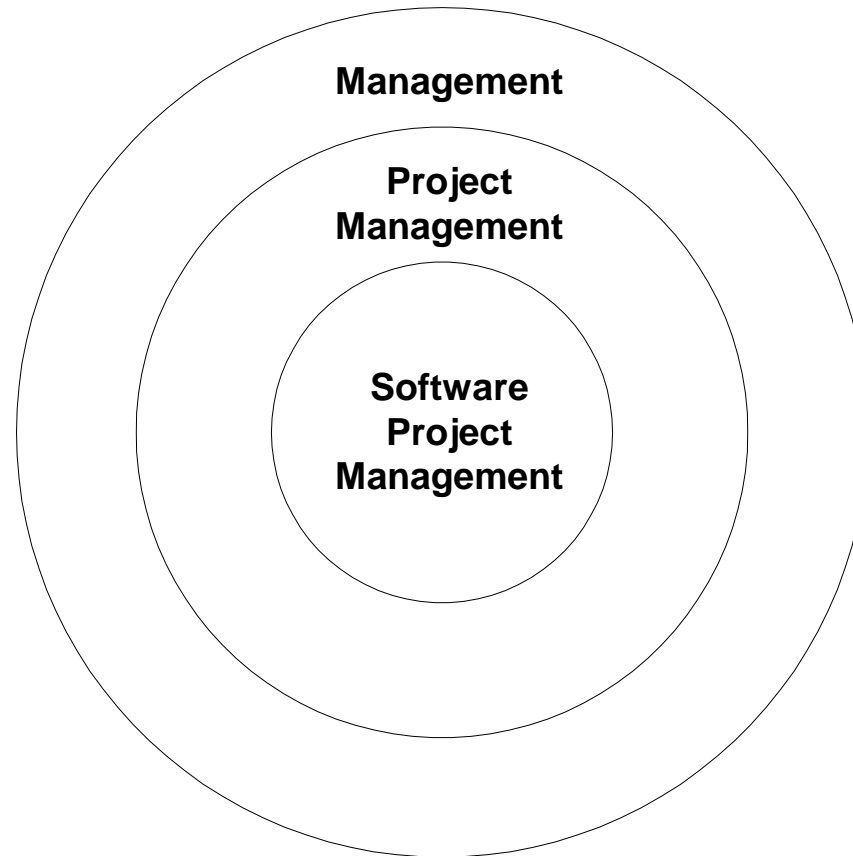# Software Project Management

Project Management Skills

- Leadership
- Communications
- Problem Solving
- Negotiating
- Influencing the Organization
- Mentoring
- Process and technical expertise

Project Manager Positions

- Project Administrator / Coordinator
- Assistant Project Manager
- Project Manager / Program Manager
- Executive Program Manager
- V.P. Program Development

Software Project **Management**

PM History in a Nutshell

- Birth of modern PM: Manhattan Project (the bomb)
- 1970's: military, defense, construction industry were using PM software
- 1990's: large shift to PM-based models
  - 1985: TQM
  - 1990-93: Re-engineering, self-directed teams
  - 1996-99: Risk mgmt, project offices
  - 2000: M&A, global projects

Project Management

- What's a project?
- PMI definition
  - *A project is a temporary endeavor undertaken to create a unique product or service*
- Progressively elaborated
  - With repetitive elements
- A project manager
  - Analogy: conductor, coach, captain

