



Leadership and Program Planning

SICSA Alumni Talks

Sasakawa International Center for Space Architecture

University of Houston

August 24, 2016

Deborah J. Neubek

Asst. Division Chief, Integration

Human Systems Engineering and Development Division/SF

NASA Johnson Space Center

July 20, 1969 - Apollo 11 Lands On the Moon



Armstrong: "...That's one small step for a man, one giant leap for mankind. "

**1978-82 Bachelor of Science in Architectural Studies
University of Illinois**

**1983-84 Graduate Work toward MArch at
Arizona State University**

ARCHITECTURE AND
KINDRED SUBJECTS
ERECTED IN THE YEAR MCMXXVI

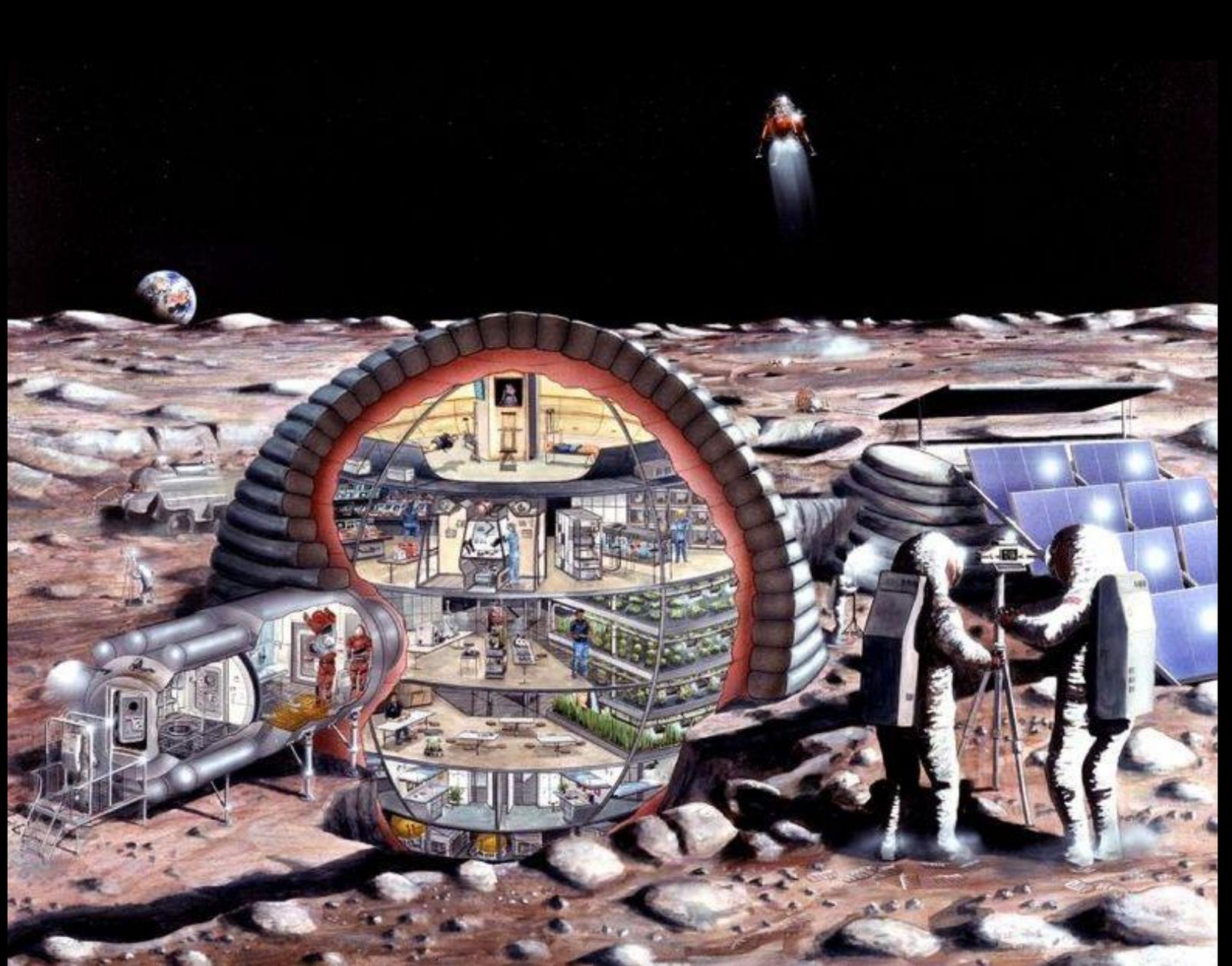
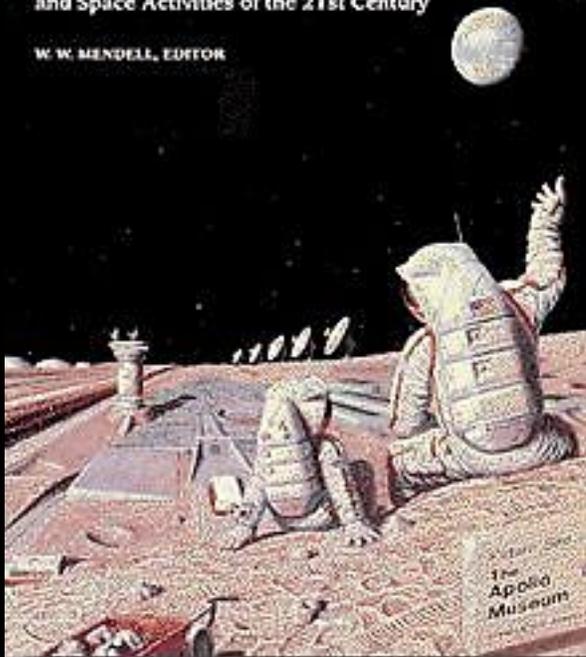
Continuing My Interests

