of Failures
- Why Is It Important?
- Project Objectives
- Original Process vs. Updated Process
- Summary
- Follow-on Phase

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## Project Introduction

- Raw stock is raw material used to make parts
- Raw stock clerk left unexpectedly
  - ◆ Clerk for over 30 years – single point failure
- For several months new raw stock was being ordered and was piling up in the stock room
- When I came across the problem, there was a 6 month backlog of material in the raw stock room
- No documented process for receiving, verifying, storing, and retrieving raw stock
- Process deficiencies were masked – problems surfaced

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## Raw Stock Definition

- Raw Stock is base material that is analyzed, tested, and certified to be machined into Space qualified parts
- Examples include copper, iron, steel, nickel, cobalt, gold



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## Wrong Materials Can Cause Catastrophic Failures

- Titanic
  - ♦ Rivets made of weaker iron
- Liberty ships
  - ♦ Steel became brittle in lower temp.
- Napoleon's Buttons
  - ♦ Tin pests



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## Raw Stock Important At My Company

- Raw materials used to make simple parts such as baseplates to complicated electron emitters
- All vacuum assemblies require parts that are machined from raw stock
  - ◆ 80% of our final products use vacuum assemblies
- Important to get the right parts, at the right time, and at the right price
  - ◆ Wrong material: functions incorrectly – unhappy customers
  - ◆ Not on time: schedule shifts, cost increases – unhappy customers
  - ◆ Expensive: cost increases – unhappy customers
- ↑ Quality, ↓ Time, ↓ Cost = 😊 Customers

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## Project Objectives

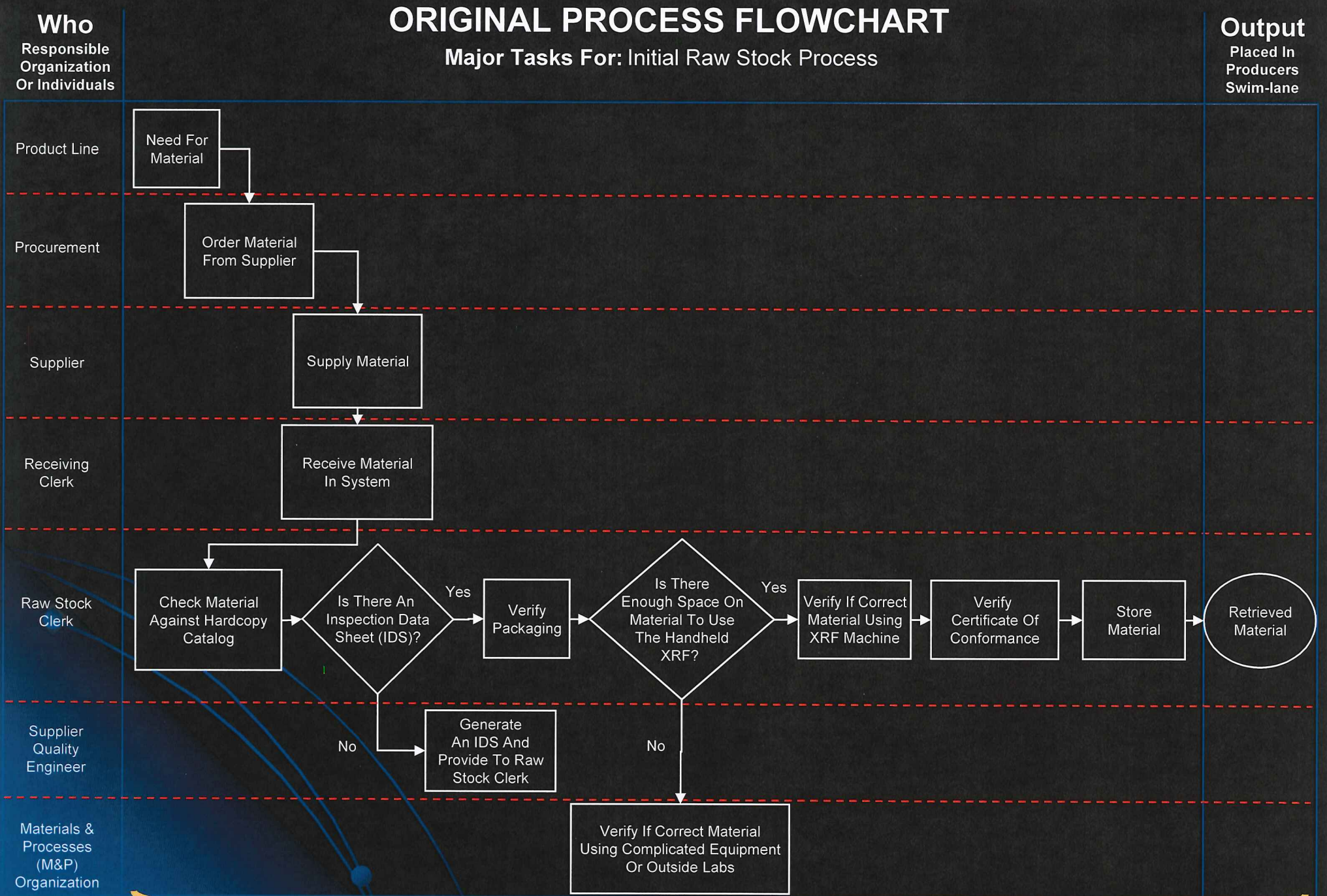
- Develop/Improve process for ordering, receiving, verifying, storing, and retrieving raw stock
  - ◆ Define criteria for materials and services purchased
  - ◆ Create partnerships with suppliers
  - ◆ Organize data received with material
  - ◆ Provide proper equipment and software to reduce time and money
  - ◆ Implement 5S (Sort, Straighten, Sweep, Standardize, Sustain) practices in the raw stock room
- Save money for the company by reducing the time and cost of the process, while ensuring quality and reducing escapes
- Improve the system so there is confidence that there are no ethical issues

