

Contrasting CMMI and the PMBOK

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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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Purpose

- 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

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Coverage

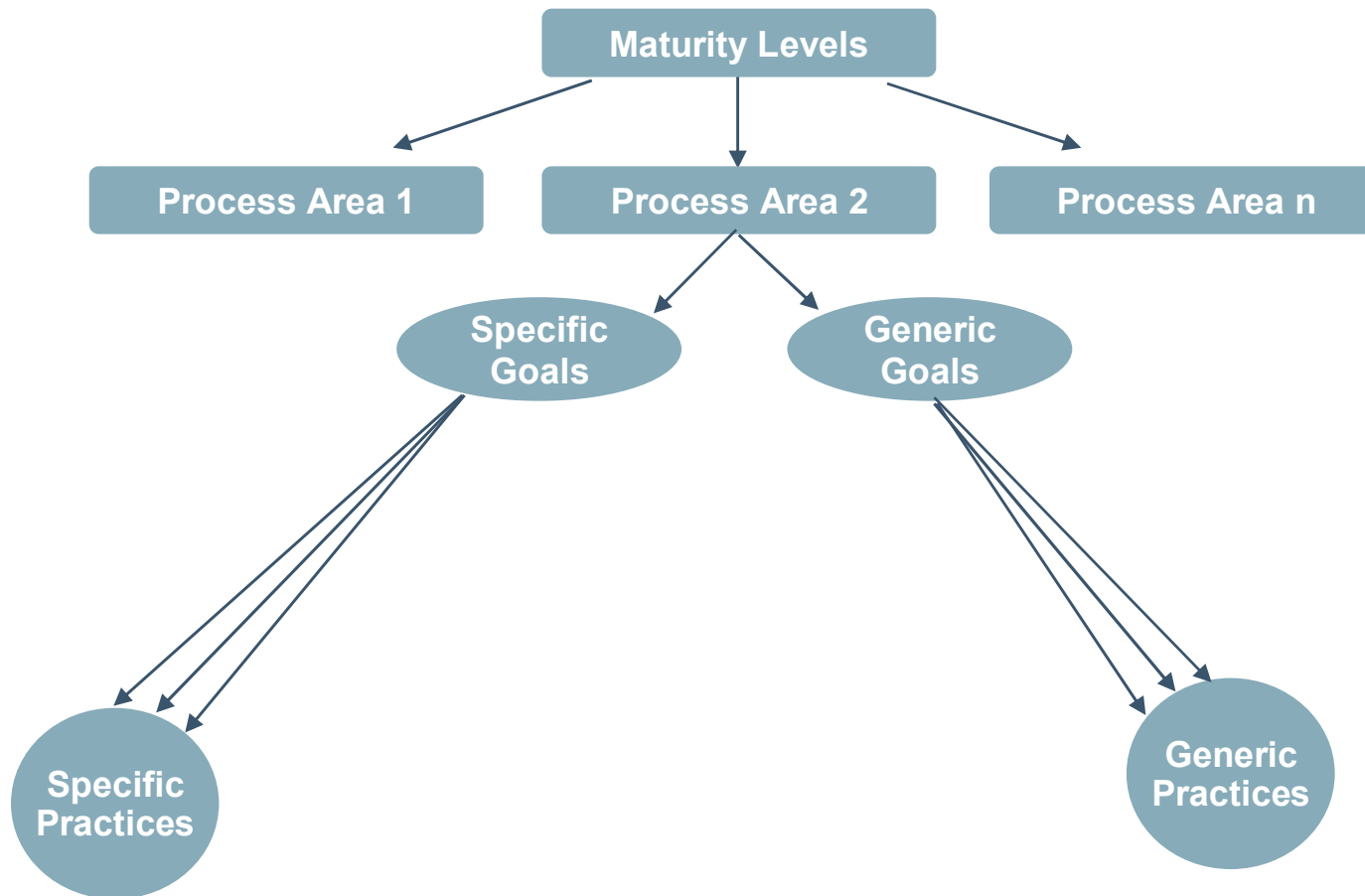
- CMMI
 - Addresses Project Management of engineering endeavors
 - Addresses a larger organization composed of engineering projects
- PMBOK
 - Addresses Project Management without addressing the type of project or directly addressing the larger organization
- The depth of coverage varies between the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

