CMMI® for Services (CMMI®-SVC) Process Areas

SES CMMI® Training Series
August27, 2009

Dial - 1-877-760-2042
Pass code - 147272

Software Engineering SERVICES

Agenda

- Project Success with the CMMI®
- Success Through Process
- The Generic Goals
- How Process Management Supports the Project
- The Service Establishment & Delivery Processes
- The Support Processes
- Other Processes

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Course Objectives

Train SES personnel to:

- *Understand the role of CMMI® in projects.*
- *Understand how institutionalization affects projects.*
- *Learn the application of service establishment/ delivery and support processes on projects.*

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→ Project Success with the CMMI®

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Why Choose the Model?

- Flexible – Processes are defined according to business goals, product characteristics
- Modular – divided into process areas and levels
- Scaleable –the model can be used for projects of different sizes
- Comprehensive - integrates management and engineering issues
- Road Map – may use the staged model or the continuous model

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Success Through Process

Projects are more likely to succeed with standardized processes and documentation in place

- Much more common now for projects to integrate components from multiple sources, develop final product or service
- Processes weave together the people, procedures, and tools
- Best practice processes perform the weaving more effectively and efficiently

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Success Through Process

Capability Maturity Model Integration-Services (CMMI-SVC) V1.2 Process Areas (PA)

LEVEL 2	Requirements Management	REQM
	Project Planning	PP
	Project Monitoring and Control	PMC
	Supplier Agreement Management	SAM
	Measurement and Analysis	MA
	Process and Product Quality Assurance	PPQA
	Configuration Management	CM
	Service Delivery	SD
LEVEL 3	Capacity and Availability Management	CAM
	Service Continuity	SC
	Incident Resolution and Prevention	IRP
	Service System Transition	SST
	Strategic Service Management	SSM
	Service System Development	SSD
	Organizational Process Focus	OPF
	Organizational Process Definition +IPPD	OPD
	Organizational Training	OT
	Integrated Project Management +IPPD	IPM
	Risk Management	RSKM
	Decision Analysis and Resolution	DAR

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The Generic Goals

- ‘Generic’ means the goal applies to more than one process area
- Generic goals describe how an organization institutionalizes each process area
- Therefore our projects must achieve each of the generic goals for every process area

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The Generic Goals

- GG2: Institutionalize a managed process
  - GP 2.1: Establish and maintain organizational policy
  - GP 2.2: Establish and maintain the plan to perform the process
  - GP 2.3: Provide adequate resources
  - GP 2.4: Assign responsibility
  - GP 2.5: Train people
  - GP 2.6: Manage configurations
  - GP 2.7: Identify and involve stakeholders
  - GP 2.8: Monitor and control the process
  - GP 2.9: Objectively evaluate adherence
  - GP 2.10: Review status with higher management

Those in blue font relate directly to service staff.

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The Generic Goals

- GG3: Institutionalize a defined process
  - GP 3.1: Establish a defined process
  - GP 3.2: Collect improvement information

Those in blue font relate directly to service staff.

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How Process Management Supports the Project

- EMO sets policy, directs process management activities
- PMG maintains process management processes
- Process management process areas (OPF, OPD, OT) maintained by PMG
- Process management processes help service projects by:
  - Training project staff in the CMMI®
  - Identifying strengths & weaknesses in process implementation (assessment, audit)
  - Maintaining and improving the set of standard SES processes
  - Assist projects in deploying SES processes including tailoring
  - Assist projects in updating and maintaining SES processes throughout the project life cycle

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Session Overview

Demand for process improvement in services is likely to grow. Services constitute more than 80% of the US and global economy.

What is CMMI-Services all about and what services can it be applied to?

This presentation provides some information on the content of the CMMI-SVC model, why it came about, and how it can help your services organization.

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What is the CMMI® for Services (CMMI-SVC)?

CMMI-DEV was released by SEI in Feb 2009 and extended coverage of the CMMI Product Suite to the establishment, management, and delivery of services

Like every CMMI model, CMMI-SVC

- Is a process improvement approach providing essential elements of effective processes (PAs)
- Can be used to guide improvement across a team, project, division, or entire organization
- Helps set PI goals and priorities, provides guidance for quality processes, and provides a point of reference for appraising current processes

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Why was the CMMI-SVC needed?

Service providers needed a benchmark for process improvement that was appropriate for their work and based on a proven approach

- Demand for PI in services is growing. Services constitute more than 80% of the US and global economy.
- Services constitute more than 54% of what DoD acquires. GAO reports DoD service contracts increased 72% between 1996 and 2005.
- Other service models existed, but didn't cover what CMMI-SVC covers. Organizations were piecing together their own ITIL + CMMI solutions, reinventing the wheel over and over -- that wheel was not designed for services other than IT.
- Customers requested their service providers demonstrate a CMMI rating, but attempts to use CMMI-DEV in a service setting often distorted the integrity or meaningfulness of the appraisal results.
- SEI had numerous requests for help with services.

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What types of services does CMMI-SVC cover?

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How do services differ from other products?

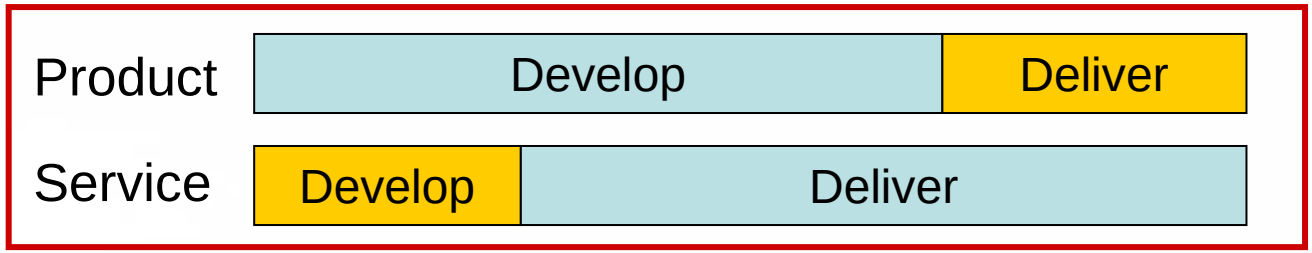
A service is an intangible, non-storable product (e.g., operations, maintenance, and logistics).

Services imply on-going relationships governed by service agreements.

Services are delivered through the operation of a service system.

Services are simultaneously produced and consumed.

Services have a different business rhythm.



