Electronics and
Computer Science

University of Southampton

Welcome & Introduction

COMP6204: Software Project Management and Secure Development

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September 24

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Overview

- House Keeping
  - Lecture times
  - Syllabus/Indicative Content
  - Some project management definitions
  - Assignments
  - Exams
  - Resources

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Module Team

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Lecturer

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MyEngagement – Registration

- MyEngagement is an attendance monitoring app that provides students and staff information about student engagement with their programme.
- **Students** can find useful information and links in the section "Information for students".
- **How it works**
  - Once a student has arrived at their session, they can register their attendance on the app by submitting a numerical code or scanning a QR code.
  - Teaching staff can also update attendance when students may have had issues doing so themselves.
  - The system will be cloud-hosted and students will need to use the SEAtS 2024 app to access their account.

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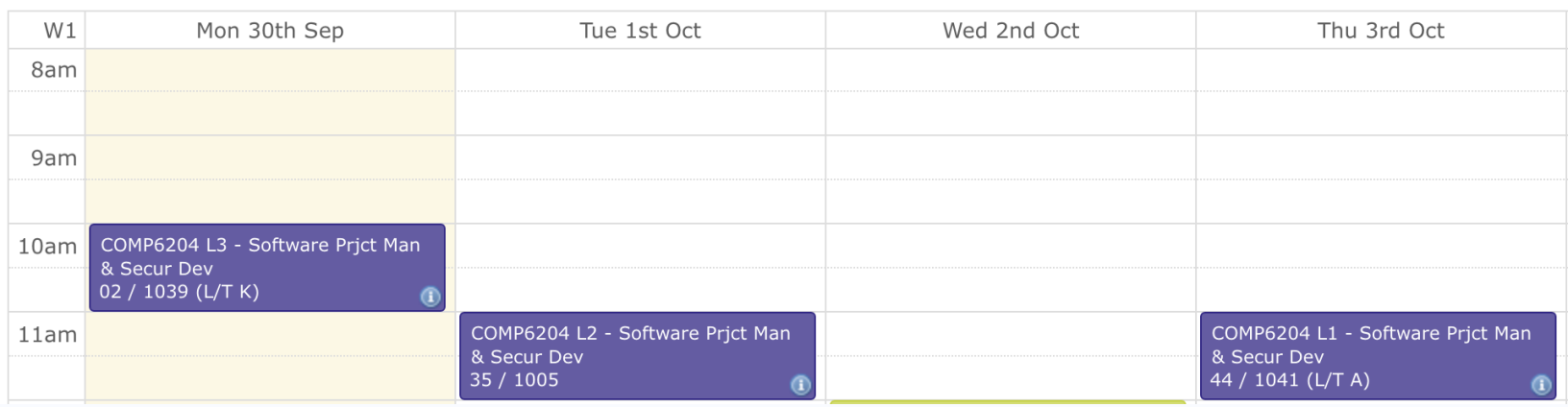
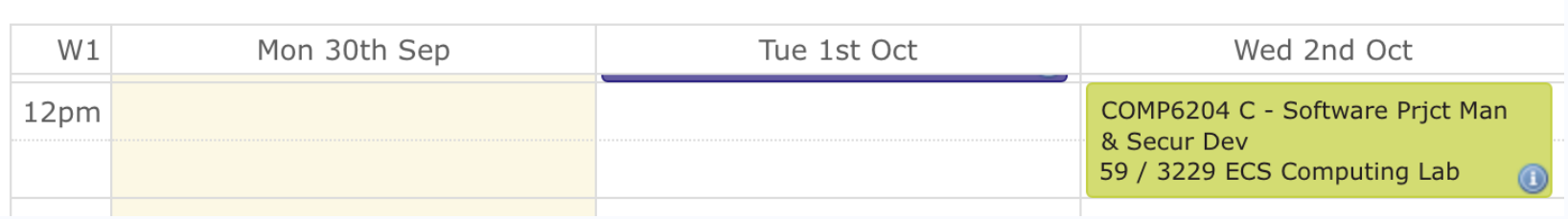
Housekeeping - What, when, where?

- Lectures (three slots)



- Coursework laboratories (Use it for group communication)
  - We may use it for other purposes (but not very often)



Syllabus

- This module is to prepare students for undertaking large software projects.
  - It introduces the students to the high-level strategies required for managing projects from their genesis to completion.

- The module also introduces the students to some aspects of secure engineering of software systems.

Indicative Content

Managing the software development process:

- Models of Software Projects
- Estimating the effort in software projects
- Initiation, Planning and monitoring
- Costing and budgeting

Security by design

- Security models, and principles of secure computing
- Threat Modelling for designing secure systems
- Popular threat modelling techniques – STRIDE

Indicative Content – Project Management

- The Project Management Process Groups & Knowledge areas
- Project life Cycles Management including, Initiating, Planning, Executing, Monitoring & Controlling and Closing Projects
- Project Integration and Scope Management
- Effort Estimations in software projects
- Project Schedule and Cost Management
- Project Resource Management
- Development methods:
  - Predictive and Hybrid development methods
  - Agile Development techniques

What Is Project?

