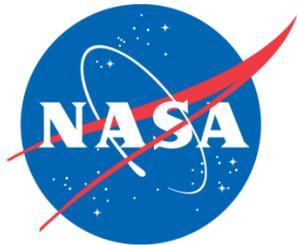




THE FLIGHT PROJECTS DIRECTORATE

BUSINESS CHANGE INITIATIVE (BCI)

EVM All Hands
May 16, 2012





Why are we here?

- To create a shared understanding of the Business Change Initiative (BCI) and why changes are needed
- To focus on how the EVM Action Team and sub-teams are crucial to the success of the BCI
- To open a dialogue among us – **you've been invited here today for your ideas, feedback and active involvement**
- You are the Earned Value Management community
- You're the ones who will identify what needs to change
- You're the change agents who will make this happen



Agenda

Overview

Our Goal; Why Change Is Needed; FPD Business Change Initiative; Phases and Process

Scheduling Action Team

Purpose; Accomplishments; Applicability to EVM; Findings

EVM Action Team

Why is EVM Necessary; Why Are Our EVM Efforts Important

EVM Sub-Teams and Updates

Process and Policy; Tools; Reporting; Training

Action Team Timelines

Encouragement to Participate and Overview of Future Envisioned

Discussion and Questions

Why is Change Needed?

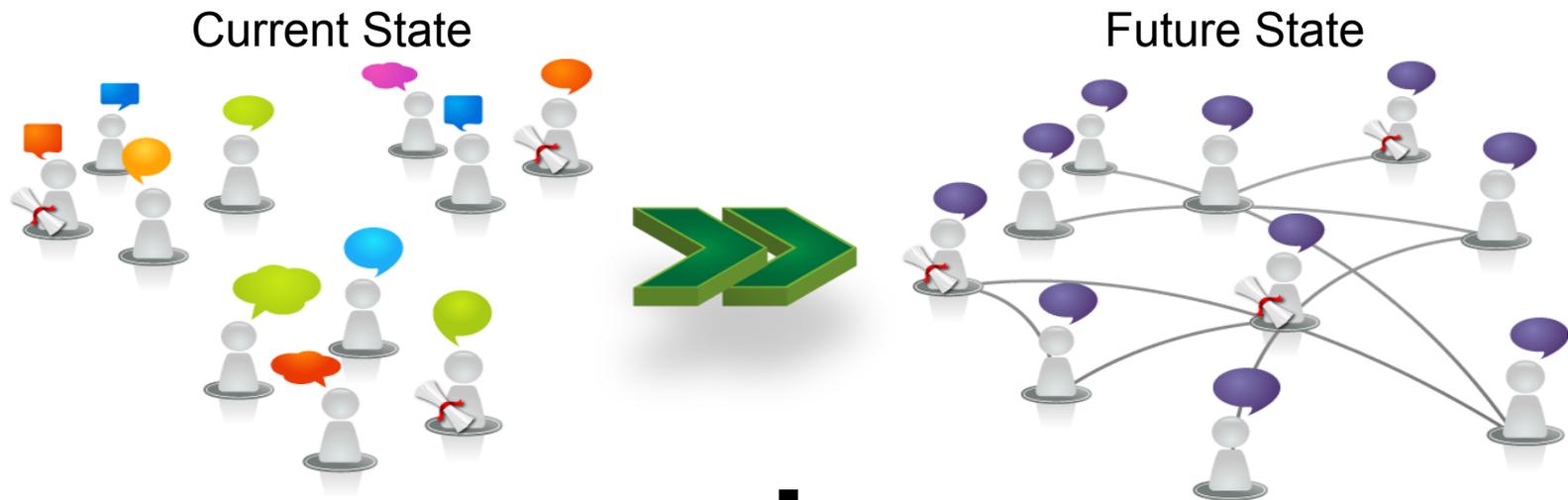
Internal challenges include *rising costs, schedule delays, disparate processes*,_diminishment of institutional processes and tools, a need to ensure optimally-trained staff, and a **retirement wave** that will seriously impact our need to capture knowledge and best practices

External challenges include a significant *increase in external reviews and data requests*; greater competition and **stakeholder pressure**; significant *perceptions of GSFC's budgeting and scheduling challenges*; and our **peers have made strides** in all aspects and are outmaneuvering and marketing on our weaknesses (e.g., Goddard is good but they won't stay within budget or on schedule)

Our world is changing as evidenced by recent **GAO findings** that NASA is not managing its projects well; **budgets are tightening** that will lead to additional scrutiny for selection—past performance does matter; being the “most technically competent” will no longer be enough

We are recognized globally as being world class in mission development and execution of projects, but we are not consistently utilizing best practices or being recognized for staying within budget or on schedule, and this has to change now!

