

Project Management

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- **Project** : A group of milestones or phases, activities or tasks that support an effort to accomplish something
- **Management** : is the process of Planning, Organizing, Controlling and Measuring

Examples of project

- ▶ Building Construction

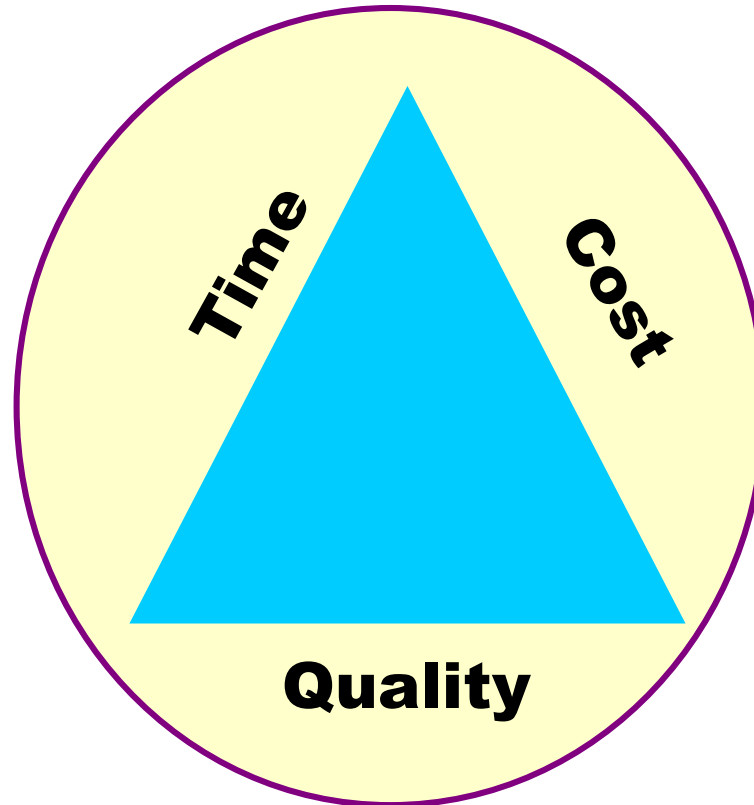


- ▶ Research Project

Examples

- Each new product or service introduction is a unique event, i.e., a project.
- effecting change in a structure, staffing or style of an organisation
- designing a new transportation vehicle
- developing or acquiring a new or modified information system
- constructing a building or facility
- building a water system for a community in a developing country
- running at campaign for political office
- implementing a new business procedure or process
- Building Delhi Metro
- Bullet train project

The triple constraint



1. *Planning* - goal setting, defining the project, team organization
2. *Scheduling* - relate people, money, and supplies to specific activities and activities to each other
3. *Controlling* - monitor resources, costs, quality, and budgets; revise plans and shift resources to meet time and cost demands



▶ Planning

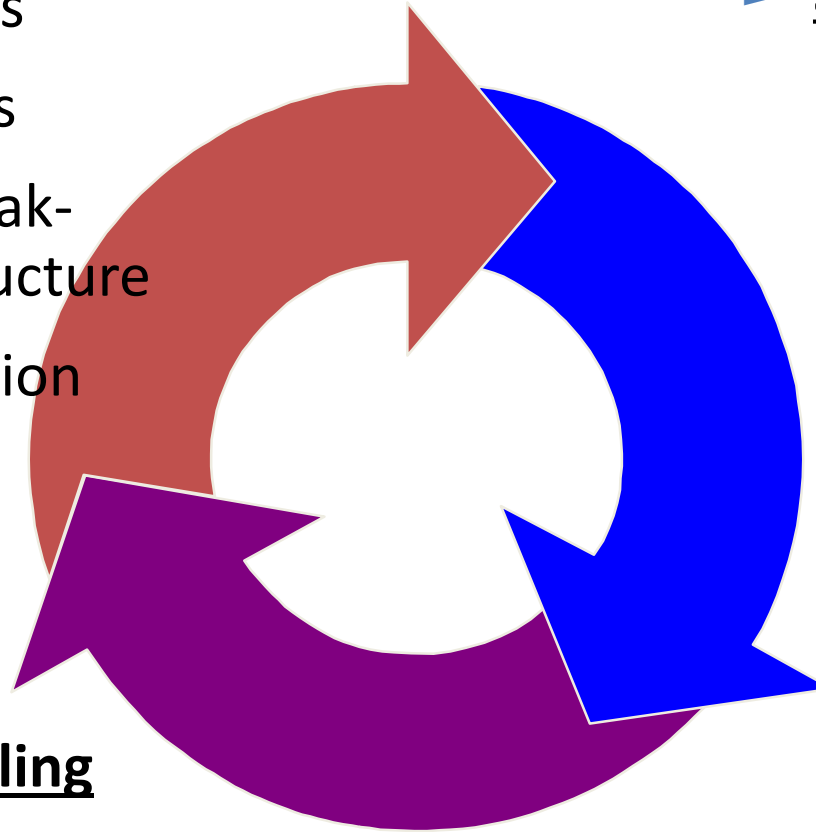
- ▶ Objectives
- ▶ Resources
- ▶ Work break-down structure
- ▶ Organization

▶ Scheduling

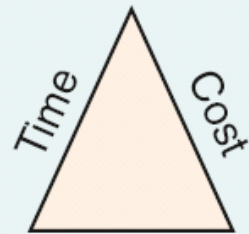
- ▶ Project activities
- ▶ Start and end times
- ▶ Network

