A Tale of Two Cultures
NDIA CMMI Conference – November 2011

Presenters:

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Agenda

- **Scope**
- **Two Cultures**
- **Architecture**
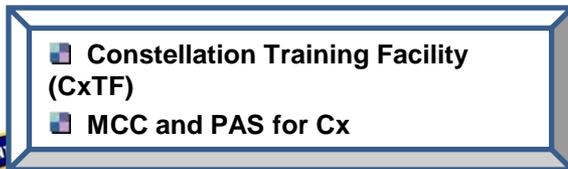- **Appraisals**
- **Change Management**
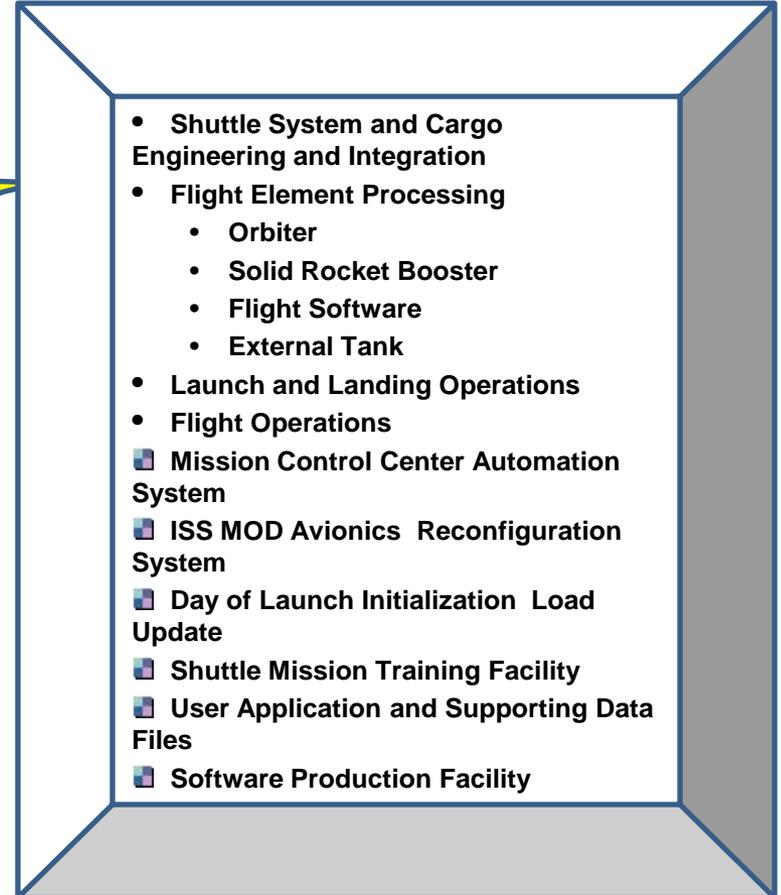- **Plan Forward**

FDOC Overview

Mission Support Operations Contract

- **Sustainment and Operations**
    - **Mission Control Center**
    - **Integrated Planning System**
    - **Houston Support Room – Moscow**
    - **Ground Systems Development Environment**
    - **Common Development Environment**
- **Operations Technology Facility Support**

New

- **Constellation Training Facility (CxTF)**
- **MCC and PAS for Cx**

Space Program Operations Contract

- **Shuttle System and Cargo Engineering and Integration**
- **Flight Element Processing**
    - **Orbiter**
    - **Solid Rocket Booster**
    - **Flight Software**
    - **External Tank**
- **Launch and Landing Operations**
- **Flight Operations**
- **Mission Control Center Automation System**
- **ISS MOD Avionics Reconfiguration System**
- **Day of Launch Initialization Load Update**
- **Shuttle Mission Training Facility**
- **User Application and Supporting Data Files**
- **Software Production Facility**

- **FDOC Scope**
- **SPOC / IMOC**

Two Cultures to One

Lockheed Martin
- One set of Established Processes
- Large development projects
- HW and SW Integration
- 12M Lines of code

United Space Alliance
- Four Processes
- Some work CMMI Level 3 compliant
- Majority of the work less than 3 month effort
- 60M lines of code

FDOC Goal
- One Process
- CMMI Level 3 for Development

Path to Consolidation

- **Conducted a series of LM21 events for consolidation of processes from two predecessor contracts**
  - 29 events in 2009 and 7 events in 2010
  - Didn't get to a steady state, continued evolving process
- **Considered USA Common Software Process (CSP) but found it too limited in scope (Small SW jobs only)**
  - Did not consider their lessons learned
- **Chose a Level 5 process set that did not meet our business model**
- **Result was that every employee had to learn something new**

Road to CMMI for Development

- **Early Successes**
  - Established the Process Asset Library
  - Established the Organizational Process Group
  - Use of myFDOC and collaboration tools

