



# DHS Cost Analysis Overview for International Cost Estimators and Analysts Association: Creating a Capability from the Ground Up

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# About the Cost Analysis Division

## Mission:

Cost Analysis Division (CAD) will provide objective cost estimates and cost analyses to enable DHS acquisition and resource decision making.

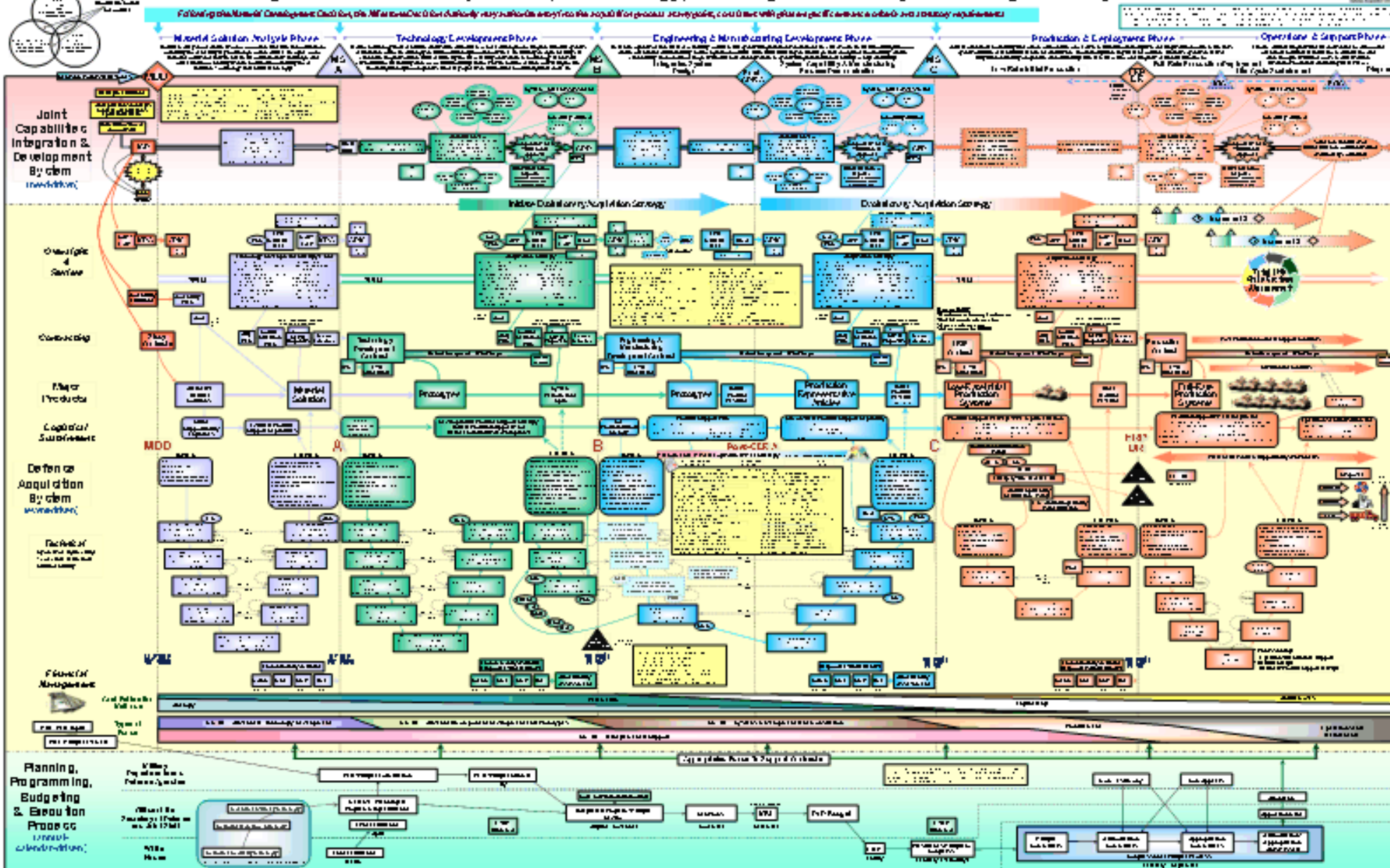
## Vision:

