

Measurement - Is it A Matter of Maturity?







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Introduction

- Software Capability Maturity Model (SW-CMM) experience
- Level 4 Government Contractor experience
- Level 1 commercial industry experience







- What are the differences between measurement at high and low levels of maturity?
 - What are you dealing with?
 - Where should you focus?





Cultural Areas:

- Management Support
- Fear Factor
- Measurement Acceptance
- Objectives or Goals
- Measurement Focus



Technical Areas:

- Process Automation
- Useful Process
 Documentation
- Graphical Expertise
- Use of Common Terms
- Mathematical Expertise
- Typical Measures



Lower Maturity - Objectives

- What are we trying to accomplish at this level?
 - Measure the status of activities
 - Measure the workload of the project
 - Measure the functionality and quality of the products





- What are the benefits of measurement at this level?
 - Determine whether product meets functionality requirements
 - Determine whether the product is "good" or not
 - Determine whether everything is getting done or not
 - Determine progress towards goals

Lower Maturity - Cultural

- What will you be able to expect working at this level?
 - "The Emperor's clothes look great this year, don't they?"
 - "Level 1 = Never having to say you're sorry."
 - "We don't need no stinkin' metrics!"
 - "We want to be the sole-source supplier of Product X" or "Increase market share" or "Deliver Quality Products at Competitive Prices"
 - Are we getting our stuff done, have we spent all of our money yet?
 - "My project is different from any other project ever in the history of any company."



Lower Maturity - Technical

- What you be able to expect working at this level?
 - Lack of process automation, data typically is collected manually
 - Process documentation is not comparable across projects, and at worse, non-existent
 - Lacking color and artistic ability
 - Common terminology is lacking
 - Lacking mathematical expertise
 - Lack of measurement commonality across projects
 - Industry defined measurements that will address Level 1 and 2 information needs (earned value (EV), progress to plan, budget)



Lower Maturity - Roadblocks, Issues, Questions

- What are typical roadblocks, issues, and questions?
 - Management support is lacking No pull for data
 - Pulling data together is a difficult, manual process
 - Some crucial data may not exist
 - Projects cannot learn as well from each other regarding use of measures due to major process differences that are not understood
 - Reliance on heroes to get the project done, so measures just tell me I have to beat them more
 - "What's in it for me?"
 - "We don't want our customer to know that we have this many defects in our product during development."





Lower Maturity - Key Areas

- What key areas need to be addressed at this level?
 - Management Support and Education
 - Terminology Definitions
 - Project Usefulness
 - Guidance for Analysis and Graphical Representation
 - Opportunities must be provided to present and explain the measurement results



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- What are we trying to accomplish at this level?
 - General understanding of expected process capability
 - So we can better estimate project performance based on actual historical process knowledge
 - Detailed understanding of actual process performance
 - So we can maximize our overall process capability given particular project constraints and objectives
 - So we can respond faster to less obvious problems
 - So we know why





- What are the benefits of measurement at this level?
 - Understand process capability, so plans can be made and managed in a more predictable, scientific manner.
 - Understand process trade-offs and issues better, which allows for better choices in the future
 - Understand early in the project whether the processes are performing up to expectation, and can judge whether goals and objectives will be met or not



- What should cultural expectations be at this level of maturity?
 - Good management support of measurement concepts
 - Use of measurements understood, little fear factor involved
 - Measurement results are generally accepted by all levels of users (maybe not understood, but accepted)
 - Objectives and goals tend to be quantitative, or at least easily translatable to quantitative
 - Focus on process measurement why things are the way they are



- What should technical expectations be at this level of maturity?
 - More automated processes with data as output of process execution
 - Processes are documented and used
 - Charts to convey measurement information in color and using sophisticated graphical representations
 - Common terminology across the organization (documented)
 - Statistical expertise available to create and analyze the information available
 - Statistical Process Control (SPC) charts everywhere, definite process focus



High Maturity - Roadblocks, Issues, Questions?

- What are typical roadblocks, issues, and questions?
 - How can we get more data?
 - XmR chart or U chart?
 - Why does their process perform differently than my process?
 - Do we have enough highly trained mathematical resources for our software/process group?
 - How does Process A performance impact Process B performance?
 - My numbers are different than your numbers. Is that a good thing or a bad thing?
 - Four hours isn't enough time to analyze my data, I want more time.
 - 45 measures aren't enough. I need more...





High Maturity - Key Areas

- What key areas need to be addressed at this level?
 - Appropriately trained resources are important
 - Especially in statistical techniques
 - Organizational communication is key
 - Engineering process group (EPG) must communicate with projects
 - Projects must communicate with other projects
 - Projects must communicate with EPG
 - Opportunities must be provided for learning from each other.
 - Time must be provided to do the work
 - Frustration level has to be managed where limitations occur.







- Different maturity level organizations have different needs and issues to address, make sure you scope the work and expectations appropriately.
- PSM provides the foundations for measurement (i.e., common terminology and practices), but does not adequately address the "process" measurement or "statistical analysis" necessary for high maturity



Questions? Comments?





About the Consortium

- Nonprofit initiative of companies, government agencies, universities; founded in 1985
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