

SWE30010

Development Project 2: Design, Planning and Management

Lecture 7a

Traditional Software Project
Management



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Lecture Overview



- Why do we develop Software Systems?
- What is a Project?
 - ☐ Engineering Perspective
 - ☐ Management Perspective



Roadmap



■ Why do we develop Software Systems?

■ What is a Project?

- ☐ Engineering Perspective
- ☐ Management Perspective



What is Software Development?



***Everything to do with the
development of a software system to
perform a required activity***

Why do we write Software?



- To address pain/pleasure points of customer and/or clients
- To deliver business value to the organisation
- To mediate exposure to “environment”
- To enable benefit from new/changed technologies
- To meet legal and social obligations
- Etc, etc

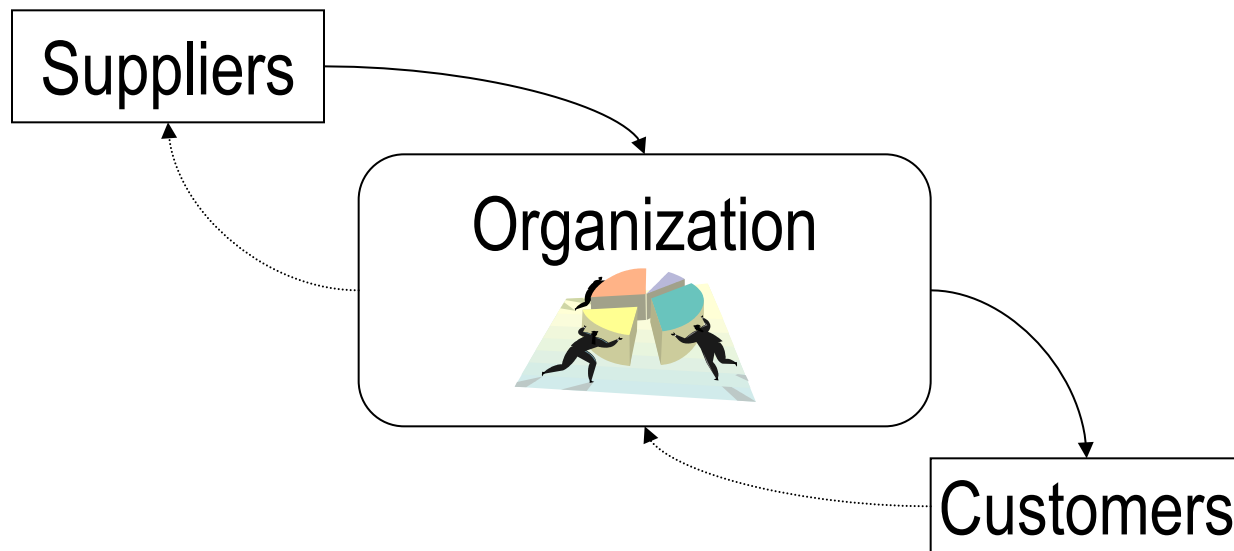
Why do we write Software?



