What Beyond CMMI is Needed to Help Assure Program/Mission Success?

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Northrop Grumman Mission Systems

- A leading integrator of complex, mission-enabling systems
- 2003 Sales - ~$4.1B
- 18,000 employees in 50 states and in 23 countries
- 1500 active contracts
- Deep, legacy domain expertise in priority, high-growth segments
- Premier provider of mission critical end-to-end solutions

Focused on program performance
Our Customer’s Challenges

• **Robust Systems Engineering**
  – Design and process flexibility that rapidly and affordably accommodates change
  – Better definition of requirements, spiral acquisition strategies, flexible architectures, mature engineering processes, evolutionary acquisition strategy

• **Mission Assurance**
  – Safe, reliable, robust products and services that meet or exceed our customer expectations
  – Done right the first time, every time
  – Quality expectations from the top down

• **Supplier Quality Management**
  – Management of the entire supplier chain

*CMMI Level 5 software and systems engineering processes are only a starting point...*
Mission Success Requires Multiple Approaches

- Robust Governance Model (Policies, Processes, Procedures)
- Risk Management
- Systems Engineering
- Training, Tools, & Templates
- Dashboards for Enterprise-Wide Measurement
- Communications & Best-Practice Sharing
- CMMI Level 5 for Software, Systems, and Services
- ISO 9001 and AS-9100 Certification
- Six Sigma
Process Effectiveness

Audits & Appraisals

Staff Competence & Training

- CMMI & Six Sigma courses
- Policies & processes course
- Standard Training Modules for each job function: engineering, project management, QA, CM, etc.

Process Asset Library

Communications & Collaboration

Assuring mission success by making the people and processes more informed and effective

12 Northrop Grumman sites externally appraised at CMMI Level 5

Assuring mission success by making the people and processes more informed and effective
Program Effectiveness

- Six Sigma connects process improvement and business value

**DEFINE**
- Charter team, map process & specify CTQs

**MEASURE**
- Measure process performance

**ANALYZE**
- Identify & quantify root causes

**IMPROVE**
- Select, design & implement solution

**CONTROL**
- Institutionalize improvement, ongoing control

- Six Sigma projects can help focus and measure CMMI-driven process improvements
  - Identify the customer’s needs, maximize the value/cost
  - Tools for management by variation (CMMI Levels 4 and 5)

- Results to date
  - 3500 Green Belts, 170 Black Belts, 10 Master Black Belts
  - 400 completed Six Sigma projects, 270 in progress
  - Significant benefit to our customer – lower costs, better performance

*Assuring mission success by identifying the customer’s needs and reducing defects*
Operational Effectiveness

Assuring mission success by providing independent cost, schedule and risk realism
Summary

• Mature processes are only a necessary condition for mission success
  – Goal should be successful missions, not process for process sake

• Mission success requires a holistic culture shift
  – Focus improvements on program success in the larger mission context
  – Requires corporate leadership and vision, backed by experience, dedication and resources

Must reduce variation and risk, to ensure predictable program performance and maximize chances of mission success