▶ Controlling

- ▶ Monitor, compare, revise, action



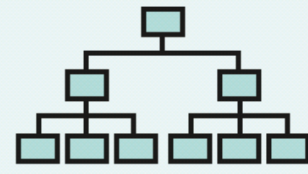
Planning the Project



Set the goals



Define the project



Develop work
breakdown
structure

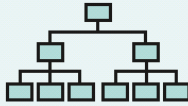

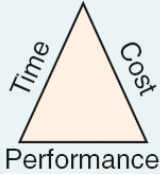


Identify team/
resources


Project Planning, Scheduling, and Controlling



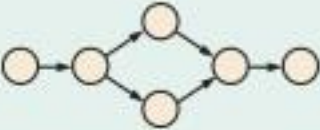
Planning the Project



Develop work breakdown



Scheduling the Project



Sequence activities

Adams	✓		
Smith			✓
Jones		✓	

Assign people


1.1

1.2

2.0

2.1

2.11

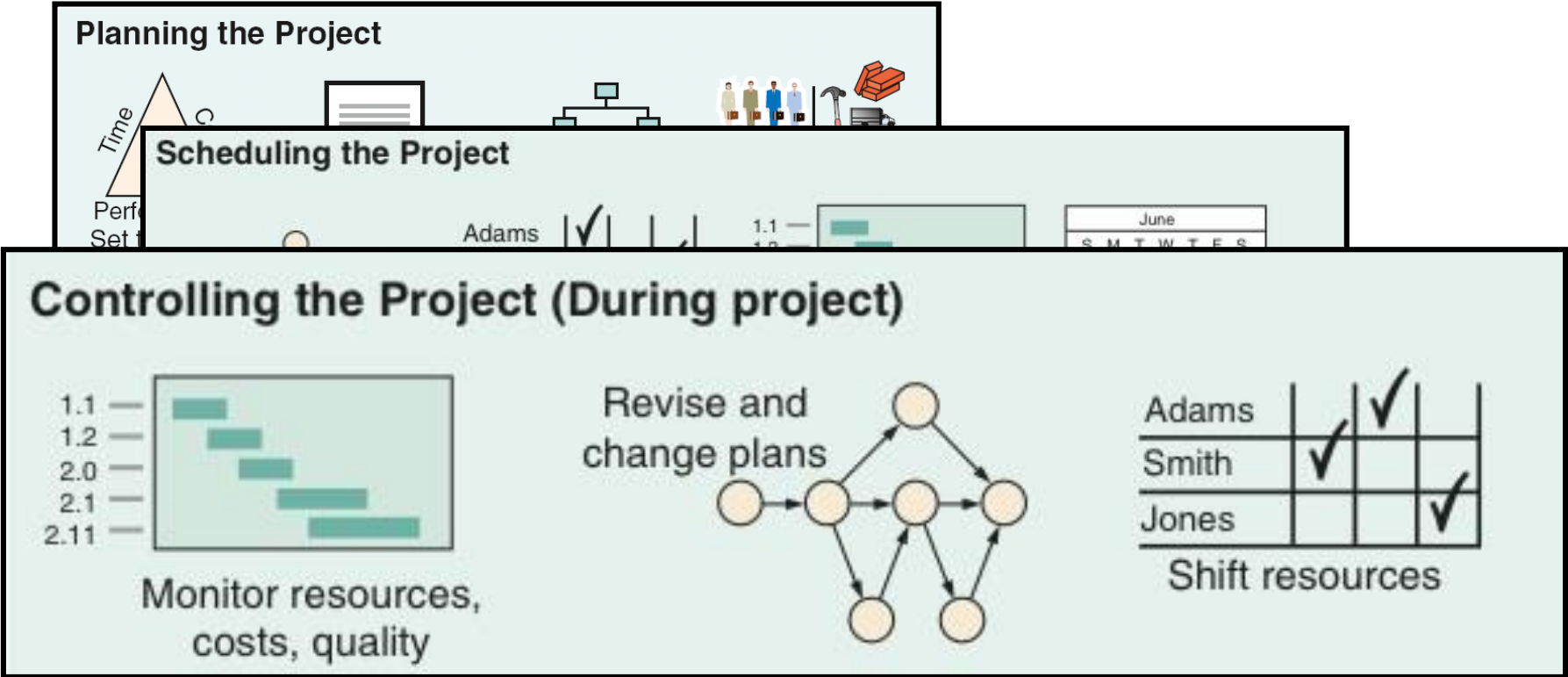


Schedule deliverables

June						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13

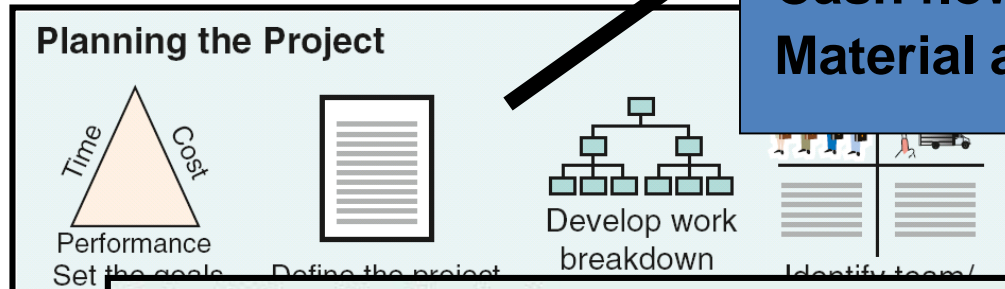
Schedule resources

Project Planning, Scheduling, and Controlling



Project Planning, Scheduling, and Controlling

Time/cost estimates
Budgets
Engineering diagrams
Cash flow charts
Material availability details



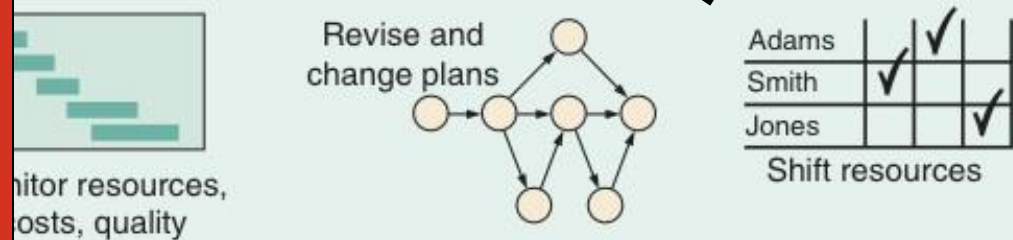
Scheduling the Project



Budgets
Delayed activities report
Slack activities report

CPM/PERT
Gantt charts
Milestone charts
Cash flow schedules

Controlling the Project (During project)





Level

1. Project
2. Major tasks in the project
3. Subtasks in the major tasks
4. Activities (or “work packages”) to be completed

- ▶ Packages for managing projects
 - ▶ Microsoft Project
 - ▶ Oracle Primavera
 - ▶ MindView
 - ▶ HP Project
 - ▶ Fast Track

