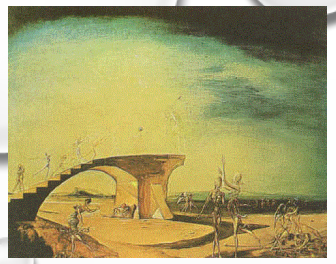
COMP 208 LECTURE 3

2020-21

PLANNING

WHAT IS PLANNING?



PLANNING

- PLANNING IS THE KEY TO A SUCCESSFUL PROJECT
- IT IS DOUBLY IMPORTANT WHEN MULTIPLE PEOPLE ARE INVOLVED

- PLANS ARE NEEDED TO:
  - IDENTIFY WHAT MUST BE DONE (WHAT)
  - ALLOCATE WORK ACROSS THE TEAM (WHO)
  - CO-ORDINATE THE ACTIVITIES OF THE TEAM (WHEN)

EXAMPLE 1: LIFECYCLE OF THIS PROJECT

WE USE A WATERFALL MODEL:

- DEFINE REQUIREMENTS
- PRODUCE DESIGN
- IMPLEMENT SYSTEM
- TEST AND PUT INTO PRODUCTION
- DOCUMENT

示例1：本项目的生命周期 我们使用瀑布模型：
•定义需求
•产品设计
•实施系统
•测试并投入生产
•文件

EXAMPLE 1:
LIFECYCLE OF THIS PROJECT

- **REQUIREMENT ANALYSIS (REWIEW WORTH 12%)**
- **DESIGN (REVIEW WORTH 15%)**
- IMPLEMENTATION (DEMO WORTH 15%)
- FINAL DOCUMENTATION (ASSESSMENT WORTH 30%)

EXAMPLE 1:
LIFECYCLE OF THIS PROJECT
WARNING!

- **REQUIREMENT ANALYSIS (TIME: 3 WEEKS – 150 HOURS)**
- **DESIGN (TIME: 4 WEEKS – 200 HOURS)**
- IMPLEMENTATION (TIME: 3 WEEKS – 150 HOURS)
- FINAL DOCUMENTATION (TIME: THROUGHOUT TERM + 1 WEEK)

示例1：此项目的生命周期警告！
•需求分析（时间：3周–150小时）
•设计（时间：4周–200小时）
•实施（时间：3周–150小时）
•最终文件（时间：整个学期+1周）

EXAMPLE 1:
LIFECYCLE OF THIS PROJECT
WARNING!

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THE INITIAL PART OF TERM IS USUALLY MORE FREE FROM WORK AND DEADLINES.

学期的开始部分通常更不需要工作和截止日期。

EXAMPLE 2: PROJECT

组织聚会?

Organizing a Party?

