

What CMMI Does for Our Industry - And What It Doesn't

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Roger Fujii

Vice President, Communications and Systems Technologies,
Defense Mission Systems Division
Northrop Grumman Mission Systems

Northrop Grumman Mission Systems & CMMI

- **Strong and continued commitment to CMMI**
 - 56 SCAMPI appraisals (39 external) conducted since 8/02
 - 163 projects appraised (115 external)
 - 19 organizational appraisals (67 projects) on PARS Site
 - 14 are Level 5
 - 5 are Level 3
 - NGMS organizations regularly reappraise within 3 years
- **NGMS is committed to using our processes**
 - Require all organizations to formally confirm their intent to use NGMS processes prior to proposal release
 - Every project undergoes post award process review within 30 days of start up
 - Process status is a part of every internal program review

We invest in CMMI because we've found it's worth the effort.

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What CMMI Is Intended to Do?

- **Provide a model of Development best practices**
 - Soon to be expanded to include Acquisition and Services
- **Provide a framework for our organizational processes**
 - Provide an outline for achieving organizational maturity through exploitation and repetition of those practices
 - Provide informational examples of practices and documentation
- **Provide a means for organizations to measure themselves using a standard method (SCAMPI)**
- **Provide a means to roughly compare achievements against other similar organizations (Maturity Levels)**

*CMMI provides a map.
Organizations provide the start and end points.
Then they create the directions
through organizational practices.*

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What CMMI Does for NGMS?

- **Common model for understanding how to execute in complex development environments**
 - Software and systems engineers now have an integrated model upon which to build an approach
 - Repeatable understanding of execution from project to project and from project managers to executives
- **Executive management has reference points to manage quantitatively and repeatedly**
 - Measures are understood both by developers and reviewers
 - Estimates are based upon similar work and scope
 - Can easily compare similar programs
- **Personnel can migrate to the next project, even in a different division, and know what to expect and how they are expected to perform**
 - Start up is easier and more predictable

*The real payoff from CMMI
is measurable results!*

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What CMMI Doesn't Do!

- **CMMI (and Organizational Process) doesn't mean that projects will automatically use them**
 - New managers or those joining from other organizations may not be convinced yet
 - **NGMS reviews early and often to ensure process use**
- **CMMI doesn't specify efficient and effective practices – it defines what to expect**
 - Organizations have to **create** their own **effective practices**
 - **NGMS uses Six Sigma to measure process effectiveness**
 - **745 Six Sigma** projects since 2001 have improved our processes and saved an estimated \$130M
- **CMMI can't guarantee error-free performance**
 - Early detection of problems and effective responses are key to minimizing impacts
 - Even the best estimates based upon poorly understood requirements can't be accurate.

*CMMI ratings are not silver bullets.
You still must work to gain the benefits!*

Project Management Maturity

- **Project Planning is where it all starts**
 - Repeatable and executable to eliminate surprises
- **Estimating what it really will require**
 - We focus on accuracy in estimation as a basis for determining the feasibility of achieving the desired results
 - Include factors to cover historical variations
- **Understanding your risks and how to mitigate them makes all the difference**
 - Puts the project and the executives on the same page
 - Gives the customer a view of development risks that they normally can't get

It all starts with an executable plan

Striving for Repeatable Execution

- **Organizations carry techniques from one project to another – especially within core business areas**
 - Organizational Training defines skill and process training for the organization and the project
- **Process adherence emphasizes repeatability**
 - Organizational Process Focus minimizes unnecessary variants (when used with reason)
 - Project Planning is the means to create it
 - Quantitative Management and Project Monitoring and control are often used to ensure compliance
- **Enforcing use of organizational practices**
 - Key to success from the outset
 - Start up kits provide the templates and direction starting with capture teams

Discipline drives out chaos!

