



Implementation of PMBOK along with CMMI – QCG Experience

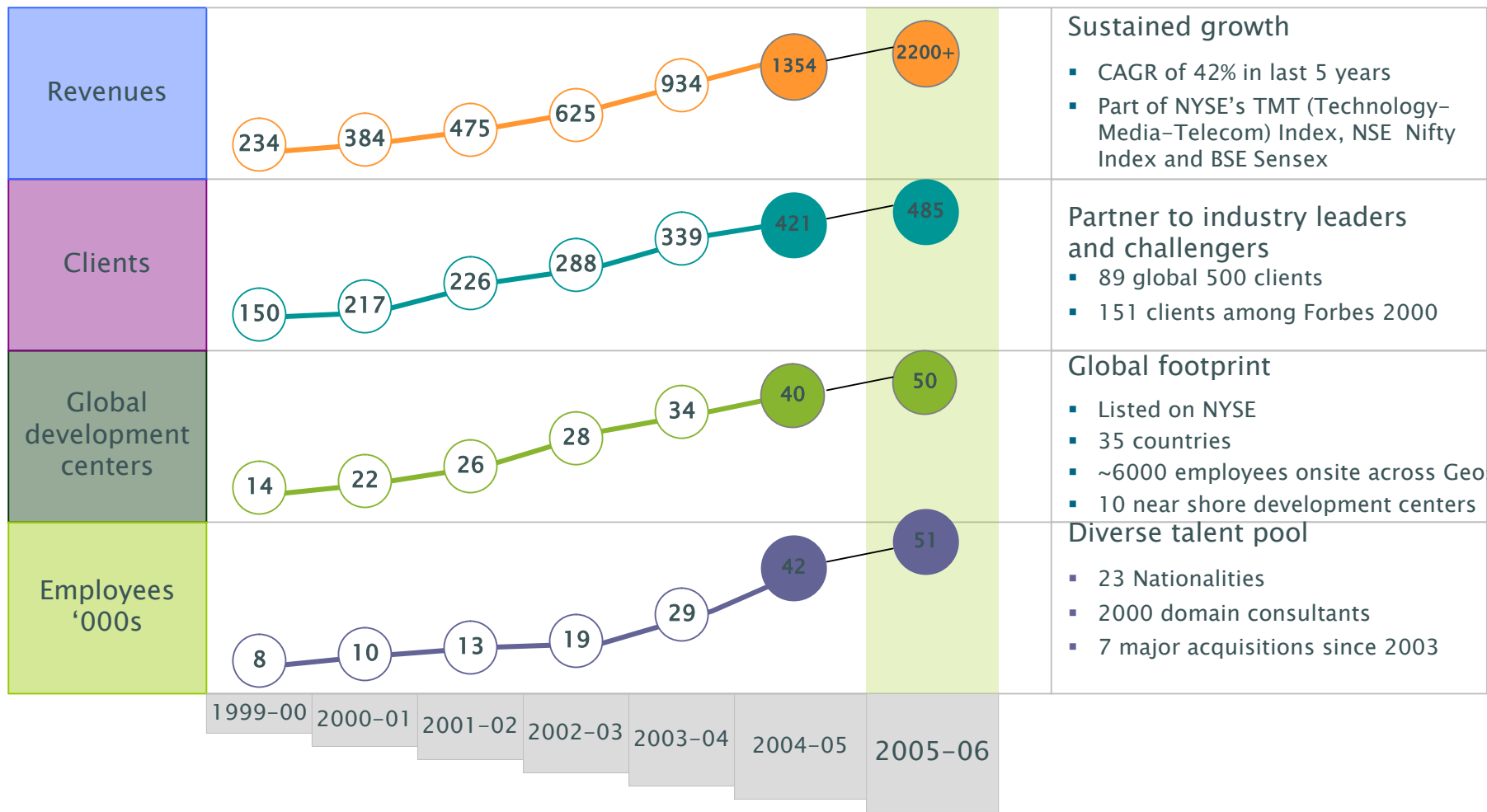
*International SEPG Conference 2007
Austin, USA*

Presentation By
Sharma Sriram & Bansi Mohan Rath
Quality Consulting Group
Wipro Technologies

Contents

- Introduction
- List of acronyms used in the presentation
- Background to the Process Solution
- Comparative analysis between PMBOK and CMMI
- Advantage of adopting PMBOK
- Challenges faced and Aspects considered for Process Solution
- Process Solution Approach
- Overall Process Architecture
- Process Architecture
- Results and Benefits
- Acknowledgements

Wipro Technologies – Facts & Figures



*Ranked leader by IDC, MetaGroup, Forrester – 2004

Awarded the highest rating in Stakeholder Value Creation & Corporate Governance by ICRA, an Associate of Moody's Investor Services

Wipro Quality Consulting Group



Process Optimization

IT Governance	Software Engineering Processes		Infrastructure Processes	
Process Consulting for IT governance	CMMI / SPICE / Prince II		ITIL Process Consulting	
SOX / CobIT Compliance	Requirements Engg.	Verification & Validation	IT Service Support	IT Service Delivery
PMO consulting	SCRM	SQA	BCP / DR Process Consulting	
CIO Metrics & Dashboards	RUP / Agile / RAD		BS 15000 / 20000	
Tool based Governance Solutions – Mercury ITG / xRPM	Rapid-Q		BS 7799 / ISO 17799	
	Software Engineering Tools			

Six Sigma & Lean for continuous improvement and optimization

- A specialist group : **Wipro Quality Consulting Group (QCG)**
 - A 150+ member practice
 - Client base of 60 with over 130+ different assignments being executed till date
 - Translates to over million hours of consulting experience
- Help clients reap the benefits of deploying process improvement initiatives
- Quality Consulting – Value add to the customer
 - Facilitate SPI (Software Process Improvement) initiatives to align with the business objectives
 - ♦ Improve client's project delivery process
 - ♦ Bring quick and quantifiable improvements in all areas of project performance
 - ♦ Act as partner in clients SPI initiative
- The Wipro quality consultants
 - Facilitate the building of a shared vision
 - Chart out a detailed road map and set milestones for achievement of the vision
 - Deploy the vision along with the client team
 - Add value through their experience, insights and analysis
- A consultative and collaborative approach – we walk the talk

