

Implementing an Integrated Project/Program Management (IP2M) Maturity and Environment System

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Melvin Frank, G. Edward Gibson Jr., Mounir El Asmar



Presenters

- **Melvin Frank**

Director, Project Controls Division (PM-30)

Director, Policy and Program Support Division (PM-50)

Office of Project Management (PM) [<https://www.energy.gov/projectmanagement/office-project-management>]

U.S. Department of Energy

- **Dr. G. Edward Gibson, Jr., PhD, PE**

Professor and Sunstate Chair of Construction Management and Engineering

School of Sustainable Engineering and the Built Environment [<https://ssebe.engineering.asu.edu>]

Arizona State University

- **Dr. Mounir El Asmar, PhD**

Associate Professor, Del E. Webb School of Construction

Co-Director, National Center of Excellence on Smart Innovations

School of Sustainable Engineering and the Built Environment

Arizona State University

Research Team Members

Team Member	Organization
Vartenie Aramali	Arizona State University
Elizabeth Betsy Ballard	Tecolote Research
Amy Basche	Hanford Mission Integration Solutions
Ivan Bembers	National Reconnaissance Office
Danielle A. Bemis	U.S. Department of Defense - DCMA
Caitlin O'Grady	U.S. Department of Defense
Thomas P. Carney	Lockheed Martin
Mounir El Asmar, PI	Arizona State University
Jon Fleming	National Aeronautics and Space Administration
Mark Frampton	National Reconnaissance Office
Melvin Frank	U.S. Department of Energy
G. Edward Gibson, PI	Arizona State University
Jonathan de Guzman	Booz Allen Hamilton
Wayne A. Harris	Tech Source
Craig T. Hewitt	Washington River Protection Solutions
David Kester	U.S. Department of Energy
Kristen Kehrer	National Aeronautics and Space Administration

Team Member	Organization
Jeffrey King	Northrup Grumman
Derek D. Lehman	Washington River Protection Solutions
Doug Marbourg	Los Alamos National Laboratory
Ben Pina	U.S. Department of Energy - NNSA
John C. Post	Jacobs
Garrett Richardson	U.S. Department of Energy
Russel W. Rodewald	Raytheon Corp
Hala Sanboskani	Arizona State University
Paul J. Sample	CACI International Inc.
Vaughn M. Schlegel	Lockheed Martin
Anthony W. Spillman	Washington River Protection Solutions
Robert Sudermann	FLUOR
David Tervonen	U.S. Department of Defense
Tristan Walters	Sandia National Laboratories
William G. Weisler	U.S. Department of Defense - DCMA
Mathew Z. (Zac) West	U.S. Department of Energy



Research Aims and Objectives

- Elevate the worth and utility of the EVMS through **unbiased scientific research**
- Develop a **scalable EVMS Maturity and Environment Model**
 - *inclusive of EIA-748 requirements but recognize other standards (PMI, ISO)*
 - *accommodate unique missions, program and project types of the DOE, DoD, NRO, NASA, and other agencies*
 - *commercial ventures requiring disciplined scope, schedule, and cost management*
 - *provides **insights into implementation risks and opportunities***
 - *Current working version available at:*
<https://www.energy.gov/projectmanagement/articles/ip2m-metr-asu-evms-study>

How we got here

- Kicked off on May 8, 2019
- Steering Team, 27 members from 16 organizations
- Literature review of 600+ publications
- Initial industry survey via Qualtrics, 294 responses from 92 organizations
- Twelve workshops, input from 136 industry experts (60 affiliated with DOE)
- Data collection for performance from 35 completed projects/programs worth \$21.8 billion (19 affiliated with DOE)
- Along with testing of tool with ongoing projects/programs on 8 projects worth \$6.8 billion (7 of 8 affiliated with DOE)
- Software development in progress, to be completed March 2022
- Training shortly afterwards

Typical Large and Complex Projects/Programs

- Industrial
- Energy
- Defense
- Aerospace
- Manufacturing
- Infrastructure
- etc.



Definitions

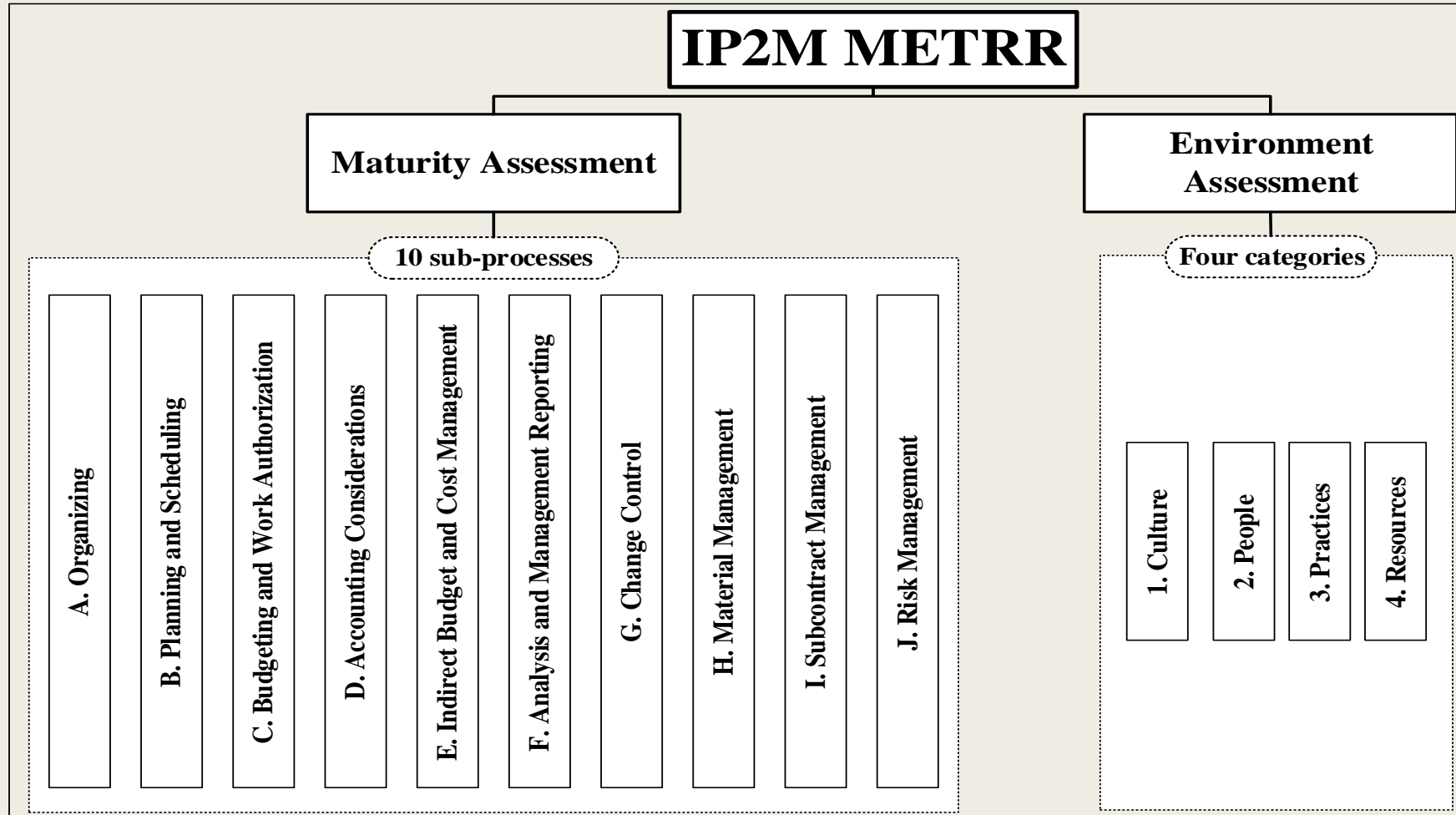
Earned Value Management (EVM): *The use of performance management information, produced from the EVMS, to plan, direct, control, and forecast the execution and accomplishment of contract/project cost, schedule, and technical performance objectives versus the plan.*

Earned Value Management System (EVMS): *An organization's management system for project/program management that integrates a defined set of associated work scopes, schedules and budgets for effective planning, performance, and management control. It integrates these functions with other business systems such as accounting and human resources, among others.*

Maturity: *The degree to which an implemented system, associated processes, and deliverables serve as the basis for an effective and compliant EVMS.*

Environment: *The conditions (i.e., people, culture, practices, and resources) that enable or limit the ability to manage the project/program using the EVMS, serving as a basis for timely and effective decision-making.*