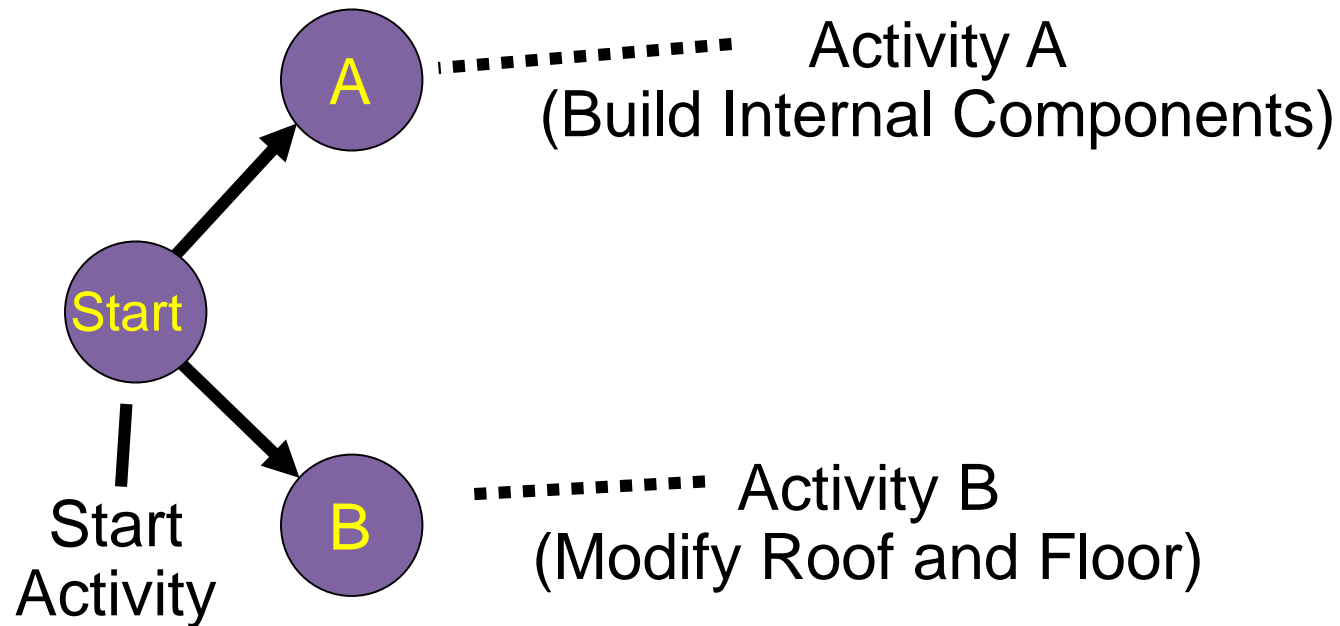
- ▶ Gantt chart
- ▶ Critical Path Method (CPM)
- ▶ Program Evaluation and Review Technique (PERT)

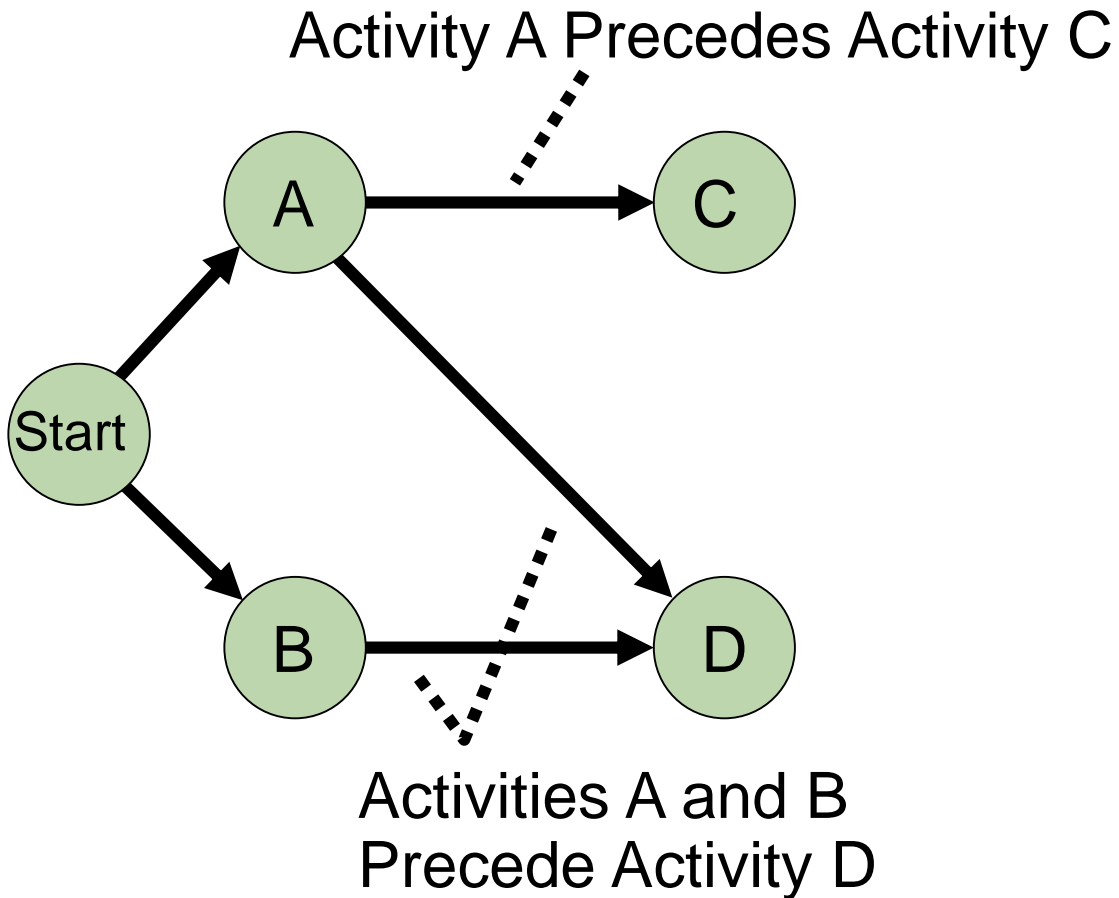
- 1) Detailed cost breakdowns for each task
- 2) Labor requirements
- 3) Cost and hour summaries
- 4) Raw materials and expenditure forecasts
- 5) Variance reports
- 6) Time analysis reports
- 7) Work status reports

