

COM6905

Research Methods and Professional Issues

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Senior Lecturer
Department of Computer Science



COM6905



Now
*MSc
Dissertation
project title*



**3pm
Wednesday
16th Sept 2020**

How?

Help you prepare well for MSc dissertation

- good technical work & professional report
- tips & techniques to succeed

Introduction to background and professional issues
that arise in industry/academia.

Course Objectives

1. To provide a solid foundation for the MSc Dissertation Project (*COM6906*)
 2. To be aware of relevant professional, legal and ethical frameworks (*for BCS accreditation*)

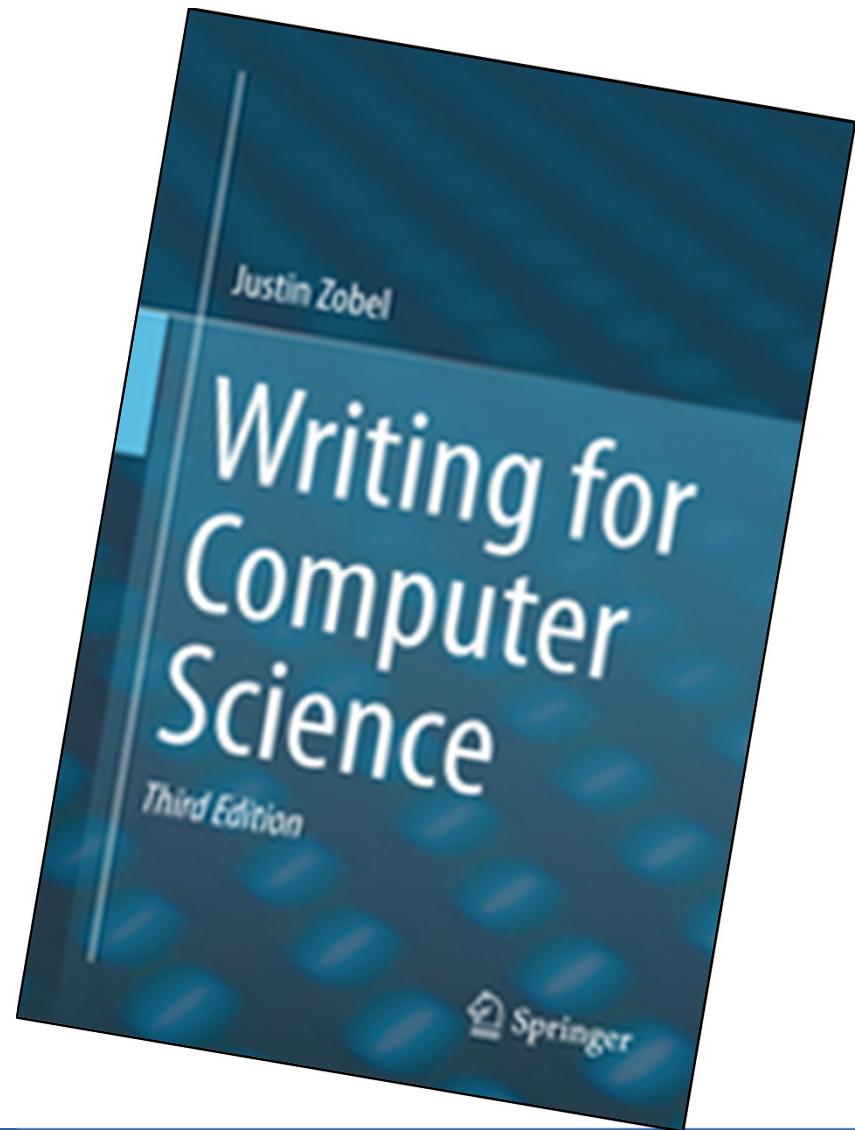
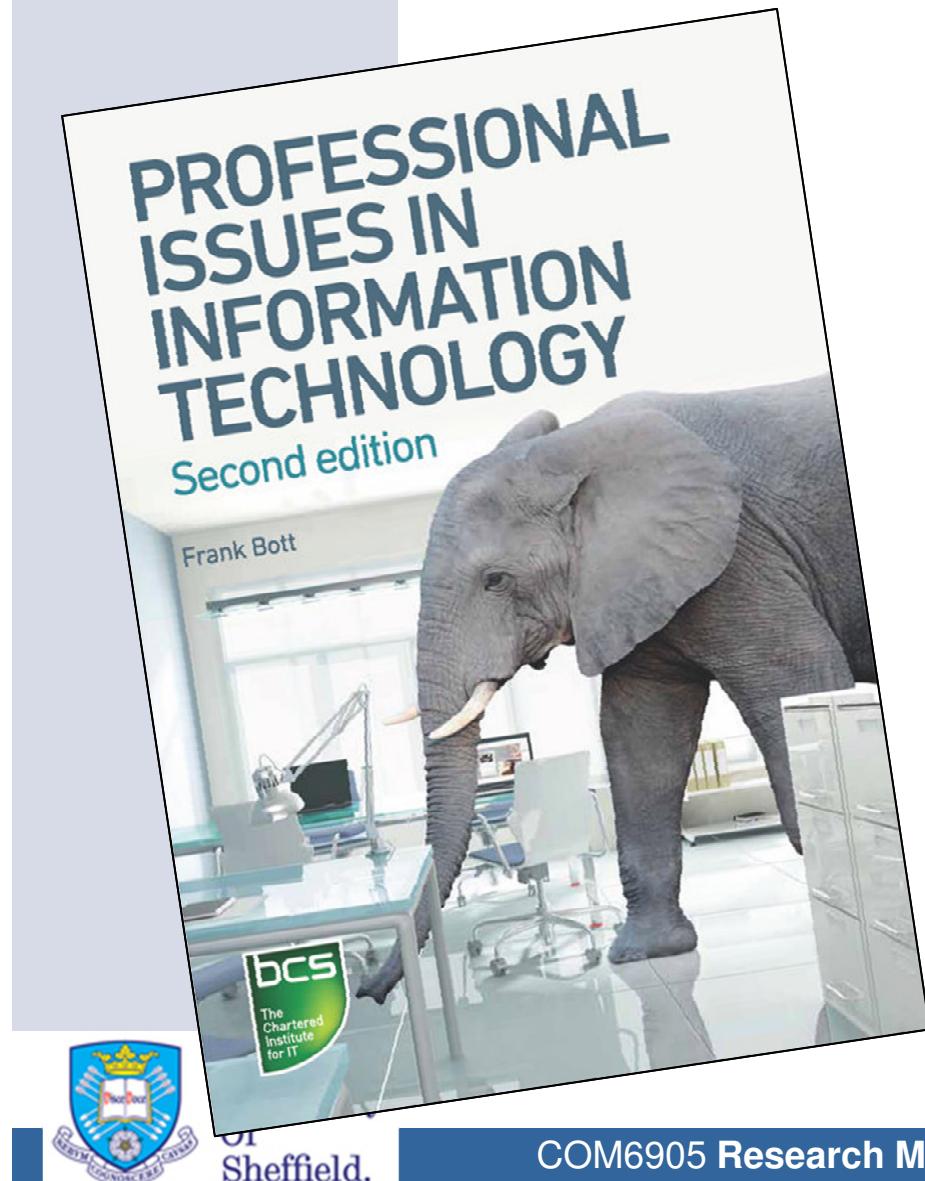


Topics Covered

- Research methods
 - finding information
 - referencing information
 - academic writing
 - presenting a poster
 - Professional issues
 - ethics (professional right/wrong)
 - risk (how to manage)
 - intellectual property (IP)
(who owns what)



Recommended Text Books



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Logistics: Lectures

Lectures: 1hr per week (*Wed 12:00-12:50*)

- **Lecture 1 (12th Feb): Project Management (PW)**
- Lecture 2 (19th Feb): *Finding & Referencing Information (EH)*
- Lecture 3 (26th Feb): *Risk & Ethics (PW)*
[4th, 11th March – No COM6905 lectures (moved to 18th/25th)]
- Lecture 4 (18th March): *Academic Writing (ML) –*
- Lecture 5 (25th March): *Intellectual Property & Contracts (RM)*
- Lecture 6 (**Mid/end August**): *Preparing & Presenting a Poster (PW)*



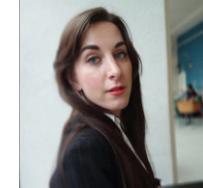
Emily Herron



Mark Lawrence



Ruth Mallalieu



GUEST LECTURES



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University Library

ELTC

*Scholarly Communications
Licensing Manager*

Logistics: COM9605 Assessment

- Assessment 1
 - Critically review (writing style) of 2 articles related to your project
 - write a concise abstract on your dissertation project
 - (worth 20% - *Released 18th March*; after Lecture 4)
 - hand-in Wed 3pm 1 April 2020 (*via MOLE*)



Logistics: COM6905 Assessment

- project background report (*worth 80% of COM6905*)
 - Release: **12 Feb 2020**
 - hand-in **Wednesday 20 May 2020, 3pm (via MOLE)**



The aim of this project background report is to help you prepare for the summer MSc project. It should include:

- extensive literature survey (or similar technology/mathematical survey for certain types of project). **[COM6905: Lectures 2 & 4 will help]**
- a clear presentation of what the project is aiming to achieve, and a description of the work done so far. It should also include a **detailed plan**, including consideration of how risk will be managed during the project.
[Lectures 1 & 3 will help]

You will receive feedback on this report from your supervisor and second marker. This will help you to prepare your final MSc dissertation. Much of what is written for this report will probably be reused in a modified form in the final dissertation; however, note this background report contributes 80% of marks to COM6905.

Project Background Report

UPLOADED TO MOLE:

- Instructions
- Example template
- Latex template



COM6905 - Project Background Report Instructions

Enabled: Statistics Tracking

Attached Files: COM6905_Background_Report_Instructions.pdf (80.541 KB)
 COM6905_Background_Report_Template.pdf (299.833 KB)
 overleaf_latex_template_background_report.zip (153.31 KB)

Instructions for project background report for COM6905 (worth 80% of marks for this module).

Please read carefully.

A latex template for the report is attached. Use of this LaTeX template to produce your background report for COM6905 (and final dissertation for COM6906) is strongly encouraged.

[LaTeX](https://www.latex-project.org/) (<https://www.latex-project.org/>) is a profession document-processing system. Using LaTeX's companion program BibTeX also makes citations much easier to use and format correctly - it does the formatting for you.

To use the latex template, you can:

- use an online Latex editor, e.g. [Overleaf](https://www.overleaf.com/for/authors) (<https://www.overleaf.com/for/authors>). Once registered for overleaf, create a 'New Project' and upload the attached zipfile.