List of acronyms used in the presentation

- **PQMS** – Process Quality Management System which is old version of quality management system for the organization
- **PMBOK**–A guide to Project Management Body of Knowledge, Third edition an American National Standard–ANSI/PMI 99–001 –2004
- **CMMI[®]**–Capability Maturity Model[®] Integration (CMMI) is a process improvement approach developed by SEI
- **SCAMPISM–C**– Standard CMMI Appraisal Method for Process Improvement–Class C Appraisal
- **SEI**–Software Engineering Institute, Carnegie Mellon[®] University

All trademarks and Service Marks acknowledged

Background to the Process Solution

- ❑ Senior Management of a major finance organization, CREDIT SUISSE IT PB Region Switzerland, decided to implement industry best practices for project management practices and selected PMBOK
- ❑ Before this decision, Project Management Expert Team in the organization had conceptualized Project Management Process solution based on PMBOK as a part of PQMS and developed a prototype
- ❑ Reason behind such decision by Senior Management was
 - PMBOK implementation with CMMI would bring "one of it's kind" of process solutions
 - PMBOK implementation along with CMMI would get acceptance from Project Mangers from the organization
- ❑ Wipro QCG is currently involved in supporting process definition and implementation for ongoing CMMI initiative
- ❑ Wipro QCG consultants along with Project Management Expert Team and Project Management Extended Team, jointly developed the process solution which is CMMI compliant and PMBOK compatible

Comparative analysis between PMBOK and CMMI (High level) 1 / 2



PMBOK

Overall 44 processes of PMBOK organized into 5 project management process groups and 9 knowledge areas

PMBOK also specifies possible interfaces between process groups and their overlap across project timeline

Project Management aspects like Initiating, Executing and Closing have been elaborated along with Planning, Monitoring and Control

Under a knowledge area process, activities are defined with inputs, tools and techniques, outputs. Processes are organized across different process groups. Interfaces between processes also have been addressed

CMMI

CMMI Project Management process areas organized into Specific Practices (SPs) catering to Specific Goals and Generic Practices (GPs) catering to Generic Goals

Apart from Planning, Monitoring and Control other three aspects Initiating, Executing and Closing have not been clearly addressed

In CMMI frame work Specific Practices, Generic Practices have been elaborated.

It provides freedom for interpretation and design of process solution which needs to meet CMMI requirements

Comparative analysis between PMBOK and CMMI (High level) 2 / 2



PMBOK

PMBOK focuses only on Project Management activities

PMBOK uses terminologies common across Project Management community

Degree of usage of PMBOK processes and details mentioned, depends on organization needs

There is no formal appraisal for PMBOK compliance

CMMI

CMMI frame work focuses on Planning, Resourcing, Monitoring and Control, Senior management reporting for all Project Management, Engineering and Support process areas through Generic Practices

CMMI does not prescribe any specific terminology to be followed. It is up to practitioners to adopt certain terminology and satisfy framework expectation simultaneously

Organization need to satisfy CMMI Maturity Level requirements (Described in GPs and SPs) through process solutions, and ensure implementation of process solution. This needs to be formally appraised by SEI authorized lead appraiser

Advantage of adopting PMBOK

Project Management Aspects

Initiating Project

- This aspect is elaborated in PMBOK
- Recommends development of project charter and preliminary project scope documents that helps in understanding, developing project management plan and associated plans

Project Planning

- Scope management plan is more elaborate in PMBOK
- Planning for continuous improvement for the project is prescribed
- Details regarding organization chart, resource loading described
- Escalation management is prescribed by PMBOK
- Emphasizes more on plan for formal verification and acceptance of deliverables
- Quantitative risk analysis, strategies for positive risk or opportunities, threshold holds for mitigation and contingency action for risks

Executing project

- This aspect is explicitly mentioned with details of acquiring project team, developing project team, performing quality assurance, information distribution, evaluation and selection of service providers

Advantage of adopting PMBOK

Monitoring and Control of Project

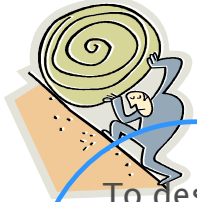
- Integrated change control is more elaborate in PMBOK, where CMMI addresses Change Management in Requirements Management and Configuration Management processes areas
- Emphasizes on scope verification (Monitoring of formal acceptance of deliverables) and scope control which supports integrated Change Management
- Quality control aspect of PMBOK emphasizes more of preventive actions. Managing of team and HR related aspects like performance appraisal, conflict management are more elaborate in PMBOK

Closing Project

- PMBOK recommends this as a separate process group and emphasizes on administrative closure, contract closure, final work products.

It also elaborates more on updating organizational process assets by best practices, experiences from project

Challenges faced and Aspects considered for Process Solution



Challenges

To design a process solution for Project Management which satisfies CMMI requirements, current organizational practice and PMBOK best practices

Definition of boundaries between Engineering lifecycle and Project Management lifecycle

Defining interfaces of Engineering lifecycle phases to Project Management lifecycle phases and vice versa

Representation of level of interaction of Project Management lifecycle phases and the way their repetitiveness to be addressed

To create an easily navigable process solution architecture where user navigates from Engineering lifecycle phases to Project Management lifecycle phases then to process, sub process and other process artifacts

Usage of process terminology which is common across the Project Management practices

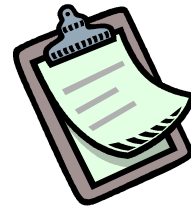
Aspects considered for Process Solution

- Detailed mapping of CMMI with PMBOK and organization current Project Management practices
- All the requirements of CMMI and PMBOK
- For designing process architecture PMBOK representations, lifecycle model, phase relationships have been considered and interpreted suitably to organization needs
- Mapping of the Project Management Processes to the Project Management Process Groups and the Knowledge Areas have been considered from PMBOK

