



CMMI-DEV V1.3 模型构造 GG&GP

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CMMI-DEV V1.3模型构造



Continuous Representation: PAs by Category

Category	Process Areas
Process Management	Organizational Process Focus Organizational Process Definition Organizational Training Organizational Process Performance Organizational Performance Management
Project Management	Project Planning Project Monitoring and Control Supplier Agreement Management Integrated Project Management Risk Management Quantitative Project Management Requirements Management
Engineering	Requirements Development Technical Solution Product Integration Verification Validation
Support	Configuration Management Process and Product Quality Assurance Measurement and Analysis Decision Analysis and Resolution Causal Analysis and Resolution



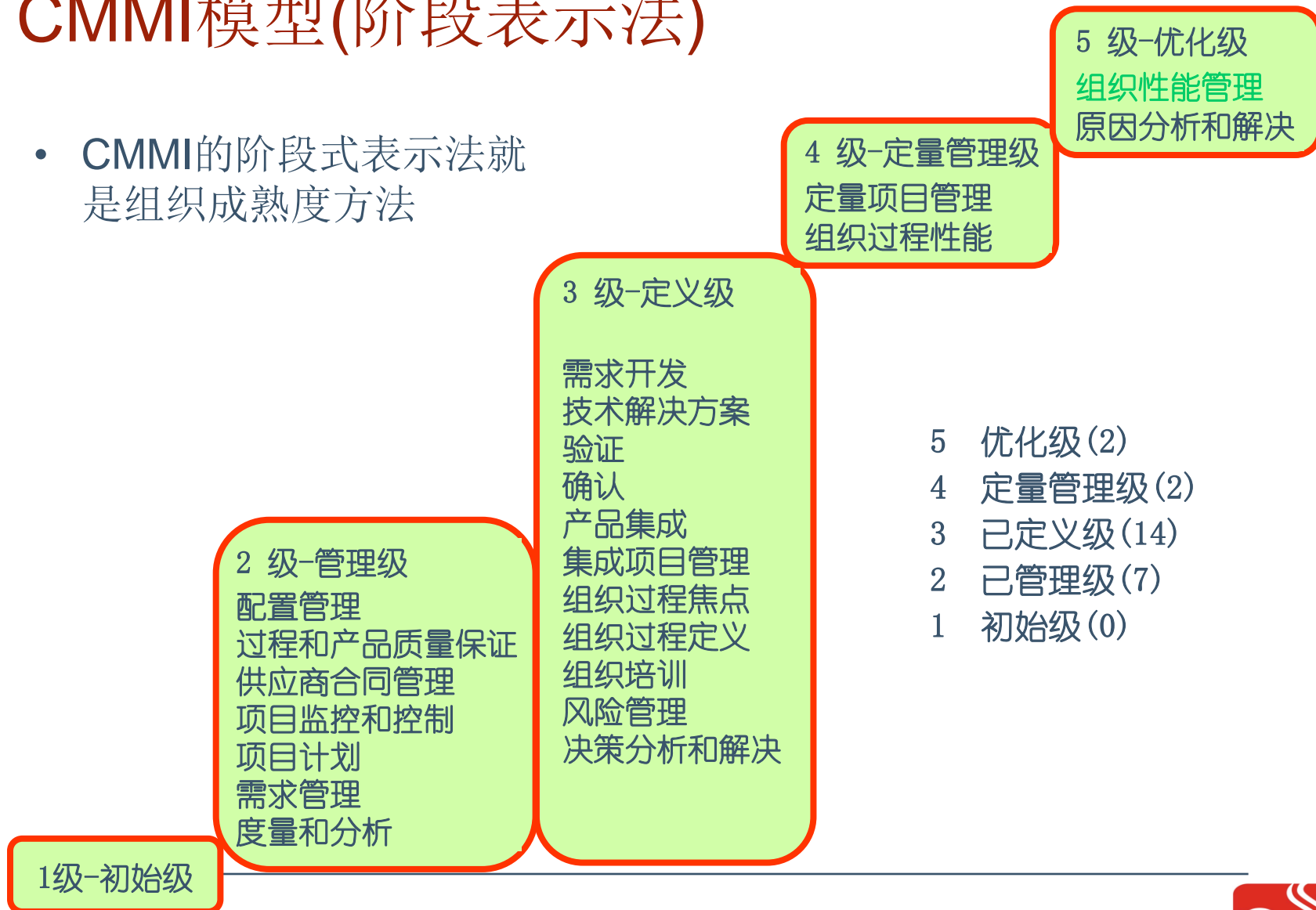
Staged Representation: PAs by Maturity

Level	Focus	Process Areas <i>Including IPPD</i>	
5 Optimizing	<i>Continuous Process Improvement</i>	Organizational Performance Management Causal Analysis and Resolution	
4 Quantitatively Managed	<i>Quantitative Management</i>	Organizational Process Performance Quantitative Project Management	
3 Defined	<i>Process Standardization</i>	Requirements Development Technical Solution Product Integration Verification Validation Organizational Process Focus Organizational Process Definition Organizational Training Integrated Project Management Risk Management Decision Analysis and Resolution	
2 Managed	<i>Basic Project Management</i>	Requirements Management Project Planning Project Monitoring and Control Supplier Agreement Management Measurement and Analysis Process and Product Quality Assurance Configuration Management	
1 Initial			Risk Rework



CMMI模型(阶段表示法)

