



**YOUR ADVANTAGE.  
AND THEN SOME.**

## **Complex System Management**

**MG John W. Holly, USA (Ret.)**

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# Expectations

- **Technical Competence**
- **Integrity**
- **Leadership**

*"Leadership is the art of  
accomplishing more than the  
science of management says is  
possible."*

*GEN Colin Powell*

# Technical Competence

- **Understand the product; not just the technology**
- **Use all of the tools available**
- **Focus on the margins**
- **Maintain rigor in the change control process**
  - **What is a class 2 change?**
  - **Deep dive audits to validate class 2 changes**
- **Document trades well**

A capability-based approach does not obviate the need for disciplined systems engineering.

- **Absolute Honesty**
- **Focus on the problem *and the solution***
- **Be a “Thought Leader”**
- **Manage technology**
  - Hurdle, barrier, or breakthrough?
  - Brutal honest – be your own worst critic
  - Establish a cut off plan for ideas that do not work
- **Know the difference between data, information, and judgment**

Curiosity decreases as a test event nears.

- **Use technology as an enabler – it is not a substitute for leadership**
- **Harness technology – do not become a slave to it**
- **Identify problems *and* recommend solutions**
- **Influence investment decisions**
- **Look beyond what you do well – focus on adding value**

If everyone is thinking the same; no one is thinking...

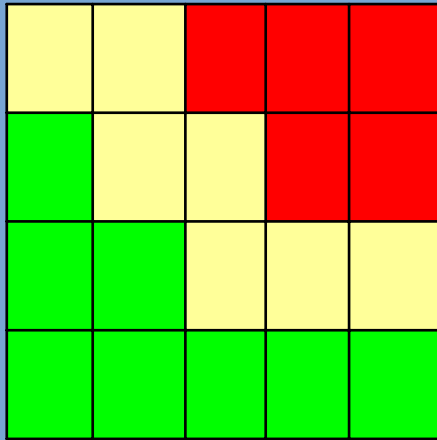
# Risk Based Leadership

- **Manage risk – do not simply monitor it!**
  - **Be aggressive**
  - **Ask questions – what could have happened, and why did it not?**
- **Follow careful planning with deliberative execution**
- **Be a leader: Swift ... decisive ... sure**

To achieve great things, one must take risks.