Our Goal → FPD consistently applies the best practices and actions to ensure cost effective and on-time delivery of all projects



A disparate community with pockets of expertise that are not well known and where projects create their own unique solutions to solve problems

An integrated community to educate, openly share and instill best practices across the organization and within the projects

Our ideal state is to be recognized as world class in all three elements of project management—cost, schedule and technical management—with known subject matter experts integrated across the community. We need your assistance in identifying and supporting your SMEs in this role

FPD Business Change Initiative

- Code 400 started the BCI in late 2011. Five Action Teams focus on tangible actions to improve our processes and effectiveness and for transference of knowledge and best practices:
 - Scheduling Action Team
 - Management Reporting Action Team
 - Earned Value Management Action Team
 - Business Rapid Information Skills & Knowledge (BRISK) Action Team
 - Cost Estimating Action Team
- **Action Teams** will progress through a five-phase process that guides the change from concept vision and definition through rollout and deployment
- **Collaboration is key**—the BCI is guided by Code 400 Civil Servants and contractors and requires alignment and coordination with the Office of Human Capital Management /110, Office of the Chief Financial Officer/150, Applied Engineering and Technology Directorate/500, and other partners
- As we go forward, we can use this process to tackle other changes in the Directorate or at the Center

Action Teams follow a simple and repeatable eight-step process:



...and key findings, best practices, and subject matter expert discovery will be captured and shared along the way



- ACTION TEAMS**
- Scheduling
 - Management Reporting
 - EVM
 - Cost Estimating
 - Business Rapid Information Skills & Knowledge



THE FLIGHT PROJECTS DIRECTORATE BUSINESS CHANGE INITIATIVE (BCI)

What We're Doing -- Summary of Activities Being Undertaken by the Action Teams

By the end of the year, each Action Team will have:

- Formed Action Teams
- Held Kick-Off Meetings
- Identified capabilities and processes that must continue
- Set overall areas for improvement
- Set a calendar of meetings and deliverables
- Identified and evaluated key projects to review
- Assessed, prioritized and selected best practices
- Categorized best practices according to Green, Yellow or Red
 - Green** – keep and disseminate throughout the Directorate
 - Yellow and Red** – practices that need improvement, consolidation or abandonment
- Drafted plans for implementation of the recommended best practices
- Identified tools, templates, rollout and support plan for the new process
- Held a series of implementation workshops
- Outlined a master timeline and transition plan
- Trained key players who interface in the new process
- Implemented, revised, monitored and institutionalized the full-scale process
- Published and distributed the new process policy throughout the Directorate
- Later evaluated the new process to ensure all support mechanisms, including tools, are in place and functioning and improve, as needed
- Conducted quality assurance audits on process efficiency benchmarks
- Implemented, revised, monitored and institutionalized a host of new processes

FPD All-Hands BCI Presentation - 9

Action Integration Team ensures consistency among Action Teams and knowledge sharing

Scheduling Action Team

Purpose

- Identify scheduling Best Practices throughout Goddard and share with the entire program/project community

Accomplishments & Current Activities

- Formulated 10 Planning & Scheduling Principles and identified 31 Best Practices; currently documenting Best Practice instructions and guidance
- Implementation of FPD Planning & Scheduling Knowledge Center (SharePoint site) to disseminate planning & scheduling Best Practices and related resources is under way

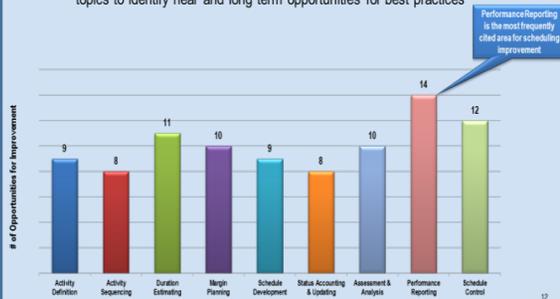
Applicability to EVM

- Realistic schedules are essential to successful EVM – improvement in scheduling will promote improvement in EVM
- Additional schedule performance metrics (e.g. BEI, CEI) will augment EVM analytics for a more robust view of project performance
- Enhanced schedule baseline control will enhance integrity of PMB
- Lessons learned from IMS design in support of EVM on MMS and GPM will benefit EVM implementation on other in-house projects

Example: Schedule Action Team Current Findings

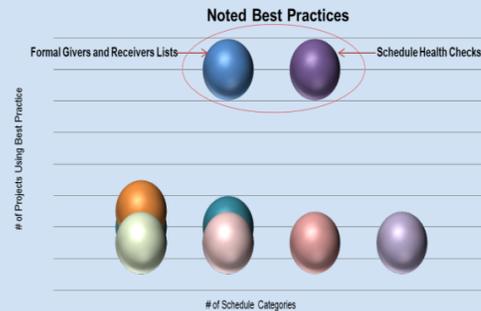
The Scheduling Action Team Uncovered Significant Opportunities for Improvement

- Expert interviews identified and validated topic findings
- External reviews will be conducted to identify and validate industry best practices and standards
- Findings will go through the formal discovery process based on scheduling topics to identify near and long term opportunities for best practices



Opportunities for improvement

Best Practices for Scheduling Action Team



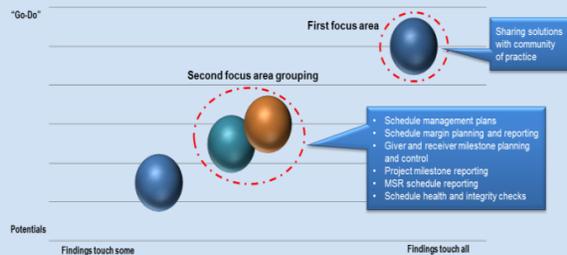
- Best practice areas were noted across all the projects and only two were consistently used by each project
- Each project had one or two best practices but many were in different areas