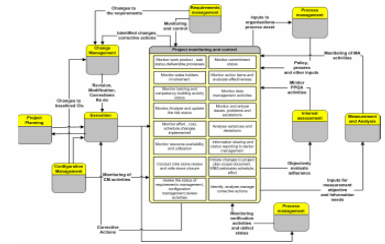
Process Solution Approach

CMMI Project Management practices	Corresponding PMBOK processes	CMMI requirements	PMBOK requirements	Combined CMMI and PMBOK requirements	Questions to seek Information	Current practices

Analysis document



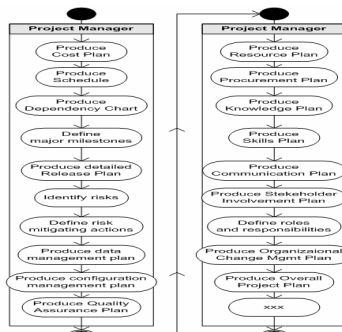
Requirements document



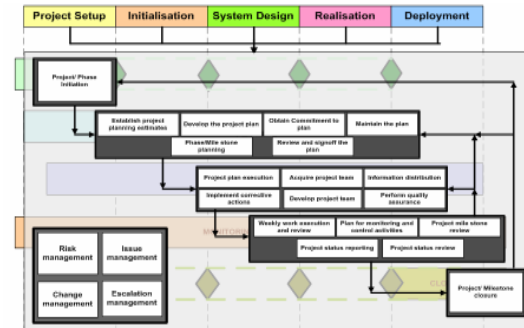
Context Diagram



Conceptual process solution

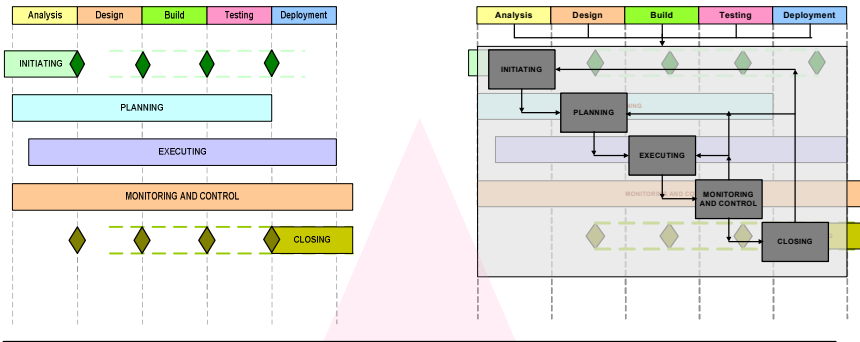


Conceptual process flow diagrams



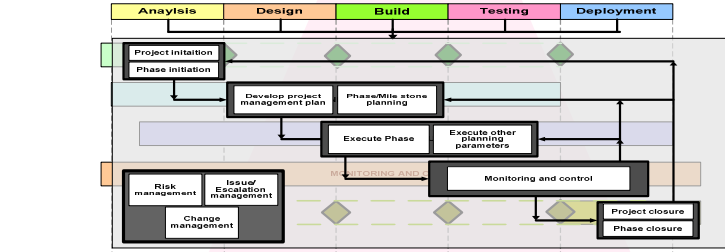
Process solution

Overall Process Architecture



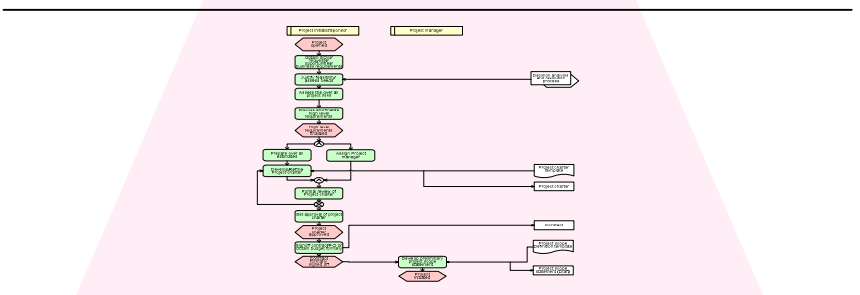
First Layer

First layer of the Process Architecture contains the interface between Project Management processes to Engineering Lifecycle Model



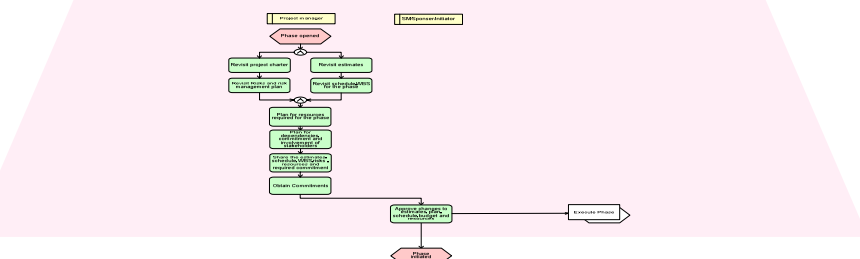
Second Layer

Second layer of the Process Architecture contains the representation of Project Management process groups and interactions