- As per Project Management Institute(PMI) ,project is defined as "Temporary endeavour undertaken to create a unique product, service or result.
- Some examples of projects:
  - New product development
  - Enhancement in an existing product
  - Market research
  - Feasibility study
  - Developing a software application
  - Constructing a building

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Reasons For Starting A Project

Market/Consumer Demand

Technology Change

Legal/social mandate

Internal Organisational Need

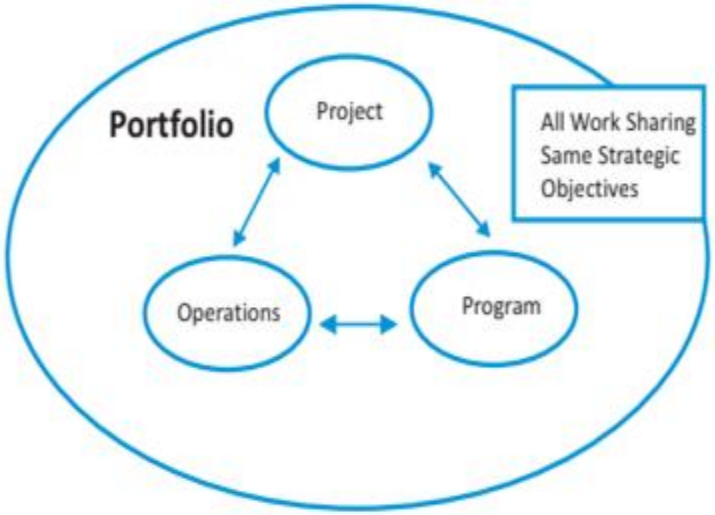
Project Management

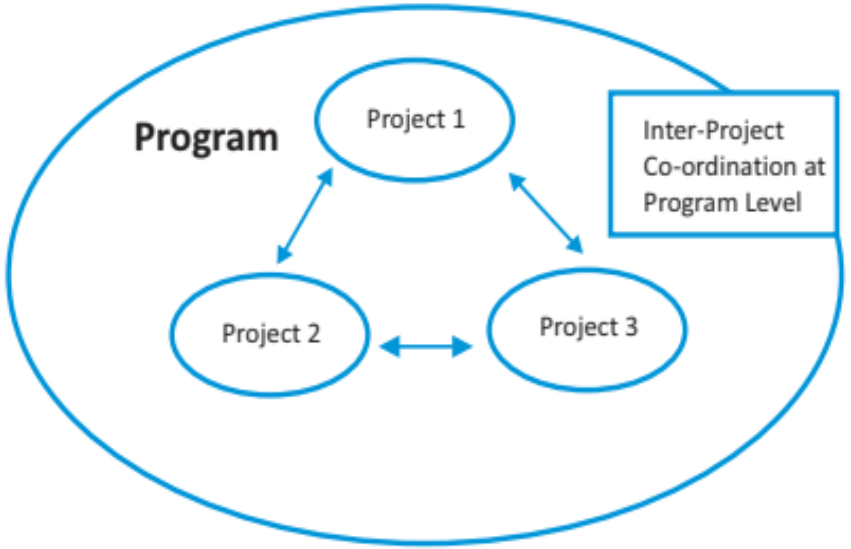
- Every project starts with an intention of meeting certain objectives.

- When one applies their knowledge, skills, tools and techniques to manage a project in order to achieve these objectives, it is called Project Management.

Program And Portfolio

In some cases, ***projects*** fit within larger ***programs***, which themselves fit within ***portfolios***.





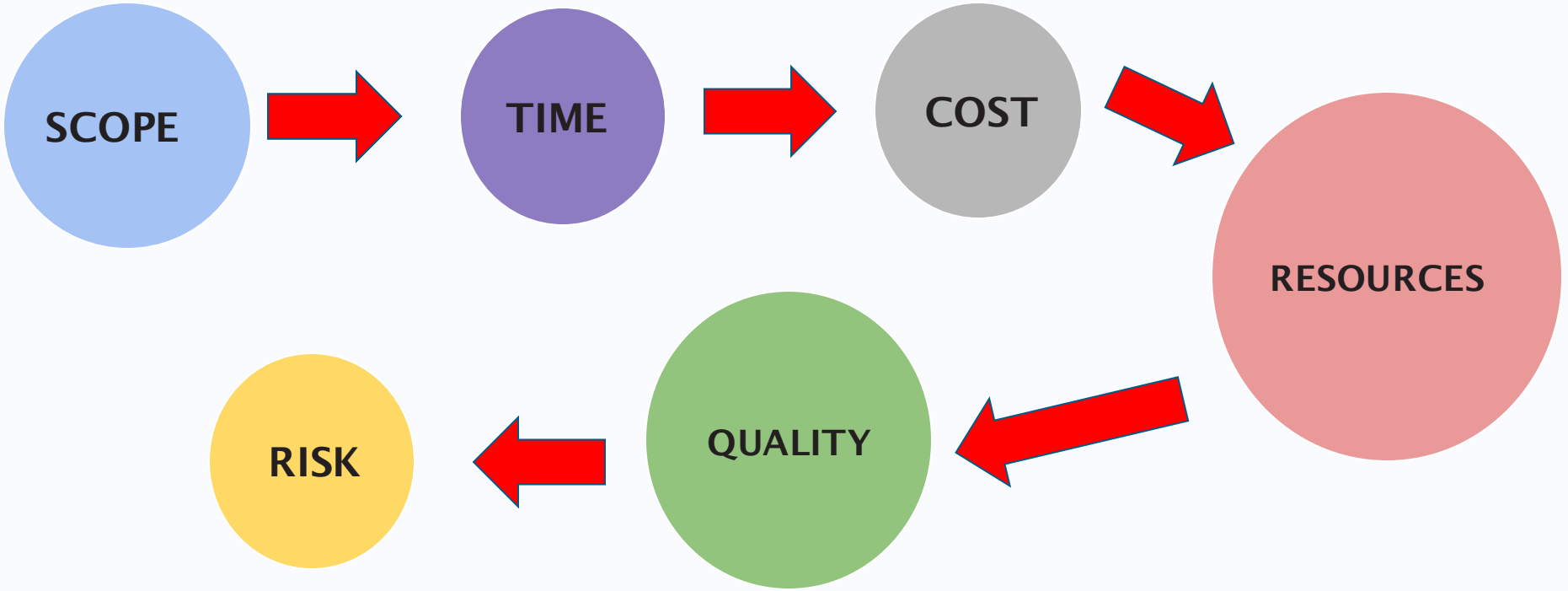
- A **portfolio** is a group of programs and/or projects within the same organization, which may be related or unrelated to one another.

