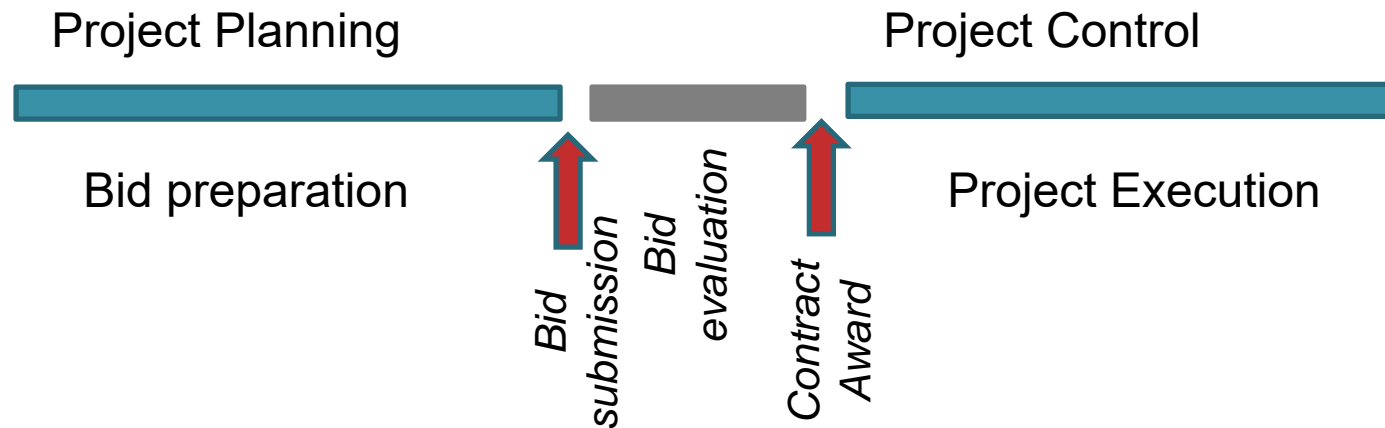# STRN 322 – Construction Planning & Scheduling

Lecture 8:
Project Control: Schedule Updating

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Project Planning vs. Control

- Project control involves the continuous monitoring of the project's schedule, budget, quality, and safety to ensure that project objectives are being met.

Project Planning

Project Control

Bid preparation

Project Execution

Bid submission

Bid evaluation

Contract Award

Project Control

Sometimes referred to as **Project Monitoring** or **Project Tracking**

What are the elements of a project that need to be controlled?

Focus of lecture

| Time | Budget |
| Safety | Quality |
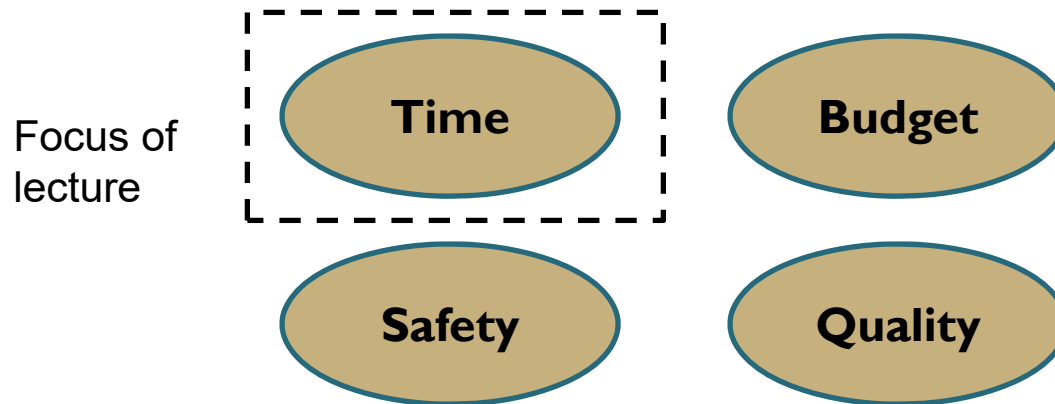
Project Control

- Project Control comprises the following continuous processes:
    - Monitoring work progress
    - Comparing progress to planned schedule and budget
    - Finding any deviations, determining where and how much, and analyzing them to discover the causes.
    - Taking corrective action whenever and wherever necessary to bring the project back on schedule and within budget.

Schedule Updating

- One of the key components of project control.
- Involves making adjustments to the schedule to reflect actual progress on site and any possible changes to the assumed durations or logic.
- What can change in an update?
  - Duration of on-going activities
  - Duration of future activities
  - Sequence of activities to be executed in the future

Schedule Updating

- What information is needed for an update?
  - Past Information: This includes what has happened since the last update
    - Activities that have started, the actual start date, the percent complete, and remaining duration.
    - Activities that are complete and their actual completion date
  - Future Information: Any changes to the schedule or schedule related items
    - Activities that have been added or deleted
    - Activities that have changed in duration or logic
    - Changes to the imposed finished date for the project or certain milestones

Need for Schedule Updating

- To continue serving as an important management tool
- To keep project participants informed about the progress of the project
- To know which corrective actions need to be taken to bring the project back on track
- To inform sub-contractors and suppliers about changes in the schedule
- To support claims and time extensions.

