

# Sustaining CMMI Compliance

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# Background

## *So you've passed your CMMI appraisal - what now?*

- **Many organizations have experienced difficulty in 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 techniques for sustaining and capitalizing on your CMMI achievements**
- **It focuses on the primary reasons why projects and organizations fail to institutionalize CMMI practices, and suggest ways to overcome them**

# Topics

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- **What institutionalization is – and how to spot it**
- **Why institutionalization fails**
- **Keys to institutionalization:**
  - Addressing the underlying beliefs
  - Accountability
  - Management commitment and support
  - Effective use of audits and appraisals

# What Institutionalization Is

**Institutionalization:** The ingrained way of doing business that an organization follows routinely as part of its corporate culture.  
- *CMMI-DEV v1.2*

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 Manage Configurations

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 Improvement Information

# Common Features – *A Lost Perspective in CMMI v1.2!*

## Commitment to Perform

GP 2.1 Establish an Organizational Policy

## Directing Implementation

GP 2.6 Manage Configurations

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## Ability to Perform

GP 2.2 Plan the Process

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## Verifying Implementation

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# Organizational Culture

***A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way you perceive, think, and feel in relation to those problems.***

## **Artifacts**

- The practices that can be observed in such areas as dress code, leadership style, communication processes

## **Espoused values**

- The elements the organization says it believes in, the factors that it says influence the practices in which it engages

## **Basic underlying assumptions**

- Unstated beliefs the organization has come to accept and abide by

# Standardized Programs

Standardized programs are programs in which the details of the program's processes are always intended to be performed in a specific way. They are instituted where it is necessary (or desirable) that the results of the program be predictable. They are established for the express purpose of the program's means controlling the program's ends.

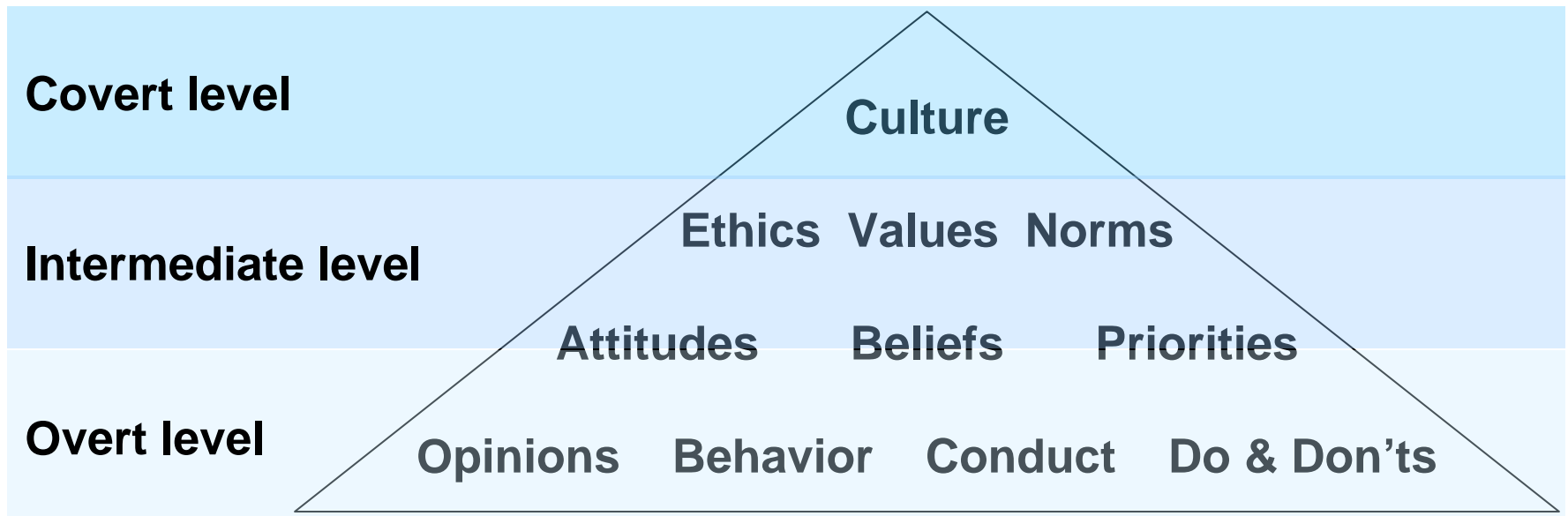
- *"The Cultural Dimensions Of Standardized Programs", D. Larry Fraser*