Best Practice Areas Identified

Best Practices

- Document Schedule Requirements in the Project Schedule Management Plan
- Assign a Lead Planner/Scheduler to the Project
- Organize the Project Schedule Office / War Room
- Plan a Successful Schedule Summit
- Develop the Project-Level Integrated Master Schedule
- Develop In-House Subsystem Schedules Using the Product Development Lead Checklist
- Create an Integrated Master Schedule Database in MS Project
- Estimate Realistic Activity Durations
- Document the Schedule Basis of Estimate
- Verify Schedule Integrity with Schedule Health Checks
- Identify and Control Giver/Receiver Milestones
- Plan the Project Schedule Margin
- Establish and Control the Schedule Baseline
- Implement a Schedule Control Board
- Status and Update the Project Integrated Master Schedule
- Design the Project Schedule Book
- Report the Critical Path for MSR
- Perform a Schedule Risk Analysis and Report the Results
- Assess Baseline Schedule Performance with the Baseline Execution Index (BEI)
- Assess Current Schedule Performance with the Current Execution Index (CEI)
- Assess Near-Term Schedule Stability with the Volatility Index (VI)
- Assess Schedule Efficiency Along the Critical Path
- Report Project Control Milestone Performance and Forecast
- Report Total Slack Changes and Trends
- Report Schedule Margin-to-Launch Trend
- Prepare and Update the Critical Milestone Schedule for MSR
- Prepare an Integrated Master Schedule Data Requirements Document
- Resource/Cost Load the Project Integrated Master Schedule
- Archive the Project Integrated Master Schedule
- Assess Current Schedule Performance with the Monthly Hit/Miss Index
- Reporting Summary Status with the Schedule Scorecard

Near Term Opportunities for Scheduling



- Preliminary reviews have uncovered potential near term opportunities to improve in the next six months

- These practices are considered to be relatively stable and do not need frequent transformation to respond
- Multiple projects already perform similar or identical practices so change should be reasonably implementable

Near Term Next Steps

FPD Planning & Scheduling Principles

- Projects develop and maintain end-to-end, Critical Path Method-based Integrated Master Schedules (IMS)
- Project schedule duration estimates are realistic and achievable
- Project schedule margins are adequate and based on assessments of risk
- Project schedules are baselined and maintained using a disciplined schedule control process
- Project schedules are consistently and regularly updated with accurate status, progress and forecasts
- Project schedules are analyzed to validate the integrity of the baseline and forecast, evaluate performance, and assess the magnitude, impact, and significance of actual and forecast variances from the baseline and current operating schedules
- Project schedule reports, metrics and trends provide meaningful visibility and insight into schedule plan, performance, forecast and risk for management decision making and control
- Project schedule baselines and forecasts are aligned and reconciled with actual and projected resource availability
- Project schedule requirements are documented in a Schedule Management Plan (or an equivalent section in a Project Management Plan)
- The project IMS is archived at all major mission lifecycle milestones Key Decision Points to support future project planning and lessons learned across the FPD

Principles



Earned Value Management



Why is EVM Necessary?

Federal legislation, policies, and NASA Directives mandate the use of a standard EVM System

- Federal Legislation and Policy Directives
 - Government Performance and Results Act of 1993
 - Federal Acquisition Streamlining Act of 1994
 - Clinger-Cohen Act of 1996
 - **OMB Circular A-11, Part 7, “Planning, Budgeting, Acquisition & Management of Capital Assets”**
 - OMB Memorandum M-04-24, “Expanded Electronic Government (E-Gov) President’s Management Agenda (PMA) Scorecard Cost, Schedule and Performance Standards for Success”
 - OMB Memorandum M-05-23, “Improving Information Technology (IT) Project Planning and Execution”
 - OMB Memorandum M-10-24, “Performance Improvement Guidance: Management Responsibilities and Government Performance and Results Documents”
 - NPR 7120.5D
- EVM Standards
 - American National Standards Institute/Electronic Industries Association (ANSI/EIA) Earned Value Management System (EVMS) Standard 748 (July 1998)

Executive Branch Management Scorecard

Agency	Current Status as of March 31, 2005			Program to Implementing the President's Management Agenda		
	Score	Target	Rating	Score	Target	Rating
AGRICULTURE	●	●	●	●	●	●
COMMERCE	●	●	●	●	●	●
DEFENSE	●	●	●	●	●	●
EDUCATION	●	●	●	●	●	●
ENERGY	●	●	●	●	●	●
EPA	●	●	●	●	●	●
HEHS	●	●	●	●	●	●
HHS	●	●	●	●	●	●
HOUSING	●	●	●	●	●	●
INTERIOR	●	●	●	●	●	●
JUSTICE	●	●	●	●	●	●
LABOR	●	●	●	●	●	●
STATE	●	●	●	●	●	●
DOT	●	●	●	●	●	●
TRANSPORTATION	●	●	●	●	●	●
VA	●	●	●	●	●	●
AD	●	●	●	●	●	●
CG	●	●	●	●	●	●
GSA	●	●	●	●	●	●
NASA	●	●	●	●	●	●
NSA	●	●	●	●	●	●
OMB	●	●	●	●	●	●
OPM	●	●	●	●	●	●
SSA	●	●	●	●	●	●
SMITHSONIAN	●	●	●	●	●	●
USA	●	●	●	●	●	●

