MIS 5203
Systems & Infrastructure Lifecycle Management 1

Week 10
November 4, 2013
Study Objectives

• Application Control related to Data and Transaction contd.
• Software Development Processes
• Alternate Software Development Methodologies
Output Controls

Providing output data to the Users in a meaningful and consistent way. There are a number of controls:

• Logging of sensitive and critical data
• Negotiable contracts, signatures, etc.
  – should be generated and compared to physical copies
• Report distribution
  – generated reports should be logged and distributed as per plan and access restrictions
  – Applies to electronic or physical report
Output Controls

• Balancing and Reconciling
  – against total
  – Audit trail should be recorded

• Output error handling and retention
  – Reporting on errors
  – Retention requirements and policy, sometimes even legal constraints

• Verification of the receipt of reports
  – logging
SDLC Processes & Quality

- What are some of the standards used to improve quality of Software product, and efficiencies of the team?
  - CMM
  - CMMI
  - ISO 9126
  - ISO 15504
  - COBIT
CMM (Capability Maturity Model of Software)

• Started at Carnegie Mellon University in 1990s
• Five maturity level of software organization, with increased level of maturity
  1. Initial
     - ad-hoc processes
  2. Repeatable
     • The organization can “repeat” software delivery
     • The processes may not be well defined or managed but, delivery is repeatable
  3. Defined
     • Defines standard process
  4. Managed
     • Quantitative managed controls
  5. Optimized
     • Refining the process and optimizing them

Additional details at: http://en.wikipedia.org/wiki/Capability_Maturity_Model
CMMI (Capability Maturity Model Integration)

- CMMI less aligned with traditional SDLC model and better aligned with contemporary software development model including Agile and Iterative models.
- Five maturity level of software organization, with increased level of maturity
  1. Initial
     - ad-hoc processes
  2. Managed
     - Processes project based and often reactive
  3. Defined
     - Defines standard process. These are proactive
  4. Quantitatively Managed
     - Quantitative managed controls
  5. Optimized
     - Refining the process and optimizing them
CMMI

Characteristics of the Maturity levels

Level 1: Initial
- Processes unpredictable, poorly controlled and reactive

Level 2: Managed
- Processes characterized for projects and is often reactive

Level 3: Defined
- Processes characterized for the organization and is proactive. (Projects tailor their processes from organization's standards)

Level 4: Quantitatively Managed
- Processes measured and controlled

Level 5: Optimizing
- Focus on process improvement

Source: Adapted from http://en.wikipedia.org/wiki/CMMI
Other Process Improvement Standards

- ISO 9126 – An international standard to assess quality of software products
- ISO 15504 – Software Process Improvement and Capability Determination (SPICE) standard. This is similar to CMM
- COBIT – by ISACA
- Six Sigma – Defect based capability and product maturity
Business Process Reengineering (BPR)

- What is BPR? Why do we need to do BPR?
- Improvement by re-engineering of an enterprise business process
- Often the business processes need to be refined and improved as a result of competitive market pressure, technology, or new discoveries
BPR

• BPR involves
  – Defining the process areas and business function. Often a process area is further decomposed into smaller or elementary processes
  – Redesign, come up with new ways, streamline the process  
  – Implement the new process. The new process could have technology or non-technology components
    • IT changes would follow typical SDL processes
    • Users, customer, business impact to be determined, and they would need to get engaged
  – At times Roles and Responsibility of the users of the business process changes with a BPR project
Benchmarking

• Benchmarking is coming up with baseline for a business process
• Benchmarking steps could include
  – Planning: processes to be improved
  – Researching: literature, standard organization
  – Observe: collect data
  – Analyze: the collected data
  – Adopt: in context with an organizational process
  – Improve: continuous improvement against the benchmark
Alternate Software Development Methodologies

- Which ones of these are alternate software development methodologies
  
  A. Agile
  B. Scrum
  C. eXtreme Programming (XP)
  D. Prototyping
  E. Rapid Application Development
  F. Object-Oriented Programming
  G. Data-oriented systems development
  H. Component-based model
Upcoming Assignments/Tests

1. Group Case Study -2 (Requirements): Mon 11/4 before the class
2. Group Case Study -3 (Testing): Mon 11/25 before the class

Questions?
Summary of Today’s Class

• Output Control
• CMM, CMMI, ISO
• BPR, Benchmarking
• Focus of the Next Class and Reading
• Questions