8 February to 14 February, 2016

Week 6

- Calendar
- Administration
- Teaching
- Home

February 2016						
M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29						

March 2016						
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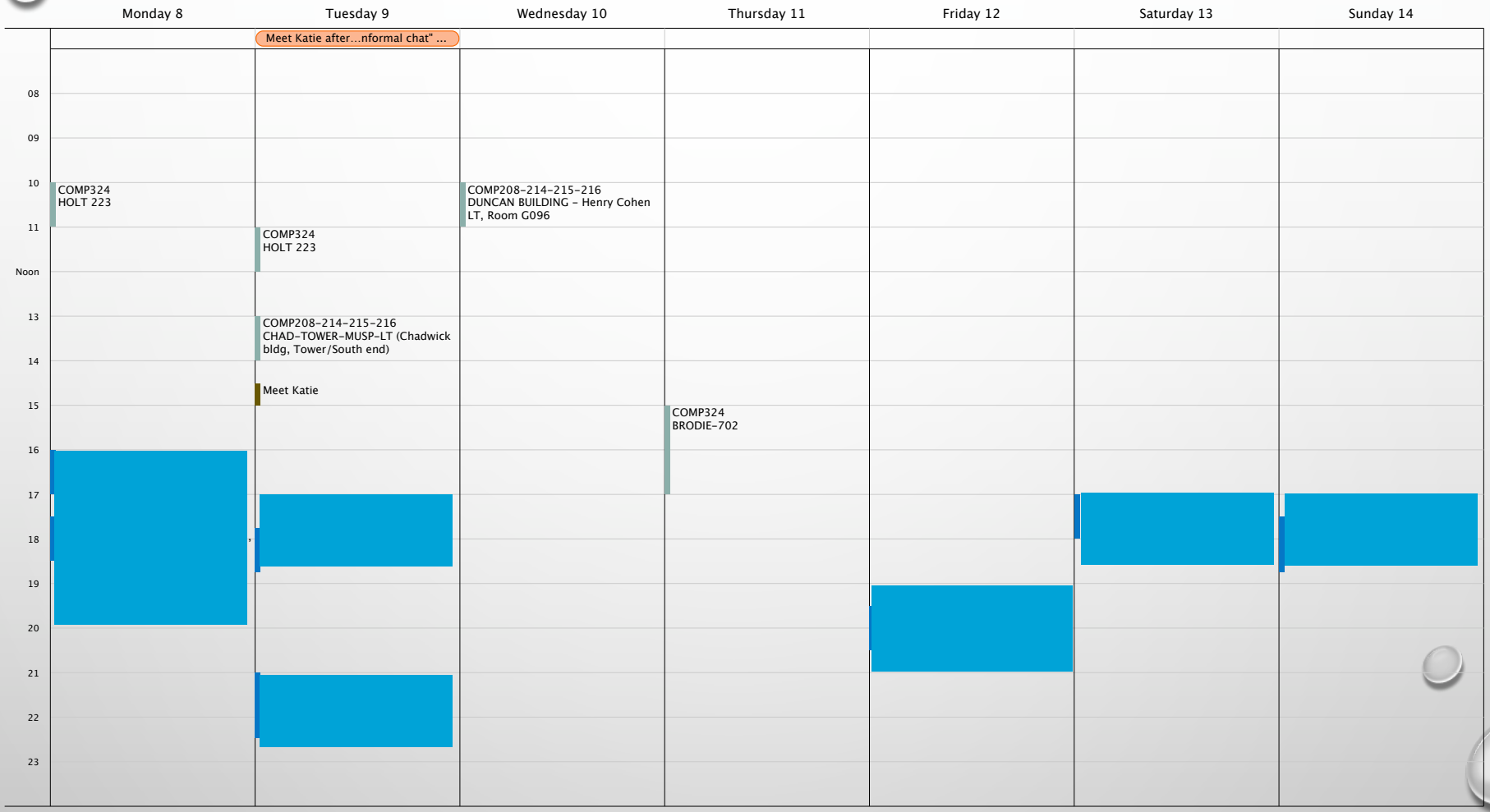


United Kingdom Time Time Zone

TASKS

(EXCLUDING CONTINGENCIES & LONG TERM JOBS!)

- PREPARE 5 LECTURES (2 HOURS EACH)
- PREPARE 1 TUTORIAL (3 HOURS)
- WRITE REFERENCE LETTERS (1 HOUR)
- MEETING PREPARATION (2 HOUR)
- PAPER (10 HOURS)
- REVIEW CONFERENCE PAPERS (5 HOURS)
- RETURN REPORTS ON CONF PAPERS (1 HOUR)

任务
（不包括意外事件和长期工作！）
准备5节课（每节课2小时）
准备1节教程（3小时）
写推荐信（1小时）
会议准备（2小时）
论文（10小时）
回顾会议论文（5小时）
提交会议论文报告（1小时）

… AND MANY MORE …

还有更多…
•建造房屋
•组织一次旅行
几年前，一位来自德勤（deloitte）的人给了我们一次很好的谈话，他向我们阐述了计划的重要性（细节可以在这里和画布上找到）

- BUILD A HOUSE
- ORGANIZE A TRIP

FEW YEARS AGO WE HAD A NICE TALK BY A GUY FROM DELOITTE THAT GAVE US THEIR VIEW ON THE IMPORTANCE OF PLANNING (DETAILS CAN BE FOUND HERE AND ON CANVAS)

HOW TO PLAN

MAIN ACTIVITIES IN A S/E PROJECT

- MANAGING PROJECT SCOPE
- DEFINING & SCHEDULING TASKS
- ACQUIRING & ALLOCATING RESOURCES
- ASSESSING & MANAGING QUALITY
- MANAGING RISK
- MANAGING PROCUREMENT
- **EXECUTION (THIS COULD BE THE ACTUAL WATERFALL PROCESS)**
- CONTROL AND CLOSURE

s/e项目的主要活动
•管理项目范围
•定义和安排任务
•获取和分配资源
•评估和管理质量
•管理风险
•管理采购
•执行（这可能是实际的瀑布过程）
•控制和关闭

MAIN ACTIVITIES IN A S/E PROJECT

- MANAGING PROJECT SCOPE
- DEFINING & SCHEDULING TASKS
- ACQUIRING & ALLOCATING RESOURCES
- ASSESSING & MANAGING QUALITY
- MANAGING RISK
- MANAGING PROCUREMENT
- **EXECUTING (ACTUAL WATERFALL PROCESS)**
- CONTROL AND CLOSURE

One/Two people devoting half of their time planning and controlling!!

