



# Software Project Management

Target Group: SE 3<sup>rd</sup> year

Instructor: Hailu Beshada (MSc)

# Why you need to study SPM?

- **Failure of many Software Projects.** For instance,
  - ✓ Large amounts of money are spent on ICT e.g. UK government in 2003-4 spent £2.3 billions on contracts for ICT and only £1.4 billions on road building
  - ✓ Project often fail – Standish Group claim only a third of ICT projects are successful. 82% were late and 43% exceeded their budget.
  - ✓ Poor project management a major factor in these failures
  - ✓ The United States Internal Revenue System was to abandon its tax system modernization program after having spent \$4 billion;

# Why you need to study SPM?

- ✓ The state of California spent \$1 billion on its non-functional welfare database system;
- ✓ The €339 million United Kingdom air traffic control system was reported as being two years behind schedule;
- ✓ A 1995 Standish Group study (CHAOS) found that only 16.2% of IS projects were successful and over 31% were canceled before completion, costing over \$81 B in the U.S. alone
- ✓ **Worldwide cost of IT failure (revisited): \$3 trillion**

# Causes of Project Management Failure

- Bad Communications
- Poor schedule or resource Management (mismanagement)
- Weak requirements definitions (leads to inadequate planning)
- Inadequate planning, assumptions, risks, or resources
- Use of new or unproven technologies/methods

# Causes of Project Management Failure

- Ineffective (or nonexistent) quality controls
- Managing multiple projects at once or multi-tasking resources
- Supply chain failures
- Scope creep or poor impact analysis
- Lack of qualified resources

# Advantages of Using Formal SPM

- Better control of financial, physical, and human resources
- Improved customer relations
- Shorter development times
- Lower costs

# Advantages of Using Formal SPM

- Higher quality and increased reliability
- Higher profit margins
- Improved productivity
- Better internal coordination
- Higher worker morale

# What is Project?

- A **project** is:
  - ✓ well-defined task, which is a collection of several operations done in order to achieve a goal.
  - ✓ a temporary endeavor undertaken to create a unique product, service, or result



