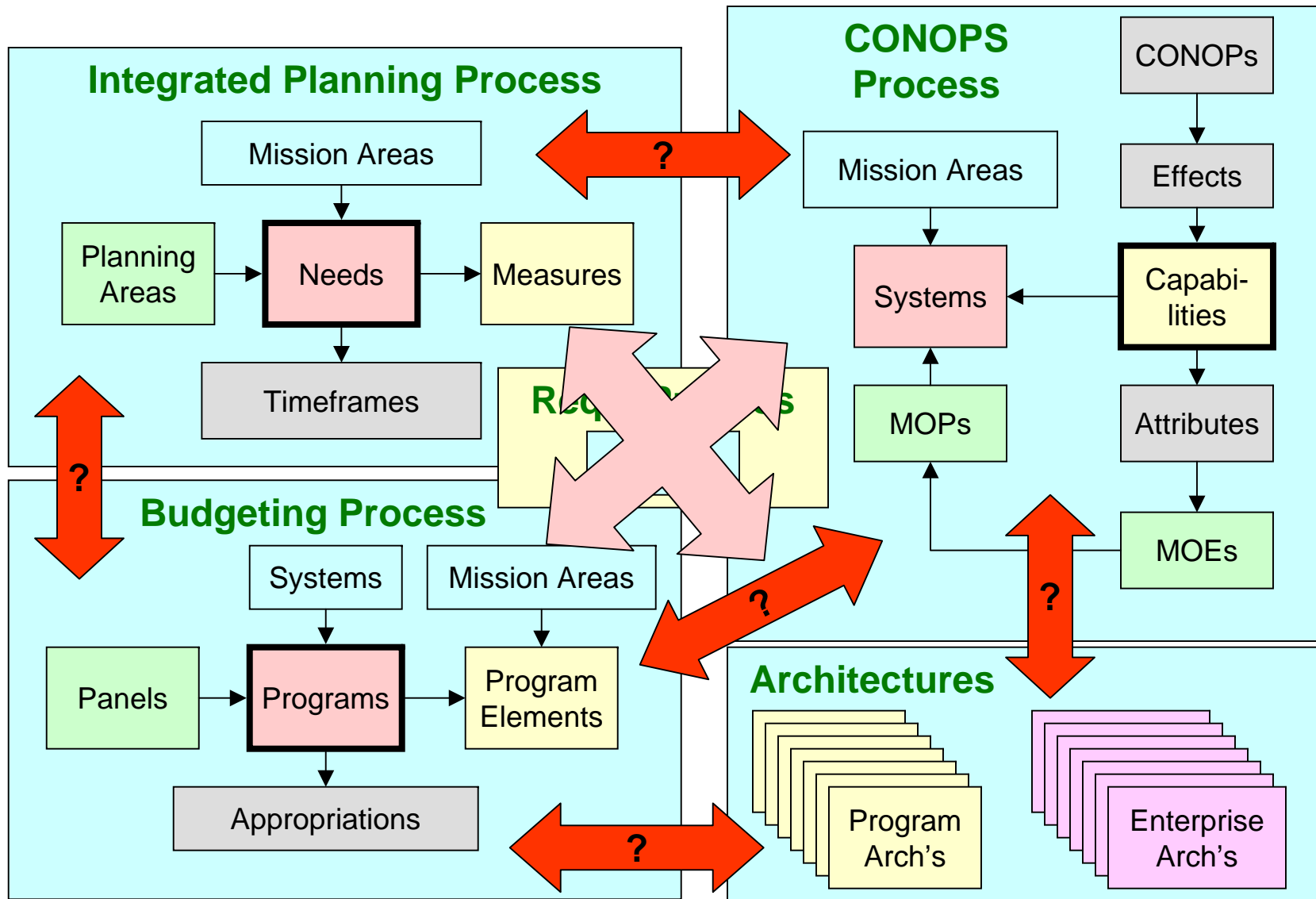


*On the Development of a  
Capability Integration Framework to  
Facilitate Cross-Program Integration  
for Air Force Space Command*

