

OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE



ODNI COST RESEARCH

SYSTEMS & RESOURCE ANALYSES

L E A D I N G I N T E L L I G E N C E I N T E G R A T I O N

Presenter(s): Carrie Gamble and Brian Wells

Audience: NASA Conference

August 2015



Agenda

- **Organization & Mission**
- **Tracking Estimates Through Time**
- **Retrospectives**



Organization

OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE

PROGRAM MANAGERS



DEPARTMENTAL



SERVICES



UNCLASSIFIED

OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE

LEADING INTELLIGENCE INTEGRATION

LEADERSHIP

Director (DNI)
Principal Deputy Director (PDDNI)
 Chief Management Officer (CMO)

CORE MISSION

Deputy DNI for Intelligence Integration (DDNI/II)

- Mission Integration Division (MID)
- National Intelligence Council (NIC)
- National Intelligence Management Council (NIMC)
- Cyber Threat Intelligence Integration Center (CTIIC)
- National Counterproliferation Center (NCPC)
- National Counterterrorism Center (NCTC)
- National Counterintelligence & Security Center (NCSC)

ENABLERS

- Acquisition, Technology, & Facilities (AT&F)
- Chief Financial Officer (CFO)
- Chief Human Capital Officer (CHCO)
- IC Chief Information Officer (IC CIO)
- Partner Engagement (PE)
- Policy & Strategy (P&S)
- Systems & Resource Analyses (SRA)
- Information Sharing Environment (ISE)

OVERSIGHT

- Civil Liberties and Privacy Office (CLPO)
- IC Equal Employment Opportunity & Diversity (EEOD)
- IC Inspector General (IC IG)
- Office of the General Counsel (OGC)
- Office of Legislative Affairs (OLA)
- Public Affairs Office (PAO)

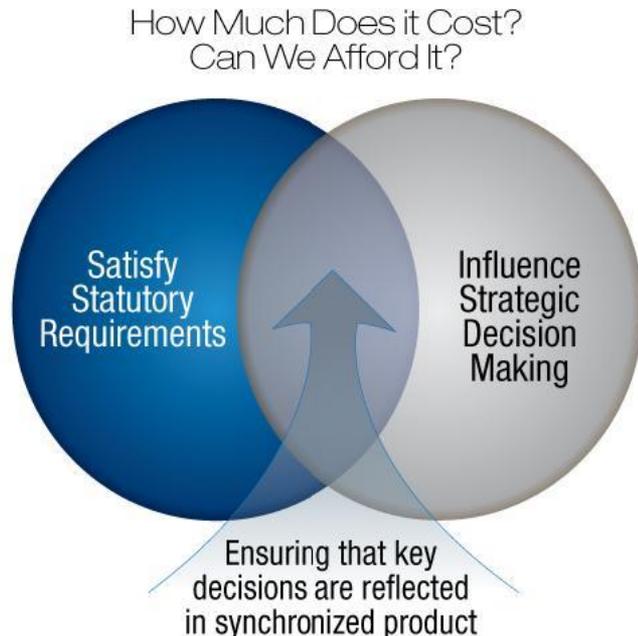
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SRA/CA Mission & Principles

“Lead the Intelligence Community in independent cost analyses through consistent, defensible cost estimates supported by in-depth analysis and innovative methods that facilitate strategic-level decision making on Intelligence Community resources.”



SRA/CA Principles

- Produce high-quality analyses that provide insight into the projected costs and schedules of major system acquisitions (MSAs)
- Support the ability of Program Offices to execute their plans and schedules
- Facilitate long-term strategic planning through the development of affordability models, performance reports, and a comprehensive Track Record
- Advance cost estimating practices and policy in the IC by focusing on research, development, and collaboration with other cost estimating organizations

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ODNI TRACK RECORD

ODNI SRA/CA

L E A D I N G I N T E L L I G E N C E I N T E G R A T I O N

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Tracking Estimates Through Time

- **Approach**

- Developed a repository for cost estimates, actuals/budgets, program milestones, and associated metadata
 - Cost estimates include ODNI ICEs and Agency Cost Positions (ACPs)
- Mapped Scope Estimates to “Actuals”
 - Include as much scope as possible

- **Goals**

- Measure systematic Independent Cost Estimate (ICE) performance
- Support analyses at multiple levels of detail
- Generate views across time to support trend analyses
- Examine impact of IC policies and practices
- Make data discoverable and support queries to filter and refine data
- Identify potential areas requiring further analyses (research or retrospective)