## **Standardized programs are useful in:**

- Product Consistency
- Oversight Facilitation
- Expectation Dependability

# Why Institutionalization Fails

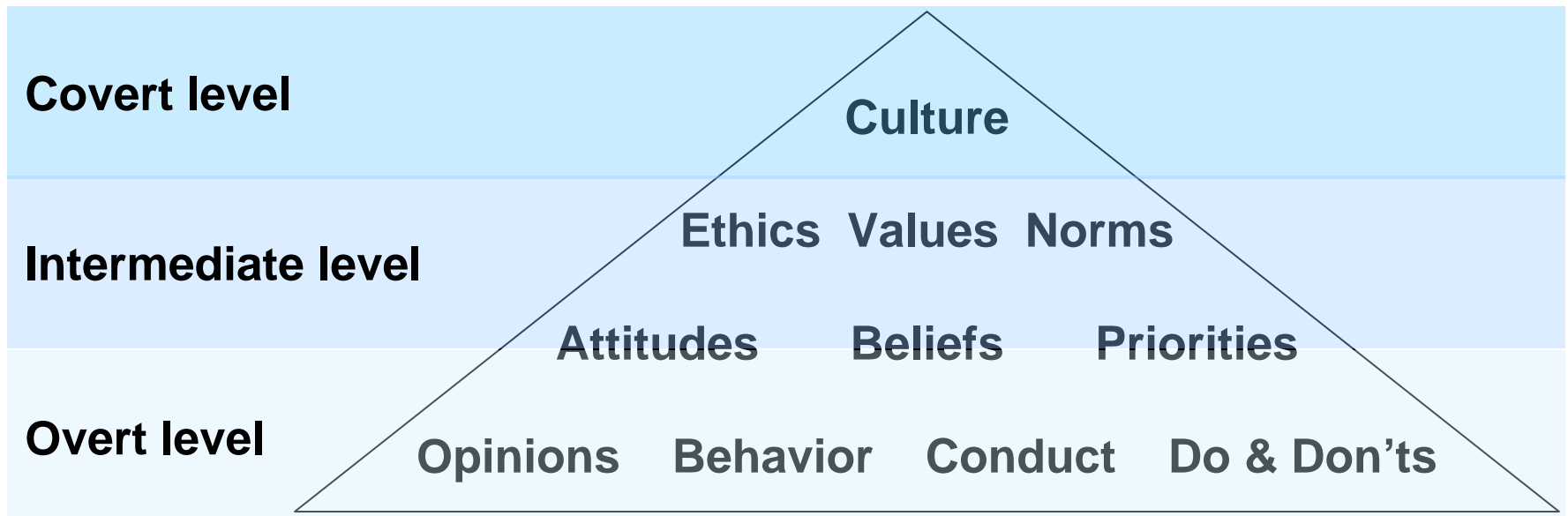
- Few engineers or managers are trained in organizational psychology
- Improvement efforts implement the generic practices (i.e., change the artifacts) without understanding or addressing lower level contributors to culture





# Addressing the Underlying Beliefs

- **Sponsors and performers must have a strong vision of the desired culture**
  - What are my roles and responsibilities?
  - What changes in behavior are required?
  - What are the underlying beliefs and values?
  - How do I benefit – WIIFM?



# 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.



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# Perceptions of the CMMI Common Features Based on Work Environment Preferences

*Skill  
Variety*

*Task  
Identity*

*Task  
Significance*

*Autonomy*

*Job  
Feedback*

## Commitment to Perform

- Establish an Org. Policy

## Ability to Perform

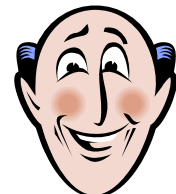
- Plan the Process
- Provide Resources
- Assign Responsibility
- Train People
- Establish a Defined Process

## Directing Implementation

- Manage Configurations
- Involve Stakeholders
- Monitor/Control the Process
- Collect Improvement Info

## Verification

- Obj. Evaluate Adherence
- Review with Higher Mgmt



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

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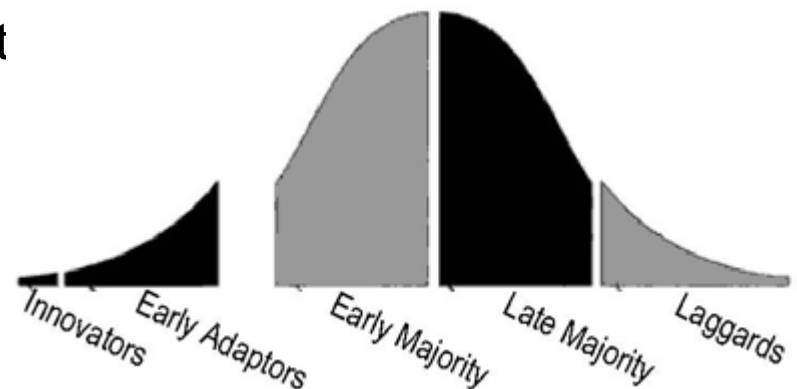
# Key Messages



- **Achieving and maintaining mature processes is essential to meeting our business goals**
  - Predictability, performance, quality
- **CMMI involves short-term investment for long-term gain**
- **CMMI is an enabler (not a guarantee) of project success**
  - Other aspects (people, technology, customer relationship, etc.) are equally important
  - The value is often risk reduction (which may be difficult to measure)
- **CMMI is a set of proven, industry best-practices**
  - Adoption is about learning how to apply these practices to our work
  - The practices may feel awkward and have limited value until we learn them
  - It's OK to make mistakes – we will get better over time
- **When the entire organization is behaving maturely, everyone's job becomes easier**
- **Continuous improvement is a way of life**

# 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*

# Management Commitment and Support

## 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 mature processes development and sustainment rather than individual heroics**
  - Tell me how you will reward me, and I'll tell how I will behave

# Effective Use of Audits and Appraisals

- **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

# Summary

- **Process improvement can be sustained by understanding and focusing on institutionalization**
  - Addressing the underlying beliefs
  - Accountability
  - Management commitment and support
  - Effective use of audits and appraisals

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