Third Layer

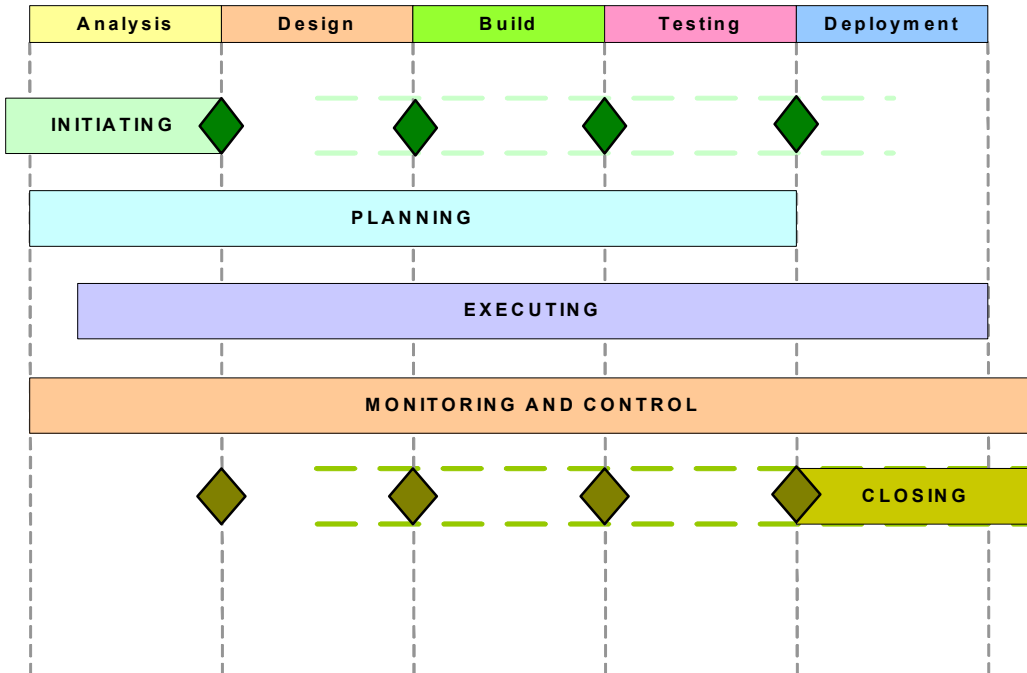
Third layer of the Process Architecture contains the detail flow representation of each process, interfaces with other processes, sub processes inputs, outputs, deliverables and associated process artifacts



Fourth Layer

Fourth layer of the Process Architecture contains the detail flow representation of sub processes, support processes and called sub processes

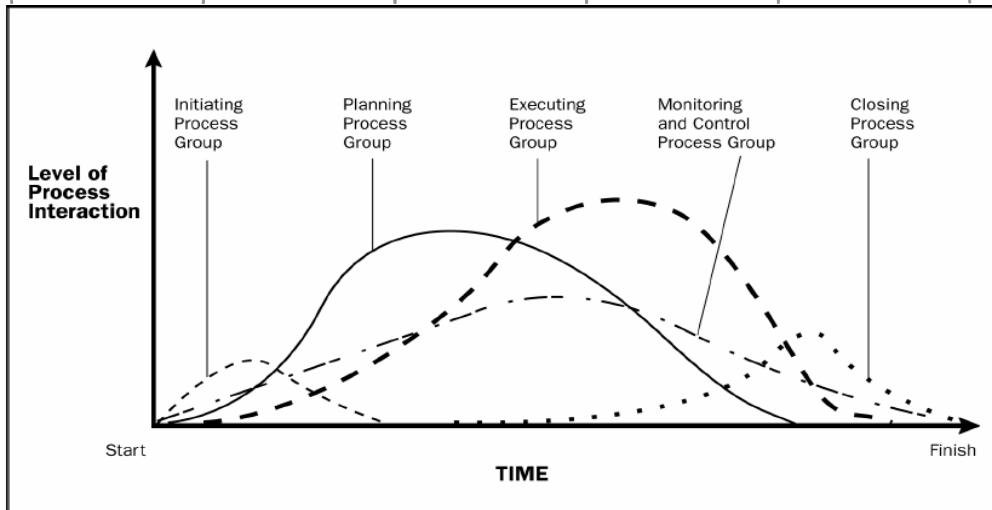
Process Architecture – First layer (1 / 2)



This diagram represents interfaces to ideal Waterfall Lifecycle Model

The first layer of processes architecture contains the interface between Project Management processes to Software Engineering Lifecycle phases

Software Engineering Lifecycle model may have different variants suitable to project needs

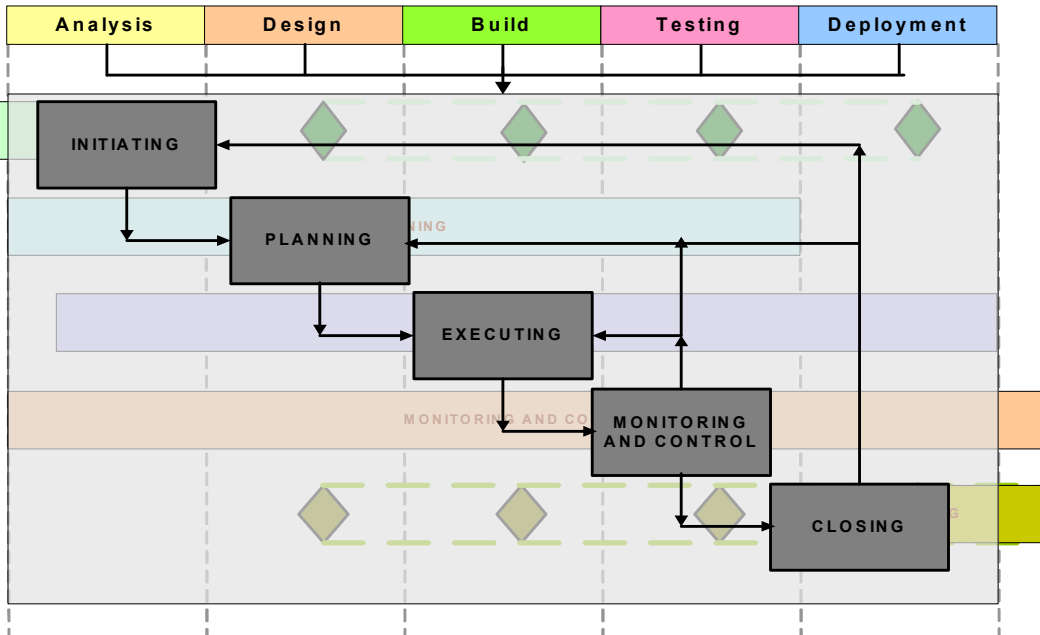


This diagram represents the five process groups of PMBOK attributed to each phase of Engineering Lifecycle