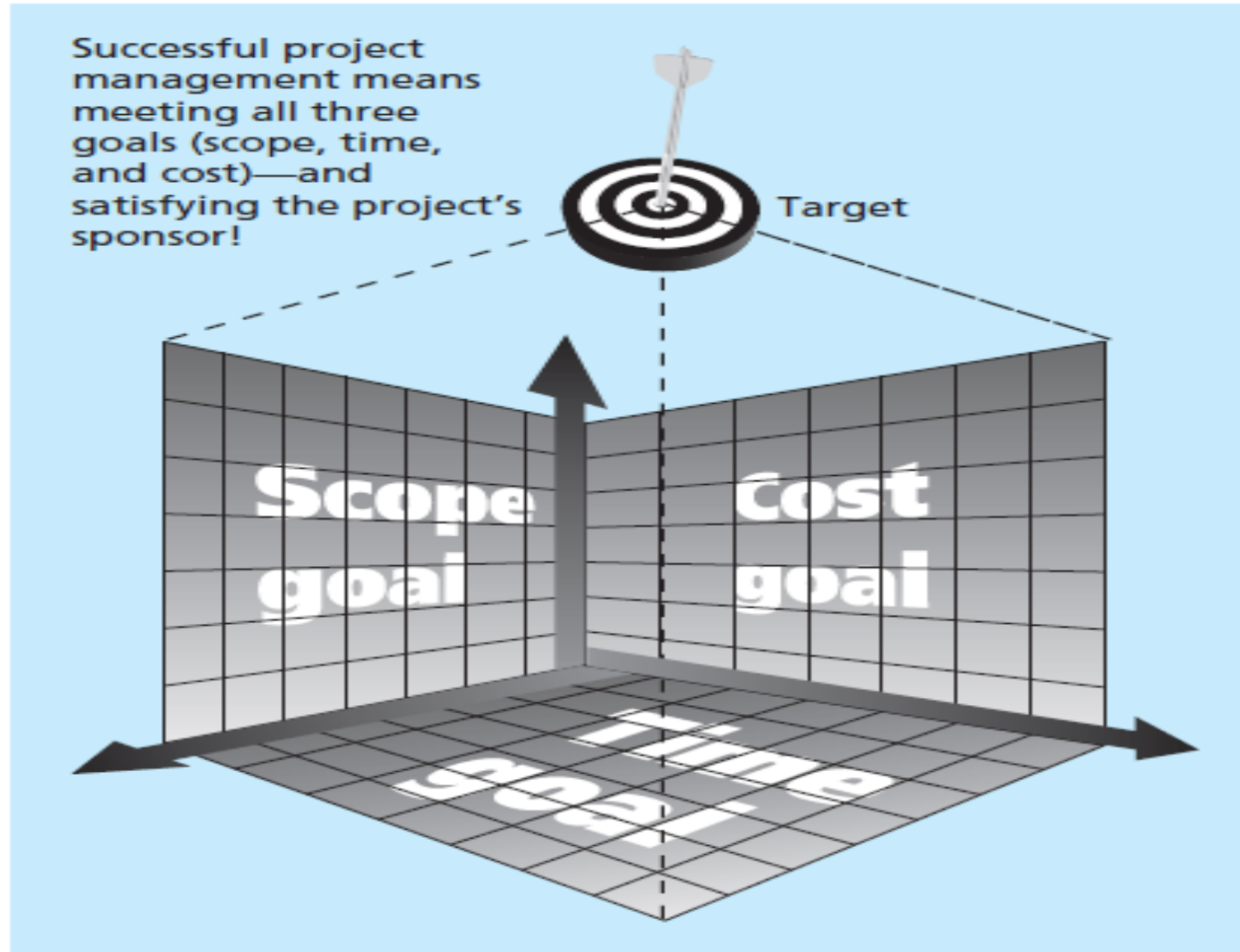
# Attributes of Projects

- Projects come in all shapes and sizes.
- The following attributes help us to define a project further:
  - ✓ unique purpose
  - ✓ temporariness
  - ✓ require resources, often from various areas
  - ✓ should have a primary sponsor and/or customer
  - ✓ involve uncertainty

# Project Constraints

- Every project is constrained in different ways by its:
  - ✓ Scope goals: What is the project trying to accomplish?
  - ✓ Time goals: How long should it take to complete?
  - ✓ Cost goals: What should it cost?
- Increased scope typically means increased time and cost, a tight time constraint could mean increased costs and reduced scope, and a tight budget could mean increased time and reduced scope.
- It is the project manager's duty to balance these three often competing goals

# The Triple Constraints of Project



# What is Project Management?

- Project Management is:
  - ✓ the discipline of planning, organizing, and managing resources to bring about the successful completion of specific project goals and objectives.
  - ✓ the application of knowledge, skills, tools, and techniques to project activities to meet project requirements.
    - Knowledge, skills, goals and personalities are the factors that need to be considered within project management.

# Stages of Projects

- Every project is unique, but you should find that if best practices are followed, each one follows the five stages of projects:
  - ✓ Initiation
  - ✓ Planning
  - ✓ Execution
  - ✓ Control and
  - ✓ Closure

# Stages of Projects

## ■ Initiating:

- ✓ **Integration management:** Developing a project charter
- ✓ **Stakeholder management:** Identifying stakeholders

## ■ Planning:

- ✓ **Integration management:** Developing a project management plan
- ✓ **Scope management:** Defining and managing scope, creating a work breakdown structure (WBS), and requirements gathering

# Stages of Projects

## ■ Planning:

- ✓ **Time management**: Planning, defining, and developing schedules, activities, estimating resources and activity durations
- ✓ **Costs management**: Planning and estimating costs, and determining budgets
- ✓ **Quality management**: Planning and identifying quality requirements

# Stages of Projects

## ■ Planning:

- ✓ **Human Resource management:** Planning and identifying human resource needs
- ✓ **Communications management:** Planning communications
- ✓ **Risk management:** Planning for and identifying potential risks, performing qualitative and quantitative risk analysis, and planning risk mitigation strategies



# Stages of Projects

## ■ Planning:

- ✓ **Procurement management:** Planning for and identifying required procurements
- ✓ **Stakeholder management:** Planning for stakeholder expectations

## ■ Executing:

- ✓ **Integration management:** Directing and managing all work for the project

# Stages of Projects

## ■ Executing:

- ✓ **Quality management:** Performing all aspects of managing quality
- ✓ **Human resource management:** Selecting, developing, and managing the project team
- ✓ **Communications management:** Managing all aspects of communications

# Stages of Projects

- Executing:

- ✓ **Procurement management**: Take action on securing necessary procurements
- ✓ **Stakeholder management**: Managing all stakeholder expectations

- Monitoring and Controlling:

- ✓ **Integration management**: Monitoring and controlling the project work and managing any necessary changes

# Stages of Projects

- Monitoring and Controlling:
  - ✓ **Scope management**: Validating and controlling the scope of the project
  - ✓ **Time management**: Controlling the scope of the project
  - ✓ **Costs management**: Controlling project costs
  - ✓ **Quality management**: Controlling the quality of deliverables

# Stages of Projects

- Monitoring and Controlling:
  - ✓ Communications management: Controlling all team and stakeholder communications
  - ✓ Procurement management: Controlling procurements
  - ✓ Stakeholder management: Controlling stakeholder engagements