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# ORIGINAL PROCESS FLOWCHART

## Major Tasks For: Initial Raw Stock Process



62 weeks

# Project Approach

- Became the team lead
  - Team included representatives from procurement, receiving lab, raw stock room, supplier quality, inspection, Materials & Processes (M&P)
  - Team met frequently and consistently for status
- Company has a union, and certain rules had to apply
- Interviewed process owners about current practices
- Received buy-in from all different levels of management

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Request For Material  
From Product Line

Order Material  
From Supplier

Purchase Order  
(PO) To Supplier

## Before

Who: Purchasing

Process:

- Generated POs that did not clearly state what was required
- Made decisions without engineering authorization
  - Cut delivery time by settling for less testing by supplier

## After

Who: Purchasing

Improved Process:

- Created template POs to include specifications/special notes for the material
- Stopped making unauthorized changes

Time:



Time:



97.5% Imp.

Cost:



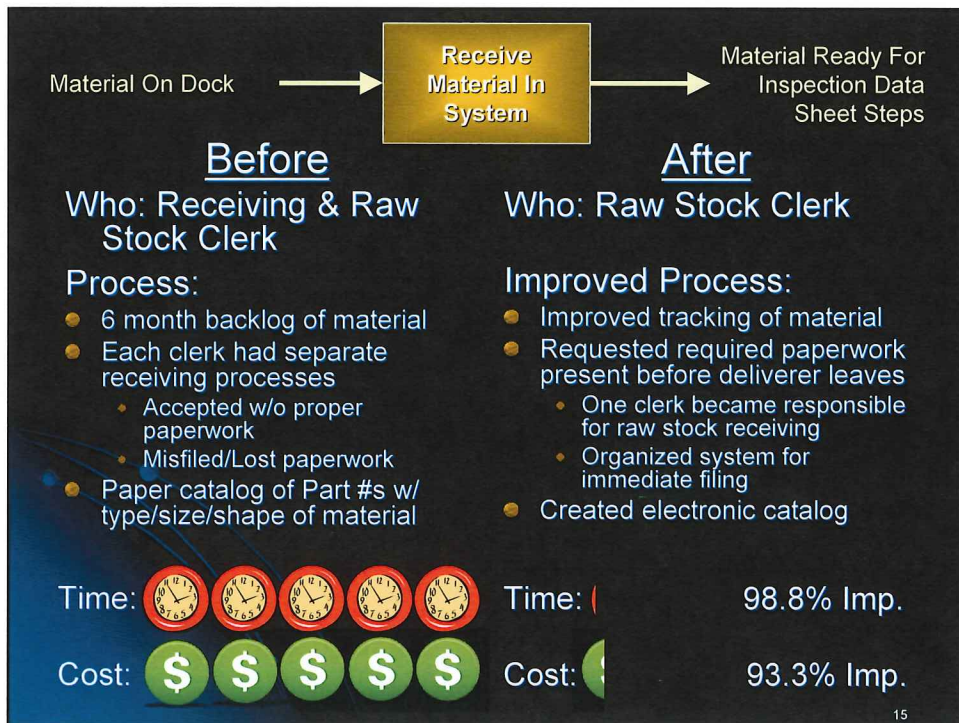
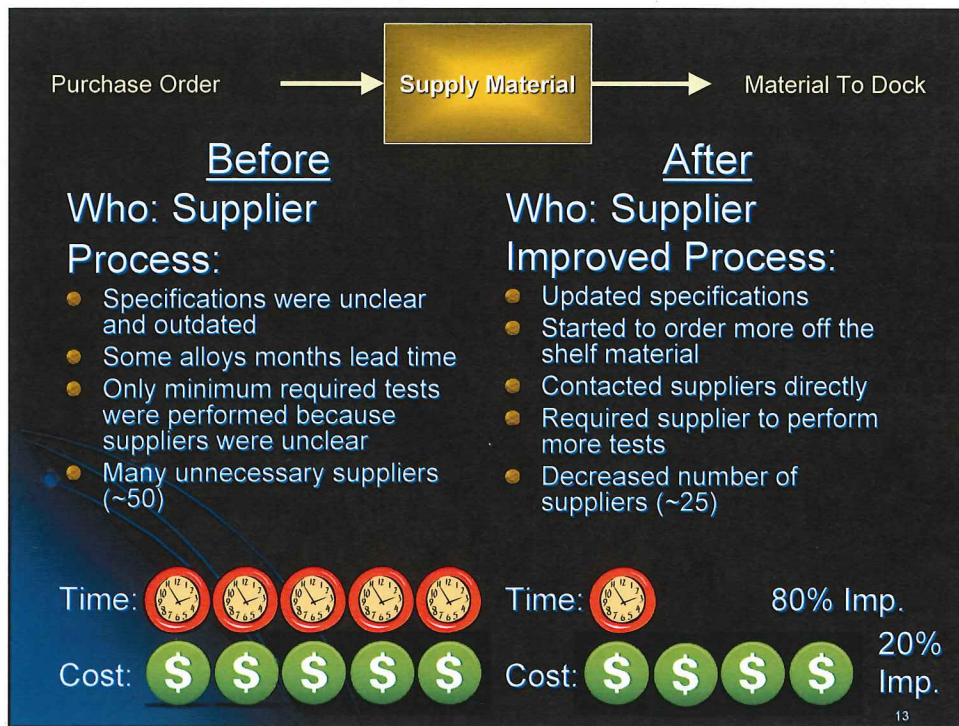
Cost:

