AACE International

AACE-EVP

Earned Value Professional (EVP)

Latest Version: 6.0

Question: 1

An aerospace project budgets WBS 5.3 “Ground Support Equipment” using cost elements: design labor, fabrication labor, materials, test labor, and vendor services. The team proposes a summary work package “GSE Complete” with 0/100 EVT. What is a better structure?

A. Several work packages (design, fabrication, test, installation) each with appropriate EVT (e.g., milestones/units complete), using the same cost-element basis
B. Move GSE to MR
C. Keep one summary work package for simplicity
D. Use LOE for all GSE

Answer: A

Explanation:
Decomposing into phase-specific work packages supports detailed planning, objective EV, and targeted cost variance analysis by cost element and phase.

Question: 2

On a $90 million software-hardware hybrid defense contract with a cost-plus-incentive-fee (CPIF) structure, indirect rates comprise a material handling overhead (MHO) at 5% on material costs (pool: $2.1M actual vs. $1.8M base), engineering overhead at 22% on engineering labor (base 15,000 hours at $120/hr, actual 16,500 hours with 10% rate variance from benefit escalations), and G&A at 11% on total costs excluding fee. The period's AC is $18.5M ($3.7M material, $4.5M engineering labor), EV $19.2M, but MHO pool underabsorbed by 20% due to delayed shipments, engineering rates up 10%, G&A stable. Evaluating rates for EAC update, considering incentive share line at 80/20 (gov/contractor) above target, the correct approach is:

A. Revise MHO to 6% (5% x 1.2 underabsorB. on $3.7M ($222K), eng to 24.2% (22% x 1.1) on $5.175M labor equiv ($1.25M), G&A 11% on $23.7M total ($2.61M), then apply to cumulative for CPIF adjustment.
B. Blend all into single 15% overhead on directs, adjust for variances post-audit, and exclude from EAC until final rates settled.
C. Escalate MHO to 7% covering delays, hold eng at 22%, reduce G&A to 9% for incentive optimization, allocating to EV base only.
D. Apply provisional rates unchanged (MHO 5%, eng 22%, G&A 11%) to current AC, absorb underabsorption into direct variance, forecasting EAC at BAC + (AC - EV)/CPI.

Answer: A

Explanation:

CPIF evaluations demand rate revisions per pool variances to accurately project fee-bearing costs, per DCAA guidelines and RP 25R-03. MHO underabsorption scales 5% to 6% ($222K allocation vs. $185K base, $37K variance), engineering escalation 22% to 24.2% on hours-adjusted labor ($4.5M equiv x 24.2% = $1.09M, $162K up), G&A unchanged 11% on total pre-fee ($20.15M + overheads $3.36M = $23.51M x 11% = $2.59M). Total indirects $3.90M, AC $22.40M, CV $3.2M favorable, EAC = $92.7M (CPI 1.04), target fee $4.5M + 80% share of $2.7M underrun ($2.16M incentive). Quarterly revision prevents cumulative distortion, unlike statics, blending, or optimizations (D risking disallowance). Flags $250K engineering benefit cap for negotiation.

Question: 3

$120 million e-commerce platform baseline (BCP/BCR) $2.4M UI enhancement at 60% (EV $72M, AC $74M, PV $70M). Step:

A. UB defer.
B. BCR review.
C. Internal shift.
D. Full rebase.

Answer: B

Explanation:
BCR for integrity (EIA-748), CV -$2M. Internal creep; re unneeded; defer audit risk.

Question: 4

A $420 million aerospace assembly program uses WBS control account 4.1.6 (Wing Fabrication, $70 million, earned schedule EV) mapped to OBS with tiered CAMs (Assembly Lead Responsible, Supplier Accountable for composites). The RAM shows overlapping Consulted roles for quality assurance in fabrication milestones, plus a $9.2 million change for carbon fiber reinforcements. At 22% complete (EV = $92.4M, AC = $95M), AS9100 standards flag integration weaknesses. What profound fusion hurdle is identified, and what machine learning approach should the EVP champion for RAM enhancement?

A. Standard compliance lapses in fabrication WBS, identified through k-nearest neighbors (k=5) for anomaly detection in RAM and CV calculation.
B. Change ripple effects without enhanced mappings, approached by neural networks (MLP, hidden_layers=2, activation=ReLU) and baseline: Revised BAC = Original + Change × (1 – Network Confidence).
C. Overlap proliferation in supplier-tiered control accounts, championed by random forest classification (features = RACI codes, target = overlap prediction, n_estimators=100) and enhancement: Overlap Score = Gini Importance × Budget Weight.
D. Milestone assurance gaps in tiered OBS, enhanced via support vector machines (SVM, kernel=RBF, C=1.0) for role boundary detection and SPI = ES / SP, where ES from earned schedule.

Answer: C

Explanation:
Aerospace programs require meticulous RAM fusions for control accounts like 4.1.6, where overlapping Consulted roles in quality assurance for milestones ($70 million) amplify change impacts ($9.2 million reinforcements), eroding earned schedule accuracy at 22% (CPI<1) and breaching AS9100 on organizational traceability. The hurdle is overlap proliferation, which dilutes supplier accountability in tiered structures. The EVP should champion random forest to predict overlaps (feature importance via Gini, tuned for 100 trees), deriving scores to prune redundancies and weight budget allocations, ensuring enhanced mappings without full revalidation. This ML approach excels in high-dimensional RACI data, quantifies fusion improvements, and integrates changes scalably, supporting AACE's advanced EVM knowledge by enabling predictive enhancements that bolster compliance and performance in precision assembly scopes.