- A **program** is a group of projects that are similar or related to one another and that are often managed as a group instead of independently.

Project Management Office(PMO)

- Today, most companies that execute several projects have a centralized department called Project Management Office (PMO).
- However, the work performed by the PMO differs.
- It generally depends upon the size of the company and whether the company's main business is into projects or operations.

Project Constraints



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Project – Stakeholders

Organisational Structures

- Every organisation defines its own unique structure.
  - However, all the structures are based on three underlying structures, using which every company creates its own unique structure.
- The structure largely depends upon the kind of business the company is into.
  - Manufacturing companies will have a different structure than consulting companies.
  - Similarly, companies focused on production define their structure differently from companies into services.

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Organisational Structures

FUNCTIONAL

This structure is organized based on functions or departments

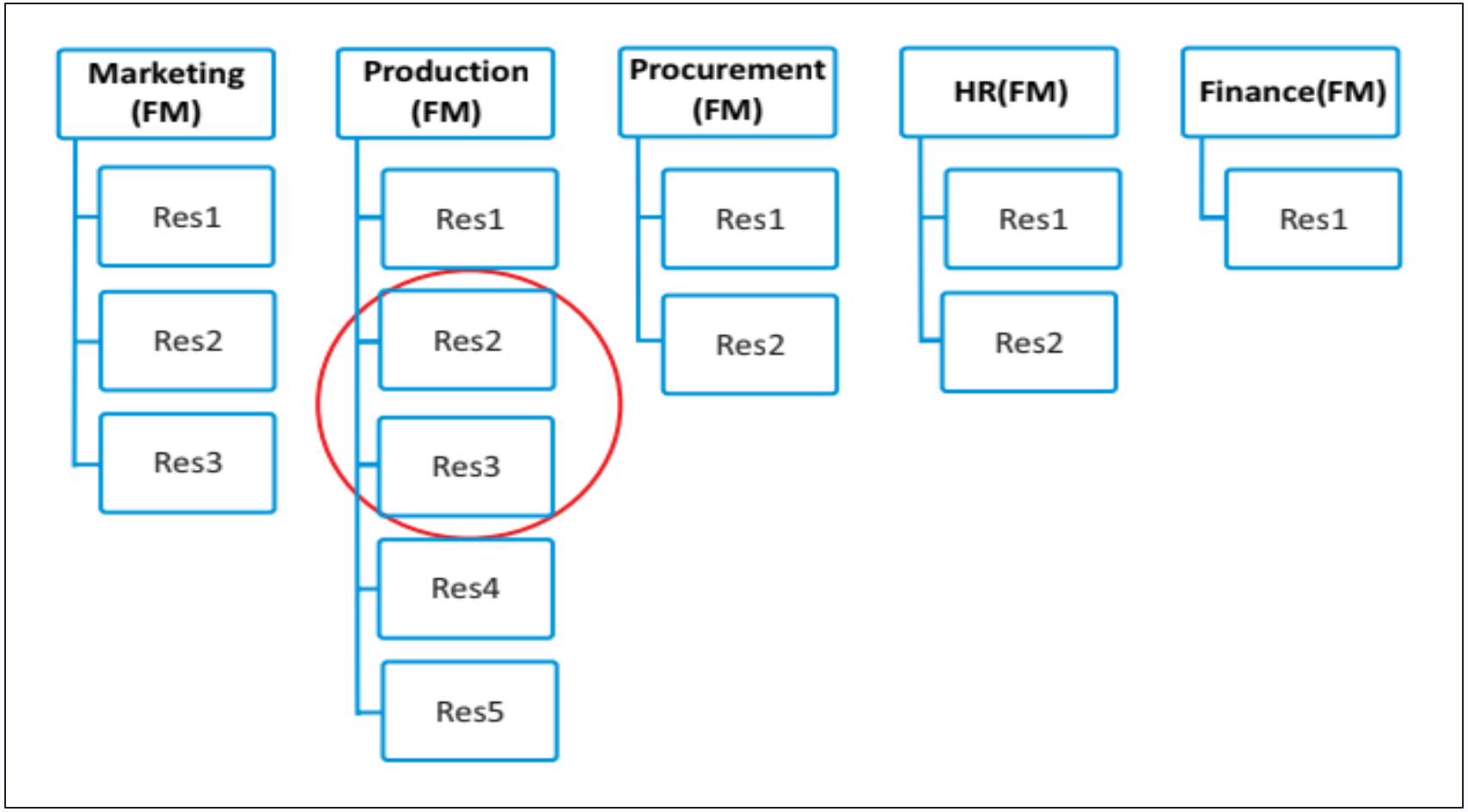
MATRIX

This structure is derived from the functional organizational structure. It allows for cross-functional projects and provides project managers with greater decision-making authority.