Track Record Performance

ODNI created the Track Record, in part, to examine estimating performance; however, similar factors are sometimes attributed to the Acquisition system¹. In fact, performance is driven by many factors, such as:

Systemic/Primary Drivers:

Estimating Performance

- Baseline (point of measure) is established by an estimate

Policies and Practices

- ICE Process, ICBDs
- IC Cost Review Boards

Acquisition System

- Acquisition Regulations and Policies
- Acquisition Workforce and Training
- Intelligence Community Capability Requirements (ICCR) Process
- Acquisition Boards

Individual Program/Periodic Drivers:

Acquisition Team

- Government and Industry

Governance/Leadership Decision

- Prioritization of organizational resources
- Prioritization of IC resources

Congressional Actions

- Congressional cuts, marks
- Sequestration

National and International Events

- Wars and Conflicts
- Economic Conditions
- International Relations (Launch Systems, etc.)

Industrial Base

- Manufacturing/Suppliers/Parts

Systemic Track Record measures are driven by IC Estimating Capabilities, the Acquisition Environment, and Policies and Practices

¹ Performance of the Defense Acquisition System, 2014 Annual Report. Washington DC: Under Secretary of Defense, Acquisition, Technology, and Logistics (USD[AT&L]), June 13, 2014

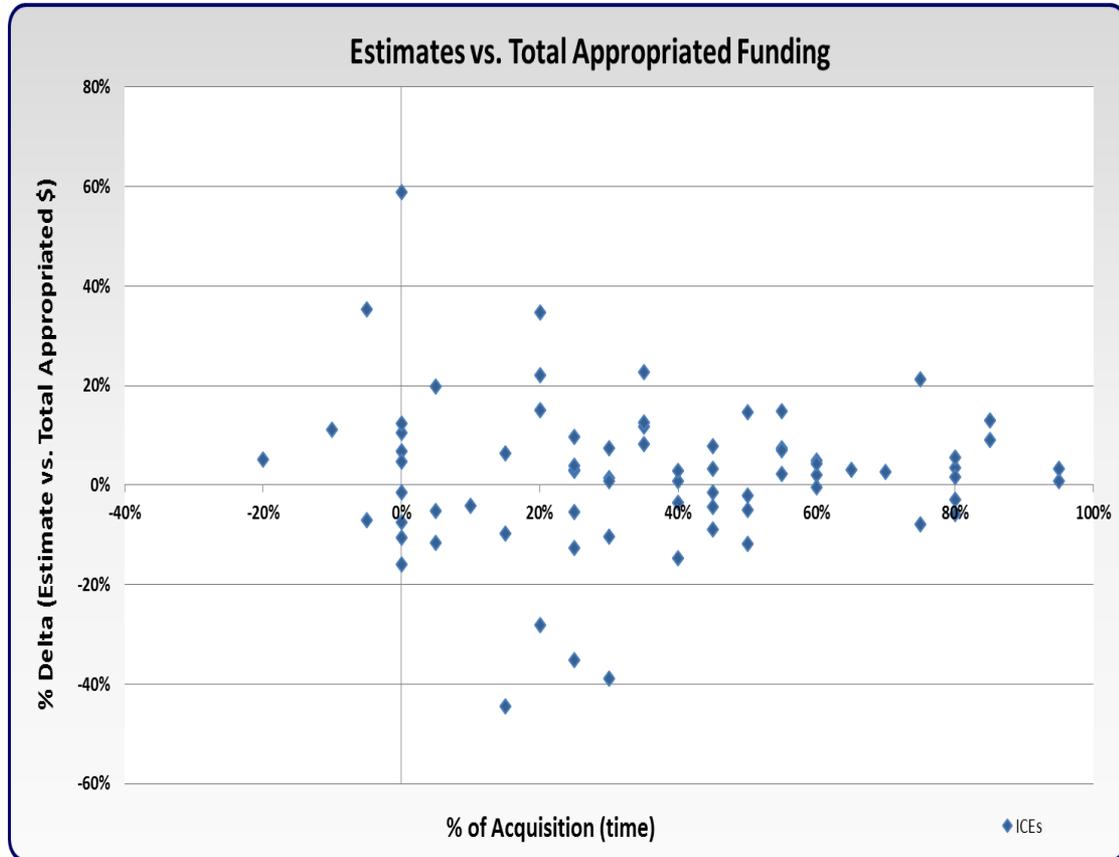


Tracking ICEs Through the Acquisition Process

- Data set contains 38 system acquisitions
 - Total ICEs: 74
- Data set is limited to programs that have reached >50% acquisition (schedule or dollars)
 - Completed acquisitions are the best possible data points (not susceptible to fluctuations)
 - >50% acquisition points may change, but allow for early observations

