Why Choose Between ISO, CMMI, ITIL and Six Sigma? Why not Leverage All!

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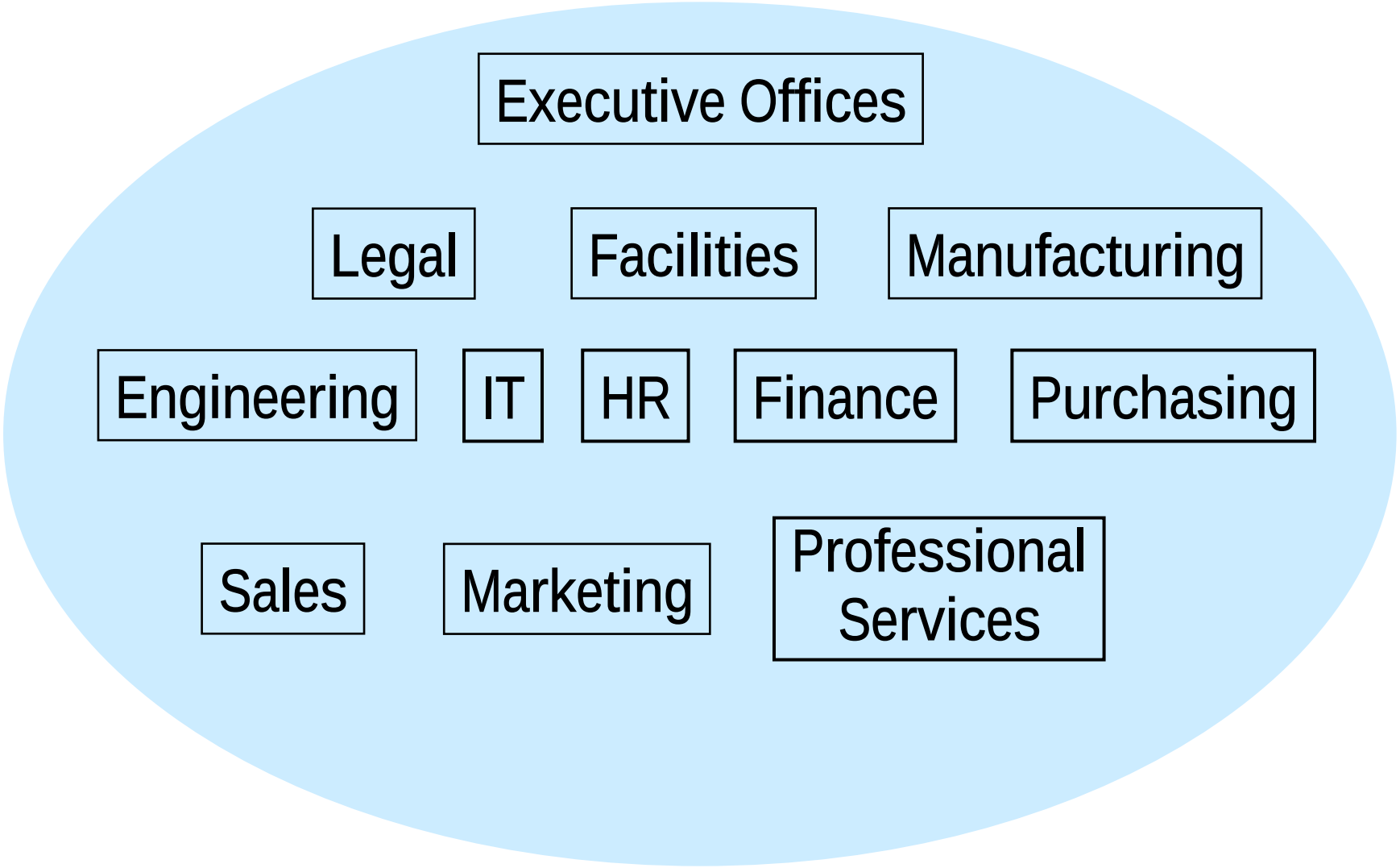
A Few Questions

- ISO, CMMI, ITIL, Six Sigma. How many of you have wondered which model or which standard to choose from?
- How many of you have heard of or participated in conversations/discussions on which is better?
- How many of you wondered how all these models, standards might fit together and you might actually use them all in your organization?

