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How to Successfully and Cost-Effectively Conduct a Re-Appraisal

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Background

- **Once they've passed their first appraisal, many organizations have difficulty maintaining CMMI-compliant behavior**
  - Projects regress into old habits
  - Senior management turns their attention to other challenges
  - None of the investment pays off
  - When the time comes to re-appraise, you have to start all over

This presentation will examine:

- **How to sustain CMMI-compliant behavior across an organization**
  - Why projects and organizations fail to institutionalize CMMI practices, and ways to overcome theses problems
- **How evidence gathering differs in a re-appraisal**

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Agenda

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- **What institutionalization is – and how to spot it**
- **Why institutionalization fails**
  - Understanding your organization's culture
  - Why quality assurance is key (and why most QA efforts are focused on the wrong things)
  - Resources required to sustain maturity
  - Keeping senior management support
- **How evidence gathering differs for a re-appraisal**
  - What evidence needs to be "refreshed"
  - Common areas of recidivism

What is Institutionalization?

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Institutionalization: The ingrained way of doing business that an organization follows routinely follows as part of its corporate culture.

- CMMI-DEV v1.3

When mentioned in the generic goal and generic practice descriptions, institutionalization implies that the process is ingrained in the way the work is performed and there is commitment and consistency to performing the process.

An institutionalized process is more likely to be retained during times of stress.

GG 2 Institutionalize a Managed Process

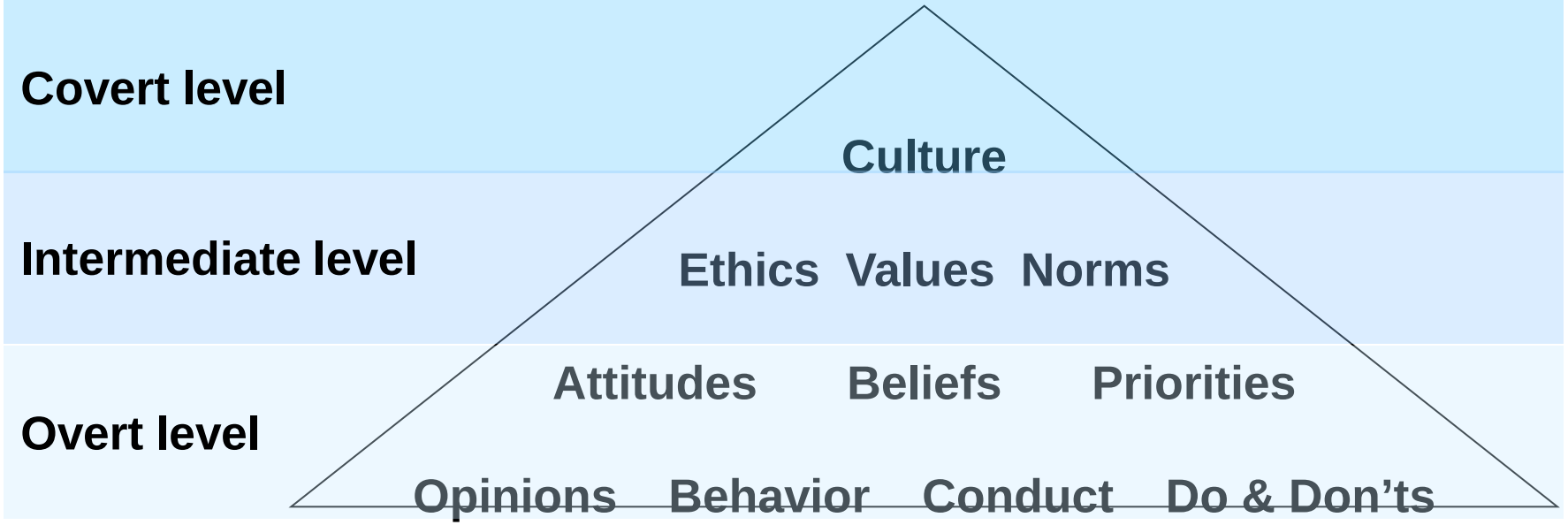
GP 2.1 Establish an Organizational Policy
GP 2.2 Plan the Process
GP 2.3 Provide Resources
GP 2.4 Assign Responsibility
GP 2.5 Train People
GP 2.6 Control Work Products
GP 2.7 Identify and Involve Relevant Stakeholders
GP 2.8 Monitor and Control the Process
GP 2.9 Objectively Evaluate Adherence
GP 2.10 Review Status with Higher Level Management