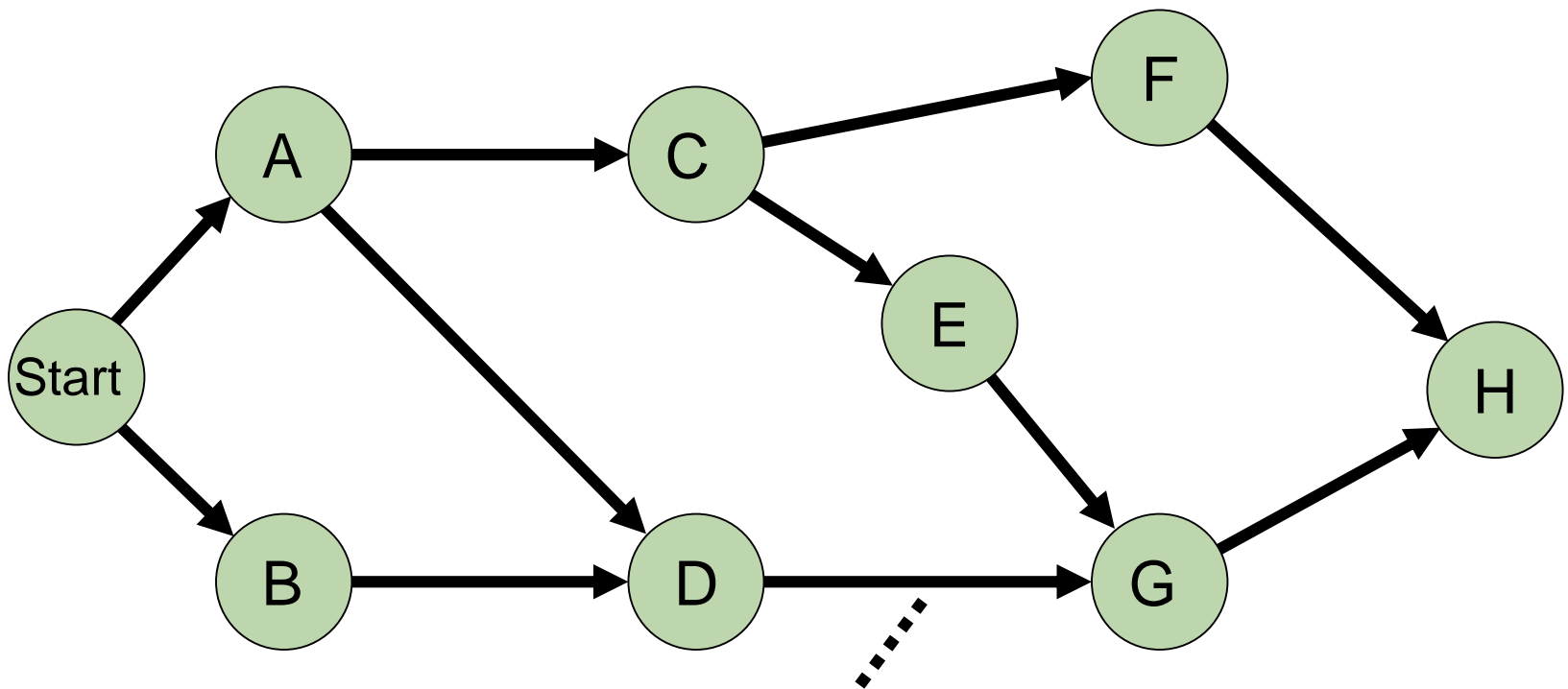
1. Define the project and prepare the work breakdown structure
2. Develop relationships among the activities – decide which activities must precede and which must follow others
3. Draw the network connecting all of the activities
4. Assign time and/or cost estimates to each activity
5. Compute the *longest* time path through the network – this is called the **critical path**
6. Use the network to help plan, schedule, monitor, and control the project



Milwaukee Paper Manufacturing's Activities and Predecessors		
ACTIVITY	DESCRIPTION	IMMEDIATE PREDECESSORS
A	Build internal components	—
B	Modify roof and floor	—
C	Construct collection stack	A
D	Pour concrete and install frame	A, B
E	Build high-temperature burner	C
F	Install pollution control system	C
G	Install air pollution device	D, E
H	Inspect and test	F, G







Arrows Show Precedence
Relationships

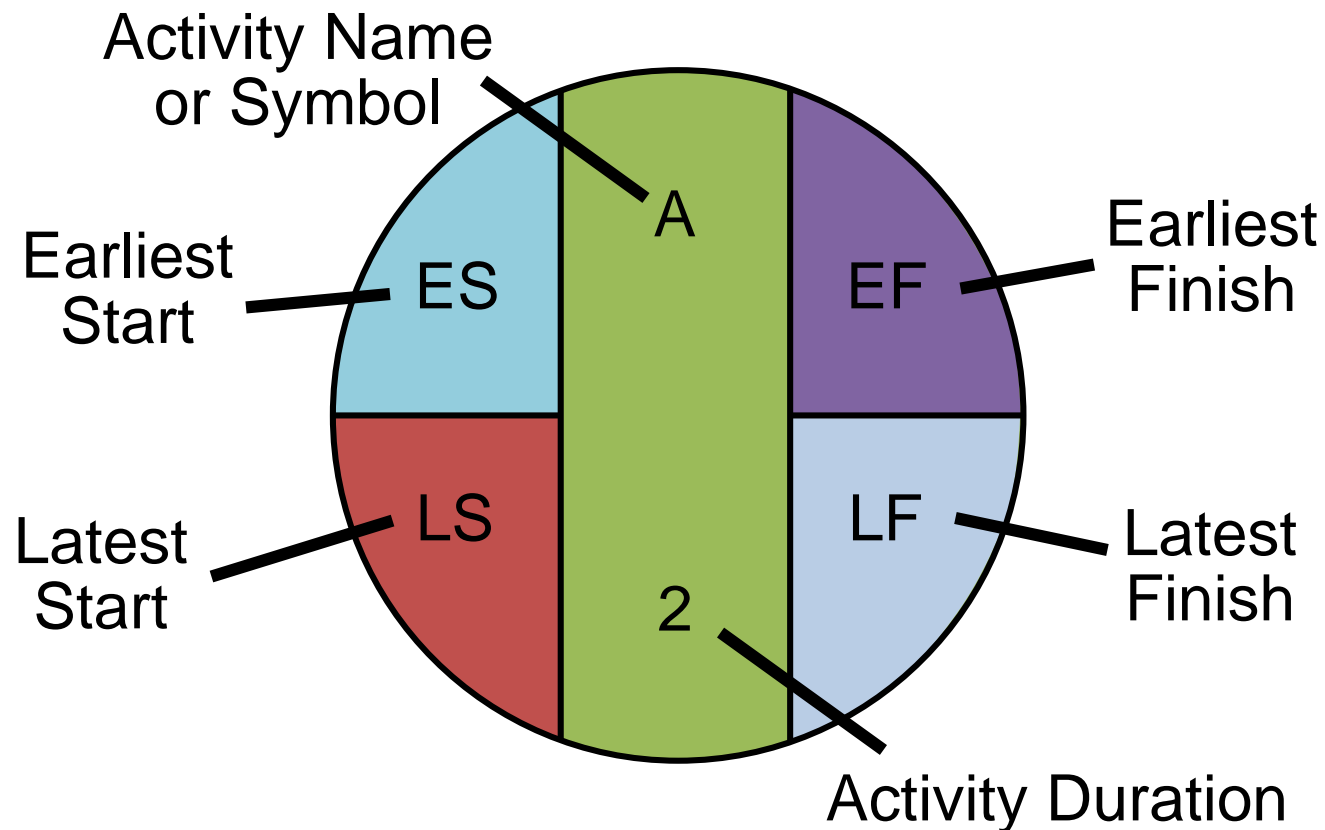
Example: Determining the Project Schedule