# Stages of Projects

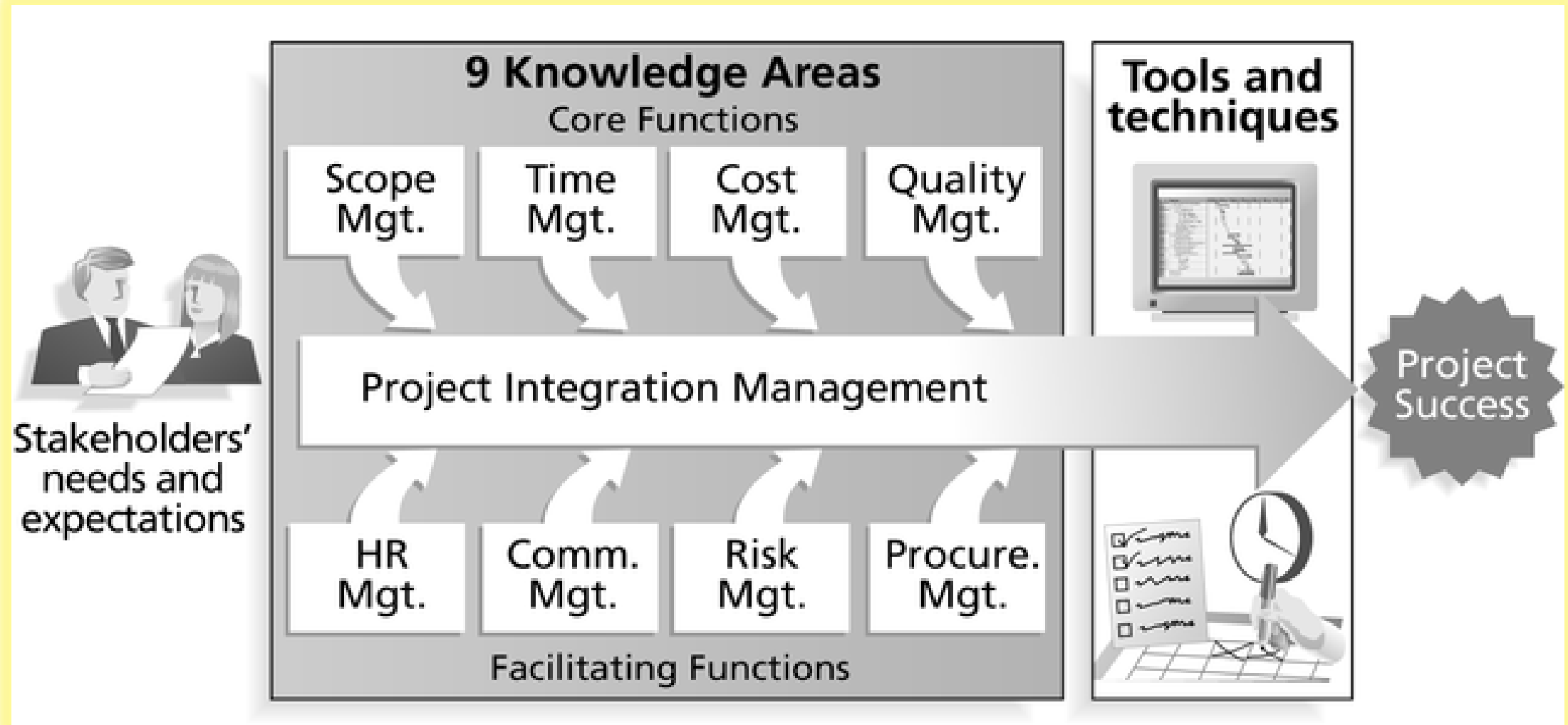
- Closing:

- ✓ Integration management: Closing all phases of the project
- ✓ Procurement management: Closing all project procurements

# The Role of Project Manager

- Planning and Defining Scope
- Developing Schedules
- Time and Cost Estimating
- Developing a Budget
- Creating Charts and Schedules
- Risk Analysis
- Monitoring and Reporting Progress
- Strategic Influencing
- Business Partnering
- Working with Vendors
- Controlling Quality

# Project Management Framework





# Project Stakeholders

- Stakeholders are the people involved in or affected by project activities.
- These are people who have a stake or interest in the project, In general, they could be users/clients or developers/implementers
- Stakeholders include
  - ✓ the project sponsor and project team
  - ✓ support staff
  - ✓ customers
  - ✓ users
  - ✓ suppliers
  - ✓ opponents to the project

# Project Management Knowledge Areas

- Knowledge areas describe the key competencies that project managers must develop
  - ✓ **4 core knowledge areas** lead to specific project objectives (scope, time, cost, and quality)
  - ✓ **4 facilitating knowledge areas** are the means through which the project objectives are achieved (human resources, communication, risk, and procurement management)
  - ✓ **1 knowledge area** (project integration management) affects and is affected by all of the other knowledge areas

# PM Tools and Techniques

- Project management tools and techniques assist project managers and their teams in various aspects of project management
- Some specific ones include
  - ✓ Project Charter and WBS (scope)
  - ✓ Gantt charts, network diagrams, critical path analysis, critical chain scheduling (time)
  - ✓ Cost estimates and earned value management (cost)