*James Conklin*



# Scope of Problem





# *Objective and Approach*

---

## Objective

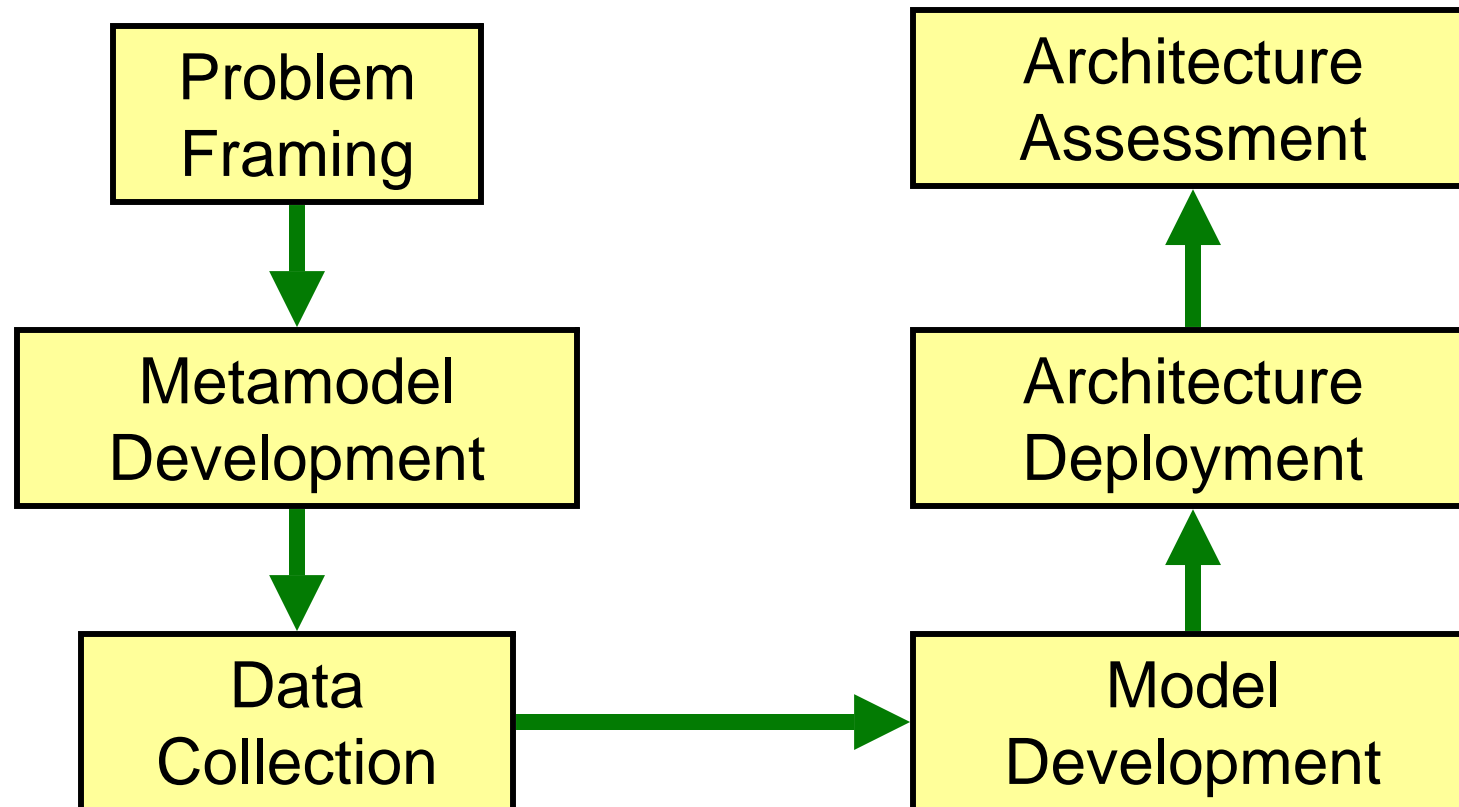
- **Provide foundation for compliance with Enterprise Architecture directives and guidelines**
- **Improve the understanding of how Programs relate to various overlapping Architectures**

## Approach

- **Develop a “Capability Integration Framework” using Metis that maps Programs to:**
  - **AF- level CONOPS**
  - **Enterprise Architecture Elements**
  - **Mission Needs & Mission Tasks**
  - **Enterprise Capabilities & Effects**
  - **Systems & Solutions**



# *Six-Step Process for Developing an Architectural Model*





# *Step 1 – Problem Framing*

---

- **Business Analysis**
  - Identify Purpose of the Architecture
  - Identify “Business Questions” to be addressed by the Architecture
  - Establish business Priorities
- **Conceptual Framework**
  - Identify relevant business “Objects”
  - Identify “Facts” about these Objects
  - Define how Questions can be answered using these “Facts”
  - Develop Conceptual Framework for the Architecture



## *Phase 1 Business Questions*

---

### **High Priority**

1. How much money is being spent by which programs to develop capabilities in support of CSAF CONOPS?
  2. In which larger architectures must a program architecture must participate?
  3. What is the relationship between programs and the mission needs they support?
- 

### **Medium Priority**

4. Which systems are a part of which architectures?
  5. Do the Integrated Planning Process Tasks cover all of the CSAF CONOPS Tasks assigned to AF Space Command?
- 

### **Low Priority**

6. Which organizations are responsible for which architectures?
7. How do the Integrated Planning Process Needs map to higher level guidance such as a vision statement?



## *Future Questions (Phase 2+)*

---

- 1. What is the thread or “kill chain” that supports a capability and which systems are part of this thread?**
- 2. What is the relationship between future concepts and the mission needs they support?**
- 3. What is the relationship between existing systems and the mission needs they support?**
- 4. Which programs map to which S&T projects?**



