NDIA - EHM Committee

Enterprise Health Management

Enabling Integrated Next Generation Decision Support

Joint Alliance and Common Reference Model

For Effective Vision to Transition

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23 October 2008 - update

Presented by Chris Reisig

Boeing

Integrated Diagnostics

Executive Summary

- **Common Vision:** Pursuing enterprise transformation driving unprecedented level of value, affordability, supportability and availability
- **Problem Statement:** Enterprise Health Management , the key enabler is a complex integration challenge; Significant and Common barriers exist across stakeholders; Inefficient resource utilization across stakeholders; Not leveraging legacy transition opportunities with emerging programs/technologies; Need a paradigm shift
- ***Proposed* Strategic Approach:** Socialize the Common Vision for Enterprise Transformation; Provide a Focused Systems Engineering Process to execute against; Provide Common Reference Model for barrier identification, solutions, road mapping and resource alignment
- **Desired outcome:**
  - Actively drive a coalition approach towards 'doing business differently'
  - Provide proactive means to foster communication
  - Enhance resource alignment
  - Accelerate EHM/CBM benefit transition to the Warfighter

Enterprise Health Management

"The capability to make intelligent, informed, appropriate decisions across the Enterprise about design, logistics, maintenance and operational actions based on Health Management Data or Information, available resources, acquisition strategy, and operational demand."

Next Generation Enterprise Health Management Decision Support Solution Targeting Unprecedented Value, Affordability and Continuous Improvement

Key Attributes Include….
EHM as a Design Element; Proactive Advisory Generation Based on Health State; Autonomic; Planned Maturation; Near Real Time Updates; No False Alarms

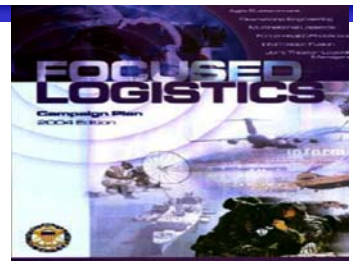
Common Programs & Initiatives

Shared Vision, Purpose & Barriers

Prognostics and Health Management

The capability to make intelligent, informed, appropriate decisions across the Enterprise about design, logistics, maintenance and operational actions based on HM information, available resources, acquisition strategy, and operational demand.

AFSO21 Air Force Smart Ops For The 21st Century



The proactive approach to managing fleet health

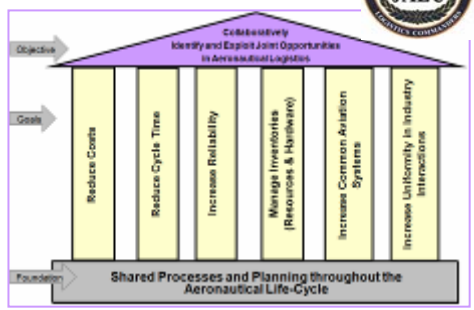
BUSINESS TRANSFORMATION

SLIM Mission Statement

Integrate WSIP, CBM+, RCM/MSG-3, RAM, MFOQA, EAVI, and AIP efforts. Standardize engineering processes/tools associated with improving system performance monitoring and assessment leading to proactive weapon system management and product improvement throughout the system lifecycle.

