

# Contrasting CMMI and the PMBOK

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User Group

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# Agenda

- Purpose & Overview
- Considerations for Comparison
- Similarities Between CMMI and PMBOK
- “Grey” Areas and Differences
- How PMBOK Supplements CMMI
- How CMMI Supplements PMBOK
- Conclusions

# Purpose

- Contrast process requirements contained in CMMI to the process requirements in 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

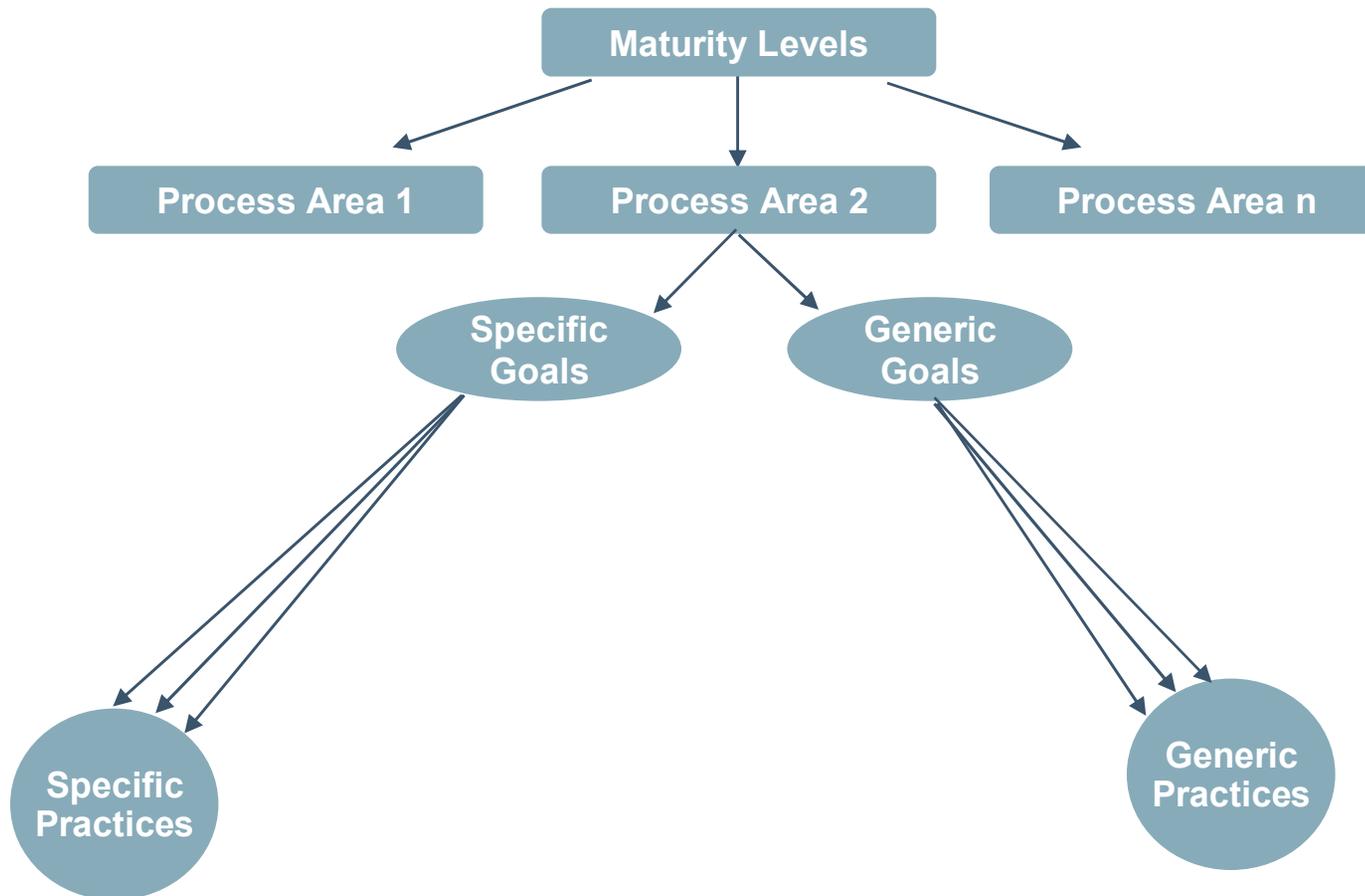
- CMMI
  - Addresses Project Management of engineering endeavors
  - Addresses a larger organization composed of engineering projects
- PMBOK
  - Addresses Project Management without addressing the type of project or directly addressing the larger organization
- The depth of coverage varies between the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