- Enhance the credibility of Life Cycle Cost Estimates (LCCEs) in support of acquisition and resource decisions
- Support Components with developing a self-sustaining cost estimating capability
- Create an Independent Cost Estimating capability for DHS



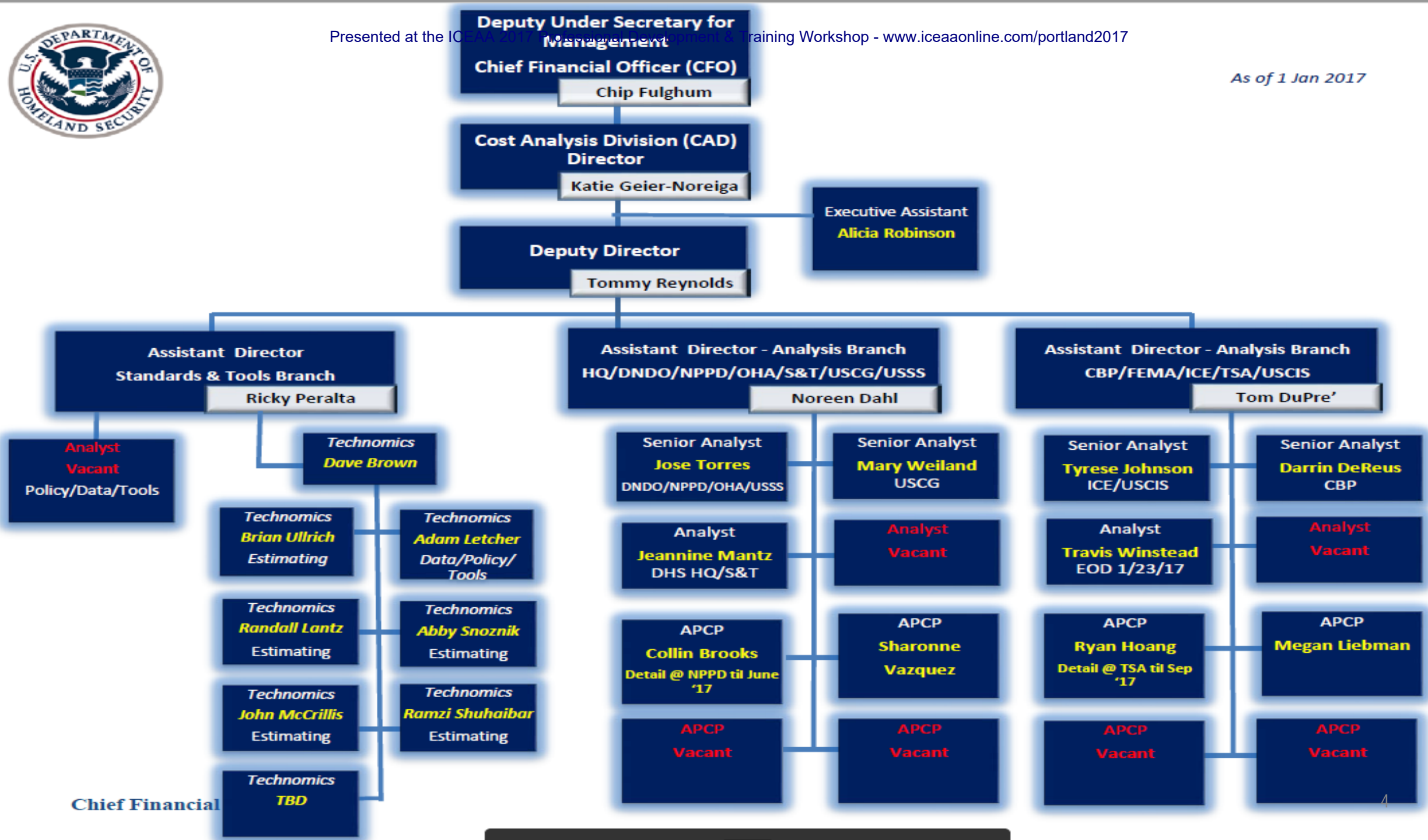
# DoD Acquisition Process

## Integrated Defense Acquisition, Technology, and Logistics Life Cycle Management System





As of 1 Jan 2017





# CAD Roles & Responsibilities

- Provide objective cost estimates and cost analyses to enable DHS acquisition and resource decision making.
  - Principally advises the Under Secretary for Management (USM), Chief Financial Officer (CFO), and Component Acquisition Executives (CAEs) on cost estimating and analysis issues.
  - Leads the Department in cost estimating and analysis policy, policy implementation, and guidance.
  - Develops Independent Cost Estimates (ICEs) and assessments of Level 1 and Level 2 Acquisition Programs to inform the Acquisition Decision Authority.
  - Reviews, analyzes, and evaluates LCCEs and ensures the cost of DHS programs are presented to the Acquisition Decision Authority accurately and completely.
  - Advises the Homeland Security Acquisition Institute (HSAI) on career field certification, training, and education for the cost estimating and analysis community.





# DHS Program Profile

- 12 Components
- 140 Total Programs
  - 54 Major Acquisition Programs
  - 20+ at various pre-acquisition stages
- Air, Marine, Terrain, Sub-terrain, Entry, Exit, Goods, Passengers...
- IT Systems (Financial, Case Management, Immigration, Transformation)



# Support Model is Based on Identified Challenges

- Based on review of 54 LCCEs from 2012-2015
  - Assessed sub-criteria ratings of DHS LCCE approval scorecard