## *Note on Model Snapshots*

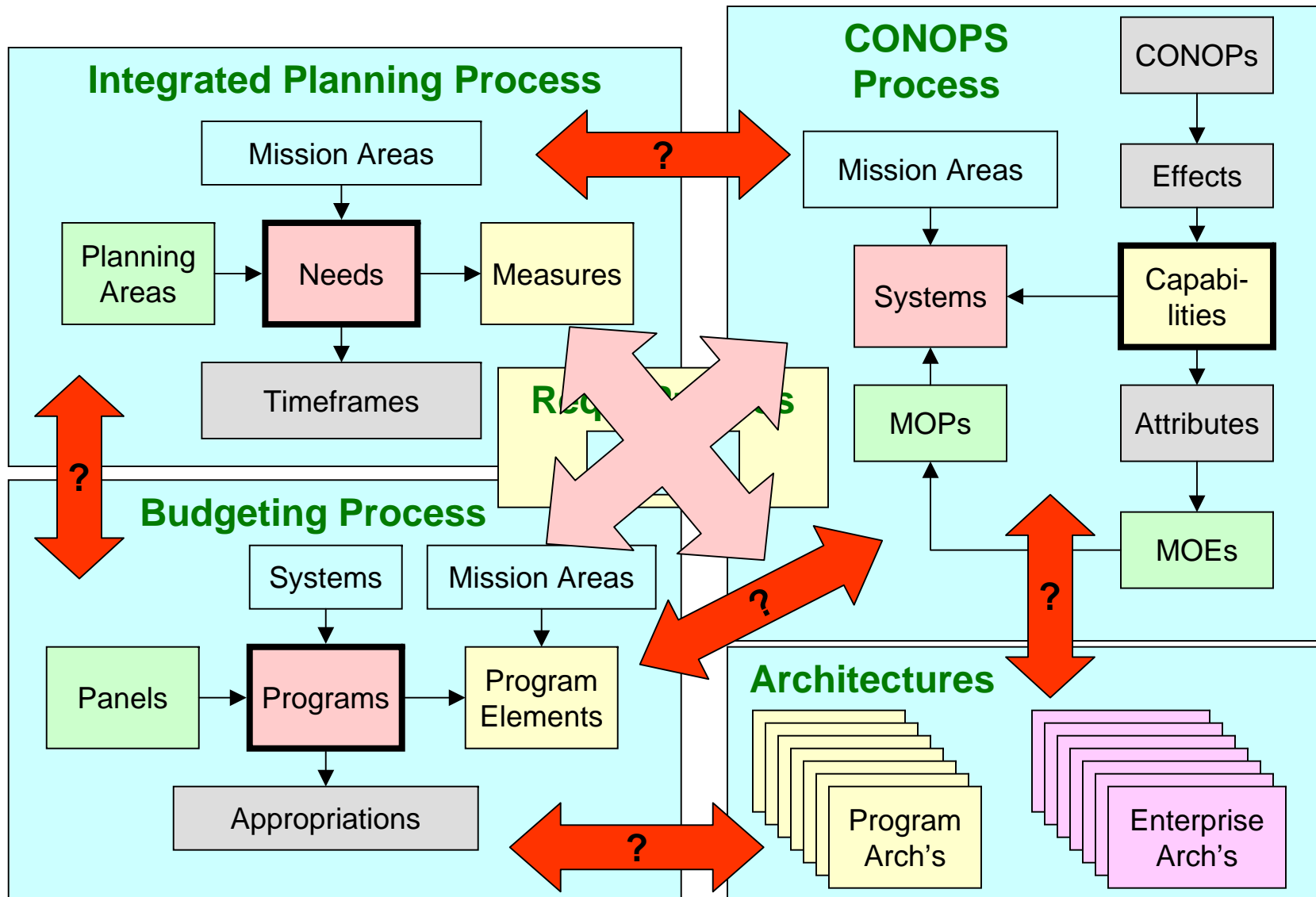
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- **All model pictures in this presentation are of the CIF Mockup**
- **The mockup is illustrative of the CIF framework but contains fabricated data.**



