Secure Systems Require System Engineering

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SE: What is it and why you need it

INCOSE Definition:

*Interdisciplinary approach and means to enable the realization of successful systems…*

*Focuses on defining customer needs and required functionality early in the development cycle…*

*Considers the complete problem*

Source: *Systems Engineering Principles and Practice*, Kossiakov et al
Manage Security Through SE

• Security is an emergent property
• Complexity creates emergent properties
• Complexity is managed by SE

• Security is managed by SE
Security Touchpoints over SE Domains


Requirements Use Cases → Architecture and Design → Test Plans → Implement → Test and Test Results → Feedback from the Field

Purpose Definition → Requirements Engineering → System Architecting → System Integration → Verification & Validation

Technical Leadership, Analysis and Scope Management
SE Demonstrated Value

• Cost Reduction: 30%
  – Demonstrated by IBM

• Schedule Reduction: 50-70%
  – Demonstrated by Boeing

• Optimized at ~15%
  Total Project Cost for System Engineering