Project vs. Program Management

- What's a 'program'?
- Mostly differences of scale
- Often a number of related projects
- Longer than projects
- Definitions vary
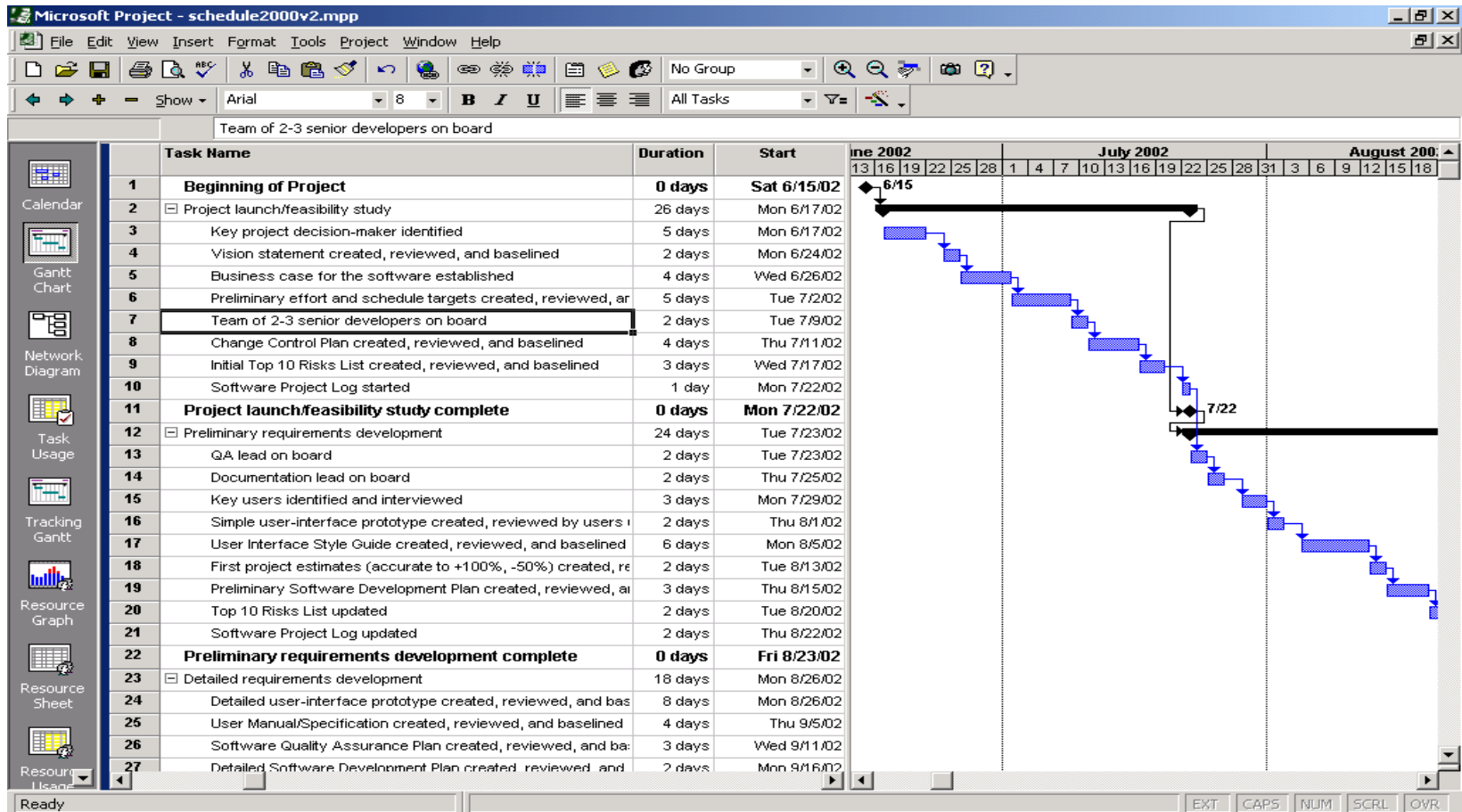- Ex: Program Manager for MS Word