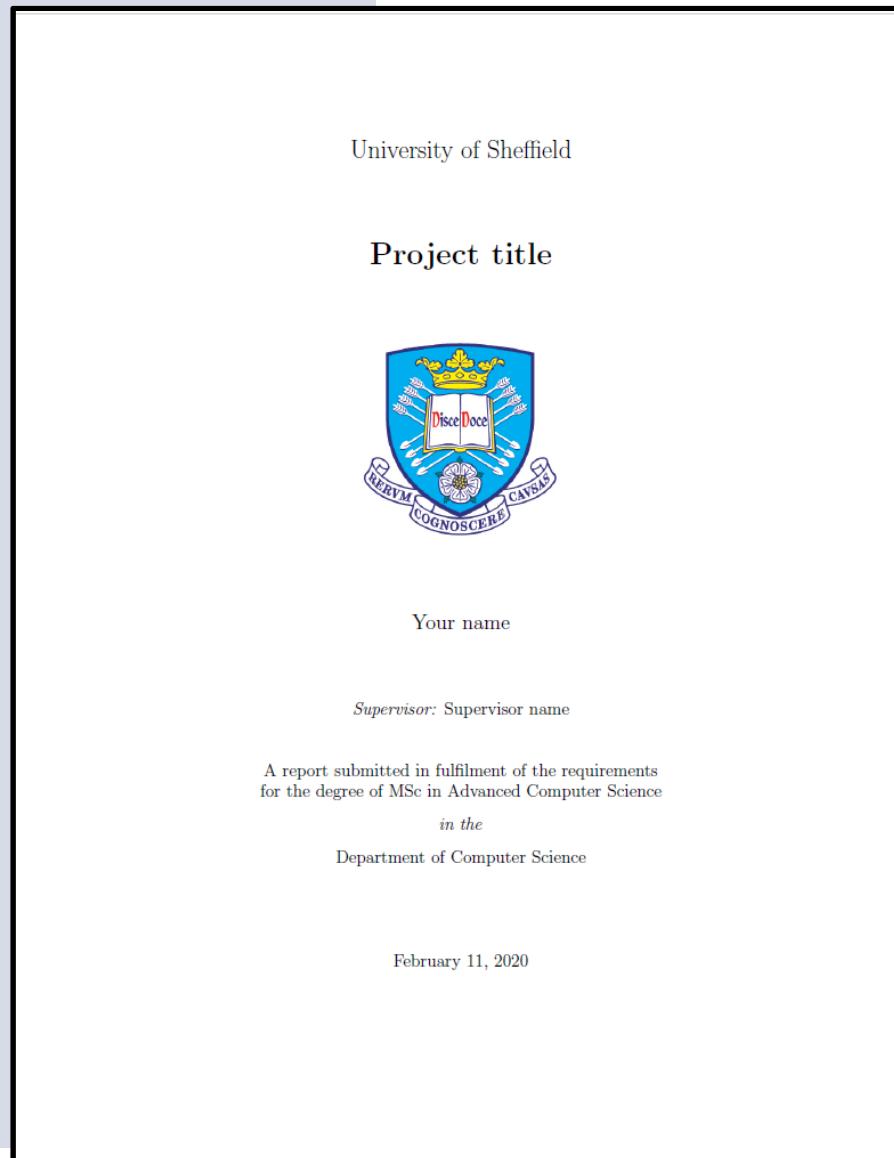
Alternatively, if you want to install latex on your PC/laptop:

- Windows users can download everything they need in a single package from the [proTeXt](http://www.tug.org/protex/) web site (<http://www.tug.org/protex/>)

- Mac users from [Tex Live](http://www.tug.org/texlive/) <http://www.tug.org/texlive/>. It should take around an afternoon to teach yourself the basics.

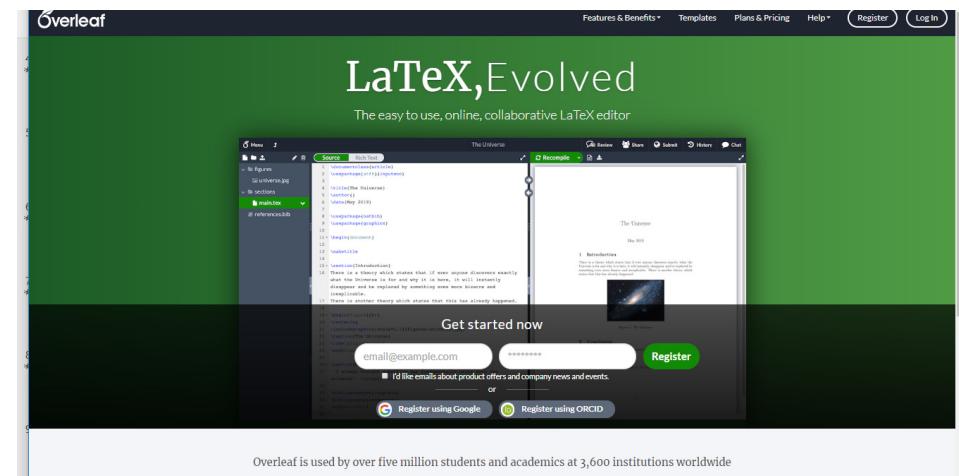


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LATeX

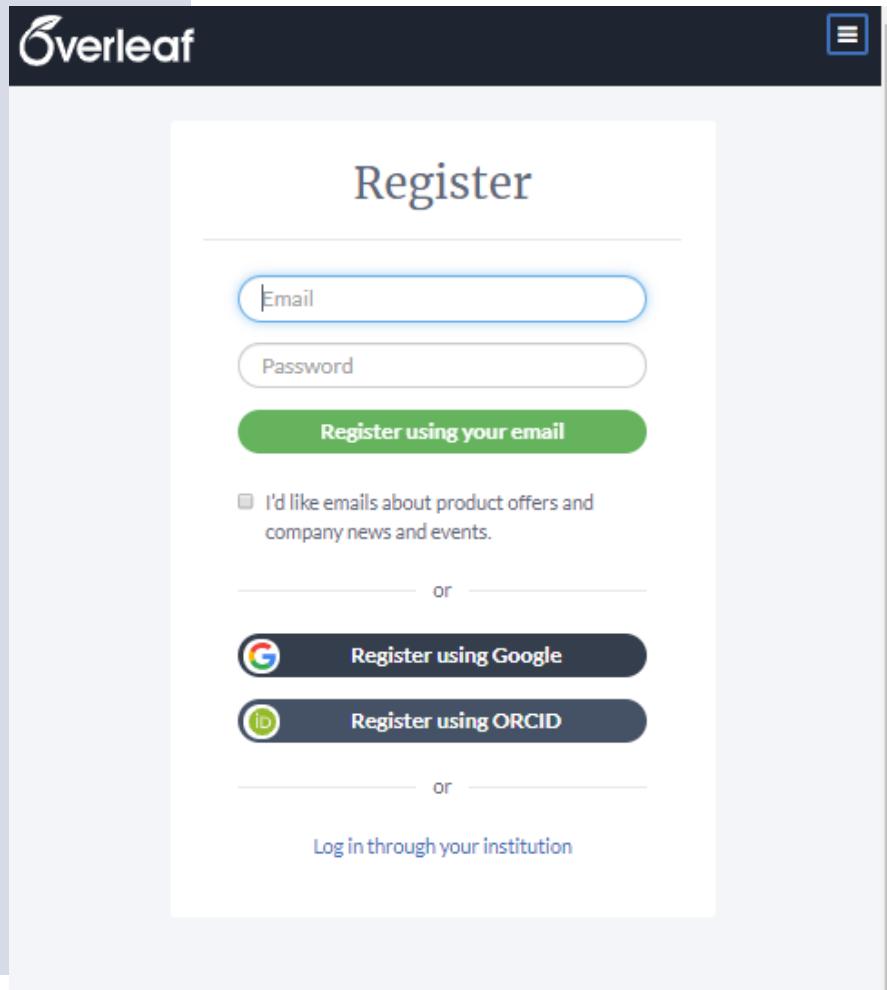
<https://www.overleaf.com/>



- Use of latex template recommended.
- Professional quality document for your background report and dissertation project.

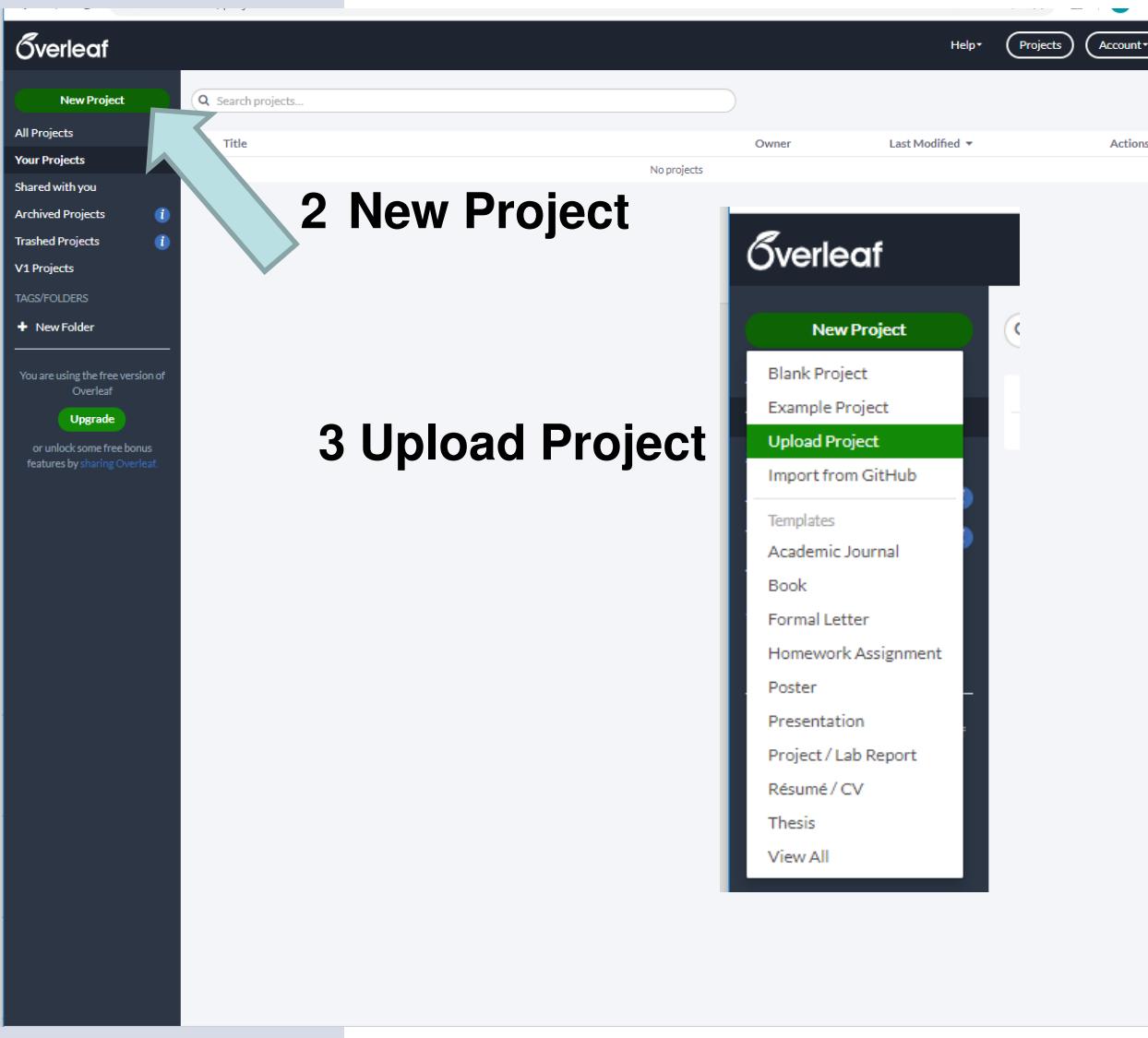
Once **registered for overleaf**, create a 'New Project' and upload the template zipfile.

STEPS



<https://www.overleaf.com/register>

1. Register for Overleaf



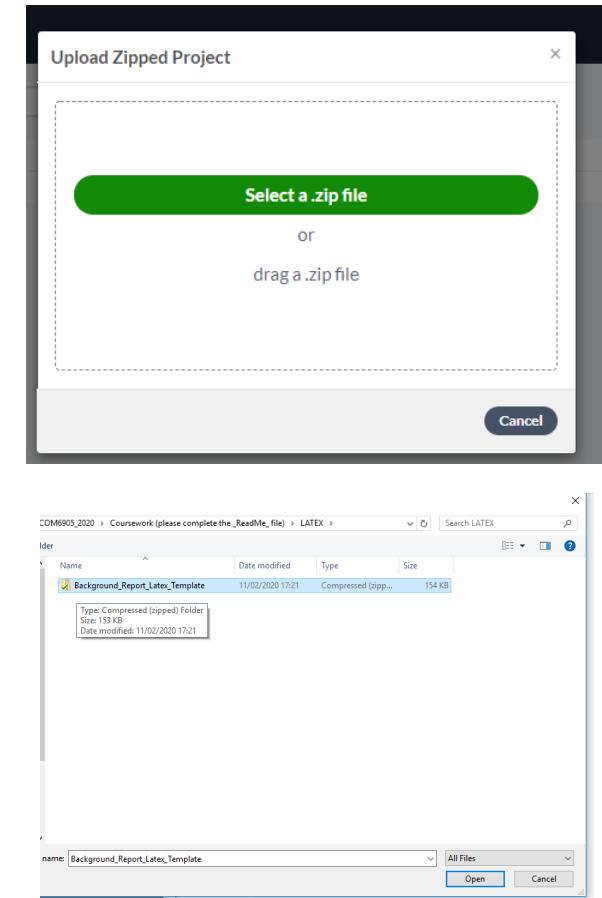
2 New Project

The Overleaf interface shows the 'New Project' button highlighted with a large blue arrow pointing towards it. The interface includes a search bar, project filters like 'All Projects' and 'Your Projects', and a message about using the free version.

