# PROCESS MANAGEMENT

CAPABILITY MATURITY MODELS INTGRATION (CMMI)

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# RATIONAL FOR CMMI

- Increasingly complex environment
- Systems grow more complex
  - Becoming larger – more to achieve, multiple responsibilities
  - Involving more people – more team members looking after different tasks
  - Crossing organisational boundaries – people from different team or even different organisations
  - Being distributed far and wider – in terms of duration and objectives
  - Continually compressing schedules – because of more competitive market and variation in customs' requirements
- Processes used to develop the systems follow the suit
  - Individuals may implement the same thing with different methods, so which one's is the best and how we can make it to be the standard for all to follow?

# RATIONAL FOR CMMI

- Evolution in the way software engineering work is performed
  - Cross-disciplinary teams – software developers always require support from field/domain experts
  - Cross-functional teams – performing more or all software life cycle functions within a team to avoid the waste of time in correcting misunderstandings between single-functional teams
  - Integrated product and process development teams – for developing products and establishing processes used to the product development at the same time
  - Concurrent engineering – resulting in grey areas for management
  - Highly automated environment – code can be generated by computers themselves, with the help of AI, for example.
  - Multinational standards --globalisation

# RATIONAL FOR CMMI

- Rapid increase of the number of models in CMM
  - CMM for software
  - SE-CMM
  - SA-CMM
  - SECAM
  - People CMM
  - EIA 371
  - Systems security CMM
  - IPD-CMM
  - …….

# RATIONAL FOR CMMI

- One for all rather than many for many
  - This is a human nature
    - .Net has the “common language” an intermedium language
    - People develop “unified” platforms for software development
  - Choosing one from many can be confusing and time-consuming, and can lead mistakes

# CMMI PHILOSOPHY

- Key integrated process-improvement principles
  - Maintain executive support
  - Reasons:
    - To obtain resources such as human, capital, time, etc.
    - To ensure the rewards for innovation and hard work, in terms of both promotion and effects
    - “Bridging the gap” between multiple organisations/teams, in the cases of cross organisation/team, as only them can do the “job”
  - “Format” – agreement among middle-level management and practioners
  - Advices on how to do it:
    - “Early and often”
    - Keeping them aware, involved and excited

# CMMI PHILOSOPHY

- Key integrated process-improvement principles
  - Pick up your target carefully
  - Reason – process improvement is difficult
    - Limited resources, such as human, capital, time, etc.
    - Convincing others
  - Advices:
    - Achievable in short/medium-terms so that you can convince others that process improvement is worthy by showing the effect
    - Define criteria for comparing the original process and the improved one in early stages
    - Use data for comparison

# CMMI PHILOSOPHY

- Key integrated process-improvement principles
  - Leverage best practice (find good examples and follow)
  - Reason – keep “cost” as low as possible (achieving with little efforts)
  - Advices:
    - Use as many solid, proven process assets as possible (“steal with pride”)
    - Baring in mind to meet your requirements when “borrow” from others.

# CMMI PHILOSOPHY

- Key integrated process-improvement principles
  - Align process improvement with business objectives
  - This is the whole purpose for process improvement

# CMMI CONTENTS

- Two types of materials:
- Materials for evaluate processes
  - Evaluation before process improvement tells the need for improvement
  - Evaluation after improvement tells the effects of the improvement
  - Essential to management – guidance on managerial processes, such as planning, maintaining plans such as check progress against plans and ensure commitment from all parties to the plans
  - Essential to technical development – guidance on the ways of product manufacturing, interfacing, satisfying users' requirements, etc
  - Essential to support

# CMMI CONTENTS

- Two types of materials:
- Materials for improving processes
  - Information to help in increase organisation’s capabilities
  - CMMI provides ways towards a viable and improvable infrastructure within which all parties involved understand their roles and responsibilities
  - Keys words:
    - Standarisation, rather than case-by-case treatment
    - Training, empower people
    - Planning, resources available

# CMMI CONTENTS

- CMMI models
- A CMMI model is a collection of best practices of a specific interest process area
- Contents in a model can be classified into three categories:
  - Required – goal, representing a desired end state at which certain project/process control is achieved
    - SG – specific goal that is unique to a single process area
    - GG – generic goal that can be applied across all process areas
  - Expected – statement of practice, or the expected means to achieve the goals
    - SP – specific practice for a single process area
    - GP – general practice for multiple process areas