Interactions / Stakeholders

- As a PM, who do you interact with?
- Project Stakeholders
  - Project sponsor
  - Executives
  - Team
  - Customers
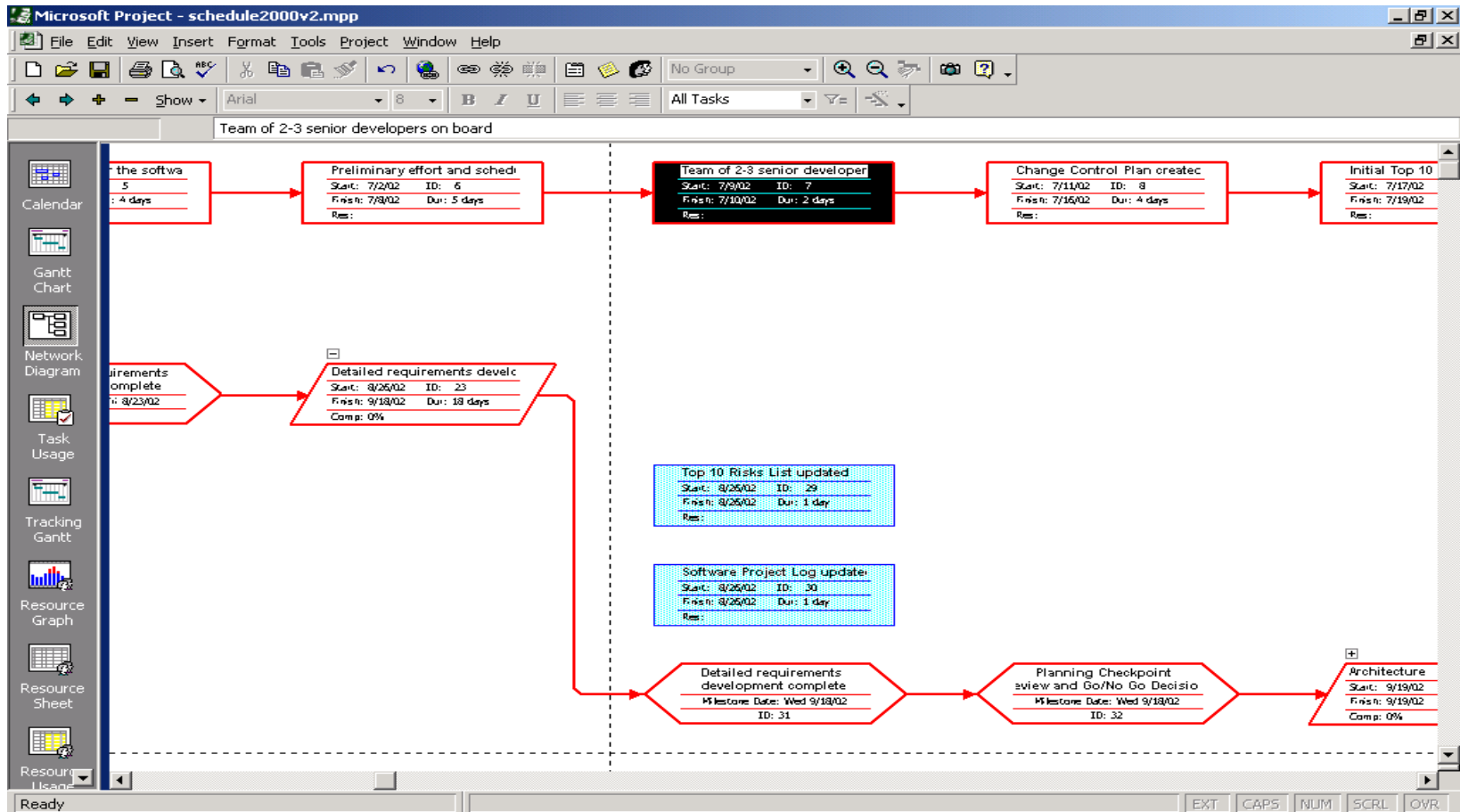 - Contractors
  - Functional managers

PM Tools: Software

- Low-end
  - Basic features, tasks management, charting
  - MS Excel, Milestones Simplicity
- Mid-market
  - Handle larger projects, multiple projects, analysis tools
  - MS Project (approx. 50% of market)
- High-end
  - Very large projects, specialized needs, enterprise
  - AMS Realtime
  - Primavera Project Manager

Tools: Gantt Chart

Tools: Network Diagram

PMI's 9 Knowledge Areas

- Project *integration* management
- Scope
- Time
- Cost
- Quality
- Human resource
- Communications
- Risk
- Procurement