# Risk in Defense Programs

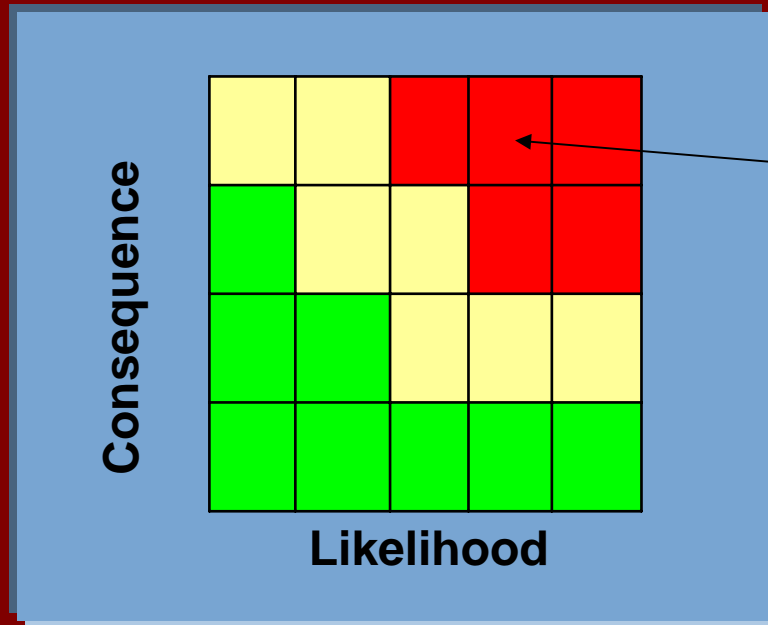
Consequence



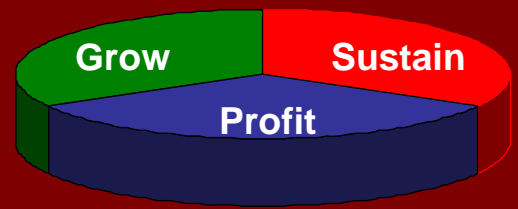
Likelihood



# Change Management



Inability to control Change  
in Vendor & Subcontractor base



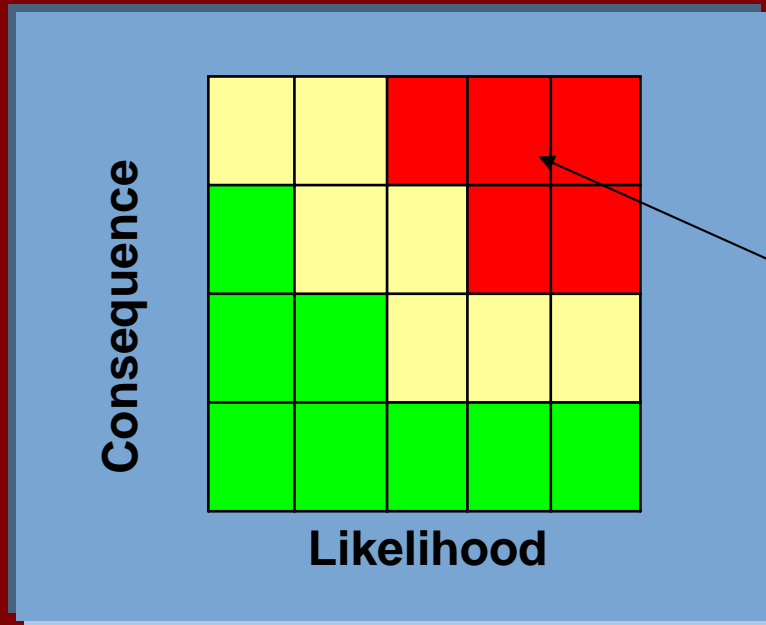
**Contributing Factor:  
Regulatory Change Rate**

