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DOE Tailoring Earned Value Management Tools – Decision Process and Best Practice for Department of Energy Projects under $50M

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Agenda

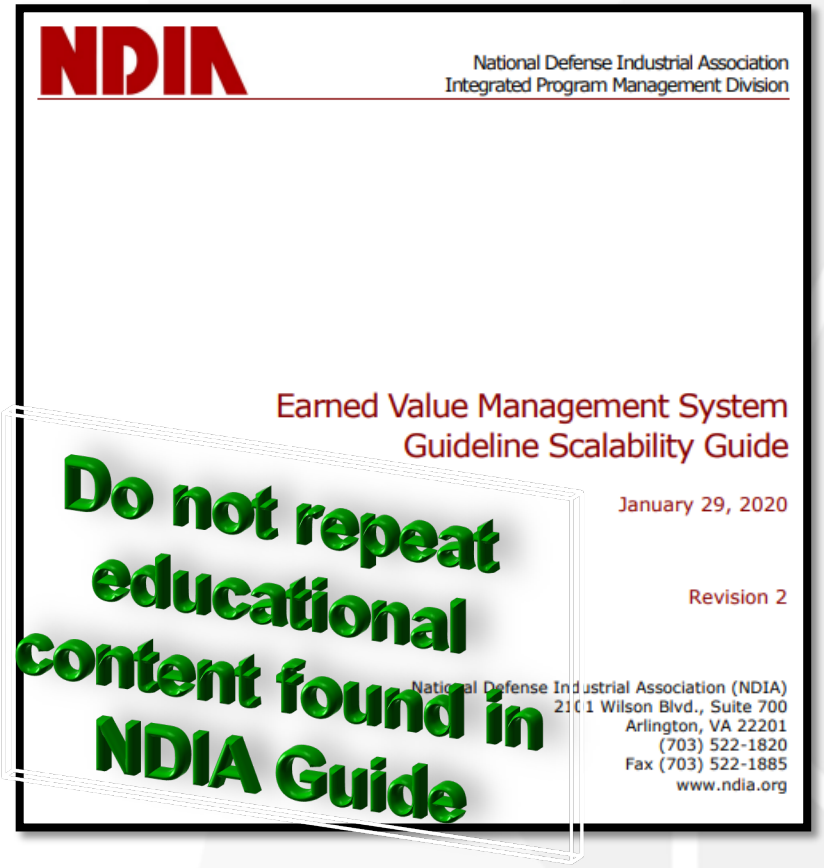
- Review Energy Facility Contractors Group (EFCOG) efforts
- Define IPT (Why, Who, How)
- Describe “Tailoring White Paper” process and conclusions
- Introduce IP2M METRR “Environment” aspects for tailored EVMS
- Outline the path forward
- Explore collaboration with NDIA Scalability Guide, “new guide”

Overview of Past Effort

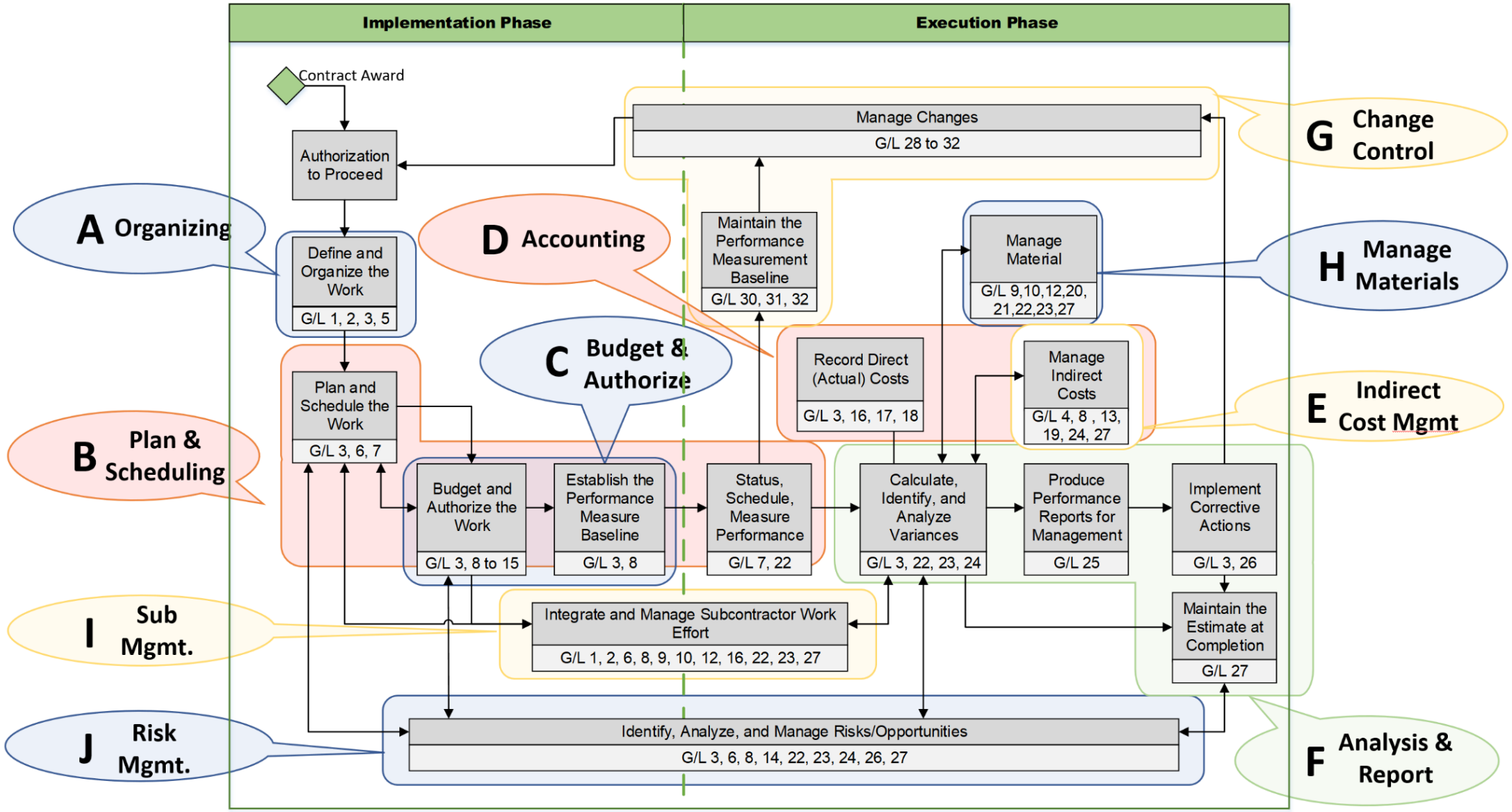
- Business Need:
  Small Project Management Tools
  when full EVMS not required (TPC < $50M)
- Identify differences between Large and Small projects
- Demonstrate EVMS value regardless of project size
- Adjust tools based on project size and risk
- Consider staffing, resources and skills
- Prepare guide for tool selection
- Document results in EFCOG “Best Practice”