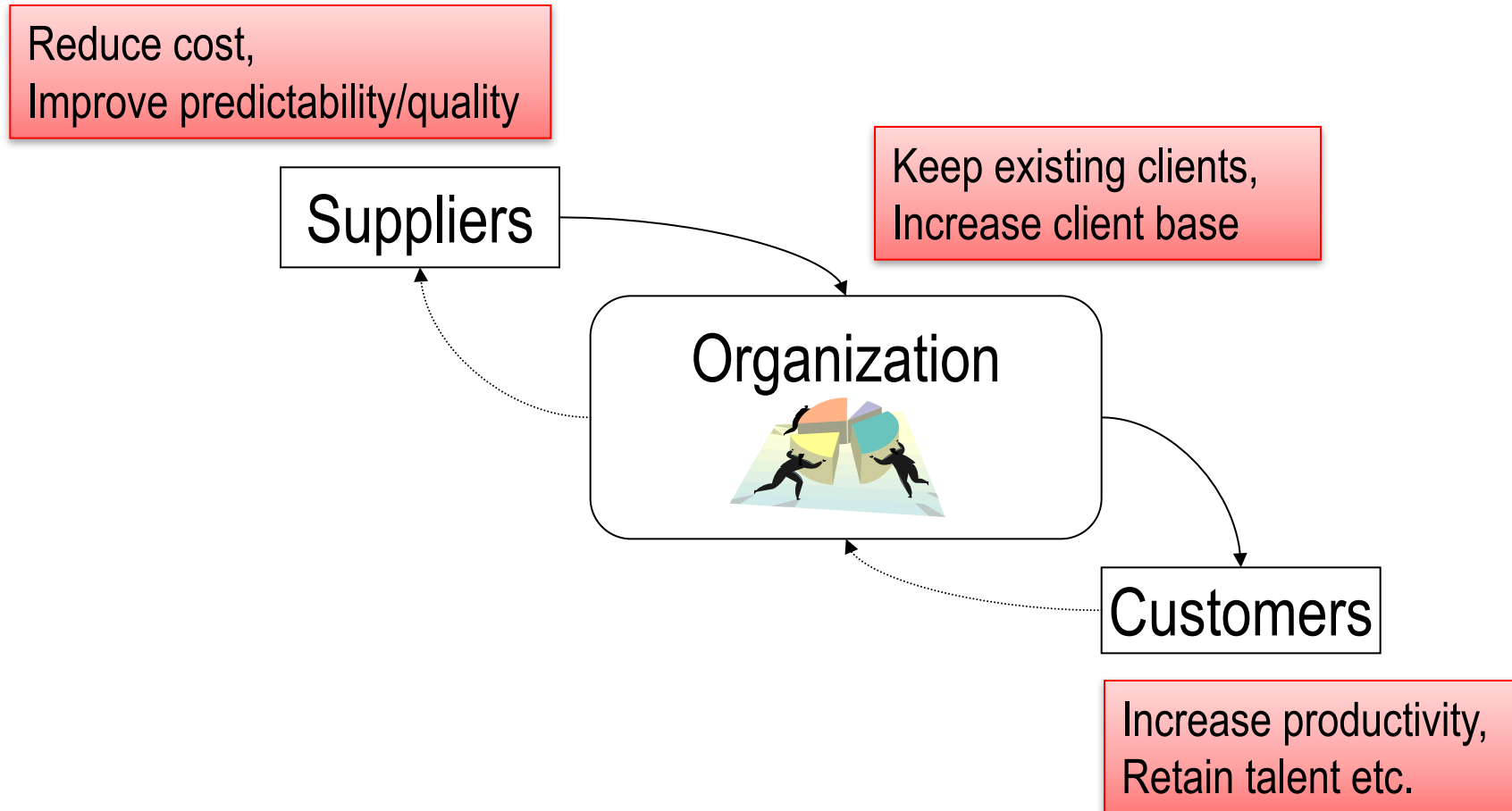
➡ *Bottom line in most cases :*

To improve business value

Business Context



Business Context – Benefits of Software



Drivers for Software Development



What are the drivers for the following systems

- A web-based system to support student applications for special consideration in assessment
- an air-traffic control system
- an adaptive cruise-control system
- a new voice-activated adviser for Android phones
- a system to analyse astronomical data captured by a large radio telescope?

Software Projects May



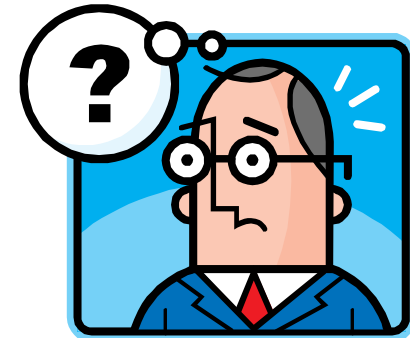
- provide a **service** to a single client
(internal in a company, or external)
- produce a **product** for sale
- The dynamics of their development are different, but there are many things in common

Choosing Software Projects



- Organisations have to choose which projects to undertake

- How do they choose them?



Choosing Software Projects



- Choice largely on the basis of business value
 - ie, which ones will be most profitable to the business
- Also true for software vendors
 - they build the products that will maximise their profits