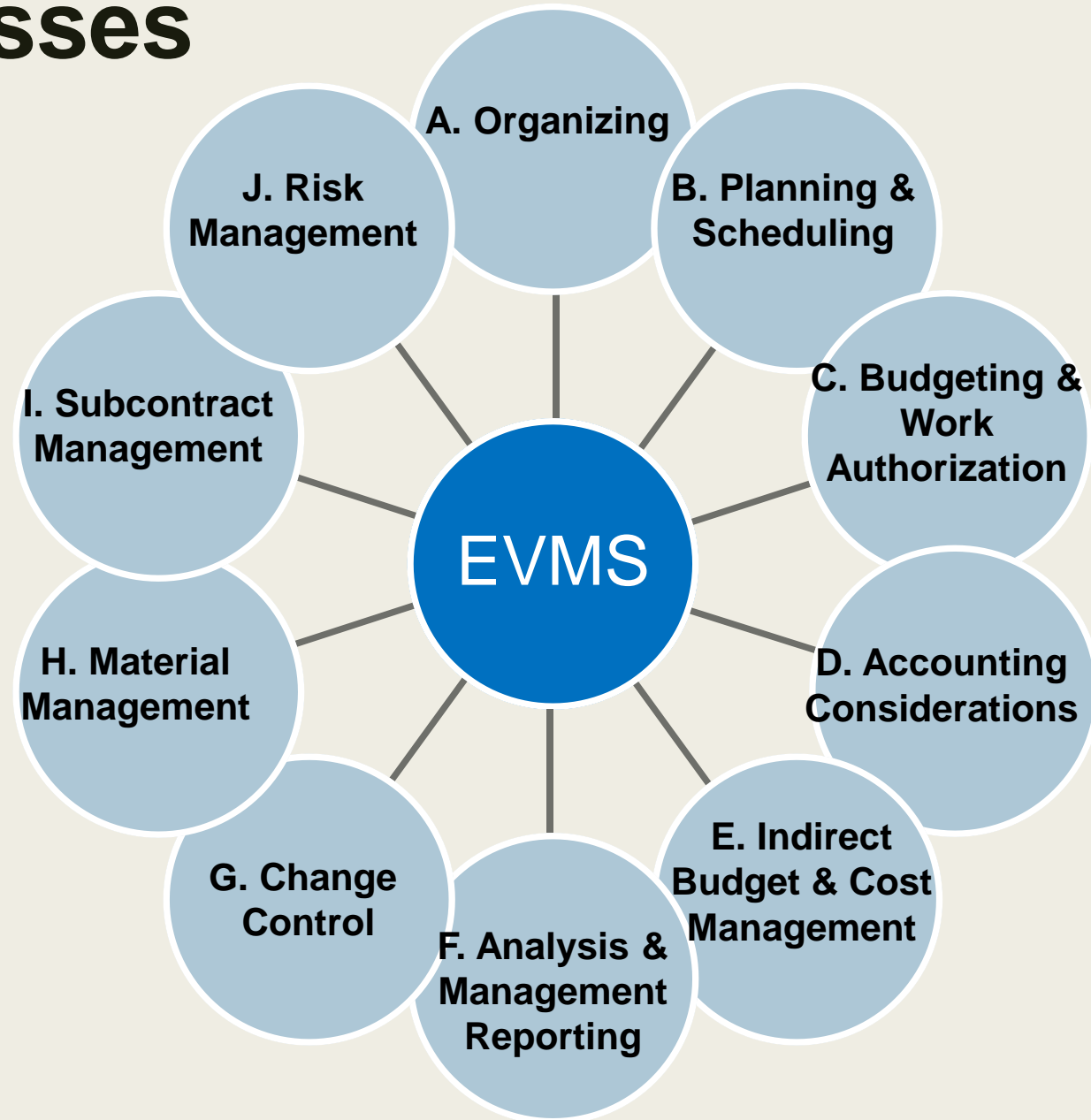
Integrated Project/Program Management (IP2M), Maturity and Environment Total Risk Rating (METRR) using EVMS



10 IP2M Sub-Processes

- Maturity Attributes can have a significant impact on the efficacy of the EVMS.
- The team identified 56 attributes making up the 10 sub-processes of EVMS.
- Each attribute can be assessed a maturity level from 1 to 5, with 5 being highest maturity.

Sub-Process: *A series of interrelated tasks that, together, transform inputs into a system to achieve Earned Value Management (EVM).*



List of 56 Maturity Attributes

A. ORGANIZING

- A.1. Product-Oriented Work Breakdown Structure (WBS)
- A.2. Work Breakdown Structure (WBS) Hierarchy
- A.3. Organizational Breakdown Structure (OBS)
- A.4. Integrated System with Common Structures
- A.5. Control Account (CA) to Organizational Element

B. PLANNING AND SCHEDULING

- B.1. Authorized, Time-Phased Work Scope
- B.2. Schedule Provides Current Status
- B.3. Horizontal Integration
- B.4. Vertical Integration
- B.5. Integrated Master Schedule (IMS) Resources
- B.6. Schedule Detail
- B.7. Critical Path and Float
- B.8. Schedule Margin (SM)
- B.9. Progress Measures and Indicators
- B.10. Time-Phased Performance Measurement Baseline (PMB)

C. BUDGETING AND WORK AUTHORIZATION

- C.1. Scope, Schedule and Budget Alignment
- C.2. Summary Level Planning Packages (SLPPs)
- C.3. Work Authorization Documents (WADs)
- C.4. Work Authorization Prior to Performance
- C.5. Budgeting by Elements of Cost (EOC)
- C.6. Work Package Planning, Distinguishability, and Duration
- C.7. Measurable Units and Budget Substantiation
- C.8. Appropriate Assignment of Earned Value Techniques (EVTs)
- C.9. Identify and Control Level of Effort (LOE) Work Scope
- C.10. Identify Management Reserve (MR) Budget
- C.11. Undistributed Budget (UB)
- C.12. Reconcile to Target Cost Goal

D. ACCOUNTING CONSIDERATIONS

- D.1. Direct Costs
- D.2. Actual Cost Reconciliation
- D.3. Recording Direct Costs to Control Accounts (CAs) and/or Work Packages (WPs)
- D.4. Direct Cost Breakdown Summary

E. INDIRECT BUDGET AND COST MANAGEMENT

- E.1. Indirect Account Organization Structure
- E.2. Indirect Budget Management
- E.3. Record/Allocate Indirect Costs
- E.4. Indirect Variance Analysis

F. ANALYSIS AND MANAGEMENT REPORTING

- F.1. Calculating Variances
- F.2. Variances to Control Accounts (CAs)
- F.3. Performance Measurement Information
- F.4. Management Analysis and Corrective Actions
- F.5. Estimates at Completion (EAC)

G. CHANGE CONTROL

- G.1. Controlling Management Reserve (MR) and Undistributed Budget (UB)
- G.2. Incorporate Customer Directed Changes in a Timely Manner
- G.3. Baseline Changes Reconciliation
- G.4. Control of Retroactive Changes
- G.5. Preventing Unauthorized Revisions to the Contract Budget Base (CBB)/ Project Budget Base (PBB)
- G.6. Over Target Baseline (OTB) Authorization/ Over Target Schedule (OTS) Authorization

H. MATERIAL MANAGEMENT

- H.1. Recording Actual Material Costs
- H.2. Material Performance
- H.3. Residual Material
- H.4. Material Price/Usage Variance
- H.5. Identification of Unit Costs and Lot Costs

I. SUBCONTRACT MANAGEMENT

- I.1. Subcontract Identification and Requirements Flow Down
- I.2. Subcontractor Integration and Analysis
- I.3. Subcontract Oversight