GG 3 Institutionalize a Defined Process

GP 3.1 Establish a Defined Process
GP 3.2 Collect Process Related Experiences

Understanding Your Organization's Culture

- **Few engineers or managers are trained in organizational psychology**
- **Improvement efforts implement the generic practices (i.e., change the artifacts) without understanding or addressing lower level contributors to culture**



Common Features – A Lost Perspective in CMMI v1.2 and 3!

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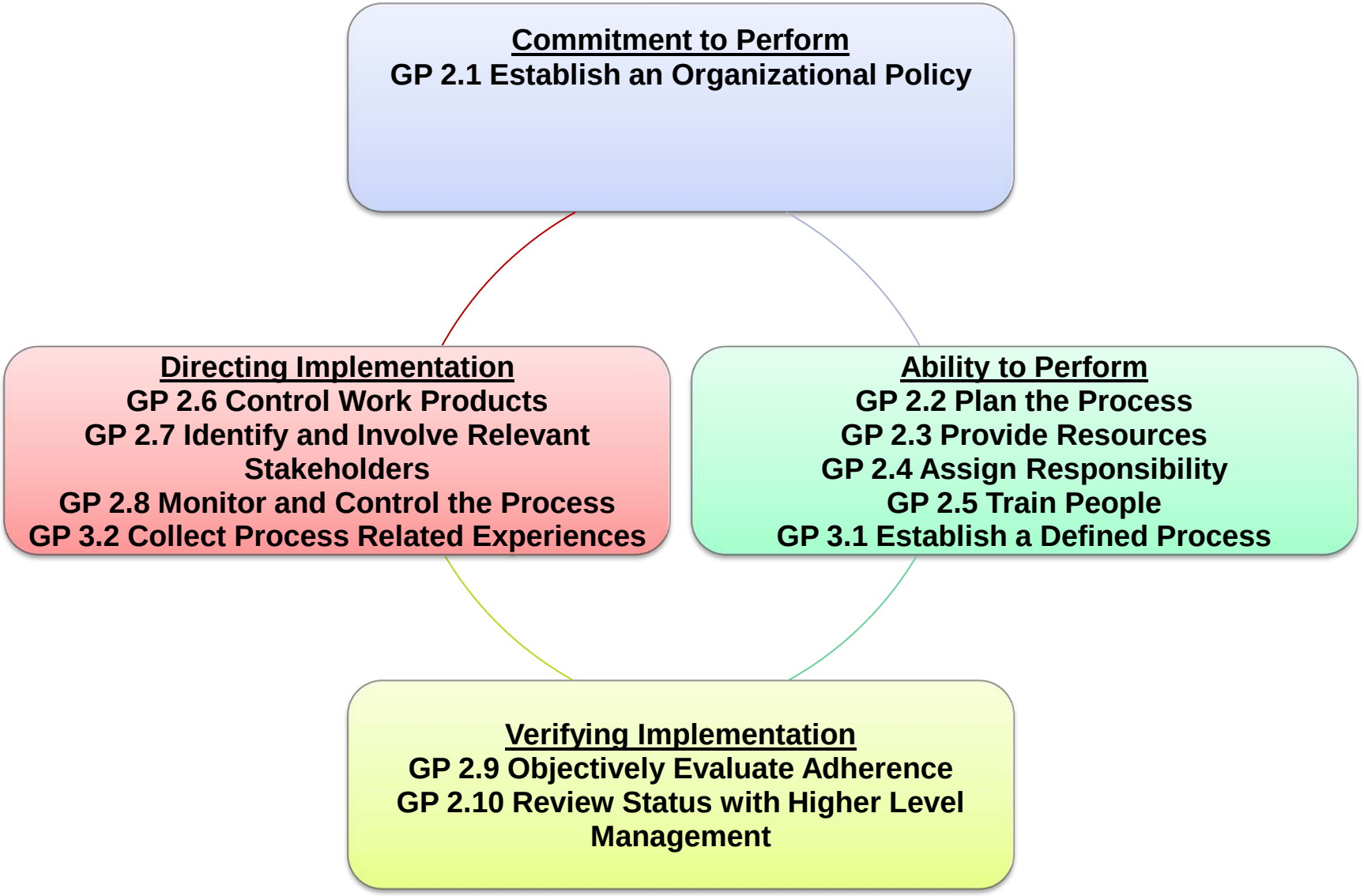