First Principles

- One size does not fit all

- Patterns and Anti-Patterns

- Spectrums
  - Project types
  - Sizes
  - Formality and rigor

Software Project Management   13

Why Rapid Development

- Faster delivery
- Reduced risk
- Increased visibility to customer
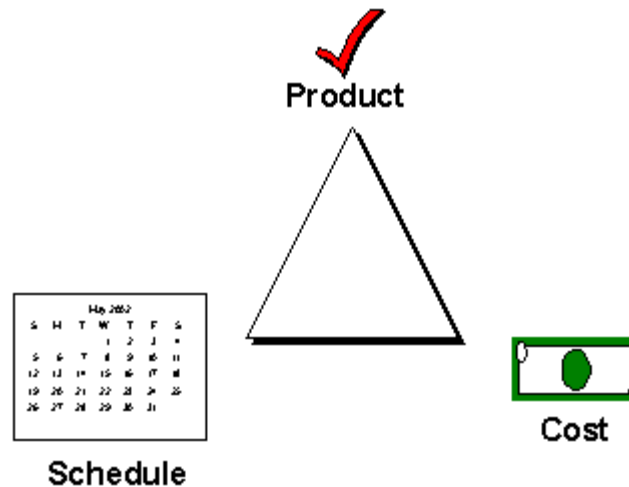- Don't forsake quality

Strategy

- Classic Mistake Avoidance

- Development Fundamentals

- Risk Management

- Schedule-Oriented Practices

Four Project Dimensions

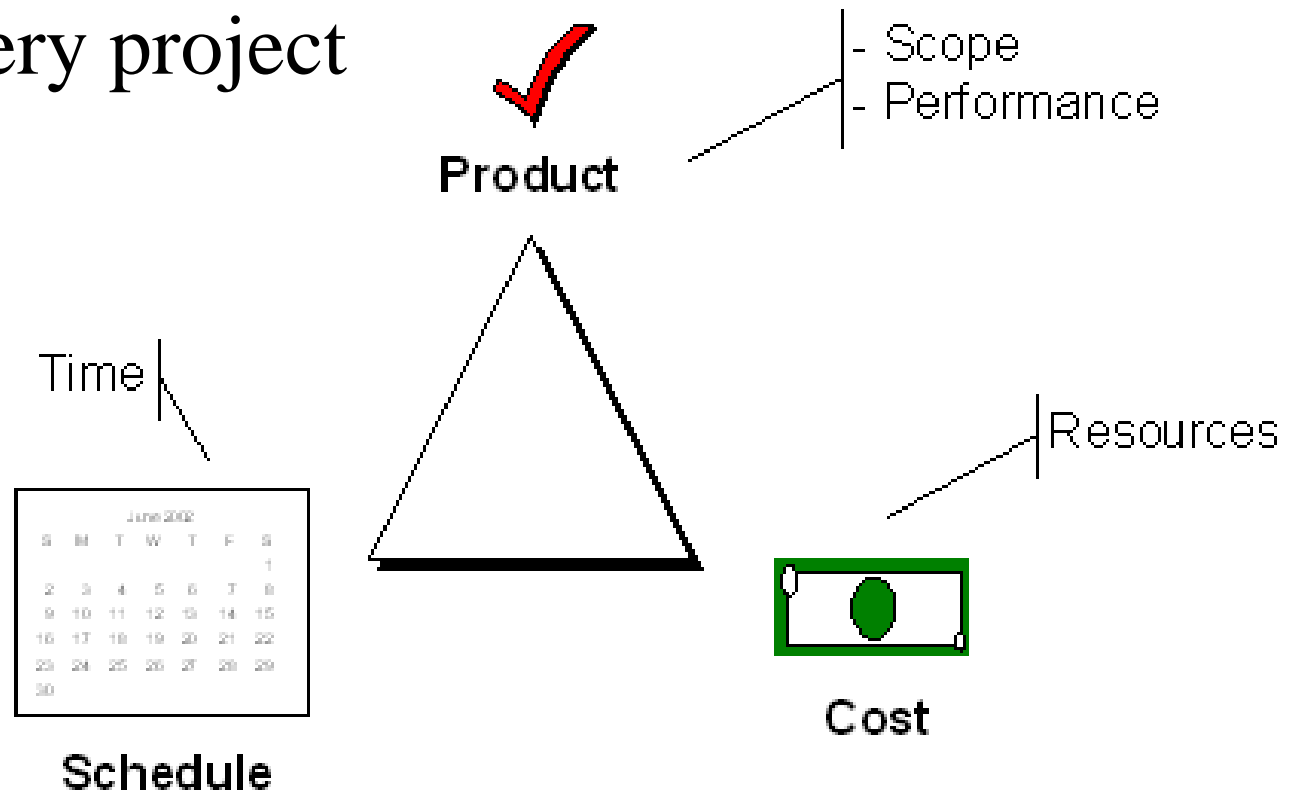- People
- Process
- Product
- Technology