- CMMI的阶段式表示法就是组织成熟度方法



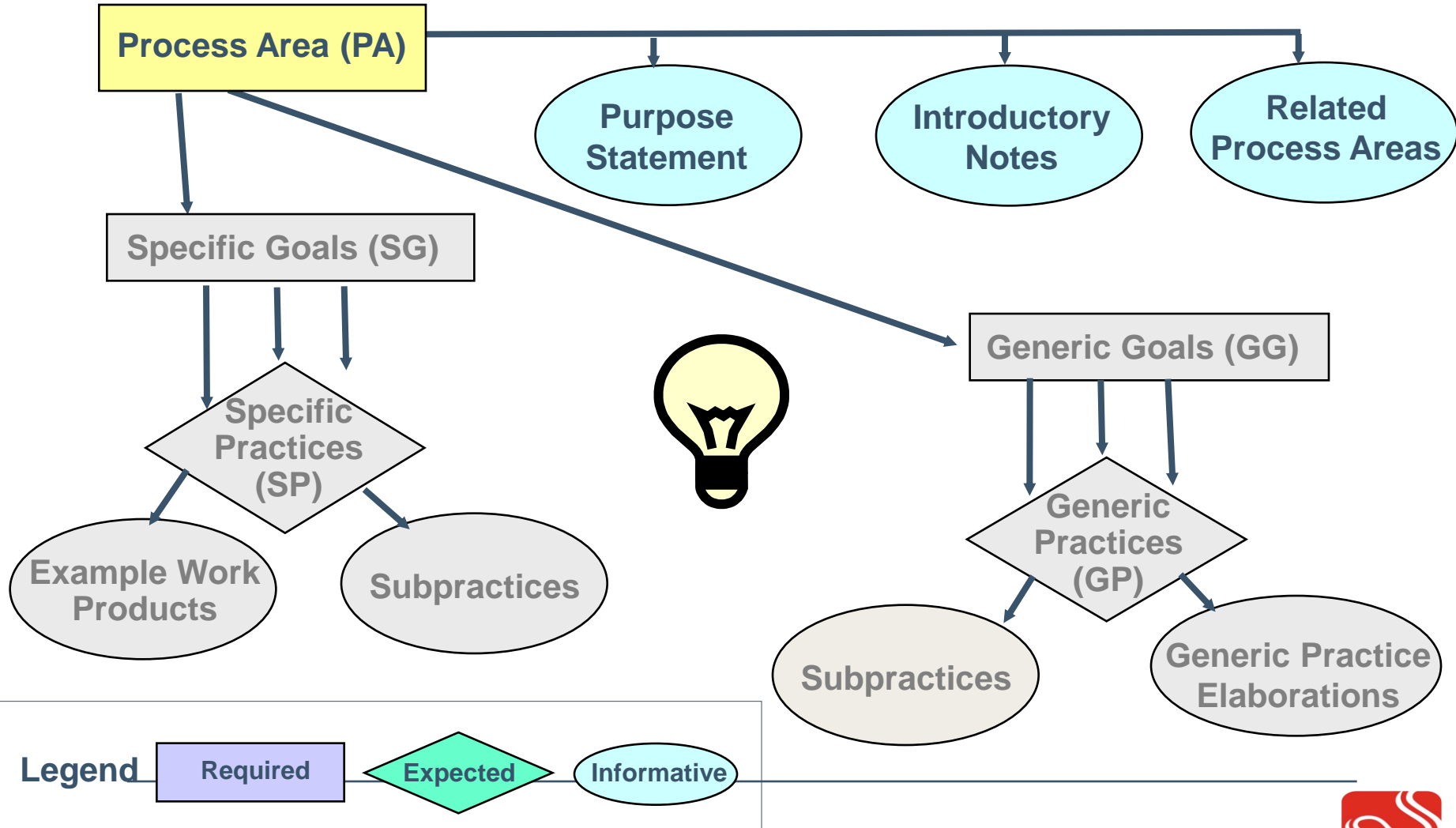


CMMI模型(持续表示法)

级别\分类	Engineering (6)	Project Management (6)	Process Management(5)	Support(5)
2级 受管理级 Managed (7)		PP(项目计划) PMC(项目监控) SAM(分包合同管理) REQM (需求管理)		CM(配置管理) PPQA (过程和产品质量保证) MA(度量与分析)
3级 已定义级 Defined (11)	RD(需求开发) TS(技术解决) PI (产品集成) VER(验证) VAL(确认)	IPM(集成项目管理) RSKM(风险管理)	OPD(过程定义) OPF(过程聚焦) OT(培训)	DAR (决策分析与解决方案)
4级 定量管理级 Quantitatively Managed (2)		QPM(定量项目管理)	OPP(组织过程性能)	
5级 持续优化级 Optimizing (2)			OPM(组织性能管理)	CAR (因果分析和解决方案)



Process Area Components -1





CMMI-DEV V1.3

GG&GP



Generic Goals and Institutionalization

- The degree of institutionalization is embodied in the generic goals and expressed in the names of the processes associated with each goal as indicated in the table below:

<u>Generic Goal & Title</u>	<u>Progression of Processes</u>
• GG1: Achieve Specific Goals Process	Performed
• GG2: Institutionalize a Managed Process *	Managed
• GG3: Institutionalize a Defined Process *	Defined Process

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- * These are the only generic goals used in the staged representation.
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GG1: Performed Process

- GG 1: Achieve Specific Goals