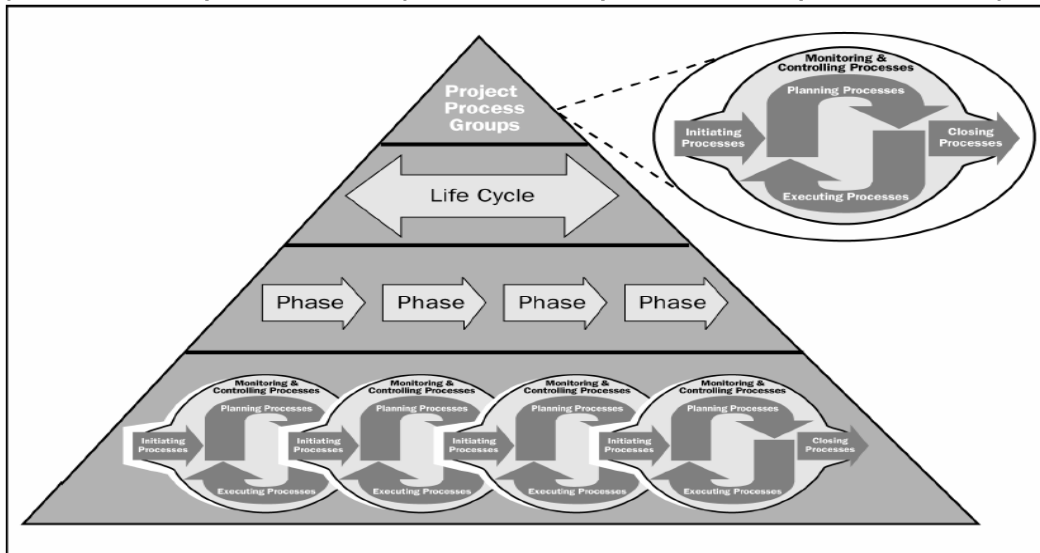
Initiating, Planning, Executing, Monitoring & Control and Closure

The intensity at which these project management activities carried out at different Engineering Lifecycle phases may differ

Process Architecture – First layer(2/2)



This diagram represents the Interactions between Process Groups, and repetitiveness of all Process Groups across Engineering Lifecycle phases



This diagram represents the Interaction between Processes Process Groups and their applicability in Engineering Lifecycle phases and over all project

Process Architecture – Second layer(1 / 3)

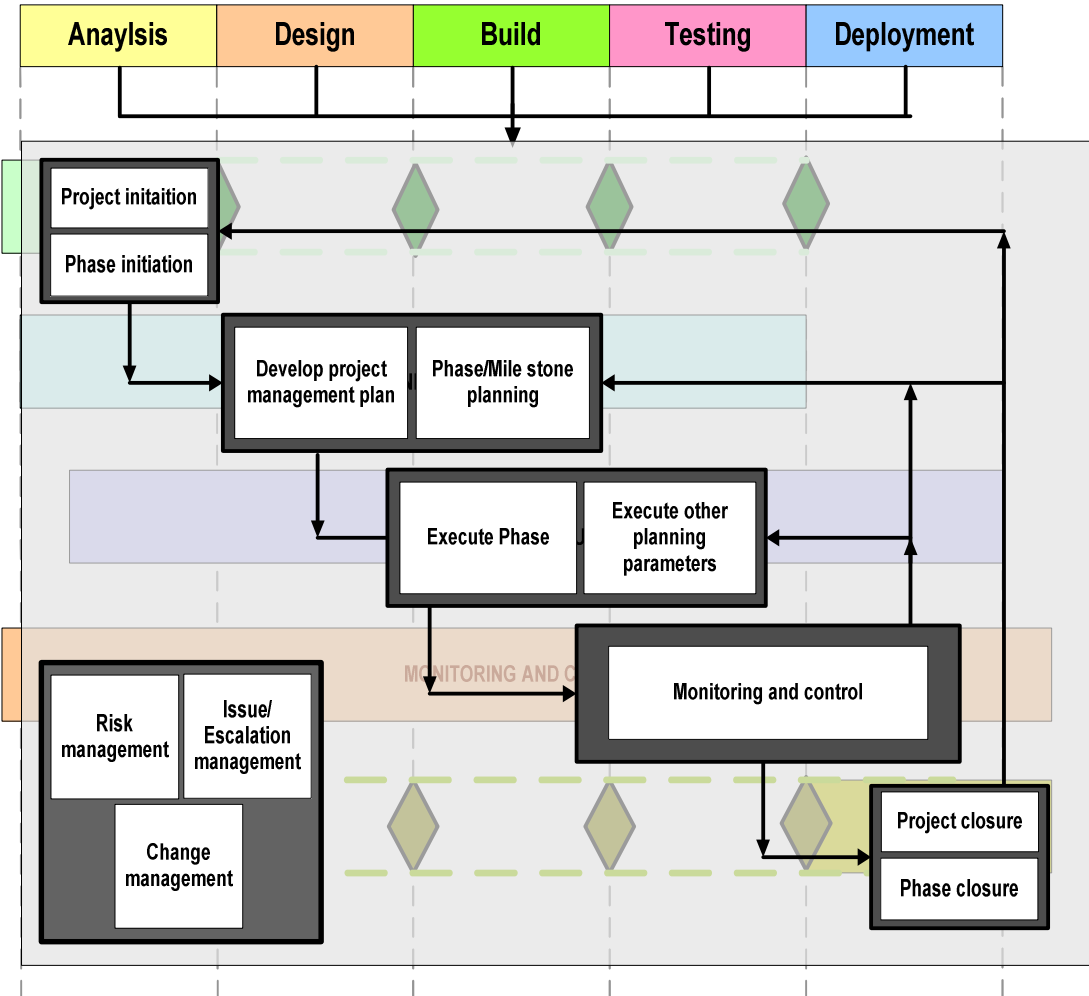
This layer represents individual process under Five Process Groups of PMBOK

Three process have been given separate status and represented outside the Five process area groups. They are :

