

W H I T E P A P E R

Project Management Relative to CMII

SUMMARY — Project management is two cycles, not one. A requirements cycle coexists with a physical item cycle. Requirements must lead and physical items must conform. A robust change process is a prerequisite.

The success of any project is compromised when work breakdown structures are poorly organized — a common contributor to cost overruns and schedule slippages.

A two-level WBS is essential. Work package networks and schedules are maintained in a CMII baseline which is closely coupled with a robust change process. All development resources work to the CMII baseline.



Institute of Configuration Management
The Home of CMII

PROJECT MANAGEMENT BOOK OF KNOWLEDGE

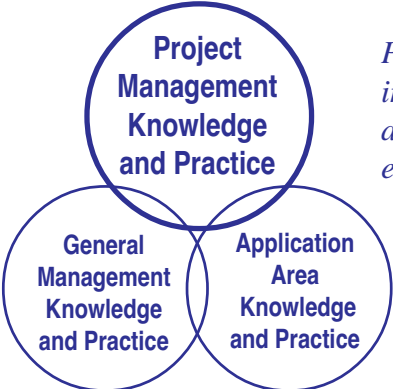
The Project Management Institute (PMI), founded in 1969 and headquartered near Philadelphia, PA, is the leading authority for project management.

With over 100,000 members worldwide, PMI's body of knowledge (PMBOK) is generally acknowledged to represent the best industry practice.

This white paper serves to provide insight to the principles and practices of project management and how they correlate with the CMII model.

Overall content of the guide for project management (or PMBOK) is summarized in twelve chapters as follow:

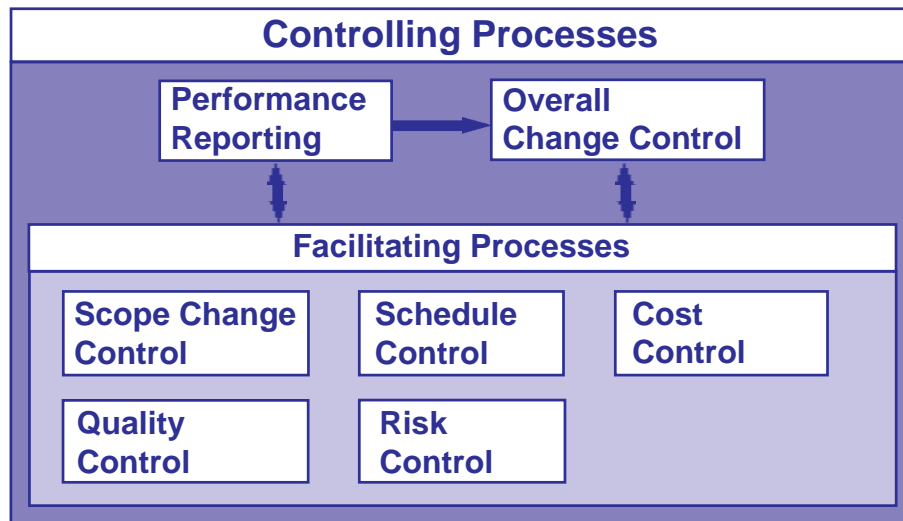
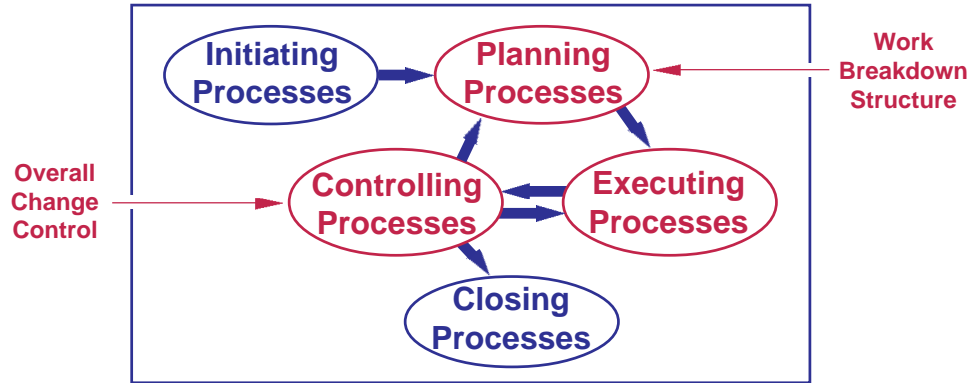
1. *Project Management Framework*
2. *Project Management Context*
3. *Project Management Processes*
4. *Project Integration Management*
5. *Project Scope Management*
6. *Project Time Management*
7. *Project Cost Management*
8. *Project Quality Management*
9. *Project Human Resource Management*
10. *Project Communications Management*
11. *Project Risk Management*
12. *Project Procurement Management*



PMBOK overlaps with general management (which includes supporting disciplines) and application areas (which include technical and management elements and industry groups).