# Case Study: Subcontractor Change Management

**ATACMS**  
**Insulation de-bond**

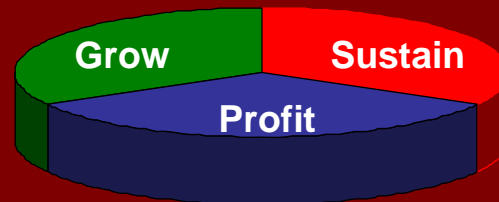


# Configuration Management



**Lack of Configuration Management Rigor**

**Contributing Factor:  
Increased System  
Complexity**

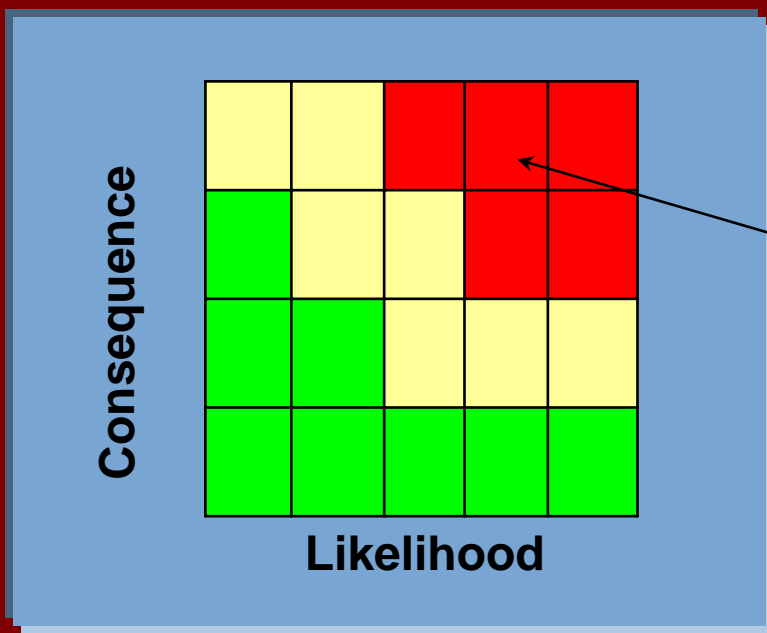


# Case Study: Subcontractor & Vendor Change Management

## Ground Based Interceptor: IFT-9 Example

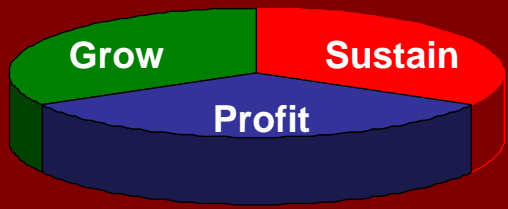


# System Complexity



Failure to appreciate impact of First Time Integration Tasks

**Contributing Factor:  
Increased Complexity with  
Decreasing Budgets**

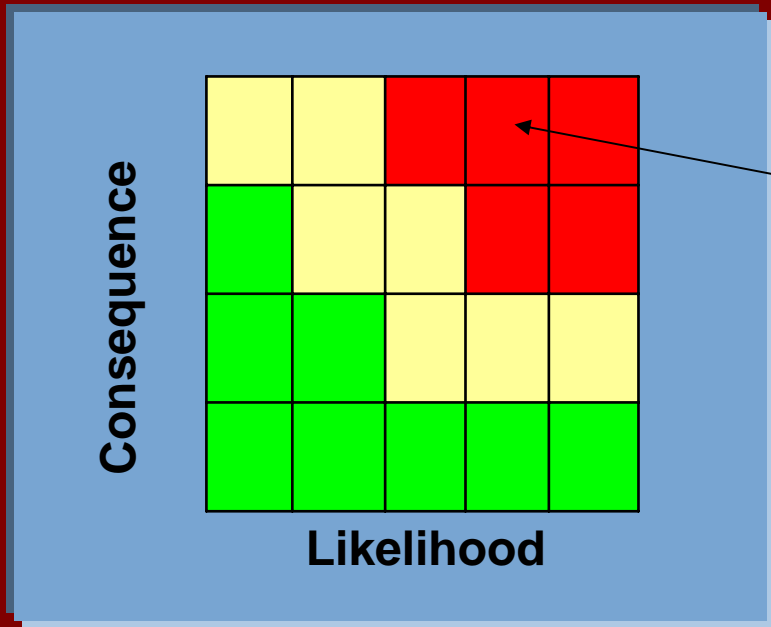


# Case Study: System Complexity

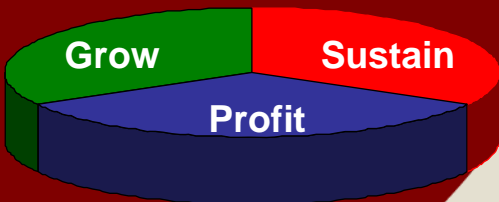
**Exo-atmospheric Kill Vehicle 4  
consecutive intercept successes**