Time Estimates for Milwaukee Paper Manufacturing		
ACTIVITY	DESCRIPTION	TIME (WEEKS)
A	Build internal components	2
B	Modify roof and floor	3
C	Construct collection stack	2
D	Pour concrete and install frame	4
E	Build high-temperature burner	4
F	Install pollution control system	3
G	Install air pollution device	5
H	Inspect and test	2
	Total time (weeks)	25

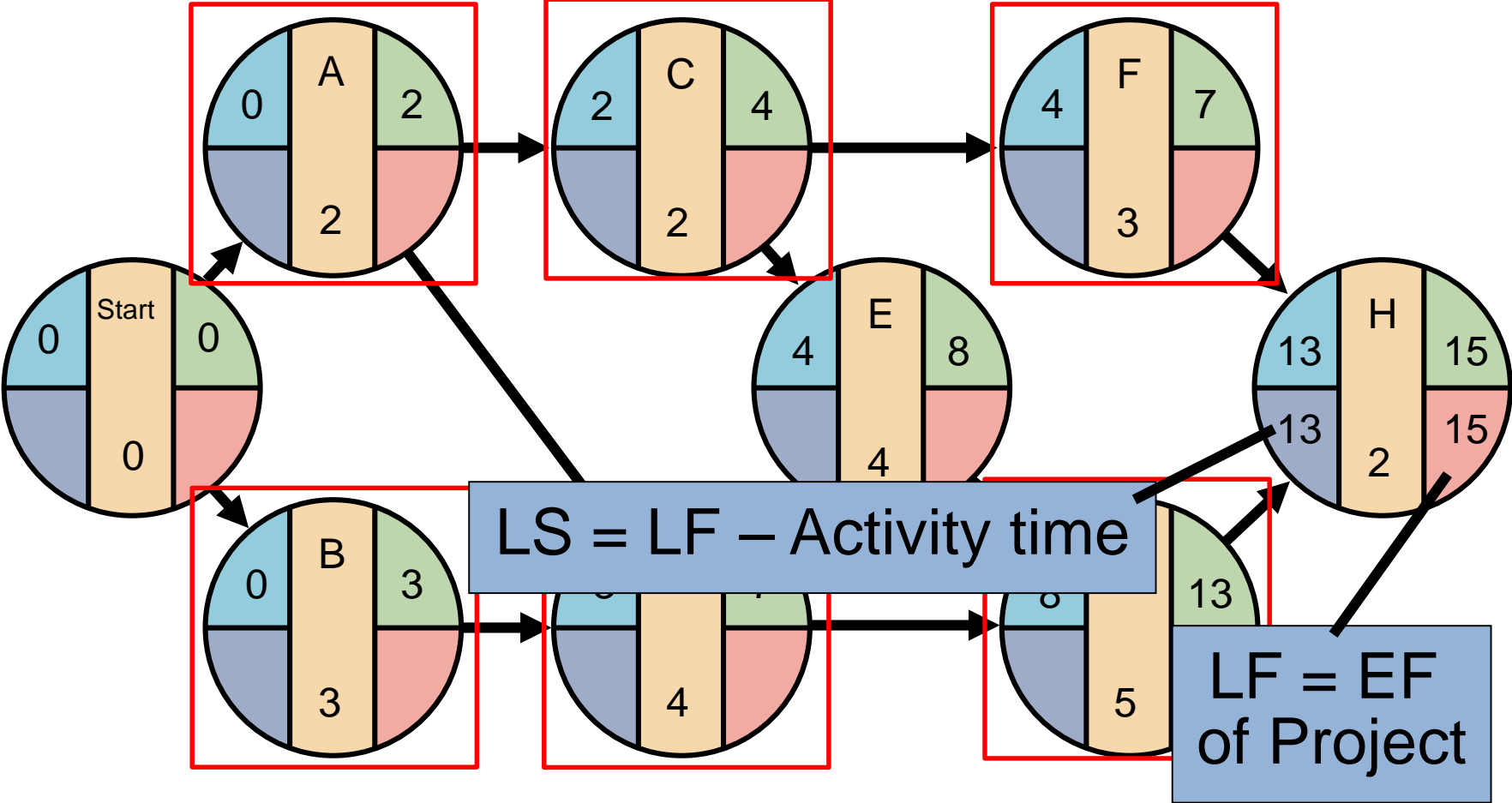
Example: Determining the Project Schedule

Activity Format



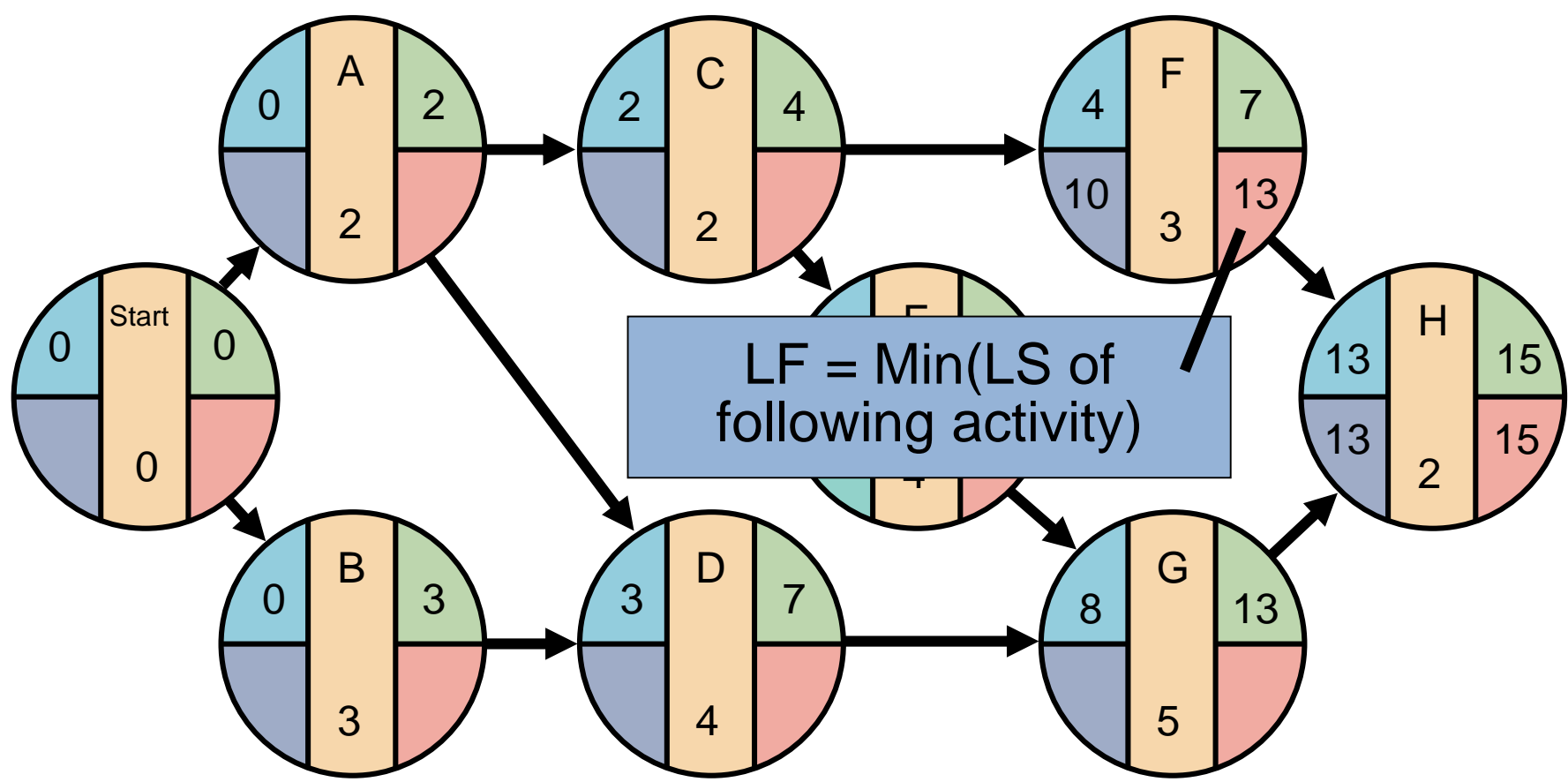
Example: Determining the Project Schedule