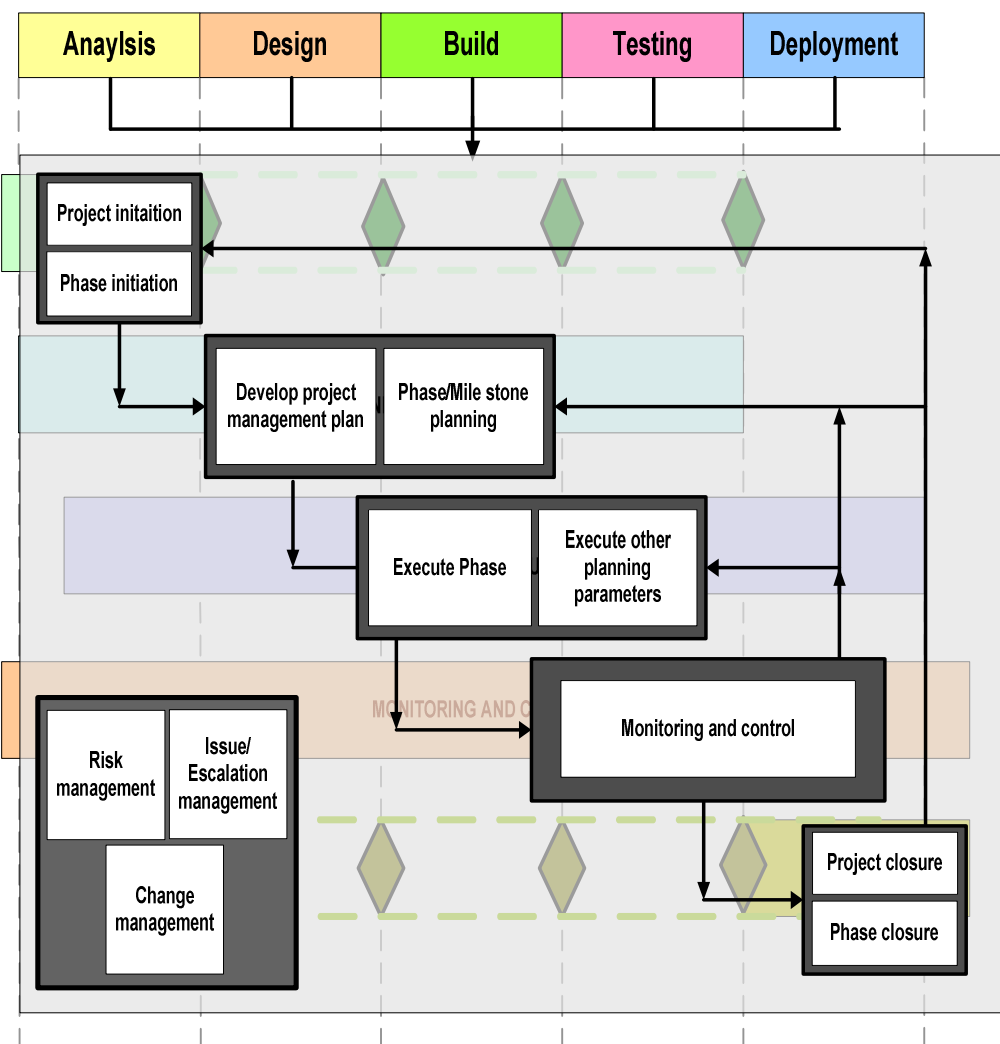
- Risk Management
- Issue/ Escalation Management
- Change Management

These processes serve more as a support processes for one or more individual processes under each process group

Project Planning, Project Monitoring and Control and Risk Management processes areas of CMMI are incorporated in the solution along with planning, monitoring and status reporting of all engineering and support process areas



Process Architecture – Second layer(2 / 3)



INITIATING PROCESS GROUP

Project initiation process
(Applicable to start of the project)
Phase initiation process
(Applicable to start of each phase of Engineering Lifecycle)

PLANNING PROCESS GROUP

Develop Project Management Plan process
(Applicable to start of the project)
Phase / Milestone planning process
(Applicable to start of each phase of Engineering Lifecycle and also to revision of Project Management Plan as and when required)

EXECUTION PROCESS GROUP

Execute phase process (Applicable to task allocation, execution for the phase and production of deliverables in each phase of Engineering Lifecycle)