STEPS IN PLANNING

- WORK BREAKDOWN
- TIME ESTIMATES
- MILESTONE IDENTIFICATION
- ACTIVITY SEQUENCING
- SCHEDULING AND ALLOCATION OF PEOPLE
- RE-PLANNING

规划步骤
•工作分解
•时间估计
•里程碑标识
•活动排序
•人员安排和分配
•重新规划

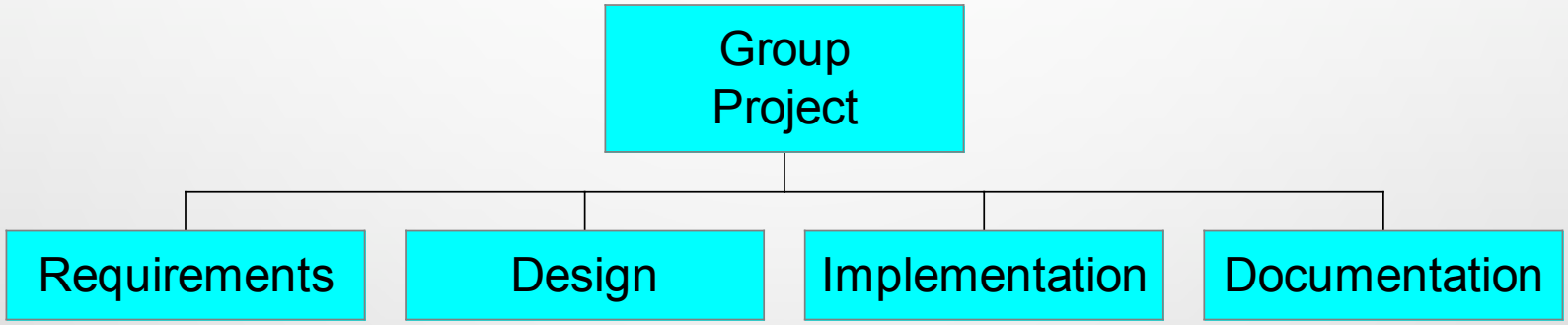
(1) WORK BREAKDOWN

- IT IS IMPORTANT TO THINK ABOUT TASKS AT THE ***RIGHT LEVEL OF DETAIL***
- "DO PROJECT" IS CLEARLY TOO ABSTRACT:
  - IT DOESN'T TELL YOU WHAT YOU NEED TO DO
  - YOU CAN'T ESTIMATE HOW LONG IT WILL TAKE
  - YOU CAN'T TELL WHAT PROGRESS YOU HAVE MADE
  - IT GIVES NO BASIS FOR SPLITTING THE WORK.