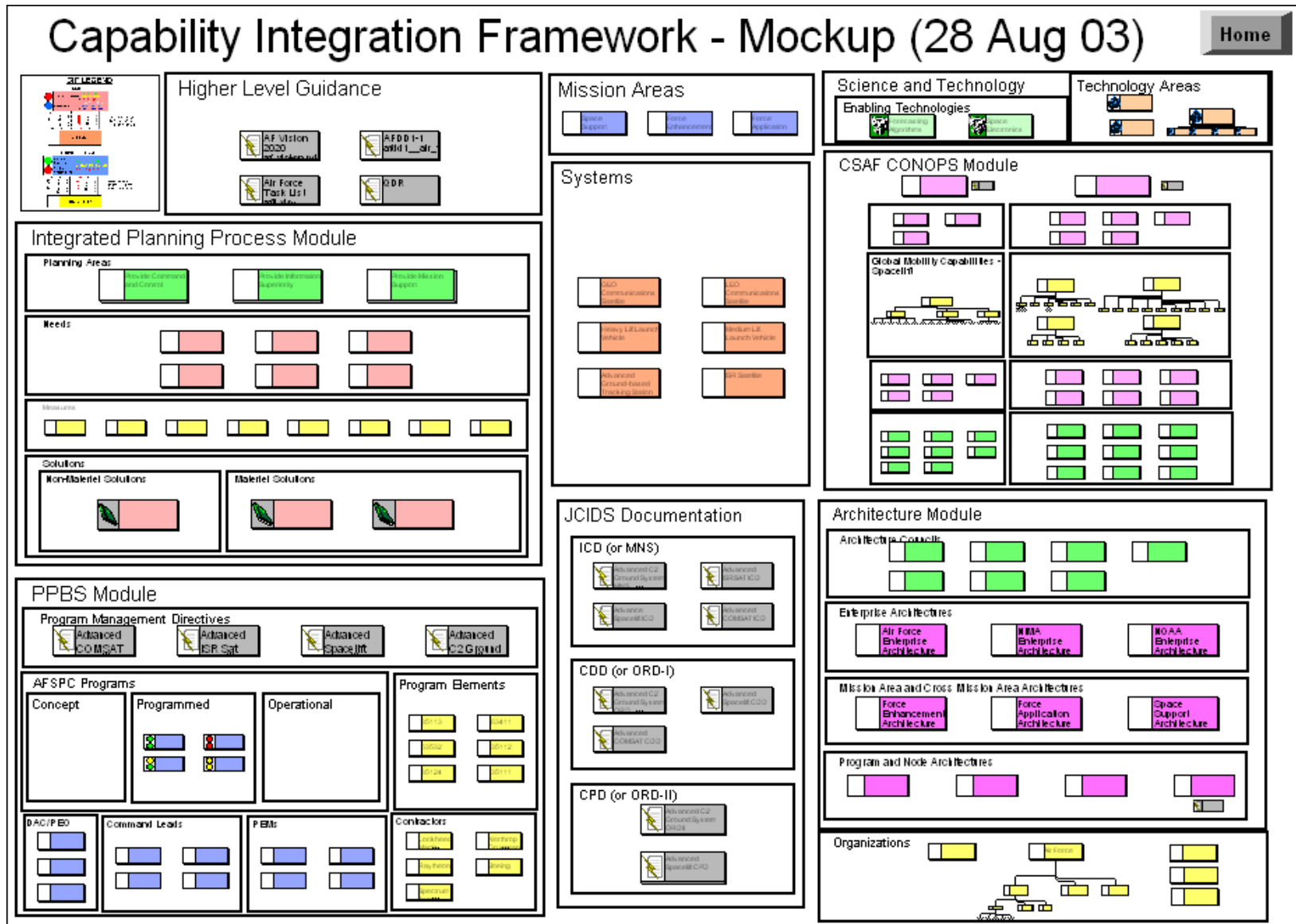


# Scope of Problem





# CIF Mockup – Main Model View



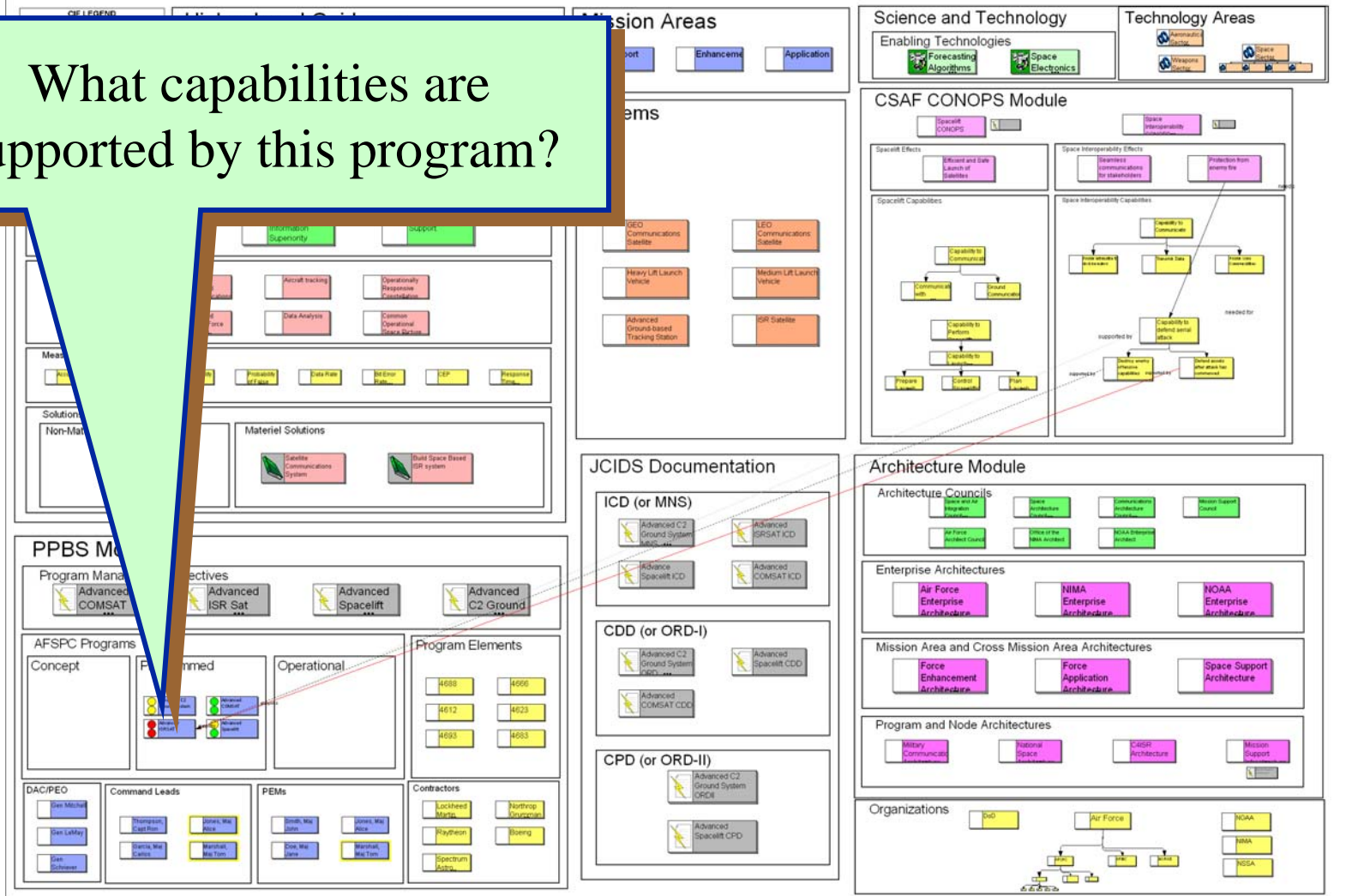


# Example Query

## Capability Integration Framework - Mockup (20 Jan 04)

Home

What capabilities are supported by this program?