# CMMI CONTENTS

- Contents in a model can be classified into three categories:
  - Informative
    - Purpose (of a process area)
    - Introductory note (scope, importance, way, terminology and interaction)
    - Reference (as reference in Java or pointer in C++)
    - Names (of required and expected components)
    - Practice-to-goal relationship table (mappings between the two)
    - Notes
    - Typical work products (output of a practice)
    - Sub-practices
    - Discipline amplification (specifying the applicable domain/discipline of certain practices)
    - Generic practice elaborations (detailing the application of generic practices)

# CMMI REPRESENTATIONS

- Staged vs continuous
  - Staged process improvement
    - Focusing on the “maturity” of an organisation
    - Grouping process areas into sets which are corresponding to different stages or maturity levels, so that when you improved a set of process areas, your organisation become more mature at a higher level
    - Pre-defined road map towards the highest maturity level
    - Example of “Software CMM” containing 5 maturity levels

| **Optimising (Level 5)** | **Continuous process improvement** | **Organisation improvement development, organisation process & innovation, defect prevention** |
|---|---|---|
| Managed (Level 4) | Quantitative management | Statistic process management, organisation process performance, organisation software asset commonality |
| Defined (Level 3) | Process standardisation | Peer review, project interface coordination, software product engineering, integrated software management, etc. |
| Repeatable (Level 2) | Basic project management | Software configuration management, software quality assurance, etc. |
| Initial (LEVEL 1) | Competent people | None |