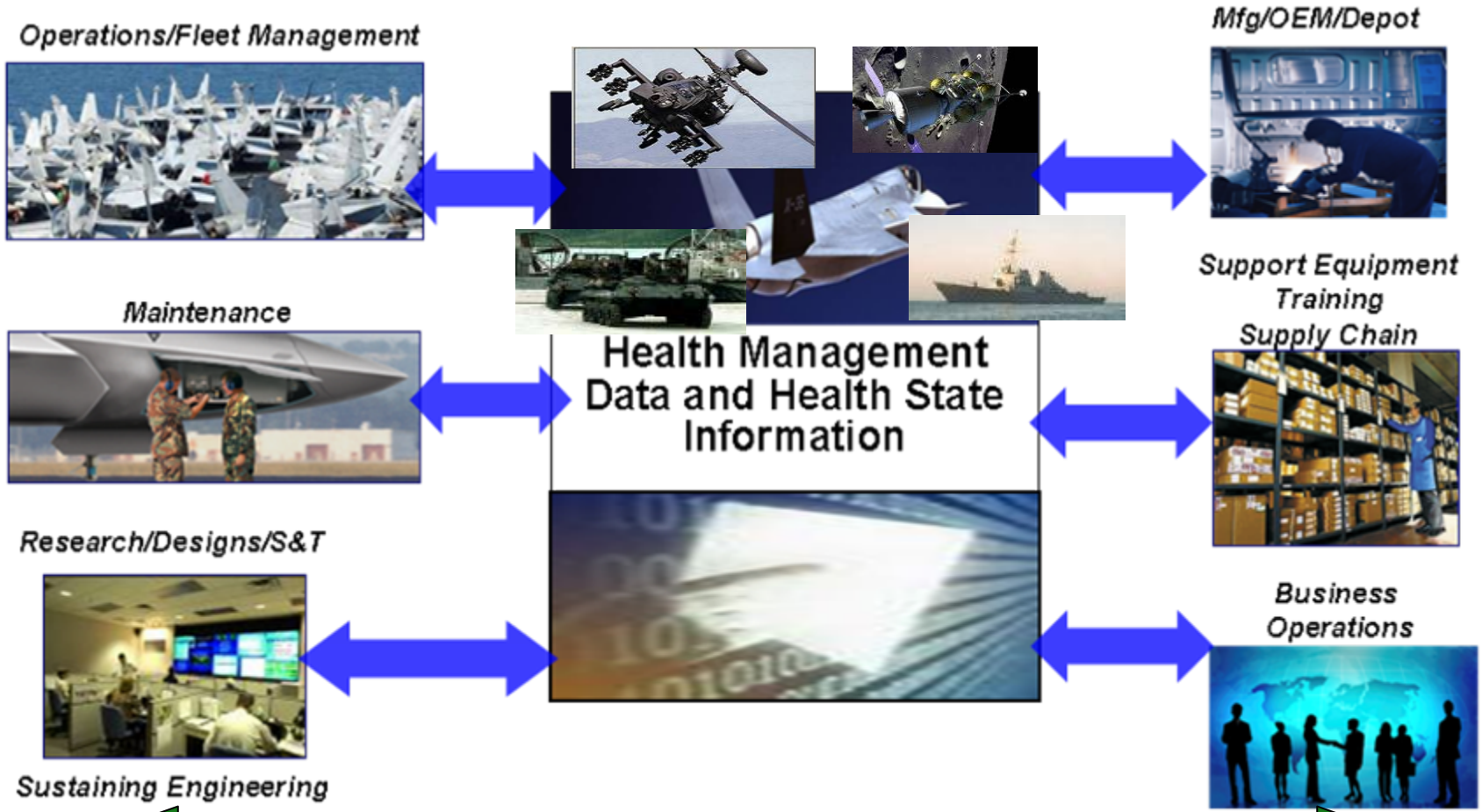
CBM+ is the application and *integration of appropriate processes, technologies and knowledge-based capabilities* to improve the *reliability and maintenance effectiveness of DoD systems and components*. At its core CBM+ is maintenance performed on evidence of need provided by Reliability-Centered Maintenance (RCM) analysis *and other enabling processes and technologies*.