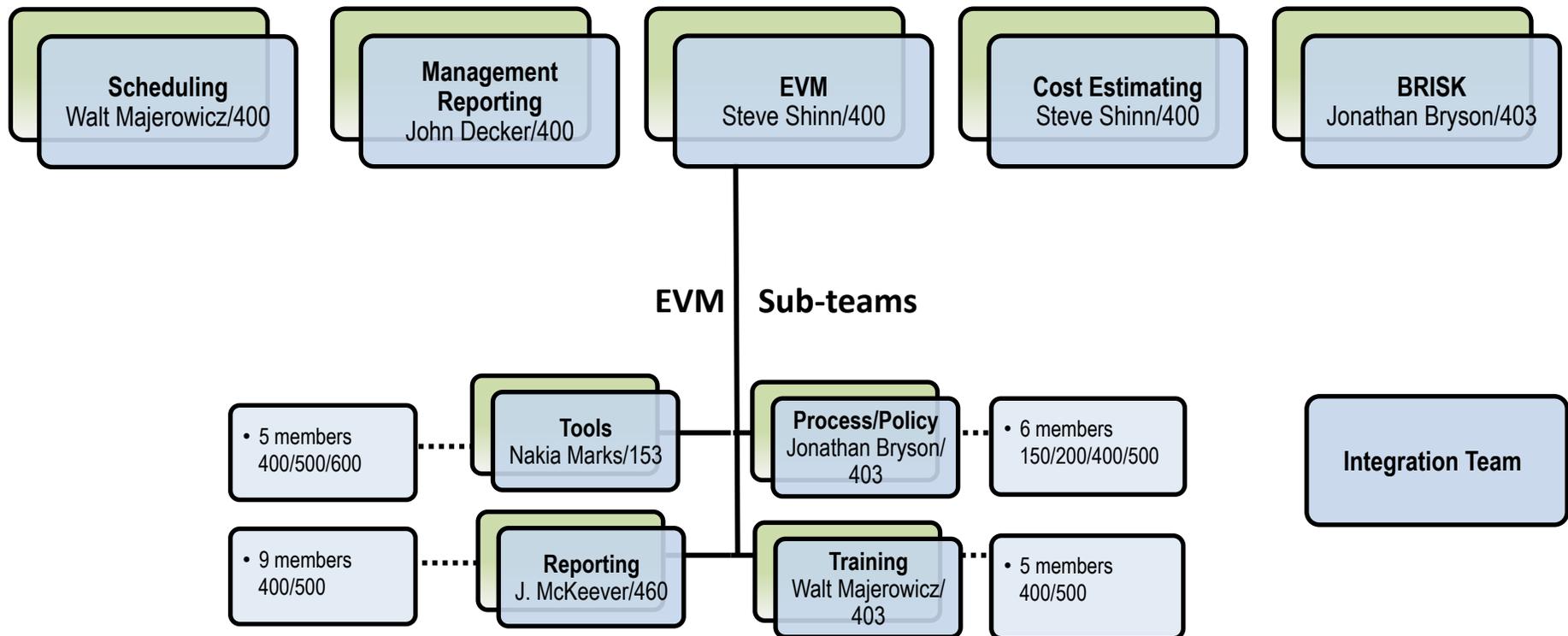
OMB CIRCULAR NO. A-11 PART 7 PLANNING, BUDGETING, ACQUISITION, AND MANAGEMENT OF CAPITAL ASSETS

MEMORANDUM FOR: CHIEF INFORMATION OFFICERS
 FROM: Karen S. Evans, Administrator, Office of E-Government and Information Technology
 SUBJECT: Expanded Electronic Government (E-Gov) President's Management Agenda (PMA) Scorecard Cost, Schedule and Performance Standards for Success

Why is EVM a good idea?

- Why are our EVM efforts important?
- We must ensure our projects are delivering on time and within budget
- We must evaluate all of our planning and control practices
- We must improve and consistently all aspects of EVM
 - *Tools*
 - *Processes*
 - *Policies*
 - *Training*
 - *Reporting*
- Ensuring projects consistently implement EVM practices that address weaknesses, help the agency manage negative earned value trends
- Doing so allows us to execute a higher number of interesting and important projects, increase our win rate for competed projects, improve our performance, and avoid further budget cuts or movement of funds between projects and programs
- Simply, our projects must be best in practice in cost integration, scheduling and technical performance
- In its most basic form, EVM is simply sound project management! *Plan, Track, Analyze*