Joined internet "bulletin boards"

Wrote NASA for information

Lunar Bases
and Space Activities of the 21st Century

W. W. MENDELL, EDITOR



1986 Space Academy
Marshall Space Flight Center
Huntsville, AL



1987-1988 Master of Architecture- Space

University of Houston

Now under the College of Engineering as Master of
Science in Space Architecture

SICSAN

Sasakawa International Center for Space Architecture



1988-1990 Research Scientist and Adjunct Associate Professor

Taught Intro to Space and CAD classes

Design Crit

Produced SICSA Outreach



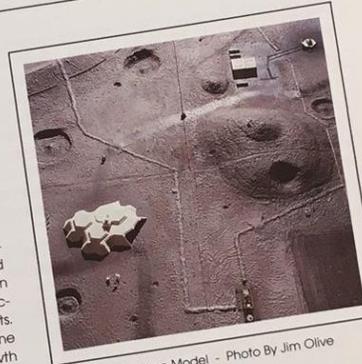
SICSA OUTREACH

Sasakawa International Center for Space Architecture

Vol. 1, No. 2: August, 1987
Special Design Project Issue

Project LEAP

SICSA pursues research and design studies for permanent lunar settlements. One such study, **Project LEAP (Lunar Ecosystem and Architectural Prototype)** produced staged growth concepts for a manned base to support lunar mining and industrial processing operations. The project was undertaken in cooperation with the **Advanced Programs Office** and **Solar System Exploration Division** at the **NASA-Johnson Space Center**.



Lunar Base Model - Photo By Jim Olive

The primary purpose assumed for this lunar development is to produce oxygen for rocket propellant and for Space Station/lunar base consumption. The plan provides for growth from an initial six-person crew occupancy to an advanced facility for thirty occupants. The physical plant is scaled to house more than one hundred people if necessary. Evolutionary growth stages are planned to utilize lunar materials as fully as possible, with self-sufficiency as a goal.

Project LEAP Study Objectives

- Identify evolutionary site development and facility requirements.
- Identify candidate site development and construction options.
- Propose site layout and habitat design/growth concepts.
- Survey requirements to achieve a high level of self-sufficiency.