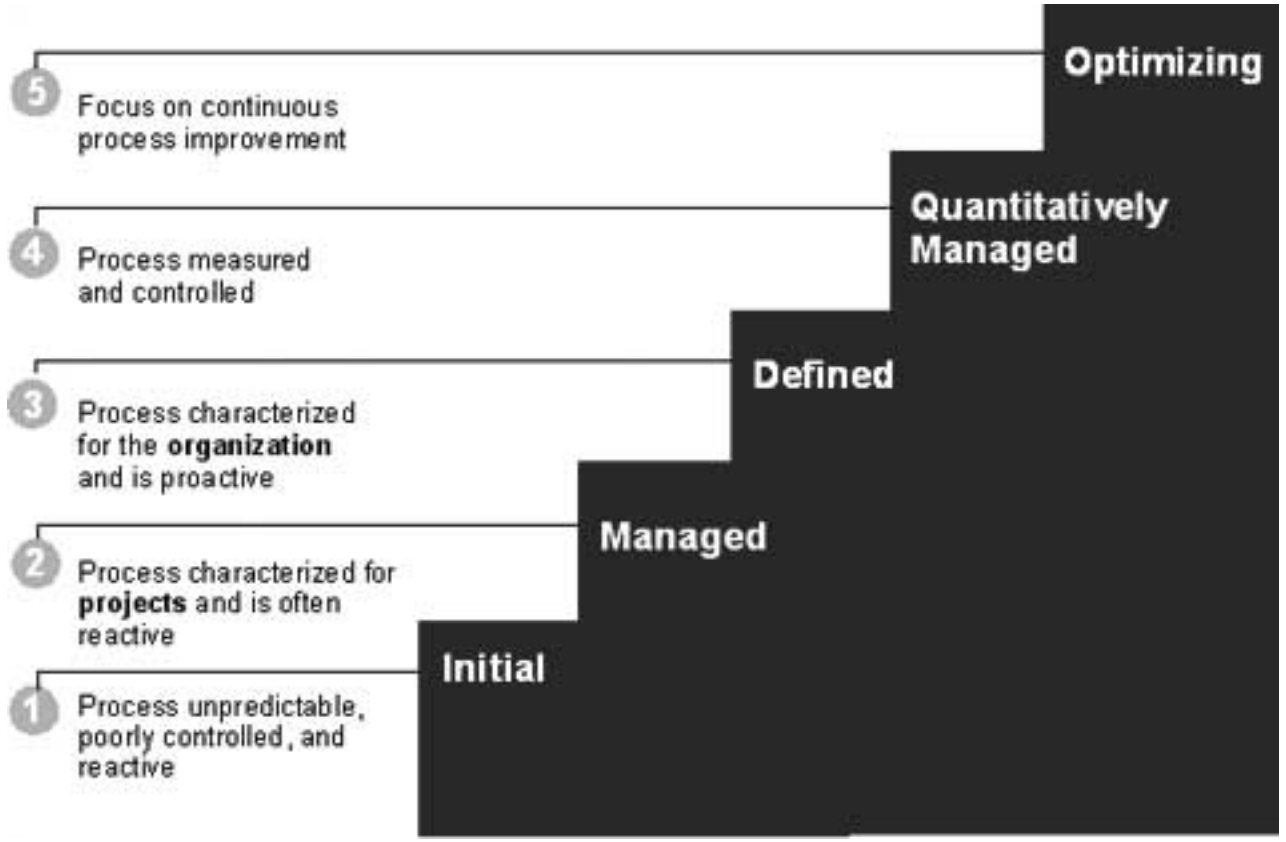
# CMMI REPRESENTATIONS

- Organisation of CMMI process areas
  - According to maturity levels

| **Level 5** | **Organisational innovation & development, Causal analysis & resolution** |
|---|---|
| Level 4 | Organisational process performance, Quantitative project management |
| Level 3 | Requirements Development, Technical solution, Product integration, Verification, Validation, Organisational process focus, organisational process definition, Organisational training, Integrated project management, Risk management, Integrated teaming, Integrated supplier management, Decision analysis & resolution, Organisational environment for integration |
| Level 2 | Requirements management, project planning, Project monitoring & control, Supplier agreement, Measurement & analysis, Process & product quality assurance, Configuration management |

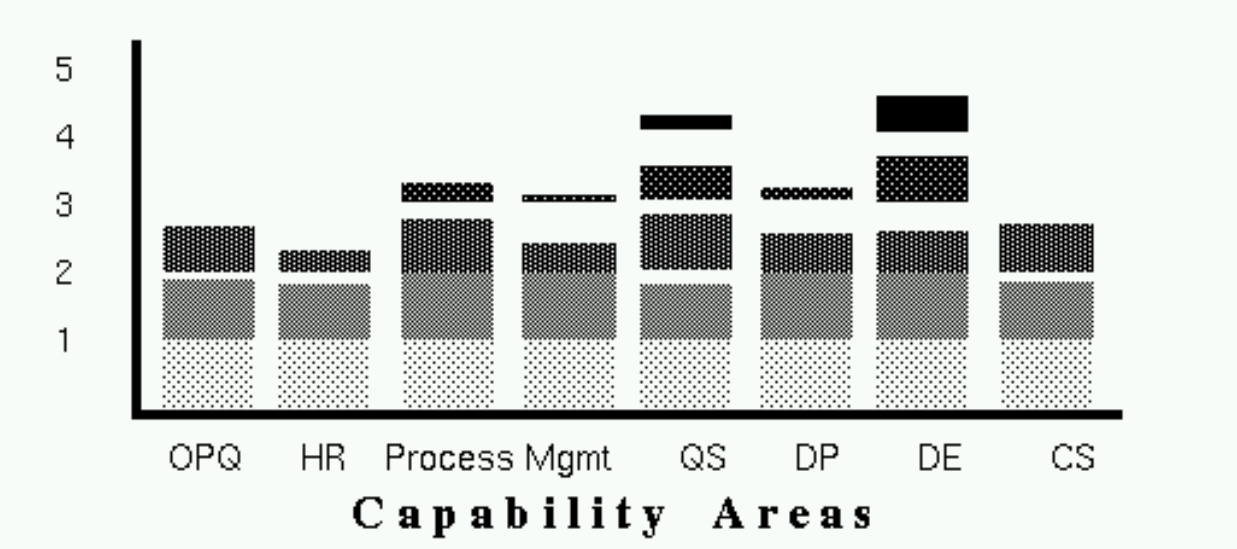
# CMMI DIMENSIONS FOR EVALUATION

- Maturity dimension evaluating how mature an organisation is
- Five levels:
  - ML1
  - ML2
  - ML3
  - ML4
  - ML5