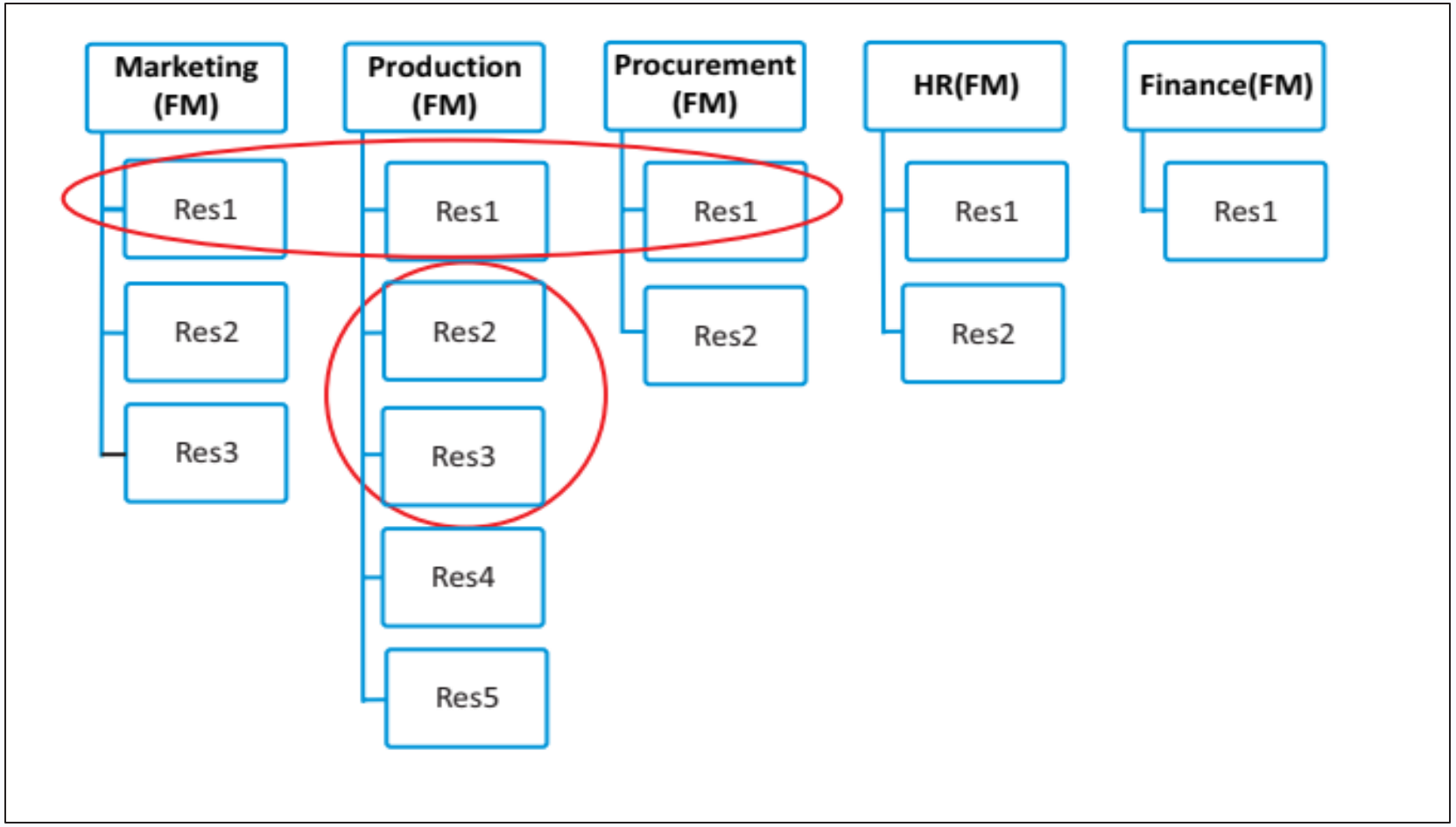
PROJECTISED

This structure contains only projects within the company. There are no functions. Hence, there are no functional manager; only project managers.