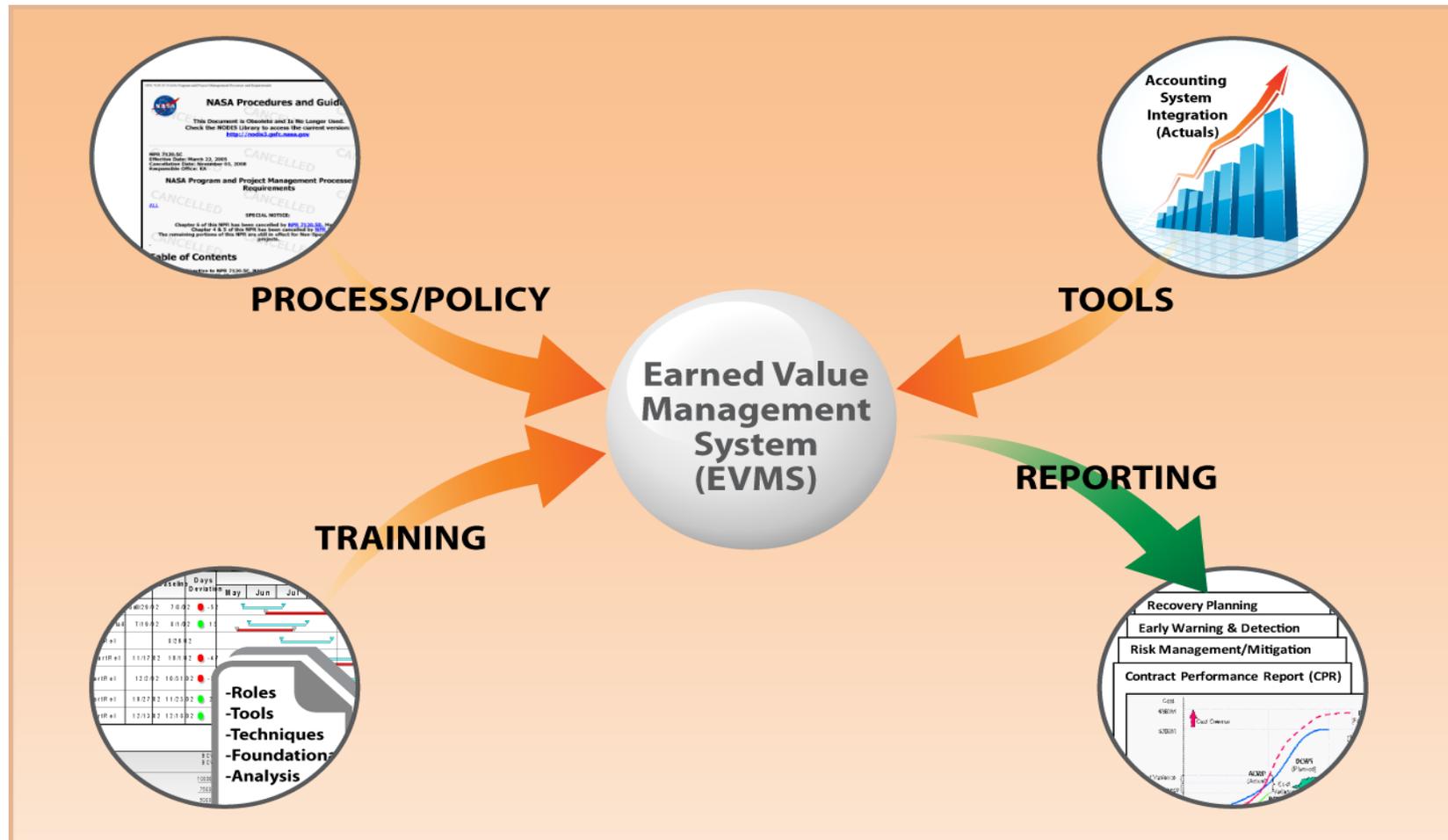
Action Team Structure: Leadership, Resources, and Projects



The Action Teams are comprised of personnel from around the Directorate and the Center. Each Action Team is reaching out to stakeholders for ideas, artifacts and best practices. Even if you are *not* on an Action Team, **everyone** is a stakeholder. Contact any of the individuals noted above with your ideas and insights.

Earned Value Management at GSFC

The four sub-teams are paving the way ahead for more consistent application of EVM at the center.



EVM Sub Team – Process and Policy

Policy

- Framework: NPR7120.5E and NASA FAR Clauses — we need to implement and enforce these (i.e., Nakia Marks in Code 150 is the EVM Working Group representative and reviews contract data requirements documents)
- Office of Chief Engineer: Agency EVM System Description is an umbrella document to Center-level (e.g., range of EV methods)
- Project: make a Project Directive or an EVM Plan (e.g., showing which EV methods were selected)
- We are building the “flow down” from OCE to the project level

