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Agenda

- **Background (Journey to CMMI Level 5) –**
 - **Northrop Grumman Information Technology (NGIT) Sector**
 - **Federal Enterprise Solutions (FES) Business Unit**
- **Institutionalizing Practical Software and Systems Measurement (PSM) at FES**
 - **Training**
 - **Measurement Guidebook**
- **The Launch Workshop Approach**
 - **Use of Six Sigma**
 - **Integrating Approaches**
- **Lessons Learned**

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Background – NGIT Sector

- One of seven sectors in Northrop Grumman
- Mission - Global enterprise to provide industry leadership in the application of advanced information technologies
 - Over 22,000 employees
 - About \$4 Billion in sales
- Northrop Grumman merged with Logicon (1997) creating the Logicon Sector (2001 renamed to NGIT)
 - Acquired companies including:
 - Inter-National Research Institute (INRI) (1998)
 - DPC Technologies (1999)
 - Comptek Federal Systems (2000)
 - Federal Data Corporation (2000)
 - Sterling Software's Federal Systems Group (2000)
 - Litton PRC/TASC (2001)

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Background – FES Business Unit

- Formed January 1, 2004
 - One of six Business Units within NGIT
 - President Wood Parker
 - approximately 4,000 employees
 - Federal sector non- DoD and non—intelligence
 - Legacy Government Solutions (GS)
 - Appraised at CMMI ML 3 – December 2003
 - Legacy Mission Systems (MS) formerly TRW
 - Appraised at CMMI ML5 – December 2003

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Background – FES Business Unit

- **FES Business Unit (sample customers)**
 - **Security & Infrastructure**
 - FAA
 - Homeland Security
 - **Health**
 - Center for Disease Control
 - American Red Cross
 - Department of Health and Human Services
 - Veteran's Affairs
 - **Business and Information Technology**
 - Treasury & IRS
 - National Weather Service
 - US Postal Service

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Institutionalizing PSM

- **Trained 38 people in PSM in 2004**
- **Published the FES Measurement Guidebook - 26 Oct 2004**
 - **PSM incorporated into the FES Measurement program at all levels**
 - FES Organizational Level
 - Project
 - **Derivation of measures from FES business goals**
 - Maps FES Objectives to Strategies to Quality and Process Objectives to Measures (used PSM ICM table)
 - "PSM provides a methodology for identifying project issues and the measures to address these issues. The FES Engineering Process Improvement Group presents a course in PSM to assist projects to defining measurement information needs and objectives."

Institutionalizing PSM

- Published the FES Measurement Guidebook - 26 Oct 2004
 - Interviewed over 30 individuals including
 - FES President, VPs, Director of Technology and Quality, Director of Organizational Processes, HR, Business Development, Contracts, Finance, Program Managers (PMs) from each OU, Engineering Process Group (EPG) Members
- Guidebook was a product of a Six Sigma Project
- Describes
 - Project Measures
 - Base and Derived measures
 - Project issues and Measures
 - Required Measures
 - List of ten FES issues with guidance for selection of measures
 - Projects will add their issues and measures

The Launch Workshop Approach

- The QM Launches lay the foundation for rapidly achieving Quantitative Management (QM) on projects.
 - Projects complete launch activities in 6 months
 - At the end of the launch, projects will perform at Level 5
 - The Launches precede an appraisal by at least 3 months
- Launches work with projects at Level 3, and facilitate their reaching CMMI levels 4 and 5.
- Facilitates the implementation of a quantitative management methodology and culture at the project level
- Uses Six Sigma as a proven methodology for institutionalizing QM tools and techniques in a short term frame tailored by FES to meet business objectives

FES QM Launch

The three parts of the FES QM Launch are:

1. **Training**
 - CBT for Six Sigma (if needed)
 - Just-In-Time training/workshops
 - Work with the projects to produce artifacts for the milestone review
2. **Weekly Milestone Activity Review with project Black Belt**
 - Black Belt reviews progress towards Launch Milestones
3. **Milestone Reviews with Master Black Belt and Project Manager**
 - Tollgate mechanism to ensure accomplishments are met

Project Commitment for Launch Workshops

- **Launch Workshops/training**
 - Approximately 25 hours of workshops/training
 - Ten – Fifteen hours of CBT in Six Sigma (as needed)
- **Project Commitment**
 - Weekly 1-2 hour meeting with Six Sigma Black Belt
 - Four hours “homework” per week
 - Work towards FES QM Launch Milestones
 - Project reviews at milestones (4-6 weeks) with Master Black Belt and Senior Management

What Skills are Needed for Levels 4 and 5?