# Intent & Structure

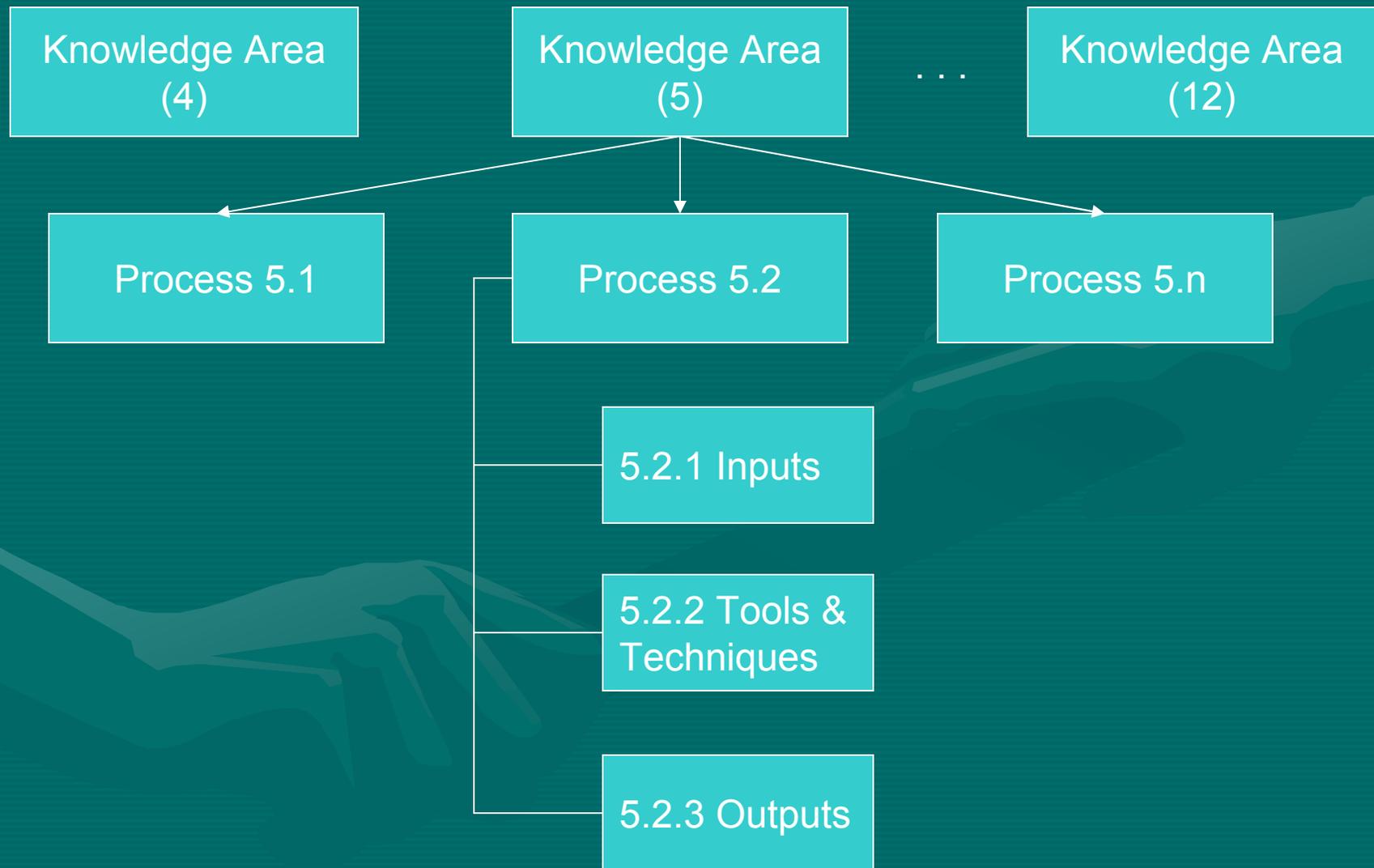
- PMBOK supports training Project Managers for Project Management Professional (PMP) certification
- CMMI supports organizational process improvement for achievement of maturity and/or capability levels
- While both have a project management focus, the structure of these documents is different