  - Consistent challenge (lower ratings) in:
    - Delivering quality program documents (Cost Estimating Baseline Document, LCCE Documentation)
    - Data analysis and risk and uncertainty analysis

Challenge Identified	Addressing the Challenge
Lack of Personnel	Directing personnel hiring in RPG
Need for Functional Expertise	Creating/offering DHS Cost Estimating Courses/enhancing existing courses



# CAD Support Model to Components

- From FY13 through FY16 - provided on site support to augment CAE staffs at Components
- Beginning this year (2017)- CAD is providing consultant support from DHS HQ
  - Similar to current support model of other DHS acquisition support teams (PARM, S&T, PA&E)
  - Continue to rotate Acquisition Professional Career Program (APCP) through Components
- Components must plan their cost estimating needs
  - CAD assessed Component workforce staffing plans (needs, gaps and mitigation strategies)
    - CBP, FEMA, NPPD, and TSA - have at least 1 Sr. Federal Cost Estimator
    - FY19-23 RPG - requires ICE, USCG, USCIS, USSS to hire at least 1 Federal Cost Estimator
  - CAD is available to support SOW review prior to contracting for cost estimating and help with recruiting/interviewing





# CAD Specialization

- CAD has 14 FTEs (11 on board; 3 vacancies)
  - Also utilize the Acquisition Professional Career Program (APCP) to obtain recent graduates and develop their expertise in cost analysis
- All positions within CAD are Operations Research 1515 or Industrial Engineering 0896 series
  - Require a degree in Engineering, Math, Operations Research or other related degree with 24 hours of mathematics, at least three of which need to be in calculus
  - Senior level positions (GS13/14/15) also require a certification in Cost Estimating