- **Struggles**
  - Created new processes vs. Document what you do
  - Developed action plans late
  - Internal audits late
  - Choice for not using CMMI for Services was based on lack of experience

- **Acknowledge that change is hard**
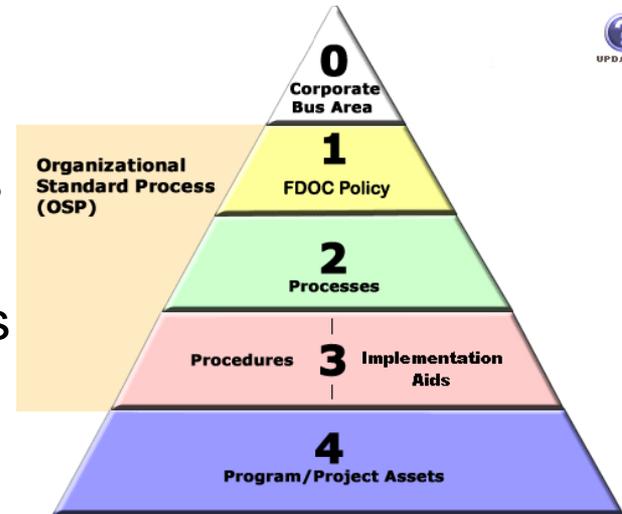
Appraisal's

- **Approach included the LM Continuous Assessment Method (CAM)**
  - Six phases to continuously assess compliance
- **SCAMPI B was done as a risk mitigation to identify any weaknesses in the model implementation**
  - Weaknesses were identified and the SCAMPI A was delayed
- **SCAMPI A successfully conducted after all weaknesses were corrected and reviewed by the Lead Appraiser**

PIID's

Phase I (CAM)

- 1 piece of evidence per project
- Engineers provided data

SCAMPI B

- Training from the LA (not followed)
- New projects selected
- Collected data by Process Area
- Data duplicated

SCAMPI A

- Compliant with the training
- Additional projects selected
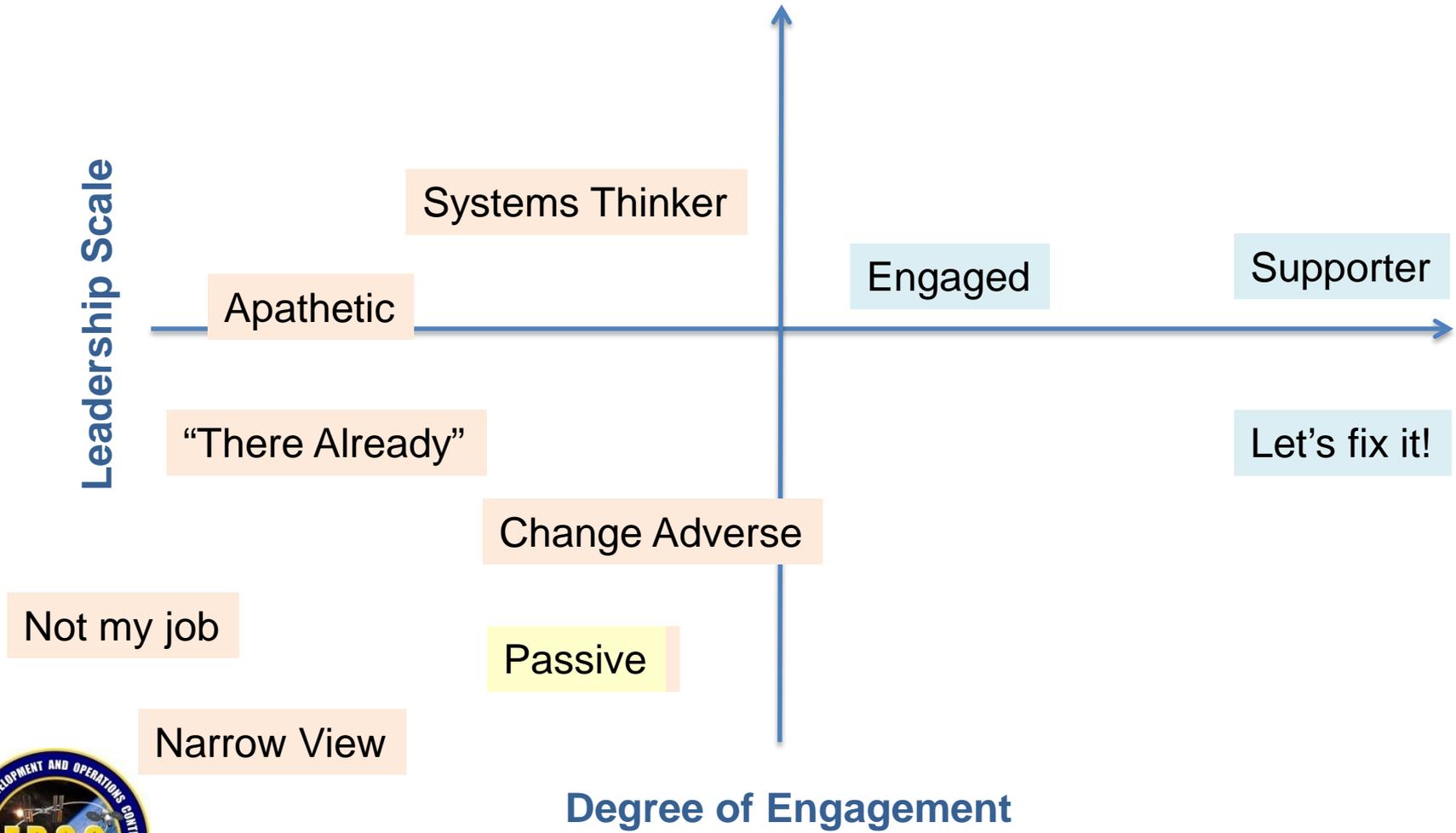- Collected data by projects
- Small team

