
Workshop A

The Environment Component of IP2M METRR

Planning for a Department of Energy project was started in September 2021 to renovate, modernize and repurpose an existing scientific facility that was originally constructed in the 1960's. This \$550 million project is in Greenland. Project-specific goals include achieving environmental and safety upgrades and enhancing the facility by ensuring it is more energy and operationally efficient and supports scientific research. The facility has had periodic renovations in the intervening years. Much of the scope is renovation, with 4 sub-projects:

- Demolition of some of the existing facilities
- Construct a water tank and upgrade the existing water system
- Outside plant infrastructure improvement including a new airfield
- Core facilities including a new 400,000 sf facility and other building renovations

On-site construction (including some demolition) is expected to start in June 2022 and is very seasonally driven with an expected (hoped for) completion of late 2027. The front end planning is complete and design phases are mostly complete; now the project is at 90% design complete with project approval for construction expenditures expected in the near term.

As a contractor you have policies in place to provide standardized EVM solution for projects that require the use of EVMS during the execution of the project. You have different resources for project performance management tools such as a control account work authorization (CAWA) project management process tool, Cobra for cost, Primavera (P6) for scheduling, a Risk Register for risk management, and a project management process tool (PMPT) for change management.

Your cost and schedule baseline will be finalized after the final design review in two months before beginning construction. Your subcontracts are managed by the subcontract program manager. Your risk management plan coincides with your customer's requirements.

The customer will conduct an EVMS review in 3 months, you were asked to lead an informal internal review using the IP2M METRR, to prepare, identify gaps, and start working on corrective actions ahead of the customer's formal review. The IP2M METRR session will be attended by the project manager, project controls manager, financial analyst, senior scheduler, executive manager, risk manager, control account managers, and subcontracts manager.

Some relevant information related to the EVMS environment of this project: The contractor has committed resources to effectively implement EVMS; however, leadership has not acted proactively in terms of providing more support. Involving an EVMS subject matter expert (SME) is improving the implementation process. However, the customer project manager does not have experience in large programs that use EVMS. The customer's EVMS team is not very experienced with EVMS. They seem to be inventing requirements on the go instead of following routines and lessons learned. There is no staffing plan in place for the contractor's team and it is not adequate in size to collaborate with the customer's team and meet the EVMS requirement. There is lack of EVMS SMEs and qualified personnel on both the contractor and customer side. In terms of time, the contractor is following the contract and is executing EVMS by the cycle time.

Your team is working on evaluating the environment component of IP2M METRR for this project. You have already assessed 24 of the 27 factors; your work thus far is documented in Appendices A and B. Below, we will provide instructions for you to complete this assessment.

Instructions

1. Applying the IP2M METRR on the fictitious project provided earlier, complete your assessment for environment factors 1a, 2b, and 4c. The detailed descriptions for each of these environment factors are provided in Appendix C of this handout. You are asked to discuss and decide on the rating of each of these factors.
2. Once your assessment of these factors is completed, you can finish calculating the project's total environment score. Discuss what this overall environment score means in terms of risk, realizing where we are for this project. What does this environment score tell you? What are some key risks?
3. List the environment factors that you are not comfortable with. How would you resolve these issues? What is/are your next step(s)? Develop a list of recommendations and corrective actions for the project.

Appendix A: IP2M METRR environment scoresheet for today’s case study exercise

<p>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.</p>							
Factors for Review	Not Acceptable	Needs Improvement	Meets Some	Meets Most	High Performing	Score	Comments
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	30	
1c. The customer organization is supportive and committed to the implementation and use of EVMS.	0	14	27	41	54	14	
1d. Project/program leaders make timely and transparent decisions informed by the EVMS.	0	12	24	36	48	24	
1e. The project/program leadership effectively manages and controls change using EVMS, including corrective actions and continuous improvement.	0	8	16	24	32	8	
1f. Effective teamwork exists , and team members are working synergistically toward common project/program goals.	0	5	11	16	22	11	
1g. Alignment and cohesion exist among key team members who implement and execute EVMS, including common objectives and priorities.	0	5	9	14	19	9	
Maximum Column Totals	0	78	156	234	313		