LS/LF Times for Milwaukee Paper



Example: Determining the Project Schedule

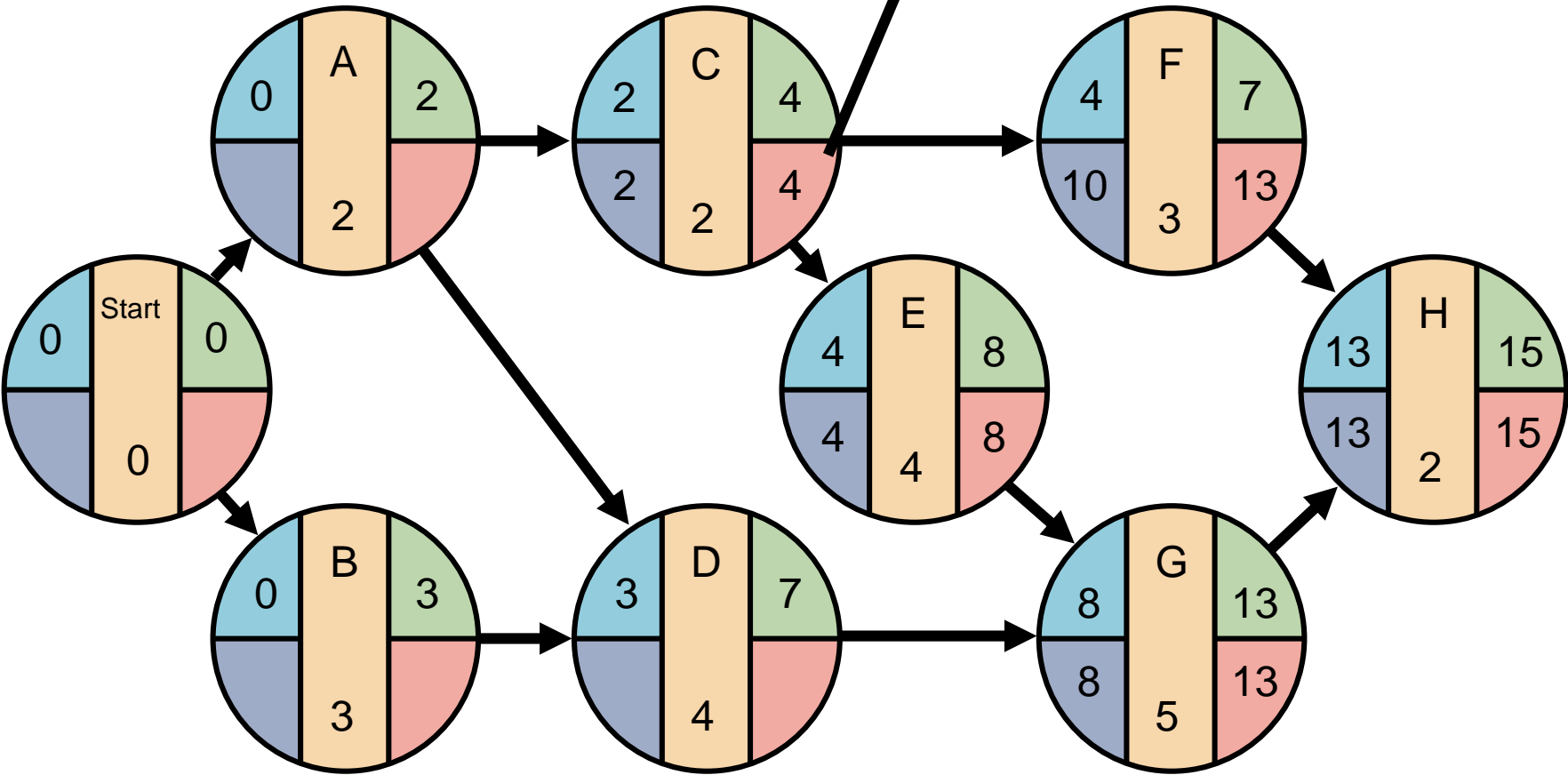
LS/LF Times for Milwaukee Paper



Example: Determining the Project Schedule

