

# CMMI GP 2.8 Interpretation and Implementation: Is The Practice Just About Numbers?

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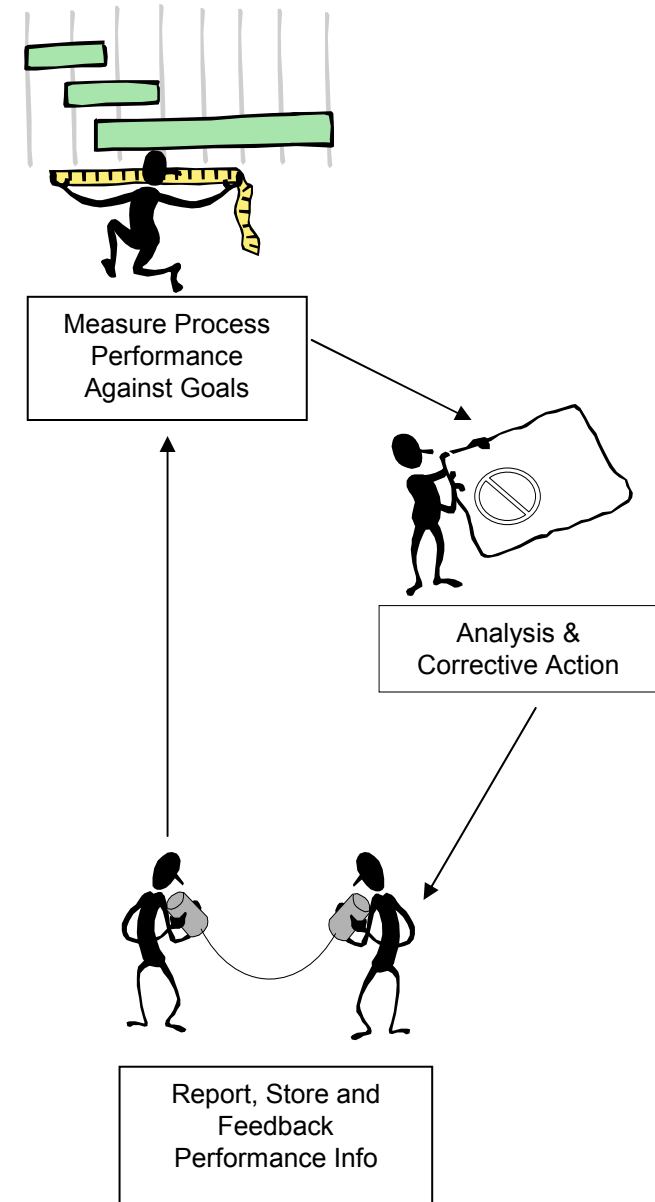
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# Agenda

- Review
- Three Keys
- Evolutionary Understanding
- Balancing Variables
- Measures For Success
- Implementation Pitfalls
- Appraisal Considerations



# GP 2.8 Monitor and Control the Process

- Monitor and control the process against the plan for performing the process and take appropriate corrective action.
  - ✓ Perform the direct day-to-day monitoring and controlling of the process
  - ✓ Visibility into the process is maintained so that appropriate corrective action can be taken when necessary.
  - ✓ Measure appropriate attributes of the process or work products produced by the process.
  
- Refer to the Project Monitoring and Control process area for more information about (the topics of) monitoring and controlling the project and taking corrective action
  
- Refer to the Measurement and Analysis process area for more information about (using) measurement (as the reporting mechanisms in preparation for higher maturity level)

# Involves Three Keys

## Monitoring

### Defined as:

**The collection, recording, tracking and reporting of important activity information**

### Example Activities:

- Progress & status reporting of activities and products
- Updates to lists of action items, risks, problems, and issues
- Comparisons of actual process data against established goals, the cost / benefit analysis used when establishing a process

**To watch, keep track of, or check for a special purpose**

## Measurement & Analysis

### Defined as:

**The development and sustainment of a quantitative capability to support sub-process or process (later for project and organizational needs)**

### Example Activities:

- Specifying goals and measures to collect
- Analysis mechanisms, baselines and decision thresholds
- Comparisons against goals and objectives
- Data storage and retrieval mechanisms (data management)

**Using numbers to determine goal satisfaction (limits)**

## Control

### Defined as:

**Managing changes and corrective actions necessary to bring actual performance into agreement with plan**

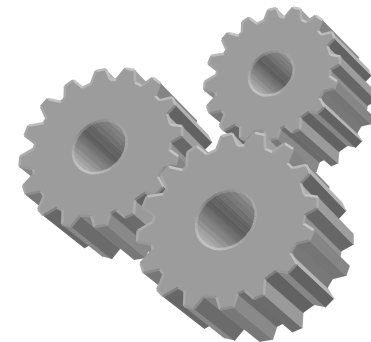
### Example Activities:

- Updates to the plan and schedule, to reflect actual progress
- Resolution of items that were unknown or that have changed since the implementation / modification of a process

**To exercise restraint or direct influence over: i.e., replanning**

## In An Evolutionary Manner, It Helps:

- Develop the rudimentary mechanisms to:
  - ✓ Identify what to collect to meet needs
  - ✓ Developing the capability to collect the right data and document and share best practices for a process area or sub-process
- Begin to establish the patterns for modeling and analysis for a collection of similar capabilities for a project
- Set the stage for understanding of the current strengths and weaknesses of the organization's processes and process assets
- Continue to support data needs for the advanced capability to achieve quantitative project and organizational objectives for quality and process performance through
  - ✓ Common measures
  - ✓ Process performance baselines
  - ✓ Process performance models