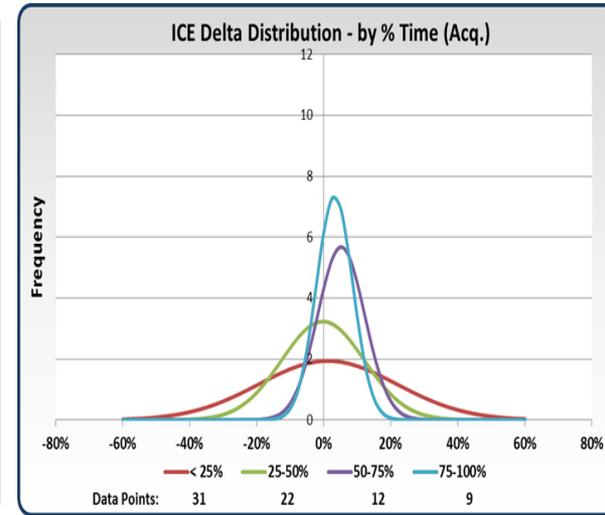
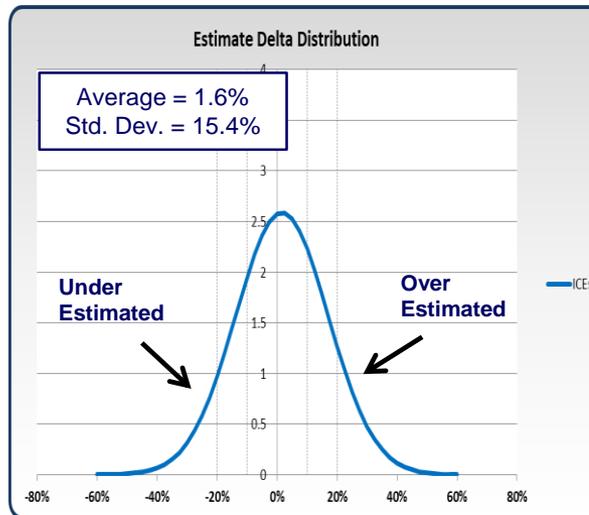
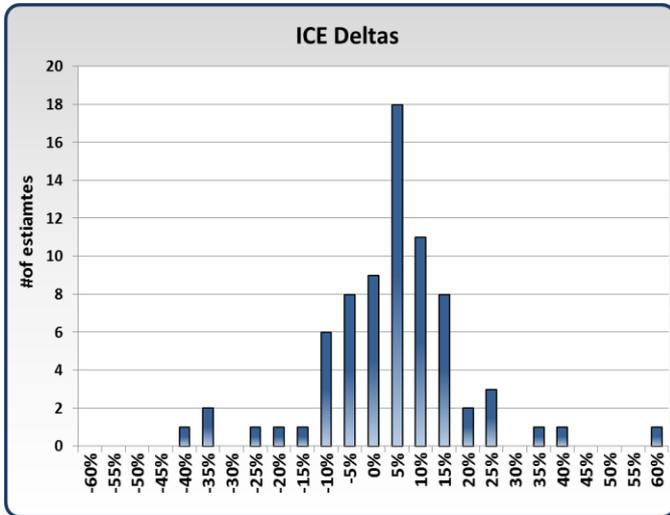
Data plots are a visualization tool, allowing for identification of potential trends, or areas of concern

- X-Axis: Percentage of time (relative to total acquisition) at which an estimate was prepared
- Y-Axis: Delta between total acquisition estimates vs. final appropriated funding





ICEs – Distribution of % Cost Delta



Histogram to distribution curve:

- Contains all ICEs for all programs > 50% complete
- 74 data points
- Includes multiple ICEs for some programs
- Assumes the data is normally distributed
- Approximately 65% of data is within 1 standard deviation for normal distributions

