Contrasting CMMI and the PMBOK

Systems Engineering Conference

October 2005

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Overview

- Purpose
- Considerations for Comparison
- Similarities Between CMMI and PMBOK
- "Grey" Areas
- How PMBOK Supplements CMMI
- How CMMI Supplements PMBOK
- Conclusions

Purpose

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- Contrast process requirements contained in CMMI and the PMBOK

- Overview
  - PMBOK provides additional project management processes for CMMI Organizations
  - CMMI provides a process management structure and Systems and Software Engineering Best Practices
  - Combining them will result in better and more complete project management of engineering projects
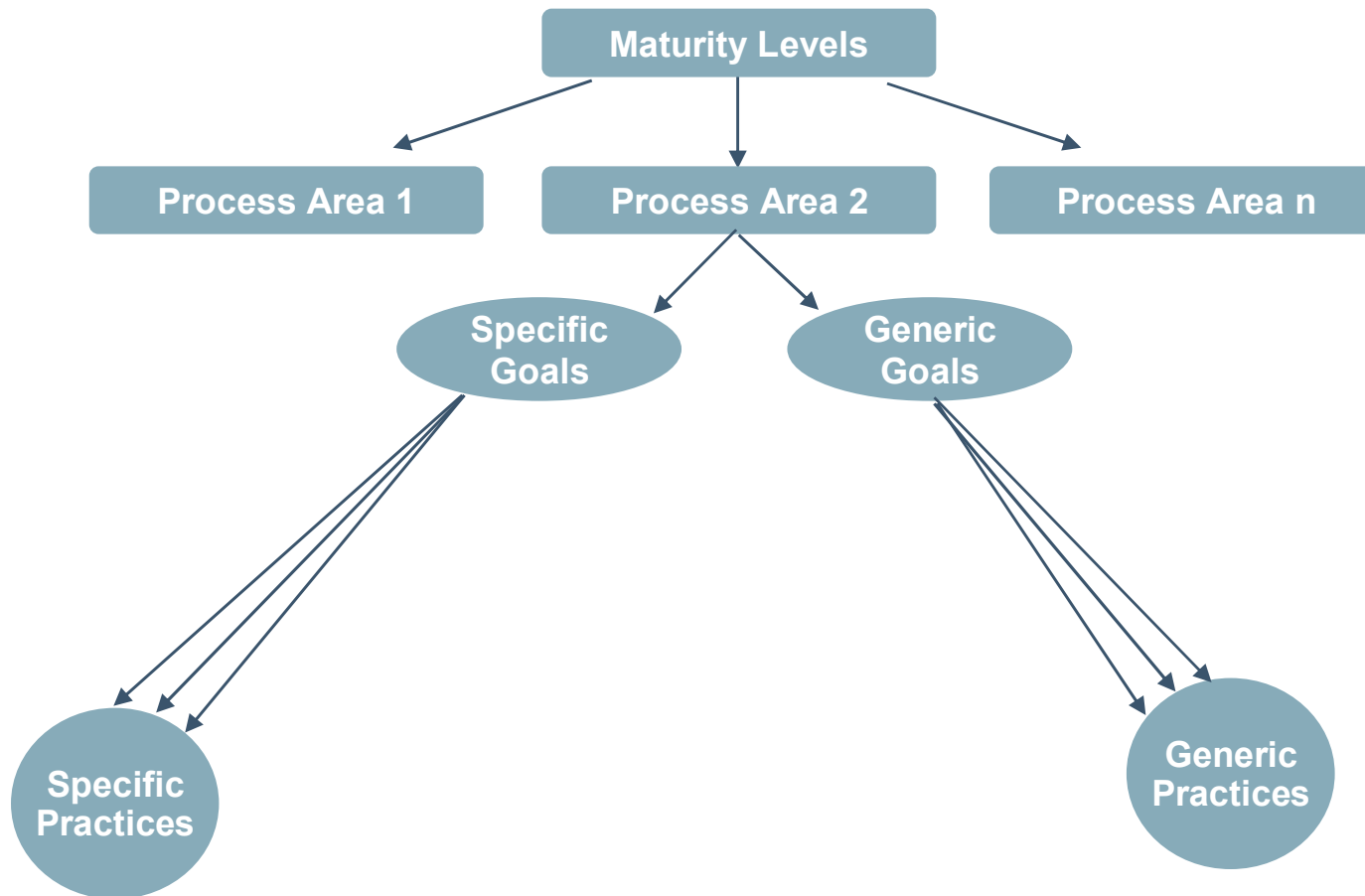
Considerations for Comparison