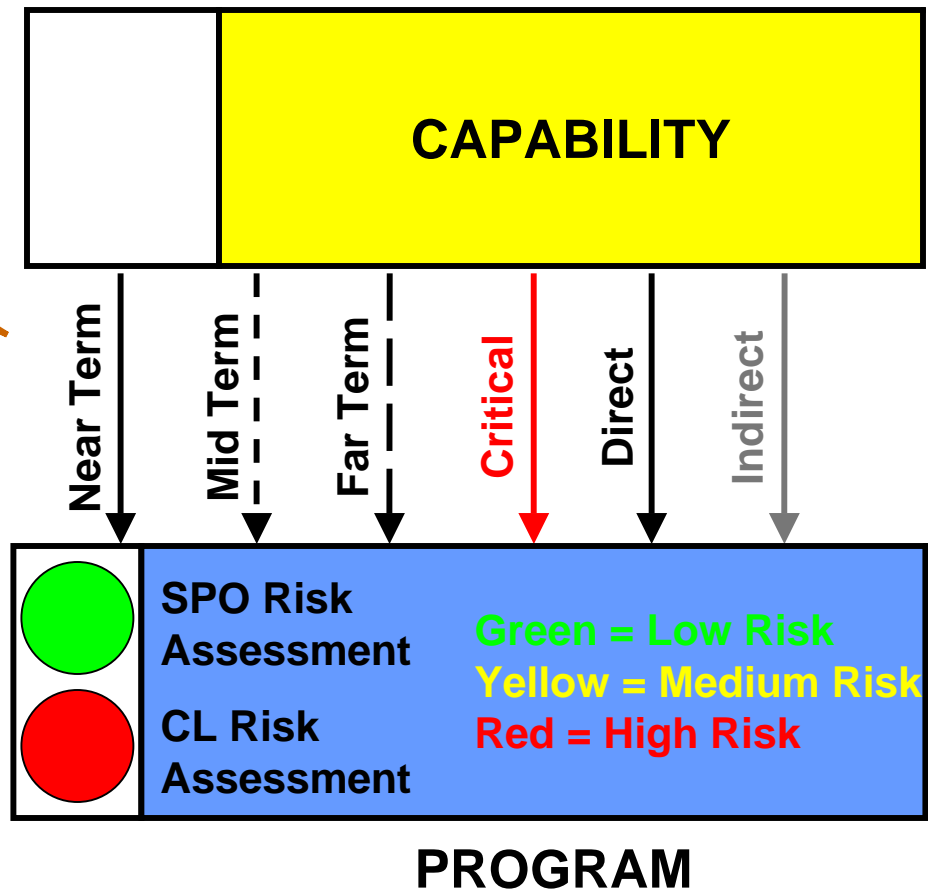




# Programs Supporting Required Capabilities

Six "Flavors" of Support

Near Term = +0 yrs  
Mid Term = +6 yrs  
Far Term = +14 yrs

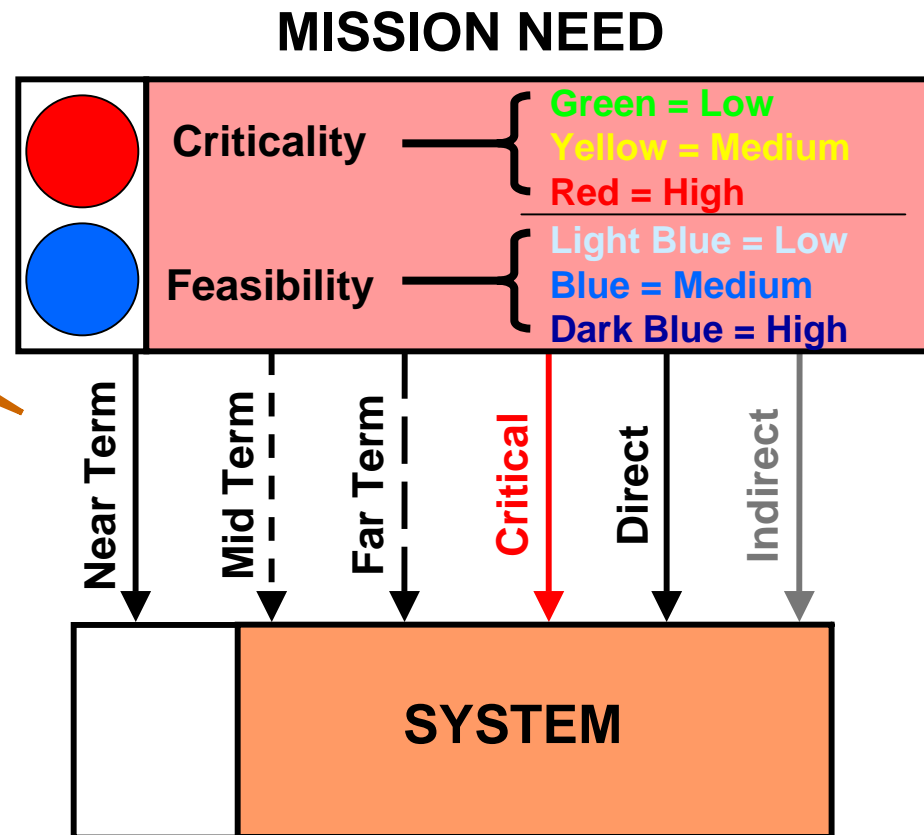




# Systems Supporting Mission Needs

Six “Flavors”  
of Support

Near Term = +0 yrs  
Mid Term = +6 yrs  
Far Term = +14 yrs





# Queries Available for a Mission Area Object

Metis 3.4.1 Model Browser - mockupwithviews.kmv

File View Tools Window Help

## Capability Integration Framework - Mockup (20 Jan 04)

Home

**Queries available for each Mission Area**

- Find all associated objects
- Which Needs map to a Mission Area?
- Which Programs are involved in this Mission Area?
- Which Systems meet far term needs?
- Which Systems meet mid term needs?
- Which Systems meet near term needs?
- Find Aggregate
- Find Neighbors of Aggregate
- Find All of Type
- Find Neighbors
- Find Parts
- Find Owners
- Find Origins
- Find Targets



# Query Results for a Financial Query

**PPBS Module**

**Program Management Directives**

- Advanced COMSAT
- Advanced ISR Sat
- Advanced Spacelift
- Advanced C2 Ground

**AFSPC Programs**

**Concept**

**Programmed**

- Advanced C2 Ground System
- Advanced COMSAT
- Advanced ISRSAT
- Advanced Spacelift

**Operational**

**Program Elements**

- 4688
- 4612
- 4693

**DAC/PEO**

- Gen Mitchell
- Gen LeMay
- Gen Schriever

**Command Leads**

- Thompson, Capt Ron
- Garcia, Maj Carlos
- Jones, Maj Alice
- Marshall, Maj Tom
- Doe, Maj Jane

**Contractors**

- Lockheed Martin

**Context Menu (Right-click on Advanced Spacelift):**

- Reports
- Properties...
- Property List
- Cut & Copy
- Open
- Full Screen
- Select Mode
- Relationships
- Zoom
- Execute Method**
  - Open Excel File
  - What is total cost to complete these programs?
  - What is total cost by fiscal year for these programs?**
  - What is total cost by appropriation code for these programs?
  - What are YTD obligations for these programs?
  - What are Remaining Funds for these programs?
  - Load Excel Data for Current
  - Load Excel Data for Selected
  - Load Excel Data for All
- Find Instances