Initiated in Fall, 1985, Project LEAP involved faculty and students in the College's **Experimental Architecture** graduate program. Technical and financial support were provided by the NASA-Johnson Space Center Advanced Programs Office. The project's main purpose was to create a reference lunar base development and staging plan to support follow-on research and design studies by SICSA and other organizations. The project identified requirements and recommended concepts for peer review and evaluation.

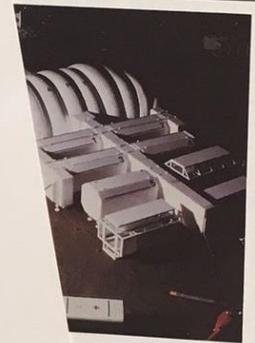
A Publication of the University of Houston's College of Architecture

Vol. 1, No. 8: July-Sep., 1988
Special Design Project Issue

OUTREACH

for Space Architecture

Advanced International Initiative



Nestbed Facility Concept

Program Goals

- **Site Planning**
- **Development Programs**
- **Technologies**
- **Stages**
- **Cost-sharing**
- **Long-term Earth Applications**
- **Programs**
- **Operation**
- **Participation**

College of Architecture

Applying for a Job with an Architecture Degree at NASA

“No degree in Aerospace Engineering?
Facilities is down the hall.”



1990 NASA ASEE Faculty Fellowship

Asked to Develop a "Taxonomy" to Define the US Space Exploration Initiative

NASA Lunar & Mars Exploration Program Office

*Lewis -
Level 3 shall be add resp. for
vertical integration for their tech area
Ward like to see this support & user
Pop & cycle.
Dec- Feb put together
to plan early opp.
Needs coming up w/ km
people which are not independent
quality or energy not needed.*

A PLANNING PROCESS FOR THE SEI TECHNICAL PROGRAM

Joyce Carpenter
Deborah Neubek
Eileen Stansbery, PhD
October 19, 1990

JSC/Series 1/Carpenter/DAI-v4 1018/92

NASA Lunar & Mars Exploration Program Office

ARCHITECTURE DEFINITION

```

    graph TD
      NSG([National Space Goals]) --> PTDev[Program Theme Development]
      PC([Political Constraints]) --> PTDev
      EP([Emphasis and Priorities]) --> PTDev
      PTDev --> FS[Functional Strategies]
      FS --> IS[Implementation Strategies]
      IS --> PP[Program Plan]
      PP --> EPA[Evolved Programmatic Architecture]
      AB([Authorized Budget]) --> FS
      MSDev[Management Strategy Development] --> IS
      MSDev --> AB
      MSDev --> EPA
  
```

JSC/Series3/Code/Arch. Evolution Strat. (Revised by DJN) 95/90

NASA Lunar & Mars Exploration Program Office

NASA Lunar & Mars Exploration Program Office

DECISIONS ARE ITERATIVE

```

    graph TD
      NN([National Needs, Policies & Visions]) --> T1[Tier 1: Objective Option Matrix]
      T1 --> T2[Tier 2: Functional Strategy Network]
      T2 --> T3[Tier 3: Implementation Strategy Analysis]
      T3 --> PP([Program Plan])
      PP --> NN
      T3 --> T2
      T2 --> T1
      T1 --> NN
  
```

LMRPO/Dec. Anal. Final/Carpenter, Neubek, Stansbery/9/17/90 /Version 3.2

1990-1993 The Early Days in “The Swamp”