Trade-off Triangle

- Fast, cheap, good. Choose two.

Trade-off Triangle

- Know which of these are fixed & variable for every project

Product

- Scope
- Performance

Time

Schedule

Resources

Cost

People

- "It's always a people problem" Gerald Weinberg, "The Secrets of Consulting"

- Developer productivity: 10-to-1 range

- Improvements:
  - Team selection
  - Team organization
  - Motivation

People 2

- Other success factors
  - Matching people to tasks
  - Career development
  - Balance: individual and team
  - Clear communication

Process

- Is process stifling?
- 2 Types: Management & Technical
- Development fundamentals
- Quality assurance
- Risk management
- Lifecycle planning
- Avoid abuse by neglect

Process 2

- Customer orientation
- Process maturity improvement
- Rework avoidance

Product

- The "tangible" dimension
- Product size management
- Product characteristics and requirements
- Feature creep management

Technology

- Often the least important dimension

- Language and tool selection

- Value and cost of reuse

Planning

- Determine requirements
- Determine resources
- Select lifecycle model
- Determine product features strategy

Tracking

- Cost, effort, schedule
- Planned vs. Actual
- How to handle when things go off plan?

Measurements

- To date and projected
  - Cost
  - Schedule
  - Effort
  - Product features
- Alternatives
  - Earned value analysis
  - Defect rates
  - Productivity (ex: SLOC)
  - Complexity (ex: function points)
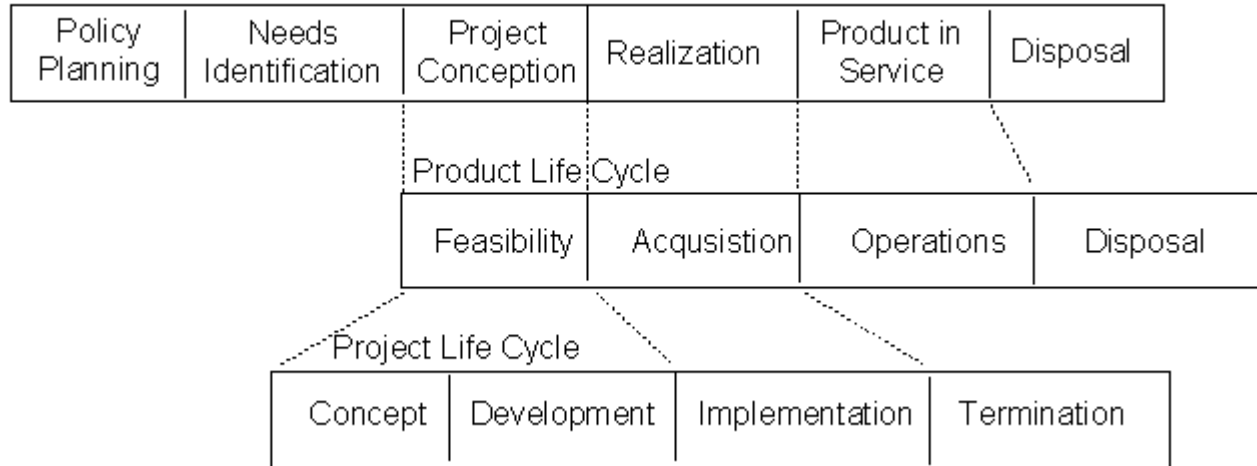
Technical Fundamentals