- To accomplish Levels 4 and 5, you must be capable of:

- Statistical thinking
- Analyzing causes
- Process thinking
- Focusing on what is important to the customer
- Understanding “capability”
- Affecting improvement



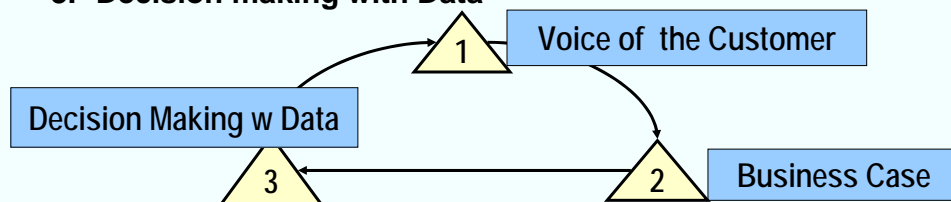
- These skills are essential for successfully implementing Levels 4 and 5
- **Six Sigma provides the foundation for performing at Levels 4 and 5!!**

What is Six Sigma?

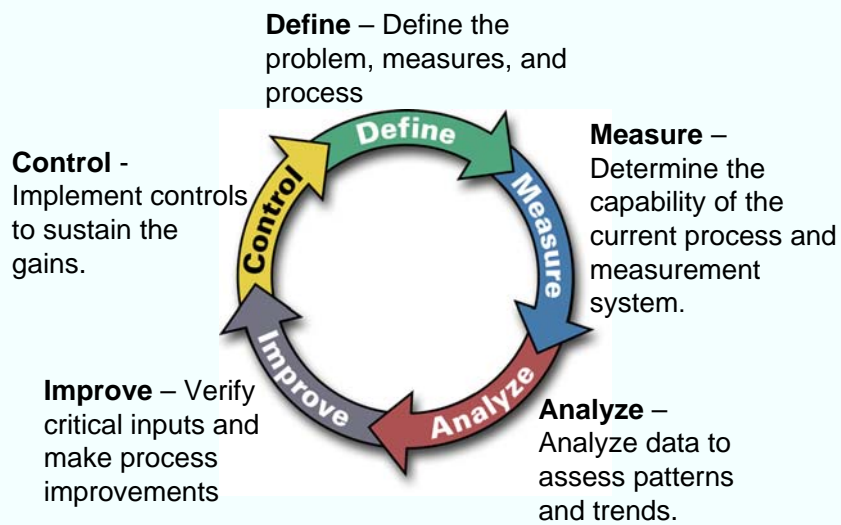
- A process improvement methodology focused on customer requirements and metrics that will impact the bottom line
- A disciplined, data-driven methodology for linking process improvement to organizational strategic objectives
- “Sigma” is a statistical term that measures how far a given process deviates from perfection
 - “Six Sigma” equates to 3.4 defects per million
- Provides integrated processes to focus on
 - Process Management
 - Voice of the Customer
 - Change Management
 - Tools to Measure Variation & Change
 - Business Measurement