The specific goals of the process area are supported by the process by transforming identifiable input work products into identifiable output work products.

- A **performed process** accomplishes the work necessary to satisfy the specific goals of a process area.
- All specific goals of the process area are satisfied.
- Essential activities are performed and the work is accomplished.
- The definition, planning, monitoring, and controlling of the process may be incomplete.
- The process may be unstable and inconsistently implemented.



GG1 Generic Practices

- GP 1.1: Perform Specific Practices
- Perform the specific practices of the process area to develop work products and provide services to achieve the specific goals of the process area.



GG 2: Institutionalize a Managed Process

制度化已管理的过程



GG 2 Generic Practices 制度化通用实践

- GP 2.1: 建立组织级方针
- GP 2.2: 计划过程
- GP 2.3: 提供资源
- GP 2.4: 分配职责
- GP 2.5: 培训人员
- GP 2.6: 管理配置
- GP 2.7: 识别并使相关干系人参与
- GP 2.8: 监督和控制过程
- GP 2.9: 客观地评价符合性
- GP 2.10: 和高层管理者评审状态



ML 2
CL 2



通用实践-能力水平 (CMMI L2)

- CMMI L2 过程的制度化是通过以下工作来实现的
- 遵循组织的方针；
执行形成文件的计划和过程描述；
运用足够的适当资源（包括资金、人员和工具）；
维持所分派的适当的责任和权限；
对执行和支持该过程的人员进行培训；
对工作产品进行适当的配置管理；
监督和控制该过程的性能并采取相应的纠正措施；
客观地审查该过程、其工作产品和服务，处理不符合问题；
出适当的管理层审查该过程的活动、状态和结果，并采取相应的纠正措施；
确定相关的共利益者并与之合作。



通用实践-能力水平 (CMMI L2)