EFCOG Team Process

- ❑ **Build upon foundation found in NDIA Scalability Guide**
- ❑ **Assemble EFCOG team**
  - 6 DOE sites and DOE PM-30 represented
- ❑ **Identify 54 EVMS tools and concepts**
- ❑ **Organize tools and concepts by sub-process**
- ❑ **Rank each tool with a background discussion**
- ❑ **Publish results**



Define Rules and Tools for Each Sub-Process Group



Grouping and Scoring Concepts (Rules / Tools)

- **List each tool/concept by sub-process group**
- **Define "Key" versus "Tailorable" Concept**
  - **Key** = considered foundational to EVMS and should be incorporated in some fashion
  - **Tailorable** = tool or concept typically associated with a fully compliant EVMS that has the most opportunity for adjustment or based upon project size and risk
- **Segregate ranking by project size and risk**
  - Project less than $10M with Low Consequence
  - Project between $10M and $50M with Low Risk
  - Project between $10M and $50M with Higher Risk

Grouping and Scoring Concepts (Rules / Tools)

- Rate each concept (1-5 scale) based upon project size and risk

Score	Description	Discussion
5	Critical	Highest rank indicating the intent of this concept should be incorporated into management tool
4	Important	Concept may include Key concepts, but adjustment of approach may be warranted based upon the project or category
3	Meaningful	Concept provides value, but may require significant effort
2	Some Value	Significant opportunity to limit or skip this concept due to complexity or expense
1	Minimal Value	None of the concepts ranked at 1 indicating there was at least some value for all concepts

DOE EVMS Tailoring Matrix (excerpt)

Appendix A – Tailoring Matrix

Tailoring EVMS Concepts for Smaller Projects (<$50M) Group: Key = Foundational concept; Variable = Optional use, tailored approach Concept Significance: 5 = Critical, 4 = Important, 3 = Meaningful, 2 = Some value, 1 = Minimal value						Concept Significance Score		
Group Key* or Tailor	Item	EVMS Primary Group (10)	EVMS Secondary Group (10)	EVMS Concept (requirement of fully compliant EVMS)	Tailoring comments	<$10M Low Consequence	$10-50M Lower Risk	$10-50M Higher Risk
Key	1	01. Organizing	03. Budgeting & Work Authorization	Define product based WBS.	Foundational. Project size and risk will guide complexity.	5	5	5
Key	2	01. Organizing	03. Budgeting & Work Authorization	Scope divided into Control Accounts (CA).	Foundational. Small project may have only 1 or 2 CA based on project structure. CA should be the reporting level	5	5	5
Key	3	01. Organizing	02. Planning & Scheduling	Scope subdivided into lower level. Work Package (WP) and Planning Package (PP) level	Foundational. Even small projects with 1 Control Account benefit from organization of scope into WP and PPs. For organizations planning to roll up projects into an enterprise report, a clear and unique WBS with CA, PP, and WP levels provides good structure for enterprise level reporting.	5	5	
Tailor	4	01. Organizing	03. Budgeting & Work Authorization	Scope defined in WBS Dictionary (WBS-D).	Best Practice. No matter how small a project is, it is a best practice to breakdown the scope and maintain through change control.	4	4	
Tailor	5	01. Organizing	03. Budgeting & Work Authorization	Require the WBS-D be configuration controlled.	Tailorable. Most value for higher risk projects >$10M. If scope is clear and scope creep is unlikely, modifying the WBS-D with baseline changes adds limited value for the administrative cost. In all cases, the schedule must clearly reflect scope to be performed.	2	3	5

Key Tool

Tailorable Tool

Scoring based on project size and risk

Tailoring recommendations for each rule or tool

Final Report

- Published Best Practice (EFCOG site) in November 2020
- Describes how and when to apply
- Summarizes tool approach for each EVMS sub-process group
- Includes “Tailoring Matrix”

EFCOG Best Practice #238

Best Practice Title: Application of Tools Based on EVMS Concepts for Projects under $50M

Point of Contact: Paul Tackett, CNS Oak Ridge 865-576-9410, Paul.Tackett@cns.doe.gov

Brief Description of Best Practice: The *Guide for Applying Tools Based on EVMS Concepts for Projects Under $50M* is designed for U.S. Department of Energy (DOE) cost-reimbursed projects less than $50M where a fully compliant EVMS (to EIA-748) is not required per DOE Order 413.3B, but concepts of EVMS are applicable to enable effective and efficient project controls and performance management. The guide provides an inventory of tools and rules typically used as part of a fully compliant EVMS. The ranking employed in this guide identifies key foundational tools, as well as identifying opportunities for tailoring based upon project size, complexity, or risk. The goal is to provide guidance for companies to establish enterprise level tools that provide an effective framework for planning and managing a project and providing meaningful performance data as efficiently as possible.

Why the Best Practice was used: This guide was developed to identify high value EVMS concepts and tools that can be applied or customized for smaller projects as these projects do not require full EVMS compliance but benefit from many concepts and tools available in it.

What are the benefits of the best practice: This guide provides a roadmap for a company to select and tailor EVMS concepts and tools for a project portfolio based on size, complexity and risk, which leads to effective and appropriate planning and management techniques, and meaningful and consistent retrieval of performance data.

What problems/issues were associated with the best practice: None identified.

How the success of the Best Practice was measured: Development and implementation of tailored EVMS tools for smaller projects provide meaningful and consistent performance data.

