Solving business problems with information systems
• Systems approach
  • function first and structure afterwards
  • helps to analyse the system clearly and allows to breakdown into subsystems
  • Allows end users of information systems to understand and contribute to the design and use of very complex business information systems
System goals and organizational goals

• Organization may contain different systems but the organization has overall goals it wants to achieve and the organizational goal should be supported by each system in the organization

• System goals are
  • System quality(Functionality, Maintenability, Flexibility)
  • Project management(on-time, within budget, higher user commitment)
  • Organizational relevance(firms efficiency, effectiveness)
• Software engineering:- early days development and programming of systems were expensive since only few could master, this lead to the approach of software engineering that help to define what system analysts and programmers must do.
The CMM process management model

• CMM (Capability maturity Model) is a framework to access the maturity level of an Organizations information system development and management processes and products

• Five levels
  • Level 1
  • Level 2
  • Level 3
  • Level 4
  • Level 5
CMM Model

**Basic Management Control**
- Initial
  - Ad hoc
  - Little formalization
  - Tools informally applied to process
- Establish rigorous project management, management oversight, and quality assurance

**Process Definition**
- Repeatable
  - Achieved a stable process with a repeatable level of statistical control
- Establish a process group
- Establish a software development process architecture
- Introduce software engineering methods and technologies

**Managed**
- Defined
  - Achieved foundation for major and continuing progress
  - Establish a basic set of process management to identify the quality and cost parameters
  - Establish a process database
  - Gather and maintain process data
  - Assess relative quality of each product and inform management
- Support automatic gathering of process data
- Use data to analyze and modify the process

**Process Control**
- Optimized
  - Major quality and quantity improvements
System development methodologies

• The several system development strategies include
  • The Classical Systems Development Life Cycle
  • Structured Analysis & Structured Design Method
  • System Prototype Method
  • Object Oriented Development
  • Rapid Application Development
  • Participatory Design
System Development Life Cycle

• Phases include
  • Project and Process Management
  • System Analysis
  • System Design
  • Implementation, Operation & Evaluation
  • Maintenance
Structured System Analysis & Design

• Uses logical tools
• Method of defining system inputs, processes and outputs and for partitioning systems into subsystems that show a logical, graphical model of information flow.
• Primary tool is DFD
• Other tools include data dictionary (content of data) and process specifications (transformations)
• Uses a structured chart which is the document
• Advantages
  • Well structured
  • Well documented
  • Simple
  • Clear
  • Easy to understand and maintain
Prototyping

• Trial and error approach
• Prototype is a working version of the system or part of system.
• Once operational the prototype will be further refined until it conforms to precise user requirements
• An experimental system is built rapidly and inexpensively for the users to evaluate
• By interacting with the prototype user can get better idea of their requirements.
• The prototype sanctioned by the users can be used as template for the final system.
• Used for small systems
Prototyping

1. Identify basic requirements
2. Develop working prototype
3. Review the prototype with users
4. User satisfied
   - yes: Implement and deliver the system
   - no: Identify additional requirement

RAD (Rapid Application Development)

- Development of the system in a very short period of time using prototyping with the help of tools, special management practices, reusable software.
- JAD sessions are conducted which involves end users and specialists.
- Iterative model
Object oriented development

• For rapidly changing environments including web applications
• System is modelled as a collection of objects and relationship between them
• Phases contains
  • Analysis
    • Design
    • Implementation
  • Reusable software makes this type of system development cheaper
Participatory design

- Users are more important than developers
- Analysts work for customers