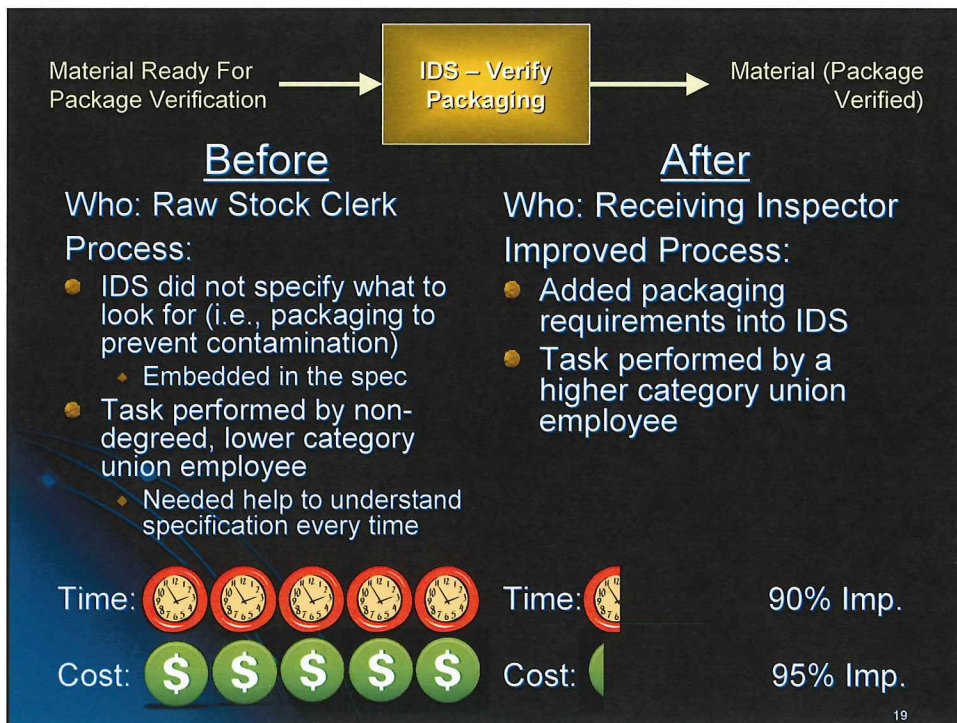
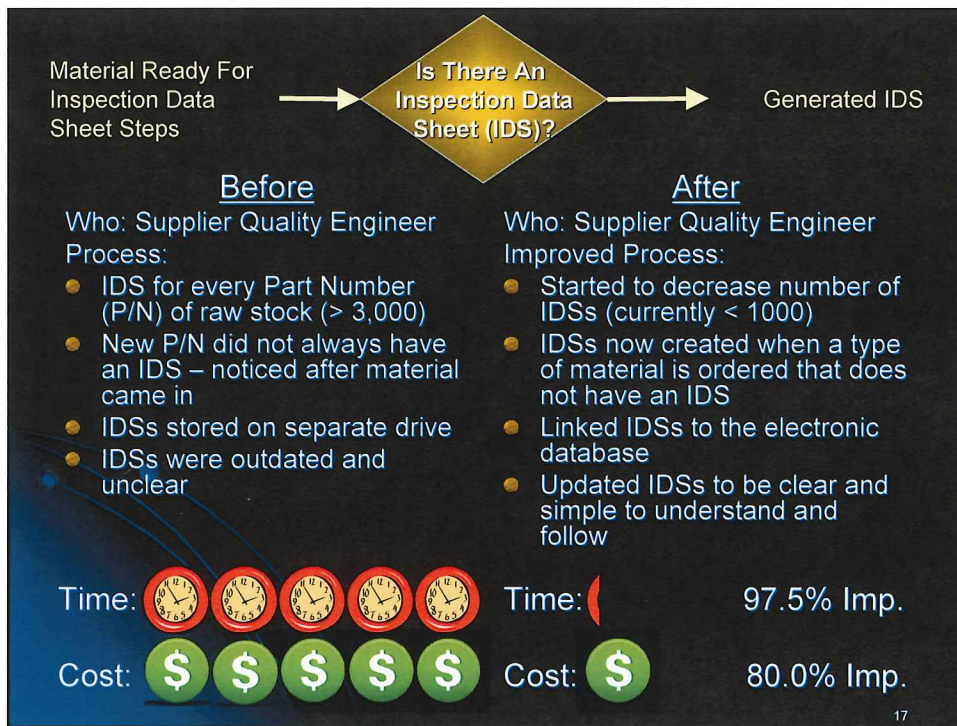


86.6% Imp.

