View metadata, citation and similar papers at core.ac.uk
brought to you by CORE
provided by NASA Technical Reports Server

N93-17325

1992

NASA/ASEE Summer Faculty Fellowship Program

Marshall Space Flight Center
The University of Alabama

Industry Survey of Space System Cost Benefits from New Ways of Doing Business

Prepared By:	Russell L. Rosmait
Academic Rank:	Associate Professor
Institution:	Pittsburg State University, Dept. of Engineering Tech Pittsburg, Kansas 66762
NASA/MSFC:	
Office :	Program Planning Office
Division:	Engineering Cost Group
MSFC Colleague:	Joseph W. Hamaker

Introduction

The cost of designing, building and operating space system hardware has always been expensive. Small quantities of speciality parts escalate engineering design, production and operations cost. Funding cutbacks and shrinking revenues dictate aggressive cost saving programs. NASA's highest priority is providing economical transportation to and from space.

Over the past three decades NASA as seen technological advances that provide greater efficiencies in designing, building and operating of space system hardware. As future programs such as NLS, LUTE and SEI begin, these greater efficiencies and cost savings should be reflected in the cost models. There are several New Ways Of Doing Business (NWODB) which, when fully implemented will reduce space system costs. These philosophies and/or culture changes are integrated in five areas. 1. More Extensive Pre-Phase C/D & E, 2. Multi Year Funding Stability, 3. Improved Quality, Management and Procurement Processes, 4. Advanced Design Methods and 5. Advanced Production Methods. Following is an overview of NWODB and the Cost Quantification Analysis results using an industry survey, one of the four quantification techniques used in the study.

The NWODB Cost Quantification Analysis is a study performed at Marshall Space Flight Center by the Engineering Cost Group, Applied Research Incorporated and Pittsburg State University. This study took place over a period of four months in mid 1992. The purpose of the study was to identify potential NWODB which could lead to improved cost effectiveness within NASA and to quantify potential cost benefits that might accrue if these NWODB were implemented.

NWODB Industrial Survey Cost Savings Summary

A literature survey & historical data analysis, programmatic effects analysis, and parametric cost model analysis were used in the first stages of this study to assist in cost quantification. The final analysis to assist in cost quantification was the use of an industry survey. At the beginning of June 1992 an industry survey was developed using the five NWODB areas. The survey listed the NWODB main topics and gave several examples for each. The survey participants were asked to rate the five general categories of NWODB using a rating scale that ranged from 2.00 (twice as costly) to .25 (25% as costly or 75% savings.) They were asked to rate the five NWODB within the three phases of Development, Production and Operations. In additions these areas were rated twice, first for *structural/mechanical* and second for *Electrical/Electronics*. Thirty people were identified as survey recipients and a survey was sent to them. Of the thirty surveys, nineteen were received and the data tabulated and analyzed. Figure 1 shows the mean scores of combined data for the five areas of NWODB. The aggregate column illustrates cost saving at their highest potential. It should be kept in mind that these maximum costs savings if all NWODB changes are made. Because it is unlikely that any project can fully implement all of the NWODB ideas the team findings reflect the more probable savings range is in the 20% to 30% percent range.

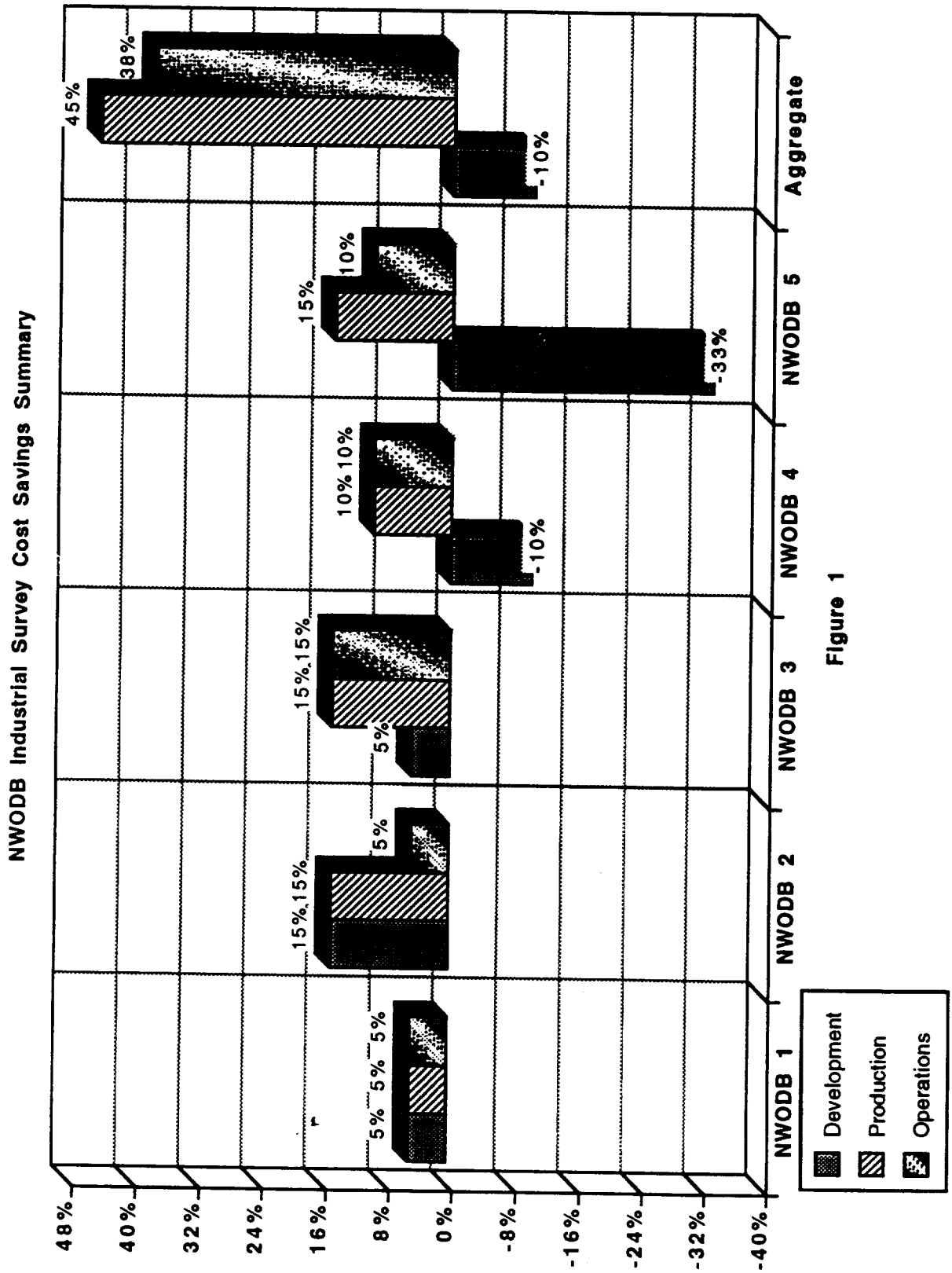
NWODB Industrial Survey Cost Savings Summary
48%
40%
32%
24%
16%
8%
0%
-8%
-16%
-24%
-32%
-40%
45%
38%
-10%
15%
10%
-33%
10%
10%
-10%
15%
15%
5%
15%
15%
5%
5%
5%
5%
NWODB 1
NWODB 2
NWODB 3
NWODB 4
NWODB 5
Aggregate
Development
Production
Operations

Figure 1