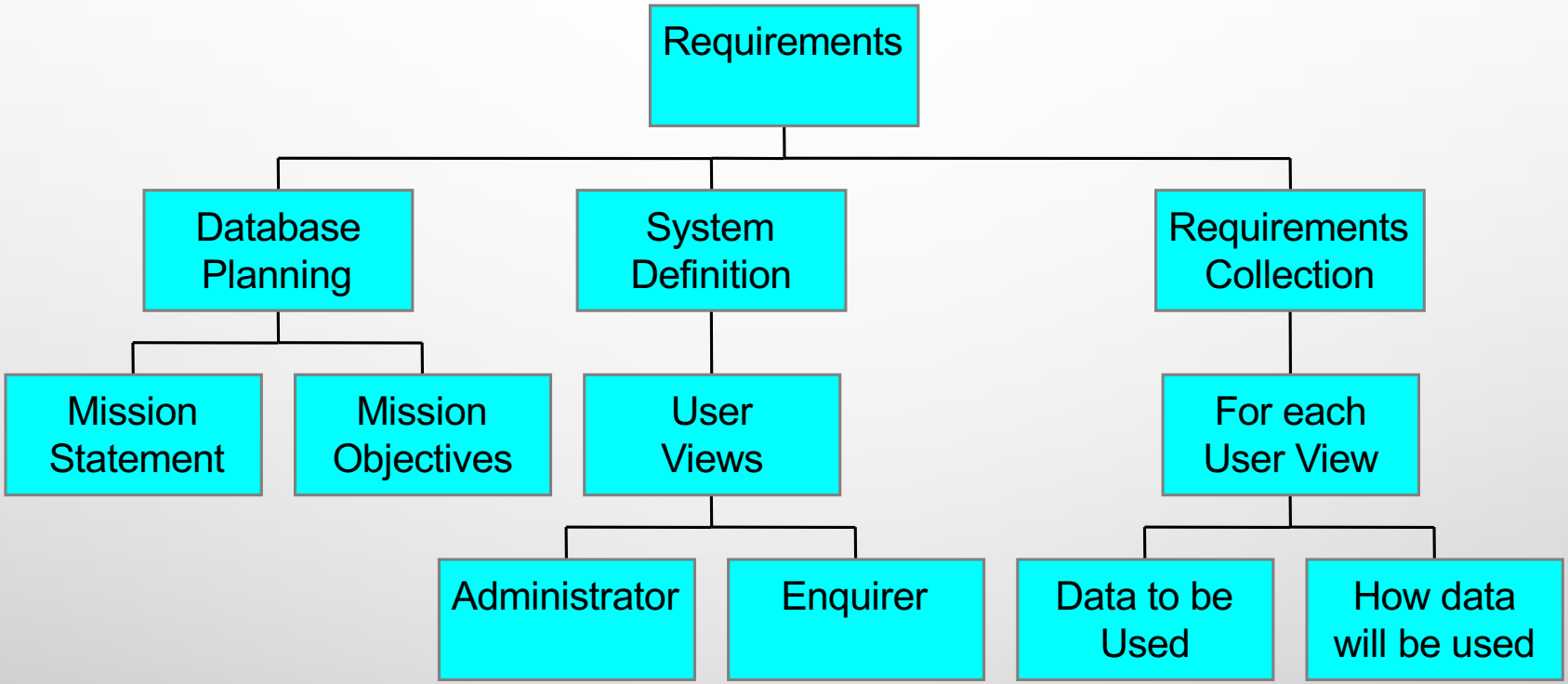
（1） 工作分解
•以正确的细节层次思考任务很重要
•"做项目"显然过于抽象：
•它不会告诉你需要做什么
•你无法估计需要多长时间
•你不知道自己取得了什么进步
•它没有提供分割工作的依据。

REFINE THE TASKS STEP BY STEP

逐步细化任务



REFINEMENT OF REQUIREMENTS



来自Connolly和Begg的子任务："数据库解决方案"

Sub-tasks taken from Connolly and Begg: "Database Solutions"

HOW FAR SHOULD WE REFINE?

- BREAK THE TASK DOWN UNTIL YOU ARE SURE ***WHAT*** THE TASK INVOLVES
- IF THE TASK IS LIKELY TO TAKE MORE THAN A WEEK, PROBABLY IT SHOULD BE BROKEN DOWN
- IF THE TASK IS LIKELY TO TAKE LESS THAN A DAY, YOU’VE PROBABLY GONE TOO FAR
- LATER TASKS CAN BE LEFT WITH LESS DETAIL ***UNTIL*** THEY ARE REACHED

TOO MUCH DETAIL MAKES RE-PLANNING DIFFICULT, TOO LITTLE MAKES PLANNING IMPOSSIBLE.

我们应该改进到什么程度?
•分解任务，直到确定任务涉及的内容
•如果任务可能需要一周以上的时间，则可能需要将其分解
•如果这项任务可能需要不到一天的时间，那么你可能做得太过分了
•以后的任务在完成之前可以保留较少的细节 太多的细节使重新规划变得困难，太少的细节使规划变得不可能。

(2) TIME AND PERSON ESTIMATES

- EXAMINE THE TASKS AT THE LOWEST LEVEL OF DETAIL
- FOR EACH ESTIMATE HOW LONG IT WILL TAKE, AND HOW MANY PEOPLE ARE NEEDED AND DESIRABLE TO DO IT
- OTHER RESOURCES THAT MAY BE NEEDED.
- THESE ESTIMATES MAY BE WRONG.
  - DON'T WORRY ABOUT THIS, BUT MAKE SURE YOUR PLAN CAN COPE (*LEAVE SLACK IN THE PLAN*).
  - PLAN GIVES YOU STRUCTURE NEVERTHELESS

（2） 时间和人员估计
•以最低的细节检查任务
•每次估计需要多长时间，需要多少人来完成
•可能需要的其他资源。
•这些估计可能是错误的。
•不要担心这一点，但要确保你的计划能够应付（在计划中留有余地）。
•计划为您提供了结构

(3) MILESTONE IDENTIFICATION

- MILESTONES ARE SIGNIFICANT EVENTS BEFORE PROJECT COMPLETION.
  - EXTERNAL MILESTONES MAY HAVE A FIXED DATE
- EXTERNAL MILESTONES:
  - THE REQUIREMENTS REVIEW
  - THE DESIGN REVIEW
  - THE DEMONSTRATION
  - THE FINAL REPORT.
- INTERNAL MILESTONES:
  - E.G. PROJECT MEETINGS, COMPLETION OF SIGNIFICANT TASKS (OPTIONAL).