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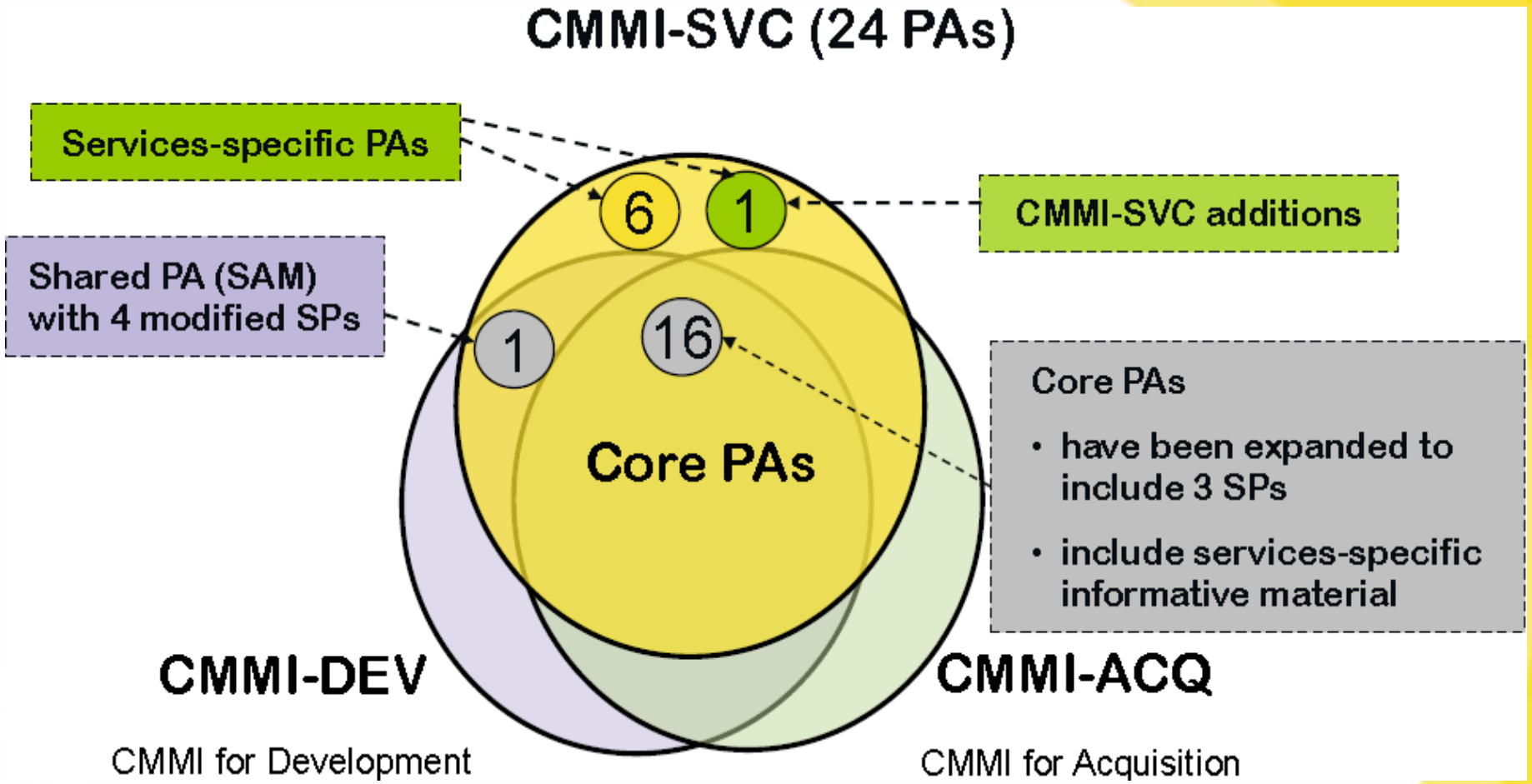
CMMI-SVC Content (vs. other CMMI constellations)



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CMMI-SVC Content (in words)

CMMI-SVC consists of 16 core PAs, one shared PA, and 7 service-specific PAs, 1 of which is an addition.

Core PAs in CMMI-SVC include the following changes:

- Services-specific informative material
- Added expected material (3 specific practices)
  - One SP for Project Strategy in the PP process area
  - Two SPs (one in OPD and one in IPM) for Integrated Teams (previously covered in the IPPD addition to CMMI-DEV)
- The Requirements Management PA was moved to the Project Management process area category

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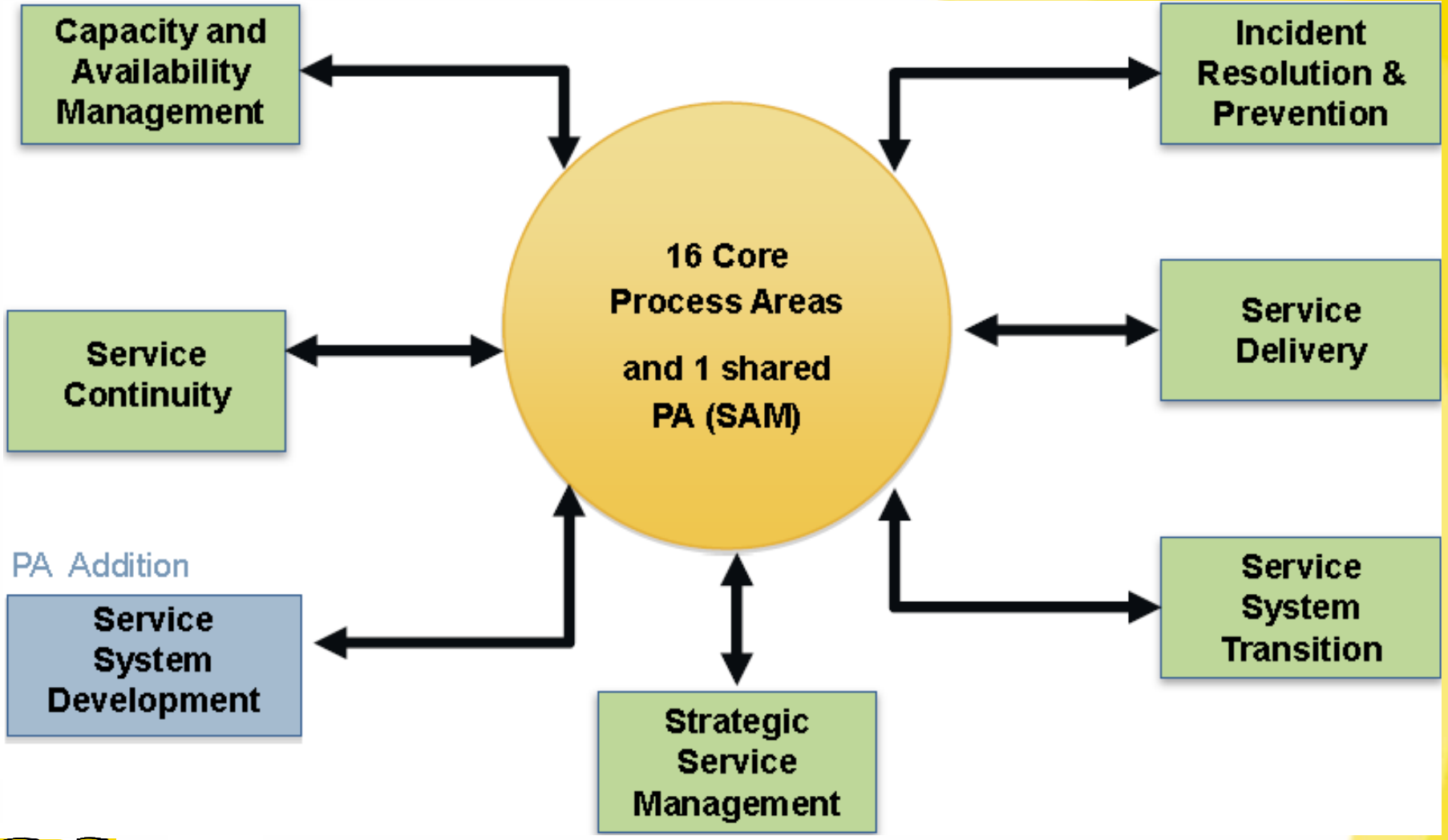
CMMI-SVC Content (graphical)