Lunar & Mars Exploration Program Office

Senior Engineer, Lockheed Martin

NASA Requirements Lead



1993-1996

Adding Hardware to My Resume

International Space Station

Transition from Freedom to ISS

ISS Vehicle Integration Manager

Systems Engineering & Integration Manager

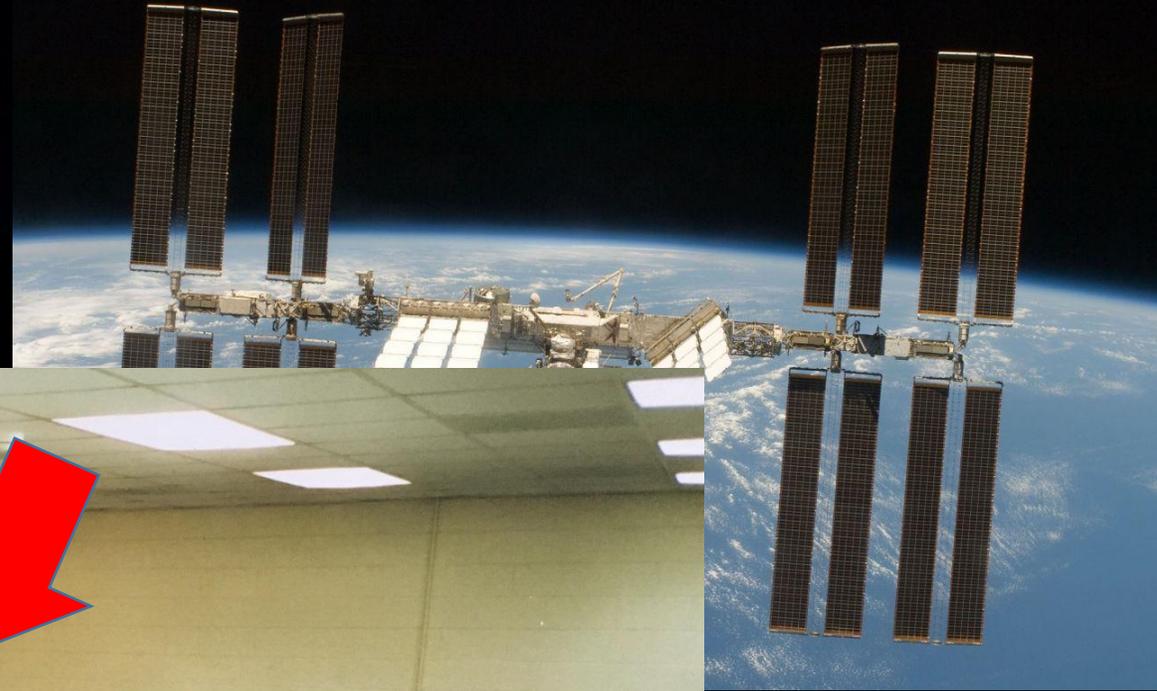


“The Bunker” Negotiating a \$6B Contract

Lead, Program Integration