3 Upload Project

A modal window titled 'Overleaf' displays the 'Upload Project' option, which is highlighted with a green background. Other options include 'Blank Project', 'Example Project', 'Import from GitHub', and various document types like 'Book', 'Formal Letter', and 'Thesis'.

4. Upload Zipped Project



Upload Zipped Project

The dialog box contains a green button labeled 'Select a .zip file' and a message 'or drag a .zip file'. A file browser window shows a folder named 'Background_Report_Latex_Template' with details: Type: Compressed (zipped) Folder, Size: 153 KB, Date modified: 11/02/2020 17:21.

5. Ready to go...

overleaf.com/project/5e43cefbaeb7f900018bd475

Background_Report_Latex_Template (1)

Source Rich Text

main.tex

mybibliography.bib

1 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
2 % MSc Project Background Report Template
3 % Prof. Roger K. Moore
4 % University of Sheffield
5 % 22 March 2017
6 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
7
8
9 \documentclass[11pt,oneside]{book}
10 \usepackage[margin=1.2in]{geometry}
11 \usepackage{setspace}
12 \usepackage[toc,page]{appendix}
13 \usepackage[none]{hyphenat} % turn hyphenation off by default
14 \usepackage{graphicx}
15
16 \begin{document}
17
18 \frontmatter
19
20 \begin{titlepage}
21
22 % You need to edit the details here
23
24 \begin{center}
25 {\LARGE University of Sheffield}\|[1.5cm]
26 \linespread{1.2}\huge \bfseries Project title\|[1.5cm]
27 \linespread{1}
28 \includegraphics[width=5cm]{images/tuoslogo.png}\|[1cm]
29 {\Large Your name}\|[1cm]
30 {\Large \emph{Supervisor:} Supervisor name}\|[1cm]
31 \large A report submitted in fulfilment of the requirements\| for the degree of MSc
in Advanced Computer Science\|[0.3cm]
32 \textit{in the}\|[0.3cm]
33 Department of Computer Science\|[2cm]
34 \today
35 \end{center}
36
37 \end{titlepage}
38
39 % -----
40 % Declaration
41 % -----

Recompile

Review Share Submit History Chat

University of Sheffield

Project title



Your name

Supervisor: Supervisor name

A report submitted in fulfilment of the requirements
for the degree of MSc in Advanced Computer Science
in the
Department of Computer Science

February 12, 2020

University Of Sheffield.

Logistics: Feedback

- Feedback
 - in-class exercises + assignments
 - Project-background report (arrange and have regular (e.g. weekly) meetings with your project supervisor)



COM6905 Research Methods and Professional Issues

Lecture 1
Project Management



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COM6905 Research Methods and Professional Issues: Lecture 1, slide 15

What is Project Management ?

- What is a Project?
 - Within professional world (academia/industry), *anything that needs to be done* is typically referred to as a **project**.
- What is Project Management ?
 - The way that you professionally organise how everything is done in the project is known as **project management**.
 - *essentially a process which allows a complex sequence of events to take place, in the right order, things happen at the right time – and **at the end...***



What are consequences of not managing a project ?

Failure

Things being delivered after needed.

Confusion



Chaos

Things being delivered before needed (and blocking entrance for something else).

UPSHOT: If you don't plan a complex activity, recipe for disaster.

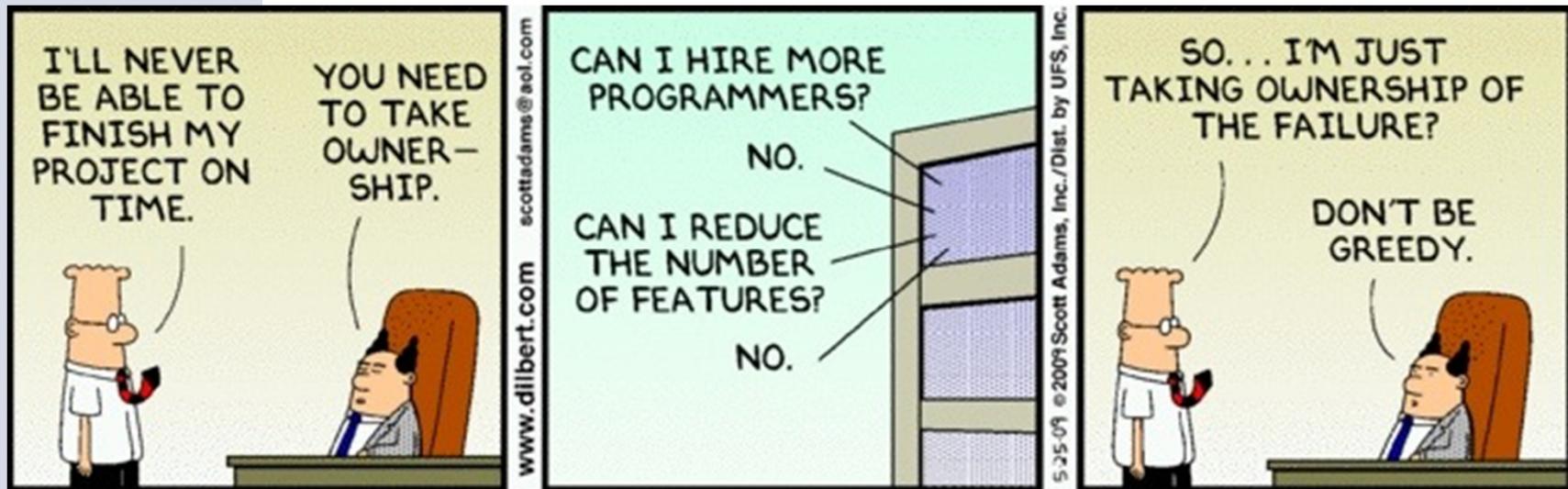


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COM6905 Research Methods and Professional Issues: Lecture 1, slide 17

→ it makes sense to have a rigorous process for managing projects.

Project Management

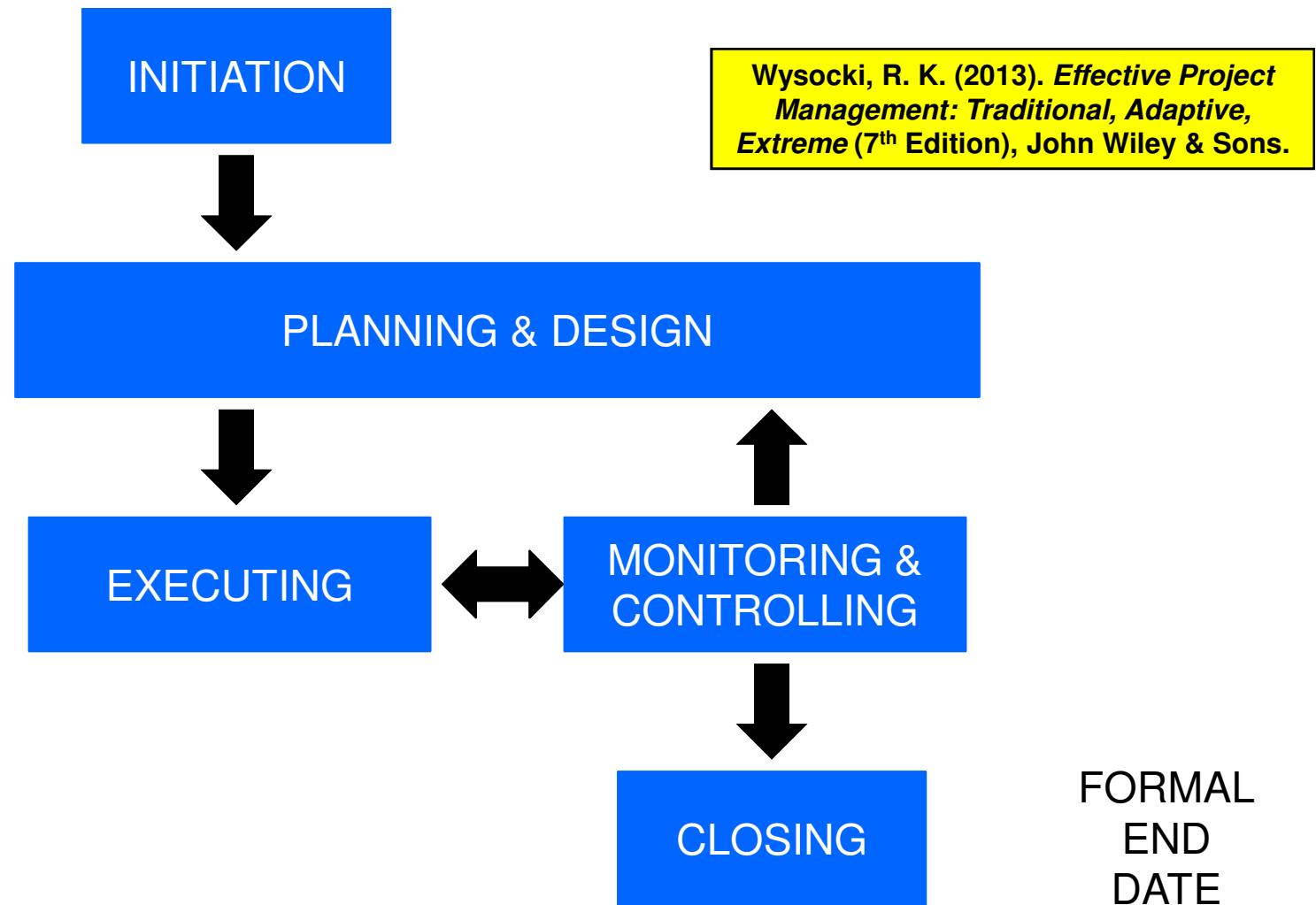


What's the Message ?