J. RISK MANAGEMENT

- J.1. Identify, Analyze and Manage Risk
- J.2. Risk Integration

Maturity Attribute Example

SUB-PROCESS A: ORGANIZING	Maturity Level				
	LOW	MEDIUM			HIGH
A.1. Product-Oriented Work Breakdown Structure (WBS)	1	2	3	4	5
<p>A product-oriented Work Breakdown Structure (WBS) is developed for a given project and extended to the control account level, as a minimum, and lower levels (e.g., work package/planning package) as necessary for management control. A WBS displays and defines the products, and/or services, to be developed and/or produced. It is a product structure and not an organizational structure. Only one WBS exists.</p> <p>A WBS is a decomposition of all the work necessary to complete all authorized project scope including any revisions resulting from authorized changes and modifications. It uses nouns and adjectives to define work and is arranged in a hierarchy. It is constructed to allow for clear and logical groupings, either by activities or deliverables. The WBS should represent the work identified in the approved Project Scope Statement or Statement of Work (SOW)/Statement of Objectives (SOO) and serves as an early foundation for effective schedule development and cost estimating and map to the authorization documentation. Programs typically will develop a WBS as a precursor to a detailed project schedule. The WBS is accompanied by a WBS Dictionary, as required, which lists and defines WBS elements.</p> <p>The goals of developing a WBS are to define the work elements 1) for the project team to proactively and logically plan out the project to completion, 2) to collect the information about work that needs to be done for a project, 3) to organize activities into manageable components that will achieve project objectives, 4) facilitates data collection and traceability, and 5) provides a control framework for integrated project/program management. The number of levels of the WBS should be determined by management needs, project/program risk and complexity, and similar driving factors.</p> <p>Items to consider include:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Singularity of Work Breakdown Structure (WBS) <input type="checkbox"/> WBS tied to the project/program SOW/SOO <input type="checkbox"/> Traceability matrix (e.g., SOW, design requirements and build specifications) to WBS <input type="checkbox"/> WBS reflects base contract and modifications <input type="checkbox"/> WBS descriptive documents, such as a WBS dictionary, index, or similar document(s), that reflect and expand on the contract SOW/SOO <input type="checkbox"/> Work Authorization Documents (WADs) based on the dictionary pages (optional) <input type="checkbox"/> Other <p>The WBS should be integrated with the Planning and Scheduling process, Budgeting and Work Authorization process, Change Control process, Accounting Considerations process, and Analysis and Management Reporting process.</p> <p>References: NDIA EVMS EIA-748-D Intent Guide GL 1; DoD EVMSIG GL 1; DOE CAG GL 1; EIA748-D; NDIA PASEG; MIL STANDARD 881 Rev E; ISO 21508:2018(E); ANSI PMI 19-006-2019</p>	Not yet started.	<p>A singular, high-level product-oriented WBS is established. WBS does not decompose to capture all work requirements.</p> <p>The process to establish a singular, product-oriented WBS has started, but is not documented.</p> <p>The hierarchical WBS is not fully traceable to the SOW and is missing SOW scope. The WBS is functionally oriented and lacks product orientation.</p> <p>Products often do not fulfill project/program requirements.</p>	<p>Processes to require a singular, product-oriented WBS are established. WBS is traceable, and decomposed to the appropriate levels for effective project/program management. The WBS includes most of the authorized work scope / requirements.</p> <p>The process to establish a singular, product-oriented WBS that accurately reflects the products, services, and deliverables required to complete the project/program has been developed. No internal checks are in place to validate that the WBS meets requirements.</p> <p>Most products fulfill project/program requirements.</p> <p>The WBS hierarchy initially is product-oriented, but the WBS as extended to lower levels becomes functionally oriented in an organizational or functional orientation.</p> <p>The WBS is coordinated with the Planning and Scheduling process, Budgeting and Work Authorization process, Change Control process, Accounting Considerations process, and Analysis and Management Reporting process.</p>	<p>Processes requiring a singular, product-oriented WBS are established and approved. WBS is traceable, encompassing all authorized work and decomposed to the appropriate levels for effective project/program management and external reporting. The required WBS is validated through internal checks per approved processes annually.</p> <p>The process to establish a singular, product-oriented WBS that accurately reflects the products, services, and deliverables required to complete the project/program has been developed, documented and approved.</p> <p>Internal checks are in place to validate that the WBS meets project/program requirements. Checks may be outside the WBS process flow. The project/program ensures that the WBS is verified as product-oriented, with corrections performed as required during project/program start-up. Products fulfill all project/program requirements. If required, WBS descriptive documents such as a WBS dictionary, index, or similar document(s) have been developed.</p> <p>The WBS is fully integrated with the Planning and Scheduling process, Budgeting and Work Authorization process, Change Control process, Accounting Considerations process, and Analysis and Management Reporting process.</p>	<p>The singular product-oriented WBS is reviewed, revised and validated annually or more frequently as needed, with revision history, per approved processes, through in-process internal checks.</p> <p>The WBS is optimized to streamline management of the project/program. Internal checks are in place to validate that the WBS meets project/program requirements within the WBS process flow.</p> <p>Automated testing ensures that the established WBS is a product-oriented hierarchical decomposition of hardware, software and services. Necessary corrective actions are implemented, completed, and recurring issues resolved.</p> <p>Routine surveillance results of the WBS are fully disclosed with all key stakeholders, who maximize use of these results.</p> <p>The WBS is continuously improved and optimized.</p>

Maturity Score Sheets (1/5)

SUB-PROCESS A: ORGANIZING							
Attribute	Maturity Level						Comments
	N/A	1	2	3	4	5	
A.1. Product-Oriented Work Breakdown Structure (WBS)		0	5	11	16	22	
A.2. Work Breakdown Structure (WBS) Hierarchy		0	5	10	14	19	
A.3. Organizational Breakdown Structure (OBS)		0	4	7	11	14	
A.4. Integrated System with Common Structures		0	6	11	17	23	
A.5. Control Account (CA) to Organizational Element		0	4	9	13	18	
Column Totals		0	24	48	71	96	

SUB-PROCESS B: PLANNING AND SCHEDULING							
Attribute	Maturity Level						Comments
	N/A	1	2	3	4	5	
B.1. Authorized, Time-Phased Work Scope		0	6	11	17	22	
B.2. Schedule Provides Current Status		0	6	11	17	22	
B.3. Horizontal Integration		0	5	10	15	21	
B.4. Vertical Integration		0	5	10	14	19	
B.5. Integrated Master Schedule (IMS) Resources		0	4	9	13	17	
B.6. Schedule Detail		0	5	9	14	18	
B.7. Critical Path and Float		0	7	13	20	27	
B.8. Schedule Margin (SM)		0	2	5	7	10	
B.9. Progress Measures and Indicators		0	5	11	16	21	
B.10. Time-Phased Performance Measurement Baseline (PMB)		0	6	13	19	25	
Column Totals		0	51	102	152	202	

Maturity Levels

N/A= Not Applicable; 1 = Not Yet Started; 2 = Major Gaps; 3 = Minor Gaps; 4 = No Gaps; 5 = Best in Class

Environment

- Environment Factors can have a significant impact on the efficacy of the integrated project/program management and EVMS.
- The team identified 27 Factors divided into 4 Environment Categories.

Environment Category

A class or division of factors regarded as having particular shared characteristics, arranged in a topological fashion.



List of 27 Environment Factors (1 of 2)

1. Culture (7 factors)

- 1a. The **contractor organization is supportive and committed** to EVMS implementation, including making the necessary investments for regular maintenance and self-governance.
- 1b. The project/program **culture fosters trust, honesty, transparency, communication, and shared values** across functions.
- 1c. The **customer organization is supportive and committed** to the implementation and use of EVMS.
- 1d. Project/program leaders make **timely and transparent decisions** informed by the EVMS.
- 1e. The project/program **leadership effectively manages and controls change** using EVMS, including corrective actions and continuous improvement.
- 1f. **Effective teamwork exists** and team members are working synergistically toward common project/program goals.
- 1g. **Alignment and cohesion exist among key team members** who implement and execute EVMS, including common objectives and priorities.

2. People (6 factors)

- 2a. The **contractor team is experienced and qualified** in implementing and executing the EVMS.
- 2b. The **customer team is experienced** in understanding and using EVM results to inform decision-making.
- 2c. Project/program **leadership is defined, effective, and accountable**.
- 2d. **Project/program stakeholder interests are appropriately represented** in the implementation and execution of the EVMS.
- 2e. **Professional learning and education** of key individuals responsible for EVMS implementation and execution, **is appropriate** to meet project/program requirements.
- 2f. **Team members** responsible for the EVMS implementation and execution phases **are co-located and/or accessible**.

List of 27 Environment Factors (2 of 2)

3. Practices (8 factors)

- 3a. The project/program **promotes and follows standard practices** to implement and execute an EVMS.
- 3b. **EVMS requirements definition is in place, and agreement exists** among key stakeholders and customer.
- 3c. **Roles and responsibilities are defined, documented and well-understood** for implementing and executing EVMS.
- 3d. **Communication is open and effective**, including consistent terminology, metrics, and reports.
- 3e. **Effective oversight is in place and used**, including internal and external surveillance and independent reviews.
- 3f. **Contractual terms and conditions** that impact the effectiveness of EVMS **are known and have been addressed**.
- 3g. Appropriate **Subject Matter Expert (SME)** input is adequate and timely.
- 3h. **Coordination exists** between the key disciplines involved in implementing and executing the EVMS.

4. Resources (6 factors)

- 4a. **Adequate technology/software and tools are integrated and used** for the EVMS.
- 4b. **Sufficient funding is committed** and available **for implementing and executing the EVMS**.
- 4c. The team that implements and executes the EVMS for the project/program is adequate in **size and composition**.
- 4d. **Sufficient calendar time and work-hours are committed and available** for implementing and executing the EVMS.
- 4e. **Data are readily available** to populate EVMS tools supporting analyses for decision-making.
- 4f. The **project/program utilizes an appropriate periodic cycle** for executing the EVMS effectively and efficiently.