JALC



Enterprise Health Management is the Common Denominator

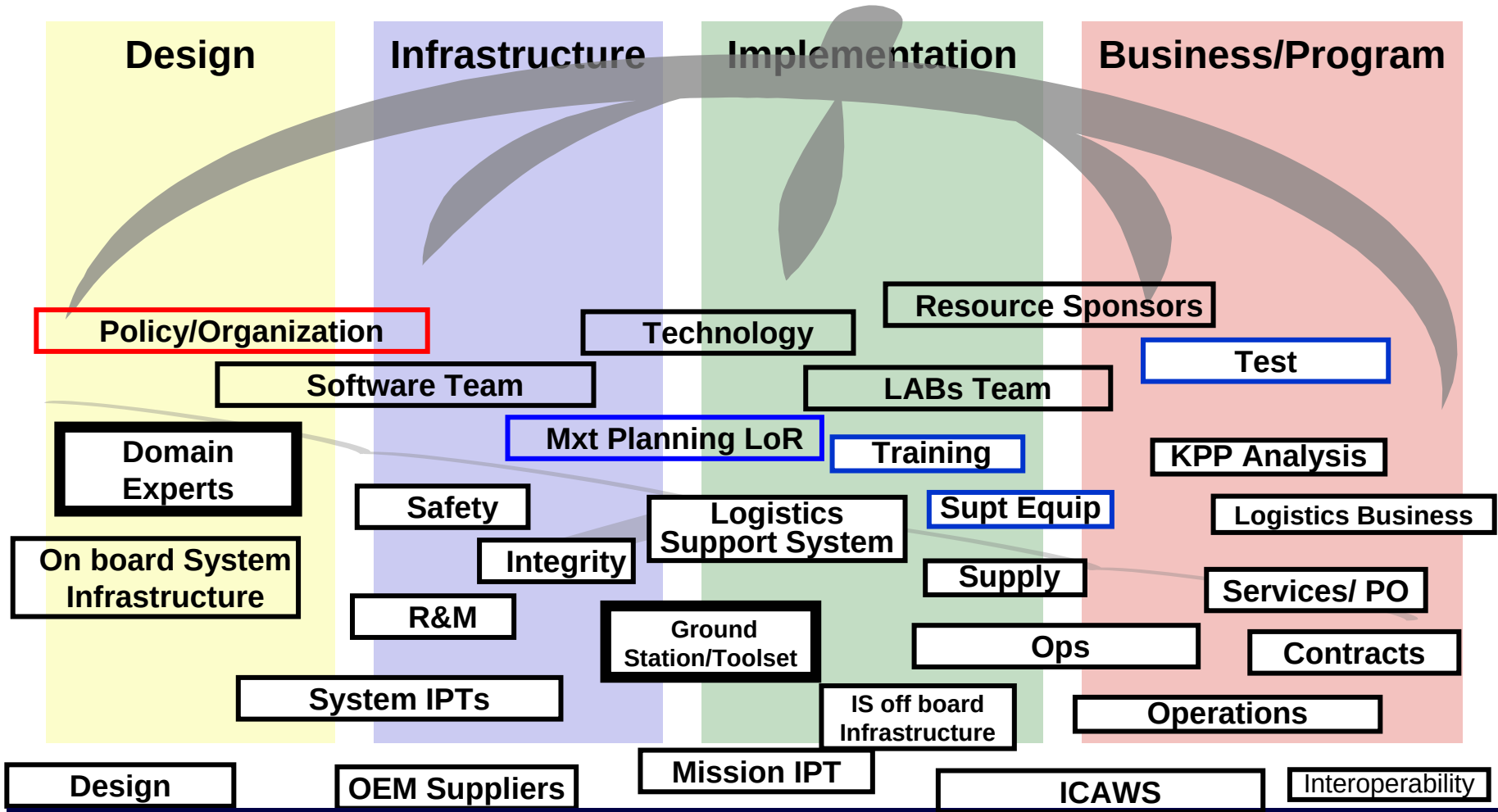
Enterprise Integrated Value Streams



Product life cycle must be considered for applicable transition

Transformation Expected Across All Elements
Strong Commonality Across Platforms

Program IPT Integration Challenge



Responsibility is distributed across All domains; Need a integrated systems approach

Key Drivers for Change

- **System supportability and affordability goals/vision difficult to meet without PHM/CBM+; Immature cost benefit models**
- **Contractor and Government organizational structures do not support health management as a new systems engineering "discipline"**
- **OEMs/Suppliers/IPTs not fully engaged**
- **Need system level architectural standards that integrate application of: smart sensors (e.g., IEEE 1451), condition monitoring (e.g., ISO 13374) and functional and global data and information exchange (e.g., MIMOSA OSA-CBM)**
- **PHM/CBM+ S&T roadmaps are not integrated across the Services, Agencies and domain IPTs --- this results in duplicate core efforts with minimal standardization, reuse and transition; Stakeholder resources not aligned to achieve vision effectively**
- **The stovepipe approach results in the "friction" factor of disparate capabilities across the enterprise value network—unsynchronized technologies will create interoperability problems, waste and non-value added activity**