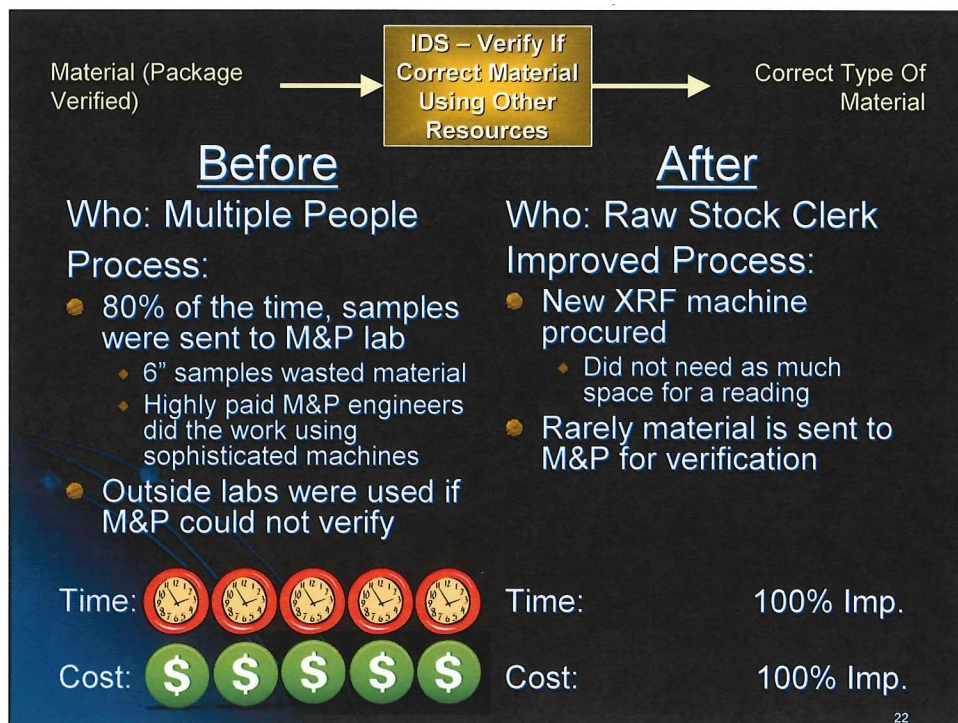
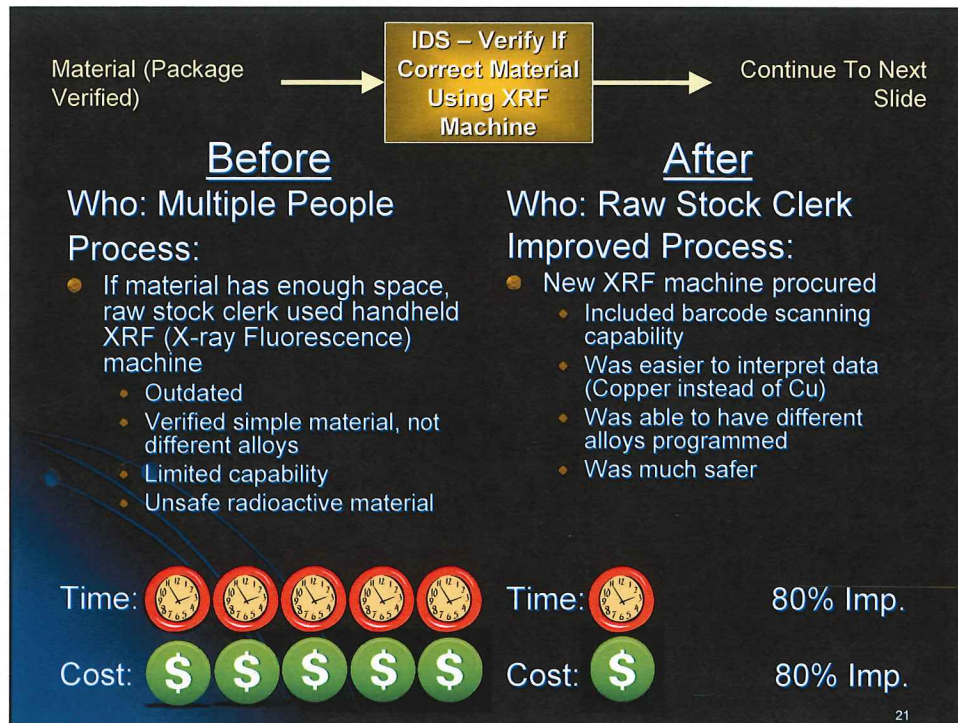
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