Coverage

- CMMI
  - Addresses Project Management of engineering endeavors
  - Addresses a larger organization composed of engineering projects
- PMBOK
  - Addresses Project Management without addressing the type of project or directly addressing the larger organization
- The depth of coverage varies between the documents
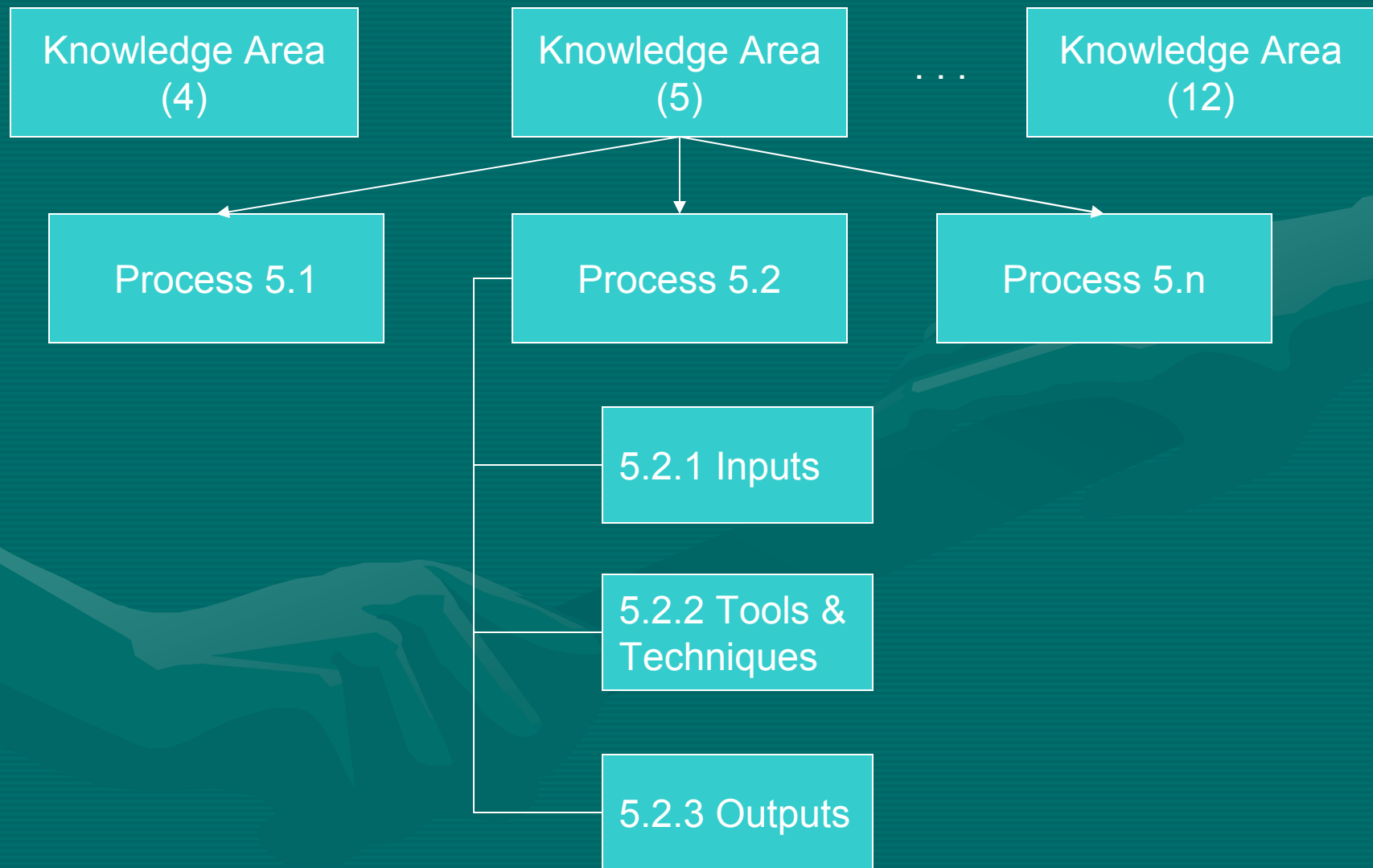
Structure

- It should be noted that while both have a project management focus, the structure of these documents is different
  - PMBOK supports training Project Managers for Project Management Professional (PMP) certification
  - CMMI supports organizational process improvement for achievement of maturity/capability levels

Model Components in the Staged Representation

PMBOK Components

Knowledge Area (4)

Knowledge Area (5)

. . .