- Requirements
- Analysis
- Design
- Construction
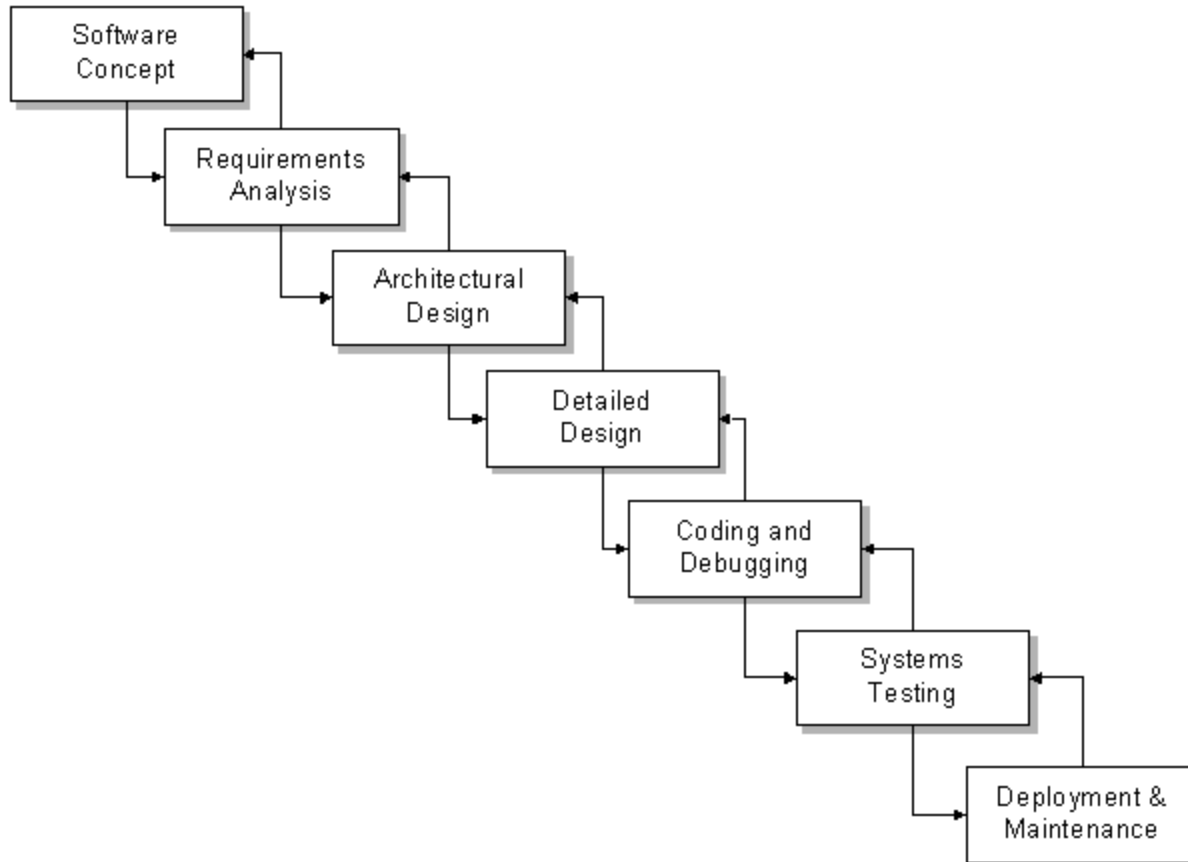- Quality Assurance
- Deployment