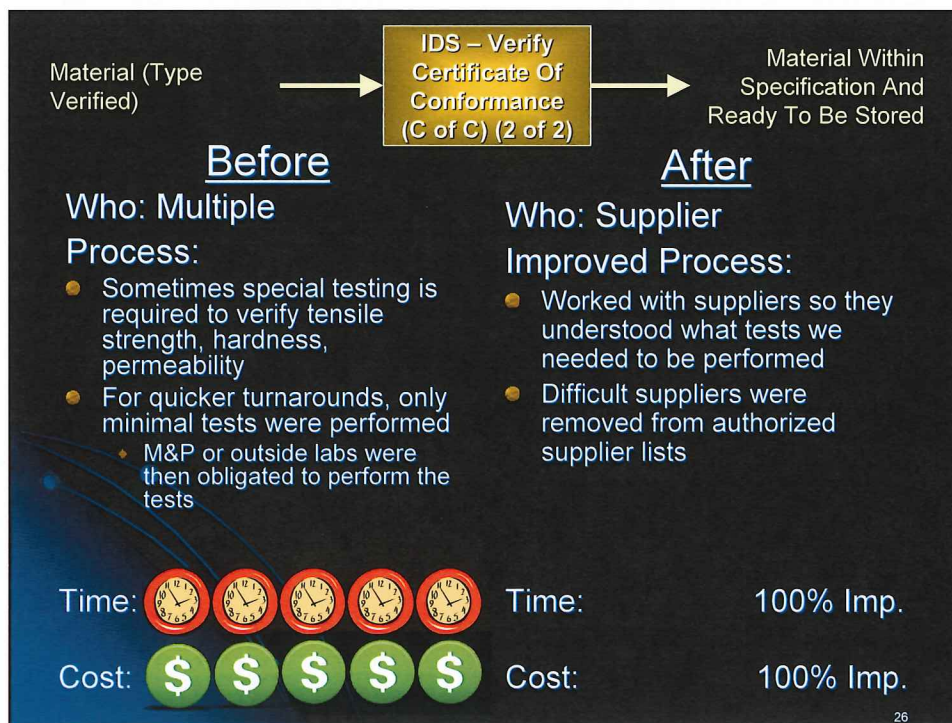
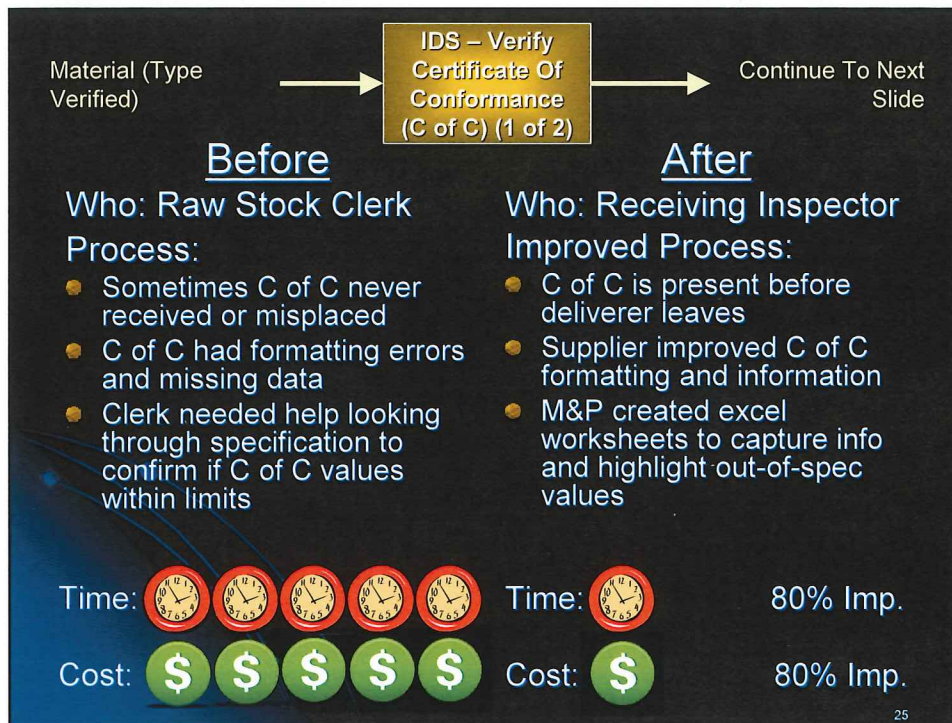