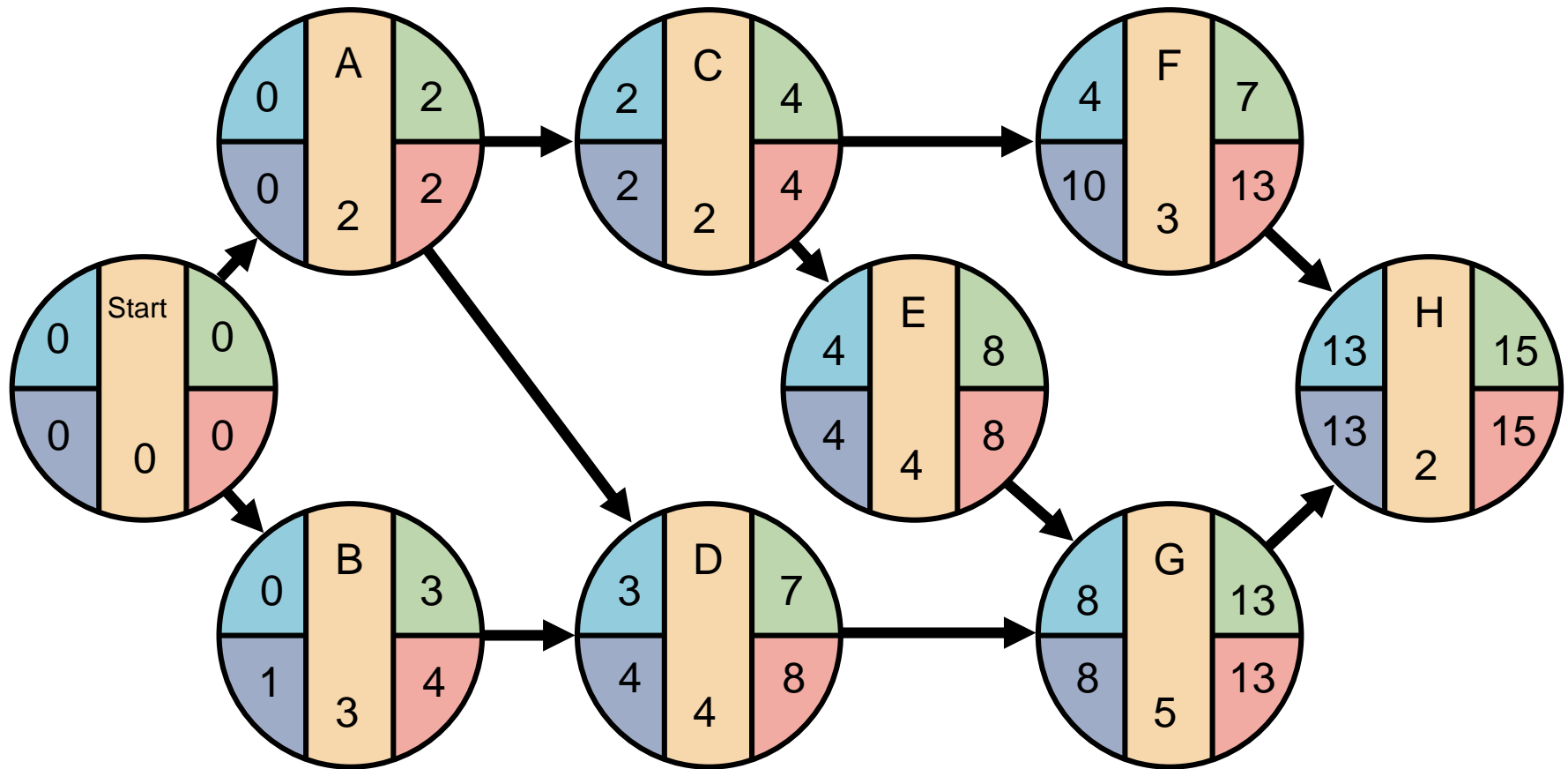
LS/LF Times for Milwaukee

$LF = \text{Min}(4, 10)$



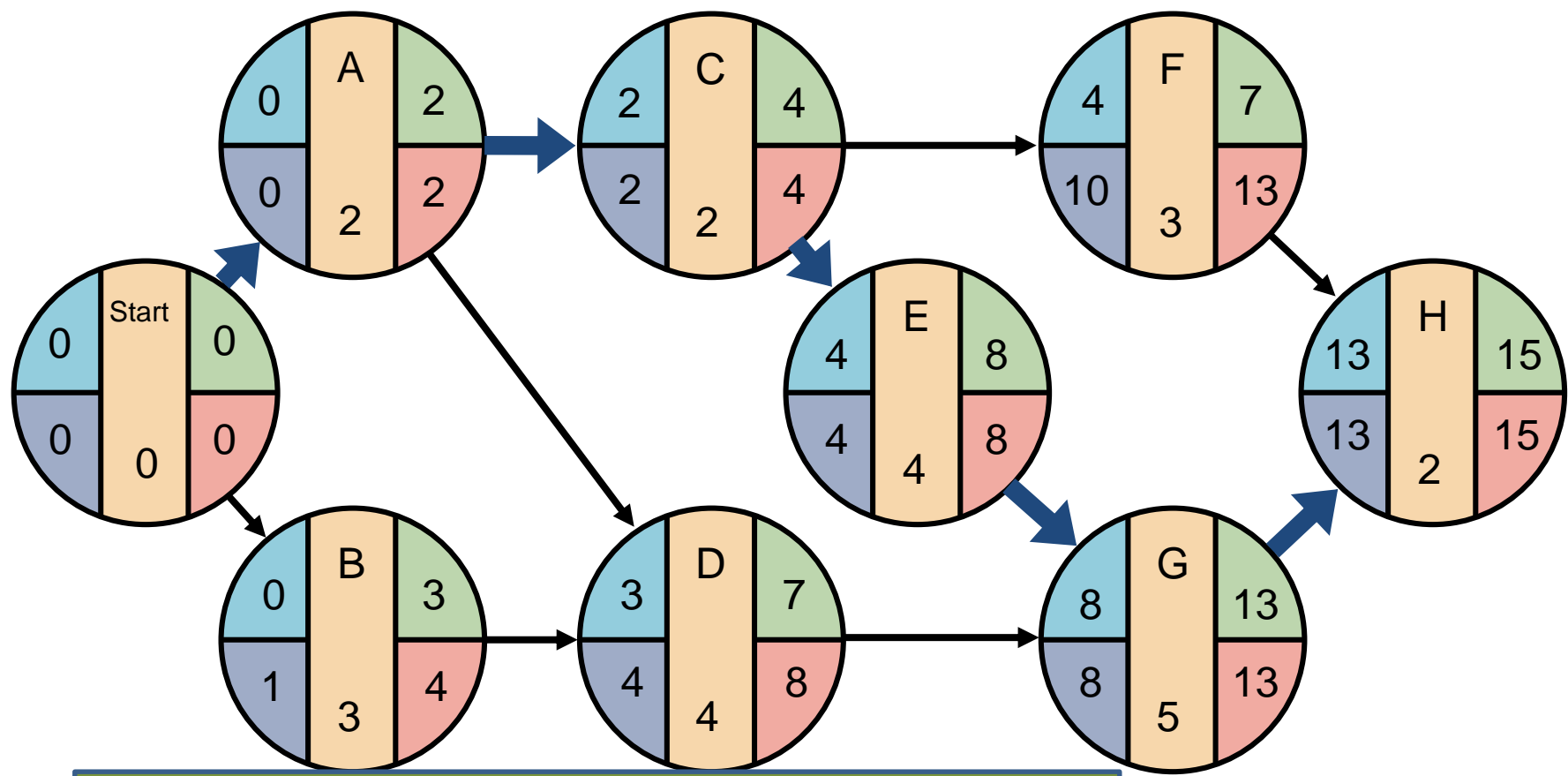
Example: Determining the Project Schedule