Estimate Distribution

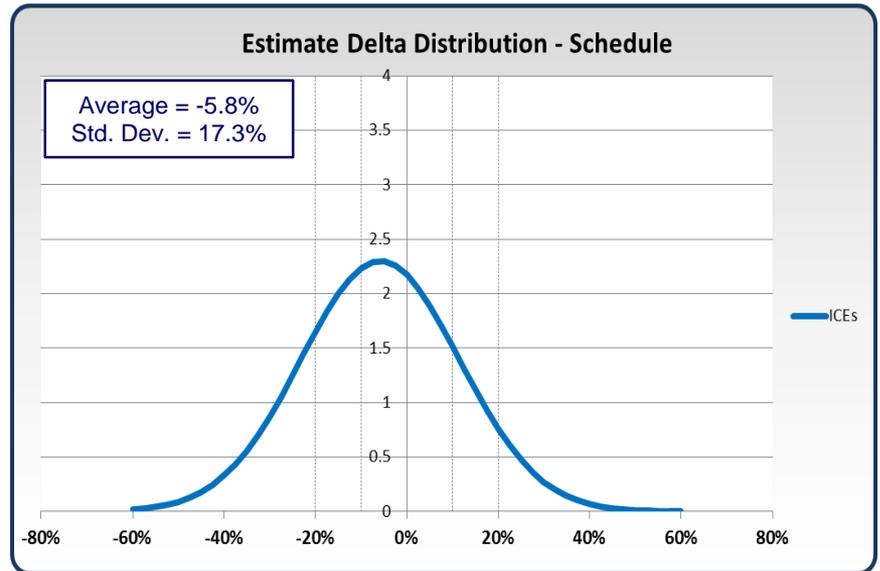
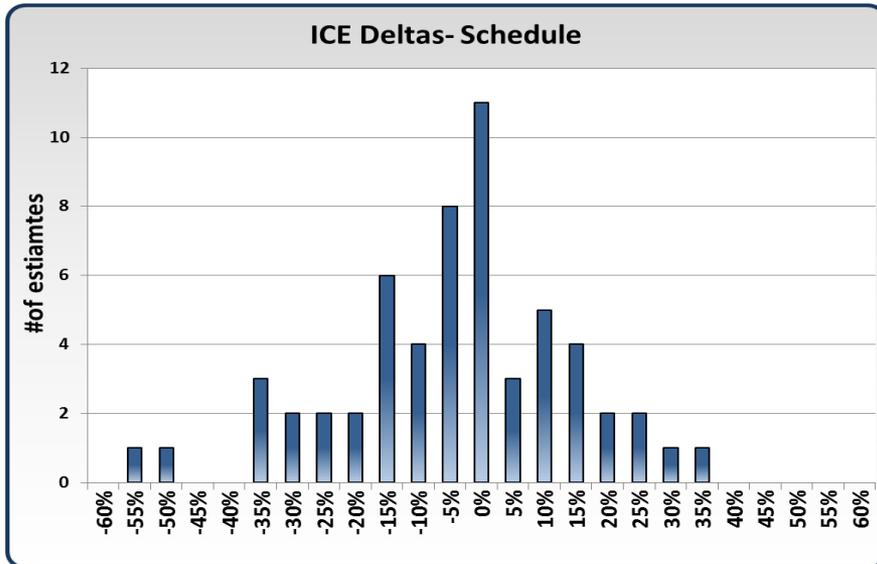
- 25% within 5%
- 48% within 10%
- 67% within 15%
- 80% within 20%
- 89% within 25%

ICEs	< 25%	25-50%	50-75%	75-100%
Average	1.2%	-0.3%	5.1%	3.2%

Two thirds of ICEs are within 15% of the final/current budget



ICEs – Distribution of % Schedule Delta



Histogram to distribution curve:

- Contains all ICEs for all programs > 50% complete
 - 74 data points
 - Includes multiple ICEs for some programs
- Assumes the data is normally distributed
 - Approximately 65% of data is within 1 standard deviation for normal distributions

Estimate Distribution

- 22% within 5%
- 41% within 10%
- 59% within 15%
- 73% within 20%
- 83% within 25%

Over half of ICEs are within 15% of the final/current schedule

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PROJECT RETROSPECTIVES

ODNI SRA/CA

L E A D I N G I N T E L L I G E N C E I N T E G R A T I O N

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Purpose of a Retrospective

Retrospectives are a formal method for evaluating project performance, extracting lessons learned and making recommendations for the future