Session Objectives

- Review of ISO 9001:2000, CMMI, ITIL and Six Sigma
- Present the relationships among them
- Discuss the areas where each would be applicable in your organization

Typical Organizational Structure



Motives for Process Improvement

- Internal drivers to improve product quality and reduce cost
- External drivers to achieve a certification or rating for marketing purposes

ISO 9001:2000 Standard

- Applies to all organizations that develop products or provide services
- Equally applicable to small, medium, and large organizations
- Less prescriptive than the 1994 version
- Provides an organization with more flexibility in documenting its Quality Management System (QMS)
- Enables each individual organization to develop the minimum amount of documentation needed in order to demonstrate the effective planning, operation and control of its processes, and the implementation and continuous improvement of the effectiveness of its Quality Management System

ISO 9001:2000 Requirements

- Systemic
  - Establish quality system
  - Document quality system
- Management
  - Support quality
  - Satisfy customers
  - Establish a quality policy
  - Carry out quality planning
  - Control quality system
  - Perform management reviews
- Resource
  - Provide quality resources
  - Provide quality personnel
  - Provide infrastructure
  - Provide quality environment
- Realization
  - Control realization planning
  - Control customer processes
  - Control product development
  - Control purchasing function
  - Control operational activities
  - Control monitoring devices
- Remedial
  - Perform remedial processes
  - Monitor and measure quality
  - Control nonconforming products
  - Analyze quality information
  - Make quality improvement

ISO 9001:2000 Requirements

Quality management system
Quality manual
Human resources
Resource management
Competence, awareness and training
Infrastructure
Work environment
Meet customer requirements
Customer communication
Identify customer requirements
Plan, design and development
Design and development verification
Design and development validation
Carry out design and development
Monitoring and measurement of process and product
Internal audits
Control of design and development changes
Control of monitoring and measuring devices
Control of documents and records
Improvement
Verify purchased products

Capability Maturity Model Integration (CMMI®)

- A framework consisting of best practices that address product development and maintenance
- V1.1 emphasizes systems and software engineering and the integration necessary to build and maintain the total product
- Applicable to any size engineering organization
- Much more descriptive then ISO – Specific Practices
- Tells you **what** to do, not **how** to do it
- Has several bodies of knowledge
- Two representations:
  - Continuous, Staged
- Assure consistency with ISO/IEC 15504

CMMI Continuous Representation

CATEGORY	PROCESS AREA (V1.1)
Process Management	• Organizational Process Focus (OPF) • Organizational Process Definition (OPD) • Organizational Training (OT) • Organizational Process Performance (OPP) • Organizational Innovation and Deployment (OID)
Project Management	• Project Planning (PP) • Project Monitoring and Control (PMC) • Supplier Agreement Management (SAM) • Integrated Project Management (IPM) • Risk Management (RISKM) • Integrated Teaming (IT) • Integrated Supplier Management (ISM) • Quantitative Project Management (QPM)
Engineering	• Requirements Management (REQM) • Requirements Development (RD) • Technical Solution (TS) • Product Integration (PI) • Verification (VER) • Validation (VAL)
Support	• Configuration Management (CM) • Process and Product Quality Assurance (PPQA) • Measurement and Analysis (MA) • Organizational Environment for Integration (OEI) • Decision Analysis and Resolution (DAR) • Causal Analysis & Resolution (CAR)

ISO 9001:2000 and CMMI V1.1 Overlap

Quality management system - OPF , GGs
Quality manual - OPD, GG
Human resources
Resource management - PMC
Competence, awareness and training - OT
Infrastructure - OEI
Work environment - OEI
Meet customer requirements – REQM, VAL
Customer communication - PMC
Identify customer requirements - RD
Plan design and development - PP
Design and development verification – VER
Design and development validation - VAL
Carry out design and development - TS
Monitoring and measurement of process and product - MA
Internal audits - PPQA
Control of design and development changes - CM
Control of monitoring and measuring devices
Control of documents & records - PPQA
Improvement – OPP CAR
Verify purchased products – SAM