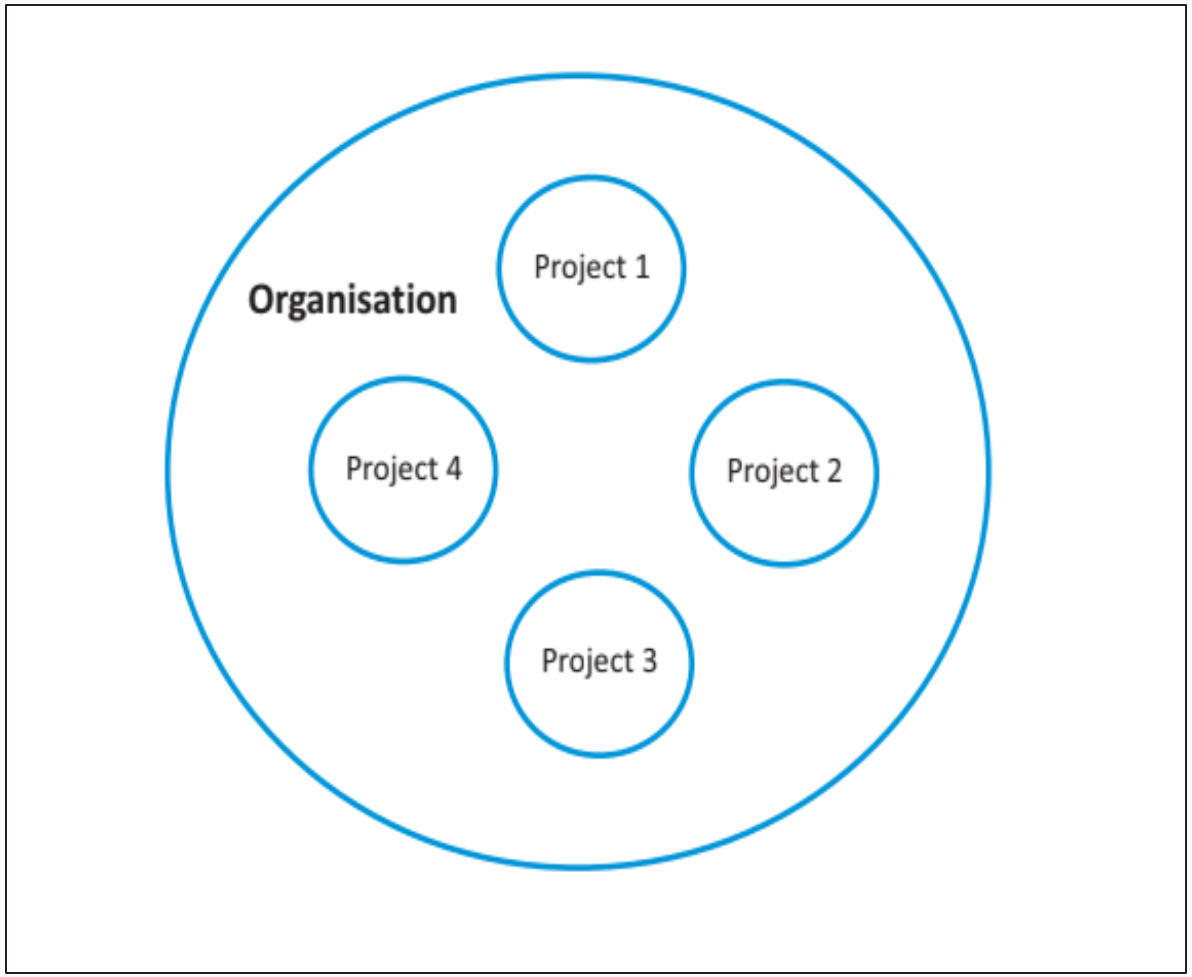
Functional Organization



Matrix Organization

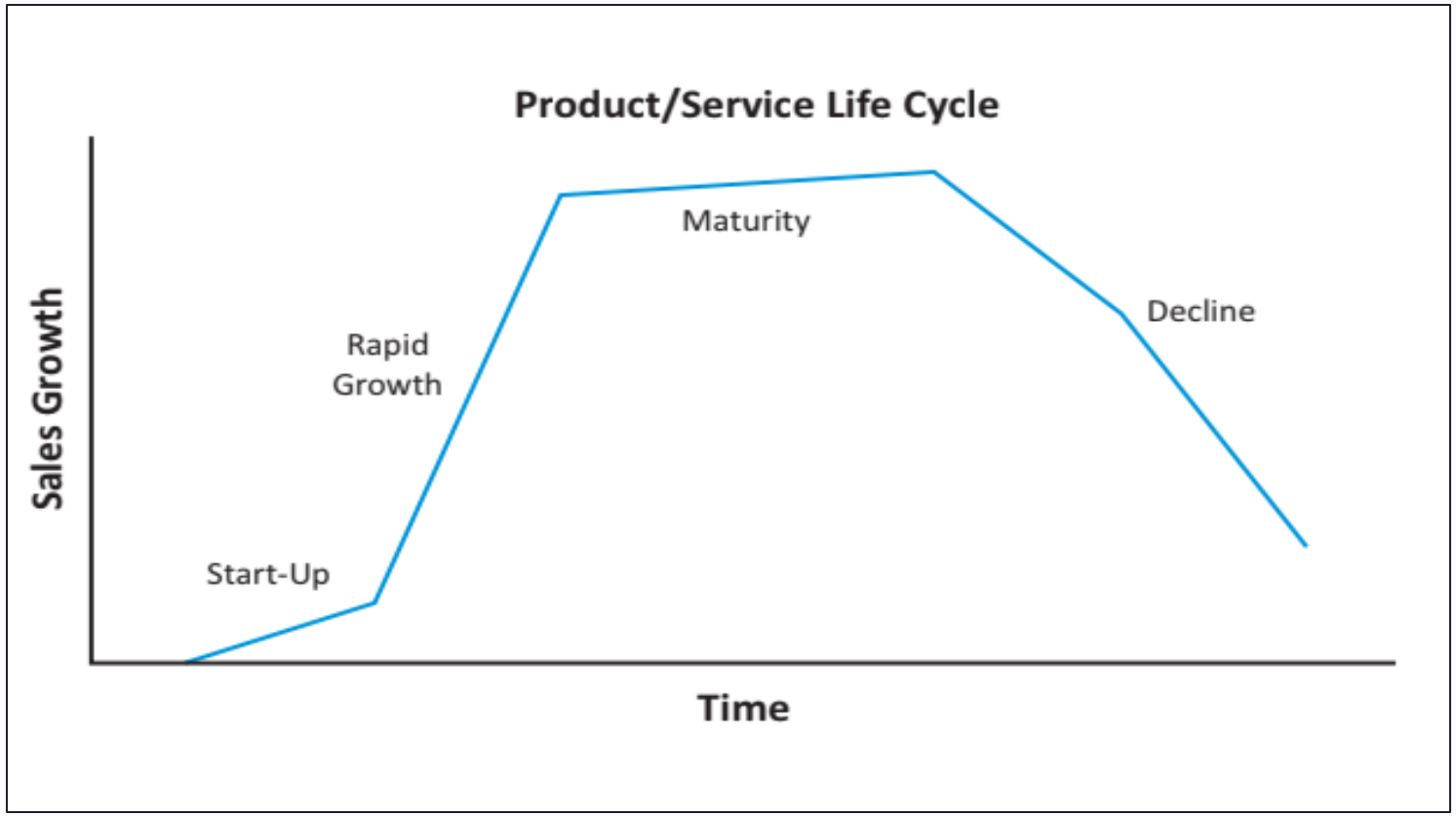


Projectized Organisation



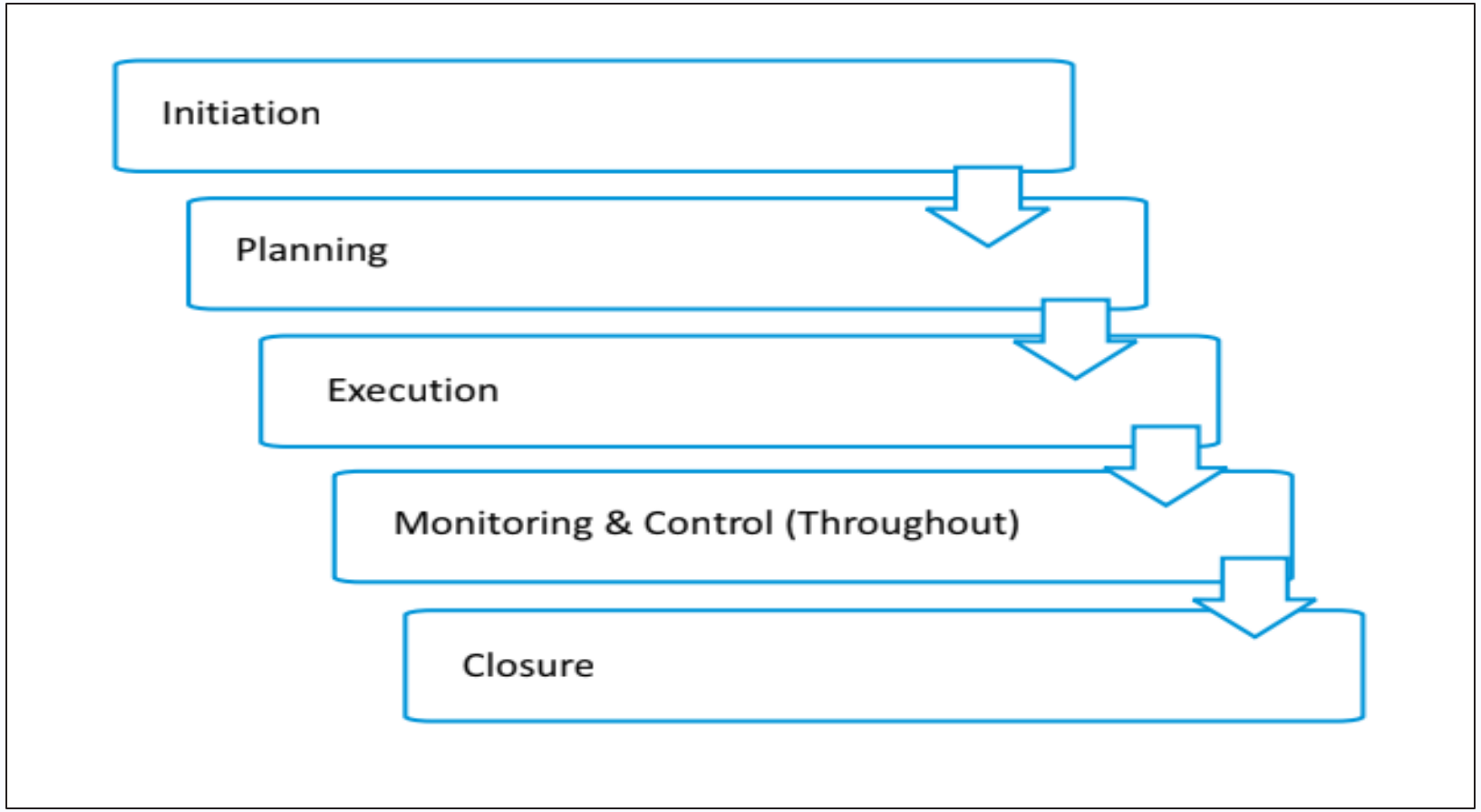
Product/Service Life Cycle vs. Project Life Cycle