<p>2. People: the people category addresses the individuals who represent the interests of their respective stakeholders (e.g., project business manager, project control analyst, project schedule analyst, acquisitions/subcontracts, control account manager, Integrated Project/Program Team (IPT) or line/resource management) and are adept in the relevant subject matter, in order to contribute to the process that leads to favorable project control outcomes.</p>							
Factors for Review	Not Acceptable	Needs Improvement	Meets Some	Meets Most	High Performing	Score	Comments
2a. The contractor team is experienced and qualified in implementing and executing the EVMS.	0	17	34	50	67	34	
2b. The customer team is experienced in understanding and using EVM results to inform decision-making.	0	13	27	40	54		
2c. Project/program leadership is defined, effective, and accountable.	0	12	25	37	49	37	
2d. Project/program stakeholder interests are appropriately represented in the implementation and execution of the EVMS.	0	8	17	25	34	25	
2e. Professional learning and education of key individuals responsible for EVMS implementation and execution, is appropriate to meet project/program requirements.	0	6	13	19	25	19	
2f. Team members responsible for the EVMS implementation and execution phases are co-located and/or accessible.	0	2	5	7	9	7	
Maximum Column Totals	0	58	121	178	238		

<p>3. Practices: the practices category addresses internal and external procedures and processes that can positively or negatively influence the outcome of a project or program. Internal business practices and methods are specific to a given organization, including internal standards, requirements and best practices. External business practices, regulations, requirements, procedures and methods are across organizational boundaries (e.g., government to contractor, software provider to contractor, subcontractor to prime, and so forth).</p>							
Factors for Review	Not Acceptable	Needs Improvement	Meets Some	Meets Most	High Performing	Score	Comments
3a. The project/program promotes and follows standard practices to implement and execute an EVMS.	0	11	22	33	44	33	
3b. EVMS requirements definition is in place, and agreement exists among key stakeholders and customer.	0	11	22	33	44	22	
3c. Roles and responsibilities are defined, documented and well-understood for implementing and executing EVMS.	0	9	18	27	35	18	
3d. Communication is open and effective , including consistent terminology, metrics, and reports.	0	8	16	24	31	16	
3e. Effective oversight is in place and used , including internal and external surveillance and independent reviews.	0	7	15	22	30	15	
3f. Contractual terms and conditions that impact the effectiveness of EVMS are known and have been addressed.	0	7	15	22	30	7	
3g. Appropriate Subject Matter Expert (SME) input is adequate and timely.	0	3	6	9	12	9	
3h. Coordination exists between the key disciplines involved in implementing and executing the EVMS.	0	2	4	7	9	4	
Maximum Column Totals	0	58	118	177	235	124	

4. Resources: the resources category addresses the availability of key tools, data, funding, time, personnel, and technology/ software to support the EVMS sub-processes.							
Factors for Review	Not Acceptable	Needs Improvement	Meets Some	Meets Most	High Performing	Score	Comments
4a. Adequate technology/software and tools are integrated and used for the EVMS.	0	12	23	35	47	12	
4b. Sufficient funding is committed and available for implementing and executing the EVMS.	0	9	18	28	37	28	
4c. The team that implements and executes the EVMS for the project/program is adequate in size and composition.	0	9	18	26	35		
4d. Sufficient calendar time and workhours are committed and available for implementing and executing the EVMS.	0	8	17	25	34	17	
4e. Data are readily available to populate EVMS tools supporting analyses for decision-making.	0	8	17	25	34	25	
4f. The project/program utilizes an appropriate periodic cycle for executing the EVMS effectively and efficiently.	0	7	14	20	27	27	
Maximum Column Totals	0	53	107	159	214		

IP2M ENVIRONMENT TOTAL SCORE

(Maximum Score = 1000)

This score represents the environment score between 0 and 1000, with 1000 having the most ideal environment.

Appendix B: IP2M METRR environment identified gaps for today’s case study exercise

Factor	Title	Gaps
1b	The project/program culture fosters trust, honesty, transparency, communication, and shared values across functions.	<ul style="list-style-type: none"> • The owner, contractor, and subcontractors are not always in alignment. • Not all items were communicated well across the team.
1c	The customer organization is supportive and committed to the implementation and use of EVMS.	<ul style="list-style-type: none"> • Customer’s organization is not aligned with the project on EVMS. • Customer does not use EVMS as a management tool.
1d	Project/program leaders make timely and transparent decisions informed by the EVMS.	<ul style="list-style-type: none"> • Project decisions are not always timely from customer to contractor to subcontractor and vice versa. • Solid discussions around actual performance are not occurring.
1e	The project/program leadership effectively manages and controls change using EVMS, including corrective actions and continuous improvement.	<ul style="list-style-type: none"> • Project management tries to implement effective project management and change control; however, customer communications or response may undermine anticipated changes. • Decision making is not happening at the appropriate level to manage the work.
1f	Effective teamwork exists , and team members are working synergistically toward common project/program goals.	<ul style="list-style-type: none"> • Project understanding, organization, and communication are lacking impacting effective teamwork. • Team building and environment are not good.
1g	Alignment and cohesion exist among key team members who implement and execute EVMS, including common objectives and priorities.	<ul style="list-style-type: none"> • Communication between various groups is not aligned. • Program has integration issues with cost and schedule.
2a	The contractor team is experienced and qualified in implementing and executing the EVMS.	<ul style="list-style-type: none"> • Varying levels of EVM understanding and baseline management have caused confusion in the tracking process. • All team members have appropriate training, but few have practical experience.
3b	EVMS requirements definition is in place, and agreement exists among key stakeholders and customer.	<ul style="list-style-type: none"> • EVMS objectives are not clear from the customer. • Contractor has extensive definitions; however, the customer has issues with the defined requirements for EVMS.
3c	Roles and responsibilities are defined, documented and well-understood for	<ul style="list-style-type: none"> • Roles and responsibilities are defined but there is a lack of cohesiveness among