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CMMI-SVC Content (services-specific process areas)

Strategic Service Management (STSM) – ML 3:

Deciding what services you should be providing, making them standard, and letting people know about them

Service System Development (SSD) – ML 3: (Addition)

Making sure you have everything needed to deliver the service, including people, processes, consumables, and equipment

Service System Transition (SST) – ML 3:

Getting new systems in place, changing existing systems, retiring obsolete systems, while making sure service delivery doesn't suffer

Service Delivery (SD) – ML 2:

Setting up agreements, taking care of service requests, and operating the service system

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CMMI-SVC Content (services-specific process areas)

Capacity and Availability Management (CAM) – ML 3:

Making sure you have the resources you need to deliver services and that they are available when needed—at appropriate cost

Incident Resolution and Prevention (IRP) – ML 3:

Handling what goes wrong—and preventing it from going wrong again or in the first place if you can

Service Continuity Management (SCON) – ML 3:

Being ready to recover from a disaster and get back to delivering your service

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Strategic Service Management (STSM)

Purpose: ***To establish and maintain standard services in concert with strategic needs and plans.***

Goals	Specific Practices	Typical Artifacts
SG 1: Establish and Maintain Strategic Needs and Plans for Standard Services	1.1 Gather and Analyze Relevant Data. 1.2 Establish and Maintain Plans for Standard Services.	Analyzed data on organization's capabilities and strategic needs Plans for standard services
SG 2: Establish and Maintain Standard Services	2.1 Establish and Maintain Properties of Standard Services and Service Levels. 2.2 Establish Descriptions of Std. Services.	Set of standard service levels, grouping of services into service lines Description of services, services catalog or menu

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Service System Development (SSD)

Purpose: ***To analyze, design, develop, integrate, verify, and validate service systems, including service system components, to satisfy existing or anticipated service agreements.*** {{OPTIONAL}}

Goals	Specific Practices	Typical Artifacts
SG 1: Develop and Analyze Stakeholder Reqmts	1.1 Develop Stakeholder Requirements. 1.2 Develop Service System Requirements. 1.3 Analyze and Validate Requirements.	Customer/end-user reqmts Service system requirements Record of analysis methods and results
SG 2: Develop Service Systems	2.1 Select Service System Solutions. 2.2 Develop the Design. 2.3 Ensure Interface Compatibility. 2.4 Implement the Service System Design. 2.5 Integrate Service System Components.	Documented solutions, evaluations, and rationale Service system architecture Updated I/F description Implemented components, training materials, ops manual Integrated service system
SG 3: Analyze and Validate Requirements	2.6 Prepare for Verification and Validation. 2.7 Perform Peer Reviews. 2.8 Verify Selected Svc System Components. 2.9 Validate the Service System.	Ver & Val methods/procedures Peer review results Verification results Validation results

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Service System Transition (SST)

Purpose: ***To deploy new or significantly changed service system components while managing their effect on ongoing service delivery.***

Goals	Specific Practices	Typical Artifacts
SG 1: Prepare for Service System Transition	1.1: Analyze Service System Transition Needs.	Analysis of current and post-transition service systems
	1.2: Develop Service System Transition Plans.	Plans for service system transition
	1.3: Prepare Stakeholders for Changes.	Transition notification and training strategies
SG 2: Deploy the Service System	2.1: Deploy Service System Components.	Installation/deployment records
	2.2: Assess & Control the Impacts of the Transition.	Post deployment review/ assessment

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Service Delivery (SD)

Purpose: ***To deliver services in accordance with service agreements.***

Goals	Specific Practices	Typical Artifacts
SG 1: Establish and Maintain Service Agreements	1.1 Analyze Existing Agreements and Service Data	Customer description of service needs; Results of customer satisfaction surveys
	1.2 Establish and Maintain the Service Agreement	Service Agreement
SG 2: Prepare for Service Delivery	2.1 Establish and Maintain the Svc Delivery Approach	Service delivery approach
	2.2 Prepare for Service System Ops	Validation reports
	2.3 Establish and Maintain a Request Mgmt. System	Request Mgmt. System
SG 3: Deliver Services IAW Service Agreements	3.1 Receive and Process Svc Requests	End user receipts confirming request fulfillment
	3.2 Operate the Service System	Service logs, list of services delivered
	3.3 Maintain the Service System	Corrective & preventive maintenance change requests

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Capacity and Availability Mgmt. (CAM)

Purpose: ***Ensure effective service system performance and ensure that resources are provided and used effectively to support service requirements.***

Goals	Specific Practices	Typical Artifacts
SG 1: Prepare for Capacity and Availability Management	1.1 Establish and Maintain a Capacity and Availability Mgmt Strategy 1.2 Select Measures and Analytic Techniques 1.3 Establish and Maintain Service System Representations	Capacity & availability management strategy Definitions of cap and avail measures and analyses methods Representations of resource and service use and service levels
SG 2: Monitor and Analyze Capacity and Availability	2.1 Monitor and Analyze Capacity 2.2 Monitor and Analyze Availability 2.3 Report Capacity and Availability Management Data	Service resource use data RAM and alarm data Service system performance reports

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Incident Resolution and Prevention (IRP)

Purpose: ***To ensure timely and effective resolution of service incidents and prevention of service incidents as appropriate.***

Goals	Specific Practices	Typical Artifacts
SG 1: Prepare for Incident Resolution and Prevention	1.1 Establish & Maintain an Approach to Incident Resolution and Prevention. 1.2 Establish & Maintain Incident Mgmt System.	Incident mgmt approach and criteria Incident mgmt system
SG 2: Identify, Control, and Address Incidents	2.1 Identify and Record Incidents. 2.2 Analyze Incident Data. 2.3 Apply Workarounds to Incidents. 2.4 Address Underlying Causes of Selected Incidents. 2.5 Monitor Status of Incidents to Closure. 2.6 Communicate the Status of Incidents.	Incident mgmt (IM) record Incident reports Updated IM record Updated IM record Closed IM records Records of communication with customers/end-users
SG 3: Define Approaches to Address Selected Incidents	3.1 Analyze Selected Incident Data. 3.2 Plan Actions to Address Underlying Causes of Selected Incidents. 3.3 Establish Workarounds for Selected Incidents.	Report of underlying causes Action proposal Workaround description and instructions

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Service Continuity (SCON)

Purpose: ***To establish and maintain plans to ensure continuity of services during and following any significant disruption of normal operations.***

Goals	Specific Practices	Typical Artifacts
SG1: Identify Essential Service Dependencies	1.1 Identify and Prioritize Essential Functions. 1.2 Identify and Prioritize Essential Resources.	Business impact analysis Orders of succession, directory of critical personnel w/contact info
SG 2: Prepare for Service Continuity	2.1 Estab & Maintain Svc Continuity Plans. 2.2 Estab & Maintain Service Cont. Trng. 2.3 Provide and Evaluate Service Continuity Training.	Service continuity plan Service continuity trng material Training records and training evaluations from students
SG 3: Verify and Validate the Service Continuity Plan	3.1 Prepare for the Ver and Val of the Service Continuity Plan. 3.2 Verify and Validate the Service Continuity Plan. 3.3 Analyze Results of Ver and Val.	Verification & Validation plan Verification & Validation results Ver & Val analysis reports and improvement recommendations