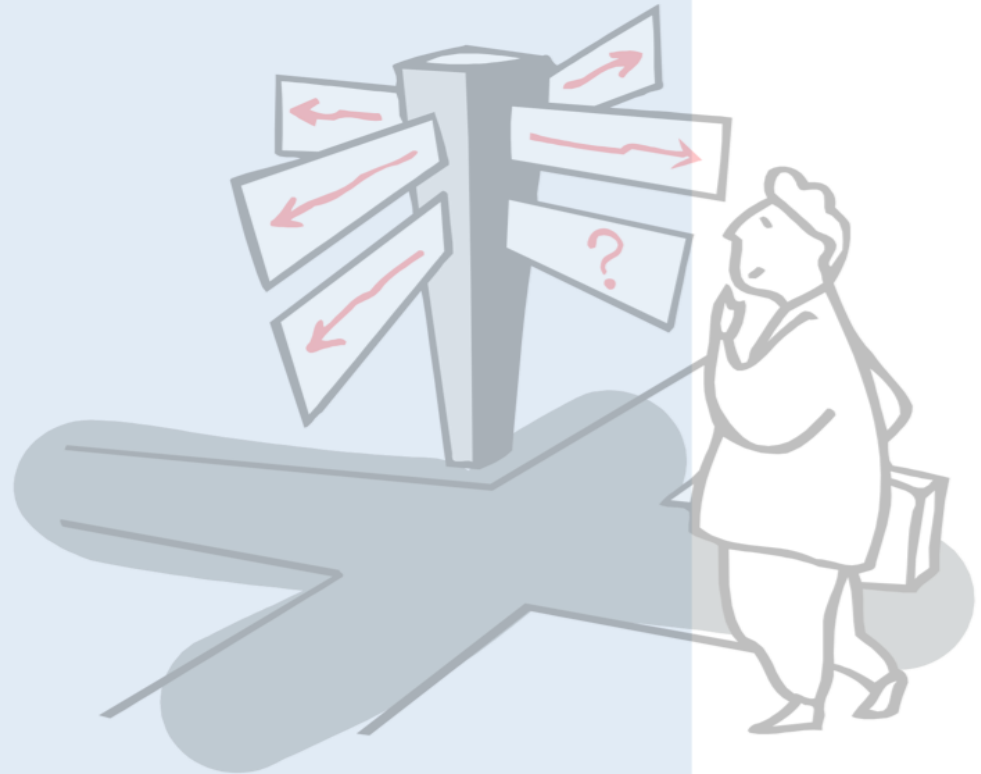
Roadmap



- Why do we develop Software Systems?

- **What is a Project?**

- ☐ Engineering Perspective
- ☐ Management Perspective



IEEE PMBOK



*“A project is a **temporary** endeavor undertaken to create a **unique** product, service, or result.*



***Temporary** means that every project has a **definite beginning** and a **definite end**.*

***Unique** means that the product, service, or result is different in some distinguishing way from all similar products, services, or results.”*



(Source: IEEE 1490 – Guide to the PMI Project Management Body of Knowledge)

Roadmap



- Why do we develop Software Systems?

- What is a Project?