- A product (or service) life cycle is different from a project life cycle.
- A product (or service) life cycle has the following stages



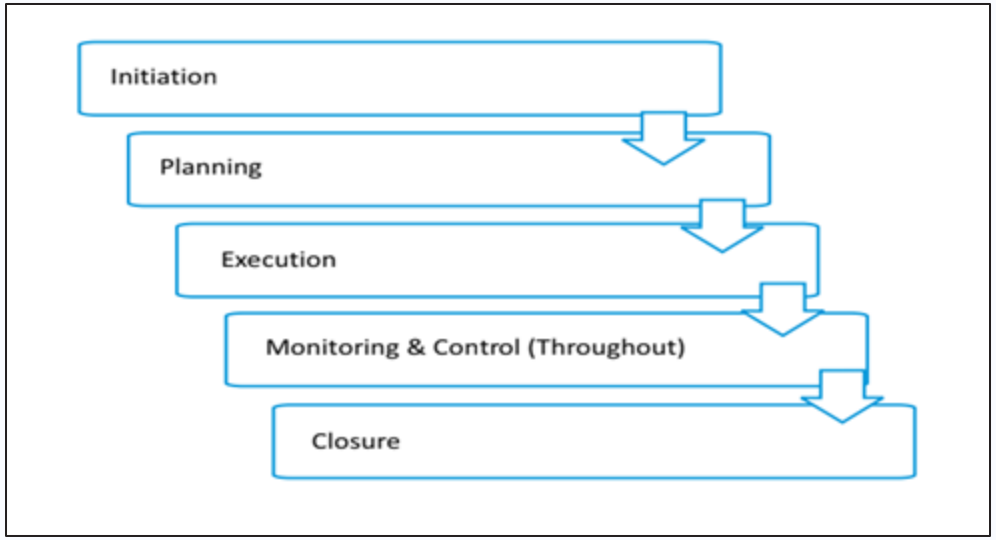
Project Management Phases

- Every project goes through five project management phases.