CONFIGURATION MANAGEMENT WITHIN PMBOK

Configuration management resides in *overall change control* which is a subset of *controlling processes*.



Tools and Techniques for Overall Change Control

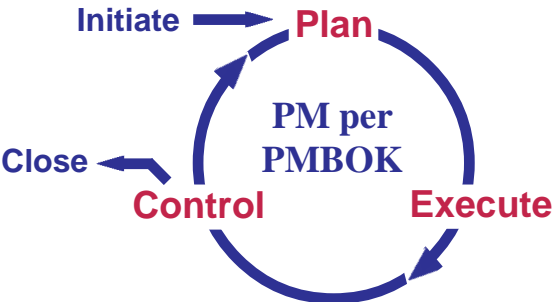
- 1 *Change Control System*
- 2 *Configuration Management* - any documented procedure used to:
 - Identify and document the functional and physical characteristics
 - Control any changes to such characteristics
 - Record and report the change and its implementation status
 - Audit the items and systems to verify conformance to requirements
- 3 *Performance Measurement*
- 4 *Additional Planning*
- 5 *Project Management Information System*

From "2000 Exposure Draft" of the PMBOK Guide sent to PMI members and professional organizations for review and comment.

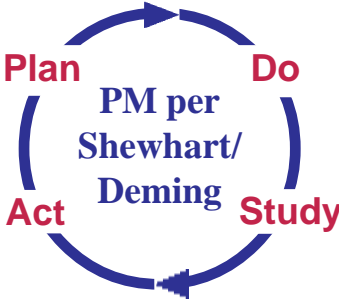
PROJECT MANAGEMENT: TWO CYCLES, NOT ONE

Project management, per PMBOK, is a single cycle containing three steps whereas quality professionals treat PM as a single cycle with four steps.

The project management cycle, in both cases, continues in a closed-loop fashion until the project is completed and closed.



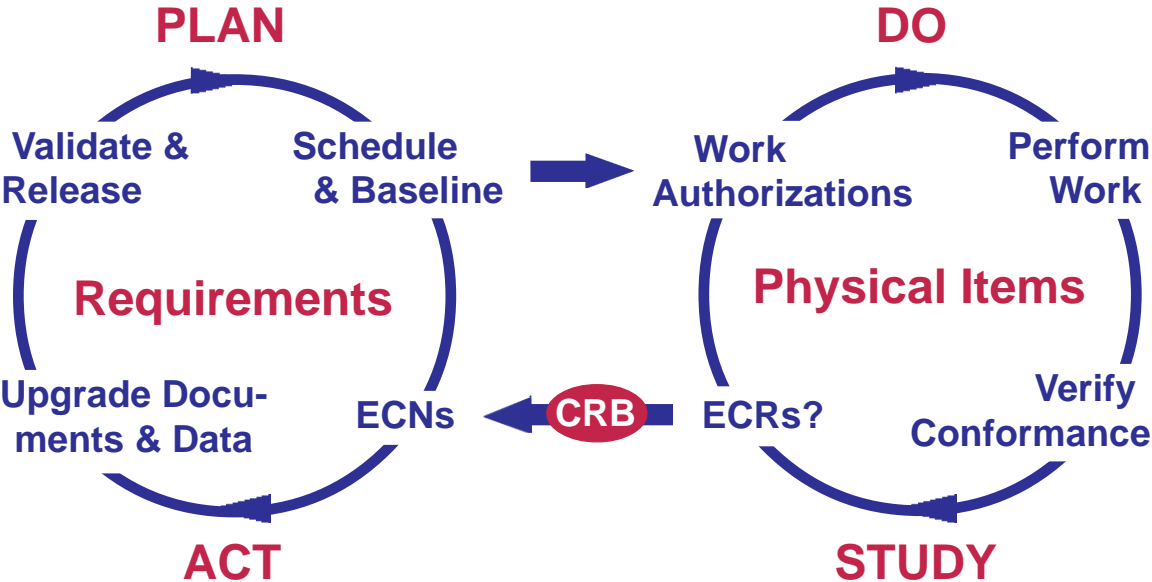
Single Cycle With 3 Steps



Single Cycle With 4 Steps

With CMII, project management represents dual cycles which involve 4 steps. A requirements cycle co-exists with a physical item cycle.