- ☐ **Engineering Perspective**

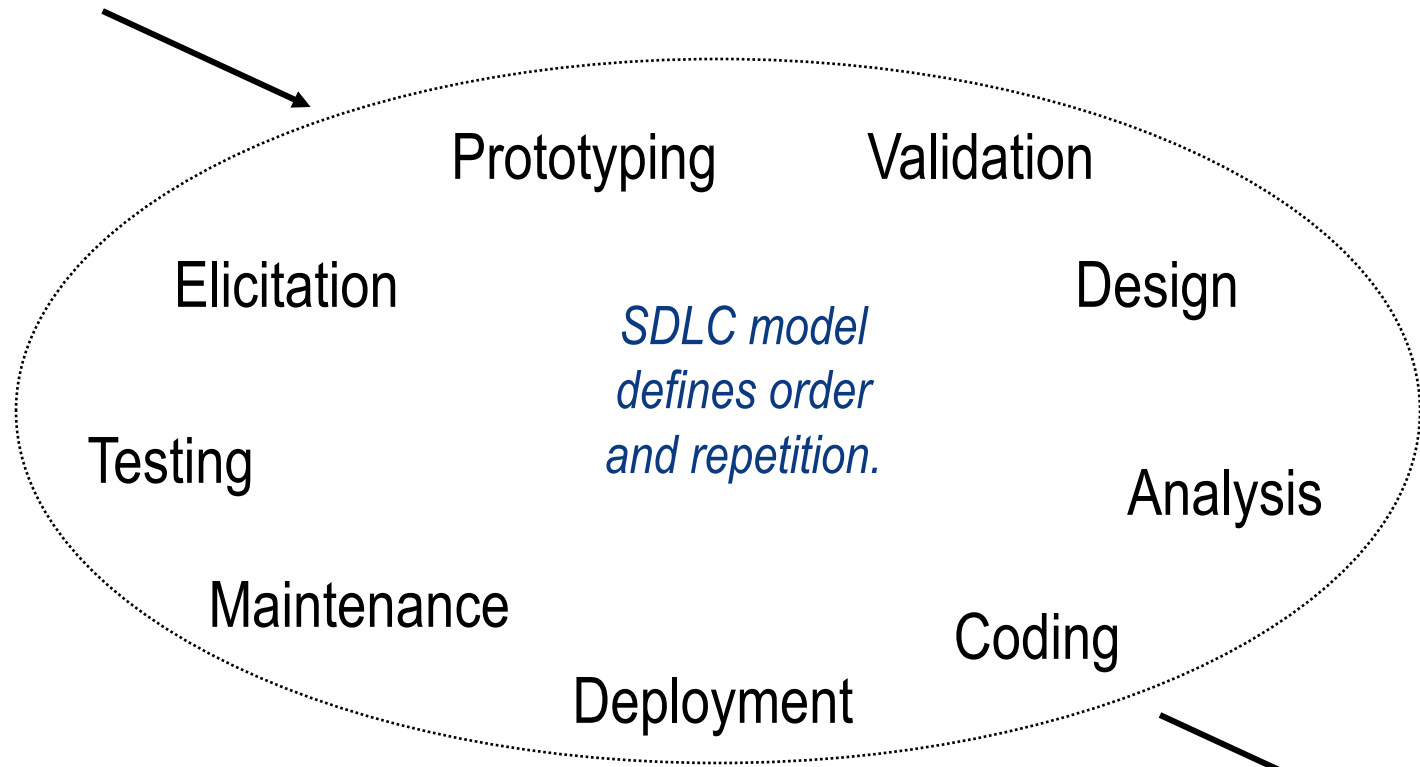
- ☐ Management Perspective



Project – a Development Perspective



Project Inception



SDP material!

Phase Out

Software Development Lifecycle Model



- A *Software Development Lifecycle* (SDLC) model is a process model for developing software-intensive systems –
 - “Set of activities and their relationships to each other to support the development of a software system” (Bruegge and Dutoit)
- May be prescriptive or descriptive
- May be activity-centred or entity-centred (cf procedural vs OO software development!)



Macro Steps vs. Micro Steps

- Every SDLC model defines a process as an *order* of macro development steps (eg: requirements analysis, **then** design, **then** coding, **then** testing, ...)
- Within each macro step, there may be lots of “micro” steps (eg, in the coding macro step, coding of each “module” is a micro step, and within that, writing the code and unit testing it are sub-steps)
- A macro step may involve a repetition of micro steps

Roadmap



- Why do we develop Software Systems?
- What is a Project?
 - ☐ Engineering Perspective
 - ☐ **Management Perspective**



Project - a Management Perspective



We now turn to the topic of this unit –
planning and managing projects

The engineering activities of a project have to
be managed

Why Do Projects Go Wrong?



- Sometimes because the engineers stuff it up!
- But often because of **poor** project management
- So we really must study and embrace good techniques for project management