**VBScript**

Number of Programs selected : 2

Total cost for Prior Years : 21

Total cost for FY03 : 103

Total cost for FY04 : 173

Total cost for FY05 : 165

Total cost for FY06 : 163

Total cost for FY07 : 122

Total cost for FY08 : 145

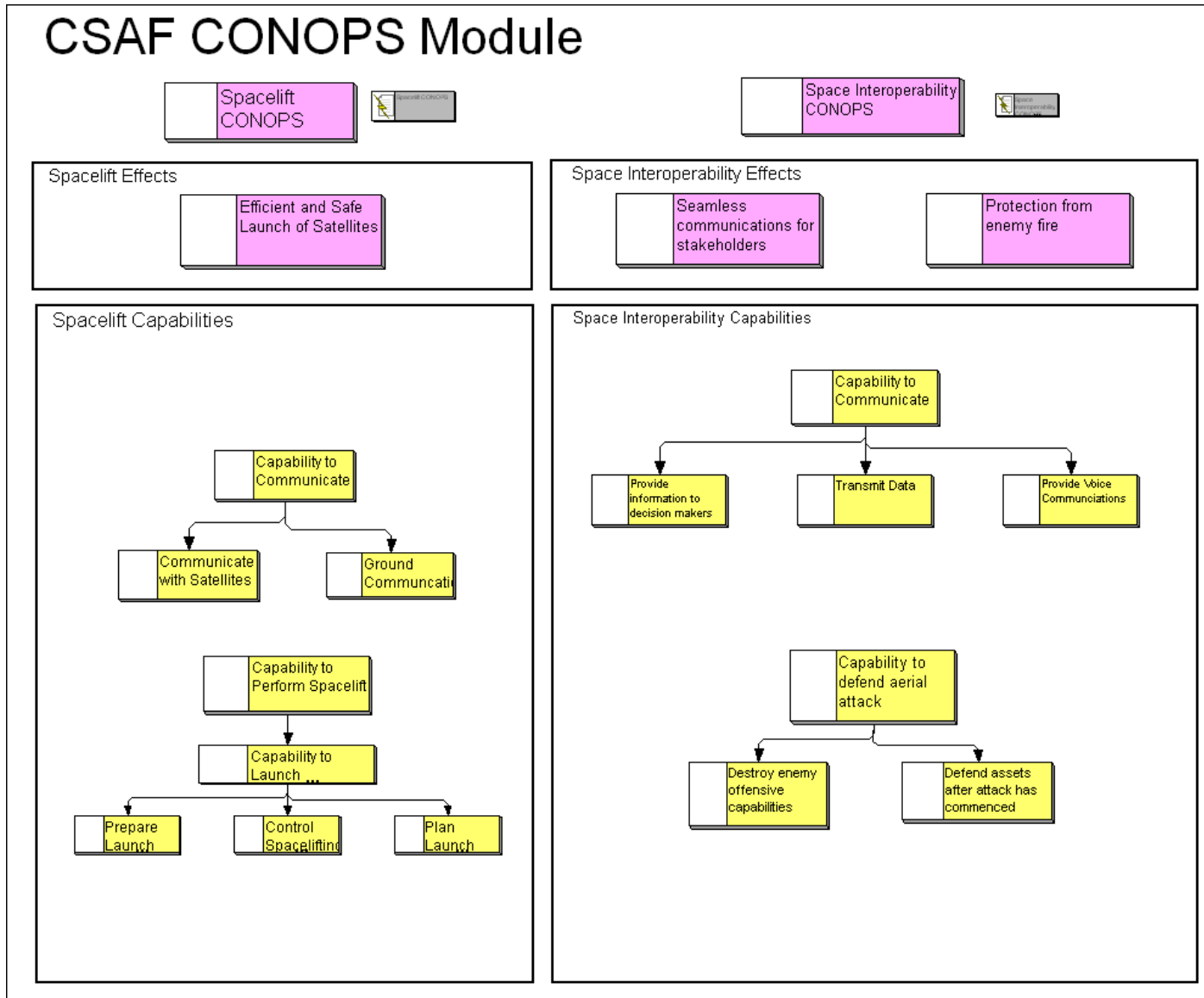
Total cost for FY09 : 0

Total cost for To Comp : 0

OK



# Capabilities & Effects







# Program Support of Capabilities

What Programs are involved with supporting a CONOPS Capability?

What programs implement the Capability to Communicate?

Space Interoperability Capabilities

Capability to Communicate

Provide Information to decision makers

Transmit Data

Provide Voice Communications

supported by

supported by

supported by

supported by

AFSPC Programs

Programmed

Advanced COMBAT

Advanced C2 Ground System



# Model Development Schedule

Task Name	Jun '03				Jul '03				Aug '03				Sep '03				Oct '03				Nov '03				Dec '03					
	1	8	15	22	29	6	13	20	27	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21
Scope Definition	█																													
Business Analysis	█																													
Conceptual Framework	█																													
Metamodel Development	█																													
Data Collection	█				█				█																					
Unclassified Model Prototype					█																									
Classified Model									█																					
Model Validation													█																	
Model Update																	█													
Architecture Deployment																					█									
Architecture Assessment																					█									



## *Summary*

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**The Capabilities Integration Framework will provide Program Managers a basis for ensuring that capabilities have clear alignment with and accountability to enterprise architectures**