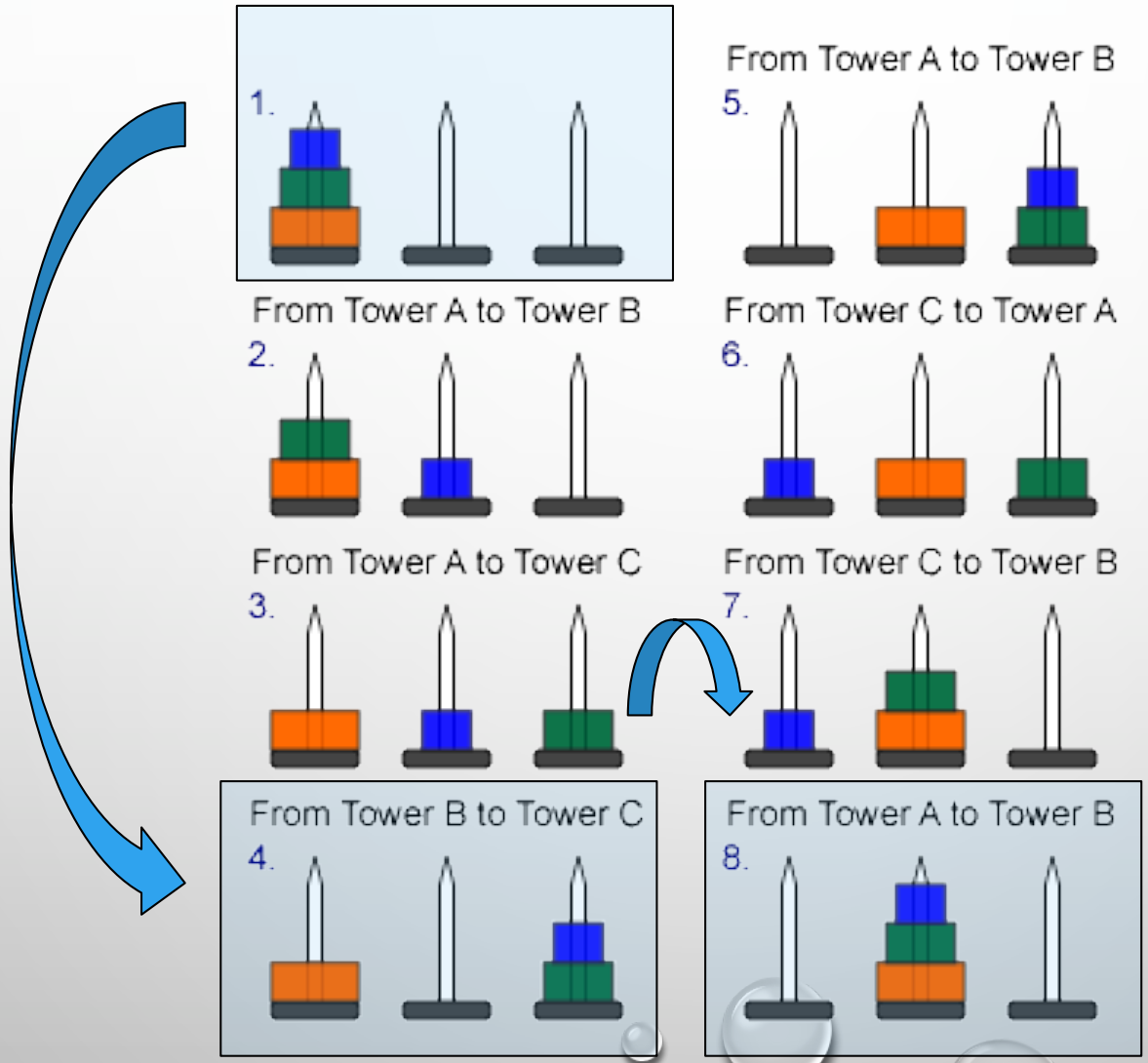
（3） 里程碑标识 •里程碑是项目完成前的重要事件。
•外部里程碑可能有一个固定的日期
•外部里程碑： •需求评审 •设计审查 •演示 •最终报告。
•内部里程碑： •例如项目会议、完成重要任务（可选）。