GP 2.1 – 建立组织级方针 Establish an Organizational Policy

- Establish and maintain an organizational policy for planning and performing the x process.
- <x> represents the name of a process area (e.g., Requirements Management)
- 方针是公司总体管理的指导纲要，定了公司对过程的期望；应当随着组织的业务范围、成熟等级、商业目标等的变化而进行更新维护



通用实践-能力水平 (CMMI L2)

GP 2.2 – 计划过程 Plan the Process

- Establish and maintain the plan for performing the x process.
- 建立和维护执行过程的计划
- 建立和维护计划过程的描述
- 和相关干系人对计划达成一致



通用实践-能力水平 (CMMI L2)

GP 2.3 – 提供资源 Provide Resources

- Provide adequate resources for performing the <x> process, developing the work products, and providing the services of the process.
- 为执行计划的过程、开发工作产品及提供过程服务提供所需的足够的资源

所需资源包括

- 足够的资金
- 适宜的物理设施
- 具备技能的人员或培训，辅导和指导，以帮助现有工作团队获得所需的知识和技能
- 适宜的工具



通用实践-能力水平 (CMMI L2)

GP 2.4 – 分配职责 Assign Responsibility

- Assign responsibility and authority for performing the process, developing the work products, and providing the services of the <x> process.
- 分配职责和权限，以执行过程，开发工作产品，并提供过程服务
- 确保在过程的生命周期内，有人负责执行计划的过程并获得规定的结果



通用实践-能力水平 (CMMI L2)

GP 2.5 – 培训人员 Train People

- Train the people performing or supporting the <x> process as needed.
- 需要时，对执行或支持计划过程的人员进行培训
- 培训的目的是为了使执行过程的人具备过程需要的知识和技能



通用实践-能力水平 (CMMI L2)

GP 2.6 – 管理配置 Manage Configurations

- Place designated work products of the <x> process under appropriate levels of control.
- 将指定的过程工作产品纳入适当级别的配置管理
- 三个基本的配置管级别：
 - 1.基线管理：最严格的控制级别，严格的变更控制
 - 2.版本管理：次严格的控制级别，变更控制严格程度降低
 - 3.存档：不要求版本控制，相当于文档管理



通用实践-能力水平 (CMMI L2)

GP 2.7 – 识别并使相关干系人参与 Identify and Involve Relevant Stakeholders

- Identify and involve the relevant stakeholders of the <x> process as planned.
- 按计划识别相关干系人并使相关干系人参与

列举项目干系人,明确干系人在什么活动中做什么事情

项目组内部人员

职能领导

客户

测试组

质量保证组

市场人员

供应商

EPG

...



通用实践-能力水平 (CMMI L2)

GP 2.8 – 监督和控制过程 Monitor and Control the Process

- Monitor and control the <x> process against the plan for performing the process and take appropriate corrective action.
- 根据计划监督和控制过程并采取适当的纠正措施
- 本实践的目的在于实施对过程执行情况直接的日常监督和控制
 - 根据计划搜集和分析实际绩效测量数据，并与计划比较
 - 根据计划的过程评审已实施过程的完成情况和结果
 - 与负责过程的管理层评审过程的活动、状态和结果
 - 识别和评价与计划的过程出现显著偏差的影响
 - 识别出计划和实施过程中的问题
 - 当不能满足需求和目标时，或当识别出问题时，或实际进度与计划出现显著偏差时，采取纠正措施
 - 跟踪纠正措施直至关闭



通用实践-能力水平 (CMMI L2)

GP 2.9 – 客观地评价符合性 Objectively Evaluate Adherence

- Objectively evaluate adherence of the (X)process and selected work products against the process description, standards, and procedures, and address noncompliance.
- 客观地评价过程、工作产品和过程服务与适用要求、规范和标准的符合性，并识别出不符合项

目的是提供可靠的保证：

- 过程按照计划得到实施
- 计划的过程符合相关方针、规范、标准
- 实施的过程符合计划的过程
- 过程的产出负责相关的标准、要求

由不直接负责管理或实施过程活动的人员完成符合性评价



通用实践-能力水平 (CMMI L2)