Environment Factor Example

Category 1. Culture		
Factor	Title	Description
1a.	The contractor organization is supportive and committed to EVMS implementation, including making the necessary investments for regular maintenance and self-governance.	<p>The contractor’s integrated project/program team (IPT) is in place (i.e., corporate leadership, execution/operations, oversight, and support staff), and has a demonstrated belief in the value and disciplined use of the EVMS. The project/program follows an integrated project management strategy to identify and manage risks using the EVMS that would otherwise negatively impact a well-formed baseline plan. It has committed resources, including funding, to ensure that effective implementation of the EVMS is a priority, assuring continuous improvement and accountability at every level of the contractor organization. This commitment ensures the availability and protected time of key individuals who contribute to implementing and executing EVMS in a substantive and measurable way. Typically, this also includes the availability/commitment of other personnel with specialized skills/knowledge, who may or may not be “dedicated” to the project/program.</p> <p>Leadership’s and team members’ attitude and discipline, both at the corporate office level and the project/program level, leads to the correct use, application, and acceptance of EVMS as an integrated project/program management tool (ranging from the definition of work scope to planning and scheduling to budgeting and work authorization, to analysis and reporting to forecasting and risk management). Leadership actively revisits the most effective ways to evaluate EVMS metrics that support decision-making. The organization’s policies provide incentives and education to foster support and commitment. The contractor’s team does not choose convenience over following the EVMS regulations and procedures applicable to the project/program. Project/program decision-making, which ultimately drives project results, is collaborative, and effectively relies on EVMS generated data and metrics. Governance is enforced and effective at dealing with the challenges of the project/program.</p> <p><i>Comments: Self-governance refers to the capacity of a contractor to govern autonomously and, as such, is an important approach in overseeing the effective implementation of the EVMS. When a contractor instills integrated project/program management principles using the EVMS in a way that benefits all levels of the organization, the results can guide management decisions, lead to improved project/program execution, and optimize performance of the project/program team.</i></p>



Environment Rating Scheme

Not Acceptable	Needs Improvement	Meets Some	Meets Most	High Performing
<p>Rating a factor Not Acceptable indicates that the factor's criteria are consistently below expectations and current performance is unacceptable. The ability to effectively manage the project/program cannot be achieved in this current state and actions are required to improve.</p>	<p>Rating a factor Needs Improvement indicates that the factor's criteria are not consistent in meeting project/ program expectations and without improvement, the ability to effectively manage the project/program is at risk. Substantial action is required to meet expectations.</p>	<p>Rating a factor Meets Some indicates that the factor's criteria are partially met and without improvement, the ability to effectively manage the project/program could be in jeopardy.</p>	<p>Rating a factor Meets Most indicates that the factor's criteria are consistently met and understood, with minor gaps, leading to effective management of project/program.</p>	<p>Rating a factor High Performing indicates the factor's criteria are fully met within the context of their respective category (e.g., culture, people, practices, or resources).</p>

Environment Score Sheets (1/4)

1. **Culture:** the culture category addresses those issues that impact the project/program culture. Culture is, by definition, the display of behaviors. Organizational culture is a system of common assumptions, values and beliefs (or the lack thereof) that governs how people behave in organizations. Organizational values and beliefs should align with the development and outcomes of a successful EVMS. The project/program culture can enable or hinder the effectiveness of the EVMS.

Factors for Review	Not Acceptable	Needs Improvement	Meets Some	Meets Most	High Performing
1a. The contractor organization is supportive and committed to EVMS implementation, including making the necessary investments for regular maintenance and self-governance.	0	19	39	58	78
1b. The project/program culture fosters trust, honesty, transparency, communication, and shared values across functions.	0	15	30	45	60
1c. The customer organization is supportive and committed to the implementation and use of EVMS.	0	14	27	41	54
1d. Project/program leaders make timely and transparent decisions informed by the EVMS.	0	12	24	36	48
1e. The project/program leadership effectively manages and controls change using EVMS, including corrective actions and continuous improvement.	0	8	16	24	32
1f. Effective teamwork exists , and team members are working synergistically toward common project/program goals.	0	5	11	16	22
1g. Alignment and cohesion exist among key team members who implement and execute EVMS, including common objectives and priorities.	0	5	9	14	19
Column Totals	0	78	156	234	313

Final Results: 35 sample projects/programs

- The collected data came from 28 projects and 7 programs, with
- ~\$21.8 Billion USD in installed cost
- Located in 17 U.S. states and territories:
 - Alabama
 - California
 - Florida
 - Idaho
 - Illinois
 - Indiana
 - Louisiana
 - Missouri
 - New Mexico
 - New York
 - Pennsylvania
 - South Carolina
 - Tennessee
 - Texas
 - Virginia
 - Washington
 - Washington DC
- The types of projects/programs they represent, and the maturity and environment scores are shown in next slides.

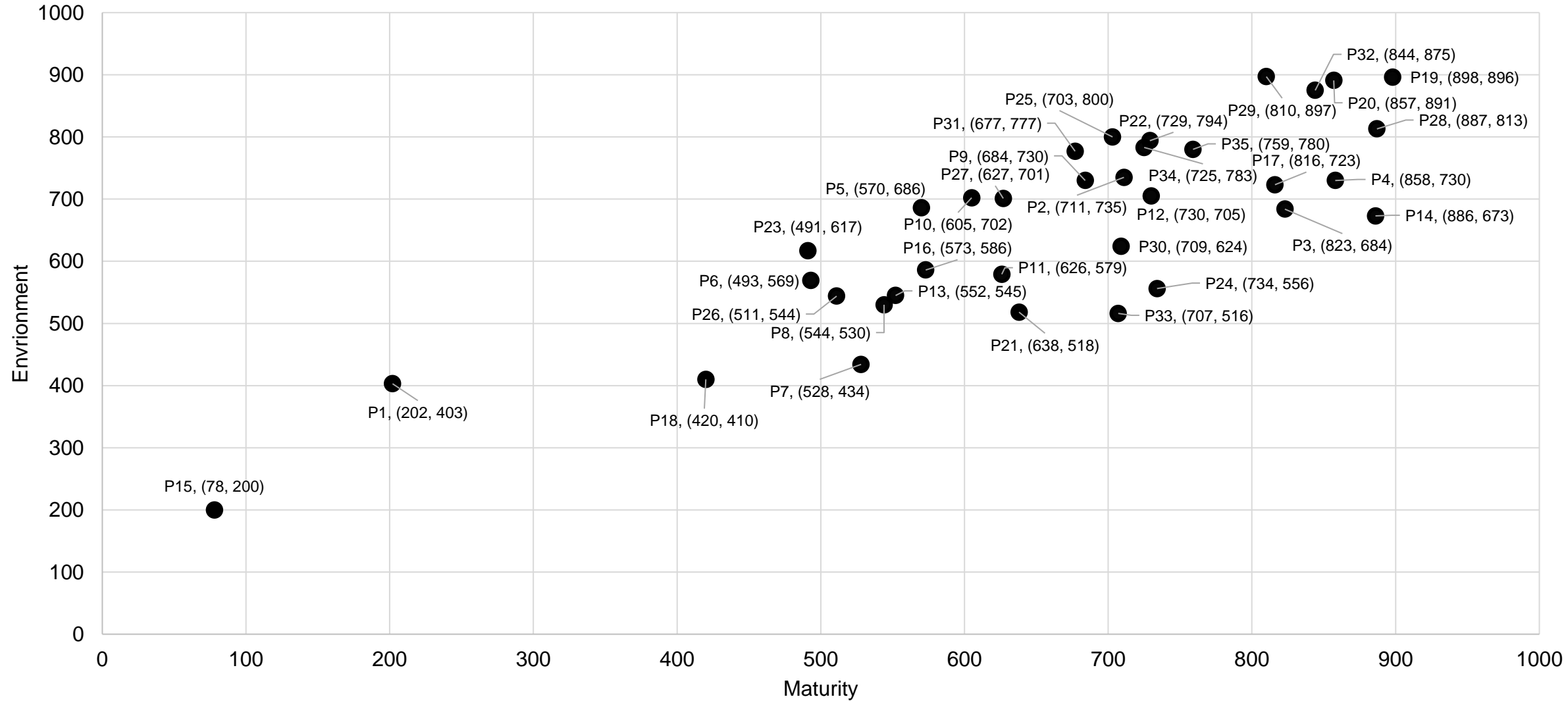
Large and Complex Projects/Programs (N=35)

Type of projects/programs	# of projects/programs
Construction	12
Defense	9
Environmental	6
Software	3
Aerospace	3
Science	2