“Sins” of Software Projects



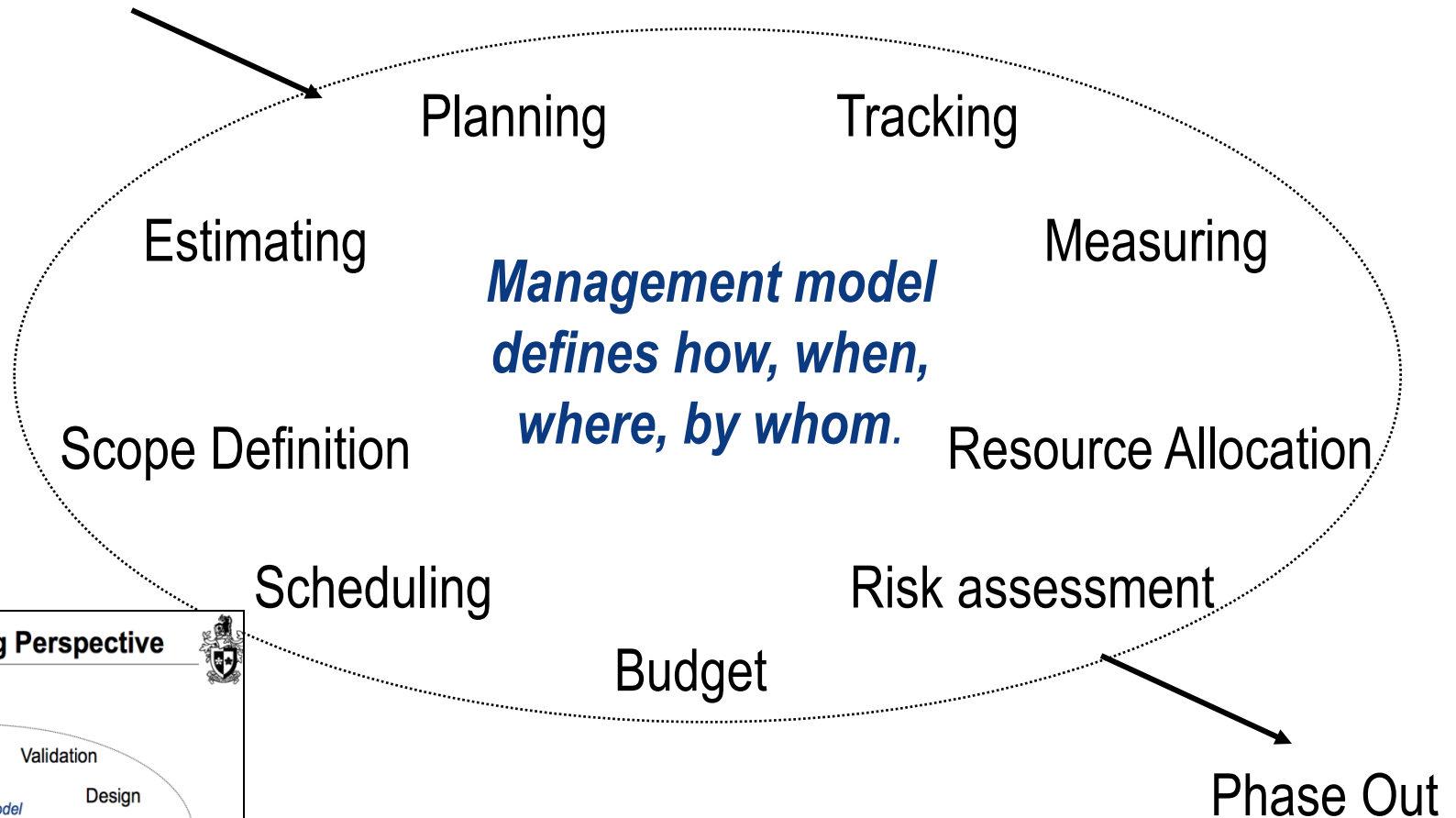
- Volatile Requirements (and too big a scope)
- Lack of understanding between clients and developers
- Poor Estimation and Planning
- Unrealistic Schedules and Budgets (which often force “fiction” into the estimation and planning process!)
- Inadequate Controls
- Insufficient focus on Quality Control (eg, inadequate testing)
- ...

Project - a Management Perspective



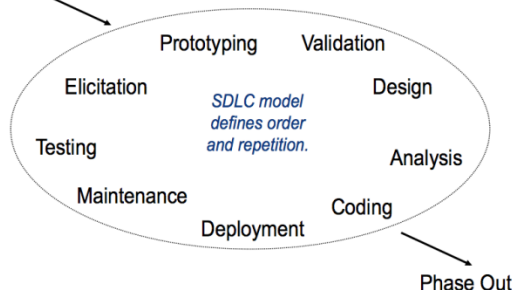
Project Inception

You have
NOT seen
this before,
in SDP or
DP1



Project - an Engineering Perspective

Project Inception



What is Project Management?



Project Management =

Plan the work then ***work the plan***

(Decide what you are going to do, then do it!)

Basic Project Management Functions



- **Scoping:** define what needs to be done
- **Planning:** estimate and schedule resources
- **Organizing:** who does what (and when)
- **Staffing:** recruiting and motivating personnel
- **Directing:** ensure team acts as a (coherent) whole
- **Monitoring / Controlling:** detect plan deviations + corrective actions

systematized
common
sense!!