Description of process experience using the best practice: Process experiences are shown in the tailoring comments and have been incorporated throughout the guide.

https://efcog.org/wp-content/uploads/Wgs/Project%20Delivery%20Working%20Group/_Project%20Controls%20Subgroup/Earned%20Value%20Management%20Task%20Team/Documents/238%20White%20Paper%20-%20EVMS%20concepts%20for%20projects%20under%2050M%202020_1019.pdf

Key “Foundational” Concepts (keep in some form)

- ❑ Define scope in a Work Breakdown Structure (WBS)
- ❑ Group scope into Work Packages (WP) and Planning Packages (PP)
- ❑ Utilize a Baseline and Forecast Schedule to plan scope
- ❑ Follow a Work Authorization process
- ❑ Collect hours & dollars (segregate Labor versus Non-Labor)
  - Associate Actual Cost with Earned Value with adequate rigor
- ❑ Generate periodic Estimate at Completion (EAC)
- ❑ Use a documented Baseline Change process with defined rules
- ❑ Provide training on the defined process and monitor compliance

Tailorable Concepts (opportunity to adjust)

❑ Organizing

- Simplify WBS
- WBS Dictionary maintenance

❑ Planning & Scheduling

- Resource loading and time phasing rules
- Relationship and logic rules
- Rules for long duration activities
- Relaxing use of loaded logic driven schedule for low risk scope

❑ Budgeting & Work Authorization

- Span of control limits
- Simple / concise OBS
- Single page Control Account Plan / Work Authorization
- Flexible Earned Value technique use and rules

Tailorable Concepts (opportunity to adjust)

❑ Accounting Considerations

- Define threshold for when to use estimated actuals
- Basic Element of Cost (EOC) definition

❑ Analysis & Management Reporting

- Fewer reporting thresholds, perhaps only summary level analysis
- Simplify VAR content requirements
- Utilize existing project action tracking system
- Relax or eliminate annual EAC requirement

❑ Change Control

- MR use rules tied to both scope and business objectives, approved internally
- Customize rolling wave and freeze period rules and exceptions
- Allow development of MR based upon management assessment
- Control retroactive changes internally

Tailorable Concepts (opportunity to adjust)

❑ Material Management

- Define budget alignment using business practices, not HDV list rules
- Relax baseline schedule alignment rules for all but critical equipment

❑ Subcontract Management

- Similar tailoring to material management
- Exploit existing business practices to avoid duplication of management tools

❑ Risk Management

- Simpler risk management program and tools

Comparison to Existing Practices (CNS small projects)

- All projects generate EVM performance data
- Most “Key” EVMS tools / concepts used with rigor
- Many “Tailorable” EVMS concepts also applied
- Simpler Reporting (Cost Processor use restricted to Major Projects)
- Limited Project Controls (PC) and PM staff spread across many projects
- PM, PC knowledge gap addressed by attending regular EVMS training

Summary of EFCOG Tailoring White Paper / Guide

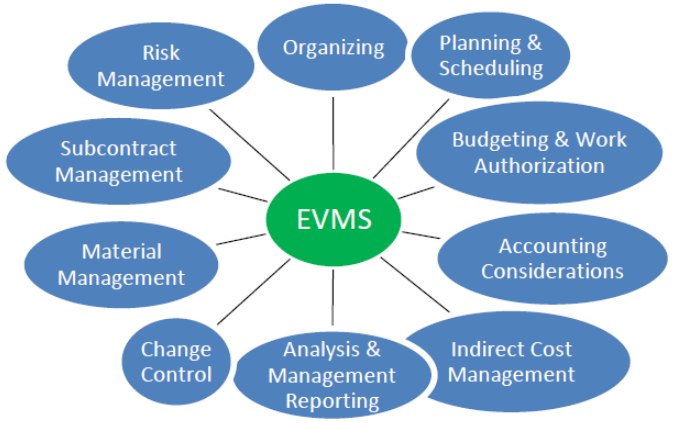
- All cost reimbursable projects benefit from EVMS concepts
- All EVMS 32 guidelines have value
- Tailoring method guided by guideline objective
- Assessment of project size and risk will drive concept tailoring decision
- Final set of EVMS process requirements must be documented
- Training and assessment of compliance enable quality analysis

Potential Enhancements to White Paper / Guide

- Since development, DOE-funded research project was completed: "Integrated Project/Program Management (IP2M) Maturity and Environment Total Risk Rating (METRR) using EVMS
- Problem Statement:

Can we take existing White Paper and update to better align with IP2M METRR?

DOE EVMS Direction – IP2M METRR



IP2M METRR FOR DUMMIES

Maturity: 10 Sub-Processes, 56 Attributes (derived from 32 EVMS GLs) multiplied by their assessed score (1-5) weighted for their relative importance

- Each attribute has a relative weight associated with it
- All maturity attribute scores roll up to a 1000-point scale (higher is better)
- The score quantifies the overall level of EVMS maturity for the project/program being assessed.