	N	Mean	Median	Min	Max	Std. Dev.
Raw Maturity Score (out of 1,000)	35	616	629	57	887	176
Adjusted Maturity Score (out of 1,000)	35	657	703	78	898	182
Environment Score (out of 1,000)	35	657	686	200	897	158

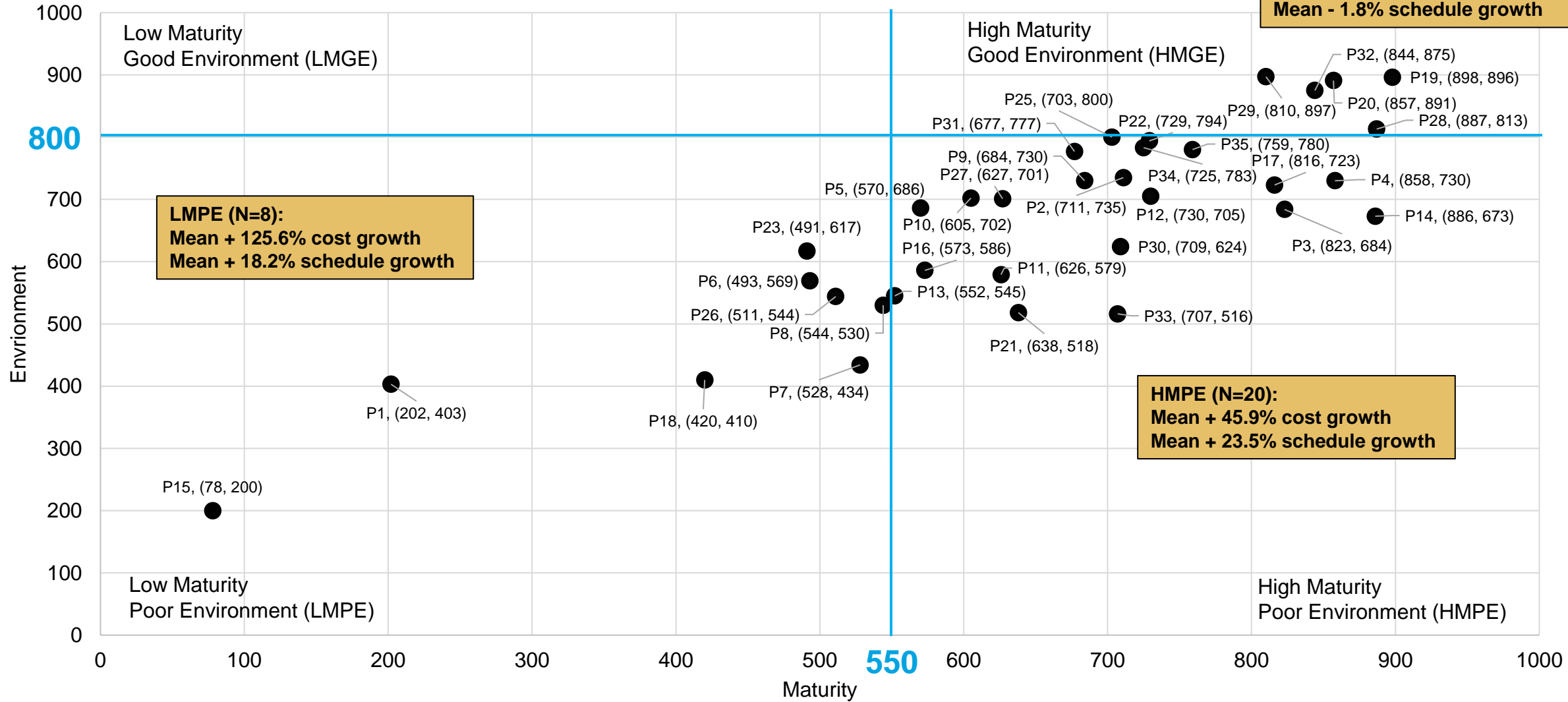
Final Result: Rating Plot

Maturity and Environment Matrix – 35 Completed Projects



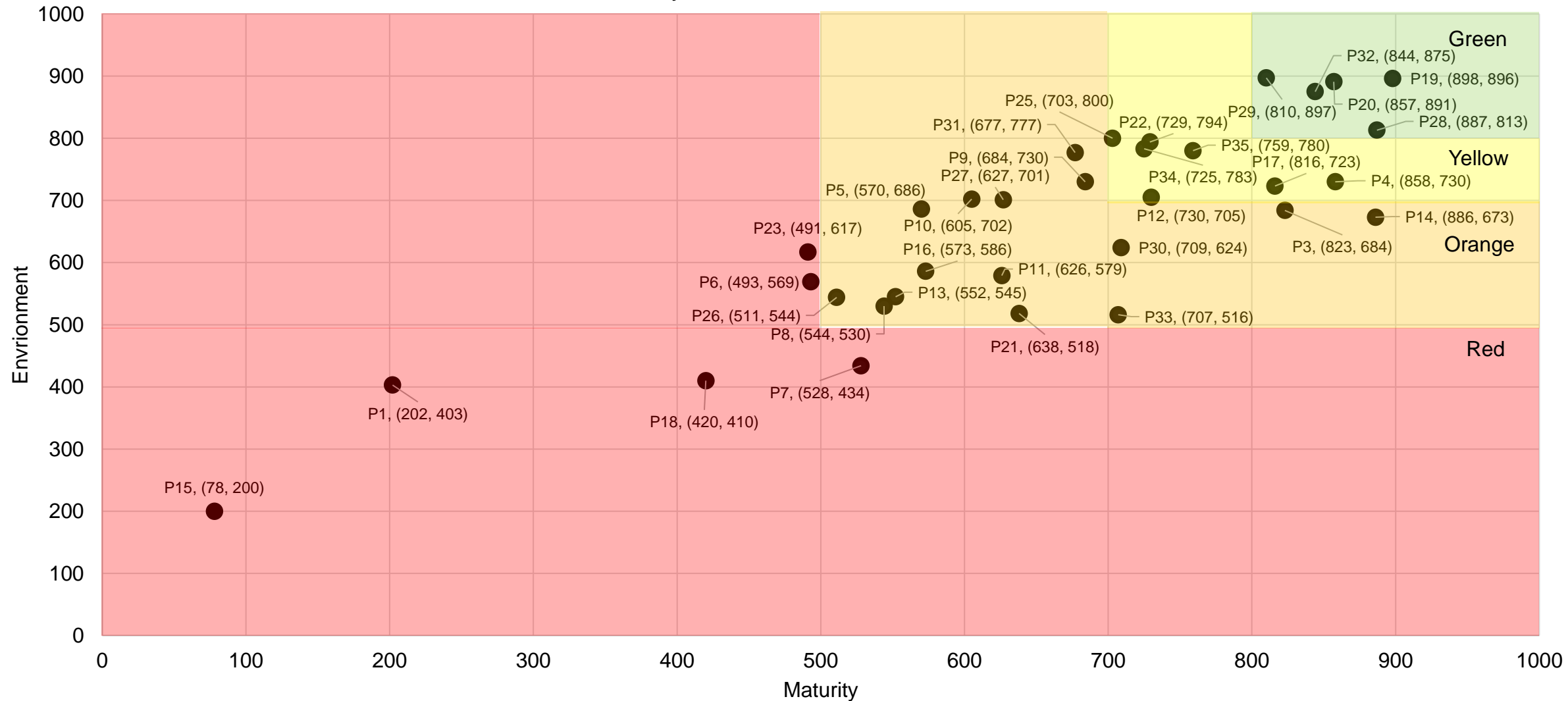
Final Result: Cost & Schedule

Maturity and Environment Matrix – 34 Completed Projects



Final Result: Four Bands (N=33)

Maturity and Environment Matrix



Performance Across the Heat Map (N=33)

GREEN (>800)	
N:	5
Mean Cost Growth:	-0.3%
Mean Schedule Growth:	-5.9%

YELLOW (700-799)	
N:	7
Mean Cost Growth:	+13.7%
Mean Schedule Growth:	+3.8%

ORANGE (500-699)	
N:	15
Mean Cost Growth:	+48.2%
Mean Schedule Growth:	+26.9%

RED (<500)	
N:	6
Mean Cost Growth:	+92.3%
Mean Schedule Growth:	+24.3%

Performance Across the Heat Map (N=35)

GREEN (>800)	
N:	5
Compliance with NDIA EIA-748:	100%
Meet Business Objectives:	5.0
Customer Satisfaction:	5.0
EVMS Helped Proactively Manage:	4.0

YELLOW (700-799)	
N:	8
Compliance with NDIA EIA-748:	100%
Meet Business Objectives:	4.4
Customer Satisfaction:	4.4
EVMS Helped Proactively Manage:	3.9