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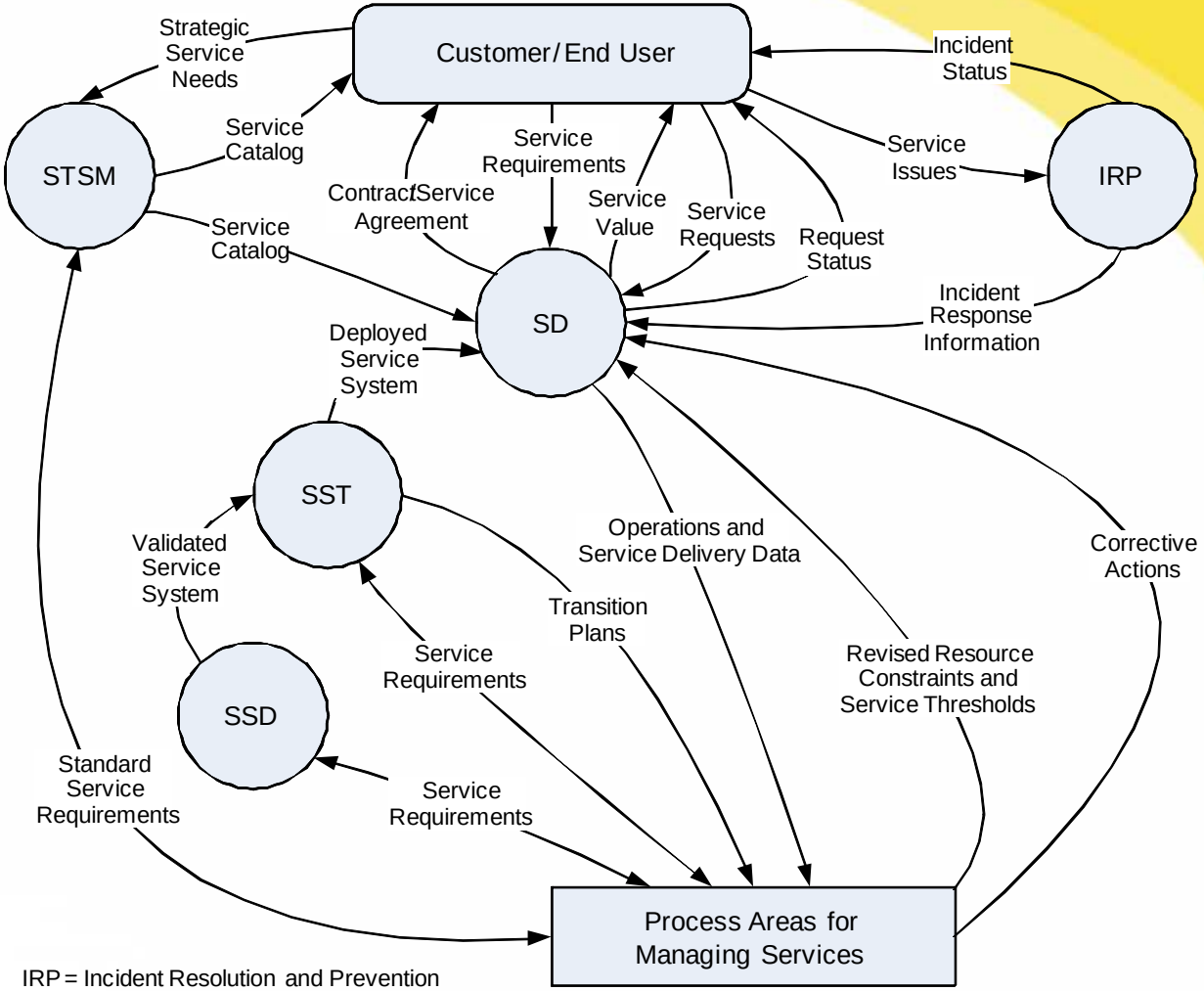
The Service Establishment & Delivery Process Areas



IRP = Incident Resolution and Prevention
SD = Service Delivery
SSD = Service System Development
SST = Service System Transition
STSM = Strategic Service Management

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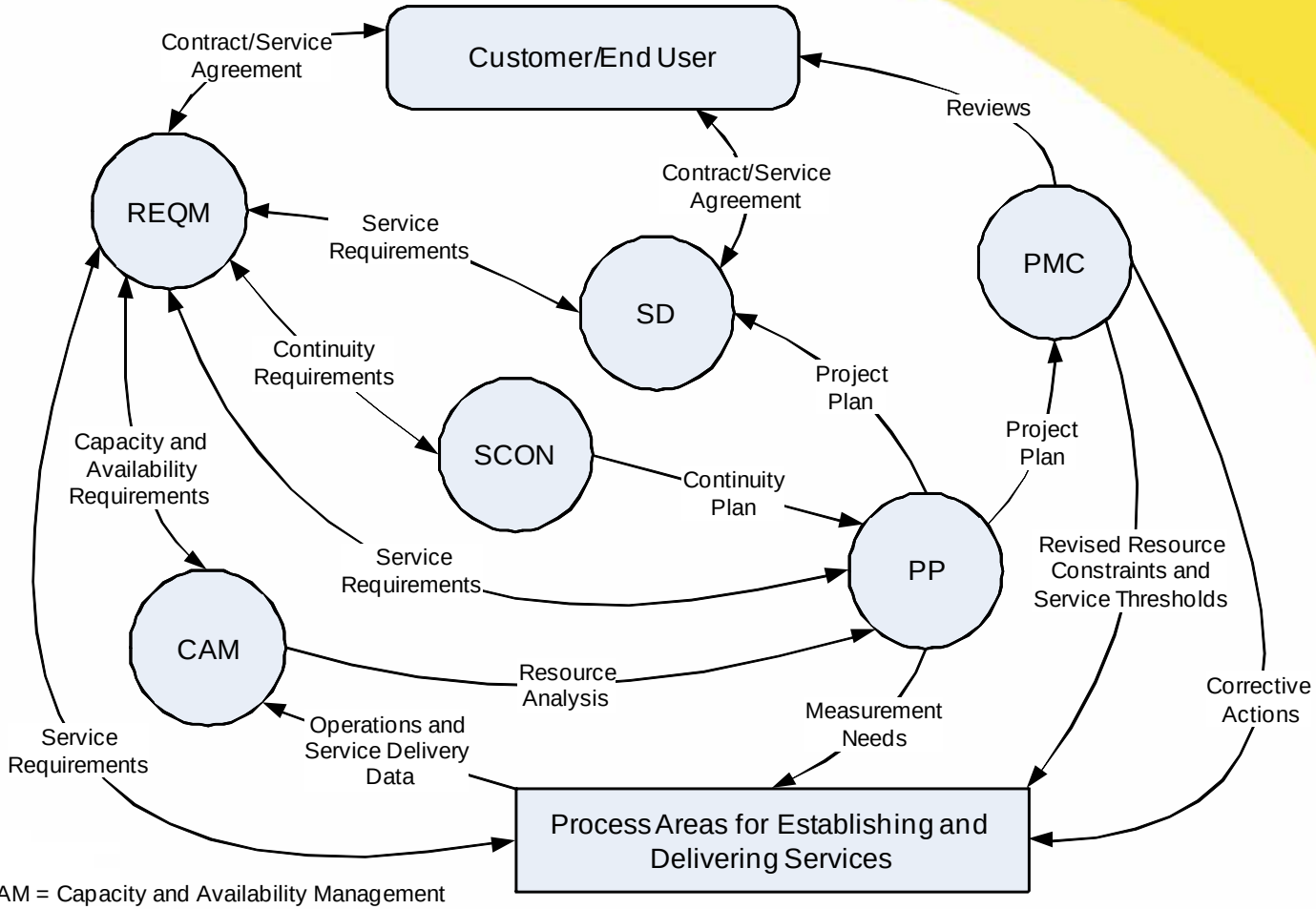
The Service Establishment & Delivery Process Areas