# Cost Reduction Initiatives



**Second Order Effects of Cost Reduction Programs**

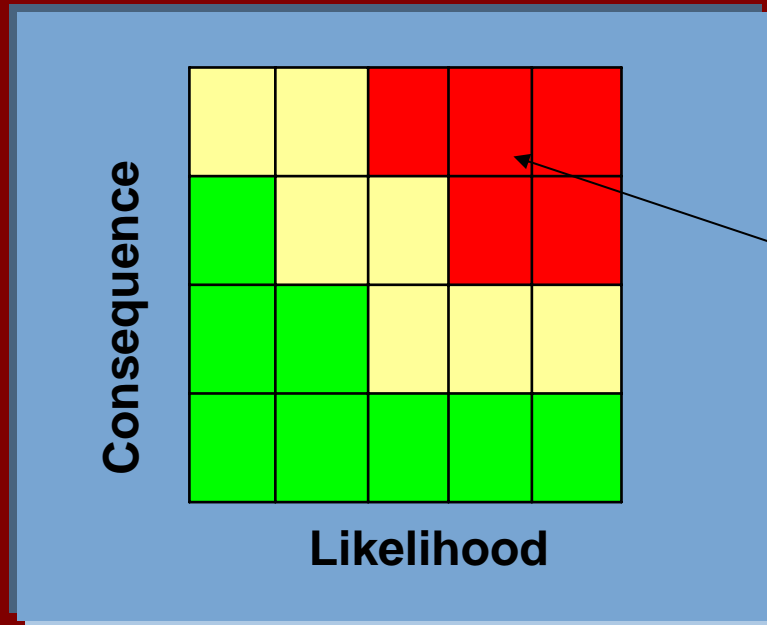


# Case Study: Second Order Effects of Cost Reduction Programs

## HELLFIRE Motor Cost Reduction Initiative

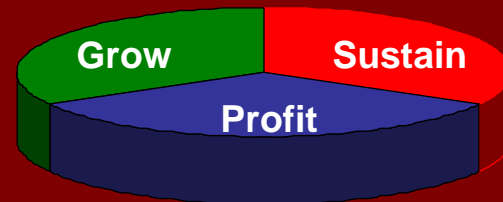


# Risk Mitigation



Monitoring instead of Mitigating Risk

**Contributing Factor:  
Continued Budget Pressure**



# Case Study: Single Source

## Ground Based Interceptor (GBI) Motor

- Risk Mitigation Strategy
- September 2002: CSD Explosions



# Closing Thoughts

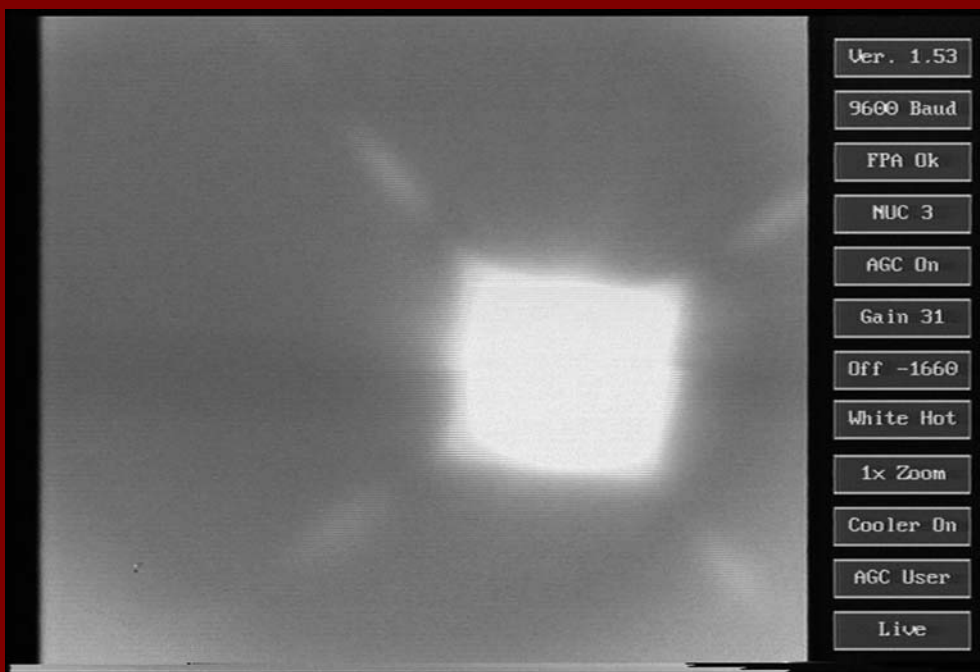
- Focus on the mission; not the organization chart
- Unpredicted challenges present great opportunities – exploit them
- Tell me what I need to know; not everything that you know
- Best people on biggest opportunities
- The first report is always wrong
- Be a high impact player
- Manage the margins
- Aggressively Manage Risk

**“Criticism is easy; achievement is more difficult.”**

**Sir Winston Churchill**

**22 January 1941**

- **Manage Risk**
- **Performance Counts**



# Back-Up Slides

# Points to Remember

- **Manage the margins**
- **Lead from the front**
- **Retain your options as long as possible**
- **Ideas and execution are the keys**
- **Careful planning and deliberate execution**
- **Be right or wrong; but not indecisive**
- **Maintain rigor in change control**
- **Be data rich and opinion poor**
- **Manage to a common set of metrics**

- **Complexity**
- **Process Controls**
- **Precision**
- **Reliability**
- **Cost**
- **Schedule**
- **Technical Maturity**
- **Producibility**
- **Discipline & Rigor**
- **Quality Assurance**
- **Configuration / Change Management**

***So What?***

***Risk Management Drives  
Performance***

***... and  
Past Performance Drives  
Future Growth***