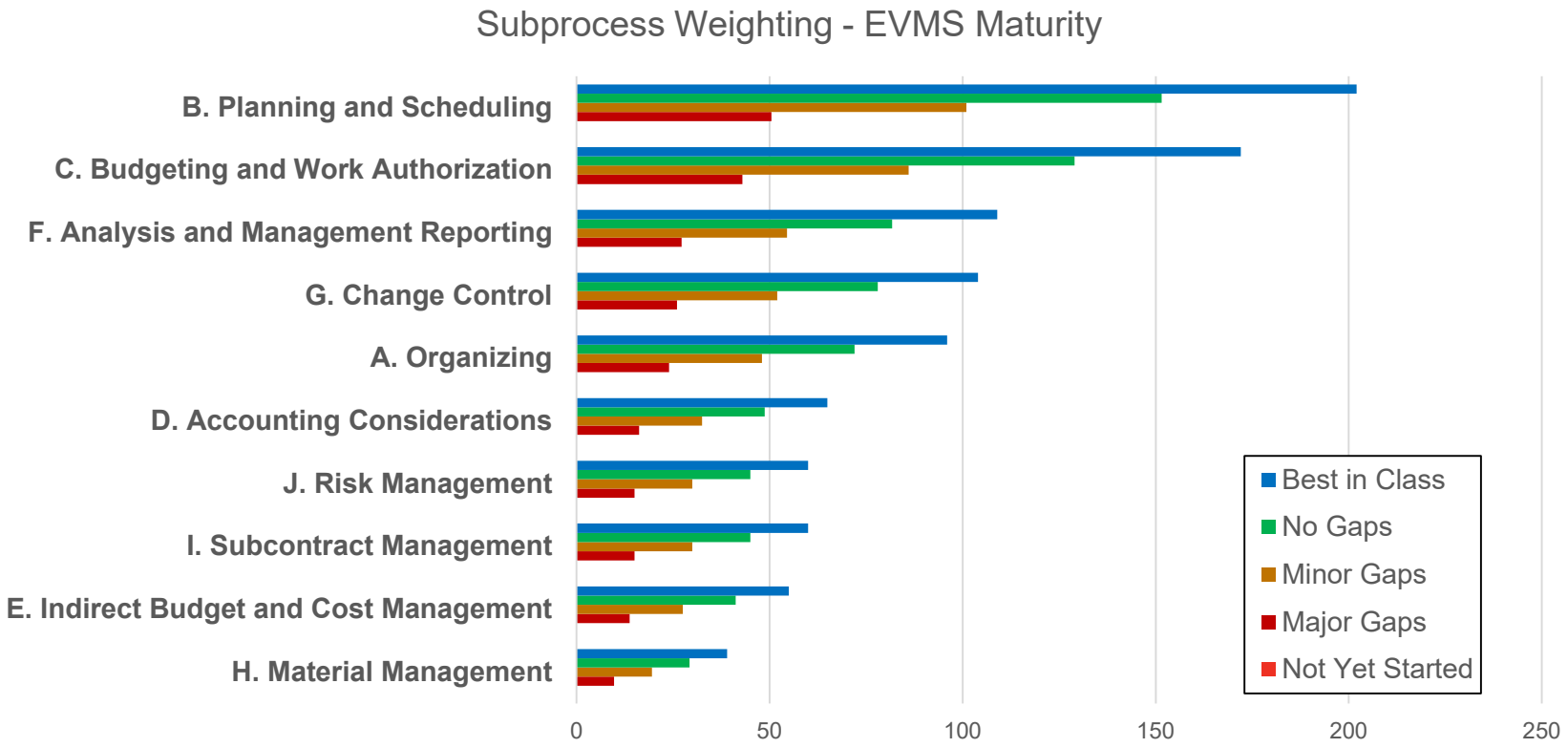
'Traditional' EVMS compliance – but not performed/assessed in a 'traditional' way

Environment: 4 Categories, 27 Factors (derived from various IPM sources) multiplied by their assessed score (5 values from 'Not Acceptable' to 'High Performing') weighted for their relative importance

- Each factor has a relative weight associated with it for all rating levels
- All environment factor scores roll up to a 1000-point scale (higher is better)
- The score quantifies the overall level of the project/program environment for the project/program being assessed.

'NON-TRADITIONAL' IPM assessment – this is a NEW/"AH HAH!" process

IP2M METRR is basis for EVMS Maturity Evaluations

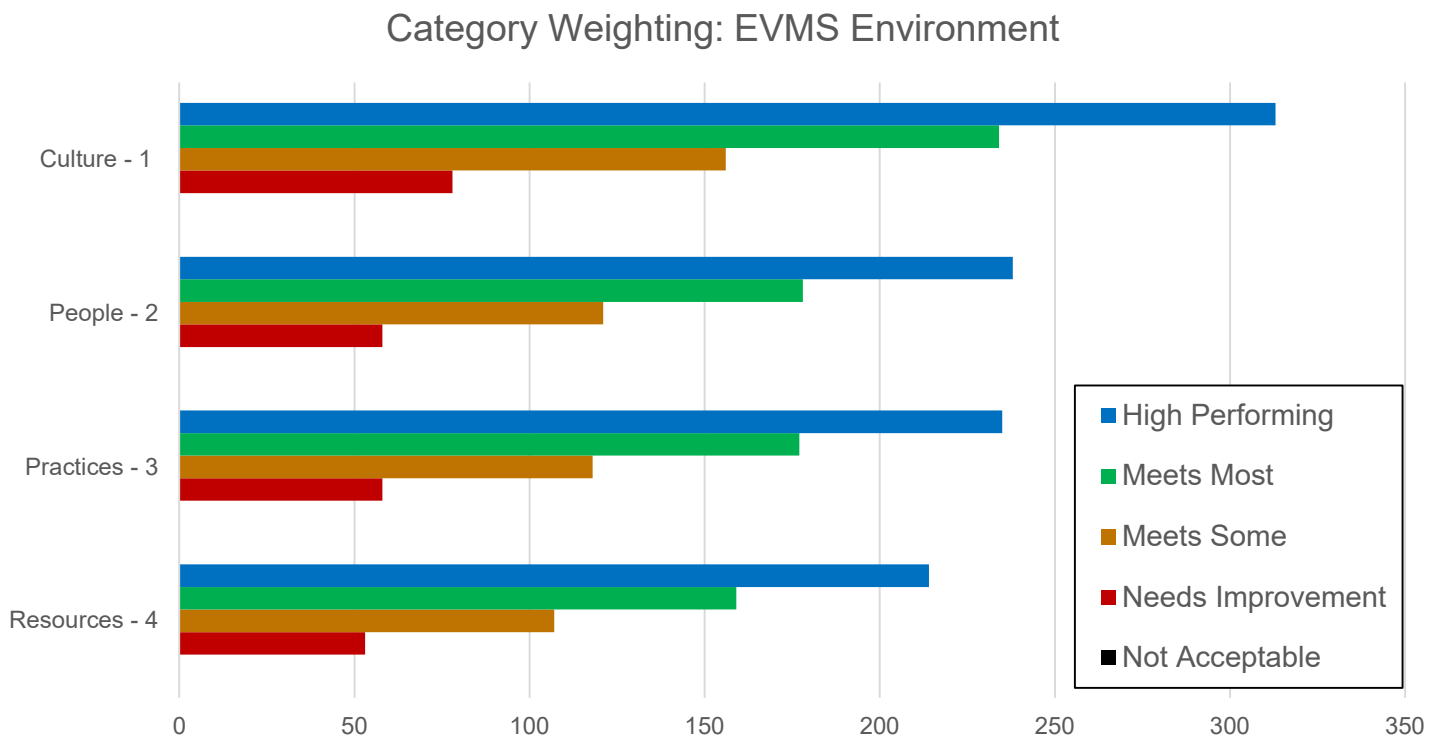


- Maturity subprocesses have been weighted based on the importance to an effective EVMS.