CAM = Capacity and Availability Management
PMC = Project Monitoring and Control
PP = Project Planning
REQM = Requirements Management
SCON = Service Continuity
SD = Service Delivery

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Success Through Process

Capability Maturity Model Integration-Services (CMMI-SVC) V1.2 Process Areas (PA)

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	Organizational Process Definition +IPPD	OPD
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	Integrated Project Management +IPPD	IPM
	Risk Management	RSKM
	Decision Analysis and Resolution	DAR

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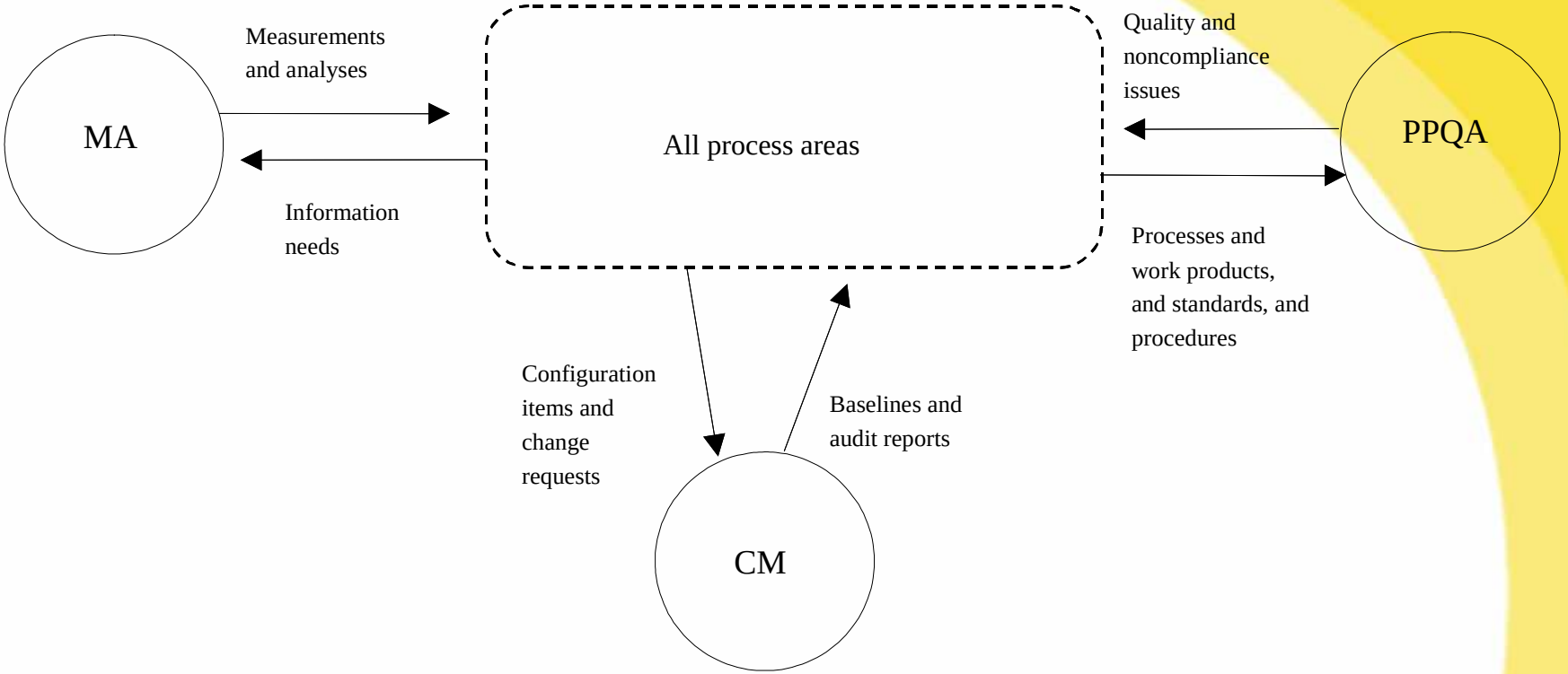
Basic Support Process Areas



MA = Measurement and Analysis
CM = Configuration Management
PPQA = Process and Product Quality Assurance

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Measurement and Analysis

Purpose: ***Develop and sustain a measurement capability that is used to support management information needs.***

Goal	Activities	Artifacts
Align M&A Activities	Establish Objectives. Specify Measures. Specify Data Collection And Storage Procedures. Specify Analysis Procedures.	SES Metric Plan; Possibly in PP also. MDS.
Provide Measurement Results	Collect, Analyze, And Store Data. Store Results Of Data Analysis. Communicate Analysis Results.	PM & QA Reports (can attach MDS) stored in Doc. Locator.

PP = Project Plan
M&A = Measurement and Analysis
MDS = Metric Definition Spreadsheet

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Process and Product Quality Assurance

Purpose: ***Provide staff and management with objective insight into processes and associated work products.***

Goal	Activities	Artifacts
Objectively Evaluate Processes and Work Products	Evaluate Work Product, Services, and Processes.	QA Audit Checklists (suite) QA Audit Reports
Provide Objective Insight	Communicate Non-compliance. Ensure Non-compliance Issues are Resolved. Establish QA Records.	QA Audit Checklists (suite). CAR Log / Defect Log. Audit Schedule.

QA = Quality Assurance.
CAR = Corrective Action Request

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Configuration Management

Purpose: ***Establish and maintain the integrity of work products using configuration identification, configuration control, configuration status accounting, and configuration audits.***

Goal	Activities	Artifacts
Establish Baselines.	Identify Configuration Items. Establish a CM System. Release Baselines.	CM Plan (or CM Section in PP). Project's Populated Doc. Locator Directory. Diagram of Environments (Dev., Test, Prod., Etc.).
Track and Control Changes.	Track Change Requests. Control Configuration Items.	Key Project Documents' PM and Client Signoff and Change History; Document Versions.
Establish Integrity	Establish CM Records. Perform Configuration Audits.	Key Project Documents' PM and Client Signoff and Change History; Document Versions. CM Baseline Audit Report. Functional and Physical Audit Reports.