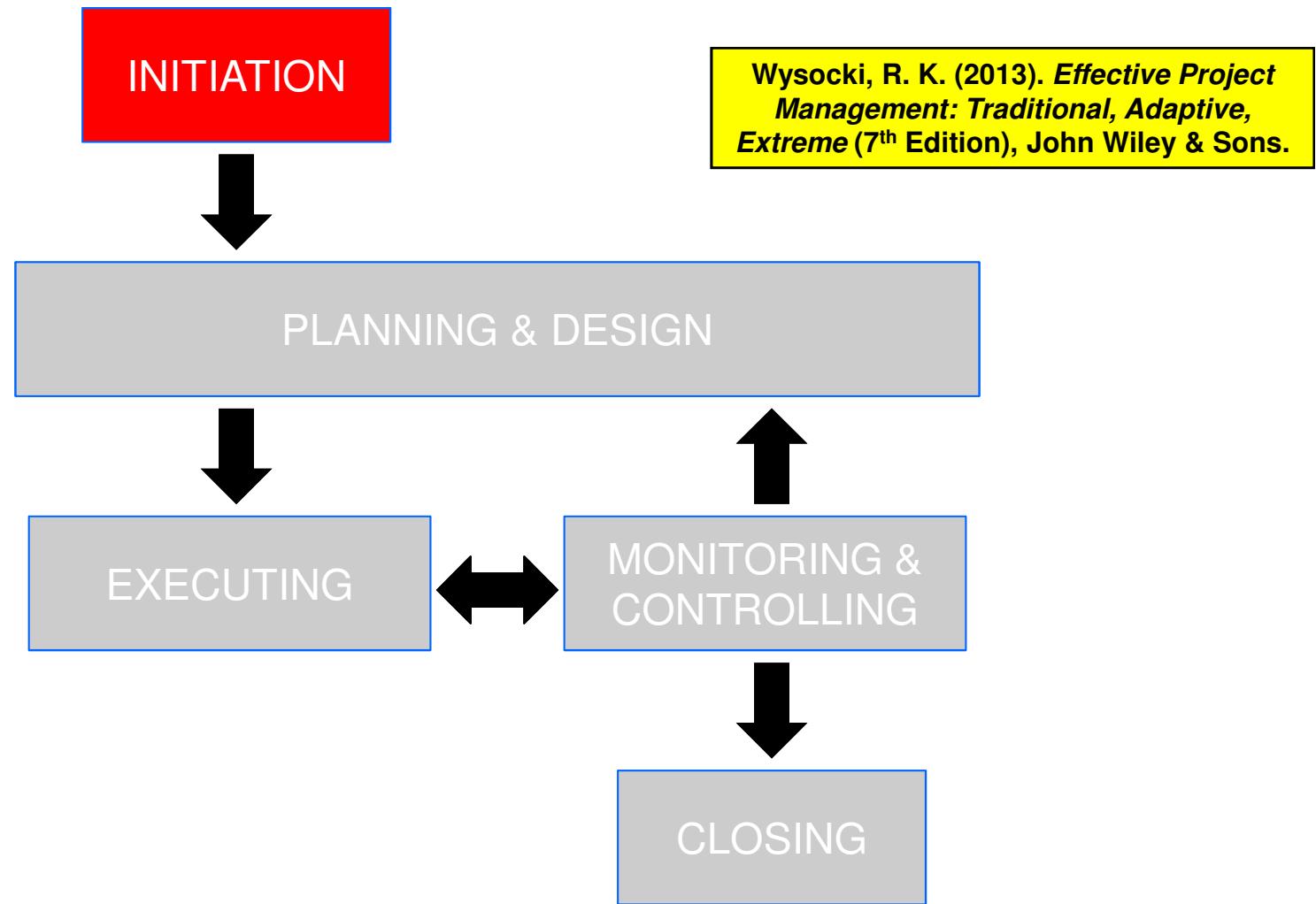
RECOGNISE: up to you to manage your project!!!

SKILLS: Need to understand how to manage project

Project Management



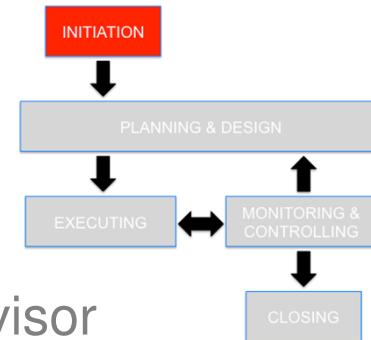
Project Initiation





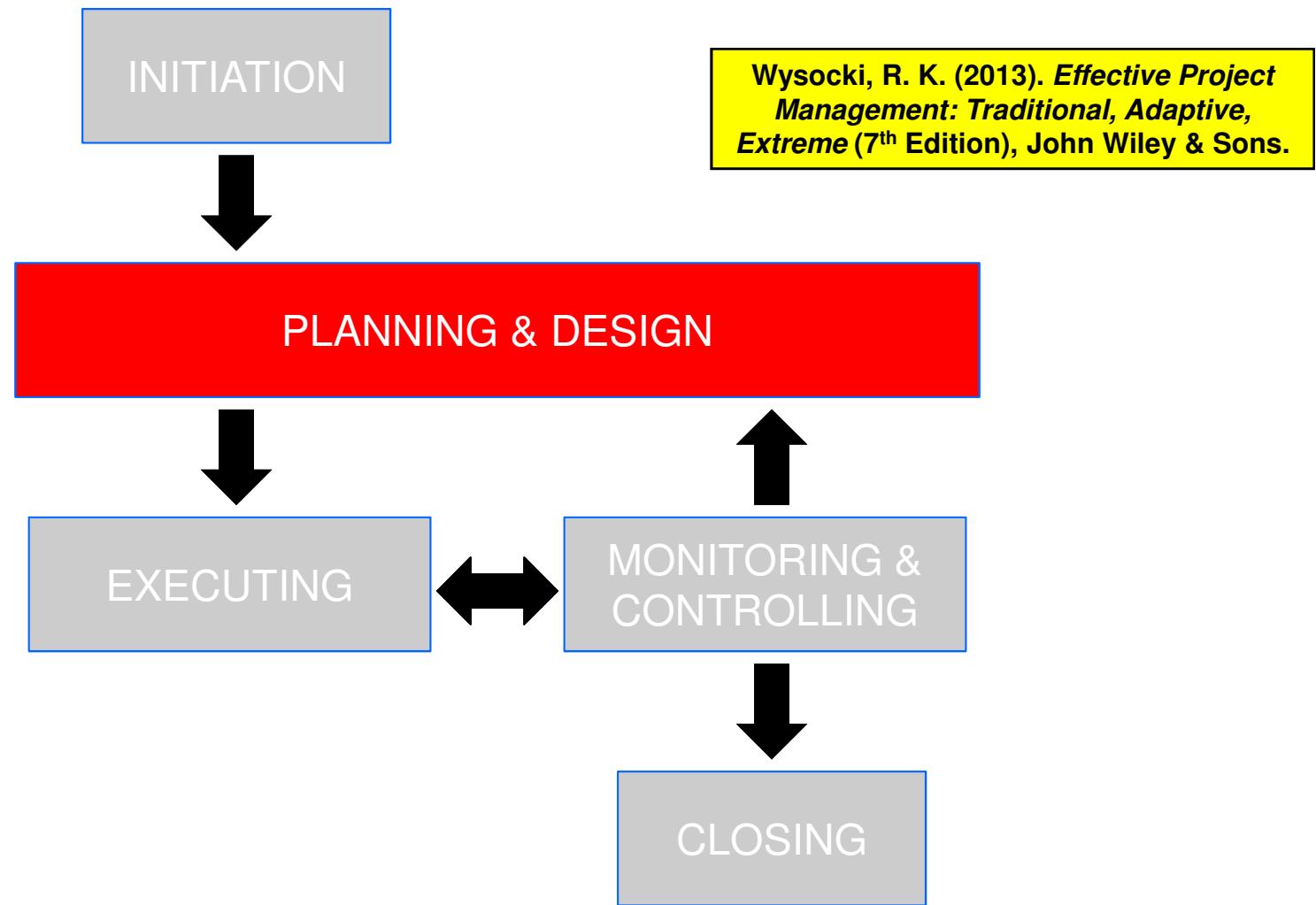
Project Initiation

- **Requirements**
 - Who informs you: stakeholder/customer/client/supervisor (may need negotiation)
 - aims & objectives
 - measurable outcomes
- **Types of project**
 - design & build & test [app - software engineers]
 - Experimental [Testing ideas - Designing experiments]
 - Theoretical [mathematical]
- **Constraints (usually relate to time)**
 - descriptions: *14th November 2019*
 - allocations: *9th – 13th December 2019*
 - Duration (full time): *15 June 2020 – 16 Sept 2020, 3pm*



NEED A GOOD UNDERSTANDING OF ABOVE
BEFORE CAN MAKE A PROJECT PLAN

Project Planning



Project Planning



Why plan at all?

- to ensure feasibility

MSC-PW Build a Time Machine*



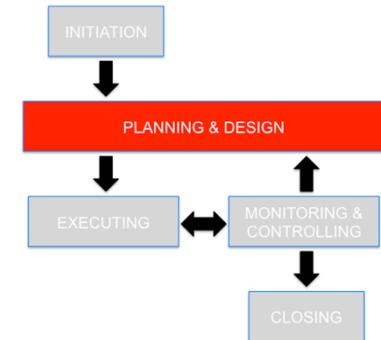
- to highlight potential problems
 - e.g. *has a crucial piece of software needed for project been released ?*
- to identify and manage risks
 - what might stop me producing a brilliant dissertation ?*
- to enable control



Project Planning

Key steps:

- determining how to plan
- developing the scope statement
- selecting the planning team
- identifying deliverables
- creating the work breakdown structure
- identifying the activities needed to complete those deliverables
- networking the activities in their logical sequence
- estimating the resource requirements for the activities
- estimating time and cost for activities
- developing the schedule
- developing the budget
- risk planning
- gaining formal approval to begin work



Kerzner, H. (2003). *Project Management: A Systems Approach to Planning, Scheduling, and Controlling* (8th Edition), John Wiley & Sons.



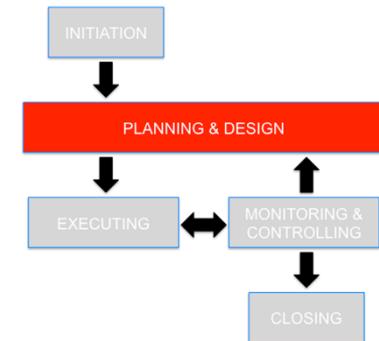
Project Planning

Q:
What tools are you going to use to help you plan?

A:
PERT and GANTT charts

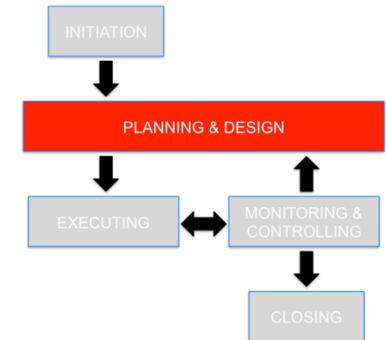
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Project Planning



Q:
What is the overall objective of your project?

Key steps

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scope

the extent of the area or subject matter that something deals with

Why is understanding and defining the scope of our project important?

Make sure you really understand the project that your supervisor has in mind **and** what they are expecting you to do.

If you don't understand it – impossible to make a plan!

Arrange a meeting to discuss your project with your supervisor

5 minute activity

- Work in pairs - can you overview your project to your neighbour
- Neighbour – now try to explain the project back to them.

Structure your thoughts:

- PROJECT MOTIVATION/BACKGROUND
- PROJECT AIMS
- PROJECT METHODS

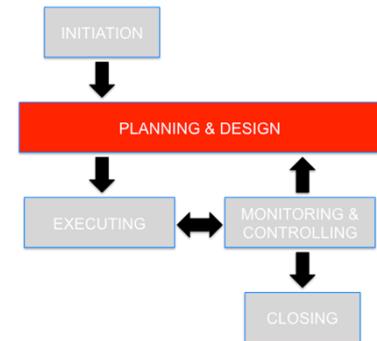
(a few sentences on each)



Project Planning

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Q:
*What are you
expected to
produce?*

A:
Poster
+
Dissertation

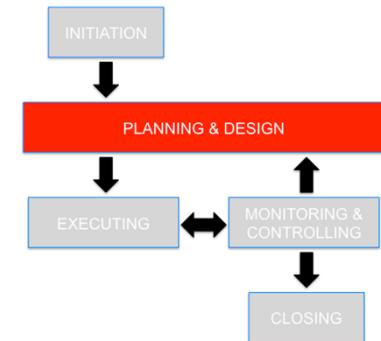


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Project Planning

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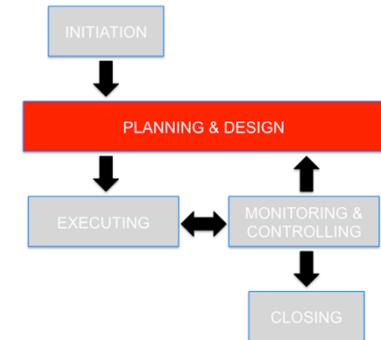
PERT Chart
(using post-it notes)



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Project Planning

Program Evaluation and Review Technique (PERT)



PERT Chart (using post-it notes)



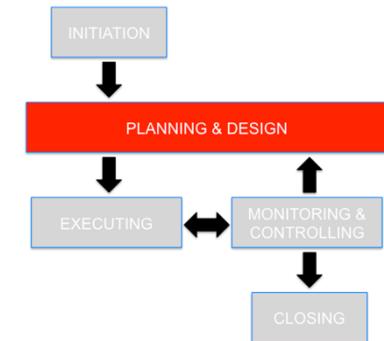
Identify tasks needs to be done (and how long will take). Construct a network of how tasks fit together and interact with one another. (needs a start node and end node.)