# Equipment Used To Verify Material







Material Within  
Specification And  
Ready To Be Stored

Store Material

Material Stored  
Approved For Use

### Before

Who: Raw Stock Clerk

Process:

- Material was stored randomly in raw stock room
- Usually remained where it was placed by the deliverer
- Room filled to capacity every day

### After

Who: Raw Stock Clerk

Improved Process:

- Organized room using 5S practices
- Started ordering material in shorter lengths or were cut to fit
- Included locations in database so each material had its place
- Labeled shelves numerically

Time:



Time:



80% Imp.

Cost:



Cost:



80% Imp.



# What The Raw Stock Room Currently Looks Like





# What The Raw Stock Room Currently Looks Like





# What The Receiving Shelf Currently Looks Like



Material Stored  
Approved For Use



Retrieve  
Material



Material To  
Product Line

## Before

Who: Raw Stock Clerk

Process:

- No designated area for each material
- Clerk went by memory to find material
- Had to dig through layers of material

Time:



Cost:



## After

Who: Raw Stock Clerk

Improved Process:

- Currently takes a couple of minutes to retrieve
- Product line can make a phone call, and the material is ready for pickup by the time they arrive

Time: |

96.6% Imp.

Cost: |

96.6% Imp.



# UPDATED PROCESS FLOWCHART

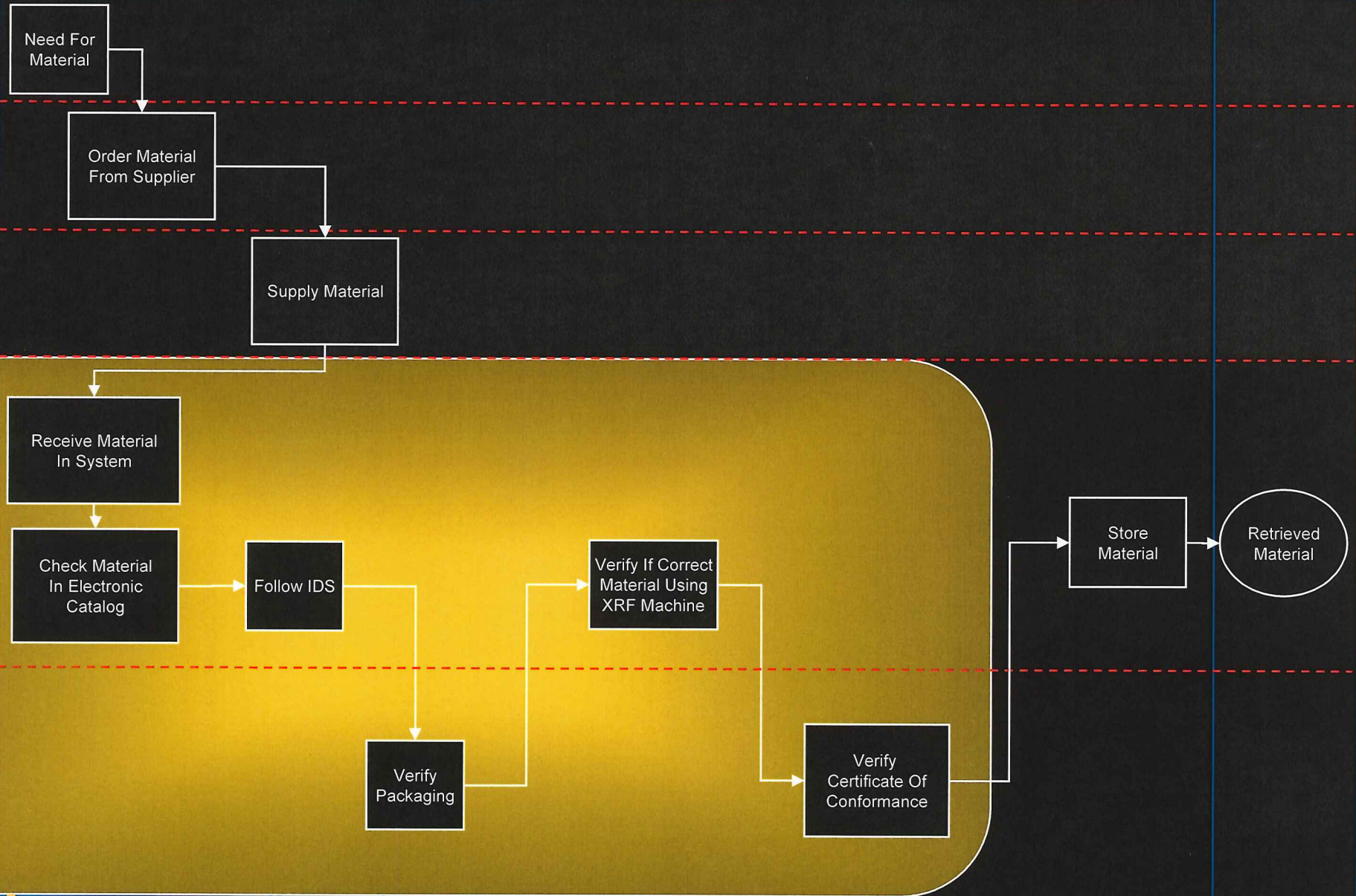