Project Management Phases

- The phases may not always happen one after the other.
- There is a certain degree of overlap between phases.
- Monitoring & Control is a phase that starts almost at the beginning of the project and continues almost till the end of the project.
- The Execution phase generally takes the most amount of time and consumes the most resources, hence utilising most of the project budget.



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Indicative Content – Secure Development

- Security By Design
- Threat Modelling and Principles of Secure Software Development
- Threat Modelling Across the Lifecycle
- Structured Threat Modelling Process
- Threat Modelling Methodologies
  - STRIDE
- Continuous Threat Modelling

Why Secure software development

- The target of attacks has changed
  - Attackers traditionally, focus on operating system and network
  - Now the focus shifted to web applications, web browsers, mobile devices, embedded software
- The attackers' nature has changed
  - Traditionally, hackers are amateurs motivated by fun
  - Increasingly, hackers are professional organized crime and state-sponsored attackers

Why Secure software development

- An organisation can either incorporate security guidance into its general project management processes or react to security failures.
  - It is increasingly difficult to respond to new threats by simply adding new security controls.
- Meeting security requirements now depends on the coordinated actions of multiple security devices, applications and supporting infrastructure, end users, and system operations.
- Project managers should consider the additional communications requirements, linkage among life-cycle activities, and the potential usage environment as these items relate to security needs.

Why Secure software development

- Many attacks starts by exploiting a vulnerability
  - A security-relevant software defect that can be exploited to produce an undesired behavior
  - A software defect is present when the software behaves incorrectly.
- Defects can be present in the software *design* and in its *implementation*
  - A flaw is a defect in the design
  - A bug is a defect in the implementation

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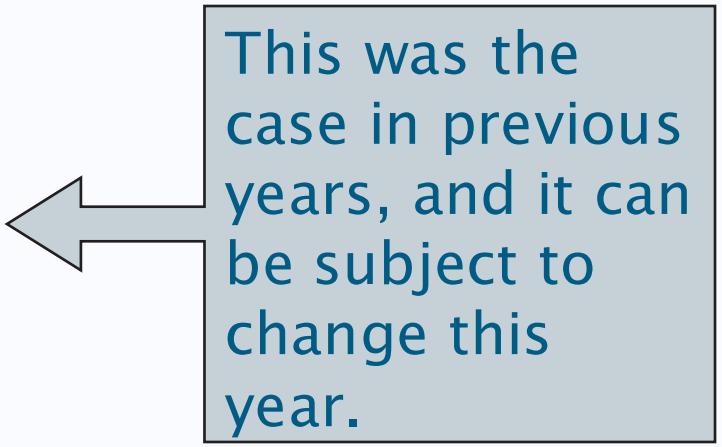
Assessment:

- Examination 70%
  - Closed book examination,
  - 2 hours, Section A and Section B
    - Section A - some short answer questions
    - Section B - Choose 3 questions from 4 questions
- Coursework 30%
  - Working in teams to produce project planning documents for an IT project
  - Attend a review session to review reports of two other groups



Resources 1:

- Module website:
  - https://secure.ecs.soton.ac.uk/module/2324/COMP6204/32959/
  - https://secure.ecs.soton.ac.uk/noteswiki/w/COMP6204
- Also, where you can see any notification or changes to the module (so please look regularly)
- Will have the slides on the NotesWiki page