OPF, OPD, OT

OPP, OID

PP, PMC, IPM

IT, RISKM

SAM, ISM

QPM

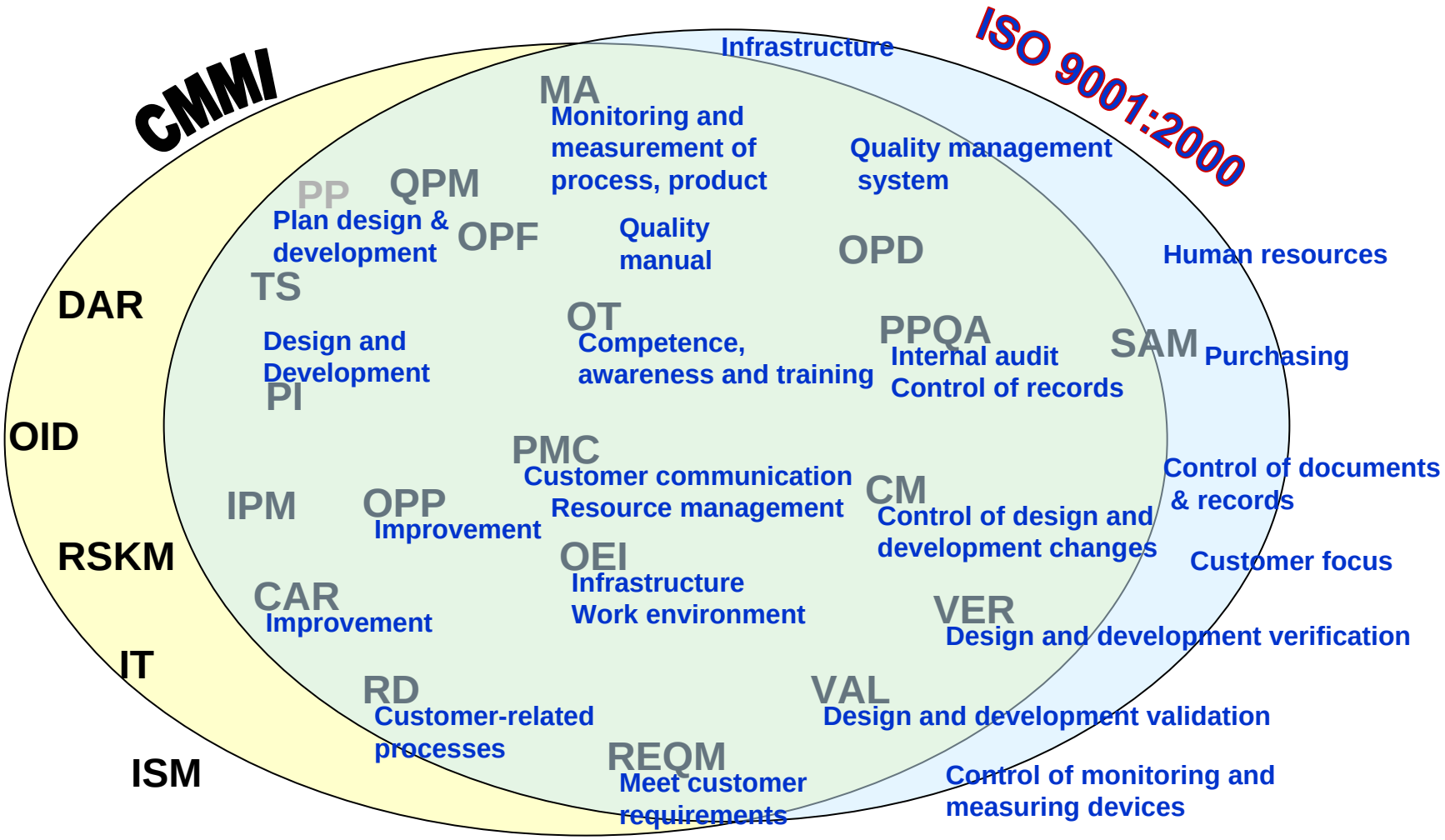
RD, REQM

TS, PI, VER, VAL

CM, PPQA, MA

OEI, DAR, CAR

ISO 9001:2000 and CMMI V1.1 Overlap



ISO 9001:2000 and CMMI Summary

- Considerable overlap

- ISO has a broad perspective and is more general
- CMMI provides more detail on what is required for engineering best practices

- ISO is applicable to all types and sizes of organizations
- CMMI is applicable to the Engineering function, IT application development function, Professional Services development function and any other organization that is planning and managing projects.