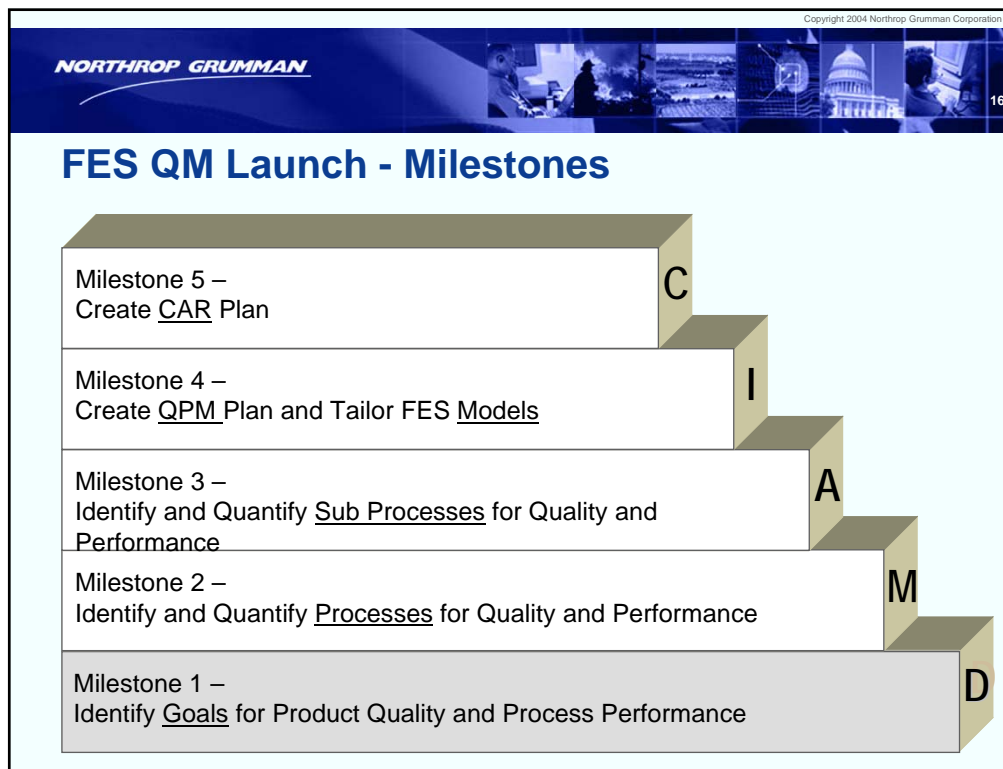
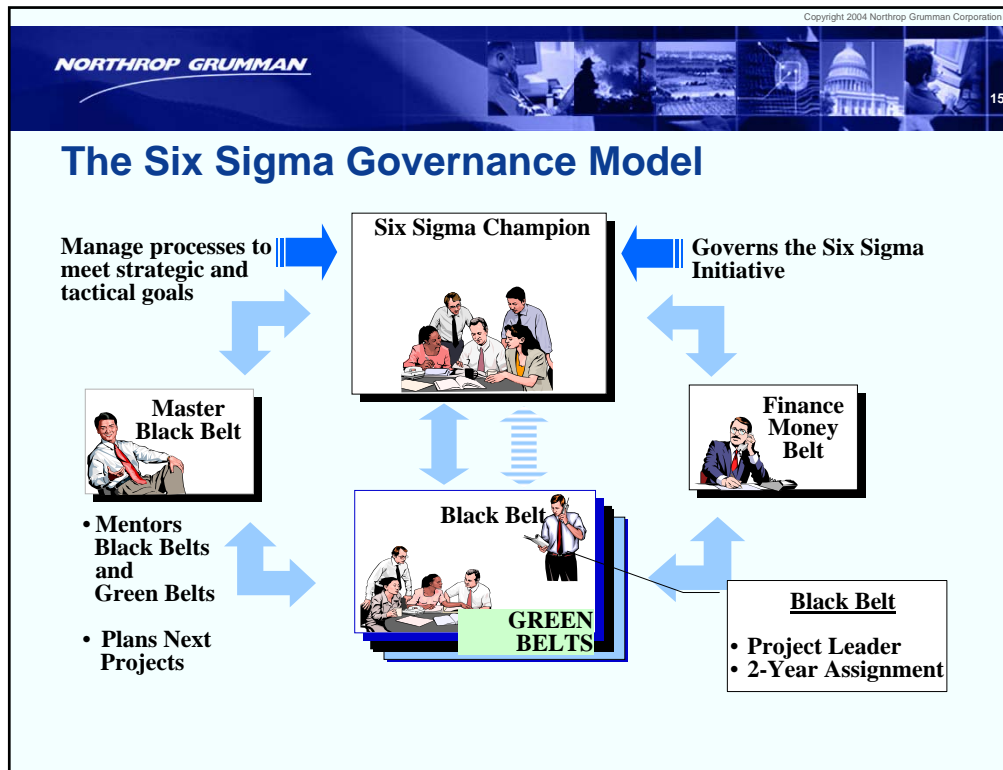
Three major elements of Six Sigma

1. Voice of the Customer (VOC)
 - Understanding customer needs and requirements
2. Business Cases
 - Understand the business reasons for process improvement
3. Decision making with Data