Project Management Frameworks



■ PRINCE2, PProjects IN Controlled Environments

□ www.prince-officialsite.com



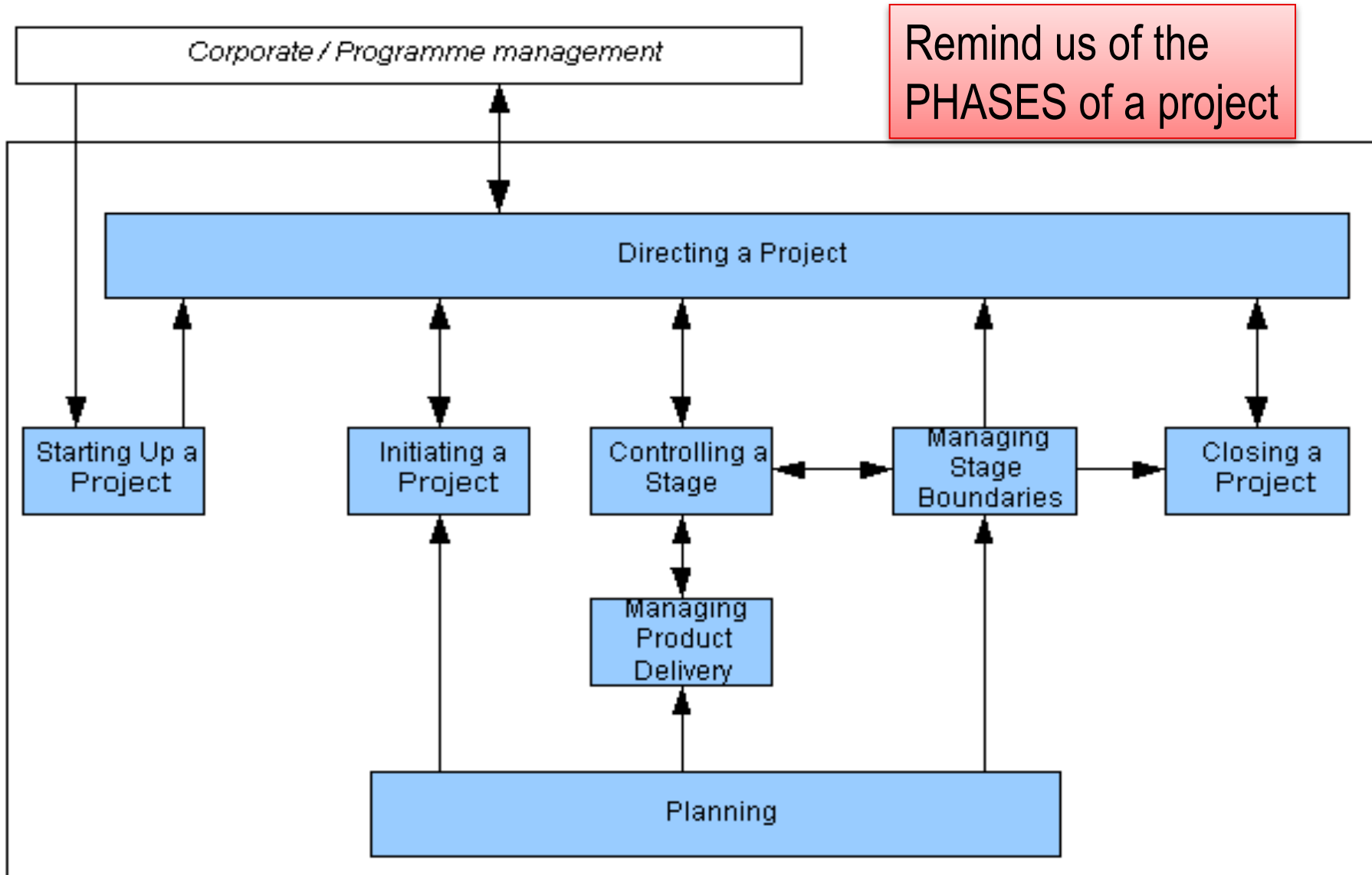
■ PMBOK, Project Management Body of Knowledge

□ Project Management Institute (PMI)

□ www.pmi.org/PMBOK-Guide-and-Standards



Components of PRINCE2



Components of PMBOK



Five *process groups*:

- Initiating
- Planning
- Executing
- Monitoring and Controlling
- Closing

Remind us of the
PHASES of a project

Nine *knowledge areas*:

- Project Integration Management
- Project Scope Management
- Project Time Management
- Project Cost Management
- Project Quality Management
- Project Human Resource Management
- Project Communications Management
- Project Risk Management
- Project Procurement Management

And ... the ASPECTS of a project

What you should know!



- What is the main purpose of developing software systems?
- What is a software project? What drives a software project?