

# Process

- A framework for the tasks required to build high-quality software
- Formal definition: applying engineering processes to obtain reliable, efficient software that works on real machines

# Focus on Quality

- Communication
  - Stakeholders
  - Client
- Planning
  - Identify tasks
  - Identify associated risks
  - Define a schedule
- Modeling
  - Helps everyone understand the goals and the design
- Construction
  - Generate code
  - Test the code, iterate
- Deployment
  - Deliver software
  - Get feedback
  - (reiterate?)

# Task Sets

- Concrete, identifiable activities that comprise each of the framework areas

# Umbrella activities

- Software project tracking and control
  - Process and product are on schedule, everyone doing what he/she is supposed to do
- Risk management
  - Identify, assess, and minimize risks (security example)
- Software quality assurance
  - User feedback, make sure software meets specifications, efficient, “define and conduct activities to ensure quality”

# Umbrella activities

- Formal technical reviews
  - How product is progressing, tracking changes to software [done in meetings]
- Measurement
  - Define and collect metrics on process, project, and product [to meet customer's needs]
- Software configuration management
  - Managing the software under development, how the software is installed, “manages effects of change”

# Umbrella activities

- Reusability management
  - Defines criteria for product reuse and establishes mechanisms for achieving reuse
- Work product preparation and production
  - Documentation, logs, forms, models, requirements lists, version control

# CMMI

- Capability maturity model integration
  - Process benchmarking system
  - Continuous or staged
- Level 0: incomplete – do not meet requirements for level 1
- Level 1: performed – all goals of area are satisfied
- Level 2: managed – lvl 1 + an organizationally defined policy with adequate resources, stakeholders involved in process

# CMMI

- Level 3: defined – lvl 2 + attempted improvements to their process and product
- Level 4: quantitatively managed – lvl 3 + improvements are measured and controlled through quantitative means
- Level 5: optimized – lvl 4 + customer consideration and statistical modeling for improvement

# Assessment Products

- SCAMPI – standard cmmi assessment method for process improvement
- CBA-IPI – cmm-based appraisal for internal process improvement
- SPICE – (ISO/IEC 15504) standards
- ISO 9001:2000 for software – “plan-do-check-act” cycle

# models

- PSP – personal software process: each person follows some process
  - What is your personal software process?
- TSP – team software process: the whole team follows the same process
  - Teams sizes of 3 – 20
  - need dedicated, self-directed team members