Knowledge Area (12)

Process 5.1

Process 5.2

Process 5.n

5.2.1 Inputs

5.2.2 Tools & Techniques

5.2.3 Outputs

Similarities Between CMMI and PMBOK

Processes Addressed by Both

- Requirements Management or Scope Control
- Project Planning
- Managing and Controlling Project Execution
- Quality Assurance
- Supplier Management
- Risk Management
- Measurement

"Grey" Areas

- The following are implied or partly addressed by PMBOK
  - Configuration Management
  - Causal Analysis
  - Generic Practices

- The following is partly addressed by CMMI
  - Human Resource Management

- The following are definition or context differences
  - Verification and Validation – Definitions in both documents are basically reversed
  - Risk – In PMBOK, risk is an uncertainty and can be positive or negative
  - Procurement Management - PMBOK considers buyer and seller points of view
  - Progressive Elaboration Vs. Establish and Maintain

How PMBOK Supplements CMMI

How PMBOK Supplements CMMI

- Project Charter
- More guidance and details on
  - planning,
  - management and control,
  - Human Resource Management,
  - Quality Assurance,
  - Risk, and
  - contracting
- Close Project + Accepted Deliverables

How PMBOK Supplements CMMI

- Project Charter
  - Issued by sponsor external to the project organization
  - Provides reasons for selecting a project
  - Formally authorizes existence of a project
  - Identifies and gives authority to project manager

How PMBOK Supplements CMMI

- More guidance and details on planning
  - Additional Planning Documents (Scope Management Plan, Schedule Management Plan, Cost Management Plan, Staffing Management Plan, Communications Management Plan, Procurement Management Plan)

  - Project Time Management (Activity Definition, Activity Sequencing, Activity Resource Estimating, Activity Duration Estimating, Schedule Development, and several possible support tools)

How PMBOK Supplements CMMI

- More guidance and details on management and control
    - Performance measurement analysis and forecasting using earned value calculations - formulas and examples are provided
    - Integrated change control details

How PMBOK Supplements CMMI

- More guidance and details on Human Resource Management
  - Human resource planning
  - Acquiring the project team
  - Developing the project team
  - Managing the project team

How PMBOK Supplements CMMI

- More guidance and details on Quality Assurance
  - Quality Planning
    - Considers Cost of Quality
    - Suggests tools with descriptions: Design of Experiments, Cost-Benefit Analysis, Benchmarking
  - Quality Control
    - Suggests tools with descriptions and some examples: cause and effect diagram, control charts, flowcharting, histogram, Pareto chart, run chart, scatter diagram, statistical sampling, defect repair review
    - Links outputs back into other processes

How PMBOK Supplements CMMI

- More guidance and details on risk
  - Risk planning and budgeting
  - Example risk parameters
  - More information on how to identify risks
  - Qualitative and quantitative risk analysis
  - Risk response planning

How PMBOK Supplements CMMI

- More guidance and details on contracting or Procurement Management
    - Considers buyer and seller
    - Request seller responses (solicitation)
    - Considerations for evaluation
    - Includes contract closure and payment

How PMBOK Supplements CMMI

- Close Project + Accepted Deliverables
  - Part of Project Management Plan
  - Administrative closure procedures
  - Contract closure procedures
  - Formal acceptance of product

How CMMI Supplements PMBOK

How CMMI Supplements PMBOK

- Engineering Best Practices

- Organizational Process Management

- Data Management

- Decision Analysis

How CMMI Supplements PMBOK

- Engineering Best Practices
  - Requirements Elicitation
  - Requirements Decomposition & Design
  - Requirements Traceability
  - Manage Interfaces
  - Planning and Environment for Integration, Verification, and Validation
  - Product Integration

How CMMI Supplements PMBOK

- Organizational Process Management
  - Process Needs (drivers & improvements)
  - Process Asset Library
  - Process Training
  - Quantitative Quality and Process Performance Objectives
  - Process Innovation and Deployment

How CMMI Supplements PMBOK

- Data Management
  - Planning for Data Management
  - Monitoring Data Management

How CMMI Supplements PMBOK

- Decision Analysis
  - Formal Decision Analysis and Resolution with expectations on how to structure the decision process

Conclusions

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- CMMI and the PMBOK
  - Can support each other and
  - Supplement each other
- Implementing PMBOK can help CMMI organizations support and maintain their Project Management Professionals (PMP)
- Implementing CMMI can help PMBOK based organizations structure their Process Management and provides engineering best practices

The Mappings Are Available

- Link to -
  https://bscw.sei.cmu.edu/pub/bscw.cgi/0/79783

- Click on "Comparisons of CMMI & Other Standards/References"

- Then click on "CMMI and PMBOK"

- There will be three files, start with "CMMI and PMBoK Mappings"

Contact Information

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