Project Planning

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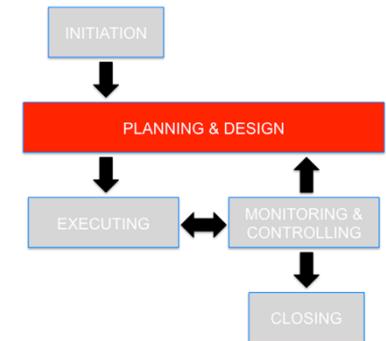


Critical Path Analysis

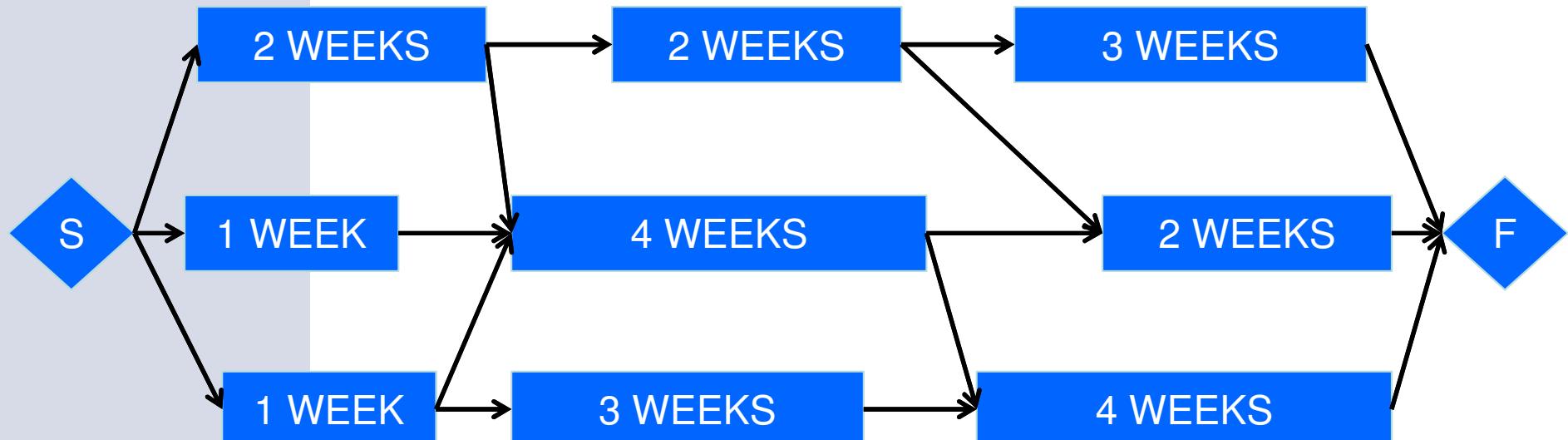
CRUCIAL PART OF PLANNING:
NEED TO FIT THE PLAN WITHIN A GIVEN TIME SCHEDULE
CRITICAL PATH ANALYSIS



Project Planning



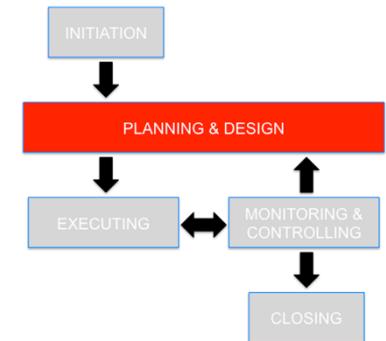
Critical Path Analysis



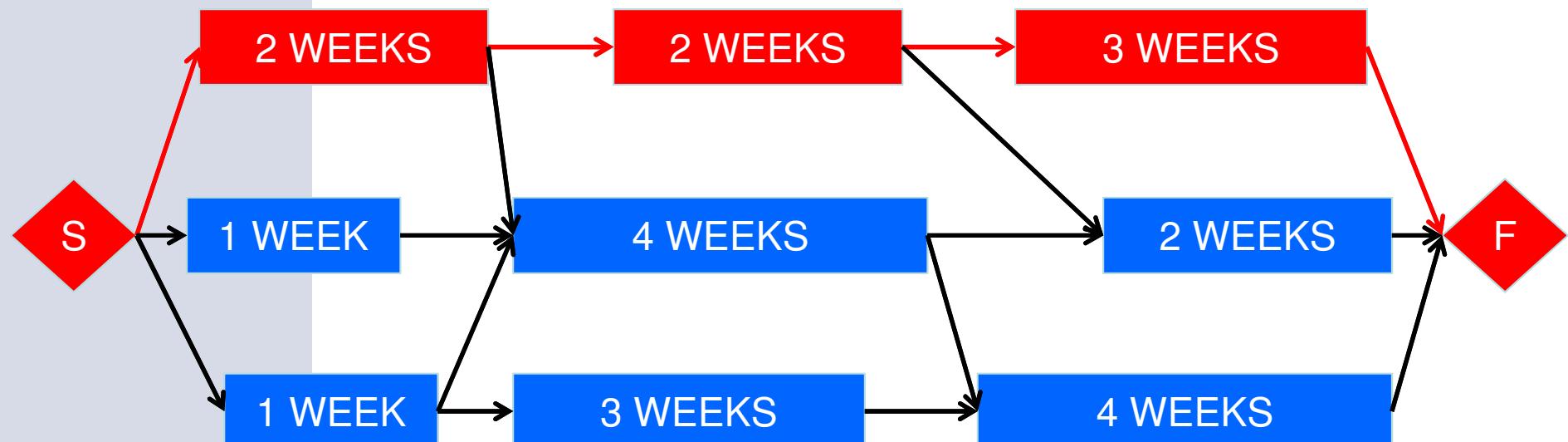
7 week project?



Project Planning



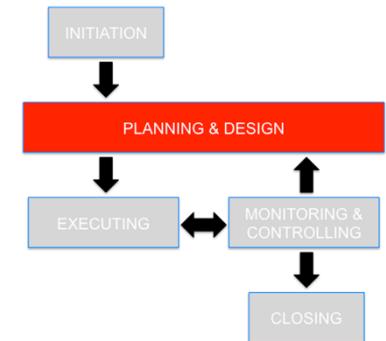
Critical Path Analysis



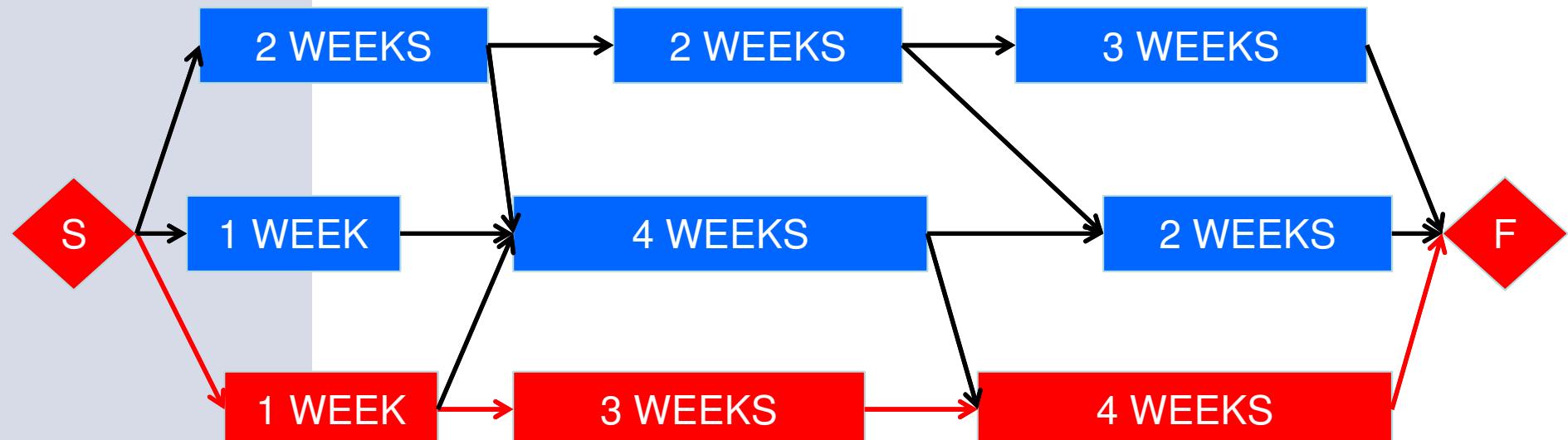
7 week project?



Project Planning



Critical Path Analysis

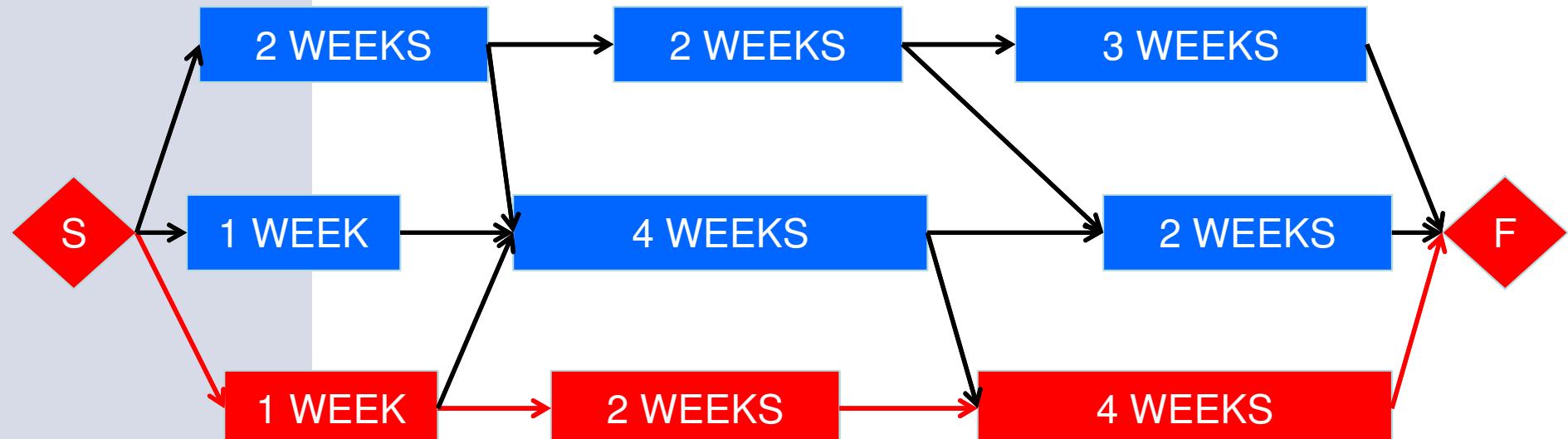
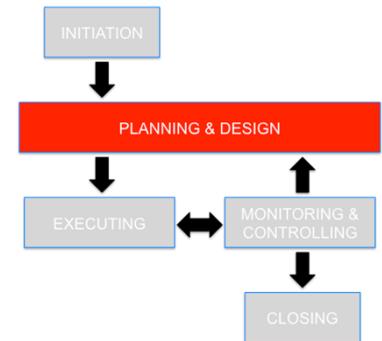


8 weeks!