Factor	Title	Gaps
	implementing and executing EVMS.	different functions. <ul style="list-style-type: none"> • Communication plan is not well understood.
3d	Communication is open and effective , including consistent terminology, metrics, and reports.	<ul style="list-style-type: none"> • Communication downward and internal lateral is great. However, lateral external, and internal and external upward is bad. • Communication is not effectively spread.
3e	Effective oversight is in place and used , including internal and external surveillance and independent reviews.	<ul style="list-style-type: none"> • External oversight was good, but it was too late and missed the schedule issues. • Program lead needs to be fully engaged and provide oversight for both cost and schedule together.
3f	Contractual terms and conditions that impact the effectiveness of EVMS are known and have been addressed .	<ul style="list-style-type: none"> • EVMS requirements are not a part of a contract officially. • Contract was not setup with the intent of detailed EVMS and therefore never budgeted for positions required.
3h	Coordination exists between the key disciplines involved in implementing and executing the EVMS.	<ul style="list-style-type: none"> • Key disciplines coordinate, but coherence of actual project planning gets lost. • Some confusion happens between scheduling and examining the status of EVMS.
4a	Adequate technology/software and tools are integrated and used for the EVMS.	<ul style="list-style-type: none"> • Lack of integration has led to a lot of manual entry of data which is expensive and has led to errors. • Contractor has struggled with cost and schedule integration since day 1.
4d	Sufficient calendar time and workhours are committed and available for implementing and executing the EVMS.	<ul style="list-style-type: none"> • Most personnel work extra time weekly just to maintain EVMS, on top of normal duties. • There is no overall staffing plan so it is unclear if everything is properly covered.

Appendix C: Descriptions of the environment factors we are assessing today

Factor	Title	Description
1a.	<p>The contractor organization is supportive and committed to EVMS implementation, including making the necessary investments for regular maintenance and self-governance.</p>	<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>

Factor	Title	Description
2b.	The customer team is experienced in understanding and using EVM results to inform decision-making.	The customer is the organization that sponsors the project/program's funding and ultimately takes over the operation of the completed project/program. The customer leadership team (e.g., sponsor representative, contracting officer) and customer project/program team (e.g., project manager, budget officer, contracting official, project controls managers, engineering lead) have previous experience using the EVM results to inform decision-making on a project/program of similar size, scope, and/or location. The customer should have the right mixture of experienced personnel to make sure that EVM is used effectively to inform decision-making. Previous experience with projects/programs of similar size and complexity increases the familiarity and understanding of the customer leadership team and project/program team with the project/program planning, design, and execution sub-processes. Relevant experience is important because repetition plays a major role in both organizational learning (e.g., lessons learned, mentoring, continuous improvement) and in creating routines and capabilities in general. Realizing that everyone is inexperienced at some point, there should be a structured method for mentoring and professional development to bring new individuals up to the right level of technical knowledge and skills, given the nature of this specific project/program.

Factor	Title	Description
4c.	The team that implements and executes the EVMS for the project/program is adequate in size and composition.	The team that implements and executes the EVMS for the project/program is adequate in size and composition to efficiently support the project/program, adjusted as needed. The customer and contractor organizations have committed time and resources to efficiently and effectively use EVM results, ensuring that decision-making is timely and informed. Customer and contractor organizational staffing levels are in place and adequate to execute scope and workflow successfully, including staffing levels to effectively implement the EVMS. This includes individuals from the project/program, corporate EVMS oversight, consultants, customer, project controls, contracts, finance and procurement offices, and so forth. It has the appropriate expertise, authority, and experience, with size and composition comparable to industry benchmarks where appropriate.