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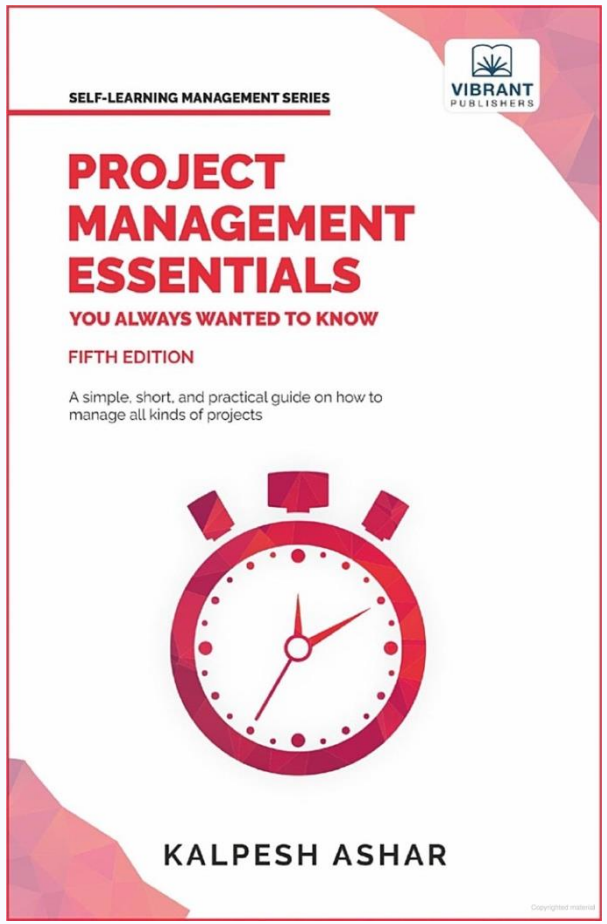
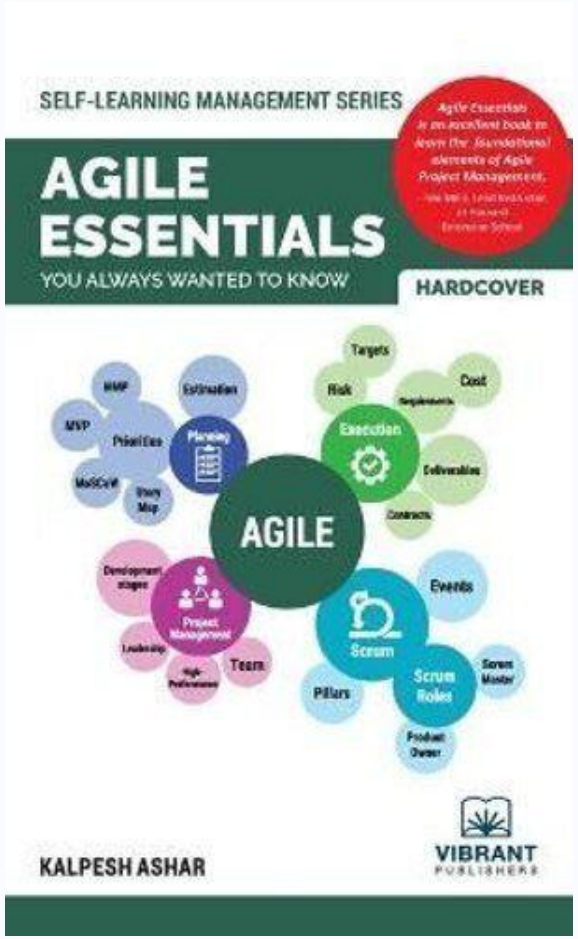
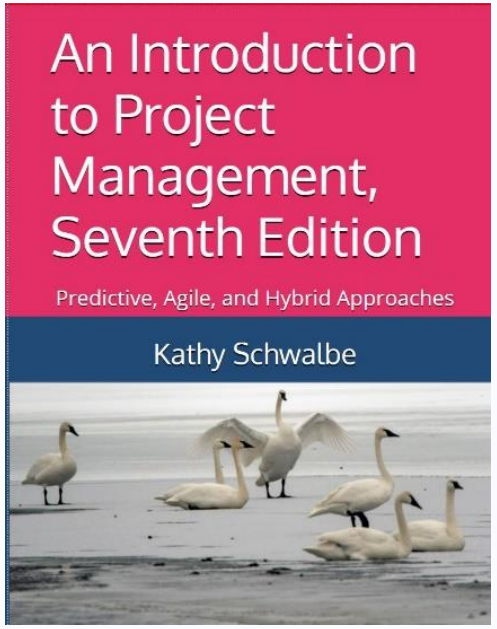
Books

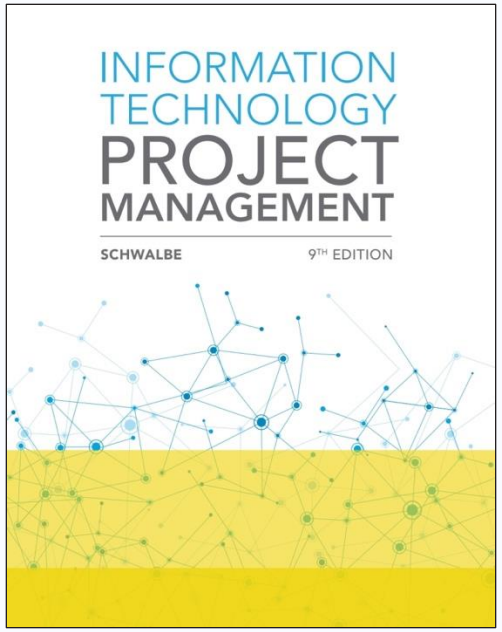


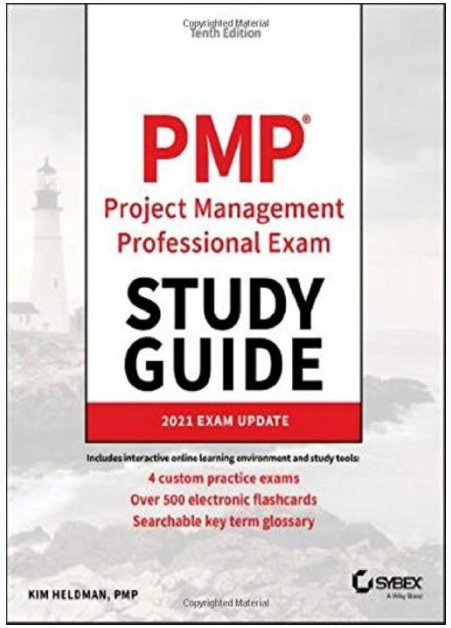


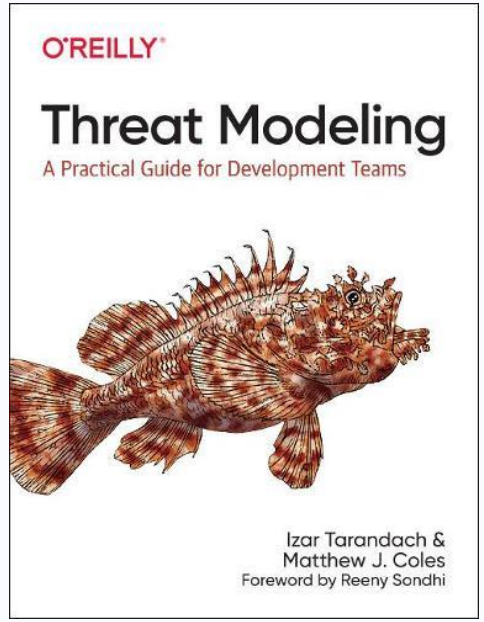
Other Resources

- You can probably find everything you need on the Web, but you may consider buying a book or two.









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YOUR QUESTIONS