

Lean Six Sigma to Improve United Space Alliance Solid Rocket Booster Element Documentation Scanning

Vertical

- Manufacturing
- Pharmaceutical
- Healthcare
- Portfolio
- Logistics
- Financial
- Government**
- Business

Genre

- Case Study
- Project Review**
- White Paper
- Technology Overview

Client

United Space Alliance



Situation

United Space Alliance (USA), a prime contractor to NASA, is responsible for all space shuttle fleet and international space shuttle processing operations. As required by NASA, USA must scan 20 million pages of Solid Rocket Booster documentation and convert them to electronic files. They also must determine the resources and equipment needed and predict completion dates for completing this task based upon varying resource availability.

Objective

Use Lean Six Sigma methods to predict and meet resource needs and completion dates.

Results

The Single Rocket Booster element document scanning project combined Lean Six Sigma Methods with ProModel technology and allowed United Space Alliance to discover the most cost effective way to use their resources, scanners and paper counters. The table below reveals that a combination of six technicians, two scanners and one paper counter proved to be the most efficient use of resources and equipment. A time analysis of this combination revealed the completion time USA had hoped to identify. USA avoided a \$250,000 outlay by requiring fewer resources and scanners than originally estimated, yet still meeting the NASA deadline.

	# Techs	Avg % Util'n	# Scanners	# Counters	# Pages
1	10	35%	1	1	14.0
2	10	43%	2	1	19.0
3	10	46%	3	1	20.9
4	10	43%	2	2	20.0
5	10	57%	3	2	27.5
6	8	40%	1	1	14.0
7	8	52%	2	1	20.0
8	8	56%	3	1	21.0
9	8	52%	2	2	20.2
10	8	59%	3	2	21.8
11	6	59%	1	1	14.0
12	6	67%	2	1	19.5
13	6	70%	3	1	20.6
14	6	67%	2	2	19.5
15	6	72%	3	2	21.4

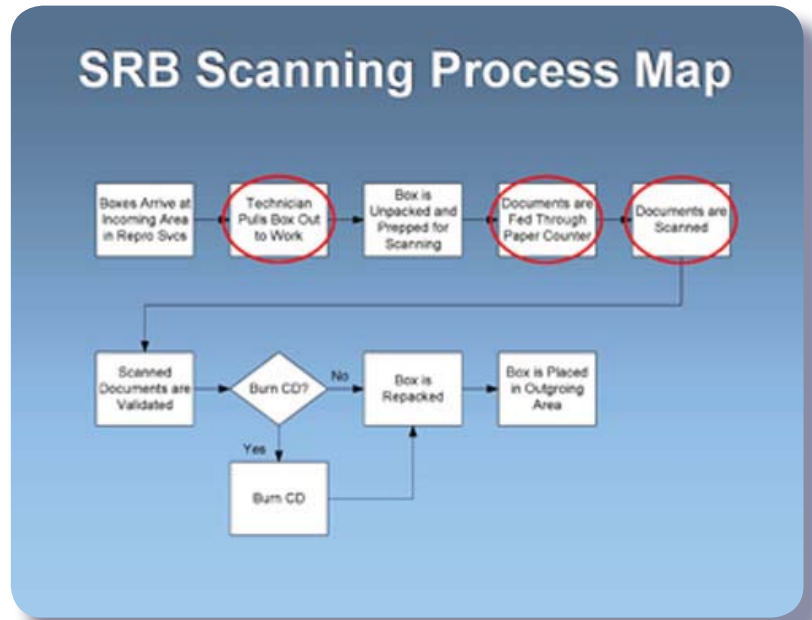
Original Estimates:
 10 technicians,
 3 – 4 scanners, &
 2 – 3 paper counters

Selected Solution:
 6 Technicians,
 2 Scanners, &
 1 Paper Counter

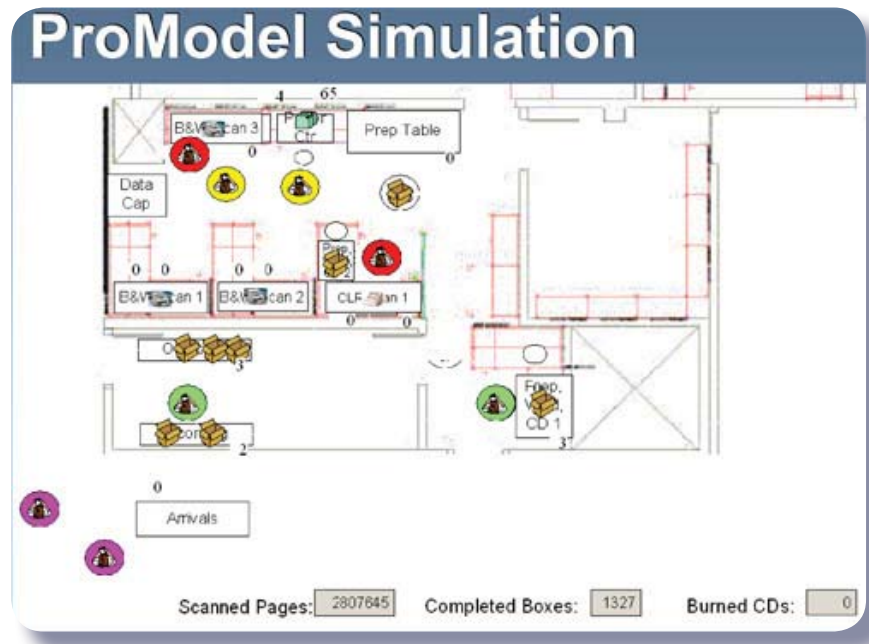
Significant
 Cost Avoidance!

Solution

United Space Alliance's Single Rocket Booster element team developed a solution which used a combination of Lean Six Sigma methods and simulation technology to help Visualize, Analyze, and Optimize the documentation scanning process. ProModel's simulation technology complemented the Lean Six Sigma methodology. The Process Map to the right shows the path of the documents. United Space Alliance manipulated the three areas, circled in red, through experimentation and simulation.



Using ProModel technology, United Space Alliance quickly developed fifteen scenarios with varying numbers of technicians, scanners, and paper counters to find the best scenario that would approach their target while conserving expenses. United Space Alliance's original resource estimates for optimum results were: 10 technicians, 3-4 scanners, and 2 paper counters, which would have cost more. ProModel simulation was able to determine head count and take into consideration variations around vacation, sick, holiday and task time. With the help of ProModel, United Space Alliance was able to make "Better Decisions – Faster."



"ProModel is a vital tool in our Lean Six Sigma Team process improvement efforts. United Space Alliance is using ProModel simulations to help reduce cycle times, predict resource needs, determine work completion dates, justify electronic systems, and improve overall process performance. United Space Alliance has also used simulations in the past to optimize shop layouts, determine production capacity, and identify shift and equipment utilization in a number of key areas."

- Project Leader in the Processing & Manufacturing Group at United Space Alliance located at the Kennedy Space Center in Florida