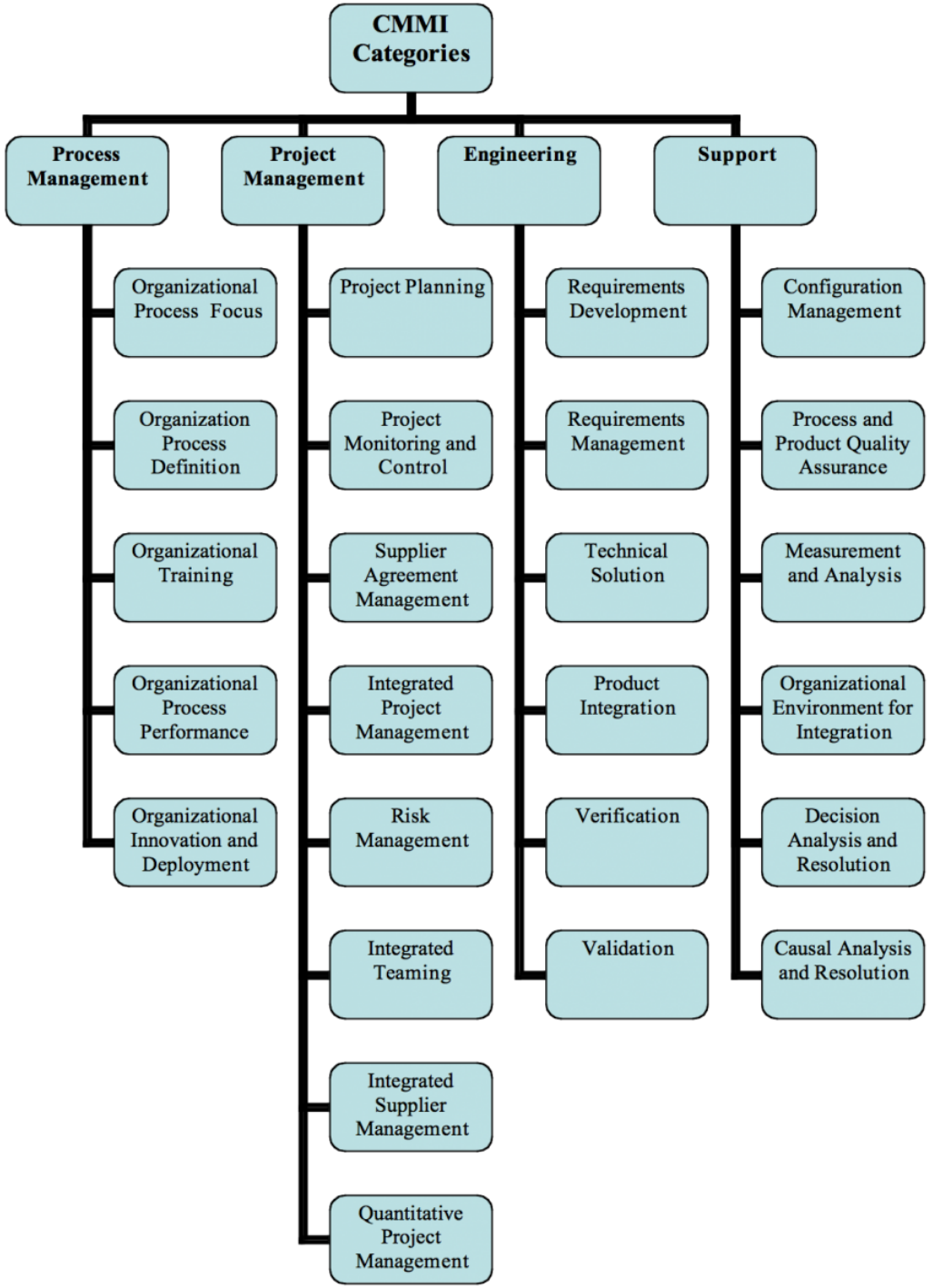
# CMMI REPRESENTATIONS

- Staged vs continuous
  - Continuous process improvement
    - Focusing on “capability” through improving individual process areas, so that an organisation becomes more capable when one or more individual area is improved, i.e. its “capability level” becomes higher
    - Process areas containing generic practices that can be used to improve different areas
    - The capability of an organisation can be reported in the format of ”capability level profile”, such as



# CMMI REPRESENTATIONS

- Organisation of CMMI process areas
  - According to capability levels



# CMMI DIMENSIONS FOR EVALUATION

- Two dimensions in line with two types of models
- Capability dimension evaluating organisation's capability growth
- Six levels:
  - CL0 Incomplete
  - CL1 Performed
  - CL2 Managed
  - CL3 Defined
  - CL4 Quantitatively managed
  - CL5 Optimising