Information Technology Infrastructure Library (ITIL)

- Premise:
  - IT plays a critical role in support of the business goals and requirements
  - IT provides essential services to the organization supporting the business
- Set of integrated, best practices focused on the management of IT service processes
- Promotes quality and efficiency in the use of Information Technology
- Meets ISO 9001 standards
- Considered "public domain" because it is a Crown Copyright
- Focuses on IT Service Management - IT Service Support and IT Service Delivery (48 modules)
- ITIL instructs **how** to do it

ITIL Service Management Focus -1

IT Service Support

- **Configuration Management -** physical and logical perspective of the IT infrastructure and the IT services being provided
- **Change Management -** standard methods and procedures for effective managing of all changes
- **Release Management -** testing, verification, and release of changes to the IT environment
- **Incident Management -** the day-to-day process that restores normal acceptable service with a minimal impact on business
- **Problem Management -** the diagnosis of the root causes of incidents in an effort to proactively eliminate and manage them
- **Service Desk (Function) -** a function not a process. This provides a central point of contact between users and IT

ITIL Services Management Focus -2

IT Service Delivery

- **Availability Management -** optimizing IT infrastructure capabilities, services, and support to minimize service outages and providing sustained levels of service to meet business requirements
- **IT Service Continuity -** managing an organization's capability to provide the necessary level of service following an interruption of service
- **Capacity Management -** enabling an organization to tactically manage resources and strategically plan for future resource requirements
- **Service Level Management -** maintaining and improving the level of service to the organization
- **Financial Management for IT Services -** managing the costs associated with providing the organization with the resources needed to meet requirements