With CMII, CM serves to keeping requirements clear, concise and valid. With CMII, requirements must lead and physical items must conform.



TRADITIONAL WORK BREAKDOWN STRUCTURE

A work breakdown structure (WBS) for a project may represent any combination of deliverables and work packages.

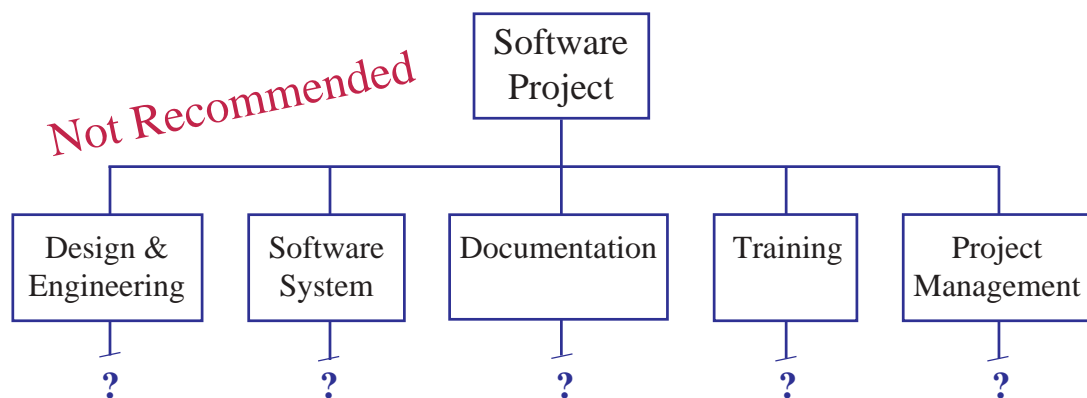
There are many ways to subdivide a project into a hierarchy of work packages. The goal is to facilitate the flow of work and keep all activities synchronized.

Subdividing required activities into a hierarchy of work packages helps to reveal their interdependencies and provide insight to the required sequence.

Defining the sequence in which the work packages are to be accomplished is the next step and typically displayed in the form of a critical path network.

The critical path network is used to derive start and completion dates for each work package, balance work loads with capacity, and so on.

The following example shows the upper levels of a WBS for a software project and the categories selected to represent the major elements of the project.



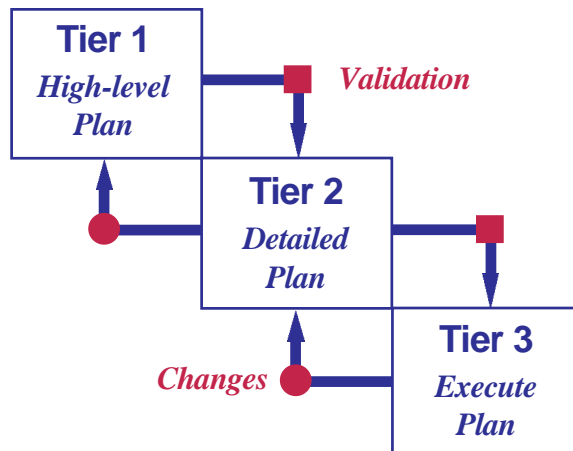
The challenge is in how to break these major elements down into a hierarchy of work packages which can facilitate properly synchronized work flows.

An additional challenge is in how to facilitate needed changes throughout the life of the project and minimize the impact on overall cost and schedule.