Structure

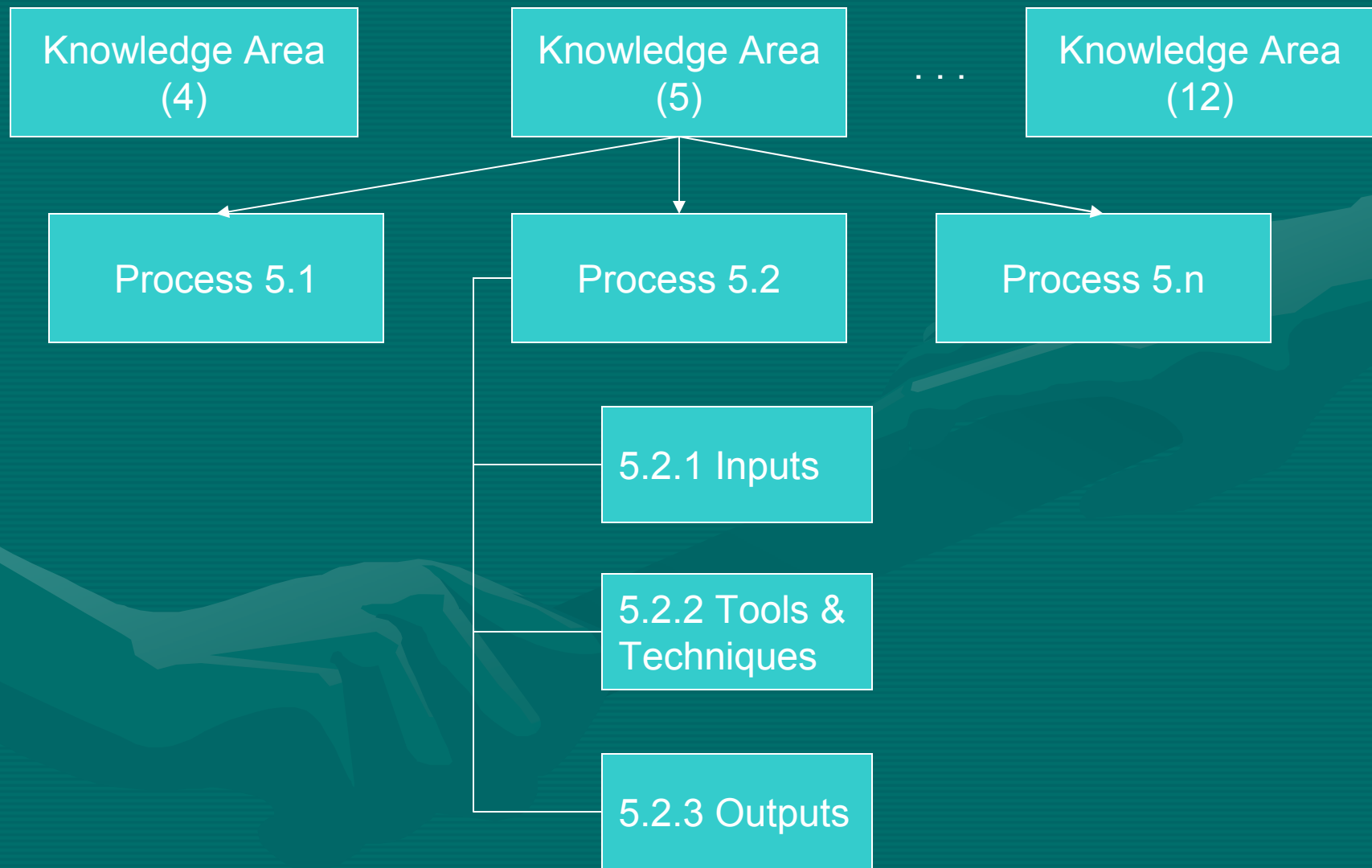
- It should be noted that while both have a project management focus, the structure of these documents is different
 - PMBOK supports training Project Managers for Project Management Professional (PMP) certification
 - CMMI supports organizational process improvement for achievement of maturity/capability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



Model Components in the Staged Representation



PMBOK Components



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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Conclusions

- 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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