GP 2.10 – 和高层管理者评审过程状态 Review Status with Higher Level Management

- Review the activities, status, and results of the <x> process with higher level management and resolve issues
- 与高层管理者评审过程的活动、状态和结果，并解决有关事宜

本实践的目的在于向高层管理者提供对过程的理解

高层管理者监督评审过程执行：

- 项目正遵循哪些过程
- 这些过程是否充分
- 这些过程是否有效
- 遵循这些过程是否能达到预期的目标



GG 3: Institutionalize a Defined Process

制度化一个已定义的过程



Institutionalize a Defined Process制度 化定义过程的通用实践

GP 3.1: 建立已定义过程
GP 3.2: 收集经验教训

ML 3
CL 3



通用实践-能力水平 (CMMI L3)

CMMI L3过程的制度化是通过以下工作来实现的：

- 满足使受管理过程（第2级上的过程）制度化的各项要求；
- 建立已定义过程的描述；
- 根据已定义过程的描述制订计划；
- 按照所策划的已定义过程执行该过程；
- 收集从策划及执行过程所获的相关经验，以支持将来使用和
改进组织过程财富



通用实践-能力水平 (CMMI L3)

GP 3.1 – 建立已定义过程 Establish a Defined Process

- Establish and maintain the description of a defined <x> process.
- 建立和维护已定义过程的描述

本实践的目的在于建立由组织标准过程裁剪得到的过程的描述，以满足特定的需求

- 组织内如何实施过程的差异减少，且过程资产、数据和学习能够有效的共享



过程描述要素

过程目标

- 定义本过程的目标与期望

过程角色(Process roles)

- 哪些角色参与本过程的哪些活动，可以用角色-职责矩阵表示

输入(Inputs)

- 哪些文档是该过程或活动的输入

入口准则(Entry criteria)

活动 (activities)

输出(Outputs)

- 输出那些文档，要注意这些输出是否覆盖了模型的要求

出口准则(Exit criteria)

- 定义了过程或活动应达到什么要求才算结束

需要的资源 (resource)

- 定义了执行过程活动需要软硬件资源

需要的知识与技能 (knowledge and technique)

- 定义了执行过程活动需要具备的知识和技能

需要的配置管理 (configuration)

- 定义需要纳入配置管理的工作产品

监督和控制 (Monitor)

- 定义了如何监控过程的执行，说明本过程需要的过程和产品度量

验证

- 定义了PPQA如何审计过程、高层经理如何审查过程

裁剪(tailor)

说明本过程可裁剪的过程和工作产品



通用实践-能力水平 (CMMI L3)

GP 3.2 – 收集改进信息 Collect Process Related experiences

- Collect process related experiences derived from planning and performing the process to support the future use and improvement of the organization's processes and process assets.
- 收集由计划和实施过程得到的经验教训，以支持今后组织过程和过程资产的使用和改进
- 该实践的目的在于收集过程相关经验，包括计划和执行过程时所获得的信息和产品



Summarizing Generic Goals and Practices

Capability Level Generic Goals

Generic Practices

ML 3 ML 4 ML 5	ML 2	CL 1	GG1: Achieve Specific Goals	GP 1.1: Perform Specific Practices
		CL 2	GG2: Institutionalize a Managed Process	GP 2.1: Establish an Organizational Policy GP 2.2: Plan the Process GP 2.3: Provide Resources GP 2.4: Assign Responsibility GP 2.5: Train People GP 2.6: Manage Configurations GP 2.7: Identify and Involve Relevant Stakeholders GP 2.8: Monitor and Control the Process GP 2.9: Objectively Evaluate Adherence GP 2.10: Review Status with Higher Level Management
		CL3	GG3: Institutionalize a Defined Process	GP 3.1: Establish a Defined Process GP 3.2: Collect process related experiences
		CL4		
		CL5		



Achieving Capability Levels (CLs) for a Process Area

**GP1.1 through GP3.2
All SPs**

**CL3
Defined**

tailored from the organization's set of standard processes according to the organization's tailoring guidelines; has a maintained process description; and contributes process related experiences to the organizational process assets.

