GSAW 2003 COTS Integration

COTS Based Systems Issues

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Some Emerging Issues from Kohl

- **COTS ‘certification’**
  - What is it? Approaches to achieve it?
  - How to measure or validate it?
  - As compared to custom built software ‘certification’

- **COTS content at major milestone reviews**
  - SRR, SDR, PDR, CDR, TRR, etc
  - What content should be presented at each review?

- **COTS impacts to lifecycle processes**
  - Changes to existing processes (requirements, evaluation)
  - Differences in sequence of activities
  - Milestone review impacts (see 2nd bullet)
Product Issues

PD01 • Requirements vs. COTS capabilities
  • Integration of
PD02  ❖ Multiple COTS products
PD03  ❖ Incompatibilities among COTS products
PD04  ❖ COTS products with new/reuse software
PD05 • COTS independent architecture
PD06  ❖ Designing architectures for COTS evolution
PD07  ❖ Designing in safety, security, supportability
PD08 • Mission risk
PD09 • Cross platform portability
PD10 • Standards: good, bad, ugly?
PD11 • API breakage ("unplug and replay")
PD12 • Dormant functionality or features
PD13 • Adverse effects of product upgrades on system
## Process Issues - Developer

| PC01 | Robust initial and periodic COTS product evaluation |
| PC02 | Prototyping in a system context |
| PC03 | Testing in operational context |
| PC04 | Regression testing of upgrades in system context |
| PC05 | Adapting software and systems engineering processes for CBS development and maintenance |
| PC06 | Still need systems and software engineering |
| PC07 | Need enhanced CM processes |
| PC08 | Planning for COTS upgrades and evolution during development and maintenance |
| PC09 | Selection of hardware platforms with availability of COTS software as key criterion |
Process Issues - Customer and User

PC10 • Acquisition and support strategies
PC11 • Adapting customer/user processes to CBS acquisition, operations and maintenance
PC12 • Processes for trading cost, schedule, requirements, and O&M concepts against COTS capabilities
PC13 • Need requirements prioritization
PC14 • Need contracts compatible with CBS development and maintenance
PC15 • Standardized processes for safety certification and security accreditation of CBS needed
PC16 • Standardized license processes to ensure suitability of licenses and maintaining currency
Resource Issues

- Cost vs. benefit of upgrading
- Acquiring and maintaining CBS skills
- Accurately costing all aspects of CBS development and maintenance
- Optimal scheduling of upgrades
- Increased computer resources for upgrades
- Modifying COTS is a BAD idea!
- Need cost and schedule management reserves
- Reallocating time and effort across life cycle
  - More time for evaluation, prototyping and analysis
  - Less time for implementation; more time for integration
### Marketplace Issues

<table>
<thead>
<tr>
<th></th>
<th>Product maturity</th>
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<tbody>
<tr>
<td>M01</td>
<td><strong>Dropped or de-emphasized platforms and products</strong></td>
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<tr>
<td>M02</td>
<td><strong>Changes in fees and fee structure for licenses and services</strong></td>
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<tr>
<td>M03</td>
<td><strong>Vendor volatility</strong></td>
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<tr>
<td>M04</td>
<td><strong>Marketplace maturity</strong></td>
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<tr>
<td>M05</td>
<td><strong>Vendor responsiveness</strong></td>
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<tr>
<td>M06</td>
<td><strong>Definition of COTS (=“for sale”)</strong></td>
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<td>M07</td>
<td><strong>Suitability of licenses for user application (e.g., expiring keys, export restrictions)</strong></td>
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<td>M08</td>
<td><strong>Release schedule, content and quality unpredictable</strong></td>
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<td>M09</td>
<td><strong>Rapid technology turnover and limited support of past releases</strong></td>
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Intergroup Interaction Issues

IG01  •  Customer resistance to COTS--NIH
IG02  •  Excessive customer bias toward COTS
IG03  •  Vendor relationships
IG04  •  Establishing and maintaining active partnership between customer, developer and user
IG05  •  Need flexible and efficient responses to unexpected impacts by customer/user
What are Your Experiences with CBS?

• **Successes**
  - What successes have you experienced (directly or indirectly)?
  - What factors contributed to the success?

• **Problems/Failures**
  - What problems have you experienced (directly or indirectly)?
  - What factors caused the problems?
  - What would you do differently to remove the problem or reduce its impact in the future?
Survey on COTS Upgrade Release Frequency

1. In your experience, what is the average duration between releases of a given COTS Product?
   - GSAW 03 = x months (range: x to x)

2. For system(s) with which you have experience, how frequently are system upgrades released that incorporate COTS software upgrades?
   - GSAW 03 = x months (range: x to x)