# Model Components in the Staged Representation



# PMBOK Components



# Similarities Between CMMI and PMBOK

# Processes Addressed by Both

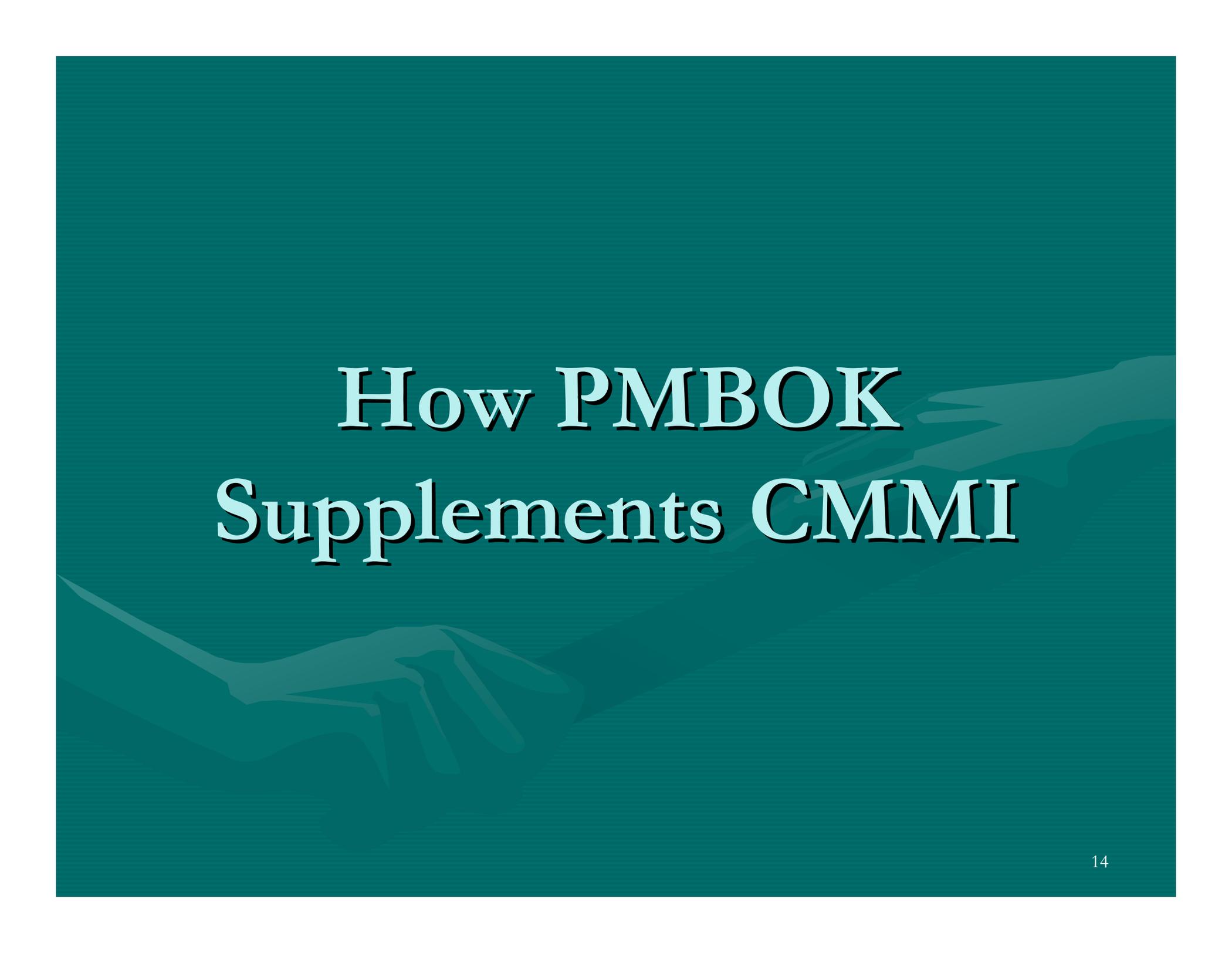
- Requirements Management or Scope Control
- Project Planning
- Managing and Controlling Project Execution
- Quality Assurance
- Supplier or Procurement Management
- Risk Management
- Measurement

# “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

# Definition & 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 (or Initiation)
- More guidance and details on
  - Planning,
  - Management and Control,
  - Human Resource Management,
  - Quality Assurance,
  - Risk, and
  - Procurement
- 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 with links to the implementing sections of the PMBOK