# Cost Estimating Success

- Since June 2014 CAD has:
  - Met the Department’s goal for **100%** of major acquisitions programs to have approved LCCEs — **for the first time in DHS history**
  - Delivered five independent cost estimates; proof that DHS is maturing its estimating capability **2 years ahead of schedule**
  - Developed and instituted a **repeatable process** for examining **affordability** of major acquisition programs
  - Established **policy** requiring maintenance of LCCEs annually (14 of 38 updated and submitted in FY16)
  - Developed/Instructed **course on Intermediate Cost Estimating** available for all Federal Government employees
  - An elevated **leadership position** and **staff size growth** from 10 to end strength of 29 by FY 22
  - Cost estimating function now **represented** at both the Acquisition Review Board (**ARB**) and Program and Budget Review (**PBR**)
  - Established avenue to explore **path forward** to collect **cost data** for acquisition programs



# Major CAD Initiatives

- Enhancing credible cost estimates for decisions
  - Independent Cost Estimates (ICEs) and Independent Cost Assessments (ICAs)
  - Piloting new LCCE ideas w/ Agile Software (S/W) Development Acquisition Integrated Project Team (IPT)
  - Maintaining policy, guidance, and development of training courses
  - Focus on collecting high quality and reliable cost data
  - Annual LCCEs
  - Affordability analysis
  - Piloting LCCE Review Board



# CAD Workforce Development

- Cost Estimating Career Path Guide
- Homeland Security Acquisition Institute
  - Course Development/Course adoption/Learning Cafés
- Identify long term strategy for developmental needs
  - We have flexibility to create courses/update certification requirements
- Keep improving the areas we do well

Scoring Average	STRONGEST COMPETENCY AREAS
4.18	Cost Estimating Process/Define Purpose of Task/Define
4.12	Cost Estimating Analysis for Analytical Decision Support/Analyses/Acquisition Reports
4.05	Contractor Performance/Evaluate Contractor Cost Performance using CPR, CSSR, CFSR
4.00	Cost Estimating Analysis for Analytical Decision Support/Proposal Evaluation/Source Selection/Analyze Contractors Projected Costs
3.97	Develop Point Estimate (PE) & Cross Checks

- Identified key developmental focus areas

Scoring Average	WEAKEST COMPETENCY AREAS
3.09	Cost Estimating Analysis for Analytical Decision Support/Analyses/Evaluation
3.13	Analyzing Data/Time-Phasing the Estimate for Budget Purposes ( <i>DoD switched with risk analysis. Time-Phasing should come before Risk Analysis</i> )
3.21	Software Cost-Estimating Concept & Methods
3.25	Build Cost Models/Parametric Methods
3.27	IT Cost-Estimating Concepts and Methods



# CAD's Efforts Toward Agile Pilot Goals

- Reduce Cycle Time to achieve Acquisition Framework Milestones
  - Active Engagement with Component Agile Pilot Programs and Agile Acquisition IPT
- Streamline Artifact Processes
  - Simplified model development and documentation
- Enabling Best Practices
  - Chartered Member of the Agile Acquisition Working Group (AAWG) Metrics sub IPT
    - Metrics (Data) are Key to Measuring Cost Performance and Future Predictions
  - CAD Cost Research Team Effort
    - Conducting cost study to identify / establish predictive cost estimating methodologies for Agile Software Development programs



# Annual Cost Estimate Updates

- FY16 was a pilot year so we don't yet have a true assessment of the impact at DHS, but in general we can expect that:
  - Tool for PMs to understand how requirements, execution and schedule changes affect the overall cost of the program and their funding needs
  - Annual estimates will provide an early warning system for potential APB breaches
  - Have a current model to conduct Independent Cost Assessments
  - Provide an avenue to obtain incurred costs which will support the development of future cost estimates
- Learning Process





## Next Steps for DHS CAD

- Deliver ICAs – provide CFO with HQ perspective
- Collect software metrics for agile pilot programs
- Instruct HSAI Learning Cafes and Courses
  - Supplement DAU courses
- Continue work with DHS CXOs on data collection efforts
- Evaluate Annual LCCEs and integrate with Program Budget Review for Affordability Analysis
- Institutionalize the LCCE Review Board
- Fill Vacancies at CFO CAD