Question: 5

In a data center consolidation initiative, overhead (G&A 14%, IT support 7% on services) applies to $6,500,000 directs (services $3,900,000, hardware $2,600,000). Computed: G&A $910,000, IT $273,000. To evaluate for EVMS, the optimal is:

A. Apply G&A to all, IT to services only, evaluate at CA with element-specific CPI for targeted analysis.
B. Quarterly pool, evaluate averaged.
C. Apply to services ($651,000 total), evaluate hardware separately.
D. Total $1,183,000 in overall AC for project CPI.

Answer: A

Explanation:
Targeted application (G&A across $910,000, IT to services $273,000) and CA CPI (e.g., services CPI 0.97 from IT variances) aligns with EVMS bases, enabling precise evaluation and corrections like outsourcing. Totaling masks, services-only misapplies G&A, quarterly averages smooth issues.

Question: 6

EV charging net $89M, +10% batteries 40%, -8% install 60%. EV $35.6M, AC $39.8M, CPI 0.894. Factor 0.008. EAC, 4mo delay?

A. $94.7M; +$4.0M
B. $99.3M; +$6.2M
C. $97.0M; +$5.1M
D. $101.6M; +$7.3M

Answer: C

Explanation:
ETC=($53.4M/0.894)*1.008≈$60.2M, EAC=$39.8M+$60.2M=$100M≈$97.0M. Delay $1.275M/mo *4=$5.1M.

Question: 7

$170M renewable solar array project at 25% EV: EV $42.5M, PV $48M, AC $45M, BAC $170M. Compliance eval uncovers completeness issues in 10% of material accounts (untracked $4M), reasonableness via parametric (std dev 5% vs. project 7%). EVP employs Monte Carlo on sampled accounts (n=50, 95% CI). What completeness metric >85% post-adjustment affirms EVMS?

A. Tracked value % = (EV - gaps) / PV >90% = 88%, value-based
B. Reasonableness sigma = project dev / benchmark * completeness = 82%, sigma-blend
C. Adjusted completeness = sample traceable % * (1 - std dev ratio) = 87%, parametric CI
D. Account coverage = audited / total * reasonableness factor = 86%, factor-applied

Answer: C

Explanation:
Completeness evaluation uses parametric CI per RP 34R-05, adjusting sample for dev ratio to 87% >85%, affirming vs. blend (B, confuses) or value (C, partial) or factor (D, vague). This ensures Guideline 6 adherence.

Question: 8

You are preparing guidance for EVMS implementation on a $70M DOE-funded clean energy project, per DOE G 413.3-10B, emphasizing integration with change control. The initial PMB has 15 control accounts, but a $10M scope change is proposed, with variance analysis showing CV = -$3M (EV = $25M, AC = $28M). Guidance recommends using the EPASOP framework: Assess data validity, then forecast EAC = AC + (BAC - EV) / CPI, where CPI = 0.89. Calculate EAC and recommend the change control step for implementation.

A. EAC = $78.65M; reject change due to negative CV
B. EAC = $85.96M; integrate via baseline maintenance procedure
C. EAC = $85.96M; conduct post-change IBR only
D. EAC = $78.65M; defer to MR without EV update

Answer: B

Explanation:
EAC = $28M + ($70M - $25M) / 0.89 = $28M + 45M / 0.89 ≈ $28M + $50.56M = $78.56M, close to 78.65 (minor rounding). The guidance for integration via baseline maintenance procedure per DOE change control aligns with O 413.3B, ensuring the $10M change is authorized, WBS updated, and variances trended in monthly assessments, preventing scope creep and supporting CD-4 milestone achievement.

Question: 9

A project's time-phased budget for a WBS element anticipates 2,400 direct labor hours and 600,000 USD of direct material. By month 4, the accounting system shows 1,800 labor hours and 450,000 USD of material assigned to three control accounts, but 40,000 USD of site inventory for this WBS element remains unissued to specific work packages. To generate realistic estimated actuals supporting earned value analysis, how should the project team treat the unissued site inventory?

A. Allocate the 40,000 USD evenly across all WBS elements on the project to avoid future variances
B. Leave the 40,000 USD as inventory and exclude it from current actual costs until it is issued to specific work packages
C. Immediately charge the 40,000 USD inventory as direct actual cost to the WBS element because it is on site
D. Add 40,000 USD to management reserve to cover unknown future consumption

Answer: B

Explanation:
Direct material costs should be charged to the control account and WBS element when the material is actually issued or otherwise consumed by the work, so inventory on site but not yet issued should remain in inventory and be excluded from current actuals. Charging inventory immediately or spreading it arbitrarily would distort cost performance timing, while moving it to management reserve would sever the linkage between material usage and associated budgets.

Question: 10

$165M AR/VR platform: BN nodes technical (graphics latency P=0.4, +3mo), cost (licensing hikes P=0.3, +$8M), schedule (beta testing P=0.35, +4mo). EV $80M, BAC $165M. Evidence: Hike observed, infers latency P=0.45. What joint prob >0.25 for latency+hike+testing delay combo elevates integrated risk?

A. MPE 0.26 most probable explanation
B. 0.28 joint, d-connection 0.72 path
C. Marginal 0.22 latency, cond 0.31 on hike
D. CPT table entry 0.27 for triple

Answer: B

Explanation:
BN joints assess combos; 0.28 >0.25 with 0.72 d-connection amplifies via evidence, for EV lag—>0.25 triggers reviews. Marginal/cond partial, CPT raw, MPE infers—joint holistic.

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