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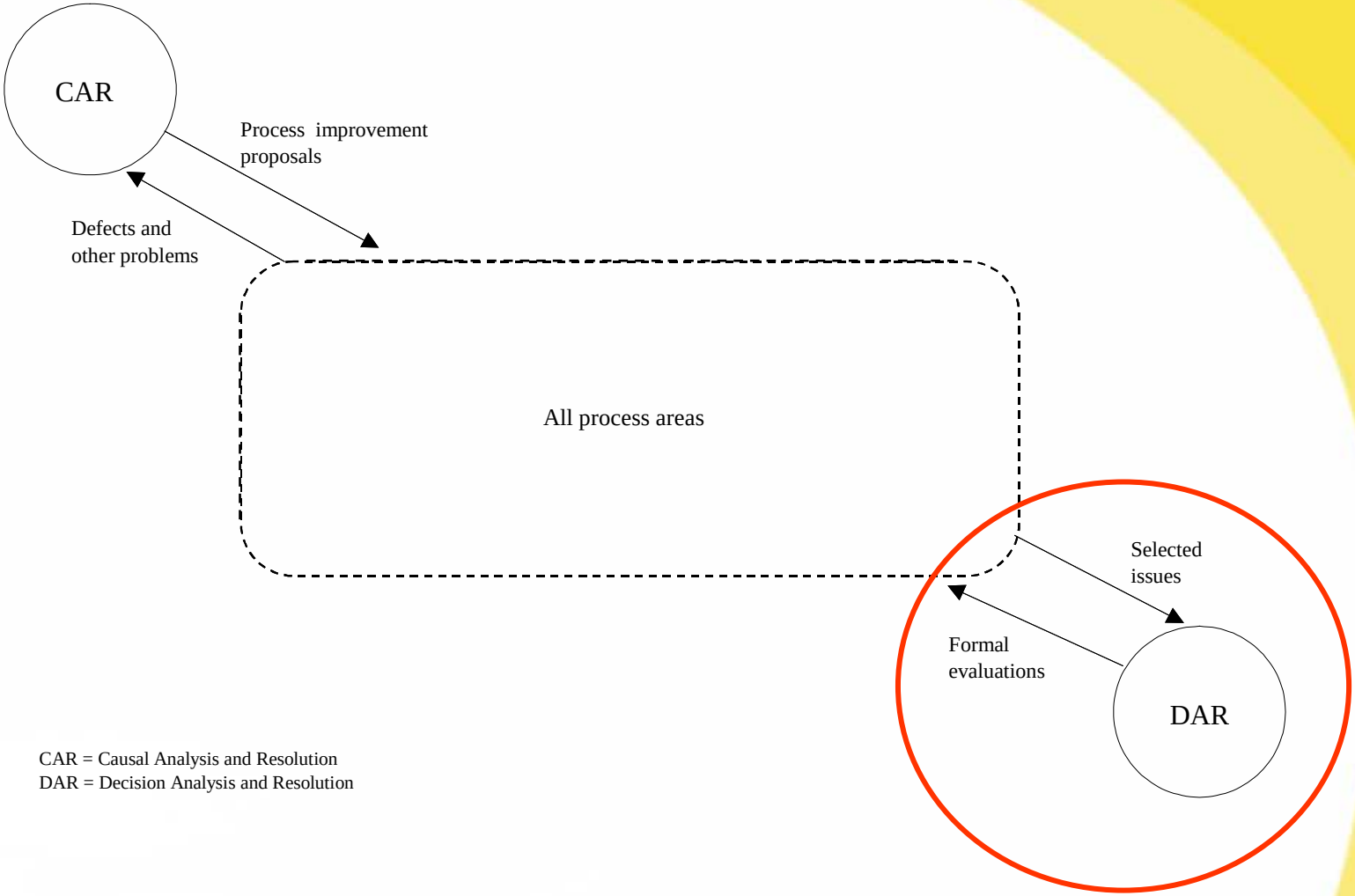
PP = Project Plan
CM = Configuration Management

Advanced Support Process Areas



CAR = Causal Analysis and Resolution
DAR = Decision Analysis and Resolution

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Decision Analysis and Resolution

Purpose: ***To analyze possible decisions using a formal evaluation process that evaluates identified alternatives against established criteria.***

Goal	Activities	Artifacts
Evaluate Alternatives	Establish Guidelines for Decision Analysis. Establish Evaluation Criteria. Identify Alternative Solutions. Select Evaluation Methods. Evaluate Alternatives. Select Solutions.	DAR Process and DAR Report.

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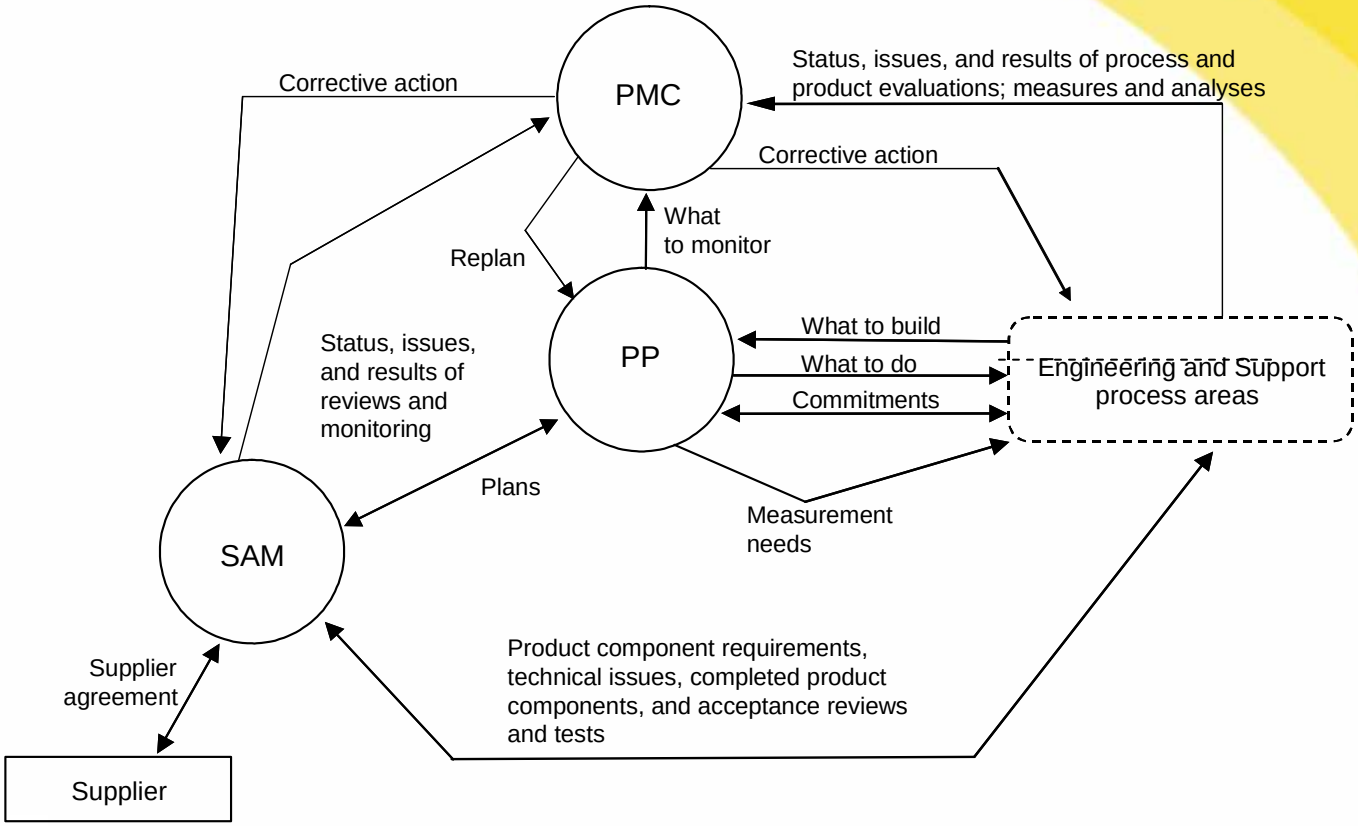
Basic Project Management Process Areas



PMC = Project Monitoring and Control
PP = Project Planning
SAM = Supplier Agreement Management

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Project Planning

Purpose:

To establish and maintain plans that define project activities.