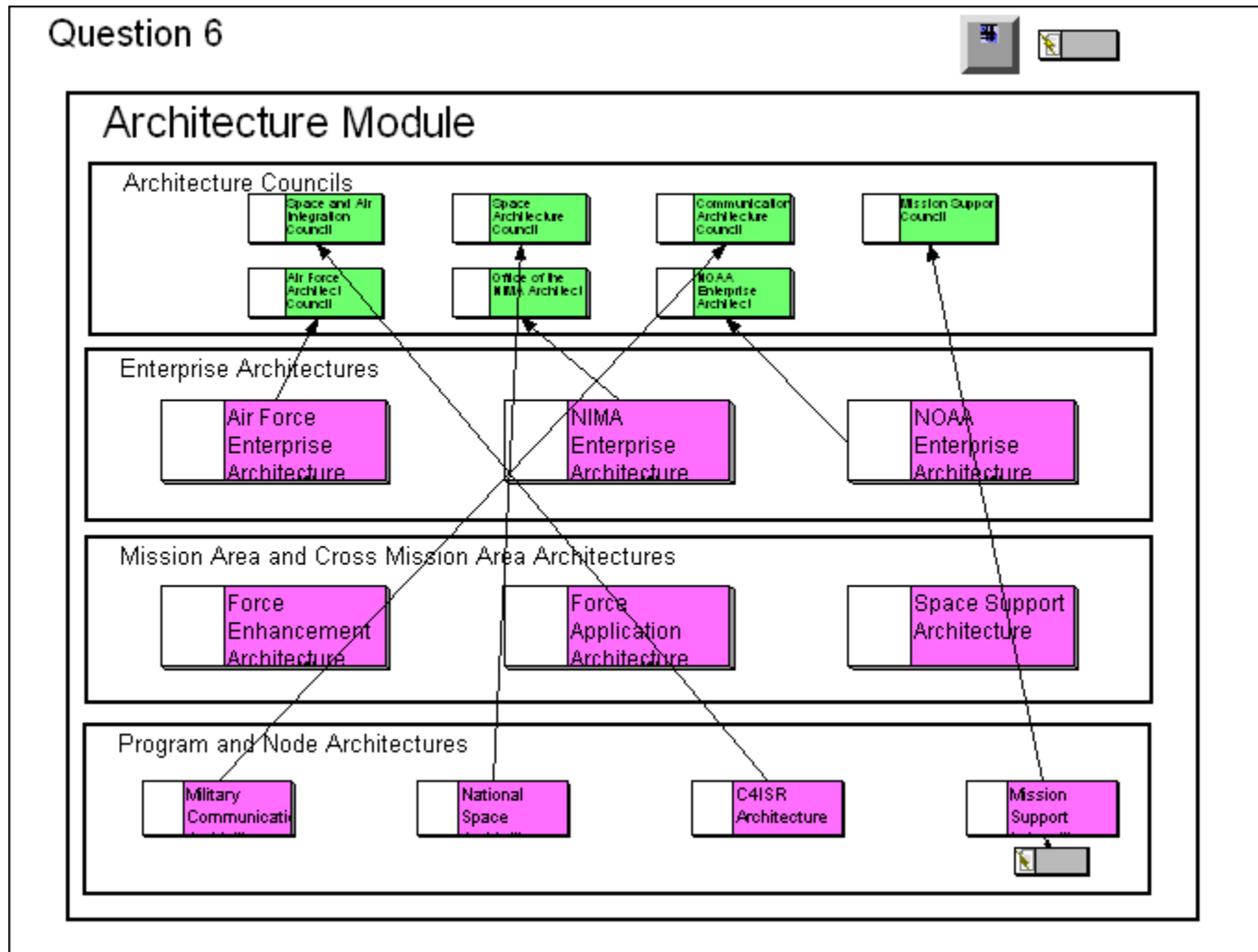
## *CIF Module Screenshots*

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- **Screenshots of modules showing objects and relationships**



## *CIF Architecture Module with relationships visible*

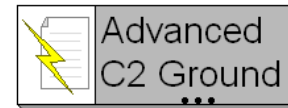




# CIF PPBE Module

## PPBS Module

### Program Management Directives

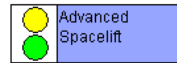
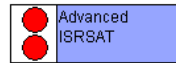
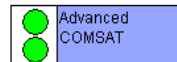
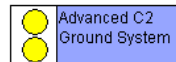


### AFSPC Programs

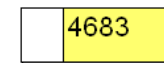
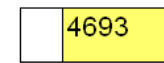
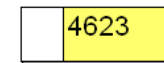
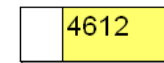
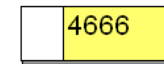
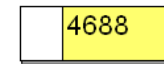
#### Concept

#### Programmed

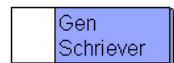
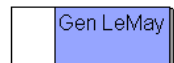
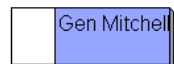
#### Operational



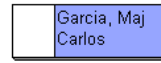
### Program Elements



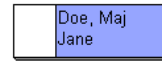
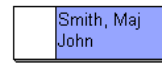
### DAC/PEO



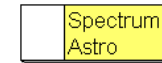
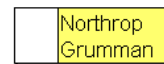
### Command Leads



### PEMs



### Contractors

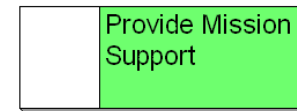
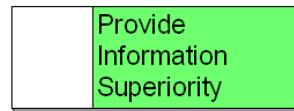
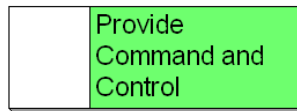




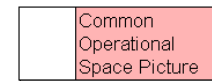
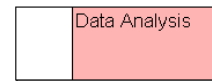
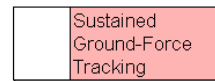
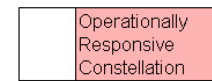
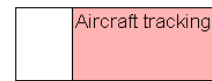
# CIF Integrated Planning Process Module

## Integrated Planning Process Module

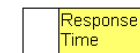
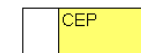
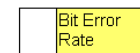
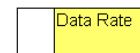
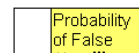
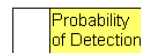
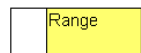
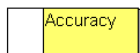
### Planning Areas



### Needs

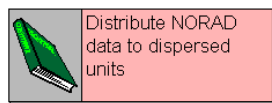


### Measures

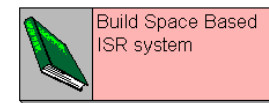
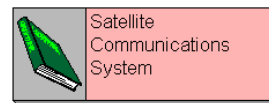


### Solutions

#### Non-Materiel Solutions



#### Materiel Solutions





## *CIF IPP Module showing relationships between one need, its measures and solutions*