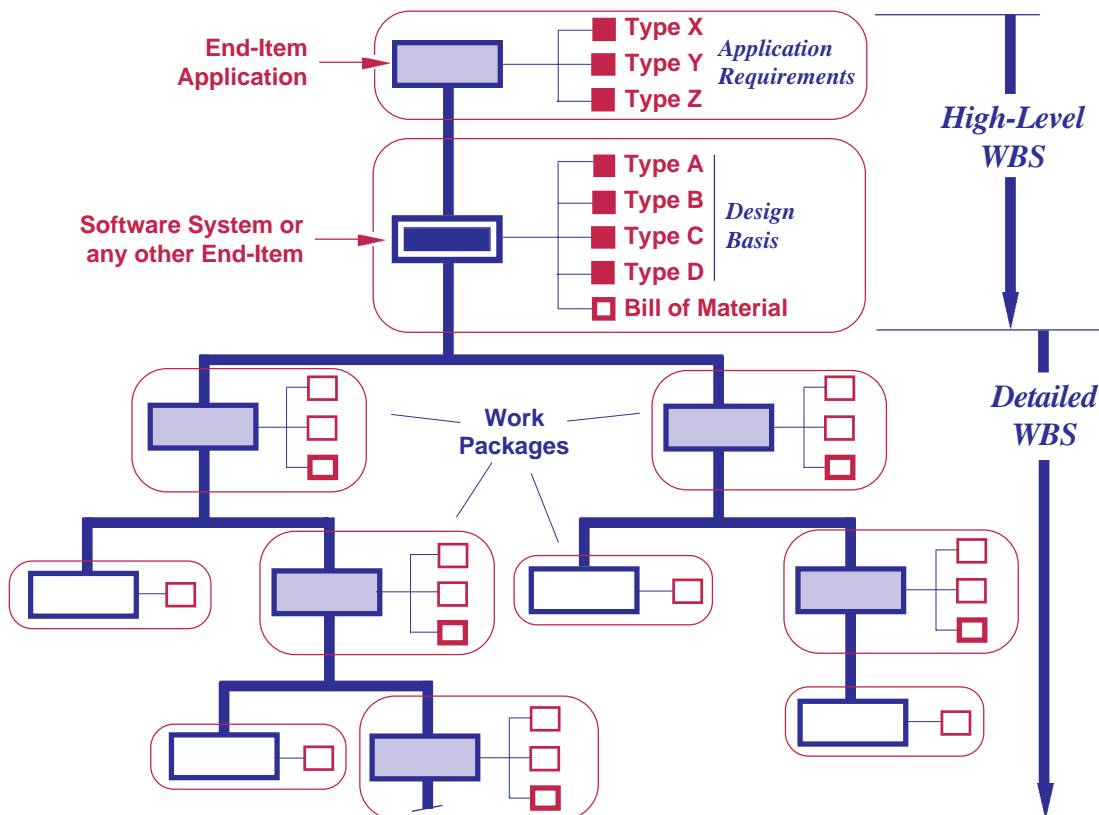
Overall cost and schedule performance is essentially dictated by the integrity of the WBS. The example shown above is not recommended.

TWO-LEVEL WBS FOR PRODUCT DEVELOPMENT

With CMII, development is a three tier process. A high level plan (or design basis) is created and released before proceeding with detailed design.



The design basis is extended into a physical item hierarchy. Each set of required documents is a work package whose owners work to planned release dates.



CMII BASELINE: WBS AND PROJECT PLAN

A CMII (or as-planned and as-released) baseline provides an up-to-date view of the overall configuration as it evolves during the development process.

It also provides visibility of planned changes to documents which may or may not be released. Shading is one way to indicate an unreleased state.

There can be changes on top of changes. Effectivities are used to maintain proper separation and avoid confusion.

The physical item hierarchy for the end-item is the framework for the baseline. It is also the framework for the detailed WBS and network of work packages.

As-planned release dates for each document are derived from the need dates for the associated physical items.

Work schedules for all development resources are driven accordingly.

CMII BASELINE											
Project <u>NNN-N</u>					Date/Time <u>today / now</u>						
PHYSICAL ITEMS			SUPPORTING DOCUMENTS				CHANGES				
Hierarchy (Qty per)	ID No.	Name	Type	Number	Rev	Release Date	Effective Date	ECN	Effectivity	A/D	ECN
0	NNNN	XXXX	TT	NNNN	R	MDY	MDY	-			
			TT	NNNN	R	MDY	MDY	---			
			TT	NNNN	R	MDY	MDY	---			
1	NNN-N	End Item	TT	NNNN	R	MDY	MDY	NNN			
			TT	NNNN	R	MDY	MDY	NNN			
			TT	NNNN	R	MDY	MDY	NNN			
			BM	NNNN	A	MDY	MDY	NNN		D	NNN
			BM	NNNN	B	MDY	MDY	NNN	MDY	A	NNN
1	NNNN	XXXX	TT	NNNN	R	MDY	MDY	NNN			
1	NNNN	XXXX	TT	NNNN	R	MDY	MDY	NNN		D	NNN
1	NNNN	XXXX	TT	NNNN	R	MDY	MDY	NNN		A	NNN

Network
Work Packages
Schedule



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