Project Phases

- All projects are divided into phases
- All phases together are known as the Project Life Cycle
- Each phase is marked by completion of Deliverables
- Identify the primary software project phases
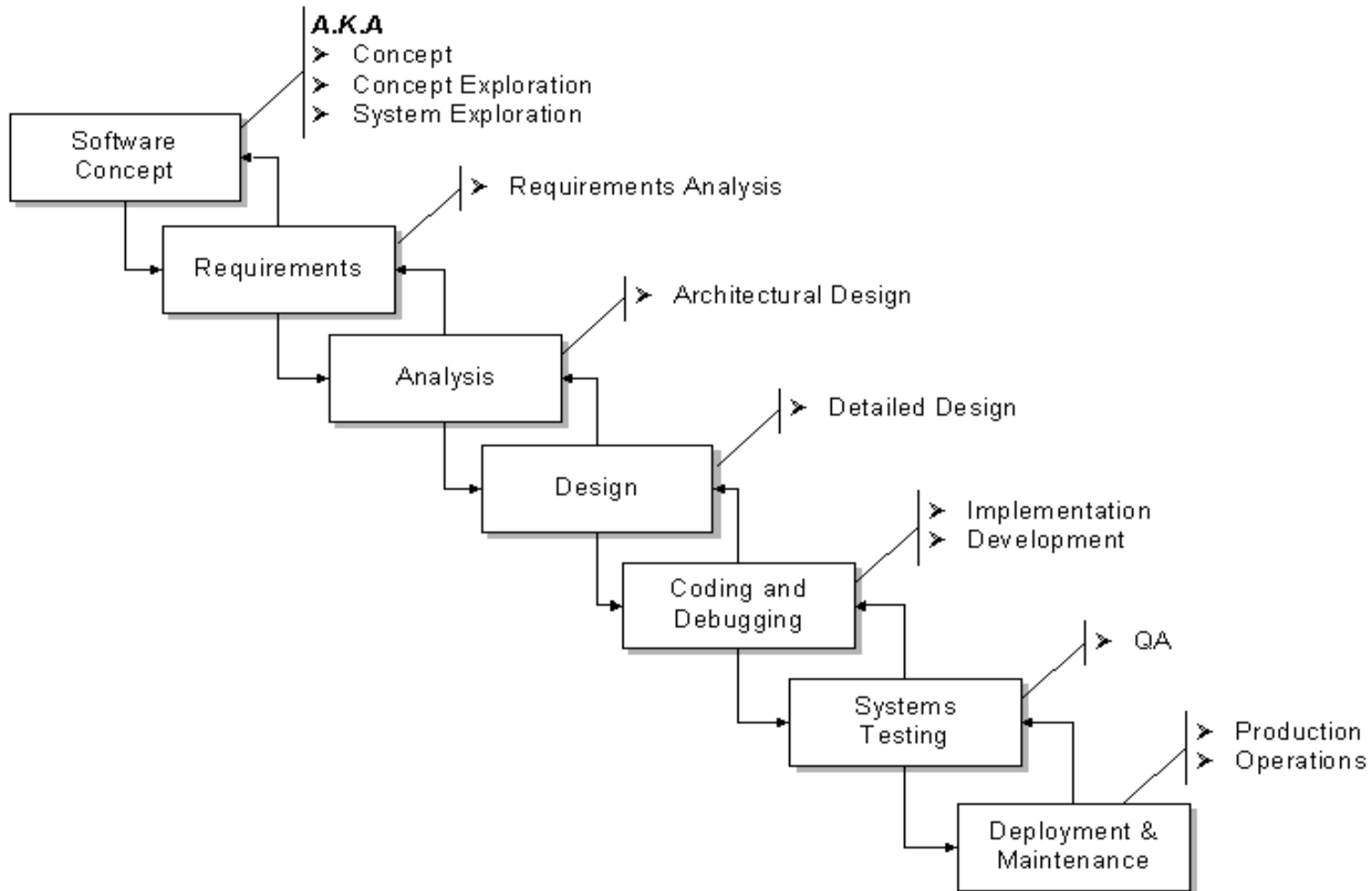
Lifecycle Relationships

Business Life Cycle

Policy Planning	Needs Identification	Project Conception	Realization	Product in Service	Disposal

Product Life Cycle

Feasibility	Acquisition	Operations	Disposal

Project Life Cycle

Concept	Development	Implementation	Termination

Seven Core Project Phases

Project Phases A.K.A.

Phases Variation