(4) ACTIVITY SEQUENCING

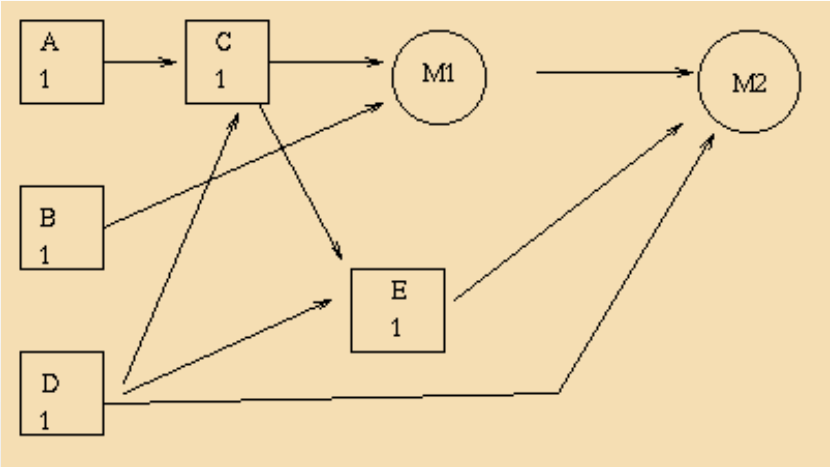
- FOR EACH TASK, DECIDE WHICH MILESTONE IT MUST BE COMPLETED BEFORE
- FOR EACH TASK, SEE WHICH TASKS MUST BE COMPLETED BEFORE IT CAN START, AND WHICH CANNOT START UNTIL IT IS COMPLETED
- DRAW A CHART SHOWING THESE RELATIONSHIPS.

（4） 活动排序
•对于每个任务，决定必须在完成之前完成的里程碑
•对于每个任务，查看哪些任务必须在开始之前完成，哪些任务在完成之前不能开始
•绘制图表，显示这些关系。

EXAMPLE

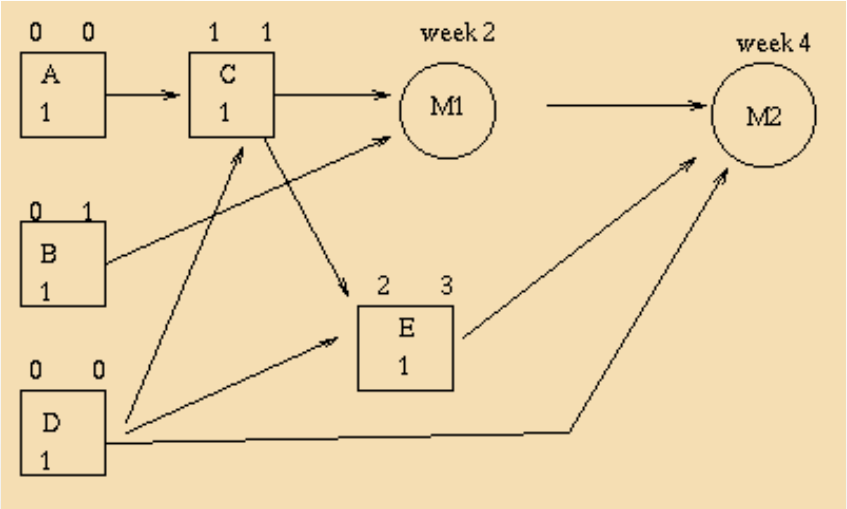

1.
From Tower A to Tower B
2.
From Tower A to Tower C
3.
From Tower B to Tower C
4.
From Tower A to Tower B
5.
From Tower C to Tower A
6.
From Tower C to Tower B
7.
From Tower A to Tower B
8.

EXAMPLE ACTIVITY NETWORK



- TASKS A,B,C ARE REQUIRED BY MILESTONE 1
- TASKS D,E, ARE REQUIRED BY MILESTONE 2
- TASK C REQUIRES TASKS A AND D
- TASK E REQUIRES TASKS C AND D
- ALL TASKS TAKE 1 WEEK

NOW ADD SOME DATES

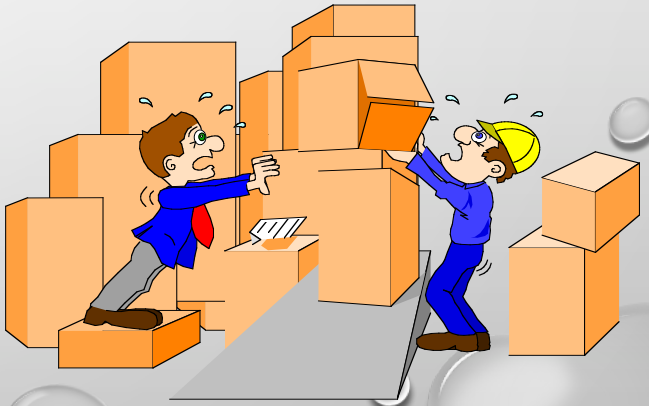


- FIXED DATES FOR MILESTONES
- EARLIEST START DATES (FROM REQUIRED TASKS)
- LATEST START DATES (FROM DEADLINES)
- IN THE EXAMPLE:
  - A AND D MUST START IN WEEK 0, AND BE DONE IN PARALLEL
  - C MUST START IN WEEK 1