# Additionally, It Is About

- Balancing these variables:
  - ✓ Needs – urgent want or necessity arising from circumstances
  - ✓ Verification – is it (or isn't it) satisfying process requirements based on needs
  - ✓ Change – do we or don't we change the process based on outcomes and variations compared against needs

*“Process will always affect Project Performance!”*  
P. Lewis, Project Planning, Scheduling and Control



# What Balance Translates Into

- Improving process performance together with management of the project
- Revealing problems early so that action can be taken
- Ensuring the quality of project work (e.g. process useage) does not take a back seat to schedule and cost concerns
- Verifying that in-place processes are used correctly (via expected outputs)
- Identifying areas where other project / process segments should be managed differently (what we did doesn't fit)
- Keeping clients / stakeholders informed of process / product / project status
- Reaffirming the organizations commitment to the project (continuous alignment with goals and objectives) [for the benefit of the team and stakeholders]

**Ensuing that the established process is retained during times of stress**

# Process Data Collecting

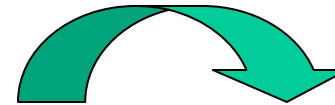
- Data collected and reported should fall into these categories:
  - ✓ Frequency counts per time period - e.g. defects per thousand
  - ✓ Raw numbers in ratio – actual amounts used / produced against a limit
  - ✓ Subjective numeric ratings – ordinal rating of performance but can't be mathematically processed
  - ✓ Inferential – using indicators as surrogates for direct measures
  - ✓ Verbal characterizations – e.g. team work, stakeholder coordination
  - ✓ Qualitative – cultural characterizations about the process experience from implementers / users



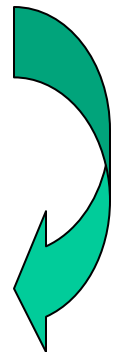
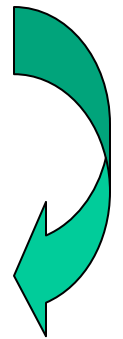
# Example PPQA

## Evolutionary Measures For Maturity Level Success

- QA milestone completions compared to plan
- Work completed, effort expended compared to plan
- Number of product audits and activities reviews compared to plan
- Number of process audits and activities vs. those planned
- Amount of time / effort spent on rework
- Amount of time / effort spent in each phase of life cycle
- Number of defects per release, build
- Total number of defects found by internal reviews and verification activities vs those found by customer after delivery
- Number of defects injected in each phase of the life cycle
- Number of noncompliance's / nonconformance's written vs. resolved vs. escalated



- 2 Variance of objective process evaluations planned and performed
- 2 Variance of objective work product evaluations planned and performed
- 3 Number of process-improvement proposals submitted, accepted, or implemented
- 3 Defect density of each process element of the organization's set of standard processes
- 4 Profile of subprocesses under statistical management (e.g., number planned to be under statistical management, number currently being statistically managed, and number that are statistically stable)
- 4 Number of special causes of variation identified



# Generic Implementation Interactions

## GP 2.8 Monitor and Control the Process

Day to day sub/process usage & output from a practitioner view  
Against requirements and needs → Goals / limits

**2.10 Review Status with Higher Level Management**

Objective verification of sub-process usage / product production  
Review / roll-up of sub process to determine compliance & improvements

**2.9 Objectively Evaluate Adherence**

Summary reporting against goals  
Progress against overall process or system  
Process noncompliance resolution

**Data driven decisions**

# It is all about data. And much more...

## Misunderstandings

- Any process measurement will fill the void
- Doesn't include qualitative expressions of process monitoring and control
- Really only use data at CL / ML 3 and above
- Information doesn't always translate into dollars or ROI
- Is not proactive
- It doesn't include mistake prevention or proofing
- Emphasizing short run results at the expense of long-run objectives (myopia)

## Understandings

- Start with the end in mind – what do you NEED
- Data comes from actual activity or sub-process use rather than generated CMMI model examples
- Often use qualitative information from “water cooler” to set context for numbers
- Set the initial mechanisms in place for eventually determining whether a process is in control or out of control (quality control, rework, etc)
- It is about learning error prevention vs. just correction

# Implementation Pitfalls

- Jumping right into CL/ML 2 without understanding the processes or relationships among them (process areas over business processes)
- Too many/few measures - what isn't counted doesn't count
- Monitoring activity vice results
- Confusion over monitoring process inputs, rather than outputs
- Data easily gathered rather than those important for control
- Gold-plating
  - ✓ Using Earned Value on every small / very short during projects
  - ✓ Using production measures on documents
  - ✓ Demanding detailed completion data and confusing it with reality
- Difficult infrastructure for reporting
- Misalignment with organizational scorecards (e.g. Balanced ScoreCard, metrics dashboards, etc.)
- Not a closed loop system – collecting but not using

# Appraisal Considerations

- Stacking deck to misrepresent or camouflage dysfunctional process, project or organizational activities
- Generic practice 2.8 implementation across all PAs (CL/ML L2→L5)
  - ✓ Can you show collection, usage, alignment, limits
- Direct Artifact Example:
  - ✓ Records of evaluations or audits being performed as planned (e.g., reports, completed checklists).
  - ✓ Noncompliance issues resulting from objective evaluation of adherence to processes, objectives, and standards.
- Indirect Artifact Example:
  - ✓ Revisions and change history to plans and commitments (e.g., replanned schedule, costs, resources).
  - ✓ Effort spent on the Process Area (e.g., reviews and action items regarding activities and Process Area)
  - ✓ Evidence of reviews of activities, status, and results of the process held with immediate level of management responsible for the process and identification of issues; (e.g. briefings, reports, presentations, milestones).
  - ✓ Issues and corrective actions for deviations from plan for executing the activities or Process Area (e.g., action items, variance reports, change requests).

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