# CMMI DIMENSIONS FOR EVALUATION

- Six levels:
  - CL0 Incomplete – no GG for CL0 as one or more specific goals of a process area is not satisfied
  - CL1 Performed – GG is to achieving specific goals in a process area, one generic practices mapped to the GG
  - CL2 Managed – GG is to institutionalising processes in a managed manner, i.e. 10 generic practices mapped to the GG plus an institutional policy on which one of the 10 is used
  - CL3 Defined – GG is on standardisation when institutionalising processes
  - CL4 Quantitatively managed – GG is to using data and quantitative measures in process institutionalisation
  - CL5 Optimising – Key is on optimisation, emphasising analysis on the trends, common causes, etc. and identifying the best solution

# CMMI PROCESS AREAS FOR PROCESS IMPROVEMENT

- Process areas details (http://www.tutorialspoint.com/cmmi/cmmi-process-areas.htm)
- Causal Analysis and Resolution (CAR)
  - **Purpose** -- To identify causes of defects and other problems and take action to prevent them from occurring in the future.
  - **Specific Practices by Goal**
    - SG 1 Determine Causes of Defects
      - SP 1.1 Select Defect Data for Analysis
      - SP 1.2 Analyze Causes
    - SG 2 Address Causes of Defects
      - SP 2.1 Implement the Action Proposals
      - SP 2.2 Evaluate the Effect of Changes
      - SP 2.3 Record Data

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Configuration Management (CM)
  - **Purpose** -- To establish and maintain the integrity of work products using configuration identification, configuration control, configuration status accounting, and configuration audits.
  - **Specific Practices by Goal**
    - SG 1 Establish Baselines
      - SP 1.1 Identify Configuration Items
      - SP 1.2 Establish a Configuration Management System
      - SP 1.3 Create or Release Baselines
    - SG 2 Track and Control Changes
      - SP 2.1 Track Change Requests
      - SP 2.2 Control Configuration Items
    - SG 3 Establish Integrity
      - SP 3.1 Establish Configuration Management Records
      - SP 3.2 Perform Configuration Audits

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Decision Analysis and Resolution (DAR)
  - **Purpose** -- To analyze possible decisions using a formal evaluation process that evaluates identified alternatives against established criteria.
  - **Specific Practices by Goal**
    - SG 1 Evaluate Alternatives
      - SP 1.1 Establish Guidelines for Decision Analysis
      - SP 1.2 Establish Evaluation Criteria
      - SP 1.3 Identify Alternative Solutions
      - SP 1.4 Select Evaluation Methods
      - SP 1.5 Evaluate Alternatives
      - SP 1.6 Select Solutions

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Integrated Project Management +IPPD (IPM)
  - **Purpose** -- To establish and manage the project and the involvement of the relevant stakeholders according to an integrated and defined process that is tailored from the organization's set of standard processes.
  - **Specific Practices by Goal**
    - SG 1 Use the Project's Defined Process
      - SP 1.1 Establish the Project's Defined Process
      - SP 1.2 Use Organizational Process Assets for Planning Project Activities
      - SP 1.3 Establish the Project's Work Environment
      - SP 1.4 Integrate Plans
      - SP 1.5 Manage the Project Using the Integrated Plans
      - SP 1.6 Contribute to the Organizational Process Assets
    - SG 2 Coordinate and Collaborate with Relevant Stakeholders
      - SP 2.1 Manage Stakeholder Involvement
      - SP 2.2 Manage Dependencies
      - SP 2.3 Resolve Coordination Issues
  - IPPD Addition:
    - SG 3 Apply IPPD Principles
      - SP 3.1 Establish the Project's Shared Vision
      - SP 3.2 Establish the Integrated Team Structure
      - SP 3.3 Allocate Requirements to Integrated Teams
      - SP 3.4 Establish Integrated Teams
      - SP 3.5 Ensure Collaboration among Interfacing Teams

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Measurement and Analysis (MA)
  - **Purpose --** To develop and sustain a measurement capability that is used to support management information needs.
  - **Specific Practices by Goal**
    - SG 1 Align Measurement and Analysis Activities
      - SP 1.1 Establish Measurement Objectives
      - SP 1.2 Specify Measures
      - SP 1.3 Specify Data Collection and Storage Procedures
      - SP 1.4 Specify Analysis Procedures
    - SG 2 Provide Measurement Results
      - SP 2.1 Collect Measurement Data
      - SP 2.2 Analyze Measurement Data
      - SP 2.3 Store Data and Results
      - SP 2.4 Communicate Results