LA/Advisor Going In Perspective

- **People**
  - PI team - too focused on develop vs. implement
  - Lack of change *leadership*

- **Processes**
  - High Level/Generic/CMMI-speak
  - Text-based
  - Tailoring vision cloudy

- **Tools**
  - Great tooling; but disconnected from process

- **Other**
  - Measures focused solely on contract requirements
  - "Project" selection proved difficult

Management Positions

Systems Thinker

Engaged

Supporter

Apathetic

"There Already"

Let's fix it!

Change Adverse

Not my job

Passive

Narrow View

Leadership Scale

Degree of Engagement

Change Management

What We Did	What We Should Have Done
• Drafted a Plan • Established a Baseline • Selected Framework • Identified Resources • Designed Solutions • Monitored Progress	• Share a Vision • Communicate Expectations • Be Honest About Changes • Handle Resistance • Reward Correct Behaviors

Communication

- **Vision**
- **Roles and Responsibilities**

Porcelain Press

What is CMMI?
- The acronym stands for: Capability Maturity Model Integration
- In a nutshell, this is what it means: CMMI is a set of process models that compare an organization's process capability (maturity) against industry standards.

What is SCAMPI?
- The acronym stands for: Standard CMMI Appraisal Method for Process Improvement
- What it is: Organizational appraisal using a CMMI model. Three SCAMPI methods of increasing level of rigor are defined (SCAMPI A, B, and C). Only the most rigorous method (SCAMPI A) can result in a rating.

FDOC's goal is CMMI Maturity Level 3 (Defined)

Let's Talk FDOC Organization Standard Process – CMMI Level 3

In July 2010, FDOC deployed its Organization Standard Process (OSP). In December, 2010 FDOC completed a CMMI SCAMPI B Appraisal on its OSP. Although FDOC has made huge improvements on institutionalization of the OSP some weaknesses were found. Listed below are some global weaknesses that all FDOC employees should be working to eliminate.

SCAMPI B –Global Weaknesses Awareness
- **Newly deployed processes – lack of adoption throughout the organization**
- **Audits were done prior to process awareness and no follow-up of findings**
- **Distributed project management and control of engineering led to confusion of roles and responsibilities**
- **Lack of project measures to all levels of work**
- **Practices not met: Analysis of peer review data and use of historical data for costing**
- **PIID's were disorganized with poor Configuration Management**

Why is CMMI important to me?
- Not only does CMMI provide a proven framework for program planning and execution, but it helps each of us become *more competitive* as a unit. This is critical in today's era of economic struggles.
- As a systems provider, we are required to be CMMI Level III (minimum) just to continue to have the *opportunity to keep doing what we're doing*.
- Because CMMI methodology is performance-focused with measurable impacts on business effectiveness, this *provides our customer with concrete evidence of our benefit* to them.
- When CMMI practices are used properly, it *facilitates teaming, process integration, and benchmarking* which helps all of us to be more effective in our individual roles.
- CMMI helps us to *recognize our process gaps and provides ways for correcting those gaps long before they become an issue* for our customer.

Look forward to further CMMI communication that can lead to PRIZES

Handling Resistance

Meetings with Managers to be champions

Lunch with Employees to understand concerns

Reward Correct Behaviors

Play CMMI Millionaire !

Play CMMI Crossword Puzzle!

