What's Tougher – Transformation or Rocket Science?

Precision Strike Summer PEO Forum

Rick Baily
The Boeing Company
Just to give you confidence that I might be able to tell..................
What Cost More To Develop?

RS-68

4.7 Years
$500M

7 Years
$750M

Source: AIAA Publication 2002-4324
RS-68 Summary

- Development costs reduced 5x
- Variable development costs reduced 10X
- Development / Cert cycle time reduced 2X
- Required engine tests decreased 3X
- Payload-to-orbit increased 2% over plan
- Design reliability goals surpassed
- Recurring cost reduced 14X

Source: AIAA Publication 2002-4324
Solving Tomorrow’s Problems Today

• What we want to get from “this NCO stuff”
• Network centric operations
  • What it isn’t
  • What’s going on now – and what we’ve learned
  • How it could apply to Precision Strike and transformational leadership
• What it’s going to take to pull it off
“Start With The End In Mind”

- Shared situational awareness
- Speed and agility of “Battle Command”
- Dynamic “Battle Execution”
NCO Cornerstones To Make It Work

• “Everybody in the network”
  – GIG, with mobile, ad-hoc network to tactical level
• The right data (when it’s needed)
  – Persistent ISR, with reach to multi-INT sources
• Turn data into information
  – Multi-source data fusion; collaboration
• Use information to make good decisions
  – Decision aids, intelligent agents, COA generators, …
• Dynamic execution!
  – Joint, integrated BMC2/Support/Training
"A Balance of Data Distribution"

**Network-based Services**

**Autonomous Applications:**
- Real-time
- Fire Control

**GIG Networks**
- Wide Area Network supports UE & UA with Optical Fiber & MILSATCOM
- Operational Area Network supports UE & UA... enabled by JTRS & MILSATCOM

**FCS C4ISR**
- Home Station Operations Center
- FCS is able to process, secure and exchange information via the GIG across all echelons

**Networks**
- Common Data Link (legacy point to point)
- Wide Area Network
- JTRS supported networks
- WIN-T supported networks

**Global Information Grid (GIG)**

Source: NDIA Interoperability Conference 24 March, 2004
The Network Isn’t

Your old phone system
Current Experience Example ……. Fixed and Mobile Networks

Boeing LABNET – real time collaborative simulations

Mobile, ad-hoc network demonstration

Harsh mobile tactical warfighting environment not like fixed infrastructure – requires different solutions
Networked Fires

Knowledge Centers

Leverage All Relevant Sensors

Air & Space Sensors

Leverage All Relevant Attack Means

Support to Joint Forces

Synchronized With Maneuver

Lethal and Non-lethal At Every Echelon

Attack and Destroy Multiple Centers of Gravity

"Approved for Public Release, Distribution Unlimited, Case #42244"
Implication for Precision Strike

- Networks connecting ever increasing number of systems/nodes
- Seamless integration from strategic to tactical enables situational awareness, but will severely load network
- Information quality-of-service management essential for bandwidth-limited “point of spear” tactical environment
Turning Data to Information Isn’t

Monkey business
# Implication for Precision Strike

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<thead>
<tr>
<th><strong>Today</strong></th>
<th><strong>Tomorrow</strong></th>
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<tr>
<td>Voice</td>
<td>Digital data</td>
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<td>Voice</td>
<td>Digital imagery</td>
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<td>Manual input</td>
<td>Machine-to-machine</td>
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<td>Networked fires</td>
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<td>Incomplete data</td>
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<td>Multiple sources</td>
<td>Single integrated</td>
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<td>Non-fused</td>
<td>operational picture</td>
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<td>Incompatible data links</td>
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*Decision aiding will be valuable tool for helping warfighters handle tremendous amounts of data*
Collaboration Isn’t …………………

Two against one ……..
More stakeholders involved and more often — but, has not cut out travel or “face-to-face”
Current Experience Example ..... Advanced Collaborative Environment (ACE)

- Team “project” folders
- Digital Product Description (3D viewers)
- Simulation portal
- Document management and control
- Approval workflows
- Host management information system
Current Experience Example ..... Advanced Collaborative Environment (ACE)

Accounts

One Team

LSI

Gov.

Projects

3 mo

6 mo

24 mo

Data Storage

3 mo

6 mo

24 mo

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Implication for Precision Strike

• Develop system of systems in collaborative environment
  – Warfighter directly involved
  – Learn as you go
• Plan for layered collaboration approach with Joint Forces (depth of capability)

If collaboration environment is effective, people will use it – the word gets out
Dynamic decision making and dynamic employment Isn’t

A BOGSAT

(Bunch of guys sitting around talking)
Current Experience Example ..... Exostar e-based Supply Chain Management

Over 6,000 partners conducting >300,000 transactions per month

Exostar announced at Farnborough

Rolls-Royce becomes investor

ProcurePass Release 5.0
Implication for Precision Strike

Joint effects based operations will require assessing a full spectrum of options.
What’s It Going To Take?

• Cultural change
  – Environment of sharing data/information
  – New levels of collaboration
  – Develop trust in decision aiding tools

• System of Systems approach
  – Look for solution with bigger picture viewpoint
  – Provide interoperability
  – Rely on interdependence (horizontally integrate)

Warfighter-focused approach needed or technology may accentuate current state, not move it forward
So ........ What's Tougher?

It's going to take Transformational Leadership to create Transformational Change