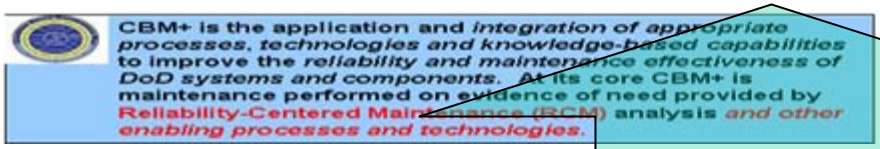
A Solution

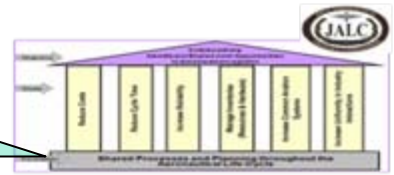
Based on a broad depth of practical experience, observations & lessons learned across various industry CBM+/PHM/Autonomic Logistic initiatives — there is a need for a systemic transformation across the enterprise — to address common barriers and accelerate achieving the intended vision…

…a Joint Enterprise Health Management Alliance, a focused Systems Engineering Process and a Common Reference Model

The Bridge

Required for Efficiency and Effectiveness





Focused EHM Systems Engineering Process

Common Reference Model

Needs, Barriers, Expertise, Funding, Schedule, Data, Roadmaps

STAKEHOLDERS/SPONSORS

Policy & Requirements	**Technology Offices**	**OEM/Integrators**
Programs and Platforms	**Research Labs**	**Suppliers**
Warfighters	**Academia**	**Small Business**

Moving Forward Effectively

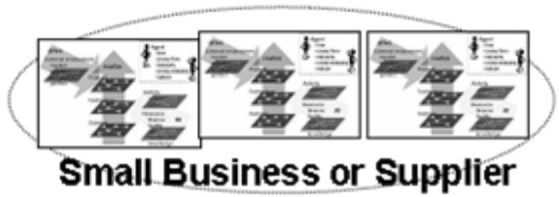
- Drive a Coalition Alliance - *(Best of the Best)*
  - **Socialize needs, lessons learned, solutions, maturation & transition opportunities; Cop (Community of Practice)**
  - **Comprised of Stakeholders across sponsors, services, agencies, industry/small business, academia, and International**
  - **Drive prioritize needs, resource planning, future tasking, standards, education, policy & guidebook**
- Provide a focused Systems Engineering Process and Common Reference Model
  - **Enterprise solutions**
  - **Barrier and solution identification**
  - **Resource Alignment (Expertise, funding, data, schedule, transition path)**
  - **Integrated and dynamic roadmapping**
- Enhance Transition and Transformation
  - **Legacy platforms benefit from early transition opportunities**

Enhanced Transition through a Common Approach, Awareness, and Knowledge

Strategic Objective Summary

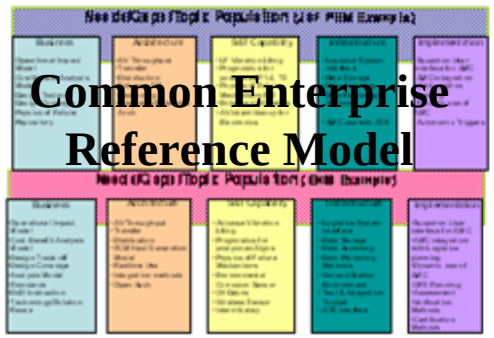
Viable Transition with Resource Alignment

Stakeholders



Leveraged Coalition Roadmaps

Common Enterprise Reference Model



Resources:

Organizations | MANTECH | OSD | International

6.1 & 6.2 | SBIR | STTR | PEO Programs | Research | DARPA

Professional Organizations | IRAD | BAA | Other

Enhanced Transition through….