AT THIS POINT:

此时：
•我们可以确定：
•什么可以（或必须）并行进行
•任务必须开始的时间，以及具有灵活性的时间
•潜在问题：最晚开始日期早于最早开始日期
•在最后一种情况下，需要重新规划：
•分割任务
•更改时间估计
•重新考虑相关性
•减少任务。

- WE CAN IDENTIFY:
  - WHAT CAN (OR MUST) BE DONE IN PARALLEL
  - WHEN TASKS MUST START, AND WHICH HAVE FLEXIBILITY
  - POTENTIAL PROBLEMS: LATEST START DATE IS BEFORE EARLIEST START DATE
- IN THE LAST CASE RE-PLANNING IS NEEDED:
  - SPLIT THE TASK
  - CHANGE THE TIME ESTIMATE
  - RECONSIDER DEPENDENCIES
  - REDUCE THE TASK.

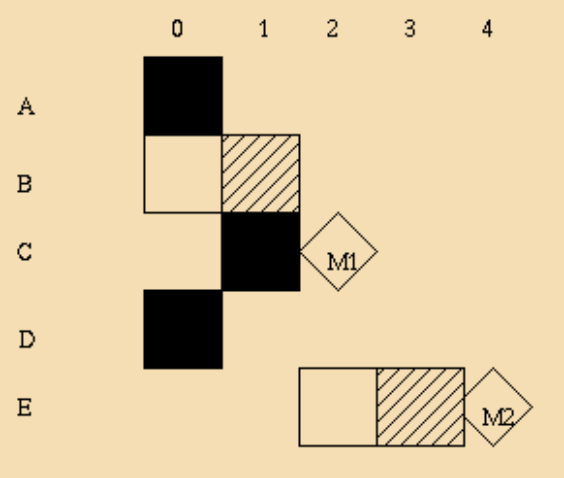


(5) SCHEDULING

- WE NOW DECIDE WHICH TASK WILL START WHEN
- ***GANTT CHARTS*** ARE COMMONLY USED
- THEY SHOW EXPLICITLY HOW LONG TASKS WILL TAKE, WHAT MUST BE DONE IN PARALLEL, AND WHAT SLACK THERE IS IN THE PLAN
  - THE MORE SLACK YOU HAVE THE BETTER.

（5） 日程安排
•我们现在决定何时开始哪项任务
•甘特图是常用的
•它们明确显示了任务需要多长时间、必须并行完成的任务以及计划中存在哪些松弛
•越松弛越好。

GANTT CHART FOR EXAMPLE



横轴显示时间步长/纵轴显示任务
黑色显示无浮动着色显示浮动
白色显示最早可能的日程安排最后一个任务结束时以菱形显示的里程碑。

- HORIZONTAL AXIS SHOWS TIME STEPS/VERTICAL AXIS SHOWS TASKS
- BLACK SHOWS NO FLOAT
- SHADED SHOWS FLOAT
- WHITE SHOWS EARLIEST POSSIBLE SCHEDULING
- MILESTONES SHOWN AS DIAMONDS AT END OF LAST TASK.

ALLOCATION OF PEOPLE I

人员配置-i
什么是可取的?
有些任务自然需要不同数量的人员；
•整个团队（例如，决定应用领域）：
•每个人都需要同意和参与
•成对（例如，用例的需求收集）
•两个头比一个头好：说话有帮助
•个人-（例如，绘制图表，实现一段代码）-但其他人审查工作可能会有所帮助。
•一个新的眼睛更容易发现任何问题。

- ***WHAT IS DESIRABLE?***
- SOME TASKS NATURALLY REQUIRE DIFFERENT NUMBERS OF PEOPLE;
  - THE WHOLE GROUP (E.G. DECIDING ON THE APPLICATION AREA):
    - *EVERYONE NEEDS TO AGREE AND BE INVOLVED*
  - PAIRS (E.G. REQUIREMENTS COLLECTION FOR A USE CASE)
    - 2 HEADS ARE BETTER THAN 1: *IT HELPS TO TALK*
  - INDIVIDUALS - (E.G. DRAWING A DIAGRAM, IMPLEMENTING A PIECE OF CODE) - BUT SOMEONE ELSE REVIEWING THE WORK MAY BE HELPFUL.
    - *IT IS EASIER FOR A FRESH EYE TO SPOT ANY PROBLEMS.*

ALLOCATION OF PEOPLE -II

- ***WHAT IS POSSIBLE?***
- IF TASKS NEED TO BE DONE IN PARALLEL, IT MAY BE ESSENTIAL TO SPLIT YOUR RESOURCES ACROSS THEM
- DIFFERENT PEOPLE MAY HAVE DIFFERENT SKILLS AND INTERESTS.

