Continuous Enhancements: An Alternative to Maintenance

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Agenda

- Speed of Acquisition
- What are Continuous Enhancements
- Real-World Example
- Impacts of Continuous Enhancements on Cost Analysis and Financial Management
- Modeling Examples
- Concerns
- Possible Solution
- Summary
Speed of Acquisition

- Enemy threat is rapidly evolving and figuring out how to counteract our defenses
- Technology advancement is much quicker than our acquisition process
- Theoretically, it is more efficient to retrofit/upgrade an older system as opposed to spending the resources and time to stand up a new program

What do we do about it?
What are Continuous Enhancements?

- The continuous refresh and upgrade of hardware and software required to adapt and stay abreast of the rapidly changing and evolving enemy threat throughout the life of a system.

- Additional full-time equivalent resources required to research and implement these upgrades.

- Additional testing and evaluation required to ensure the updates coordinate with the existing system.

- Training updates required based on new components.
This same incremental “upgrade” process can be applied to a military weapons system.
Impacts of Continuous Enhancements on Cost Estimating and Financial Management

- Phasing and amount of appropriations are different from the traditional program profile
  - Requires significant explanation in budget exhibits
    - Continuous detailed budget exhibits for research, design, test, and evaluation (RDT&E) and procurement
    - Justification of estimate for operations and maintenance (O&M)

- Program objective memorandum (POM) for continuous RDT&E and procurement is a funding challenge
  - Yearly POM initiatives
    - Might not address emerging threats quickly enough
  - Requires yearly Congressional justification and approval

- Constantly changing leadership requires continually educating management of the enhancements’ necessity
We chose to create four cost models:

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Basic Description</th>
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<tr>
<td>1a</td>
<td>Traditional maintenance, 20-year service life</td>
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<tr>
<td>1b</td>
<td>Continuous enhancements, 20-year service life</td>
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<tr>
<td>2a</td>
<td>Traditional maintenance, 30-year service life</td>
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<tr>
<td>2b</td>
<td>Continuous enhancements, 30-year service life</td>
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</table>
Visual of Continuous Enhancements

- Research into the latest technology and available options occurs the year before procurement of a new component.
- Procurement of enhancement components is split over a two-year period
  - Multiple lower cost components can be bought in the same year

<table>
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<th>2028</th>
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The enhancement schedule will need to be somewhat fluid, because of progress in the technical domain of each component.
Assumptions for All Example Models

- Assets will be procured and fielded according to the following:

<table>
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- Two assets are purchased with RDT&E for testing and integration and are not part of the Approved Acquisition Objective (AAO)

- Nine components will be integrated on the base system

- All components will be fully operational commercial off-the-shelf elements, which will require additional testing and integration only
Assumptions

- Both RDT&E and procurement Engineering Change Orders occur every three years
- Tech Refresh occurs halfway through the service life
- Operational and depot-level maintenance is included
Assumptions

- Continuous enhancements occur according to the schedule in slide 10
- “Inspect and Repair Only As Needed” replaces the Tech Refresh
- Steady increase in procurement due to inflation and anticipated increase in unit cost of each upgrade component
- Minimal continuous disposal costs; to dispose of existing components being enhanced
Why Limit Ourselves to a 20-Year Service Life?

- Continuous enhancements ensure our system is relevant for the modern threat

- Even legacy systems have been shown to last well beyond their expected life

- Theoretically, the government can save money by extending the service life instead of standing up a new program
  - Potential follow on analysis for next year
Results of Model 2a
Traditional Maintenance: 30-Year Life Cycle

Assumptions from 20-year life cycle still valid except:

– Tech Refresh occurs every 10 years through the service life
Results of Model 2b
Continuous Enhancements: 30-Year Life Cycle

Assumptions from 20-year life cycle still valid except:

- Steady increase in procurement due to inflation and anticipated increase in unit cost of each upgrade component
Comparison of Results

The traditional 50%–70% for O&S is no longer a valid check when applying continuous enhancements.
Comparison of Results

Significant cost increases should not be expected transitioning from Traditional to Continuous Enhancement Modeling but depends on the unit cost.
Concerns

- Programmatic metrics
  - Average Procurement Unit Cost (APUC)/Program Acquisition Unit Cost (PAUC)
    - Limit RDT&E and procurement cost prior to full operational capability?
    - How do we determine if there is a Nunn-McCurdy Act breach?
  - Unit cost
    - How do we maintain consistency on budget exhibits?
    - After AAO is complete, do unit costs matter?
    - For historical data purposes, what should be used in acquisition documents?
  - Acquisition Category (ACAT) Designation Thresholds

- Funding constraints from Congress
  - Endless RDT&E and procurement funding requests are usually met with concern
  - Continuous POM initiatives

- Lack of O&M budget exhibits
  - Requires financial managers to continuously explain an increase in RDT&E and procurement for the whole life cycle
Possible Solution

- Change the rules on what O&M can be used to purchase

Diagram:

- Mod to increase performance?
  - YES: RDT&E
  - NO: DT or OT required?
    - NO: System in Production?
      - NO: O&M
      - YES: Procurement
    - YES: Procurement

Legend:
- DT: Developmental Testing
- OT: Operational Testing

Fund Development & Test with .....
Summary

- Federal acquisition and cost analysis processes must change to adapt to quickly changing technology and threat.

- Cost analysis and financial management technical fields need to work together closely to fill out budget exhibits and agree on programmatic definitions and assumptions.

- POM initiatives and requests need to be developed and approved on a yearly basis.
Conclusion

Questions, Answers, and Discussion

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