LS/LF Times for Milwaukee Paper



Example: Determining the Project Schedule

Critical Path for Milwaukee Paper



- Paths:
- | | | | |
|-----------------|----|---------------|----|
| (1) S-A-D-G-H | 13 | (2) S-B-D-G-H | 14 |
| (2) S-A-C-E-G-H | 15 | (4) S-A-C-F-H | 9 |

Computing Slack Time

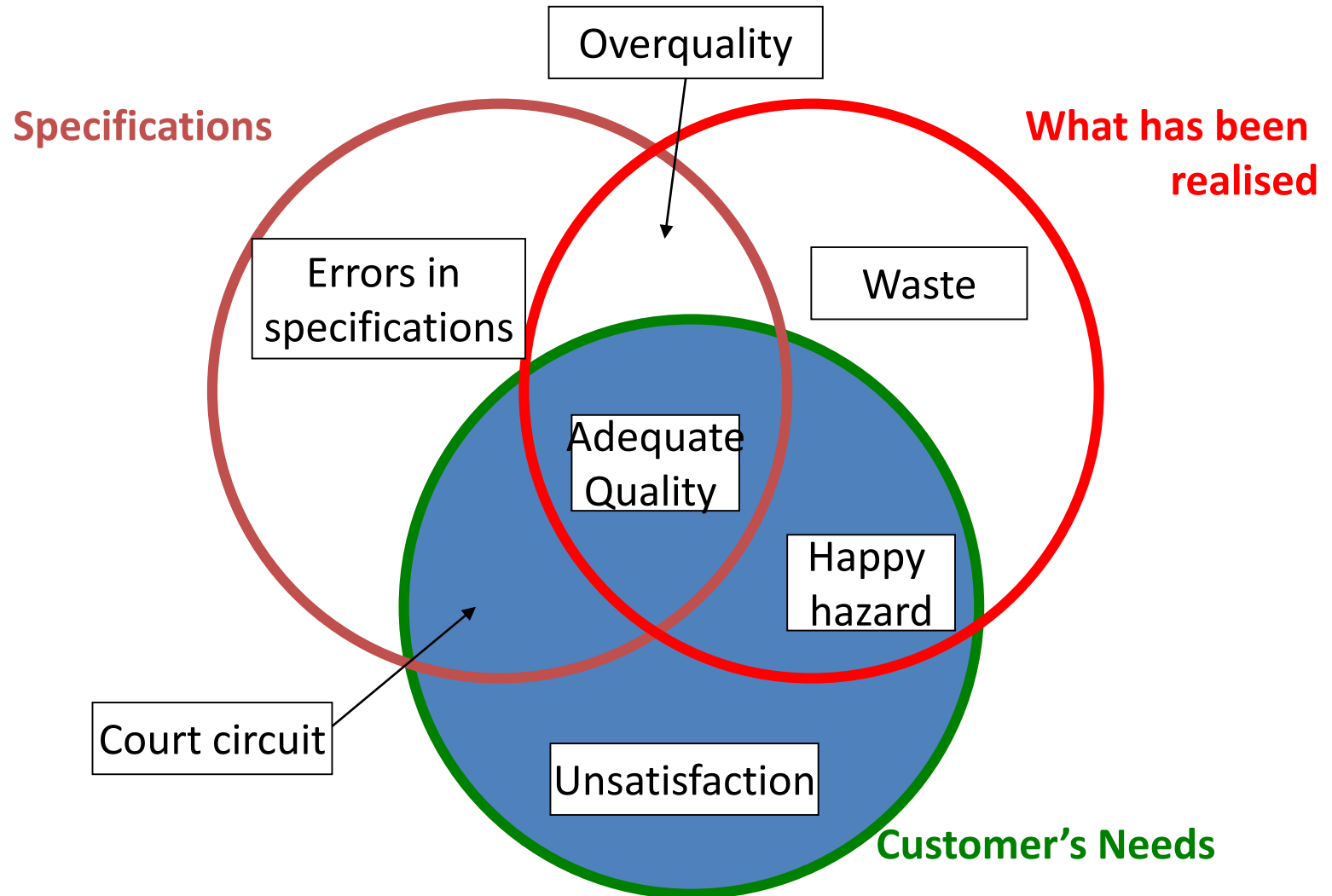
- Slack is the length of time an activity can be delayed without delaying the entire project

$$\text{Slack} = \text{LS} - \text{ES} \quad \text{or} \quad \text{Slack} = \text{LF} - \text{EF}$$

Milwaukee Paper's Schedule and Slack Times

ACTIVITY	EARLIEST START ES	EARLIEST FINISH EF	LATEST START LS	LATEST FINISH LF	SLACK LS – ES	ON CRITICAL PATH
A	0	2	0	2	0	Yes
B	0	3	1	4	1	No
C	2	4	2	4	0	Yes
D	3	7	4	8	1	No
E	4	8	4	8	0	Yes
F	4	7	10	13	6	No
G	8	13	8	13	0	Yes
H	13	15	13	15	0	Yes

Monitoring Project scope during the project





- Project scope management constitutes 'the processes to ensure that the project includes all of the work required, and only the work required, to complete the project successfully.'
- Project scope has several purposes:
 - It defines what work is needed to complete the project objectives
 - It determines what is included in the project
 - It serves as a guide to determine what work is not needed to complete the project objectives
 - It serves as a point of reference for what is not included in the project



- Reports to senior management
- Communicates with users
- Plans and schedules
- Obtains and allocates resources
- Controls risks
- Manages people
- Coordinates
- Implements quality assurance
- Controls the budget
- Delivers results

References and Further Readings

- Operations Management by Jay Heizer, Barry Render, Pearson India
- Project Management <https://www.pmi.org>
- Project Management <https://www.projectmanagement.com/>
- All About Project Management <https://managementhelp.org/projectmanagement/index.htm>
- MS Project https://www.tutorialspoint.com/ms_project/
- **Microsoft Project 2016 Tutorial for Newbies** <https://www.smartsheet.com/microsoft-project-2016-tutorial-newbies#SmartsheetAnchor>

Thanks!