人员配置-ii
•什么是可能的?
•如果任务需要并行完成，则有必要将您的资源分散到这些任务中
•不同的人可能有不同的技能和兴趣。

人员配置-iii
•如果每个人都有事情要做就更好了
•有正在进行的后台任务，例如可以在“任何”时间完成的数据采集
•尽量避免过多等待他人完成
•在人员和时间上均匀分配工作
•在你的计划中尽量不要松懈。

ALLOCATION OF PEOPLE - III

- BETTER IF EVERYONE HAS SOMETHING TO DO ALL THE TIME
  - THERE ARE ON-GOING BACKGROUND TASKS, SUCH AS DATA ACQUISITION WHICH CAN BE DONE AT “ANY” TIME
- TRY TO AVOID TOO MUCH WAITING FOR OTHER PEOPLE TO FINISH
- SPREAD THE WORK EVENLY OVER PEOPLE AND TIME
- TRY TO KEEP SLACK IN YOUR PLAN.

（6） 重新规划 •计划从来都不是完美的：事情会出问题或很好。 •修改计划-不要放弃 •科林·鲍威尔将军：“与敌人第一次接触后就没有任何计划幸存下来。” •一项任务完成得晚，没有任何懈怠：其他任务必须更快地完成 •使用更多的人；减少任务； •任务提前完成 •将活动向前推进；始终尝试创建松弛 •在项目过程中确定新任务 •将其添加到计划中 •不再需要任务 •将其从计划中删除。

(6) RE-PLANNING

- PLANS ARE NEVER PERFECT: THINGS WILL GO WRONG OR WELL.
  - MODIFY THE PLAN - DON’T THROW IT AWAY
  - GENERAL COLIN POWELL: *“NO PLAN SURVIVES FIRST CONTACT WITH THE ENEMY.”*
- A TASK FINISHES LATE AND THERE WAS NO SLACK: OTHER TASKS MUST BE COMPLETED MORE QUICKLY
  - USE MORE PEOPLE; REDUCE THE TASK;
- TASKS ARE FINISHED EARLY
  - MOVE AN ACTIVITY FORWARD; ALWAYS TRY TO CREATE SLACK
- NEW TASKS ARE IDENTIFIED IN THE COURSE OF THE PROJECT
  - ADD THEM TO THE PLAN
- TASKS ARE NO LONGER NEEDED
  - REMOVE THEM FROM THE PLAN.

如果你有个好计划 •每个人都知道要做什么，什么时候需要做，为什么要做 •预计可能出现的困难 •事情会按时完成 •工作将公平分配 •每个人都会快乐。

IF YOU HAVE A GOOD PLAN

- EVERYONE KNOWS ***WHAT*** TO DO, ***WHEN*** THEY NEED TO DO IT, AND ***WHY*** THEY ARE DOING IT
- POTENTIAL DIFFICULTIES WILL BE ANTICIPATED
- THINGS WILL BE COMPLETED ON TIME
- WORK WILL BE DIVIDED FAIRLY
- EVERYONE WILL BE HAPPY.

8 February to 14 February, 2016

Week 6

- Calendar
- Administration
- Teaching
- Home

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	Monday 8	Tuesday 9	Wednesday 10	Thursday 11	Friday 12	Saturday 13	Sunday 14
		Meet Katie after...nformal chat" ...					
08	COMP324		COMP208				
09		COMP324		COMP324 - TUT	PAPER	Return	
10	COMP324 HOLT 223		COMP208-214-215-216 DUNCAN BUILDING - Henry Cohen LT, Room G096				
11		COMP324 HOLT 223	Review papers				
Noon	COMP208						
13		COMP208-214-215-216 CHAD-TOWER-MUSP-LT (Chadwick bldg, Tower/South end)		COMP324			
14	MEETING						
15		Meet Katie		COMP324 BRODIE-702			
16							
17							
18							
19							
20							
21							
22							
23							

United Kingdom Time Time Zone

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