# 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

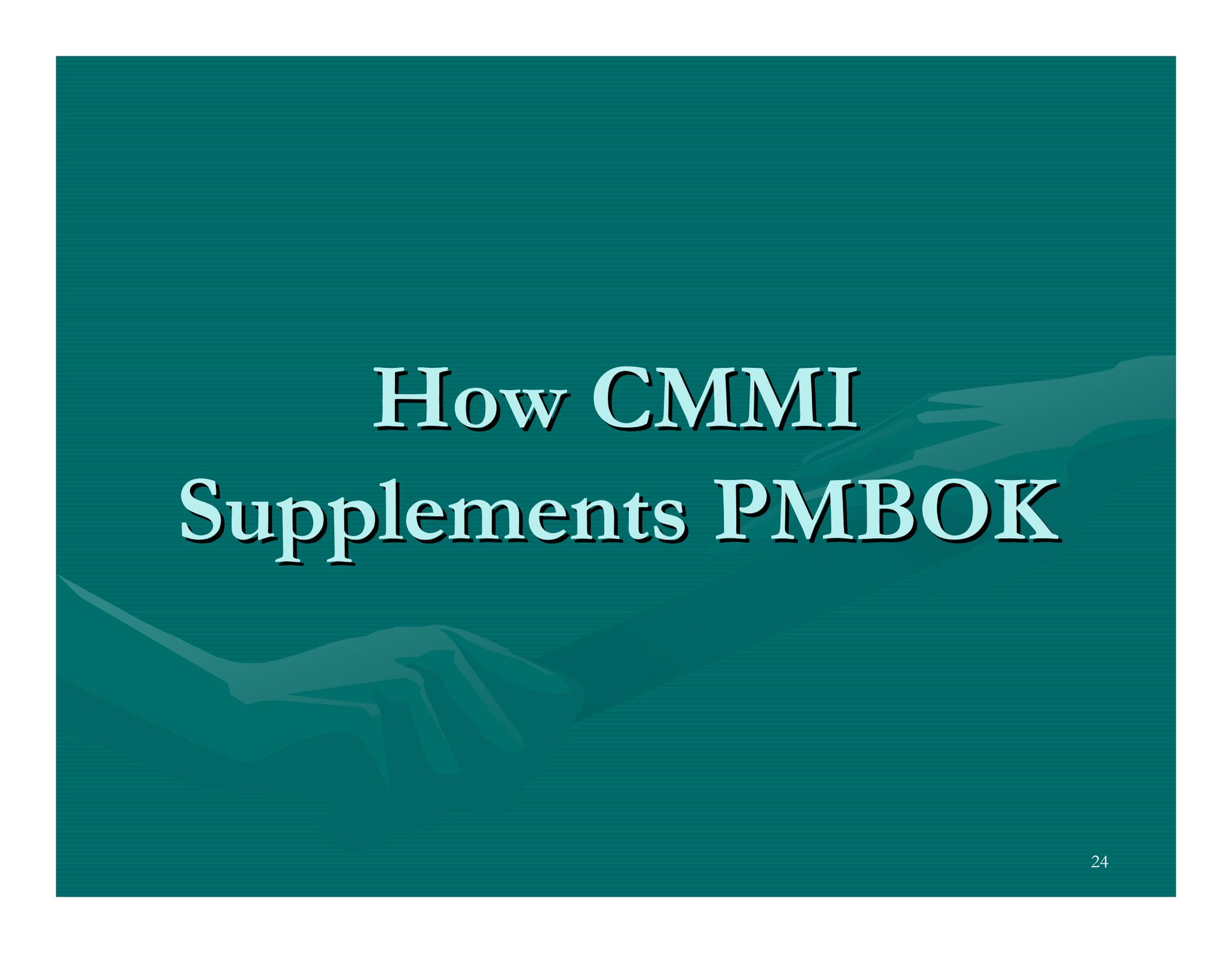
- More guidance and details on risk
  - Risk planning and budgeting
  - Example risk parameters
  - More information on how to identify risks
  - Qualitative and quantitative risk analysis
  - Risk response planning

# 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

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- Engineering Best Practices
- Organizational Process Management
- Data Management
- Decision Analysis

# How CMMI Supplements PMBOK

- Engineering Best Practices
  - Requirements Elicitation
  - Requirements Decomposition & Design
  - Requirements Traceability
  - Management of Interfaces
  - Planning and preparation, including 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 with Process Management and 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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