Learning from the best

12-15 hour days x 7
days/week



1996-2005

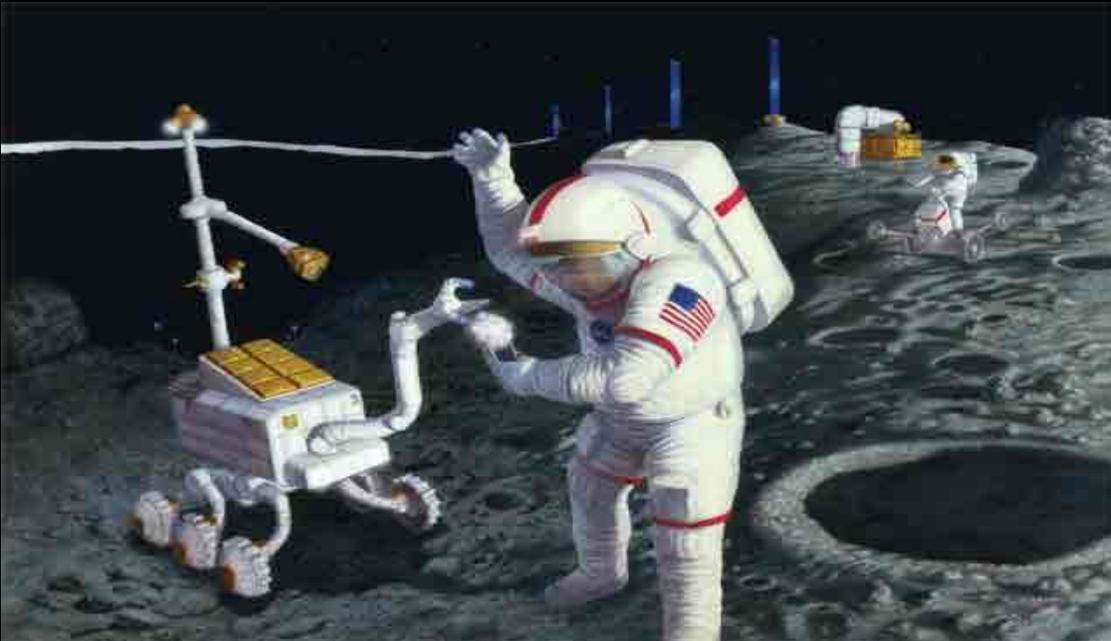
Division staff

Modeling and Simulation lead

Exploration Analysis Branch Deputy then Manager



Images by Pat Rawlings © NASA



2005 – 2010 Constellation

Phone call from the
Administrator

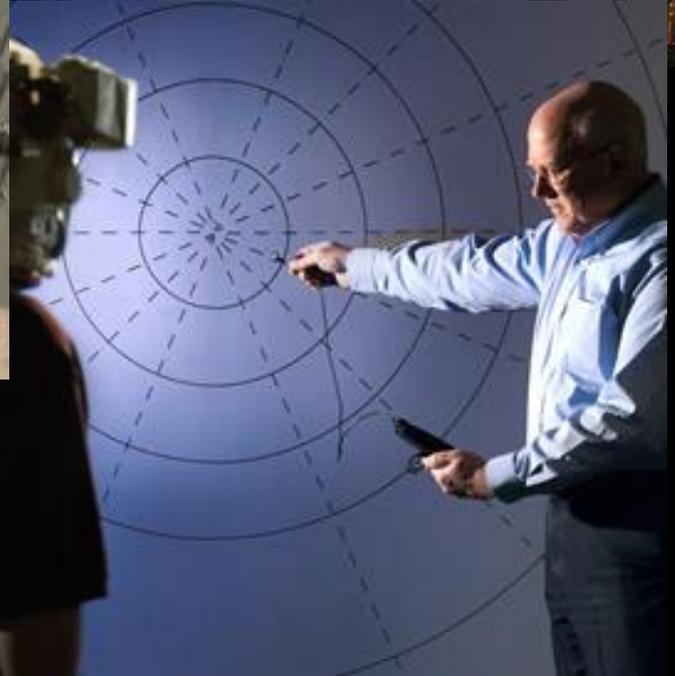
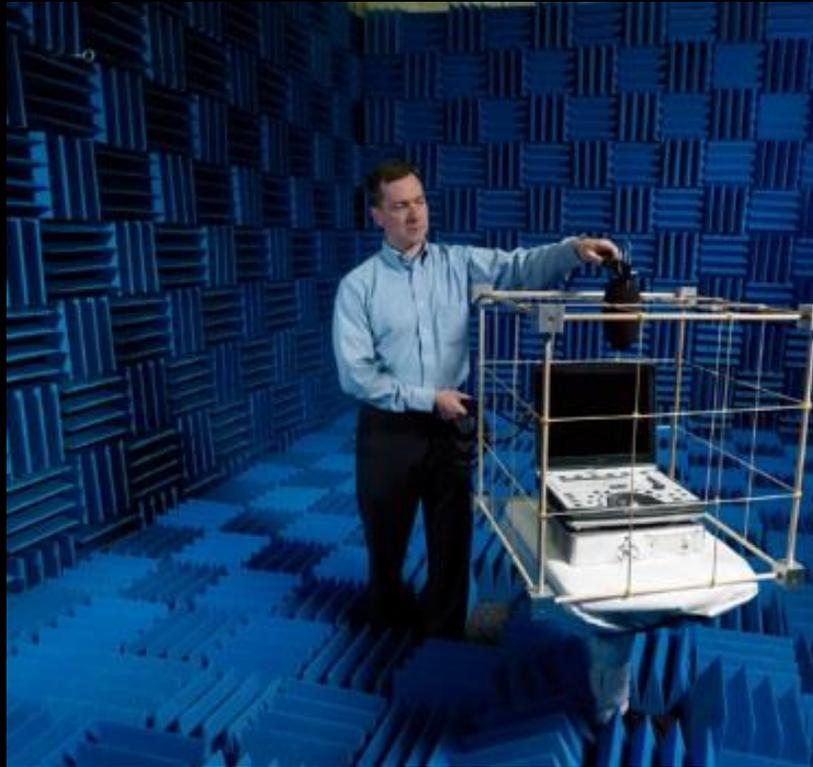
Chief of Staff, Technical



