



President's Commission On Moon, Mars And Beyond

24-25 MAR 04

**Mr. Gary Payton
Deputy For Advanced Systems
Missile Defense Agency**



MISSION



- **Defend The United States, Deployed Forces, Allies And Friends**
- **Employ A Ballistic Missile Defense System That Layers Defenses To Intercept Missiles In All Phases Of Their Flight Against All Ranges Of Threat**



ELEMENTS



- **Collection Of Several Disparate Existing And Future Programs Funded And Managed By Army, Air Force, And Navy**
- **Now, Elements Brought Together In One Major Program With A Single Mission, Integrated Schedule, Prioritized Funding, And Closely Coordinated Performance Objectives**



ELEMENTS





HISTORICAL APPROACHES



Programs	Definition	System Engineering	System Integration	Element Development
Unprecedented				
Manhattan Project	Government Responsible	Government Responsible	Government Responsible	Government Responsible
ICBM, Polaris	Government Responsible	Government Responsible / Industry Support To Government / Element Developer	Government Responsible / Industry Support To Government / Element Developer	Industry Responsible
Mercury , Safeguard, Apollo, NRO (Early)	Government Responsible	Government Responsible / Industry Support To Government / Element Developer	Government Responsible / Industry Support To Government / Element Developer	Industry Responsible
Shuttle	Government Responsible	Government Responsible / Industry Support To Government / Element Developer	Industry Responsible	Industry Responsible
U-2 / SR-71	Government Responsible / Industry Support To Government / Element Developer	Industry Responsible	Industry Responsible	Industry Responsible
SDI	Government Responsible	Independent Industry Responsible (Not Element Developer)	Independent Industry Responsible (Not Element Developer)	Industry Responsible
Precedented				
SLBM-Trident	Government Responsible	Government Responsible / Industry Support To Government / Element Developer	Government Responsible / Industry Support To Government / Element Developer	Industry Responsible
NRO, C-17	Government Responsible	Industry Responsible	Industry Responsible	Industry Responsible
JSF	Government Responsible / Industry Support To Government / Element Developer	Industry Responsible	Industry Responsible	Industry Responsible

Key

- Government Responsible
- Independent Industry Responsible (Not Element Developer)
- Industry Responsible
- Industry Support To Government / Element Developer
- Industry Support To The Government Responsible



SYSTEMS ENGINEERING



- **Thorough Trades Analyses Between Elements**
 - **Accurate Engineering Models**
 - **Uniform Metrics**
 - **Cost Models**
 - **Leads To Budget Decisions And Programatic Direction**



SYSTEMS ENGINEERING



- **Ruthless Configuration Control**
 - Performance
 - Contracts
 - Budget

- **Rigorous Interface Control**
 - Hardware
 - Software



BMD EVOLUTIONARY DEVELOPMENT



CY 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

1. Plan

2. Execute

3. Adjust

Feedback

Evolutionary Spiral Development

Block 2004

Block 2006

Block 2008

Block 2010

Block 2012

Block 2014

- Add New Capability Based On Technical Maturity
- Upgrade Existing Capability – Insert Technology
- Evolve Requirements
- Procure Additional Force – Enhance Capability
- Extend To Allies And Friends When Appropriate



SPIRAL DEVELOPMENT



- **Realistic Demonstrations**
- **Proven In Representative Test Environment (Stretching From California To Alaska To The Kwajalein Atoll in the Marshall Islands)**
- **Build – Test – Learn**