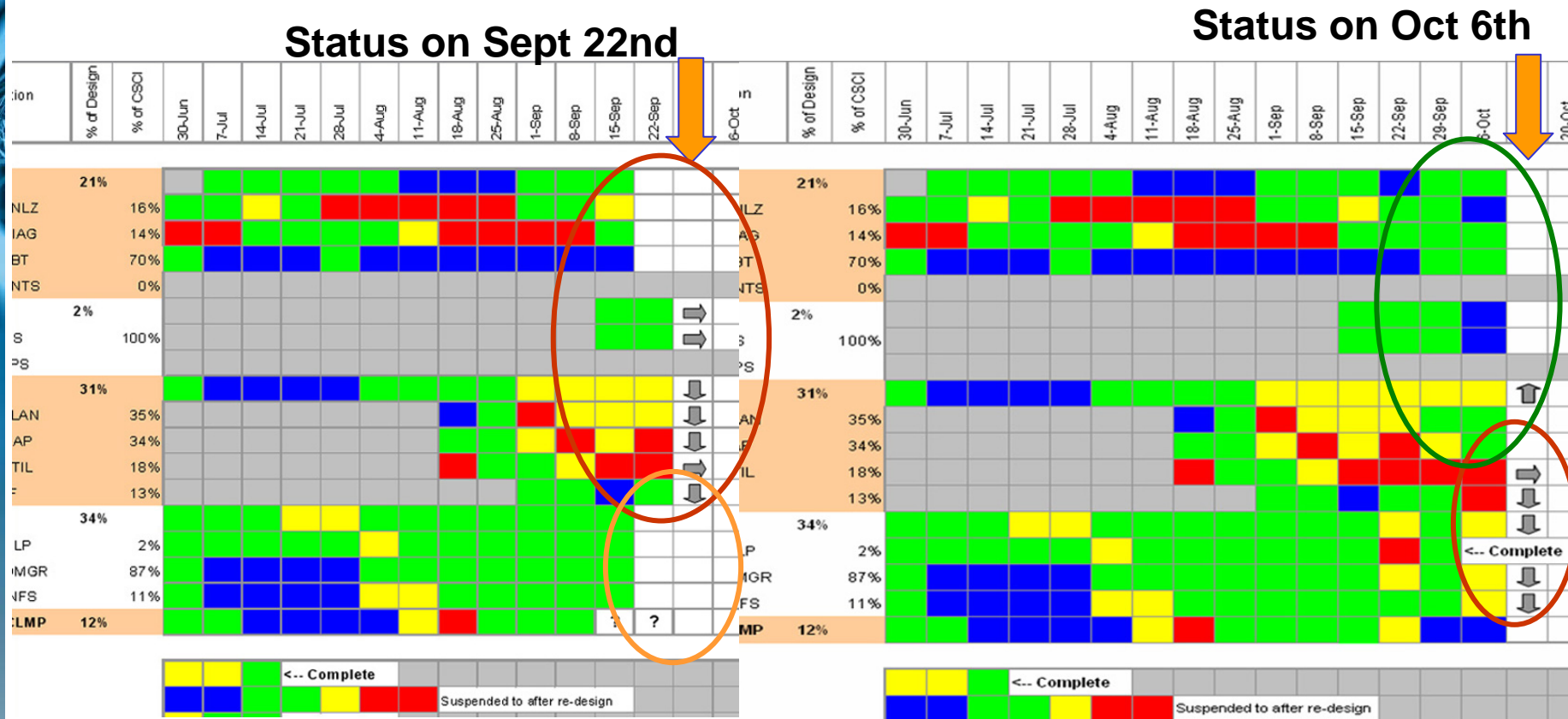
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Building the right thing, the right way!

- **First you have to know what to build**
 - Requirements Development & Requirements Management
 - Then you have to build it right
 - Technical Solution & Product Integration
 - And ensure it is built right and you built the right thing
 - Validation and Verification
- **But you fail if you don't build it on time and within budget**
 - Project Planning
 - Project Management & Control
 - Quantitative Management
- **And the initial estimate is made before the requirements are agreed upon (There is lots of room for underestimation)**