Project Planning

Critical Path Analysis

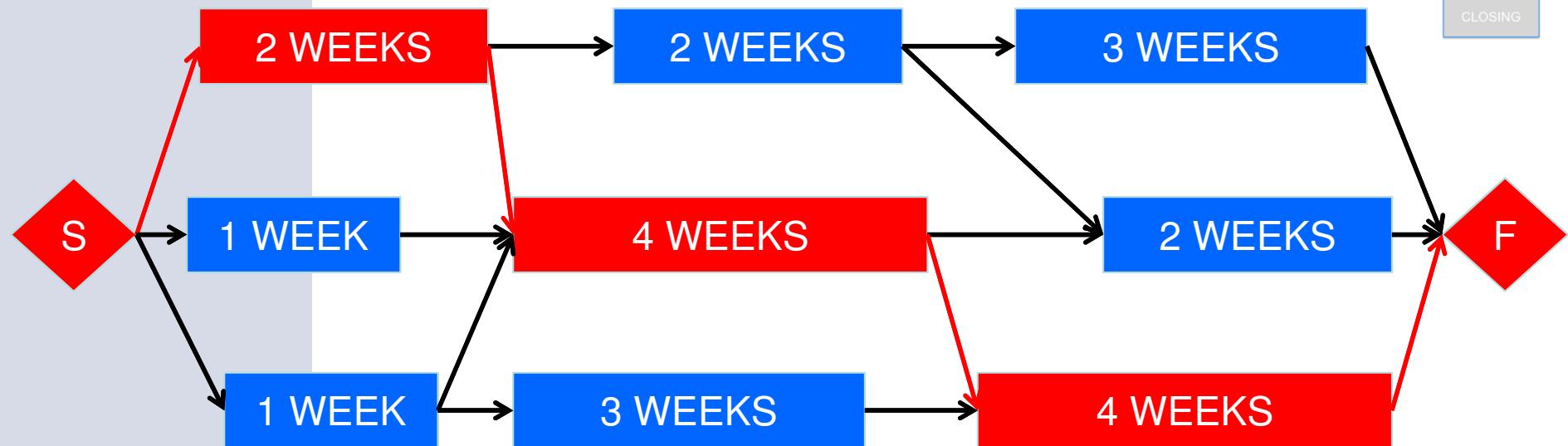
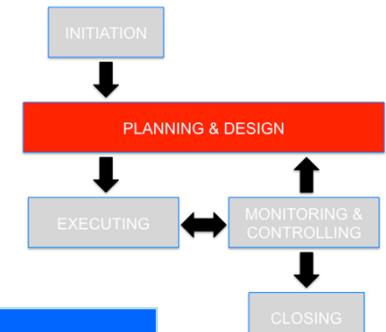


7 weeks?



Project Planning

Critical Path Analysis



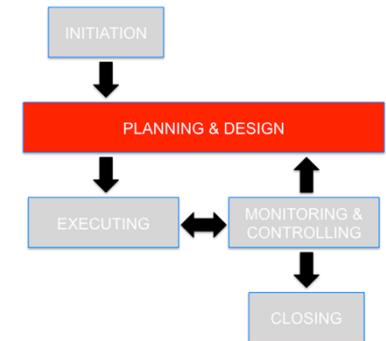
Longest path = 10 weeks! (*solved using 'dynamic programming'*)

TO REDUCE PROJECT LENGTH:

- Identify longest path
- Can tasks on longest path be reduced ?

Bellman, R. E. (1957).
Dynamic Programming.
Princeton University

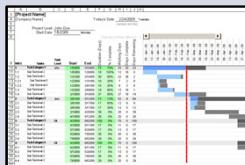
Project Planning



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GANTT chart



(required to make a Gantt Chart for your project)



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GANTT chart

A **Gantt chart** is a type of bar **chart** that illustrates a project schedule.

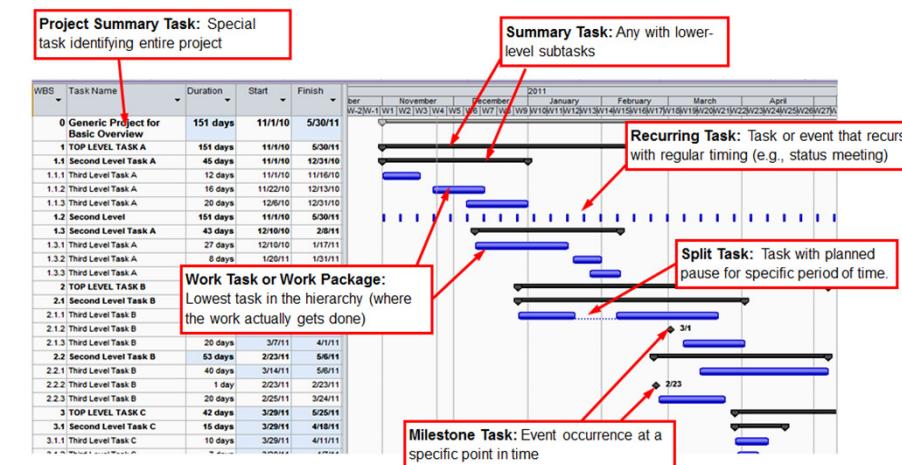
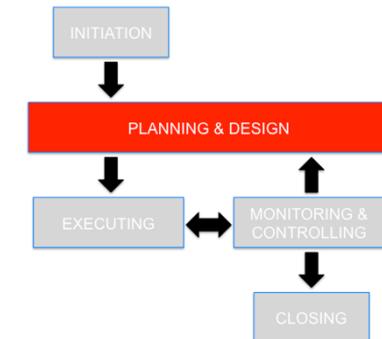
It enables task timing (planned or actual timing) to be easily be visualized over time.

lists tasks to be performed on vertical axis, and time intervals on horizontal axis.

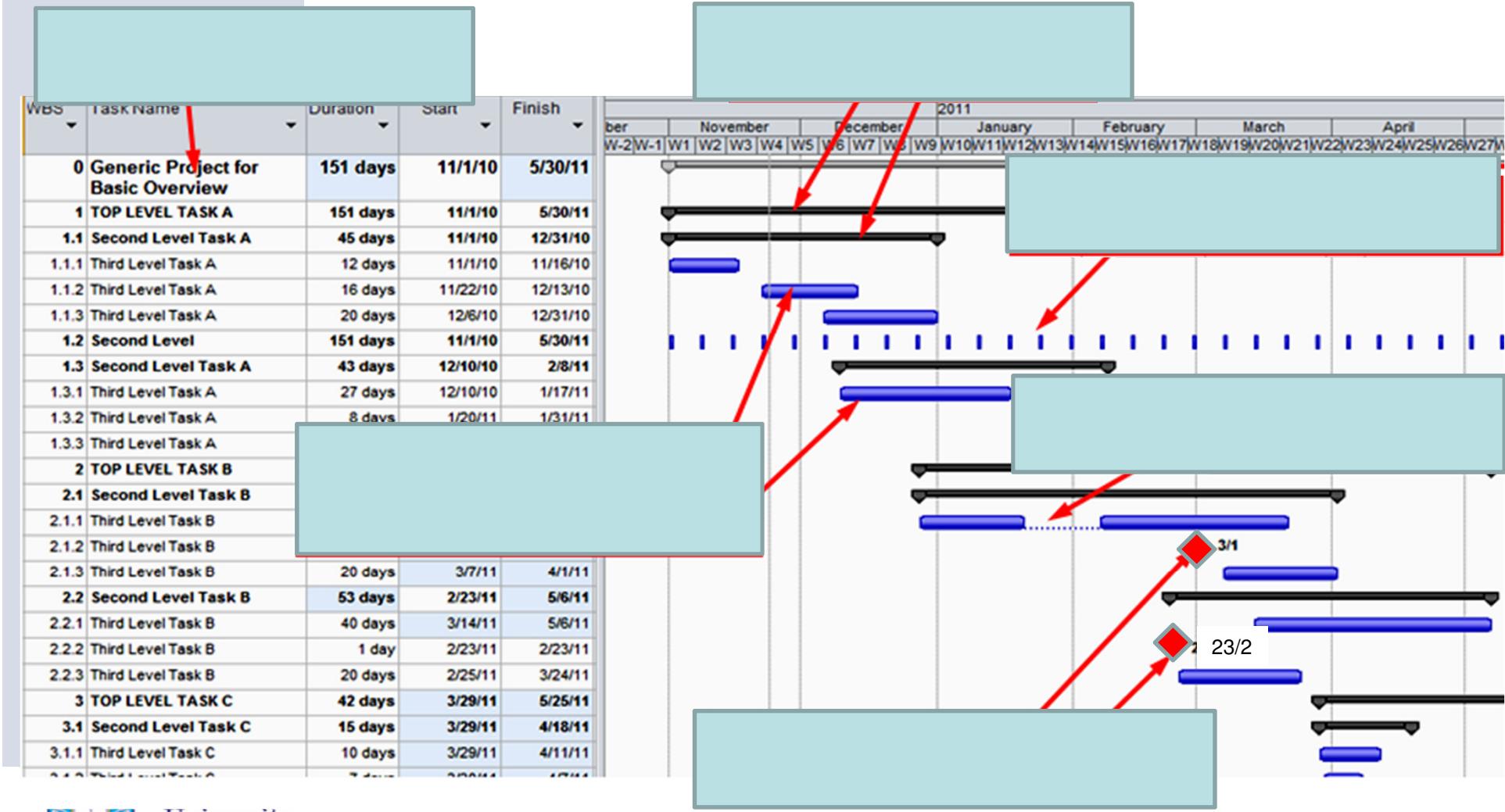
width of horizontal bars show duration of each activity.

can be used to track and display progress of all tasks throughout the project.

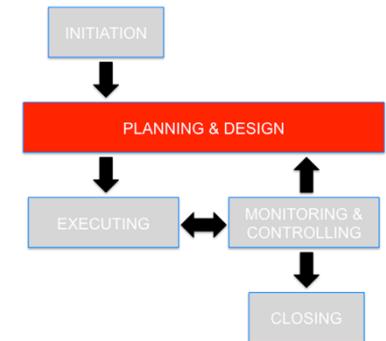
Project Planning



Gantt charts include: a list of project tasks, a timescale across the top with user-defined timing intervals (e.g., months or weeks), and bars under the timescale showing task timing.

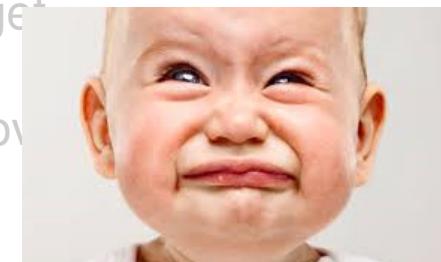


Project Planning



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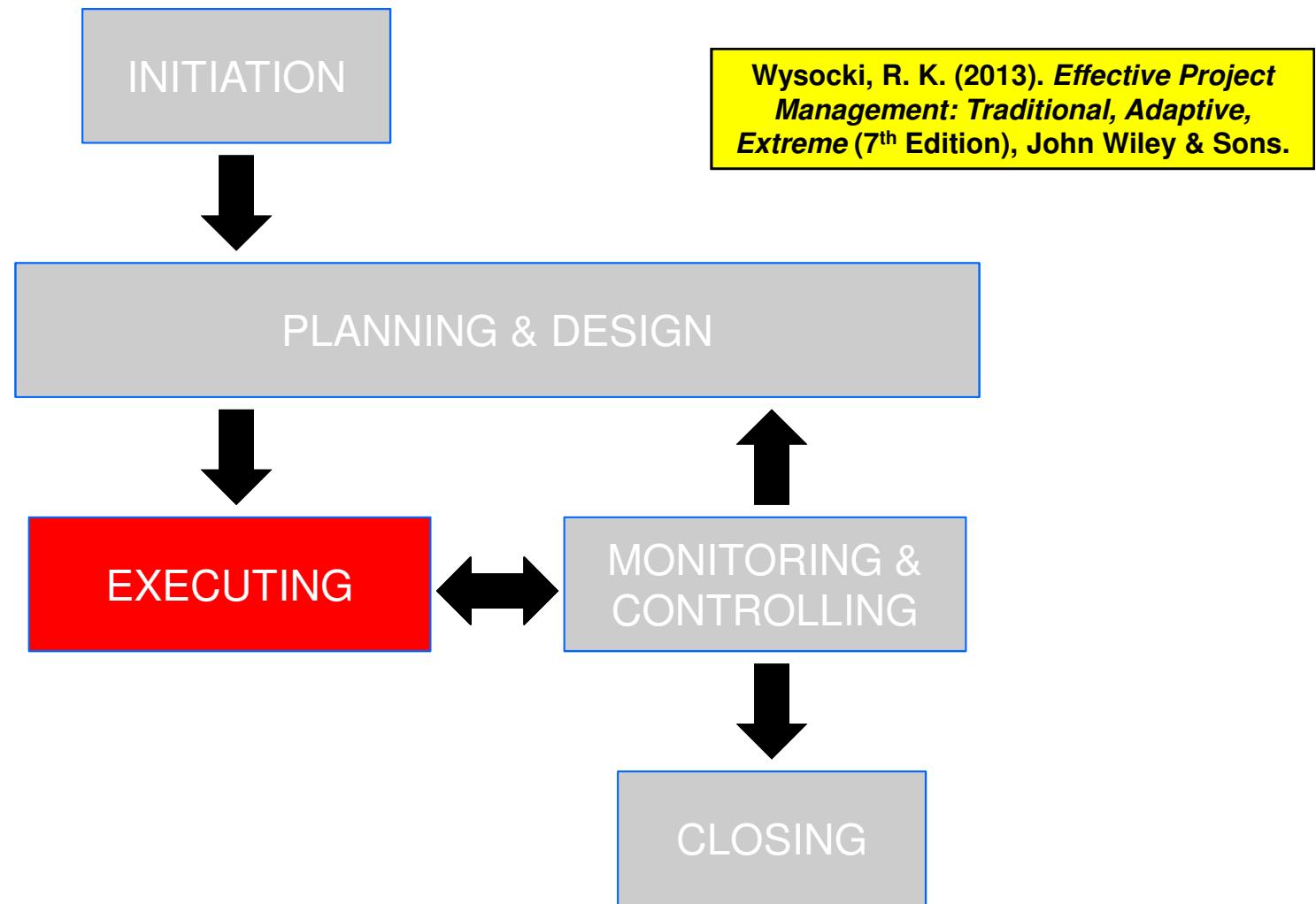