Five Dimensions of Work

Reference: Richard Hackman & Greg Oldham, Work Redesign

- *Skill variety* - The degree to which the work requires you to exercise a variety of skills
- *Task identity* - The degree to which the work requires you to complete a whole, identifiable piece of work
- *Task significance* - The degree to which your work affects others and contributes to social welfare
- *Autonomy* - The degree to which you have control over the means and methods you use to perform your work
- *Job feedback* - The degree to which carrying out the work itself provides you with direct and clear information about how effective you are.

Perceptions of the CMMI Common Features Based on Work Environment Preferences

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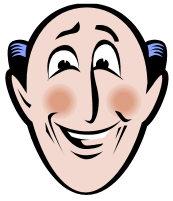
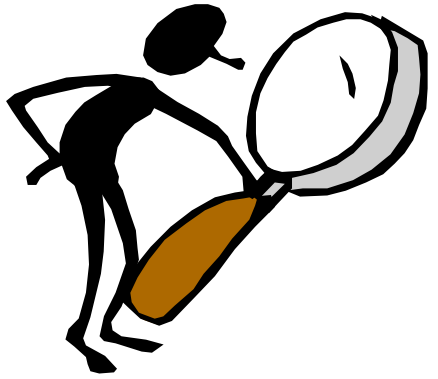
	Skill Variety	*Task Identity*	*Task Significance*	*Autonomy*	*Job Feedback*
Commitment to Perform Establish an Org. Policy					
Ability to Perform Plan the Process Provide Resources Assign Responsibility Train People Establish a Defined Process					
Directing Implementation Control Work Products Identify/Involve Stakeholders Monitor/Control the Process Collect Process Experiences					
Verification Obj. Evaluate Adherence Review with Higher Mgmt					

"Aligning CMMI Strategies with Individual, Project, and Organizational Perspectives," Software Technology Conference, 2003

Why QA is Key



- **Process and product audits provide tangible, objective measures of adoption/sustainment**
  - Policies, processes, and standards must reflect the desired behaviors
- **Appraisals evaluate the effectiveness of the audit program**
  - Standardized tools, approaches, and methods
  - Consistency of appraisers – if they understand the way we are structured and operate, there is less time required to understand what we are doing.
  - Pre-appraisal activities to prepare projects for the appraisal process
- **The frequency of audits and appraisals, and the sampling, must reflect the progress of the cultural change**
  - As the culture begins the change, more frequent and more in-depth audits/appraisals are required
  - Later, the amount of audits/appraisal may decrease, if the culture has truly changed

The Problem with Traditional QA

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Traditional QA (DoD-STD-2168)

- Involved checking documents against DIDs (data item descriptions
- Some organizations performed process audits against plans
- Criteria were often subjective

CMMI Approach

- PPQA emphasizes both work product and process audits
  No DIDs means PMs must decide what work products need standards
- Process audits are performed against process descriptions and procedures
- Criteria are defined in the procedures and work product standard

QA's Role Evolves

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Initially, effective QA enforces the new processes

- Conflict exists when QA is also in the process improvement role

Level	Focus	Process Areas
5 Optimizing	*Continuous process improvement*	Causal Analysis and Resolution Organizational Performance Management
4 Quantitatively Managed	*Quantitative management*	Quantitative Project Management Organizational Process Performance
3 Defined	*Process standardization*	Organizational Process Focus Organizational Process Definition Organizational Training Integrated Project Management Risk Management Decision Analysis and Resolution Requirements Development Technical Solution Product Integration Verification Validation
2 Managed	*Basic project management*	Requirements Management Project Planning Project Monitoring and Control Supplier Agreement Management Measurement and Analysis Process and Product Quality Assurance Configuration Management
1 Performed		

