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INFO MEMO

23 February 2011

FOR: PRINCIPAL DEPUTY UNDER SECRETARY OF DEFENSE (AT&L)

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SUBJECT: PARCA Root Cause Analysis for Enterprise Resource Planning Systems

- This memorandum summarizes PARCA's root cause analysis of the cost and schedule growth in DoD's Enterprise Resource Planning Systems (ERPs).
 - This analysis was requested as a result of a Government Accounting Office (GAO) report entitled "DoD Business Transformation – Improved Management Oversight of Business System Modernization Efforts Needed" dated October, 2010.
 - That study examined nine DoD ERPs (four in detail) and found that:
 - ERP schedule delays and cost overruns were common and sometimes large.
 - DoD's ERP cost estimates are not credible because DoD did not generally follow GAO best practices to develop a reliable ERP Integrated Master Schedule or perform a sensitivity analysis
 - To determine the root causes for DoD ERP cost and schedule growth, PARCA selected three ERPs as specific case studies.
 - These were the Global Combat Support System – Marine Corps (GCCS-MC), the Navy Enterprise Resource Planning system (Navy ERP), and the Air Force's Expeditionary Combat Support System (ECSS).
 - GAO reported significant cost growth for all these systems: 641% for GCCS-MC, 73% for ECSS, and 28% for Navy ERP. GAO overstated the cost growth for GCCS-MC and the ECSS cost growth is based on a Milestone A estimate.
- Our analysis is divided into issues at program inception which led to a flawed acquisition strategy and unrealistic cost and schedule estimates and the series of execution actions which hindered government and contractor ability to recognize and respond to problems. *Of these, the more profound problems were at inception.*
- **Issues at program inception.** A failure to understand the requirements for a successful ERP and the DoD's approach to accommodate the complexity of DoD business processes led to a flawed acquisition strategy and unrealistic baseline estimates for cost and schedule.
 - All ERP efforts – at least in DoD application – are primarily a vast set of business enterprise /operational revisions and the great preponderance of both the cost and the problems associated with their implementation is located in the business operations domain rather than information technology issues. Consequently, ERPs are very complex undertakings which require a clear and sustained strategy from inception.

- The business world has articulated several conditions for the success of ERPs and commonly limits the “scale” of the ERP to a business unit.
 - These conditions are often not satisfied by the DoD acquisition strategy. Moreover, DoD is attempting to implement ERPs on a scales not seen in the commercial world which makes it even less likely that the conditions for success are met.
 - The scale also tends to extend the time required to implement the ERP and DoD finds it difficult to maintain constant purpose and interest in business processes across leadership changes.
- The failures to understand the requirements of a successful ERP and the DoD’s approach to accommodate the complexity of DoD business processes manifested themselves as follows:
 - The policy mandating acquisition of ERPs with a firm-fixed-price contract vehicle was flawed. Fixed price contracts are appropriate when the government knows what it wants and the contractor has a good basis for estimating the cost. Neither of these conditions is valid when the systems integration contract is let for ERPs since blueprinting has not yet begun.
 - The award of any systems integration contract for the entire ERP prior to blueprinting was flawed because an understanding of the user’s as-is and to-be business processes is necessary to estimate the cost of the ERP. However, the cost for that blueprinting is substantial.
 - ERP programs were not structured to deliver smaller amounts of capability in order to gather necessary data, be in line with software refresh rates, and to minimize the risks inherent in ERP acquisition. These risks can also be reduced through piloting. This was only done for Navy ERP (which had the least cost growth of the ERPs examined but still increased the number of releases).
 - The necessity for and consequences of technology development to meet system requirements were underestimated.
 - Early cost estimates often excluded the costs of implementation/change management and data conformance from the program. This was unrealistic and effectively concealed the total cost of the ERP. A related issue is poor definition of the bounds of operational content for which the ERP’s implementation will be liable. Both factors result in unrealistic baselines.
 - Initial cost estimates underestimated the risk of a product intimately dependent on the cooperation of statutorily-independent entities to implement the organizational change integral to the ERP

Issues at Inception for the Specific Programs

Causes of Cost and Schedule Growth	GCSS-MC	ECSS	Navy ERP
Flawed fixed-price contracting strategy	•	•	
Unrealistic release plan	•	•	•
Unrecognized technology requirements	•	•	
Incomplete program content	•	•	•
Impact of organizational change underestimated	•	•	

- **Issues in management and execution.** Given that the initial acquisition strategies and estimates were flawed, the ERPs were on a path to uncover significant problems. The following factors materially impacted ERP programs' ability to overcome and minimize the consequences of these latent problems as they were discovered:
 - Due to the latent problems from inception, it proved necessary during execution for some ERPs to add content to the program under Time and Material terms or to renegotiate Fixed-Price terms. This effectively removed incentives for the contractor to minimize their workforce and reduce cost.
 - The fixed price contracting strategy reduced the reporting requirements (such as earned value data) which diminished program office situational awareness and reduces the data available for future ERP cost estimates.
 - All the programs, at times, exhibited slow decision making and/or implementation of decisions especially in the presence of exogenous shocks. This caused cost growth since the systems integrator had already ramped up their work force.
 - The oversight of the ERPs was often ineffective. Manifestations of this included lack of consistent guidance, failing to recognize that programs were in trouble (often lacking the data to do so), and unnecessarily complicating and delaying program execution once problems were identified.

Issues During Execution for the Specific Programs

Causes of Cost and Schedule Growth	GCSS-MC	ECSS	Navy ERP
Inadequate incentives	•	•	
Limited situational awareness	•	•	
Delays in decision making	•	•	•
Ineffective oversight	•	•	

- Although the focus of this analysis was the root causes for cost and schedule growth in ERP programs, we offer the following two observations about the strategic goals which ERPs are intended to help DoD reach. These strategic goals are primarily the concern of the user rather than the acquisition community.
 - GAO also observed that DoD lacks performance measures to assess the ERPs and their contribution to transforming business operations. This appears to be true.
 - It does not appear that, even if current ERPs are successful, DoD overarching goals for auditability will be achieved. Therefore, the overall costs of meeting those objectives are likely not known.

COORDINATION: NONE