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Organizational Innovation and Deployment (OID)
  - **Purpose** -- To select and deploy incremental and innovative improvements that measurably improve the organization's processes and technologies. The improvements support the organization's quality and process-performance objectives as derived from the organization's business objectives.
  - **Specific Practices by Goal**
    - SG 1 Select Improvements
      - SP 1.1 Collect and Analyze Improvement Proposals
      - SP 1.2 Identify and Analyze Innovations
      - SP 1.3 Pilot Improvements
      - SP 1.4 Select Improvements for Deployment
    - SG 2 Deploy Improvements
      - SP 2.1 Plan the Deployment areas
      - SP 2.2 Manage the Deployment
      - SP 2.3 Measure Improvement Effects

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Organizational Process Definition +IPPD (OPD)
  - **Purpose** -- To establish and maintain a usable set of organizational process assets.
  - **Specific Practices by Goal**
    - SG 1 Establish Organizational Process Assets
      - SP 1.1 Establish Standard Processes
      - SP 1.2 Establish Life-Cycle Model Descriptions
      - SP 1.3 Establish Tailoring Criteria and Guidelines
      - SP 1.4 Establish the Organization's Measurement Repository
      - SP 1.5 Establish the Organization's Process Asset Library
  - IPPD Addition:
    - SG 2 Enable IPPD Management
      - SP 2.1 Establish Empowerment Mechanisms
      - SP 2.2 Establish Rules and Guidelines for Integrated Teams
      - SP 2.3 Balance Team and Home Organization Responsibilities

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Organizational Process Focus (OPF)
  - **Purpose** -- To plan and implement organizational process improvement based on a thorough understanding of the current strengths and weaknesses of the organization's processes and process assets.
  - **Specific Practices by Goal**
    - SG 1 Determine Process Improvement Opportunities
      - SP 1.1 Establish Organizational Process Needs
      - SP 1.2 Appraise the Organization's Processes
      - SP 1.3 Identify the Organization's Process Improvements
    - SG 2 Plan and Implement Process Improvement Activities
      - SP 2.1 Establish Process Action Plans
      - SP 2.2 Implement Process Action Plans
    - SG 3 Deploy Organizational Process Assets and Incorporate Lessons Learned
      - SP 3.1 Deploy Organizational Process Assets
      - SP 3.2 Deploy Standard Processes
      - SP 3.3 Monitor Implementation
      - SP 3.4 Incorporate Process-Related Experiences into the Organizational Process Assets

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Organizational Process Performance (OPP)
  - **Purpose** -- To establish and maintain a quantitative understanding of the performance of the organization's set of standard processes in support of quality and process-performance objectives, and to provide the process performance data, baselines, and models to quantitatively manage the organization's projects.
  - **Specific Practices by Goal**
    - SG 1 Establish Performance Baselines and Models
      - SP 1.1 Select Processes
      - SP 1.2 Establish Process Performance Measures
      - SP 1.3 Establish Quality and Process Performance Objectives
      - SP 1.4 Establish Process Performance Baselines
      - SP 1.5 Establish Process Performance Models

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Organizational Training (OT)
  - **Purpose** -- To develop the skills and knowledge of people so they can perform their roles effectively and efficiently.
  - **Specific Practices by Goal**
    - SG 1 Establish an Organizational Training Capability
      - SP 1.1 Establish the Strategic Training Needs
      - SP 1.2 Determine Which Training Needs Are the Responsibility of the Organization
      - SP 1.3 Establish an Organizational Training Tactical Plan
      - SP 1.4 Establish Training Capability
    - SG 2 Provide Necessary Training
      - SP 2.1 Deliver Training
      - SP 2.2 Establish Training Records
      - SP 2.3 Assess Training Effectiveness