Major Tasks For: Initial Raw Stock Process

**Who**

Responsible  
Organization  
Or Individuals

**Output**

Placed In  
Producers  
Swim-lane



4 weeks, 1 day, 5 hours

## Summary

### Before

- Backlog
  - ◆ 6 months
- Failures during mfg
  - ◆ 1 - 2 / month
- Total time
  - ◆ 62 weeks
- Total cost
  - ◆ \$32,275

Total  Savings: 58 weeks; Total  Savings: \$27,250 per material lot

### After

- Backlog
  - ◆ Zero
- Failures during mfg
  - ◆ Zero
- Total time
  - ◆ 4 weeks, 1D, 5H
- Total cost
  - ◆ \$5,025

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## Follow-on Phase

- Inputting C of C data into worksheets to verify values in specification
  - ◆ M&P group currently doing most of them today
  - ◆ Receiving inspection just starting to do it themselves
- Decreasing number of IDSs in the system
  - ◆ Started to decrease, but goal to have only one or two per material type
- Suppliers can still decrease supply time
  - ◆ Continuing to work with them to understand their problems and help improve turnaround times

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communications  
Electron Technologies, Inc.

# Team Achievement Award

is presented to

# Questions?

as a member of

## Raw Stock Inspection Team

for accomplishments  
of major significance to L-3 ETI

May 5, 2008

A handwritten signature in gold ink, appearing to read 'K. A. Math', is written over a horizontal gold line.

President