Alignment of Common Needs and Leveraging of Resources

Critical Path ID; Integrated Dynamic Roadmaps

Summary and Action

- Emerging or Legacy Programs can not effectively achieve the objective independently; Efficiency and affordably factors

- Common fundamental gaps and challenges exist across all stakeholders and value streams

- Need focused Systems Engineering process and Common Reference Model to achieve alignment of needs and resources

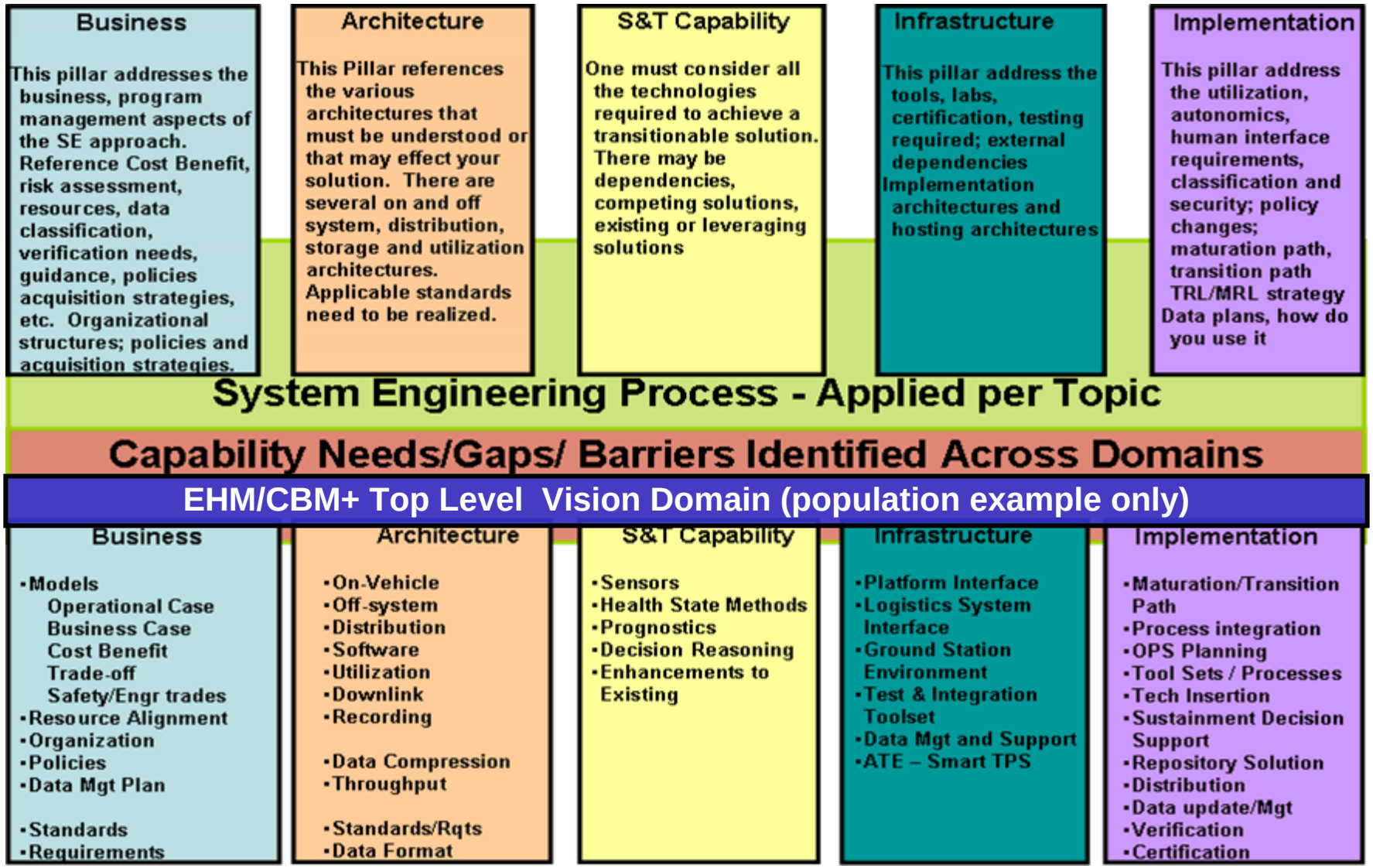
Leadership provide advocacy to engage and align key stakeholders

  - Execute proposed strategy
  - **NDIA Tasking**
    - Mature the common Reference Model and Systems Engineering process
  - Forum to build the Joint Alliance
  - Community of Practice (i.e. www.hmframework.org)