To be covered
in Lecture #3

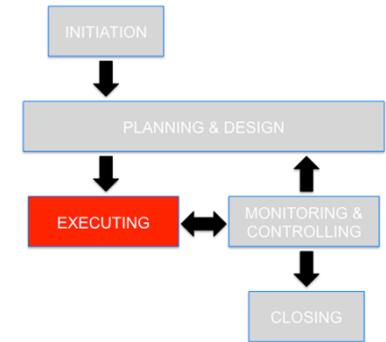


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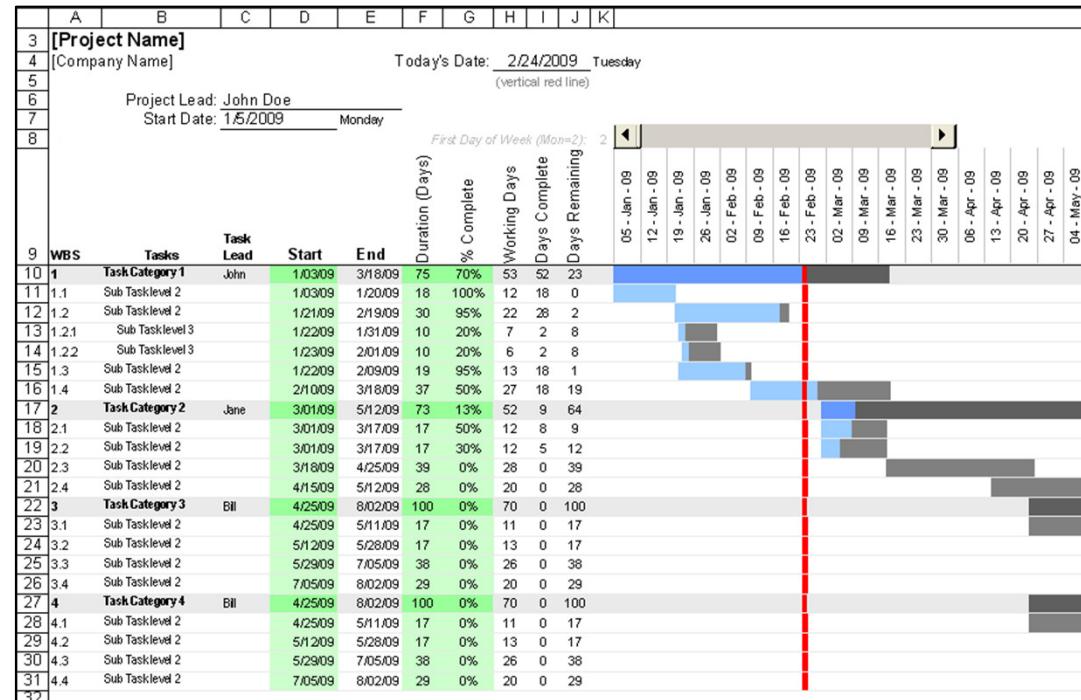
Project Execution



Project Execution

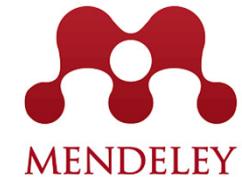
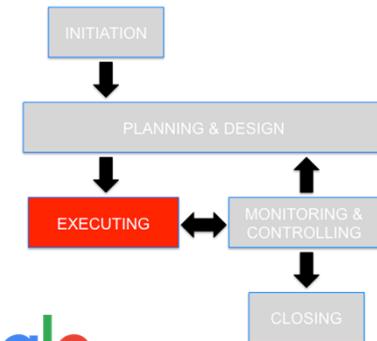


Follow the plan...

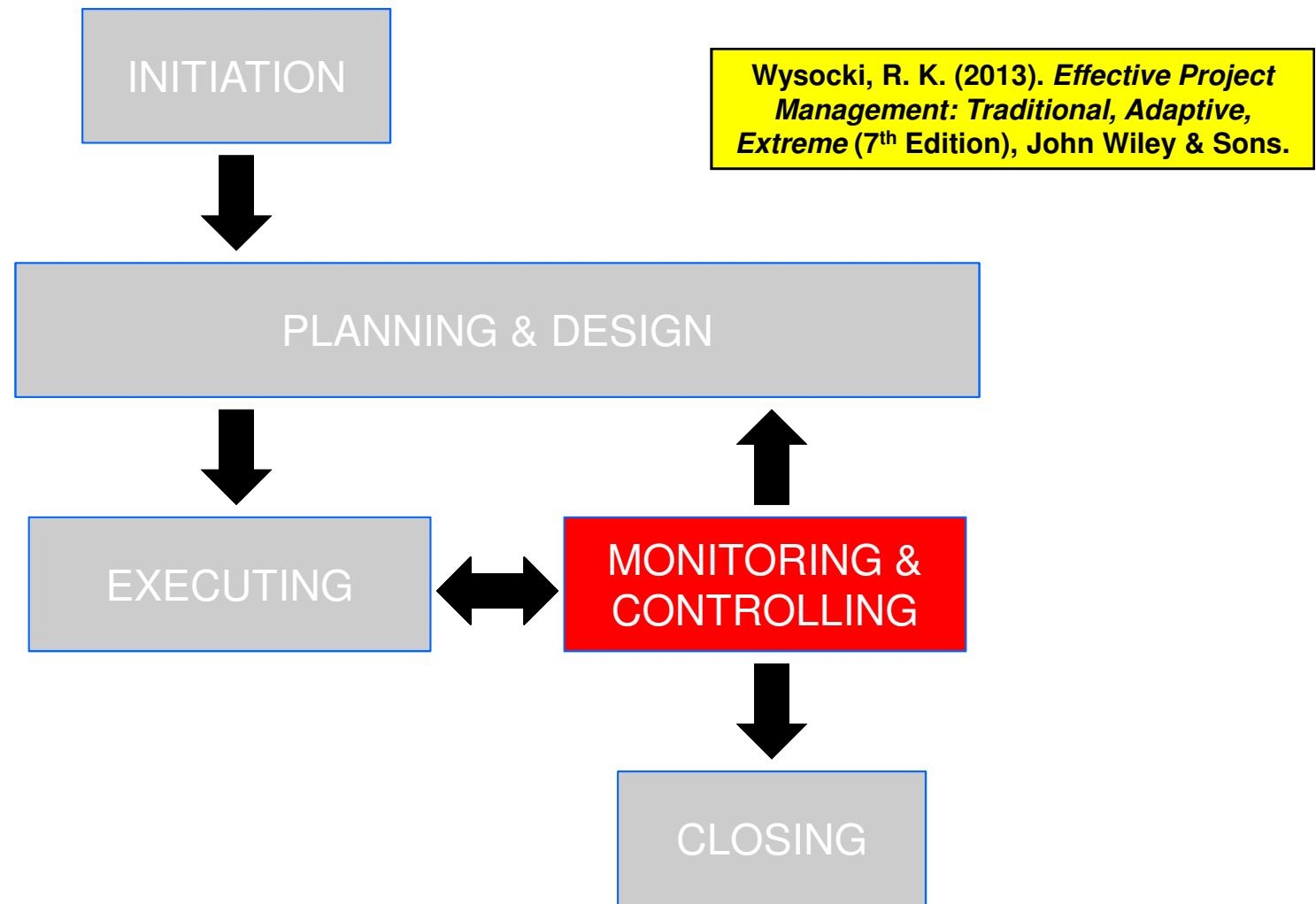


Project Execution: Tips

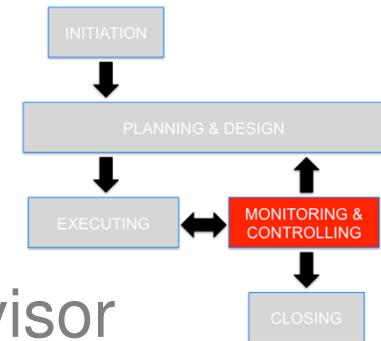
- Collect relevant background information
 - (*will be covered in Lecture 2*)
 - academic text books
 - scientific research papers
 - industry technical reports
 - government white papers
 - Google Scholar
 - Wikipedia (*use, but don't cite*)
- Keep a project notebook
 - paper (*bound notebook, not loose sheets*)
 - electronic (e.g. EverNote)
- Consider using a 'reference manager'
 - Mendeley (<https://www.mendeley.com>)
 - JabRef (<http://www.jabref.org>)
- Setup regular (*weekly*) meetings with supervisor



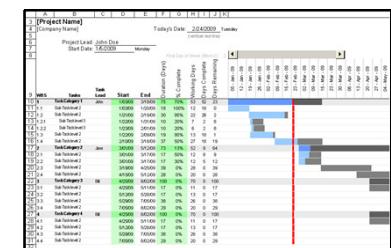
Project Monitoring



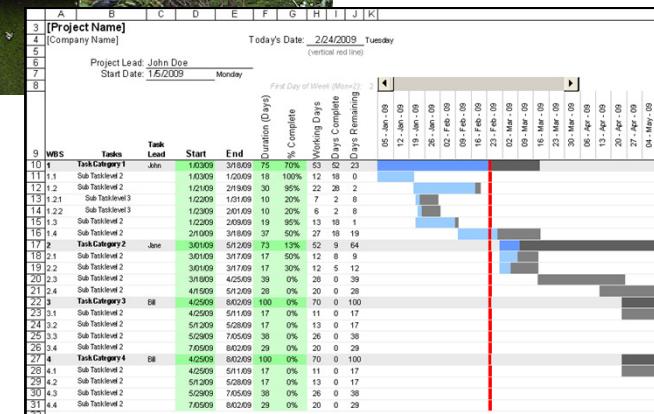
Project Monitoring



- Discuss progress with your supervisor
- Compare your achievements with your plan
- Anticipate checkpoints/milestones
- Identify contingencies for:
 - falling behind the plan (*activities to drop*)
 - running ahead of the plan (*activities to add*)
- Revise/Adapt/Update your plan ...