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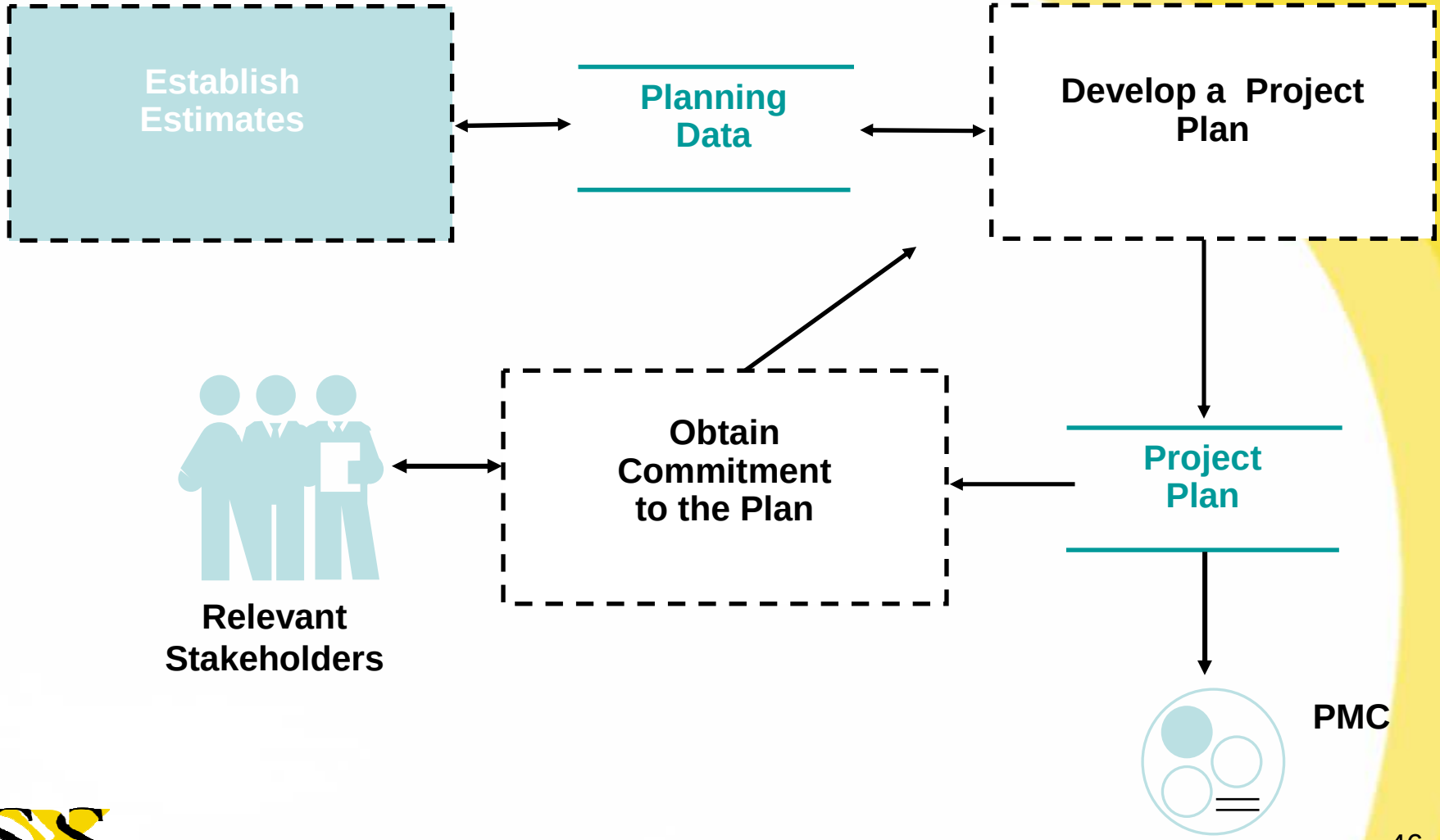
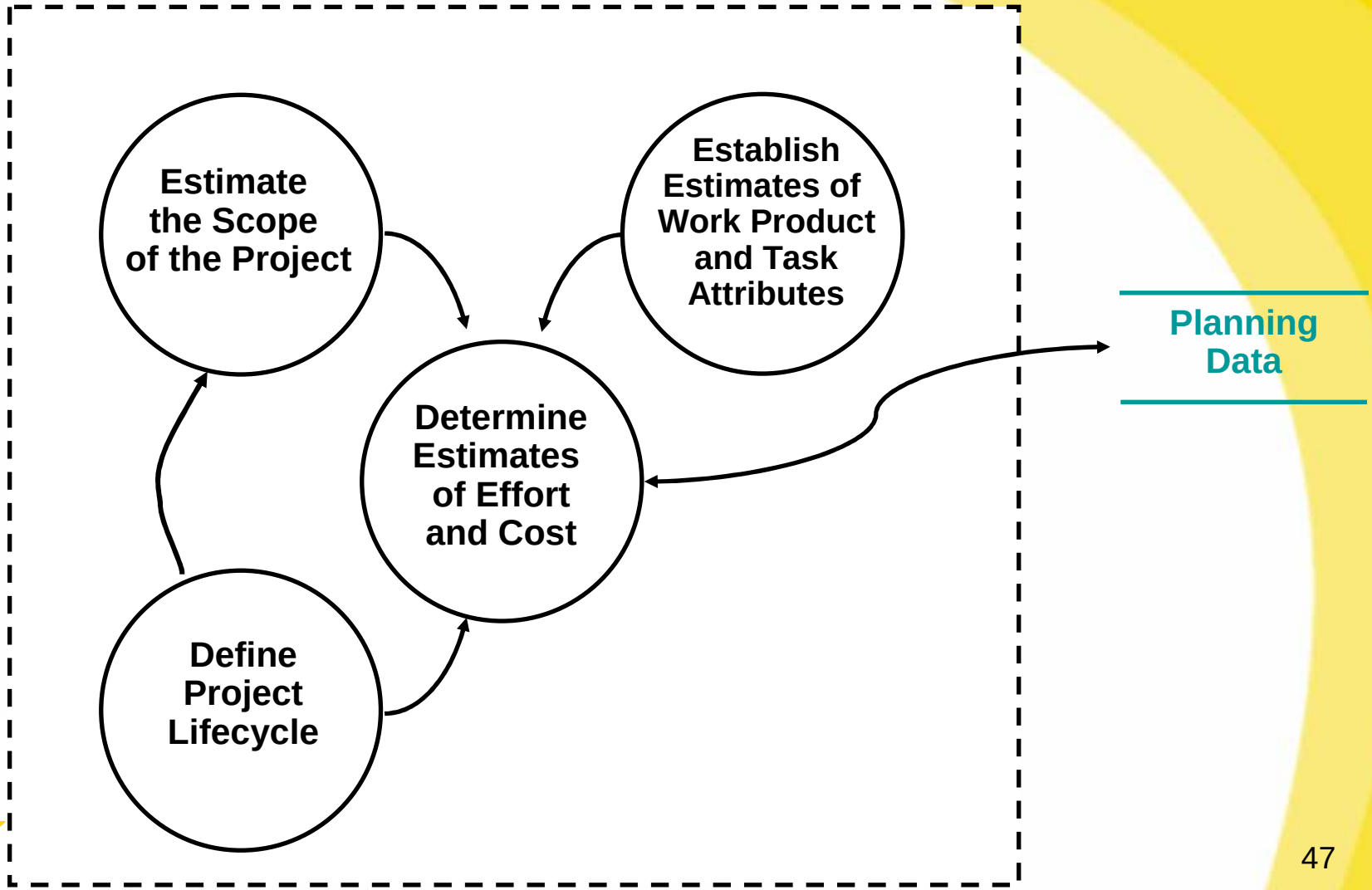
Project Planning