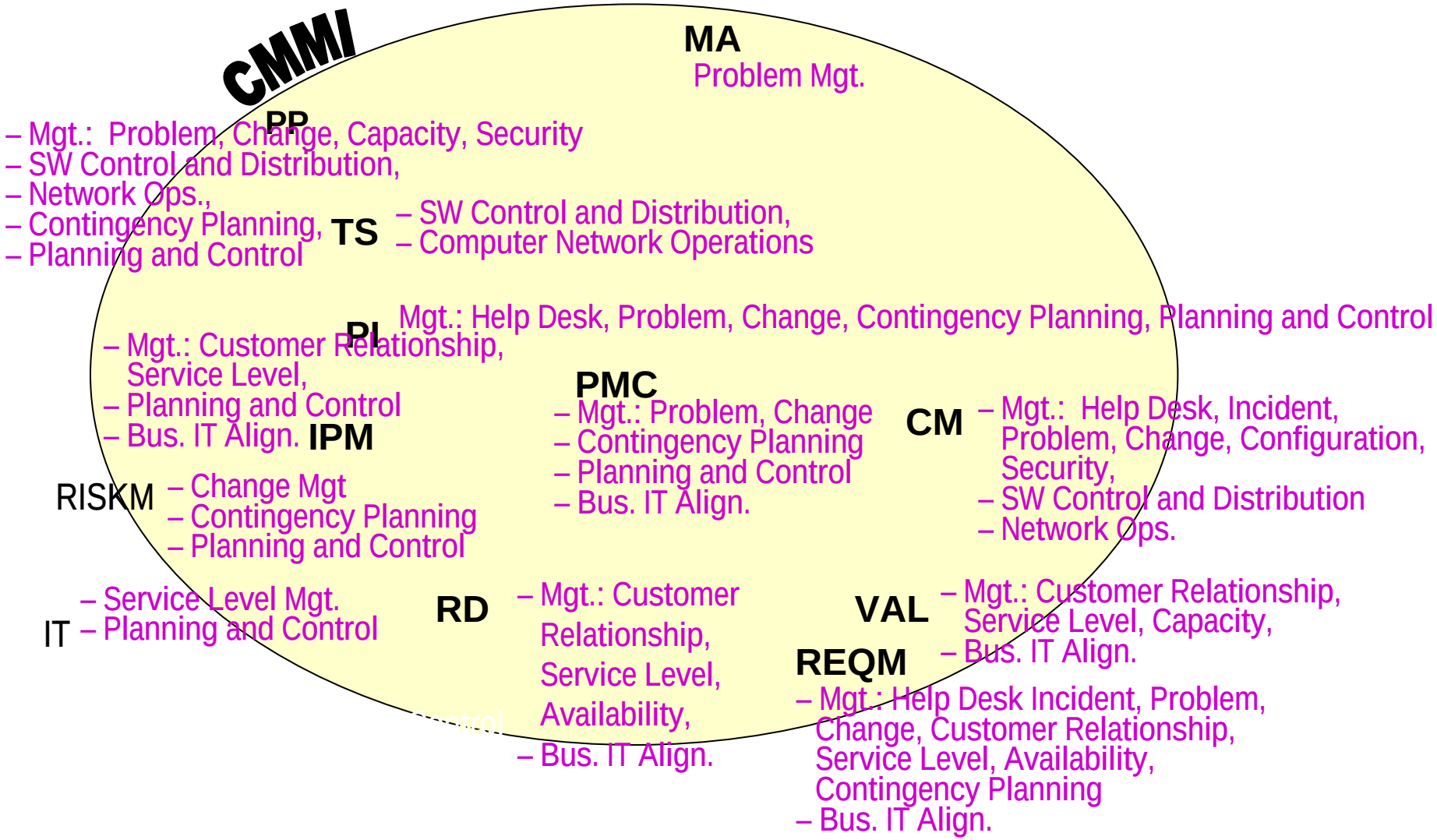
CMMI V1.1 and ITIL Touch Points

CATEGORY	PROCESS AREA
Project Mgt.	• PP – Problem Mgt., Change Mgt., SW Control and Distribution, Computer Network Operations, Capacity Mgt., Security Mgt., Contingency Planning, Planning and Control • PMC – Problem Mgt., Change Mgt., Contingency Planning, Planning and Control, Business IT Alignment • IPM – Customer Relationship Mgt., Service Level Mgt., Planning and Control, Business IT Alignment • RISKM – Change Mgt. , Contingency Planning, Planning and Control • IT – Service Level Mgt., Planning and Control
Engineering	• REQM – Help Desk, Incident Mgt., Problem Mgt., Change Mgt., Customer Relationship Mgt., Service Level Mgt., Availability Mgt., Contingency Planning, Business IT Alignment • RD – Customer Relationship Mgt., Service Level Mgt., Availability Mgt., Business IT Alignment • TS – SW Control and Distribution, Computer Network Operations • PI – Help Desk, Incident Mgt., Problem Mgt., Change Mgt., Contingency Planning, Planning and Control • VAL – Customer Relationship Mgt,, Service Level Mgt., Capacity Mgt. , Business IT Alignment
Support	• CM – Help Desk Incident Mgt., Problem Mgt., Change Mgt., Configuration Mgt., SW Control and Distribution, Computer Network Operations, Security Mgt. • MA – Problem Mgt.

CMMI V1.1 Process Areas with No ITIL Touch Points

- Organizational:
  - OPF, OPD, OT, OPP, OID
- Project Management:
  - SAM, ISM, QPM
- Engineering:
  - VER
- Support:
  - PPQA, DAR, CAR, OEI