- Maturity levels:
  - Best in Class
  - No Gaps
  - Minor Gaps
  - Major Gaps
  - Not Yet Started

- ***Best in Class*** Maturity score is ***1000***
- ***No Gaps*** Maturity score is ***750***

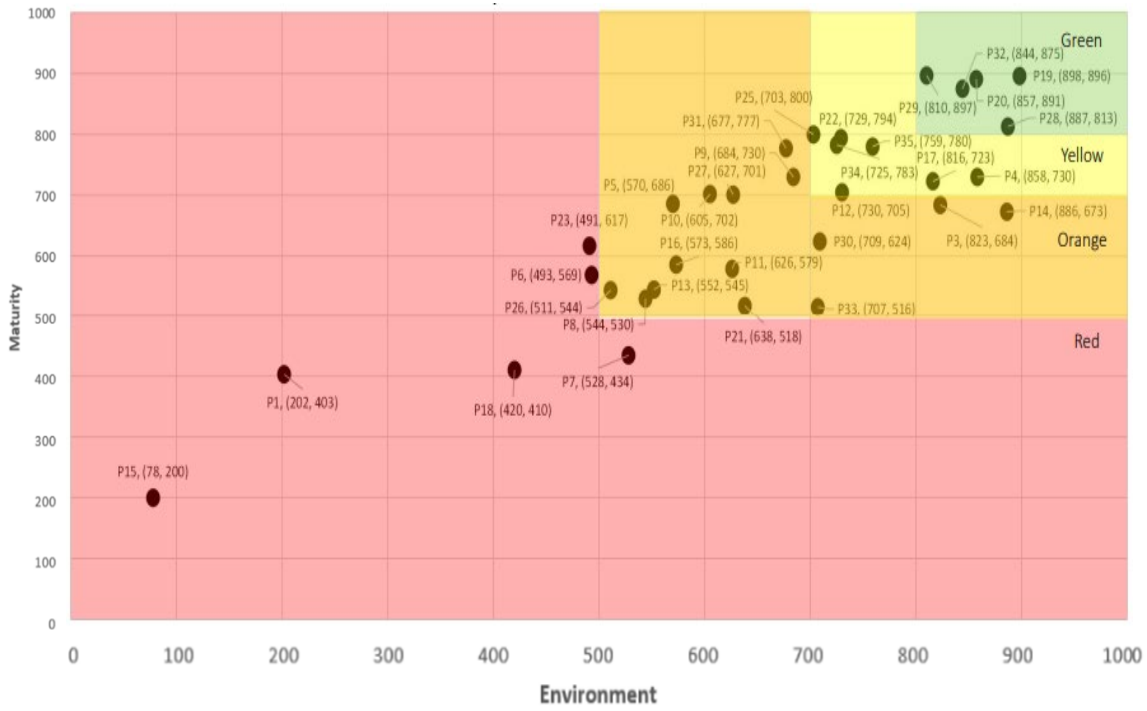
IP2M METRR is also basis for EVMS Environment Evaluations

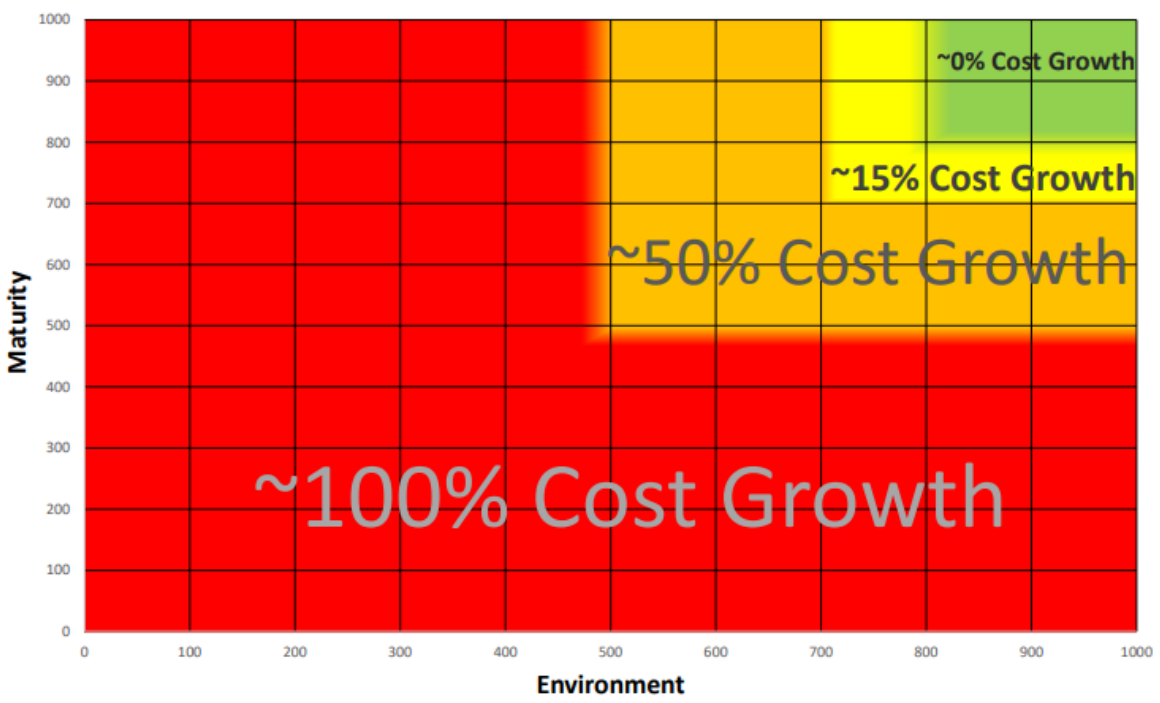


- ***High Performing*** Environment score is ***1000***
- ***Meets All*** Environment score is ***750***

- Environment subprocesses have been weighted based on the importance to an effective EVMS.
- Environment categories:
  - High Performing
  - Meets All
  - Meets Some
  - Needs Improvement
  - Not Acceptable