Frequency of Schedule Updating

- Bi-weekly or monthly updates are the most common.
- Depends on project characteristics (size, complexity, liquidated damages, etc…)
- Problems with long durations between updates:
  - Eliminates effectiveness of updating as a control tool. By the time progress is reported and analyzed, managers may not have the time or opportunity to take corrective action.
  - Superintendent or project manager may forget actual start and ends of an activity if not formally documented.
  - Effort may be overwhelming for scheduler
- Problems with short durations between updates:
  - Costly in terms of time consumption and needed overhead
- Updating frequency usually increases before deadlines!
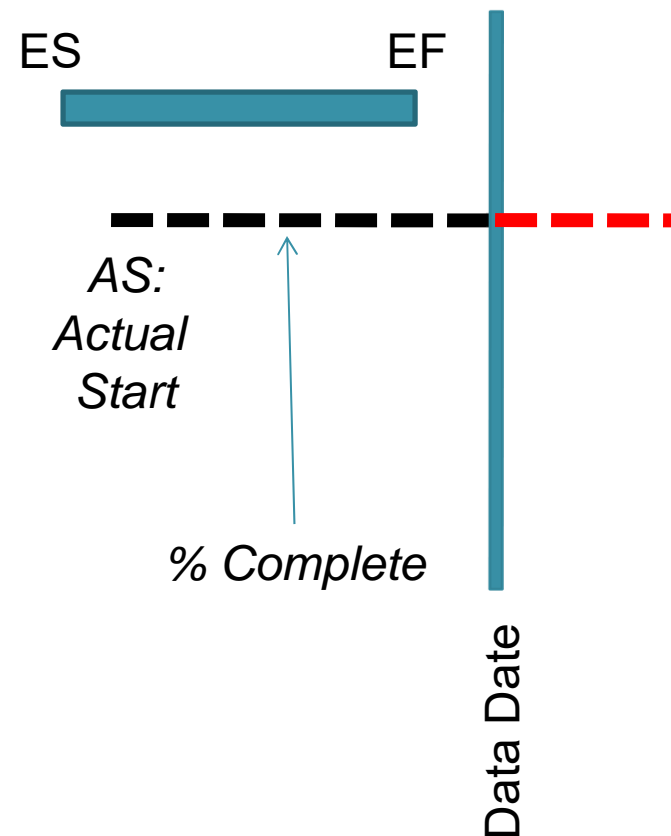
Schedule Updating Terminology

- Baseline Schedule:
  - Is the schedule prepared by the contractor, before the start of the project and used for performance comparison.
  - If approved by the owner the schedule usually becomes part of the contract documents and is legally binding to the contractor.
  - Sometimes called the **'Target Schedule'**