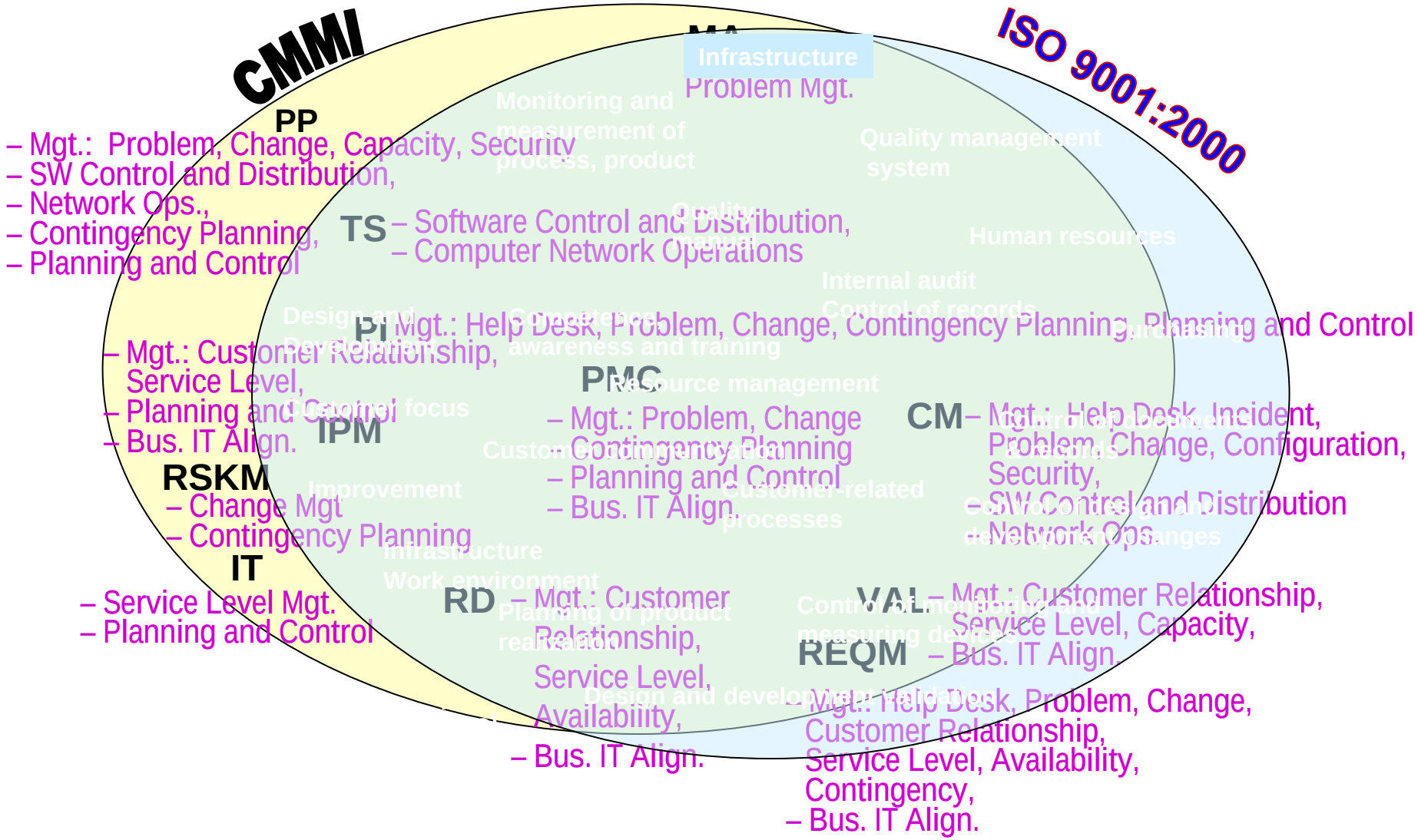
CMMI V1.1 and ITIL Touch Points



ISO 9001:2000 , CMMI Overlap and ITIL Touch Points

Quality management system	OPF , GGs	
Quality manual	OPD, GG	
Human resources		
Resource management	PMC	– Mgt.: Problem, Change, Contingency Planning, Planning and Control, Business IT Alignment (Bus. IT Align.)
Competence, awareness and training	OT	
Infrastructure	OEI	
Work environment	OEI	
Meet customer requirements	REQM	– Mgt.: Help Desk, Problem, Change, Customer Relationship, Service Level, Availability, Contingency Planning, Bus. IT Align.
Customer communication	PMC	
Identify customer requirements	RD	– Mgt.: Customer Relationship, Service Level, Availability, Bus. IT Align.
Plan design and development	PP	– Mgt.: Problem, Change, Capacity, Security, SW Control and Distribution, Network Ops., Contingency Planning, Planning and Control
Design and development verification	VER	
Design and development validation	VAL	– Mgt,: Customer Relationship, Service Level, Capacity, Bus. IT Align.
Carry out design and development	TS	– Software Control and Distribution, Computer Network Operations
Monitoring and measurement of process and product	MA	– Problem Mgt.
Internal audits	PPQA	
Control of design and development changes	CM	– Mgt.: Help Desk, Incident, Problem, Change, Configuration, Security, SW Control and Distribution, Network Ops.
Control of monitoring and measuring devices		
Control of documents & records	PPQA	
Improvement	OPP, CAR	
Verify purchased products	SAM	