**GP1.1 through GP2.10
All SPs**

**CL2
Managed**

Adhere to policy; follow documented plans and processes, apply adequate resources; assign responsibility and authority; train people, apply configuration management, monitor, control, and evaluate process; identify and involve stakeholders; review with management

**GP1.1
All SPs**

**CL1
Performed**

Perform the work

**A few GPs or SPs may be
implemented**

CL0

Not performed, incomplete



Requirements Management (REQM) - Capability Levels 1 & 2

Specific practices

- SP1.1: Obtain an Understanding of Requirements
- SP1.2: Obtain Commitment to Requirements
- SP1.3: Manage Requirements Changes
- SP1.4: Maintain Bidirectional Traceability of Requirements
- SP1.5: Ensure Alignment Between Project Work and Requirements

Specific practices

- SP1.1: Obtain an Understanding of Requirements
- SP1.2: Obtain Commitment to Requirements
- SP1.3: Manage Requirements Changes
- SP1.4: Maintain Bidirectional Traceability of Requirements
- SP1.5: Ensure Alignment Between Project Work and Requirements

Generic practices (CL1)

- GP1.1: Perform Specific Practices

Generic practices (CL2)

- GP1.1: Perform Specific Practices
- GP2.1: Establish an Organizational Policy
- GP2.2: Plan the Process
- GP2.3: Provide Resources
- GP2.4: Assign Responsibility
- GP2.5: Train People
- GP2.6: Manage Configurations
- GP2.7: Identify and Involve Relevant Stakeholders
- GP2.8: Monitor and Control the Process
- GP2.9: Objectively Evaluate Adherence
- GP2.10: Review Status with Higher Level Management



REQM - Capability Level 3

Specific practices

- SP1.1: Obtain an Understanding of Requirements
- SP1.2: Obtain Commitment to Requirements
- SP1.3: Manage Requirements Changes
- SP1.4: Maintain Bidirectional Traceability of Requirements
- SP1.5: Ensure Alignment Between Project Work and Requirements

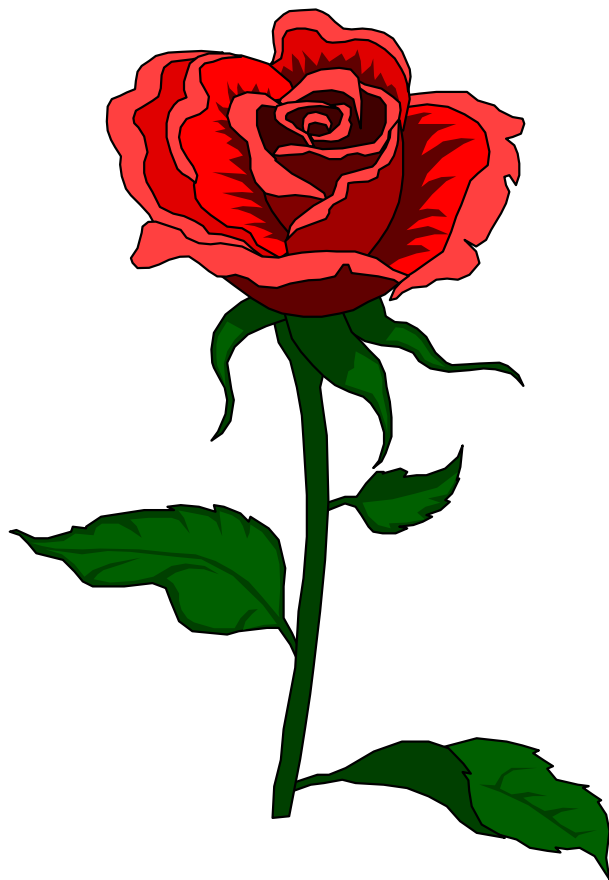
Generic practices (CL3)

- GP1.1: Perform Specific Practices
- GP2.1: Establish an Organizational Policy
- GP2.2: Plan the Process
- GP2.3: Provide Resources
- GP2.4: Assign Responsibility
- GP2.5: Train People
- GP2.6: Manage Configurations
- GP2.7: Identify and Involve Relevant Stakeholders
- GP2.8: Monitor and Control the Process
- GP2.9: Objectively Evaluate Adherence
- GP2.10: Review Status w/Higher Level Management
- GP3.1: Establish a Defined Process
- GP3.2: Collect Process Related experiences



问题与回答





谢谢



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