- Data Date:
  - The date as of which all progress on a project is reported. It is not the 'current date'
  - Sometimes called the **'as-of-date'** or the **'status date'**.
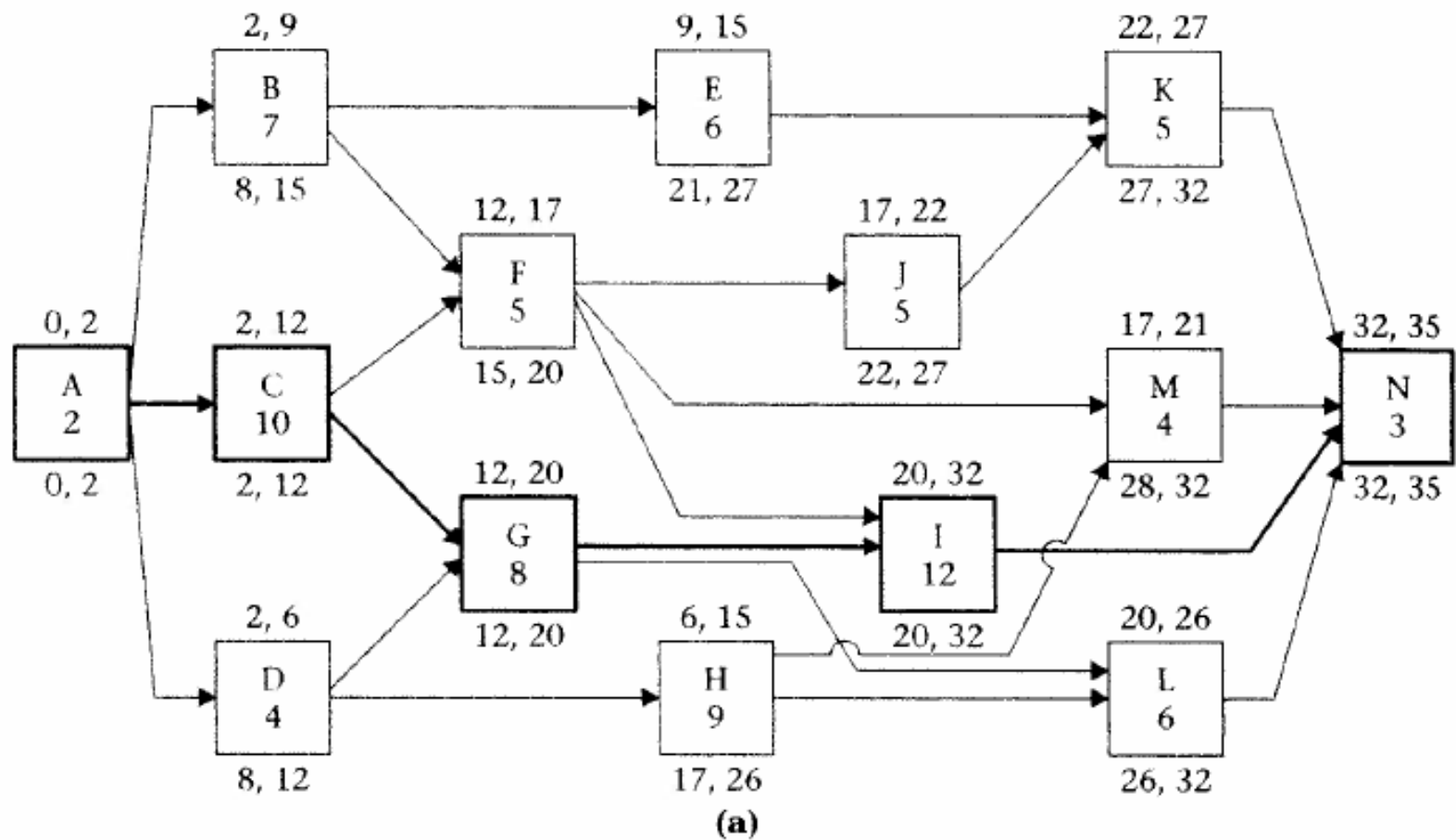
Updating Schedules

- **<u>Bar Chart: Completed Activity</u>**

ES   EF

AS:
Actual
Start

AF:
Actual
Finish

Actual
Duration

Data Date
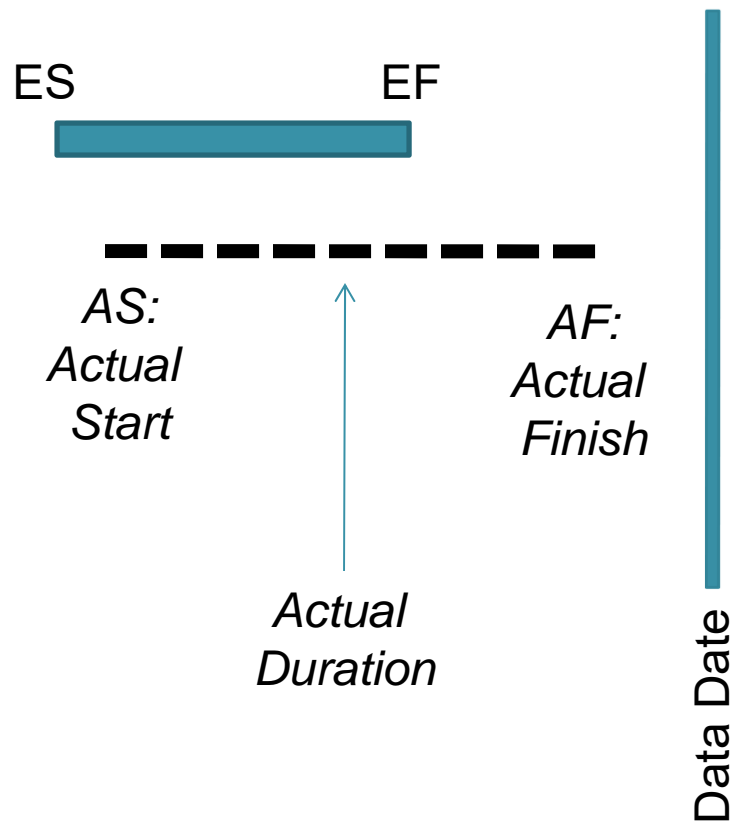
- **<u>Bar Chart: Ongoing Activity</u>**

ES   EF

AS:
Actual
Start

% Complete

Data Date

Example

(a)