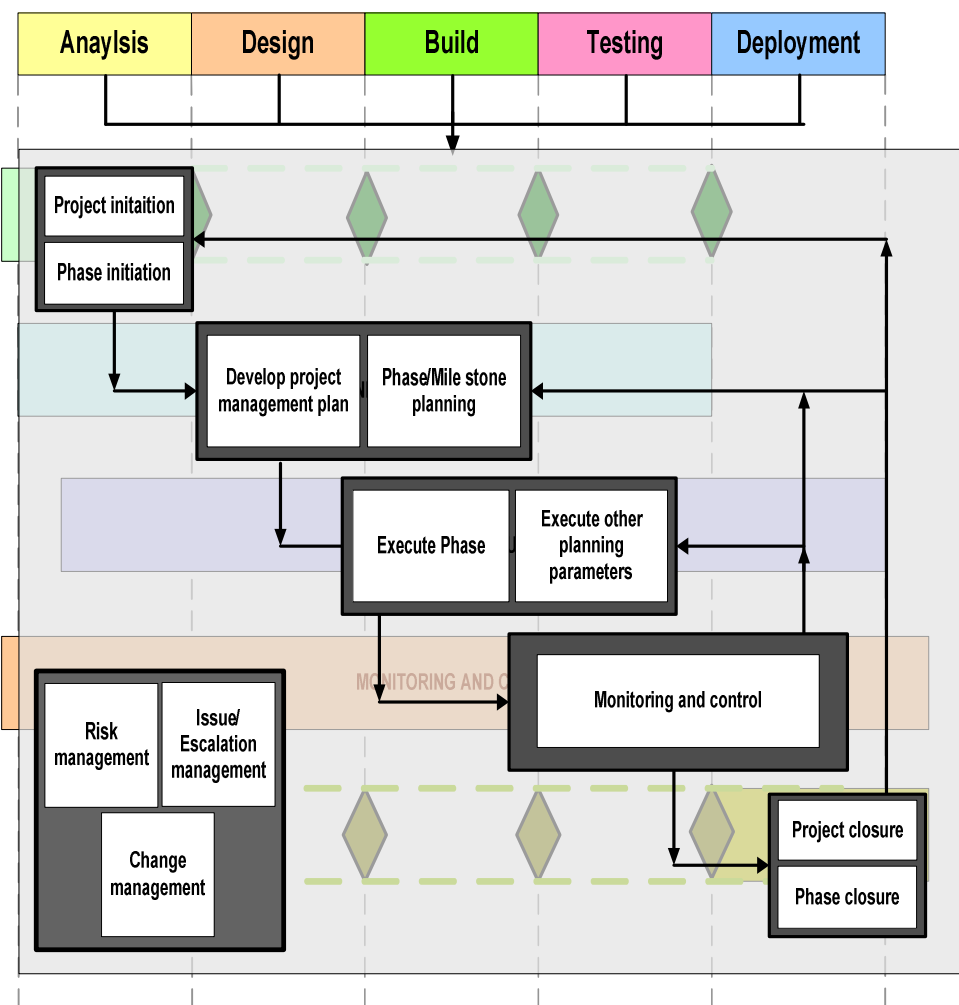
MONITORING AND CONTROL PROCESS GROUP

Monitor and Control process
(This is applicable to Phases and Over all project)

CLOSING PROCESS GROUP

Phase closure process (Applicable to completion of deliverables of each phase of Engineering Lifecycle, logical handing over to next phase)

Process Architecture – Second layer(3 / 3)



Project closure process (Applicable to over all project closure, contract closure, administrative closure etc).

Each Process group is supported by one or more Knowledge area processes

There are interdependencies between one knowledge area element to other knowledge area element to satisfy the objective of Process group

There are also interdependencies between different elements of single Knowledge area under different process area groups

All these have been depicted through different processes and process interfaces

Process Architecture –Third Layer–Processes

Example:

Develop Project Management Plan process

Overview

All planning aspects of PMBOK and CMMI Built into the process

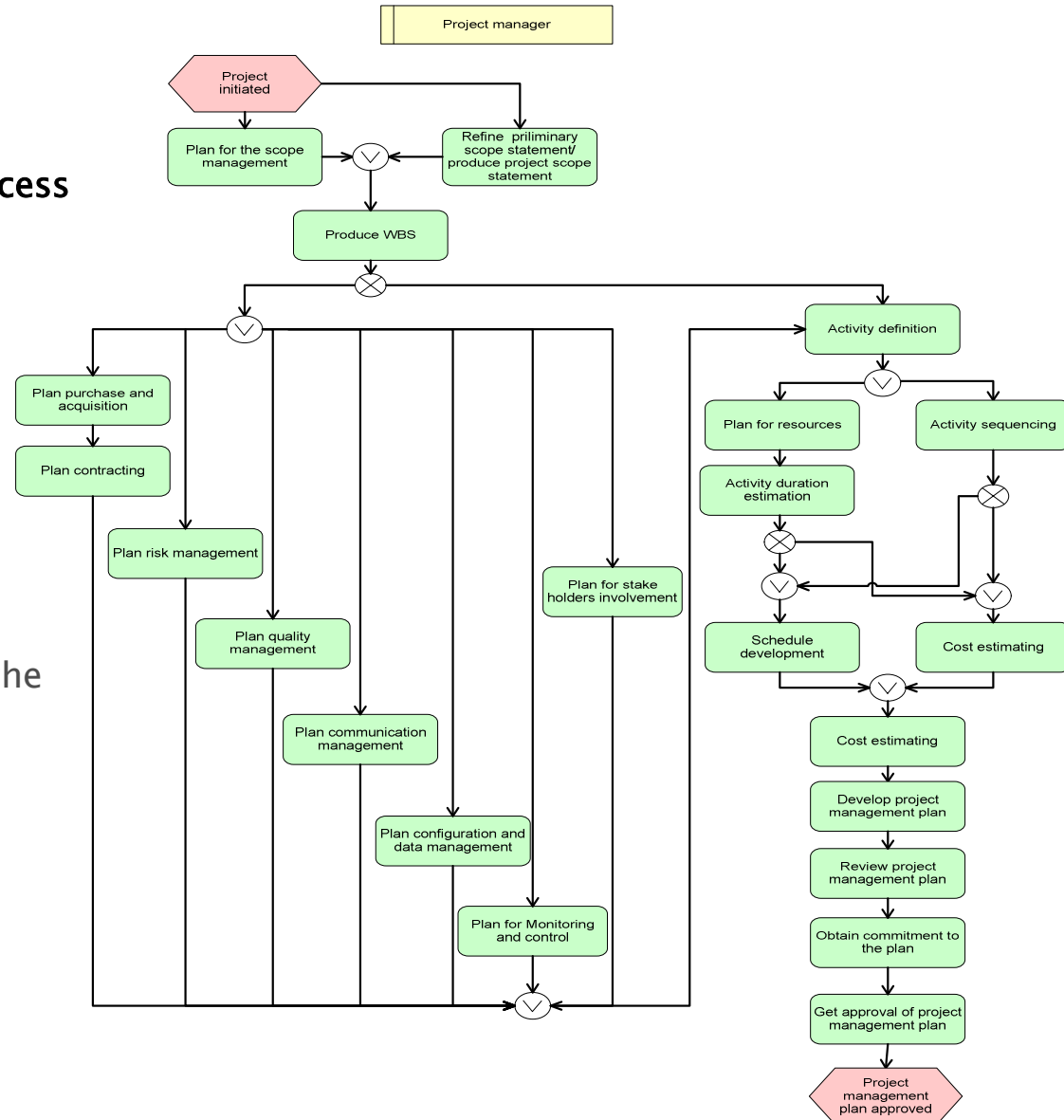
The flow is depicted as per PMBOK

Usage of PMBOK terminology

CMMI terminology has been used for the aspects which PMBOK does not cater

Major deliverables

Project Management Plan with all associated sub plans



Process Architecture

Fourth Layer–Support processes



Example

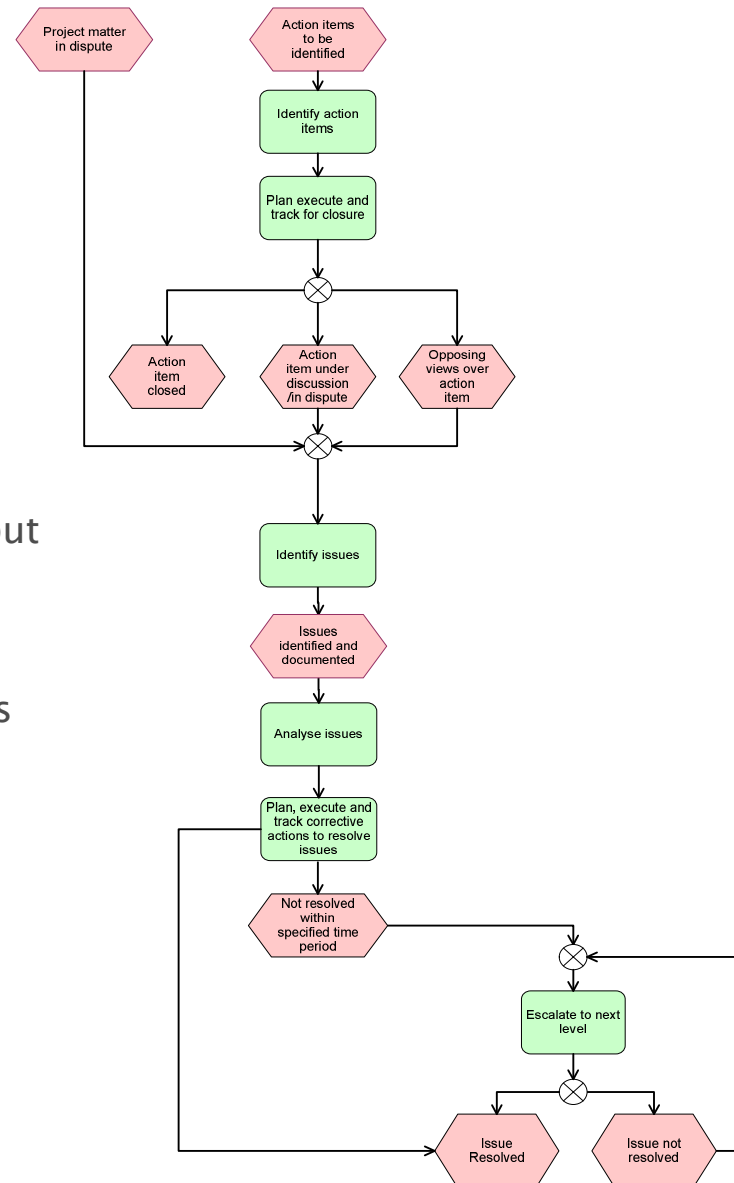
Action item/ Issue/ Escalation process

Overview

Escalation aspect is not mentioned in CMMI

In PMBOK escalation and issue mentioned but it is not mentioned as process in PMBOK

It caters to most of the processes in project management and called inside the processes as per requirement



Results and Benefits



RESULTS

- ❑ As a part of process solution 7 processes, 7 sub processes, 9 guidelines, 12 templates and 3 checklists have been produced
- ❑ Process Solution has successfully undergone SCAMPI-C appraisal by SEI authorized Lead Appraiser

BENEFITS

- ❑ Acceptance of process solution among the practitioners
- ❑ Leads to improvement of cost and schedule performance in the projects
- ❑ Project Management practices across organization standardized through common terminology, consistency in practices
- ❑ Improved process compliance in projects
- ❑ Scalable process model which accommodates location and business specific tailoring and customization
- ❑ Alignment of Project Management processes to Engineering and Support processes brings seamless process integration

Acknowledgements

Sponsor of process improvement program
CIO of Credit Suisse IT PB Region Switzerland

Responsible for the program development and execution

Head of IT Methodology & Quality Management Global
Instrumental in decision to go for such process solution and provided overall guidance during development of the solution

Head of CMMI Program for CS IT Region Switzerland
Instrumental in developing project management process solution prototype based on PMBOK. Provided expert guidance and involved as a subject matter expert for review of the process solution and related process assets. Also helped in coordinating, providing resources and over all support for design and implementation of process solution

Process Area Manager for Project Management processes
Key stakeholder, involved in design, review and finalization of the process solution

Wipro QCG Consultants
For contribution in design, development and review of Process Solution

Thank you

Sharma Sriram

sharma.sriram@wipro.com

Bansi Mohan Rath

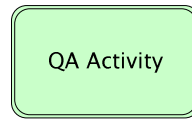
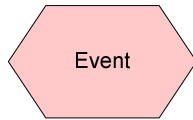
bansi.rath@wipro.com

<http://qualityconsulting.wipro.com/index.php>
www.wipro.com

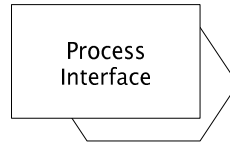
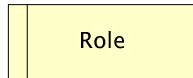


Appendix 1 Process architecture

– Notations used



AND Connector



OR Connector



Connector



Input/ Output connector



XOR Connector



Flow



Template



Work Product



Process Group

Appendix 2–Details of activity under process



Activity Description		PMBOK reference	
Input WP / Event		CMMI Reference	
Output WP / Event		COBIT/COSO References	
Verification Type*		Applications+Links	
Entry Criteria		Guidelines+ Links	
Exit Criteria		Templates+ Links	
Guidance (optional)		Checklists+ Links	
Tailorable	<input type="checkbox"/> Yes No <input type="checkbox"/>	Examples+ Links	
Tailoring Guidelines			
RACI	R: A: C: I:		

Activity

Following details has been provided for each activity under a process or sub-process