DOE EVMS Direction – IP2M METRR is basis for EVMS evaluation

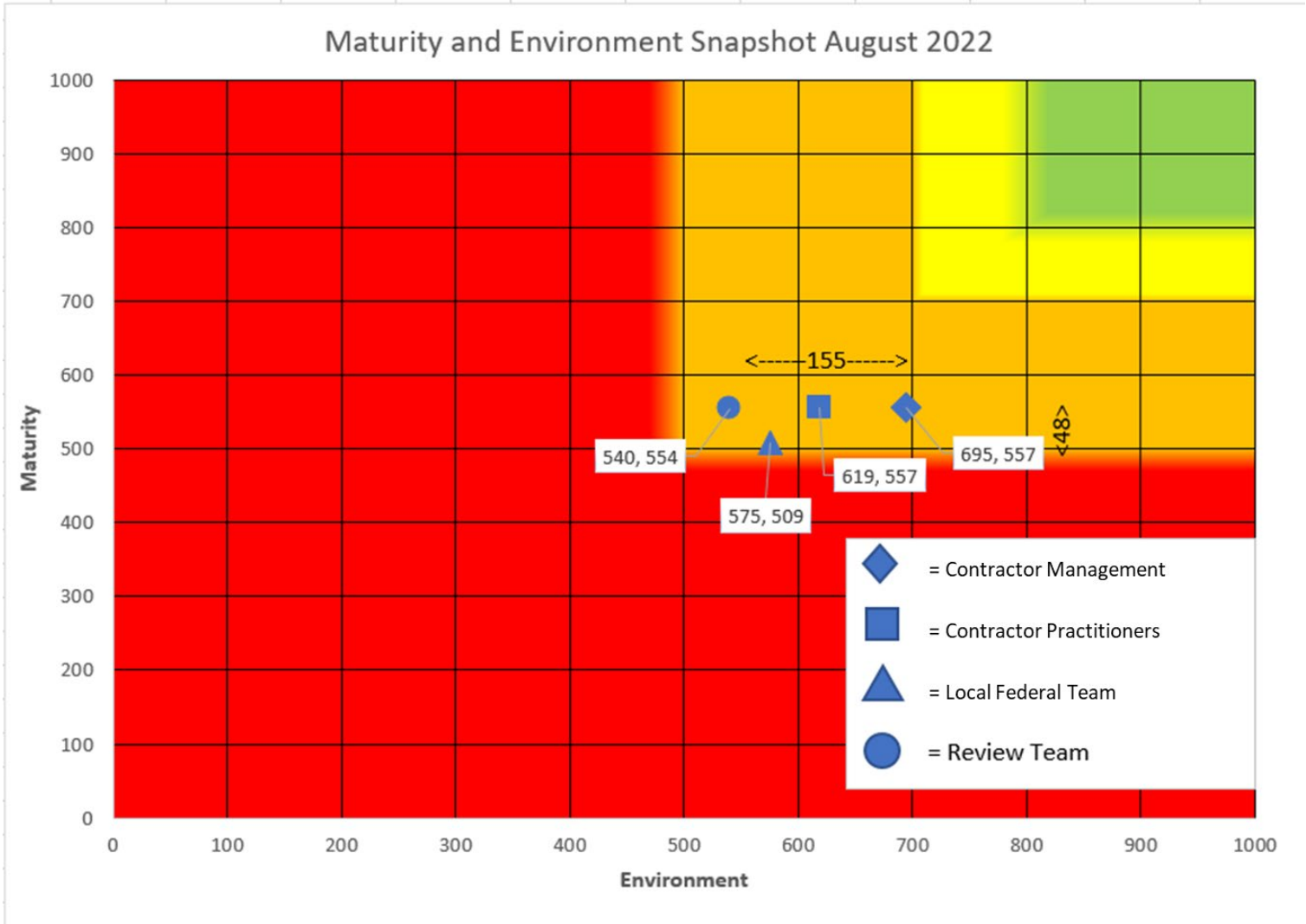




"As goes environment, so goes maturity"

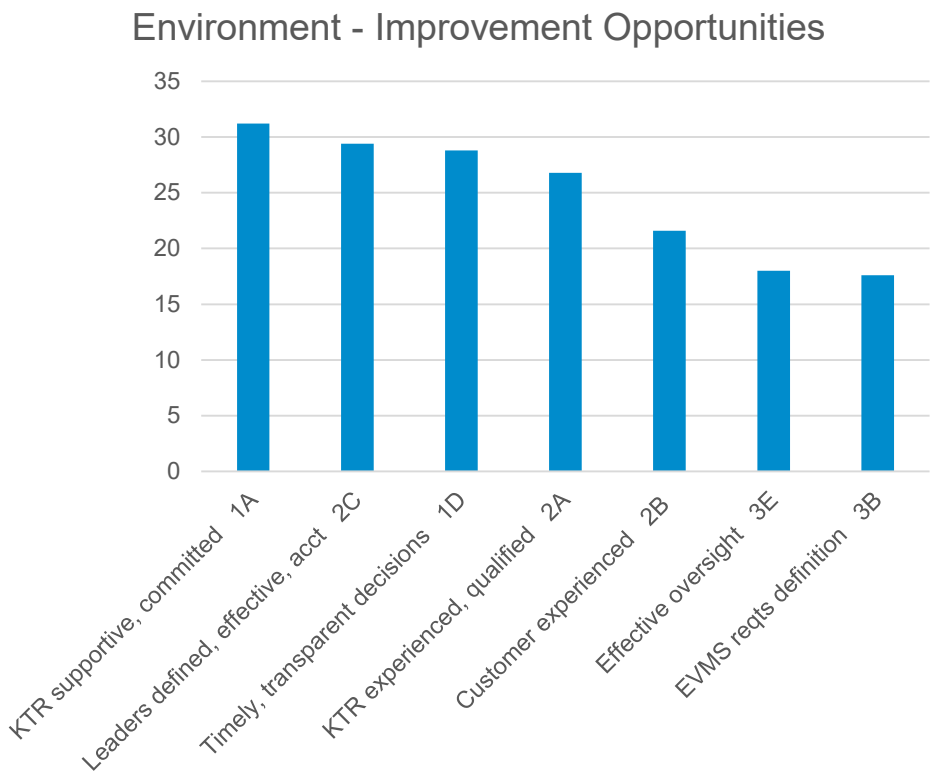
"… and so goes performance"