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Product Integration (PI)
  - **Purpose** -- To assemble the product from the product components, ensure that the product, as integrated, functions properly, and deliver the product.
  - **Specific Practices by Goal**
    - SG 1 Prepare for Product Integration
      - SP 1.1 Determine Integration Sequence
      - SP 1.2 Establish the Product Integration Environment
      - SP 1.3 Establish Product Integration Procedures and Criteria
    - SG 2 Ensure Interface Compatibility
      - SP 2.1 Review Interface Descriptions for Completeness
      - SP 2.2 Manage Interfaces
    - SG 3 Assemble Product Components and Deliver the Product
      - SP 3.1 Confirm Readiness of Product Components for Integration
      - SP 3.2 Assemble Product Components
      - SP 3.3 Evaluate Assembled Product Components
      - SP 3.4 Package and Deliver the Product or Product Component

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Project Monitoring and Control (PMC)
  - **Purpose** -- To provide an understanding of the project's progress so that appropriate corrective actions can be taken when the project's performance deviates significantly from the plan.
  - **Specific Practices by Goal**
    - SG 1 Monitor Project Against Plan
      - SP 1.1 Monitor Project Planning Parameters
      - SP 1.2 Monitor Commitments
      - SP 1.3 Monitor Project Risks
      - SP 1.4 Monitor Data Management
      - SP 1.5 Monitor Stakeholder Involvement
      - SP 1.6 Conduct Progress Reviews
      - SP 1.7 Conduct Milestone Reviews
    - SG 2 Manage Corrective Action to Closure
      - SP 2.1 Analyze Issues
      - SP 2.2 Take Corrective Action
      - SP 2.3 Manage Corrective Action

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Project Planning (PP)
  - **Purpose** -- To establish and maintain plans that define project activities.
  - **Specific Practices by Goal**
    - SG 1 Establish Estimates
      - SP 1.1 Estimate the Scope of the Project
      - SP 1.2 Establish Estimates of Work Product and Task Attributes
      - SP 1.3 Define Project Life Cycle
      - SP 1.4 Determine Estimates of Effort and Cost
    - SG 2 Develop a Project Plan
      - SP 2.1 Establish the Budget and Schedule
      - SP 2.2 Identify Project Risks
      - SP 2.3 Plan for Data Management
      - SP 2.4 Plan for Project Resources
      - SP 2.5 Plan for Needed Knowledge and Skills
      - SP 2.6 Plan Stakeholder Involvement
      - SP 2.7 Establish the Project Plan
    - SG 3 Obtain Commitment to the Plan
      - SP 3.1 Review Plans that Affect the Project
      - SP 3.2 Reconcile Work and Resource Levels
      - SP 3.3 Obtain Plan Commitment

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Process and Product Quality Assurance (PPQA)
  - **Purpose** -- To provide staff and management with objective insight into processes and associated work products.
  - **Specific Practices by Goal**
    - SG 1 Objectively Evaluate Processes and Work Products
      - SP 1.1 Objectively Evaluate Processes
      - SP 1.2 Objectively Evaluate Work Products and Services
    - SG 2 Provide Objective Insight
      - SP 2.1 Communicate and Ensure Resolution of Noncompliance Issues
      - SP 2.2 Establish Records

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Quantitative Project Management (QPM)
  - **Purpose** -- To quantitatively manage the project's defined process to achieve the project's established quality and process-performance objectives.
  - **Specific Practices by Goal**
    - SG 1 Quantitatively Manage the Project
      - SP 1.1 Establish the Project's Objectives
      - SP 1.2 Compose the Defined Processes
      - SP 1.3 Select the Subprocesses that Will Be Statistically Managed
      - SP 1.4 Manage Project Performance
    - SG 2 Statistically Manage Subprocess Performance
      - SP 2.1 Select Measures and Analytic Techniques
      - SP 2.2 Apply Statistical Methods to Understand Variation
      - SP 2.3 Monitor Performance of the Selected Subprocesses
      - SP 2.4 Record Statistical Management Data

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Requirements Development (RD)
  - **Purpose** -- To produce and analyze customer, product, and product-component requirements.
  - **Specific Practices by Goal**
    - SG 1 Develop Customer Requirements
      - SP 1.1 Elicit Needs
      - SP 1.2 Develop the Customer Requirements
    - SG 2 Develop Product Requirements
      - SP 2.1 Establish Product and Product-Component Requirements
      - SP 2.2 Allocate Product-Component Requirements
      - SP 2.3 Identify Interface Requirements
    - SG 3 Analyze and Validate Requirements
      - SP 3.1 Establish Operational Concepts and Scenarios
      - SP 3.2 Establish a Definition of Required Functionality
      - SP 3.3 Analyze Requirements
      - SP 3.4 Analyze Requirements to Achieve Balance
      - SP 3.5 Validate Requirements