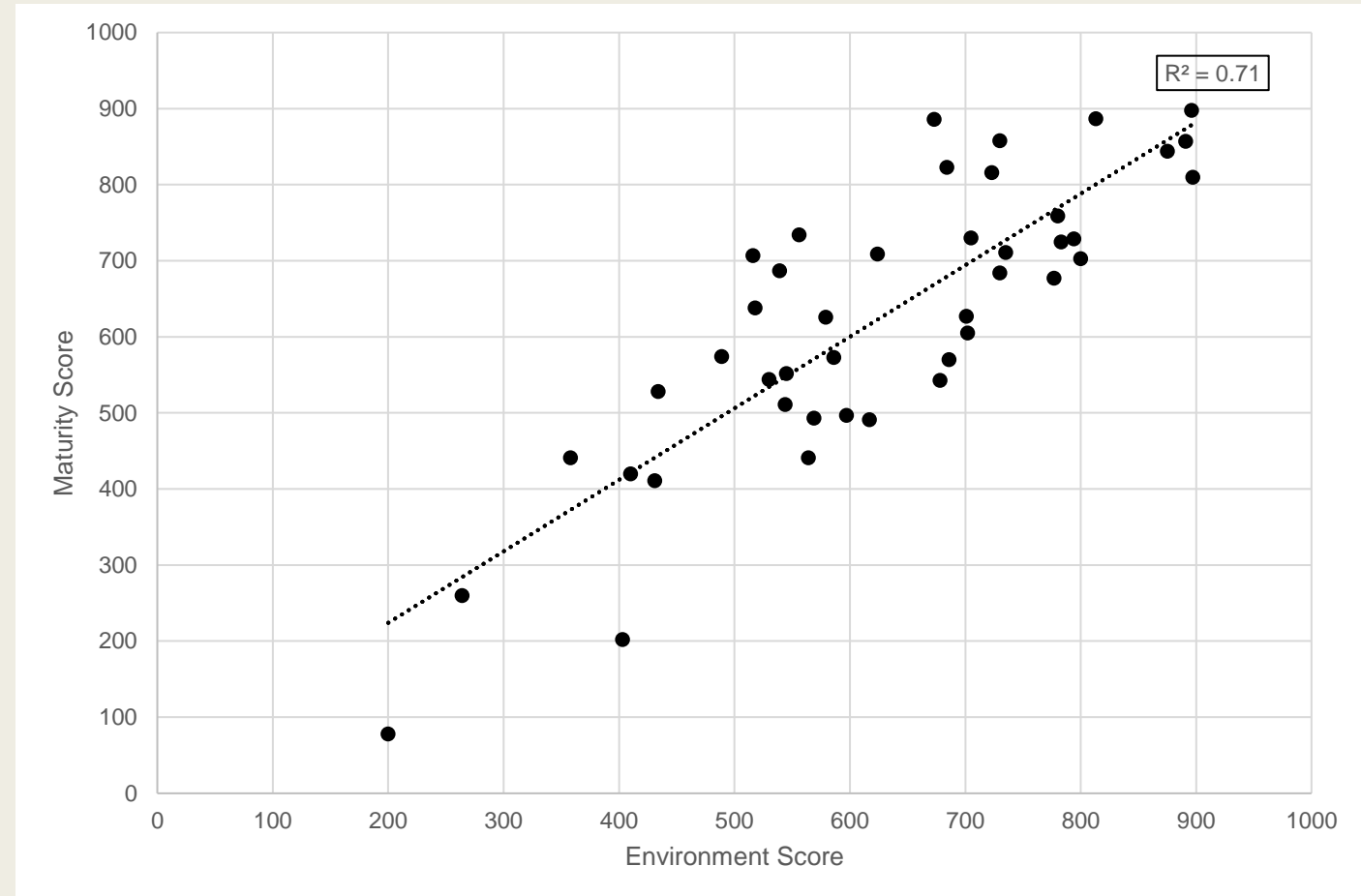
ORANGE (500-699)	
N:	16
Compliance with NDIA EIA-748:	62.5%
Meet Business Objectives:	4.3
Customer Satisfaction:	4.3
EVMS Helped Proactively Manage:	3.5

RED (<500)	
N:	6
Compliance with NDIA EIA-748:	16.7%
Meet Business Objectives:	2.7
Customer Satisfaction:	2.7
EVMS Helped Proactively Manage:	2.7

Correlation between maturity and environment scores (N=43)

To study the relationship between the maturity score and the environment score, correlation was tested between them.

The results showed a Pearson R value of 0.843, which indicates a strong correlation between the maturity and the environment score, with a direct or positive relationship between them ($p < 0.05$).



$$\text{Maturity Score} = \text{Environment Score} \times 0.94 + 35.89$$

Interesting details on maturity attributes

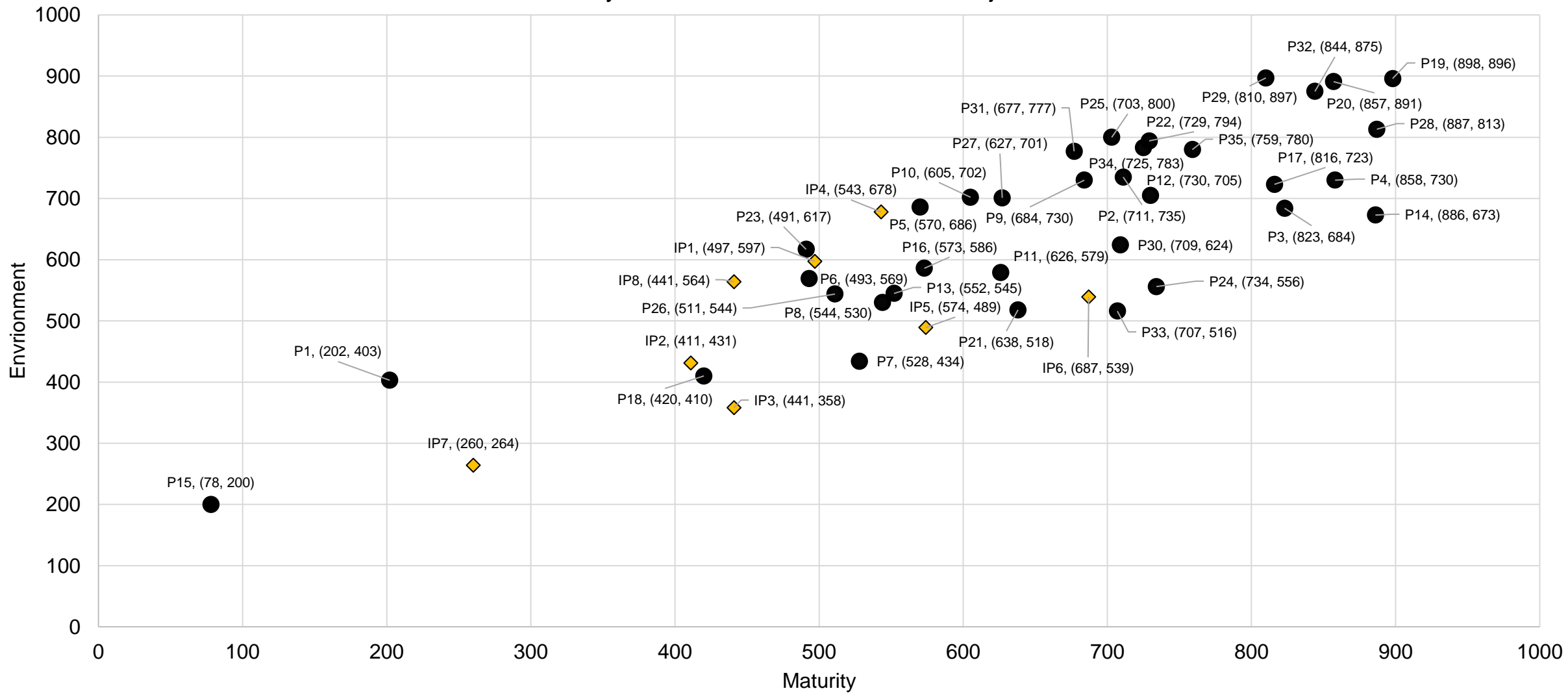
- **Top 3 attributes** rated as levels 4 and 5
 - D.1 Direct costs
 - A.5 Control Account to organizational element
 - F.1 Calculating variances
- **Bottom 3 attributes** rated as levels 1 and 2
 - B.8 Schedule Margin
 - C.6 Work package planning, distinguishability, and duration
 - I.3 Subcontract oversight

Interesting details on environment factors

- **Top 3 factors** rated as “Meets most” and “High performing”
 - 4b. Sufficient funding is committed and available for implementing and executing the EVMS
 - 4e. Data are readily available to populate EVMS tools supporting analyses for decision-making
 - 2f. Team members responsible for the EVMS implementation and execution phases are co-located and/or accessible
- **Bottom 3 factors** rated as “Not acceptable” and “Needs improvement”
 - 1c. The customer organization is supportive and committed to the implementation and use of EVMS
 - 2b. The customer team is experienced in understanding and using EVM results to inform decision-making
 - 1a. The contractor organization is supportive and committed to EVMS implementation, including making the necessary investments for regular maintenance and self-governance

Plot with in-progress projects

Maturity and Environment Matrix – 43 Projects



Note: Maturity scores are adjusted.