- **SRA/CA directed to perform project retrospectives by ADNI SRA**
 - Selection of topics based on interest and estimated difficulty of collecting data
- **Retrospective Goals:**
 - Improve SRA/CA cost estimating by identifying best practices and areas for improvement
 - Gather information to improve overall understanding of the program
 - Provide lessons learned to multiple stakeholders (SRA, AT&F, CFO, CIO, agency representatives, etc.) to apply across the IC
- **Any program for which SRA/CA has developed a cost estimate is a potential topic for a retrospective, with final selection based on:**
 - ODNI level of interest
 - Ease with which data can be collected to support the retrospective



Retrospective Benefits

- **Project retrospectives have the potential to offer many benefits to a variety of groups**
 - SRA
 - Identify potential areas for research within CA, SA, and PE
 - Highlight estimating best practices and need for method improvement
 - Provide justification or explanation for variance between estimates and actual costs
 - Offer additional detail for requirements analyses and program evaluation efforts
 - AT&F
 - Indicate areas for improvement in and program management and evaluation
 - Highlight successful strategies that can be replicated in other programs
 - Modify policy to avoid repeating mistakes and enhance returns on investments in future projects
 - Intelligence Community
 - Inform decision making in CFO and CIO offices
 - Lessons learned across the community can be prioritized and turned into action
 - One agency can learn from the experiences of another agency



Retrospective Process

- **ODNI analysis primarily based on two types of information:**
 - Official Documentation
 - Includes items such as requirements documents and Intelligence Capabilities Baseline Descriptions (ICBDs), Quarterly Performance Reviews (QPRs), Capabilities Description Document (CDD), etc.
 - Documents provide valuable historical perspective of acquisition and evolution of program under review
 - Interviews/Survey Responses
 - Survey composed of questionnaire (+70 questions) and Classic Mistakes checklist
 - Interview a variety of participants, including representatives from agency staff, ODNI staff, contractors, and users
 - Results consolidated to ensure anonymity of respondents
- **Summarized information used to identify root causes of problems and successes, which in turn leads to lessons learned and recommendations**
- **Scope of analysis limited execution of program under consideration**
 - ODNI does not review events that occurred during source selection
 - ODNI analysis does not trace to root causes that extend into programs other than the program under consideration



Criteria for Consideration

	Criteria	Description	Assessment (1 10)
Difficulty	Quality/accessibility of data	Estimated ability to acquire high-quality data	1= Extremely unlikely; 5= Able to acquire some data; 10 = Able to acquire all necessary data
	Years since completion of program	Time since completion of program (more recent completion will make data collection more feasible)	1= >12 yrs 3= 9-10 yrs 5= 5-6 yrs 7= 1-2 yrs 9= Just completed 10= Scheduled for completion in next 6 months (1 also = More than a year from completion)
	Scope/size of program	Larger/longer programs may make data collection more difficult	1= Large program 10= Small program
Interest	% cost delta	% difference in estimated vs. appropriated dollars (highest delta per Track Record)	1= < 2% 3= 5%-8% 5= 10%-13% 7= 16%-18% 9= 21%-30% 10= 31%-40%
	Changes in requirements	Fluctuation in requirements may lead to less noticeable cost differences	1= No req. change 5= Multiple req. shifts 10= Program re-baselined multiple times
	Schedule Changes	Deviation from the program's original schedule (negatively or positively)	1= Completed within +/-10% of schedule 5= +/-50% of schedule 10= +/-100% of schedule
	AVERAGE		Assessed Topic Score

Criteria fall into two categories

Each program will receive a score



Retrospectives to Date

- **As of March 2015, one retrospective is complete and a second one is in progress**
 - Identified root causes of problems and successes in first retrospective led to five primary lessons learned with multiple associated recommendations for the future
 - Many findings are already being implemented/addressed
 - ICE updates upon contract award
 - Expanded discussion and investigation into agile development practices
 - Initiation of new agency data collection effort
 - Leadership conversation on tracking level of detail
- **In the future, we will be able to trace patterns and trends between retrospectives**
- **Each new retrospective leads to improvements in the total process**
 - Complete a “Retrospective on the Retrospective” after each effort is complete to continuously improve the final product