CONSTELLATION

2011-Present

Assistant Chief, Human Systems Engineering and Development Division



2011-Present

Assistant Chief, Human Systems Engineering and Development Division

Commercial Crew Program

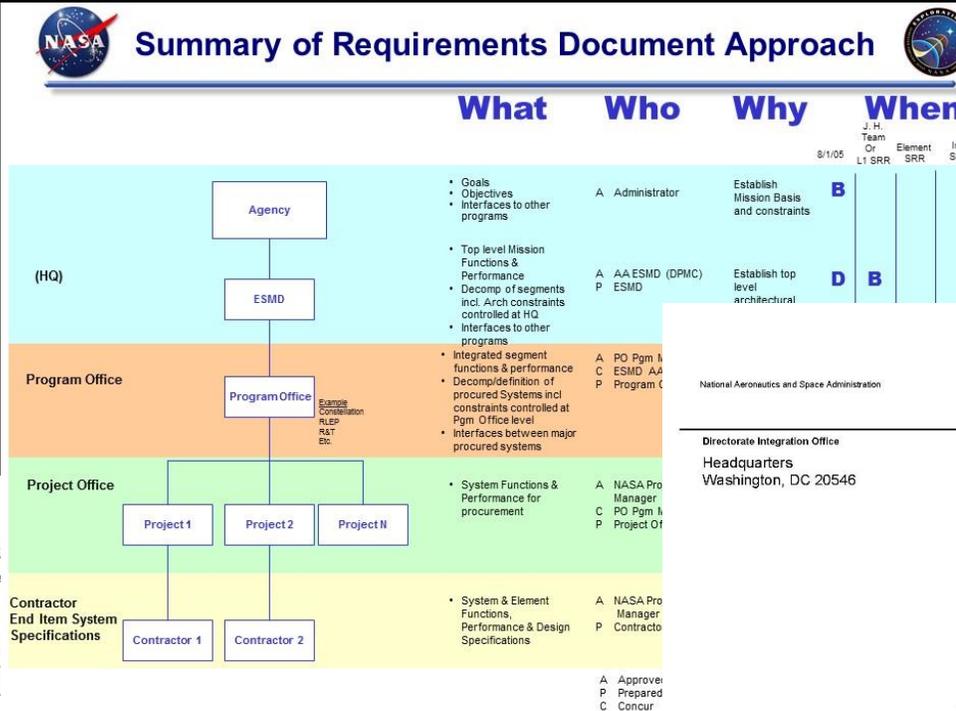


National Aeronautics and Space Administration



First Steps in Defining a Program or Project

Establish Goals, Objectives & Constraints



Lunar & Mars Exploration Program Q

DEFINING THE PROGRAM GOALS

Levels covered at implications of this

- The primary program goal answers the question: WHAT will we do when we get there?
- The primary program focus is a combination of:
 - Science
 - Exploration
 - Resource Exploitation

Note: Program goals may also address administrative issues. The SEI Decision Analysis Hierarchy includes only technical goals at this time.

National Aeronautics and Space Administration

Directorate Integration Office
Headquarters
Washington, DC 20546

Exploration Architecture Requirements Document (EARD)

ESMD-EARD-08.07 Rev.D

CHECK THE MASTER LIST - VERIFY THAT THIS IS THE CORRECT VERSION BEFORE USE