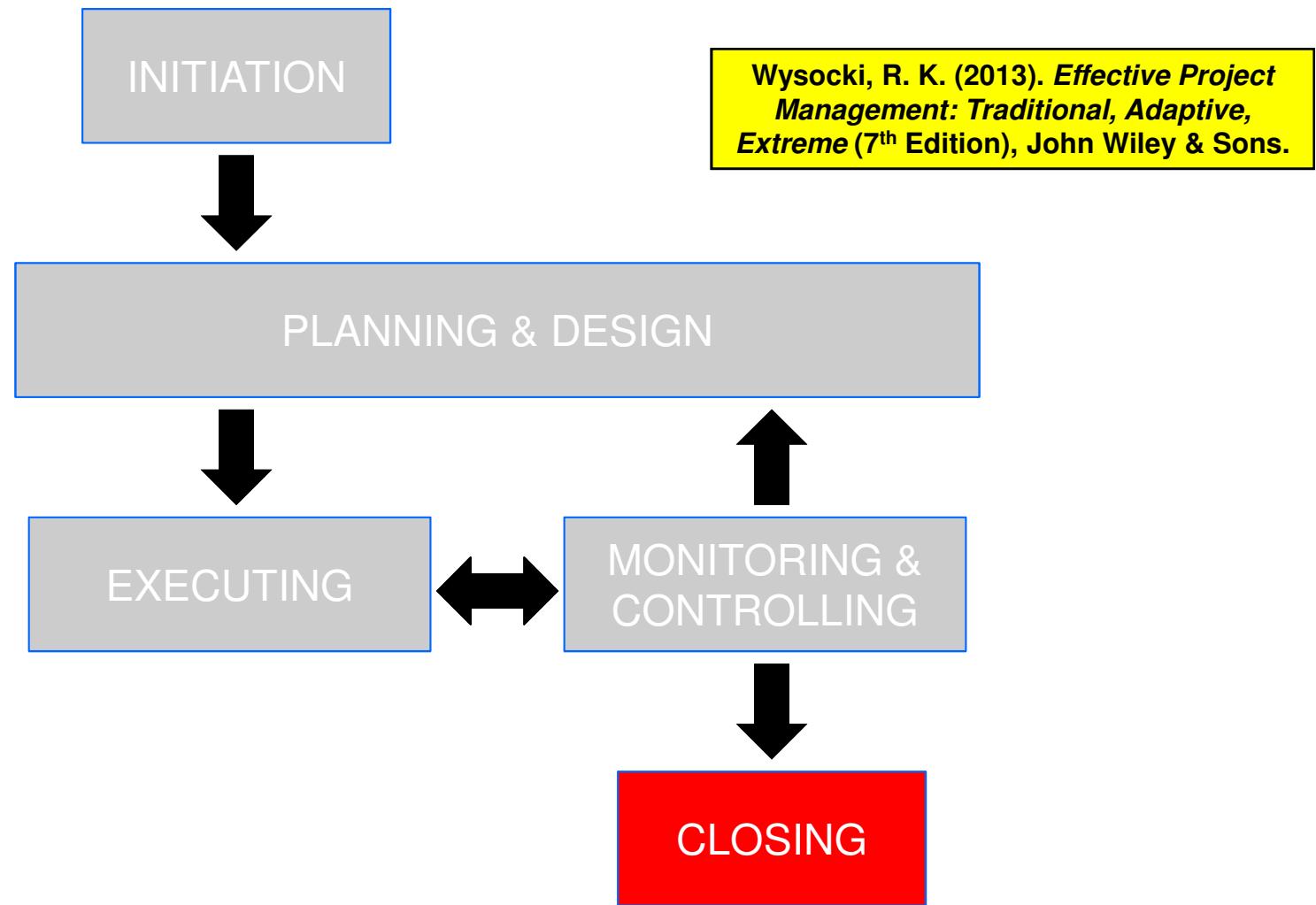
Monitor Project: Adapt/Revise Plan if necessary



Gantt chart – living document which you consult/adapt throughout project.

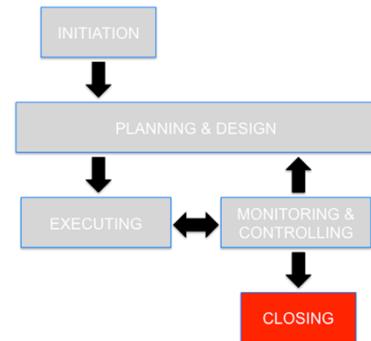
PURPOSE: to help you manage/achieve your project

Project Closure



Project Closure

- Poster
 - 2-4pm on 9 September 2020
 - Lecture 6: *How to Prepare and Present a Poster (August 2020)*
- Dissertation
 - hand-in **3pm 16th September 2020**
 - Lecture 4: *Academic Writing*



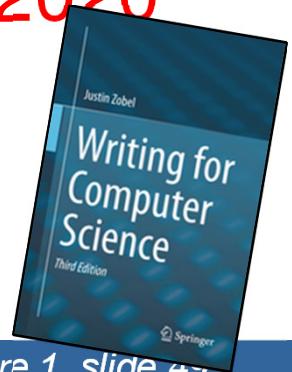
Awareness and Usage of Speech
Technology

COM6910 Dissertation Project
(Academic year 2014-15)

Student: Shih-Hao Liao

Supervisor: Prof. Roger K. Moore

This report is submitted as partial fulfillment of the requirements for the degree of MSc in Information
Systems by Shih-Hao Liao





Now
MSc
*Dissertation
project title*



16th Sept 2020

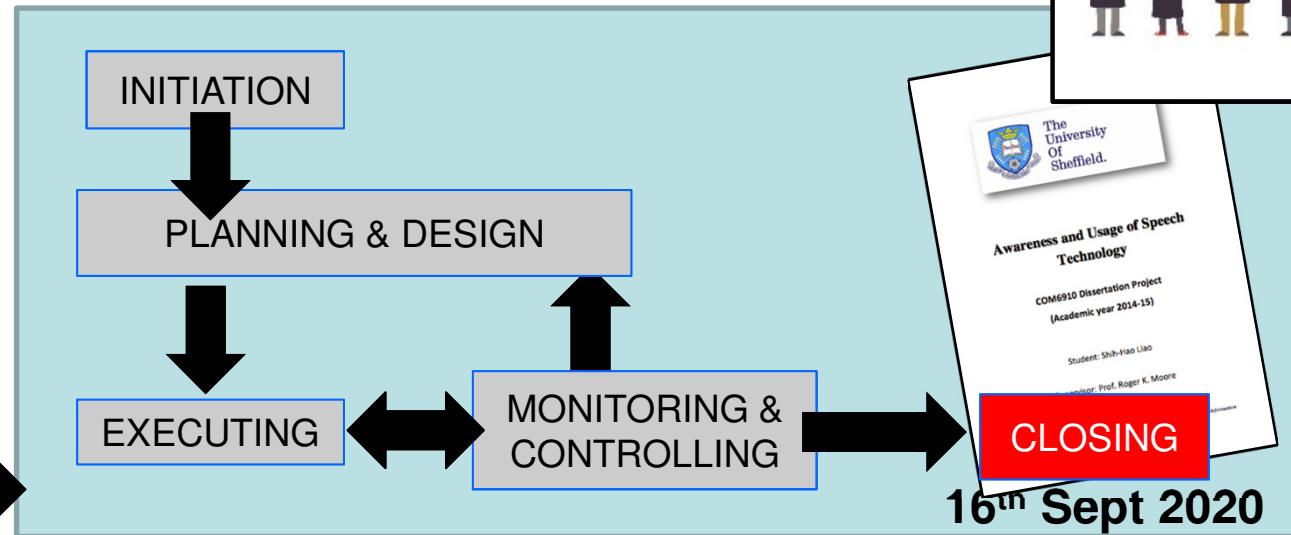


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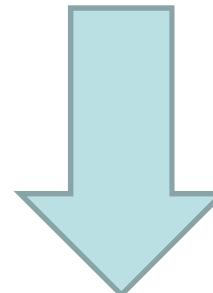
COM6905



Now
MSc
Dissertation
project title



More generally:



COM6905/06 skills prepare you to be
a Professional in industry/academia.



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This lecture has covered ...

- Course objectives
- Recommended texts
- Logistics
- Project management
 - initiation
 - planning (*PERT, GANTT*)
 - execution
 - monitoring
 - closure
- Professional training/tools
 - APM
 - PRINCE2



Next time ...

Ethics & Risk



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Useful Professional Training/Tools

Association for Project Management Body of Knowledge



Range of professional courses offering the 'fundamentals' of project management through to 'management' and 'professional' levels of understanding, requiring more advanced learning and assessment.

<https://www.apm.org.uk/body-of-knowledge/>

Professional Software: PRojects IN Controlled Environments



PRINCE2® 2017

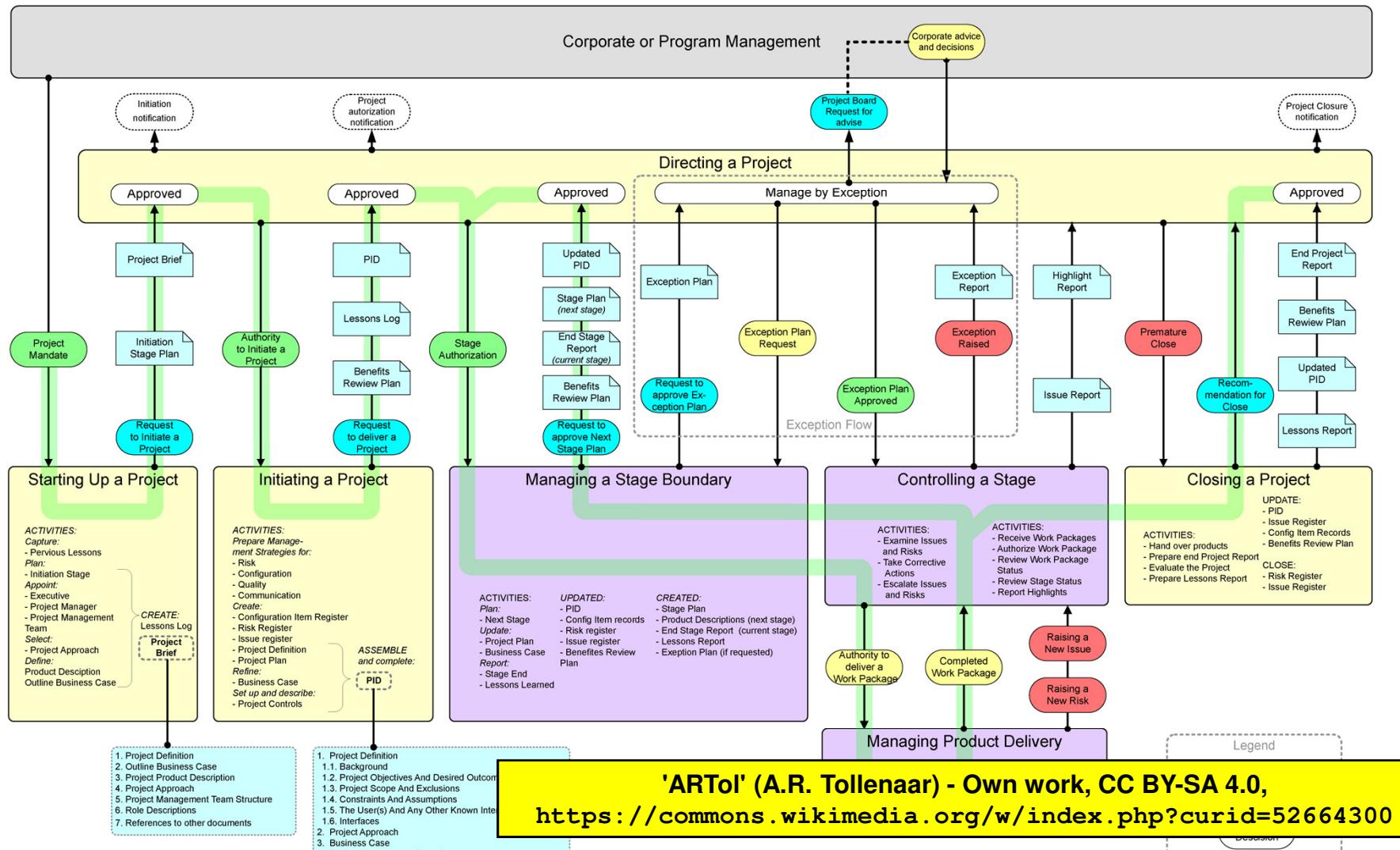


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<https://www.prince2.com/uk/what-is-prince2>

PRINCE2 Process Model (Edition 2009)



PRINCE2 process-based method for effective project management. Used extensively by the UK Government, PRINCE2 is also widely recognised and used in the private sector, both in the UK and internationally. The PRINCE2 method is in the public domain, and offers non-proprietary best practice guidance on project management.