Project Planning

Artifacts: SOW, WBS, Estimating Worksheets, SDLC/PDLC Document



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Project Monitoring and Control

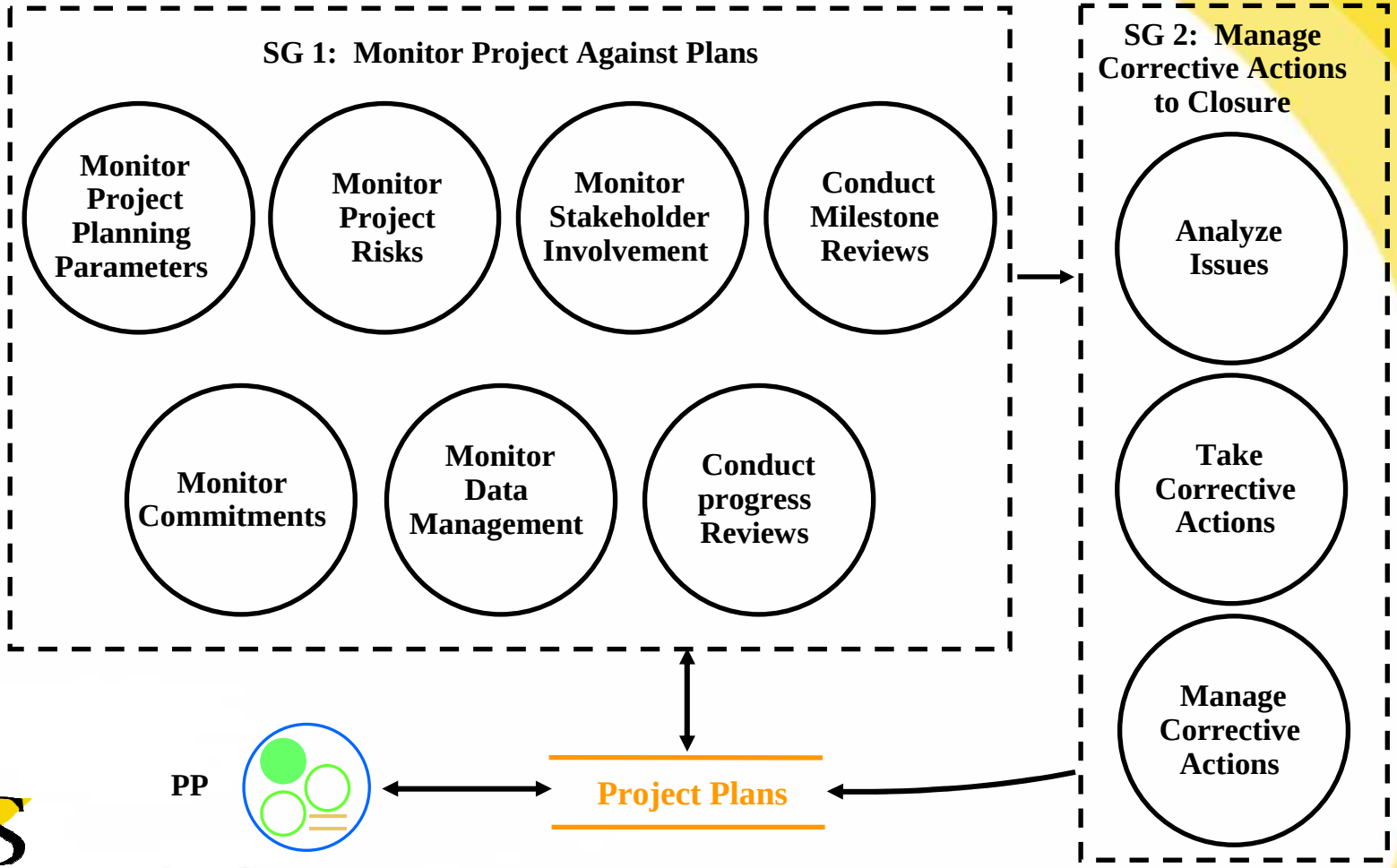
Purpose:

Provide understanding into the project's progress so that appropriate corrective actions can be taken when the project's performance deviates significantly from the plan.

Project Monitoring and Control - Context

Artifacts: QA audit reports, PM/QA/CM status reports, Risk report & register, Mgmt. Reviews.

Artifacts: Mgmt. Reviews / minutes / attendance, PM status report, action item and issues logs, revised PP w/signoff.



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How can I learn more?

Download and study the CMMI-SVC model.

Take the Introduction to CMMI-SVC V1.2 course (3 days) or the Services Supplement for CMMI V1.2 training course (1 day).

- Available through SEI and SEI-authorized training partners
- Required for lead appraisers, instructors, SCAMPI B&C team leaders, and SCAMPI team members using CMMI-SVC
- Introduction to CMMI-DEV V1.2 is a prerequisite for the Services Supplement course

Visit websites such as CMMI Marketplace. (http://www.cmmimarketplace.com)

Seek help from SEI Partners (SES and several others listed on the CMMI Marketplace website).

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Questions?

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References

CMMI® for Services, Version 1.2 (CMMI-SVC, V1.2): *Improving processes for better services*, CMU/SEI-2009-TR-001, February 2009.

***CMMI for Services (CMMI-SVC) Overview*, Eileen Forrester-SEI, October 2008.**

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Additional Info on the Web

CMMI-DEV, SVC, and ACQ Models:
www.sei.cmu.edu/cmmi/models

Questions Regarding Interpretation Issues?:
Yahoo! Discussion Group:
http://groups.yahoo.com/group/cmmi_process_improvement

Ask the CMMI Appraiser Blog:
http://askthecmmiappraiser.blogspot.com

Send questions to cmmi-comments@sei.cmu.edu

SPIN meetings…

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