- Completed project
- ◆ In-progress project

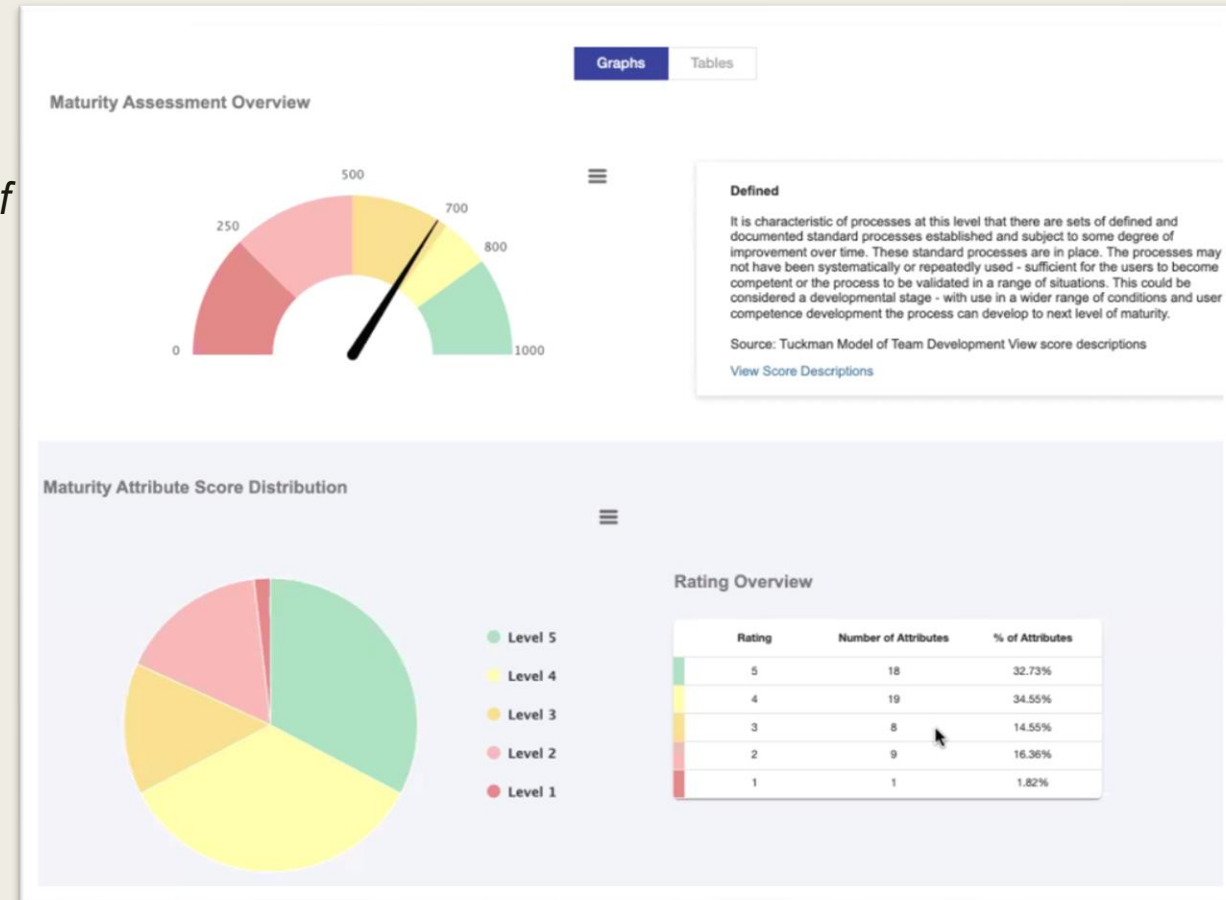


IP2M METRR to support Facilitated Reviews

- Maturity facilitated in common sessions with key stakeholders
 - Example shown here had 7 stakeholders
 - Session length: 3.5 hours
 - **Consensus** attribute rating
 - Participants asked to provide comments related to any uncovered gaps
 - Gap lists developed including team comments and areas for improvement
- Environment facilitated in common sessions with key stakeholders
 - Example shown here had 7 stakeholders
 - Session length: 2 hours 40 minutes
 - Discussion encouraged
 - **Anonymous** factor ratings consolidated by facilitators and analyzed for key gaps to provide to the stakeholders

IP2M METRR to support Facilitated Reviews

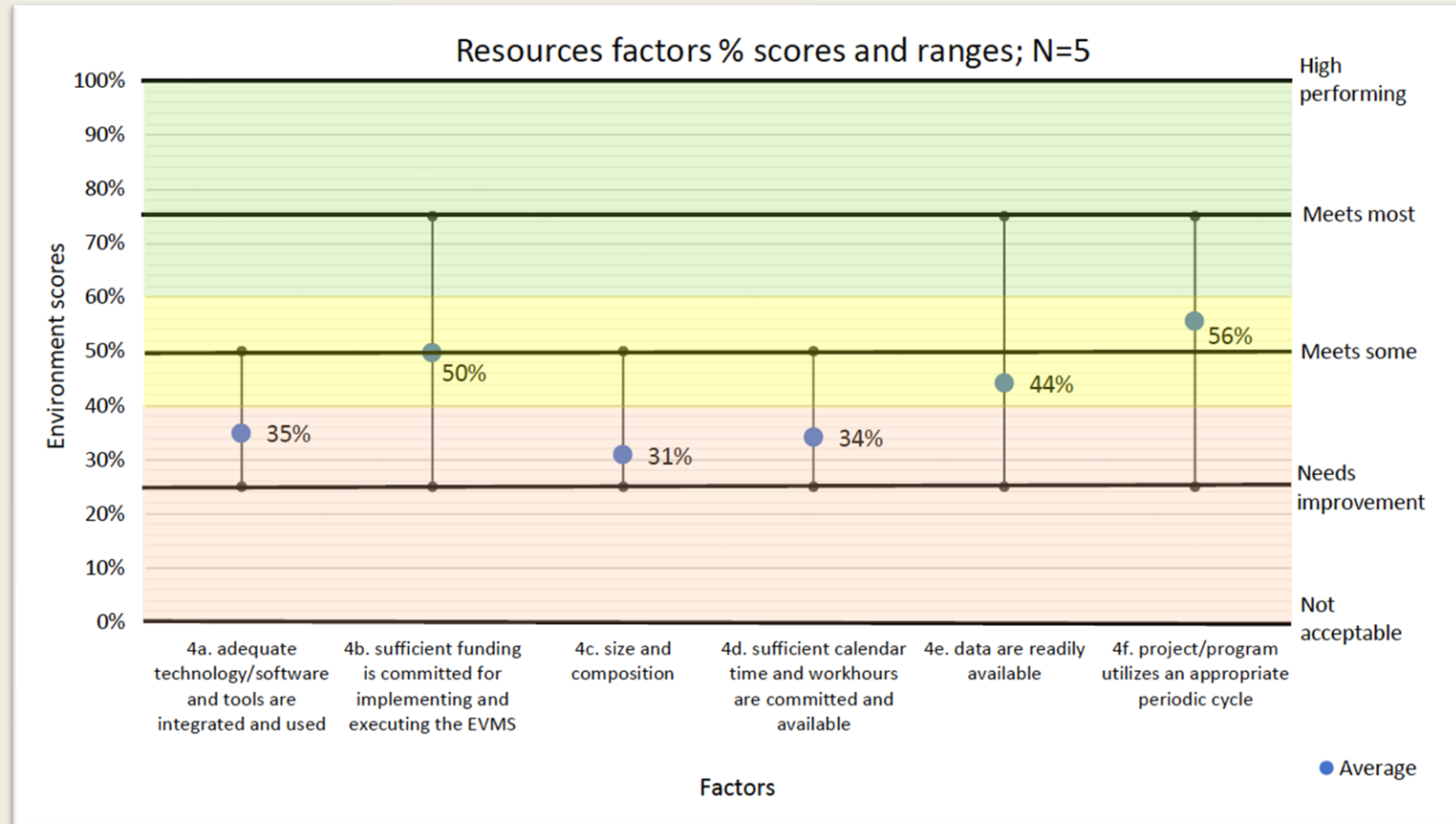
- Maturity Excerpt from recently assessed project
 - (M score 654)
- *“An overarching comment is that more than half of the attributes have high maturity. The remaining attributes can be further improved; 34% of the attributes were assessed as Maturity Level 2 or Maturity Level 3. None had Level 1. Three attributes were assessed as not applicable to the project.*
- *Our overall perspective of the project is that integration in particular should be addressed, especially in sub-processes Organizing, Planning and Scheduling, and Budgeting and Work Authorization. Better resource loading and allocation should be considered. Constraints, especially ones by the customer, are a challenge and they must be defined and addressed.”*