Plan Forward

- **Consolidation of ISO and CMMI Audit checklist**
  - Audit by role instead of by process area
- **Creation of a measurement working group**
  - Ensure the continuation of measurement collection and review
  - Ensure the measures are value add
- **Promote the use of best practices across FDOC**
- **Consolidation of Configuration Management systems**
  - Eliminate redundant data
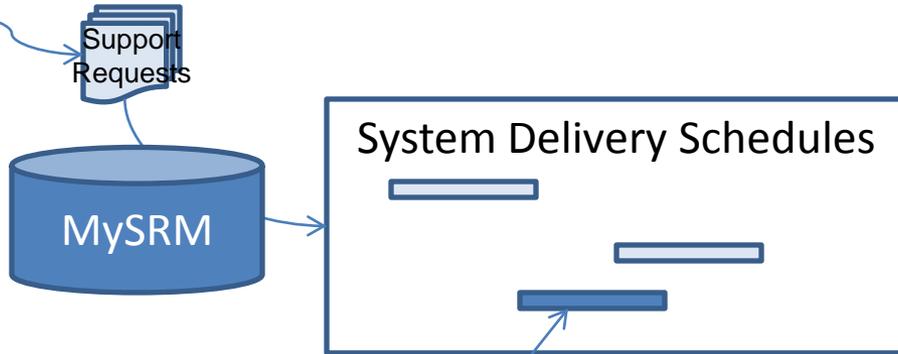- **Maintain the Organizational Process Assets**

LA/Advisor Post Mortem Perspective

- **CAM and LA not coordinated, aligned**
  - audit/test vs. intent
  - breadth and depth of practice implementation
- **FDOC Process Lead's tenacity essential**
- **Changes made between SCAMPI B and A brought processes closer to actual practice**
- **Ongoing activity post SCAMPI A is sure sign of true maturity**
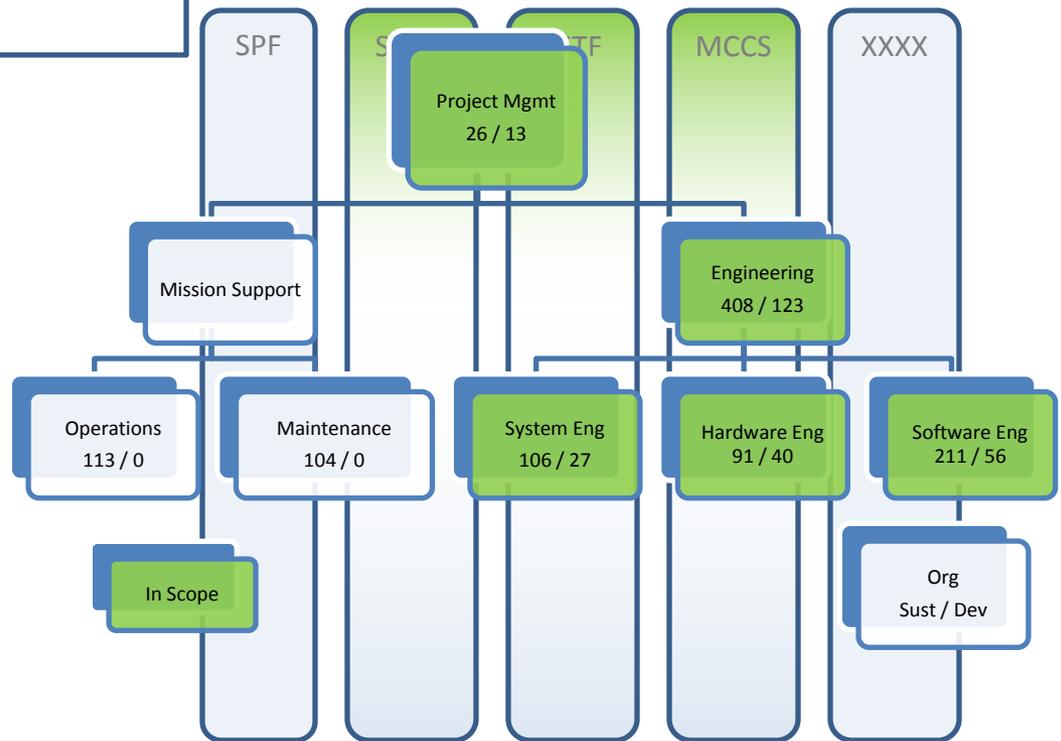- **CMMI for Services probably a better fit**

CMMI DEV or SVCs?

Customer

Support Requests

Contract SLAs

MySRM

System Delivery Schedules

Only a small percentage of SRs Were grouped and managed like a "project"

| SPF | S | TF | MCCS | XXXX |

Project Mgmt
26 / 13

Mission Support

Engineering
408 / 123

Operations
113 / 0

Maintenance
104 / 0

System Eng
106 / 27

Hardware Eng
91 / 40

Software Eng
211 / 56

In Scope

Org
Sust / Dev

Questions?

Thank You!