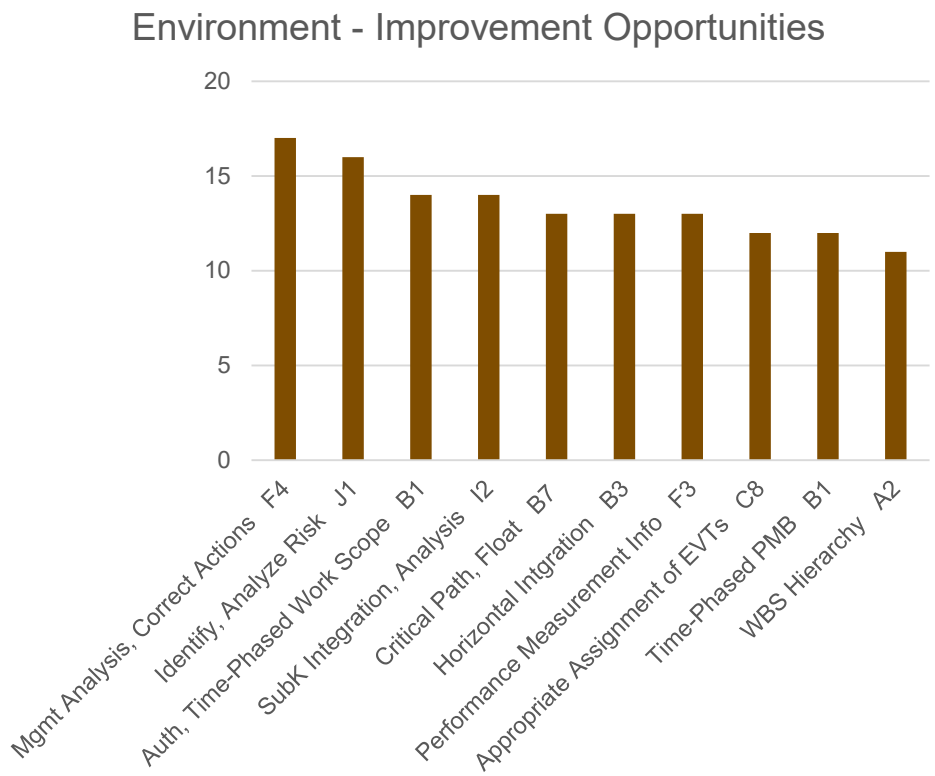
IP2M METRR allows measurement from different perspectives



- Environment and Maturity can be evaluated from different perspectives:
  - Contractor Management
  - Contractor Practitioners
  - Local Project Team
  - Review Team

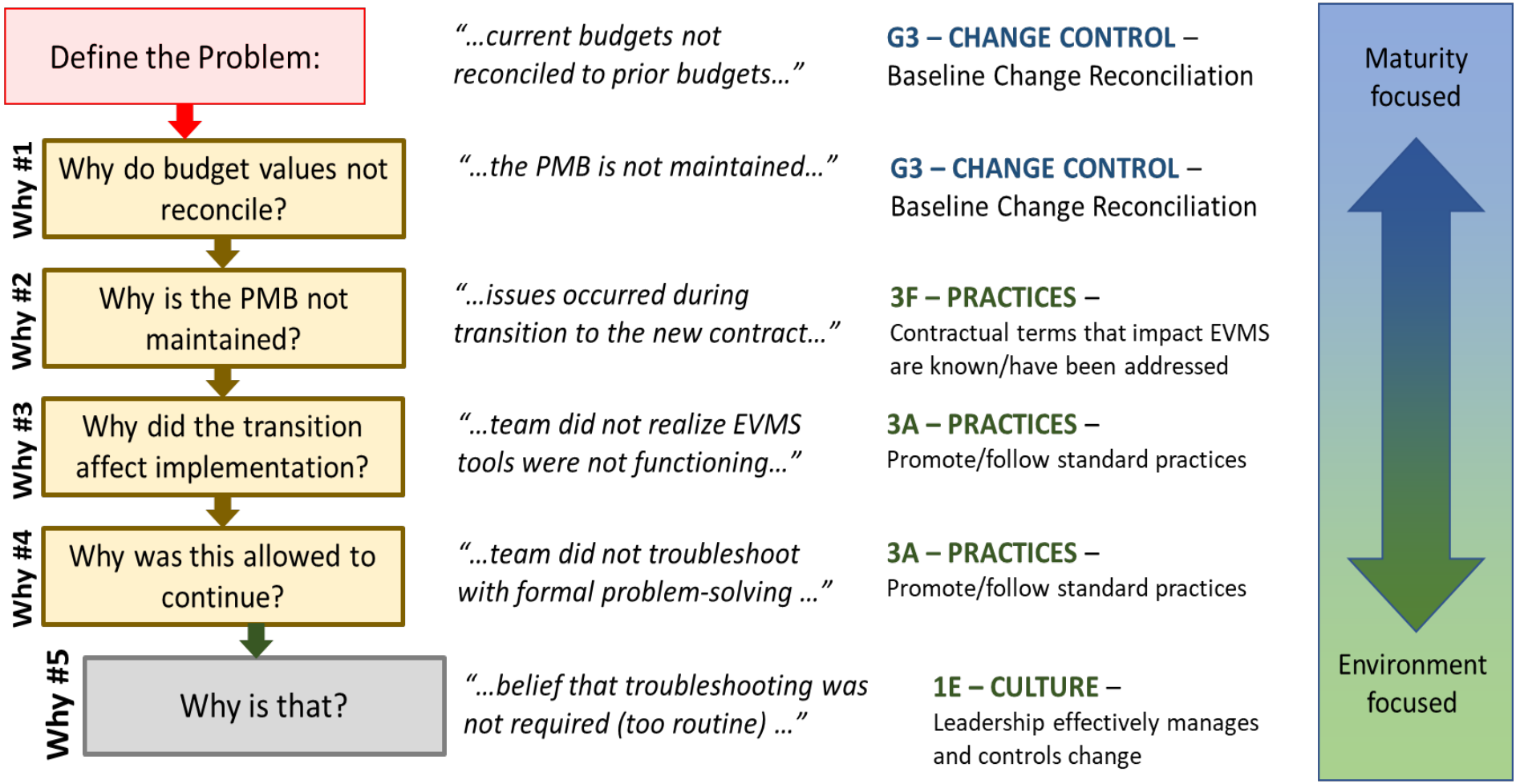
IP2M METRR provides opportunities for project improvement





25% of environment factors contribute 55% of opportunity;
18% of maturity attributes contribute 38% of opportunity