At higher maturity levels, the need for traditional QA often diminishes

- QA personnel measures effectiveness, may perform metrics/statistics collection and analysis

Resources Needed: Management Commitment and Support

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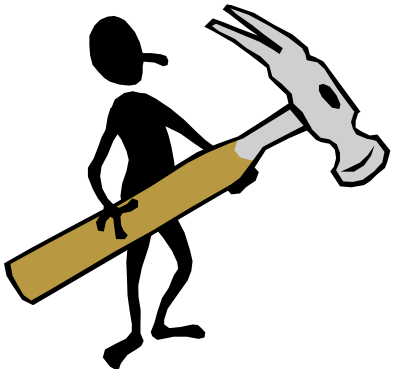
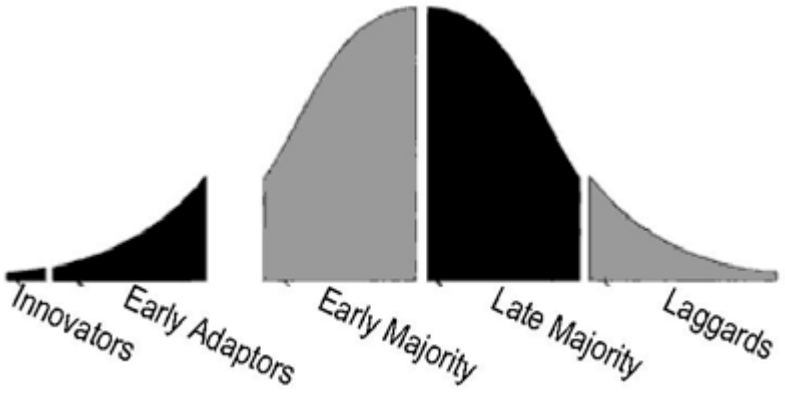


Committed management:

- **Understands the key messages**
- **Is willing to take actions to reinforce them**
- **Provides resources to support/sustain process improvement efforts**
- **Sets expectations that essential project functions will be funded and processes will be followed**
  - Project planning, estimation, tailoring, CM, QA, etc.
- **Supports process improvement and sustainment, rather than passing appraisals**
- **Rewards following the agreed-to processes rather than individual heroics**
  - "Tell me how you will reward me, and I'll tell how I will behave"

Accountability

- **Adopting and sustaining CMMI is about each practitioner learning and performing the new behaviors**
- **The role of management in cultural change is to hold people accountable for the new behaviors and conduct**
- **Change agents can enable management by:**
  - Helping them have a clear vision of the new culture
  - Identifying inappropriate behavior
  - Providing tangible, objective measures of adoption/sustainment



"Crossing The Chasm", Geoffrey Moore

How Evidence Gathering Differs in a Re-appraisal

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- In a first appraisal, evidence gathering is typically performed as part of an initial gap assessment
  - CMMI awareness and buy-in, education, assessment

- In a re-appraisal, evidence gathering should focus on assessing the effectiveness of institutionalization
  - Are processes in place?
  - If not, why? What GPs are ineffective?

- New projects in a re-appraisal will have a similar focus to an initial appraisal
  - Provides an assessment of how effective your start-up processes are

Re-appraising Continuing Projects

Can I use 3-year old evidence?

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Possibly good

- PP, GP 2.2, GP 3.1 (need to check whether plans, tailoring are being maintaining current with program scope)
- "Prepare for" Specific Goal 1's (confirm strategies have not changed)

Probably bad

- PMC, GP 2.8, GP 2.10, IPM, GP 2.7, RskM, QPM
- CM, GP 2.6, QA, GP 2.9, MA, DAR, CAR (use more recent application)
- RM, RD (unless no requirement changes)
- TS, PI, VER, VAL (all driven by requirement changes)
- OPF, OPD, OT, OPP, OPM, GP 2.1, GP 2.5, GP 3.2

It depends

- GP 2.3, GP 2.4

Summary

- **The difficulty in passing a re-appraisal is directly related to how effectively practices have been institutionalized**
  - Depends on the strength of the Generic Practices (Common Features), the commitment of management, and the role of QA
- **Re-appraisal offer a mechanism to assess the effectiveness of the generic practices**
  - Focus should be preventing recidivism, not just correcting the evidence


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