IP2M METRR to support Facilitated Reviews

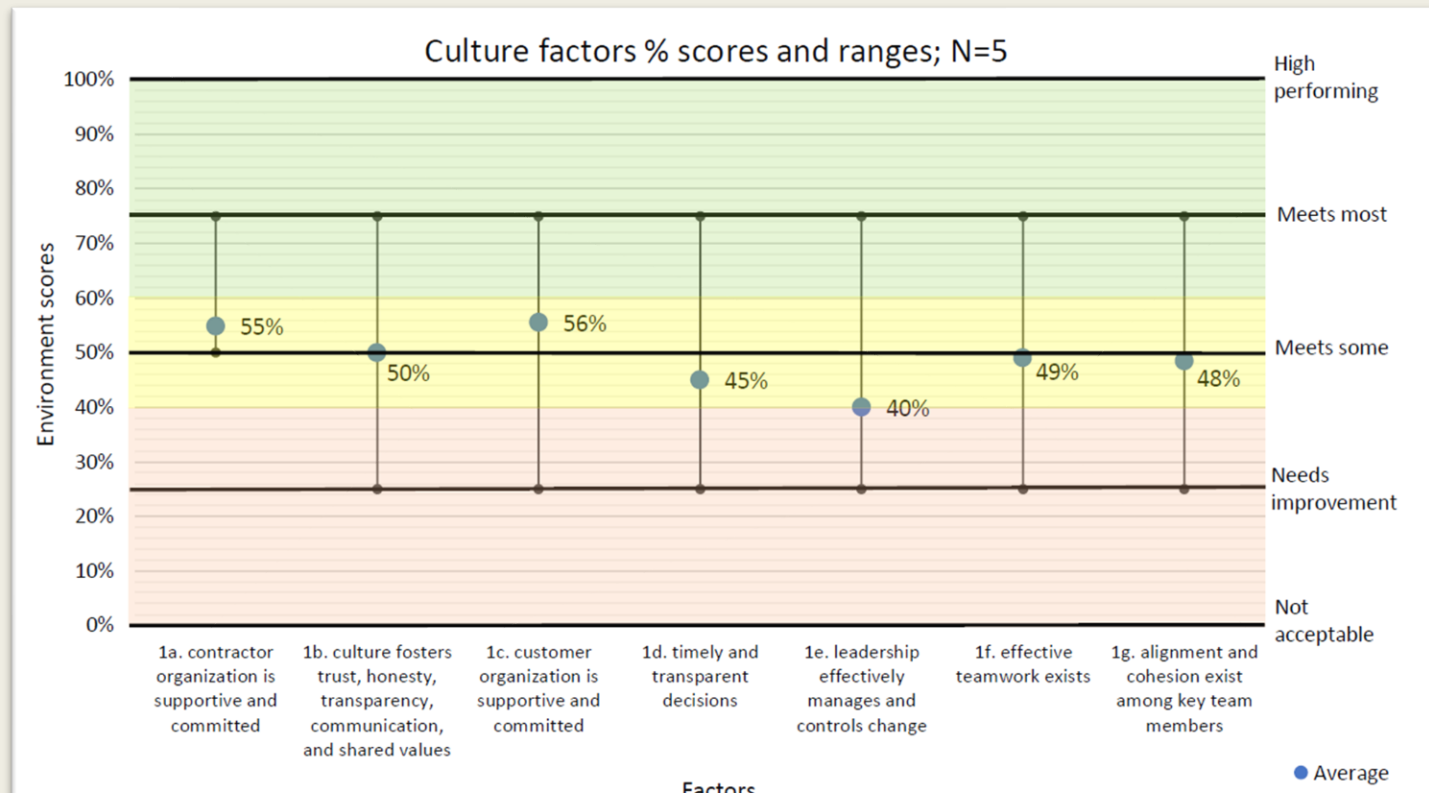
- Environment Excerpt from recently assessed project (average E score 489)

“All four Environment categories can be improved, but the Resources category in particular needs to be addressed. EVMS training is a must, in order to help the project team mature in the EVMS area and meet project requirements. EVMS should be used to manage and control change. The pandemic has affected the approval cycle for certifications, in part due to remote work. Based on our interaction with the team, we feel that there is positive energy towards improvement.”




IP2M METRR to support Facilitated Reviews

- Environment Excerpt from recently assessed project (average E score 489)
 - *“Self-governance needs more run time to solidify.*
 - *All levels of leadership can improve on using/valuing EVM data.*
 - *Project team often has to drag information (status/forecasting) from functional support organizations.*
 - *The customer is highly focused on EVMS but underestimates costs. Others only look at final numbers but not root causes.*
 - *Functional organizations sometimes work to their "own schedule" regardless of what EVMS is telling them what the priority should be.*
 - *Leadership does not always control change, perhaps react to change.*
 - *Functional organizations, tend to be working to their own requirements, not necessarily project priorities.*
- *Functional organizations, tend to be working to their own requirements, not necessarily project priorities*
- *The relationship with elements of the customer base is adversarial*
- *The project team is efficient. Pulling in functional organizations is a challenge.*
- *There are varying degrees in the depth of use and reliance on EVMS.*



Software development – in progress

 Department of Energy Hogwarts School of Witchcraft and Wizardry

Assessment Name
Assessment Status: In Progress

Download Link
 [Copy link](#)

Project / Program Data

<input type="text" value="Project ID"/> DTPRJ007	<input type="text" value="Project Manager (optional)"/> Rahul Bond
<input type="text" value="Project Name"/> Decision Theater IP2M MTRR	<input type="text" value="Project Location (optional)"/> Tempe, Arizona
<input type="text" value="Project Type"/> Software Development	<input type="text" value="Assessment Date (optional)"/> 08/18/2014
<input type="text" value="Facilitator Name"/> Rahul Bond	<input type="text" value="Project % completion"/> 20%
<input type="text" value="Project Description (optional)"/>	

Lock Environment assessment for participant Lock Unlock

Assessment Settings

Assessment Type

Maturity Environment

Environment Anonymity

Anonymous to everyone: participants, facilitators, admins

Anonymous to only participants (facilitators and admins can view names associated with assessments)

Maturity Assessment

[Customize Available Attributes](#)

Software development – in progress



Department of Energy

Hogwarts School of Witchcraft and Wizardry

- Hide
- Assessment
- People
- Reports
- Manage

Assessment Overview

Total Assessment
Status: **In Progress**

Maturity
Status: In Progress

Environment
Status: Not Started

Upload Environment Assessments

Conclusions

- IP2M METRR works.
- There are statistically significant differences in both Environment and Maturity:
 - Cost performance
 - Schedule performance
 - Compliance
 - Meeting project objectives and business drivers
 - Customer satisfaction
 - EVM help proactively manage the project/program
- Environment and maturity are positively correlated
- We feel that this tool can be used as a means of benchmarking current and completed projects in a wide variety of industry sectors.
- Path forward: data collection complete, finishing up guidebook and software

ASU Study Results in DOE Reviews

- Begin with end in mind
 - Effective and efficient integrated management control system
 - In place ASAP and used after CD-1
 - To foster positive project outcomes
 - *Like PDRI, EVMS is a powerful FEP tool*
- Rethink the EVMS implementation and review process
 - Not just a bolt on to existing processes
- EVMS Reviews - ASU Maturity/Environment backbone
 - Collaborative and iterative
 - Joint discovery
 - Test metrics still relevant
 - data algorithms help detect patterns and develop hypotheses
 - effectively and efficiently test reliability of management processes
 - provide objective evidence
 - Corrective actions ongoing

Maturity Important but *Environment Matters*

- $M = f(E)$
- Facilitated by independent 3rd party
 - Collective/separable Environment assessment
 - Contractor
 - Customer
 - Review Team
- More insight (show me)
 - Leadership values, priorities, focus, and commitments
 - Weekly/monthly management meetings
 - Training
 - Self-governance
 - Teamwork and team alignment
 - Business practices
 - Resources

Questions/Comments/Discussion



THANK YOU!