Relationship of Maturity and Environment in a typical 5 Whys Root Cause Analysis

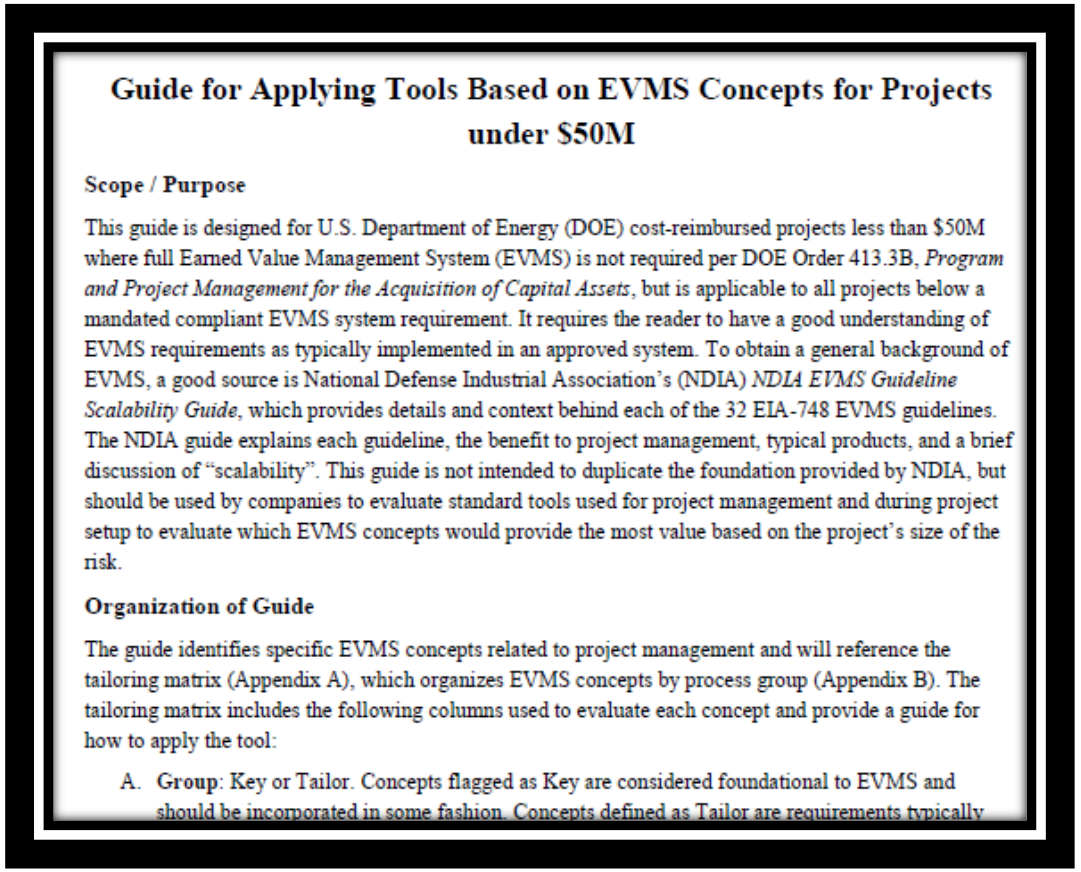


IP2M METRR Principles provide foundation for approach to Tailoring

- **Environment influences tailoring approach**
- **Conduct Environmental Assessment before selecting tools**
  - Culture – Organization supportive and committed to EVMS?
  - People – Contractor staff qualified and experienced in EVMS?
  - Practices – Existing tools understood and integrate well with EVMS?
  - Resources – Funding, Calendar Time, Data Available?
- **Define gaps to target system**
- **Tools must blend well with existing core business practices**
  - ‘Evolution’ easier than ‘Revolution’
  - Target high value changes

Limitation of existing EFCOG White Paper

- **Prepared prior to IP2M METRR**
  - Weighting of maturity attributes is not completely aligned
  - Add environment factor decision matrix
  - Highlight foundational concepts
- **Directs reader to NDIA for basic concepts, EVMS tools and how they are used**
- **Designed for DOE projects < $50M**
  - Expand for broader use



Guide for Applying Tools Based on EVMS Concepts for Projects under $50M

Scope / Purpose

This guide is designed for U.S. Department of Energy (DOE) cost-reimbursed projects less than $50M where full Earned Value Management System (EVMS) is not required per DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, but is applicable to all projects below a mandated compliant EVMS system requirement. It requires the reader to have a good understanding of EVMS requirements as typically implemented in an approved system. To obtain a general background of EVMS, a good source is National Defense Industrial Association's (NDIA) *NDIA EVMS Guideline Scalability Guide*, which provides details and context behind each of the 32 EIA-748 EVMS guidelines. The NDIA guide explains each guideline, the benefit to project management, typical products, and a brief discussion of "scalability". This guide is not intended to duplicate the foundation provided by NDIA, but should be used by companies to evaluate standard tools used for project management and during project setup to evaluate which EVMS concepts would provide the most value based on the project's size of the risk.

Organization of Guide

The guide identifies specific EVMS concepts related to project management and will reference the tailoring matrix (Appendix A), which organizes EVMS concepts by process group (Appendix B). The tailoring matrix includes the following columns used to evaluate each concept and provide a guide for how to apply the tool:

A. **Group**: Key or Tailor. Concepts flagged as Key are considered foundational to EVMS and should be incorporated in some fashion. Concepts defined as Tailor are requirements typically

"Limitations imply possibilities. A problem is a challenge"

John Russell Pope

Evaluate approaches for Tailoring

- **Tailoring is necessary for efficient project delivery; consider**
  - Size ($ threshold)
  - Commercial-type projects
  - Other factors: risk, visibility, safety, security, schedule

DOE/EFCOG proposed Path Forward

- **Align White Paper concepts with IP2M attributes**
  - FROM: 10 Groups, 54 Concepts TO: 10 Subprocesses, 56 Attributes
- **Align White Paper concept score with IP2M maturity rating**
  - FROM: 1 – 5 Scale TO: Weighted 1000 total, 6 - 32 Range
- **Introduce Weighting for Environment Items**
  - Evaluate Environment Factors
  - Utilize similar “Concept Significance Score” process

DOE/EFCOG proposed Path Forward

- **Address “gap” for guidance – Leverage NDIA efforts if possible**

- **Participate with NDIA – New publication for Scaling/Tailoring:**
  - for scalable solutions
  - satisfy the underlying **intent** of EIA-748
  - where the results may not be "compliant", but the management value is optimized for successful outcomes

- **Better define the reasons for using ($ threshold, project complexity)**

- **Develop product that builds on concepts of IP2M METRR**