EVM Sub Team – Process and Policy

Process

- Following several GSFC project EVM implementations – will attend project interviews with EVM Training team
- Tracking ICESat-2 effort as the “pathfinder” for Project and In-House EVM
- Will assess the ability to comply with the ANSI/EIA -748-B EVMS 32 Guidelines, including potential updates due to the ANSI 748 Standard for Earned Value Management Systems refresh scheduled for 2012
- Consulting meeting between Steve Shinn et al and projects – support process development and provide lessons learned captured for cumulative knowledge (i.e., ICESat-2)
- Possible topic: Systematic review of recent GAO/IG reporting that we have done:
 - Roles with OCE vis-à-vis Center level
 - Can we organize their questions better?
 - How is this instructive for other projects?
 - How can we train our reviewers and build an orientation package

EVM Sub Team – Tools

Objective

Integrate a set of software products to develop a “Tool Suite” that will completely support project management in producing and reporting EVM data. The tool suite will include all products required to manage projects (i.e. accounting, scheduling, earned value, reporting)

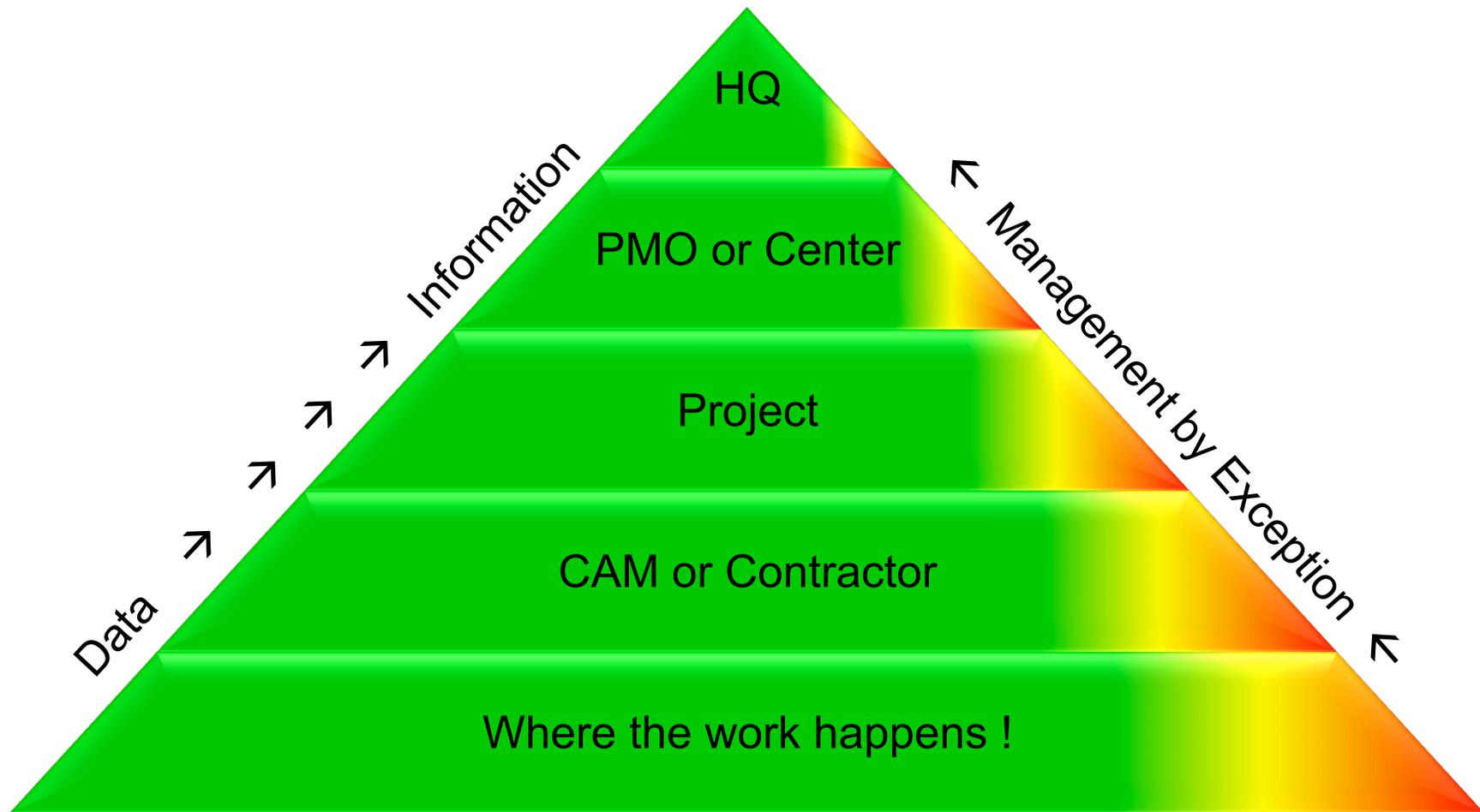
Actions

- Establish a team of users, experts, and industry consultants to analyze requirements and recommend a tool suite that best meet our needs
- Interview and survey GSFC projects with EVM requirements; document current tools and processes used to manage, and their effectiveness
- Analyze findings from interviews and surveys then develop a general recommendation of what tools and processes are required to manage a typical project
- Meet with vendors to discuss and evaluate available products; select a set of products that best meet our requirements
- Purchase a Center Wide License Agreement (CWLA) through NSSC
- Develop product and process flow to recommend best practices
- Modify Center policies as needed

