Software Regression Testing

LT Alex Hoover
COMOPTEVFOR
Monday, January 13, 2003
### Software Registration Testing

<table>
<thead>
<tr>
<th>1. REPORT DATE</th>
<th>2. REPORT TYPE</th>
<th>3. DATES COVERED</th>
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<td>13 JAN 2003</td>
<td></td>
<td>00-00-2003 to 00-00-2003</td>
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<table>
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<tr>
<th>4. TITLE AND SUBTITLE</th>
<th>5a. CONTRACT NUMBER</th>
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<td>Software Registration Testing</td>
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<tr>
<th>6. AUTHOR(S)</th>
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<tr>
<th>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</th>
<th>8. PERFORMING ORGANIZATION REPORT NUMBER</th>
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<tbody>
<tr>
<td>Commander Operational Test &amp; Evaluation Force (COMOPTEVFOR), Code 83, 7970 Diven Street, Norfolk, VA, 23505</td>
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<th>10. SPONSOR/MONITOR'S ACRONYM(S)</th>
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<th>12. DISTRIBUTION/AVAILABILITY STATEMENT</th>
<th>13. SUPPLEMENTARY NOTES</th>
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<td>Approved for public release; distribution unlimited</td>
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<tr>
<th>14. ABSTRACT</th>
<th>15. SUBJECT TERMS</th>
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Approved for public release; distribution unlimited
Congratulations!

Computer Controlled Power Steering

Computer Controlled Secure Remote Entry

Computer Controlled Environmental Monitoring

Computer Controlled Fuel Regulation

Computer Controlled Anti-Lock Brakes
Testing …

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Troubleshooting...

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Premise

The degree of regression testing required for a system is not proportional to the failure corrected, but to the extent of the change applied to correct the failure.
Measuring Extent of Change

• Traditional Methods
  – SLOC
  – SPR Opening/Closure Rate
  – Interface Tracing

• Proposal
  – Functional Decomposition and Synthesis
  – Total Architectural Change
Functional Dependency

• Functional Entities Exist at Multiple Levels of Resolution
• Entity-Relationship Views are Isomorphic with Hierarchies
• Hierarchies Can Establish “Order of Effect” Relationships Among Entities
Substantive Change

- Changes in Scope
- Changes in Nature
- Changes in Range
- Changes in Behavior
Tracing Change to Test Cases

• Dimensions of Testing
  – Breadth
  – Depth

• Dimensions of Change
  – Order
  – Substance

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Questions

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