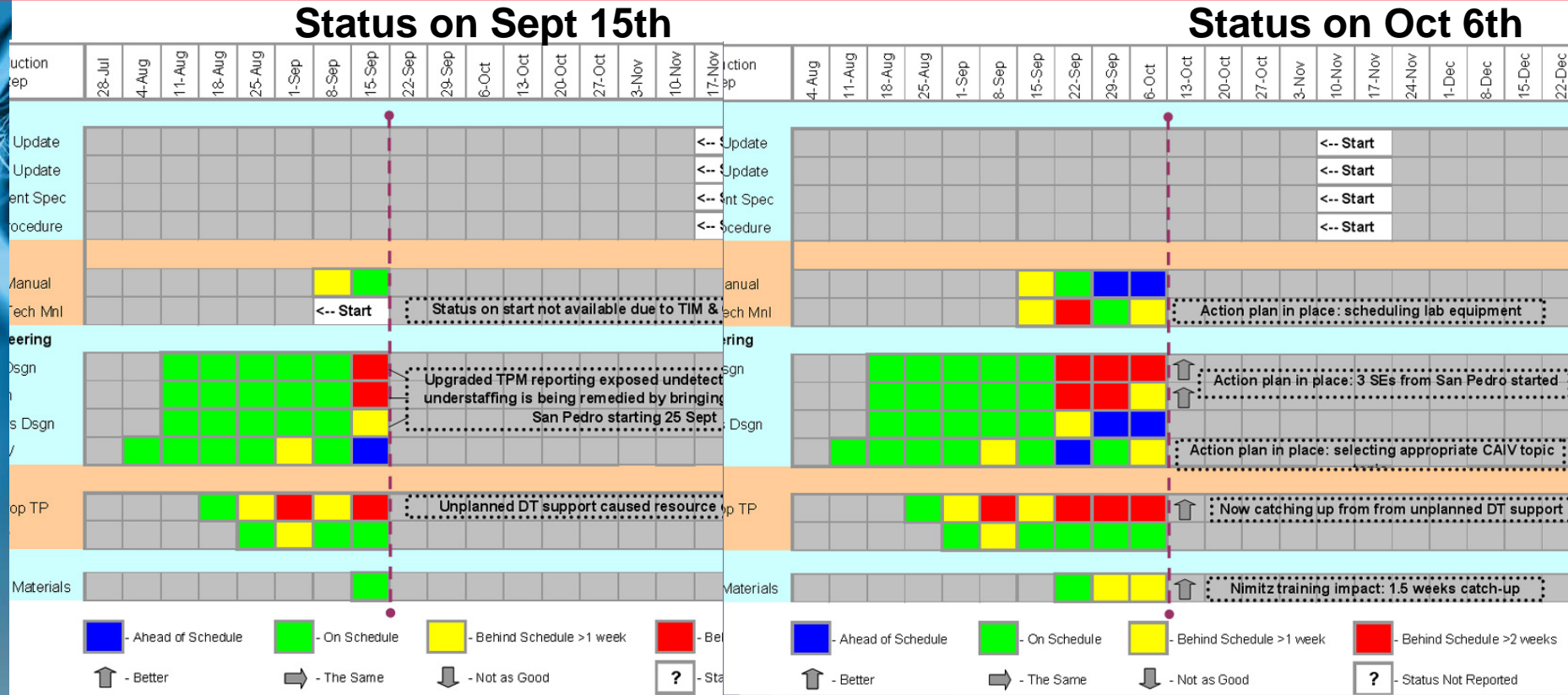
*Customer trust gained by repeated success -
PRICELESS!*

Using "Inch-Pebble" Planning and Monitoring



Monitoring in detail helps get the effort directed to where it will do the most good & having a VP & GM interested doesn't hurt either.

Mitigation to Manage Schedule & Performance



Any program can experience delays in sub tasks. Keeping the minor delays from spreading makes for program success.

Results That Impress Executives

- **During the last 4 years:**
 - Projects started using NGMS mature processes haven't experienced pervasive problems
 - When & if problems do occur (and they will regardless of process)
 - Problems are identified before causing severe damage
 - Action is taken quickly to return the projects to effective performance
 - Requirements Development that uncovers misunderstandings is the biggest cause of variations
- **Since CMMI was adopted:**
 - Customer funding problems are the #1 reason for appearing on the problem projects list
 - Most projects that are reported for performance problems predate CMMI organizational adoption

Executives don't like surprises

A Development Organization's ROI in CMMI

- **An organization's life blood is winning new projects**
 - Estimation validity gains support from executive management to pursue aggressively and price competitively
 - Repeatable performance is key to support both when bidding and during development
- **Risk isn't just a dirty word in Government**
 - Executives view Proposal Risk, Program Risk, & Execution Risk equally
 - Identification and mitigation of risk using proven and trusted process is key to gaining executive support
- **Individuals trained on mature programs migrate easily to new starts**
 - Takes one more risk out of start up

We invest in CMMI because it pays off!