EVM Sub Team – Reporting

- Effective reporting of Earned Value metrics or Project Performance metrics is an essential part of the Project Communication Plan
- What is it?
 - Using metrics, the project provides performance data in dollars, hours and indices to communicate the health of the project to stakeholders
 - Use of the EV metrics help the project validate their “position”
 - Metrics and values inform the stakeholder of:
 - Where the project should be in terms of accomplishment (BCWS)
 - Where the project is in terms of accomplishment (BCWP)
 - The cost of the accomplishment (ACWP)
 - How much the remainder of work to be accomplished will cost (ETC/EAC)
- The indices derived from the values provide an indication of the projects performance
 - Schedule Performance ... “SPI, spi”
 - Cost Performance ... “CPI, cpi”
 - “To Go” Cost Performance “tCPI”
- Having accurate metrics is key to effective communication and management of the project

Reporting – From Data to Information



Everyone is a Stakeholder

EVM Sub Team – Reporting

So what is the EVM Reporting sub team going to do?

- *Gather* the artifacts currently used by the various projects using and reporting Earned Value / Project Performance metrics
- *Assess* what is being reported and where (in the chain) reporting is taking place
- *Leverage* or derive reporting formats to establish templates for projects to use or follow
 - The goal is to produce the same view of the performance across projects
 - Reduce questions on, what does it tell me?
 - Effectively communicate Project Performance
 - Validate other methods and outputs of project management performance (Schedule, IMS, LOBs)
 - Work with the Training and Tools sub team to:
 - Educate Creators
 - Educate Users
 - Educate Reviewers
- *Achieve* overall goal – gather *valid* reporting data

EVM Sub Team – Training

Purpose

Design an approach to EVM training that supports the skills needed by project teams to manage their work while informing other stakeholders about the performance of their project, system, subsystem or instrument, and to identify the foundational, tool-based, analytical and other forms of EVM training and learning that project teams and stakeholders require to best support the success of GSFC's projects, in-house work and contracts

Short-Term Actions

- Develop an EVM Training Framework which organizes project roles, the EVM needs of those roles, the skills necessary to fulfill those needs, and the training and learning required to obtain or enhance those skills
- Identify sources of EVM training and learning including instructor-led and web-based courses; coaching and mentoring; web/wiki-based resources; case studies; and other forms of training to enhance the learning experience of practitioners
- Schedule training courses and workshops as needed to support priority needs such as Integrated Baseline Reviews, baseline development or data analysis
- Conduct training sub-team kick-off meeting

EVM Sub Team – Training

Medium-to-Long-Term Actions

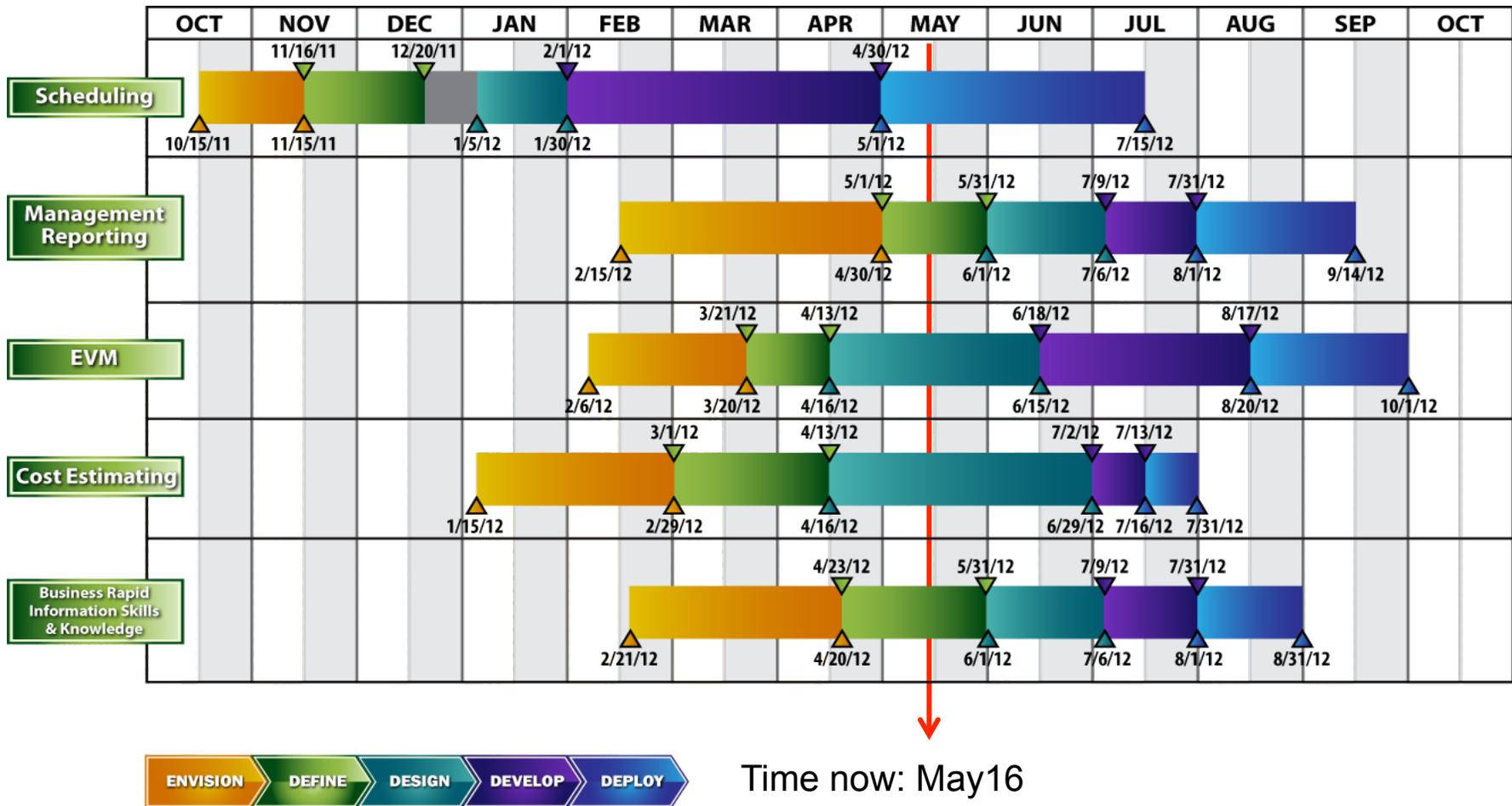
- Identify and/or develop training courses for GSFC-unique EVM needs
- Establish a virtual EVM Community of Practice to share knowledge, resources and ideas among EVM stakeholders at GSFC
- Continue to coordinate with other EVM sub-teams on new and evolving training requirements