Six Sigma DMAIC – Improve Existing Processes





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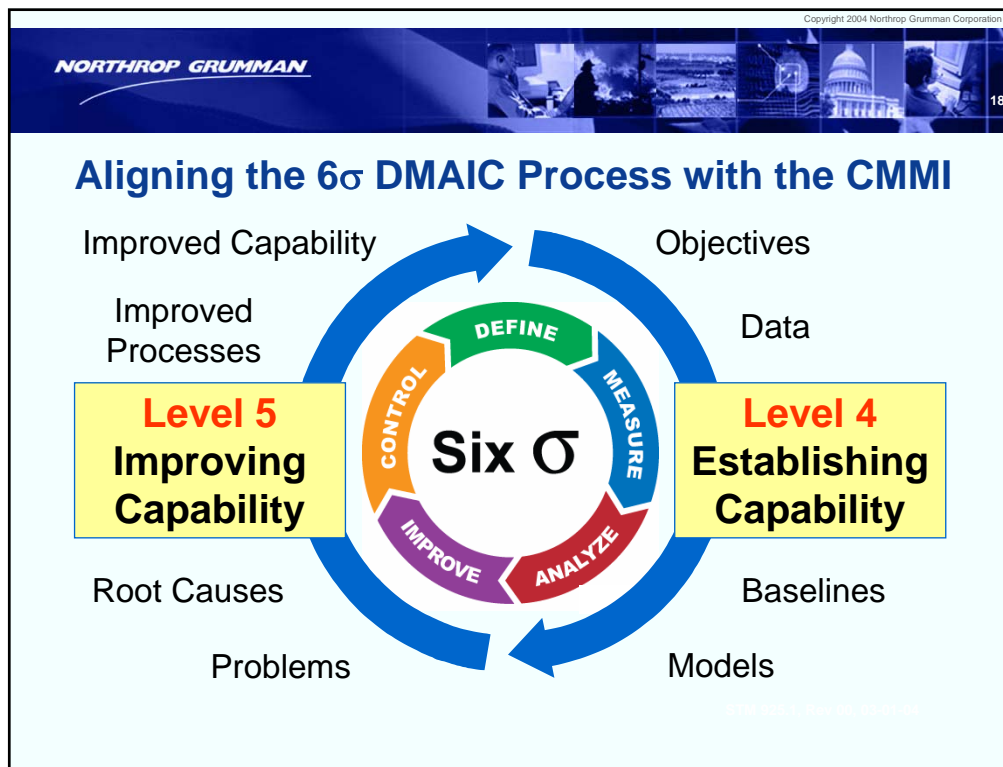
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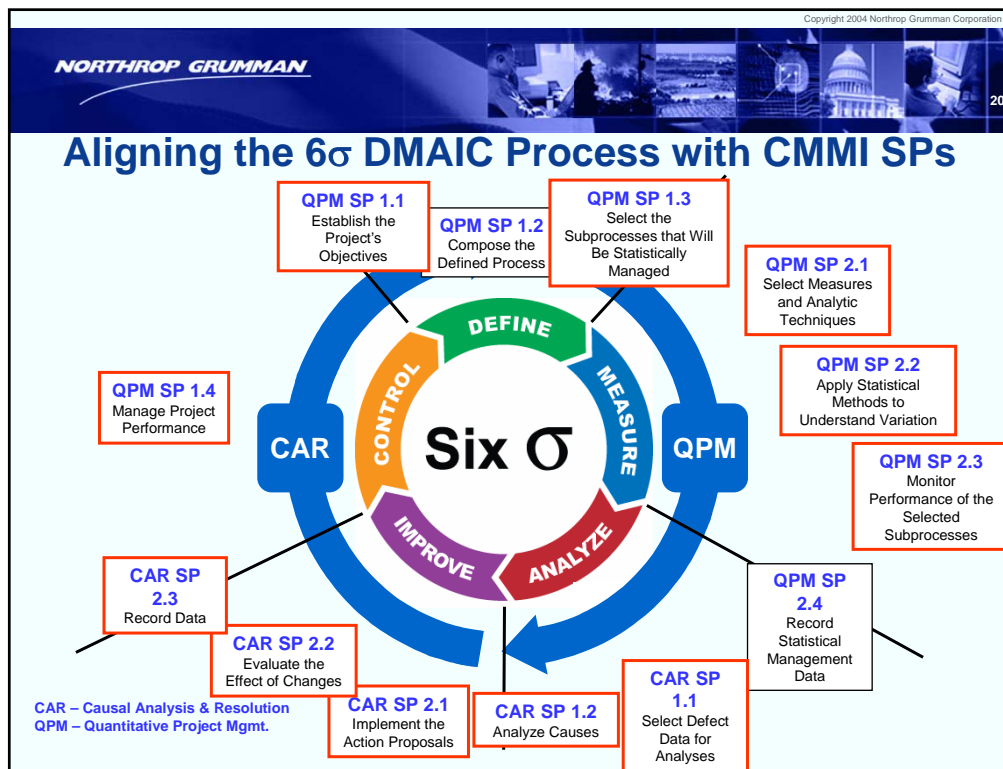
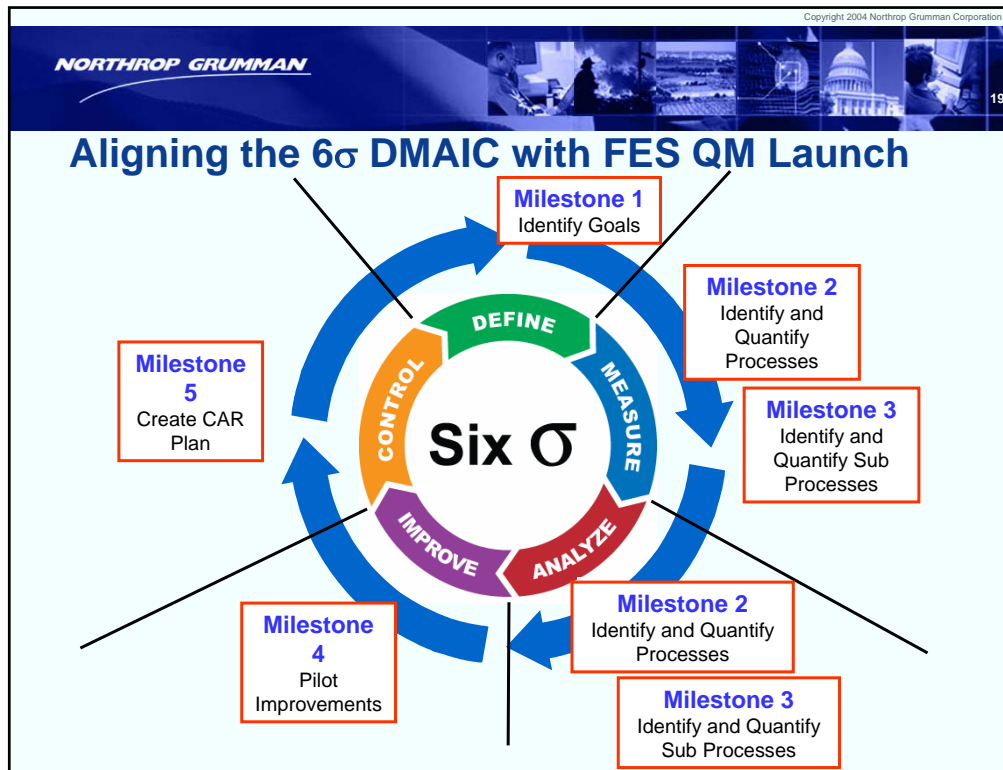
FES QM Launch - Schedule

