Impacts/Benefits of COTS during Operations/Maintenance Phase

FUSE Lessons Learned

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Benefits

• SCL C&C Standard Approach
  – Flight/Ground/I&T

• Mission Ops Team integrated at design phase for both Flight and Ground Operations
Impact

• Cost/Schedule Impact
  – $$
  – Time

• Technology Impact
  – Leveraging On-board Expert System to detect SEU and reload detectors
FUSE Approach

- Mass Customization
  - Not COTS Mass Production
  - But Open COTS + GOTS + …

- COTS only gets you to an 80% solution, You then need to tailor the solution to the customer/application
GOTS

- Lack of Support
- Lack of Documentation
- Costly
COTS Integration

• Issues
  – Scalability
  – Support/Maintenance
  – Risk Mitigation / Total Cost

• CORBA
  – IONA
    • Orbix & OrbixEvents

• Software Bus
  – Ground Data Distribution
    • NDDS from RTI
    • Tooltalk
Data Management

• Data Representation
  – From RDL to SML/XML
  http:www.interfacecontrol/SML

• Data Management
  – Object-Oriented Database
    • O2 Ardent Software
      – Benefits
      – Issues
Other COTS

- Displays using SAMMI
  - A Mission Ops Responsibility

- STK

- MatLab

- IDL
Key To Success

- SCL Standard Framework
- Open Source (ICS Announcement)
- Integrated Team
  - Mission Ops
  - Software Development
  - Vendors
Pat Cappelaere

- President/CEO founder of Interface & Control Systems 1988
- Software Architect for SCL: Spacecraft Command Language
  - Command Interpreter/Expert System for On-Board Space Applications/Embedded Systems
- ICS Major Achievements:
  - Clementine (1994), ROMPS, FUSE, X33
  - New Programs: SBIRS High, ICM, NEMO
- Education
  - M.S. in Engineering -- Lille France
  - XMBA Loyola College – Baltimore MD