Training Challenges and Considerations

- Cultural resistance and misunderstanding of EVM at GSFC
- Some policy, system, tool and reporting aspects are evolving—additional training courses and knowledge sharing methods will need to be modified or developed



Action Team Timelines are phased to maximize team impact and results



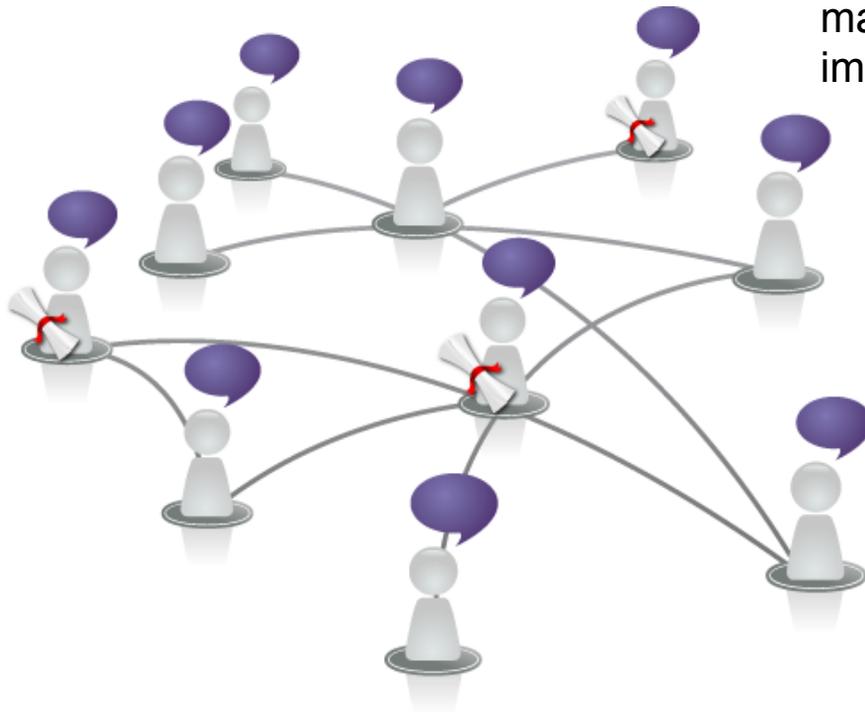
As a Team, we must get involved to:

- Identify, improve and embrace new project management business practices—make change a priority
- Actively engage with the EVM Action Teams to seek breakthroughs and ensure long-lasting change
- Collaborate across projects and Directorate, and evolve to a community of known experts and practitioners—but it is imperative that we share ideas, best practices and actively engage
- Use Code 400 as a “compass” to direct projects to improved practices and resources
- Enable the next generation of business management personnel to sustain NASA’s success
- We highly encourage you to get involved and contact the Action Team leads to provide insights and assistance

Endorse these changes as they happen by serving as vocal advocates of what’s new, what’s different and why it matters

The Future:

We will uncover best practices and identify subject matter experts to leverage across the Center to improve our project management practices



Outcomes to include a proliferation of new approaches:

- Revamped and relevant training
- Improved workforce collaboration and feedback
- Implemented best practices across all the business practices
- Standardized tools and approaches
- New knowledge management, repositories and portals
- Standard operating procedures/guidelines

The future of our projects is an integrated community of “expert” practitioners yielding:

- Improved cost and schedule performance
- Higher efficiency of projects and teams
- Improved integration and collaboration across teams
- Recognized lists of business systems SMEs
- Improved business training and skills development

Discussion and Questions