CMMI V1.1 and ITIL Touch Points



ISO 9001:2000, CMMI V1.1, and ITIL Summary

- Considerable overlap

- ISO has a broad perspective and is more general
- CMMI instructs what is required for development best practices
- ITIL provides more detail on the "how to" of a process

- ISO is applicable to all types and all sizes of organizations
- CMMI is applicable to the Engineering function, IT application development function, Professional Services development function and any other organization that is planning and managing projects.
- ITIL is applicable to IT function, and IT Professional Services

Six Sigma

Has been described as:

- "A highly technical method used by engineers and statisticians to fine-tune products and processes"
- A goal of near-perfection in meeting customer requirements.
- A sweeping "culture change" effort to position a company for greater customer satisfaction profitability and competitiveness

SIX SIGMA: "A comprehensive *system* for achieving, sustaining and maximizing business success. Six Sigma is uniquely driven by close understanding of customer needs, disciplined use of facts, data, and statistical analysis and diligent attention to managing, improving, and reinventing business processes." - *Six Sigma Way*, © 2000, Peter S. Pande, Robert P. Neuman, Roland R. Cavanaugh

Six Sigma

- Is a *flexible* system for improved business leadership and performance
- Builds on many of the ideas and best practices of the past
- Is about action, not theory
- Applicable to all types and all sizes of organizations
- Could be applied to any process
- Assumes existing processes
- Consists of six themes:
  - Focus on the Customer
  - Data- and Fact-Driven Management
  - Process Focus, Management, and Improvement
  - Proactive Management
  - Boundaryless Collaboration
  - Drive to perfection; Lack of Tolerance for Failure

Elements of Six Sigma in CMMI V1.1

LEVEL	FOCUS	PROCESS AREA
5 Optimizing	Continuous process improvement	• Causal Analysis & Resolution SSA • Organizational Innovation and Deployment SSI
4 Quantitatively Managed	Quantitative management	• Quantitative Project Management SSC SSM • Organizational Process Performance SSA
3 Defined	Process standardization	• Organizational Process Focus SSI • Organizational Process Definition SSD • Organizational Training SSI • Integrated Project Management SSC SSD • Decision Analysis and Resolution SSA • Requirements Development SSA SSD
2 Managed	Basic project management	• Requirements Management SSA SSD • Project Planning SSD • Project Monitoring and Control SSC • Measurement and Analysis SSM
1 Initial		

Six Sigma Control
SSC

Six Sigma Improve
SSI

Six Sigma Analyze
SSA

Six Sigma Measure
SSM

Six Sigma Define
SSD

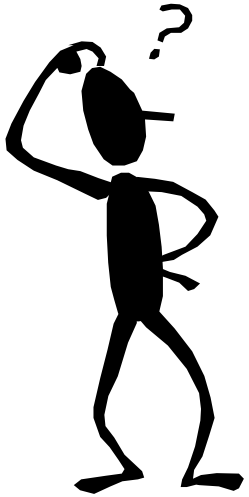
ISO 9001:2000, CMMI, ITIL and Six Sigma Summary

- Considerable overlap

- ISO has a broad perspective and is more general
- CMMI instruct what is required for engineering best practices
- ITIL provides more detail on the "how to" steps of the IT best process
- Six Sigma's broad perspective could be applicable to any process

- ISO is applicable to all types and all sizes of organizations
- CMMI is applicable to the Engineering function, IT application development function, Professional Services development function and any other organization that is planning and managing projects.
- ITIL is applicable to IT function and IT Professional Services function
- Six Sigma is applicable to any organizational function

Questions and Comments



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