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Requirements Management (REQM)
  - **Purpose** -- To manage the requirements of the project's products and product components and to identify inconsistencies between those requirements and the project's plans and work products.
  - **Specific Practices by Goal**
    - SG 1 Manage Requirements
      - SP 1.1 Obtain an Understanding of Requirements
      - SP 1.2 Obtain Commitment to Requirements
      - SP 1.3 Manage Requirements Changes
      - SP 1.4 Maintain Bidirectional Traceability of Requirements
      - SP 1.5 Identify Inconsistencies between Project Work and Requirements

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Risk Management (RSKM)
  - **Purpose** -- To identify potential problems before they occur so that risk-handling activities can be planned and invoked as needed across the life of the product or project to mitigate adverse impacts on achieving objectives.
  - **Specific Practices by Goal**
    - SG 1 Prepare for Risk Management
      - SP 1.1 Determine Risk Sources and Categories
      - SP 1.2 Define Risk Parameters
      - SP 1.3 Establish a Risk Management Strategy
    - SG 2 Identify and Analyze Risks
      - SP 2.1 Identify Risks
      - SP 2.2 Evaluate, Categorize, and Prioritize Risks
    - SG 3 Mitigate Risks
      - SP 3.1 Develop Risk Mitigation Plans
      - SP 3.2 Implement Risk Mitigation Plans

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Supplier Agreement Management (SAM)
  - **Purpose** – To manage the acquisition of products from suppliers for which there exists a formal agreement.
  - **Specific Practices by Goal**
    - SG 1 Establish Supplier Agreements
      - SP 1.1 Determine Acquisition Type
      - SP 1.2 Select Suppliers
      - SP 1.3 Establish Supplier Agreements
    - SG 2 Satisfy Supplier Agreements
      - SP 2.1 Execute the Supplier Agreement
      - SP 2.2 Monitor Selected Supplier Processes
      - SP 2.3 Evaluate Selected Supplier Work Products
      - SP 2.4 Accept the Acquired Product
      - SP 2.5 Transition Products

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Technical Solution (TS)
  - **Purpose** -- To design, develop, and implement solutions to requirements. Solutions, designs, and implementations encompass products, product components, and product-related life-cycle processes either singly or in combination as appropriate.
  - **Specific Practices by Goal**
    - SG 1 Select Product-Component Solutions
      - SP 1.1 Develop Alternative Solutions and Selection Criteria
      - SP 1.2 Select Product Component Solutions
    - SG 2 Develop the Design
      - SP 2.1 Design the Product or Product Component
      - SP 2.2 Establish a Technical Data Package
      - SP 2.3 Design Interfaces Using Criteria
      - SP 2.4 Perform Make, Buy, or Reuse Analysis
    - SG 3 Implement the Product Design
      - SP 3.1 Implement the Design
      - SP 3.2 Develop Product Support Documentation

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Validation (VAL)
  - **Purpose** -- To demonstrate that a product or product component fulfills its intended use when placed in its intended environment.
  - **Specific Practices by Goal**
    - SG 1 Prepare for Validation
      - SP 1.1 Select Products for Validation
      - SP 1.2 Establish the Validation Environment
      - SP 1.3 Establish Validation Procedures and Criteria
    - SG 2 Validate Product or Product Components
      - SP 2.1 Perform Validation
      - SP 2.2 Analyze Validation Results

# CMMI PROCESS AREASFOR PROCESS IMPROVEMENT

- Verification (VER)
  - **Purpose** -- To ensure that selected work products meet their specified requirements.
  - **Specific Practices by Goal**
    - SG 1 Prepare for Verification
      - SP 1.1 Select Work Products for Verification
      - SP 1.2 Establish the Verification Environment
      - SP 1.3 Establish Verification Procedures and Criteria
    - SG 2 Perform Peer Reviews
      - SP 2.1 Prepare for Peer Reviews
      - SP 2.2 Conduct Peer Reviews
      - SP 2.3 Analyze Peer Review Data
    - SG 3 Verify Selected Work Products
      - SP 3.1 Perform Verification
      - SP 3.2 Analyze Verification Results