Milestone	1	2	3	4	5
Schedule	Month 1	Month 2	Month 3	Month 4	Month 5
Training	<ul style="list-style-type: none"> Goals 	<ul style="list-style-type: none"> Process Measure 	<ul style="list-style-type: none"> Sub Process Analyze 	<ul style="list-style-type: none"> QPM Plan FES Models 	<ul style="list-style-type: none"> CAR Sustain

*****1-2 hours in weekly meetings**

*****2-6 hours in weekly “homework”**





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Benefits of Quantitative Management - 1 of 2

- **Enhances Business Results**
 - **Lowest Cost Structure**
 - **Improves Product Quality**
 - **Improves Profitability**
 - **Increases Customer Satisfaction**
- **Transforms Organizational Culture**
 - **Business Focused**
 - **Customer Focused**
 - **Organization Focused**
- **Provides Competitive Advantage**

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Benefits of Quantitative Management – 2 of 2

Provides visibility into using objective measurement for

- **Setting realistic objectives**
- **Producing reliable product quality and process performance estimates**
- **Increasing response to process performance degradation**
- **Obtaining better insight into when corrective actions are necessary**
- **Increases predictability of process performance**
- **Makes it possible to manage the project effectively and ensure the objectives are met**

Lessons Learned

- Establish Measurement Program during Project Start-Up (or earlier)
- Begin Collecting the “Right” Data on Day 1 of the Project
 - Focus on Level 4/5
- Establish a Long-Range Plan for “Launching” Projects
 - Ensure projects have necessary lead time to solidify Level 3 processes
- Ensure Measures are tied to Organizational and Project Goals
- Train all “Launch” team members on Six Sigma Methodology
- Facilitate cross-sector and cross-organizational communication to share lessons learned and best practices
 - Especially for Organizational Models and Baselines

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