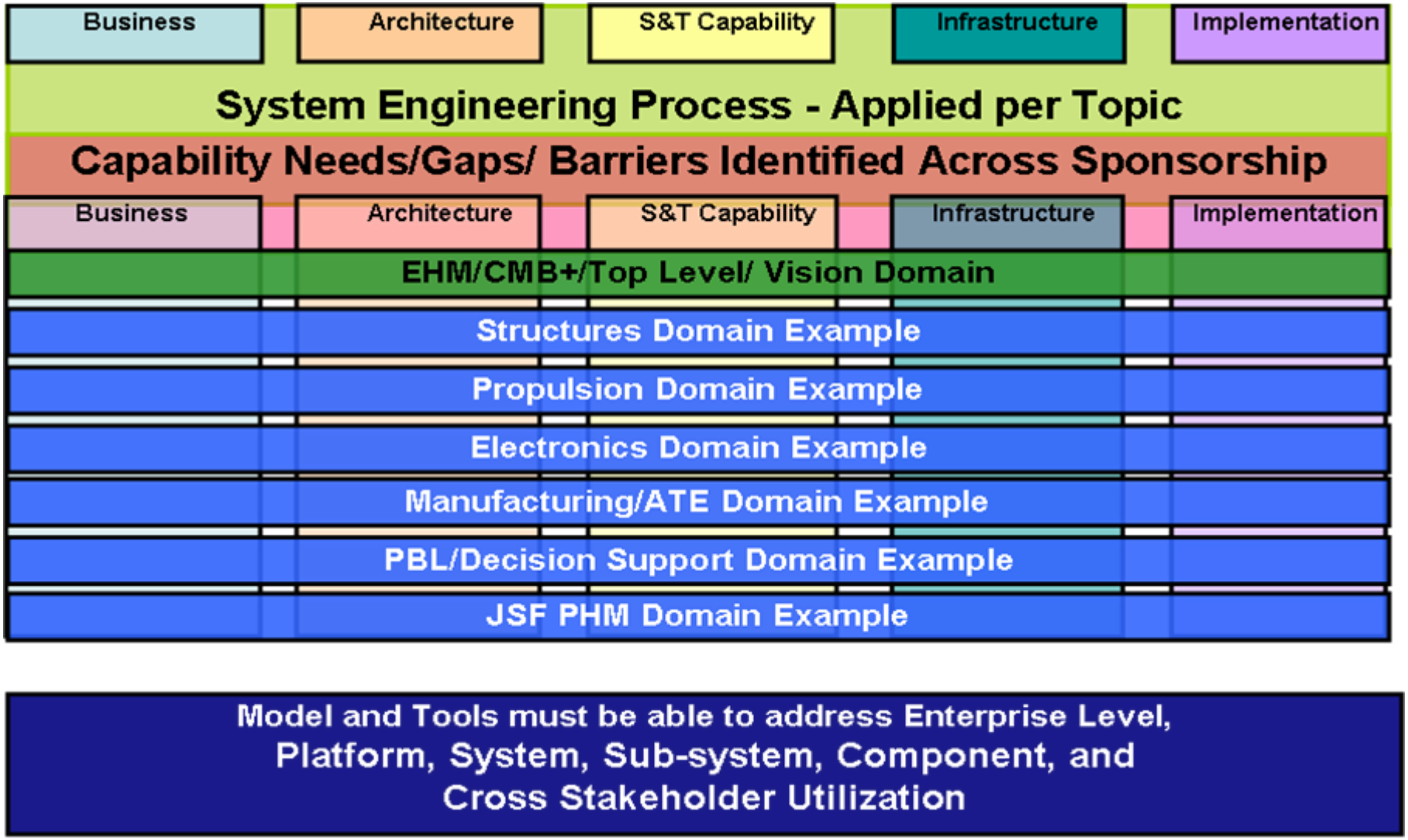
Common Reference Model and Framework Baseline

Detail

Common Reference Model



Multiple Domain Application



Proposed Draft
NDIA Task Approach

NDIA Task Summary

The NDIA EHM Committee Task:

