COCOTS Breakout Group

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15th International Forum on COCOMO and Software Cost Modeling

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COCOMO vs. COCOTS Cost Sources
(COTS in System)

Total system lifecycle

LCO    IOC

development    maintenance

Cost of maintenance
Fn (synchronization, complexity of system, no. planned upgrades, etc.)

A COTS Lifecycle Modeling Approach using Systems Dynamics Modeling Techniques:
COTS-LIMO Model

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### ACTIVITIES

<table>
<thead>
<tr>
<th>High Priority</th>
<th>S-spiked C-constant</th>
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<tbody>
<tr>
<td>- Training(existing COTS, upgrade COTS)</td>
<td>SC (dep. Turnover)</td>
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<td>* An accounting cost?; or prepwork in model, actual training an accounting cost</td>
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<tr>
<td>- Configuration Management</td>
<td>C</td>
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<td>- Operations Support</td>
<td>C</td>
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<td>- Integration Analysis</td>
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<td>- Managing Requirements</td>
<td>SC</td>
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<th>Medium Priority</th>
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<td>- Certification</td>
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<tr>
<td>- Market watch</td>
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<tr>
<td>- Distribution</td>
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<tr>
<td>- Vendor management</td>
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<td>- Business case evaluation</td>
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<th>Low Priority Activities</th>
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<td>- administering COTS licenses</td>
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### Issues

- Normal Maintenance vs. Volatility-related
- AID in helping to decide whether to deal with volatility or not.
- **COST Driver**
  - Safety/Mission Critical
  - Non-Safety/Mission Critical
  - Redelivery of system
  - Swapping elements in & out
- Look at COCOMO II maintenance cutoff %
Types of Maintenance

Adaptive
e.g. Less adherence to standards => More adaptive effort

Corrective (COTS/Vendor Maturity dependent)
e.g. Less maturity => More corrective effort

Perfective
e.g. Optimization:
   Greater # COTS => More perfective effort

COTS Life Cycle Anchor Points

LCO--LCA--IOC--??-----??----??----??----??---Retirement

Suggested Anchors:
IOR -> Initial Operating Rollout (1st Revenue Release)
COR -> Completion Of Rollout

Where is Transition accounted for?
- How is it defined?
- Warranty Period in Contract?
- From Initial Site Installation to Final Site?
- Overlap between Transition & Maintenance, i.e. 1st and Last site?
WHAT IS NEEDED NEXT

- Tighter definitions of major items listed in FAA workshop notes.
  - More structured analysis of FAA notes

- COTS WBS

- Define a maintenance lifecycle with Anchor Points and activities
  - Assumptions?
  - COTS Upgrade? No COTS upgrade between anchor points?
  - Major/Minor Anchor Points?