- **Validate and Enhance System Engineering Process (Definition and application)**
- **Evaluate and Test Common Reference Model**
  - **Test viability across Key domains (Enterprise, Platforms/Systems, and Stakeholders)**
  - **High Level EHM/CBM+ Gap/Needs Summary**
- **Conduct workshop with stakeholders**
  - **Application of "Overarching SE process" and Reference Model/Framework to specific domains (populate EHM/CBM+ Top Level Gaps)**
- **Provide a Task Final Report with Recommendations**
- **Products: Report; SE process Definitions for use; SE Recommendations; 1st Generation gaps towards achieving CBM+/EHM; High level gap/solution set and recommendations**

NDIA Task 1 Milestones

- Form Core Task Group – Jul/Aug 08
- Define Draft Tasking/Workshop – Aug 08
- Task meeting (Telecon/Virtual) – Sep 08
- Task meeting @ NDIA HQ – 1 Oct 08
- **Task meeting (Telecon/Virtual) – Early Nov 08**
- **Task meeting @ NDIA HQ – Early Dec 08**

- **Conduct Workshop – 28 - 30 Jan 09**
  - **New Orleans, LA**

NDIA Task 1 – Workshop agenda

- **NDIA Workshop**
  - **Jan 28 –30 2009**
  - **2-1/2 day event**
  - **New Orleans Sheraton**

Day 1	
0800	Welcome and Introductions
0830	NDIA task description •Executive Summary •Workshop Goals •Workshop product definition •Order of play •Logistics (facility) •Terms of Reference (What is EHM)
0900	"OSD vision" to which NDIA will contribute within this workshop
	Break
1030	Current State of DoD and Industry (presentations)
1030	•Policy
1200	Lunch
1300	•Program Perspective (emerging/legacy platform)
1430	Break
1500	•Top Level Stakeholder Visions (USAF/USN/USMC/NASA)
1630	Summary results of Day 1

NDIA Task 1 – Workshop agenda (Cont'd)

Day 2

0830 Review of day 1
Refocus on WS goals and Products

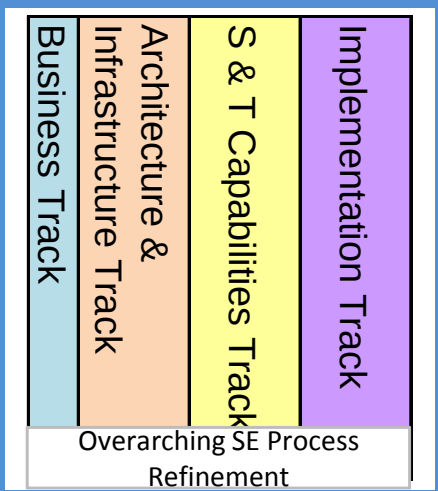
0900 Strawman EHM SE process description
- Test Case overview
- O&A

1030 Break

1100 Breakout Sessions Introduction
Discuss goals, test case(s), results & formats

1200 Lunch

1300 Breakout Sessions

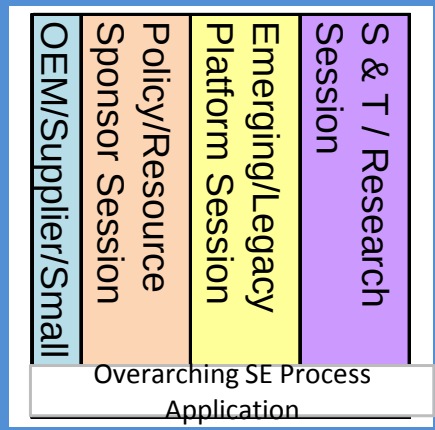


1600 Session Chair Outbrief

Day 3

0800 Breakout instructions / goals/ output def

0830 Breakout Sessions



1130 Lunch

1300 Wrap up
- Workshop Key outputs
- Action Items
- Final Report outline
- Schedule of remaining activities

1400 Conclude Workshop

Strategic Tasks - Not Covered by NDIA Task 1

….but will be covered under follow-on/separate venue

- Alliance Organization
- Tool Demonstrations
- Integrated Domain Application
- Policy Changes/Guidebook
- Defined Standards
- Resource Recommendations

Questions?