The schedule update

- 10 days after the project has started:
  - Activities A and D are complete
  - Activity B started on day 5. Remaining duration = 2 days.
  - Activity H has yet to start. It is expected to start immediately.
  - Activity C started on day 2. Some problems were encountered. Remaining duration = 4 days.
  - The duration of F was adjusted to 8 days.
  - Activity J has been cancelled.
  - The duration for new activity P is 4 days. IPA=E, ISA=K.
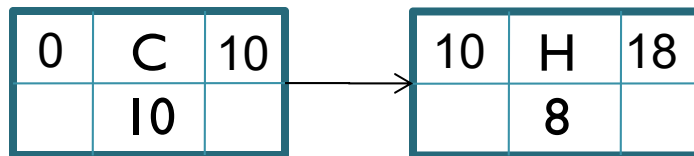
Modifications to original schedule


(b)
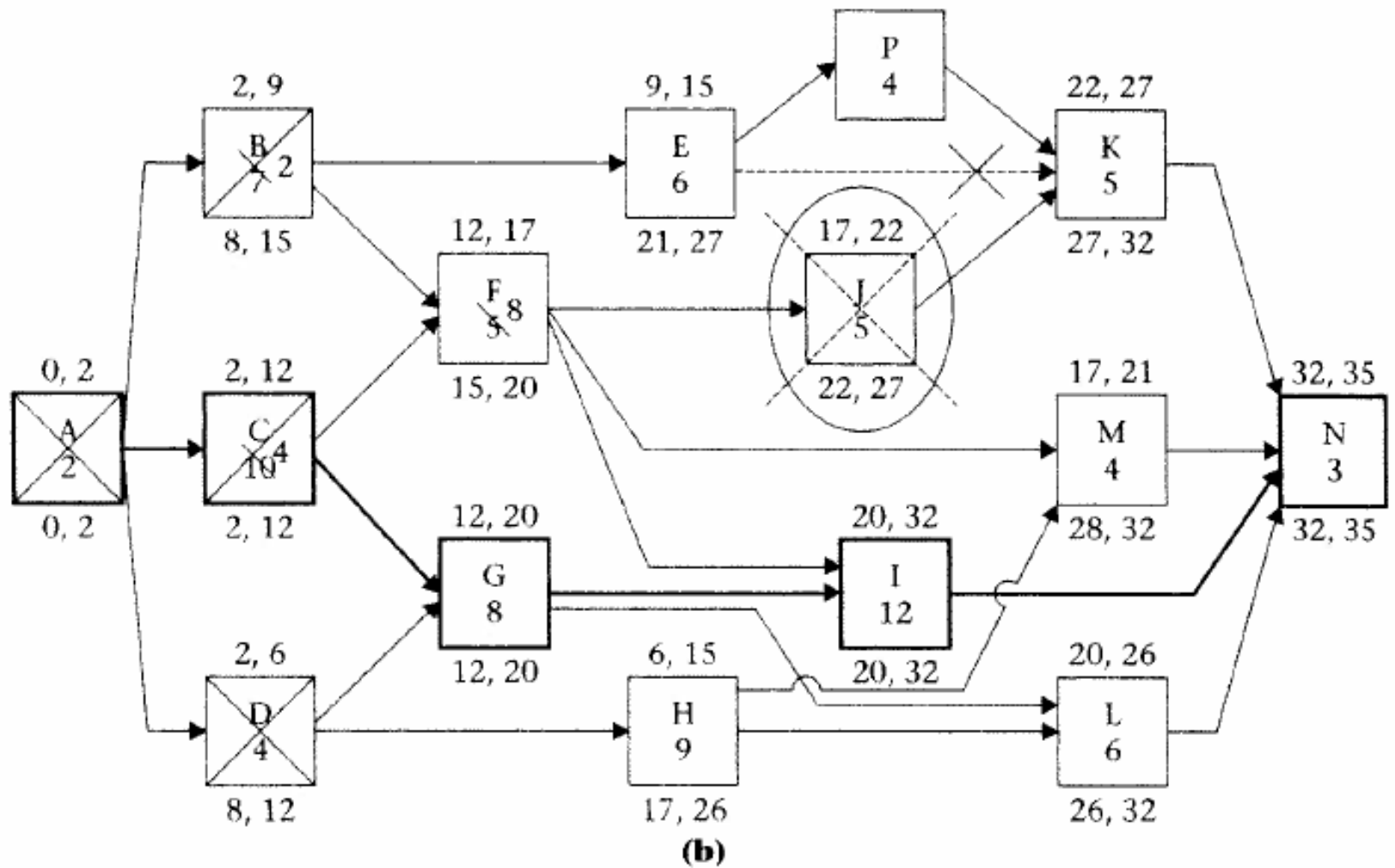
Updated Schedule
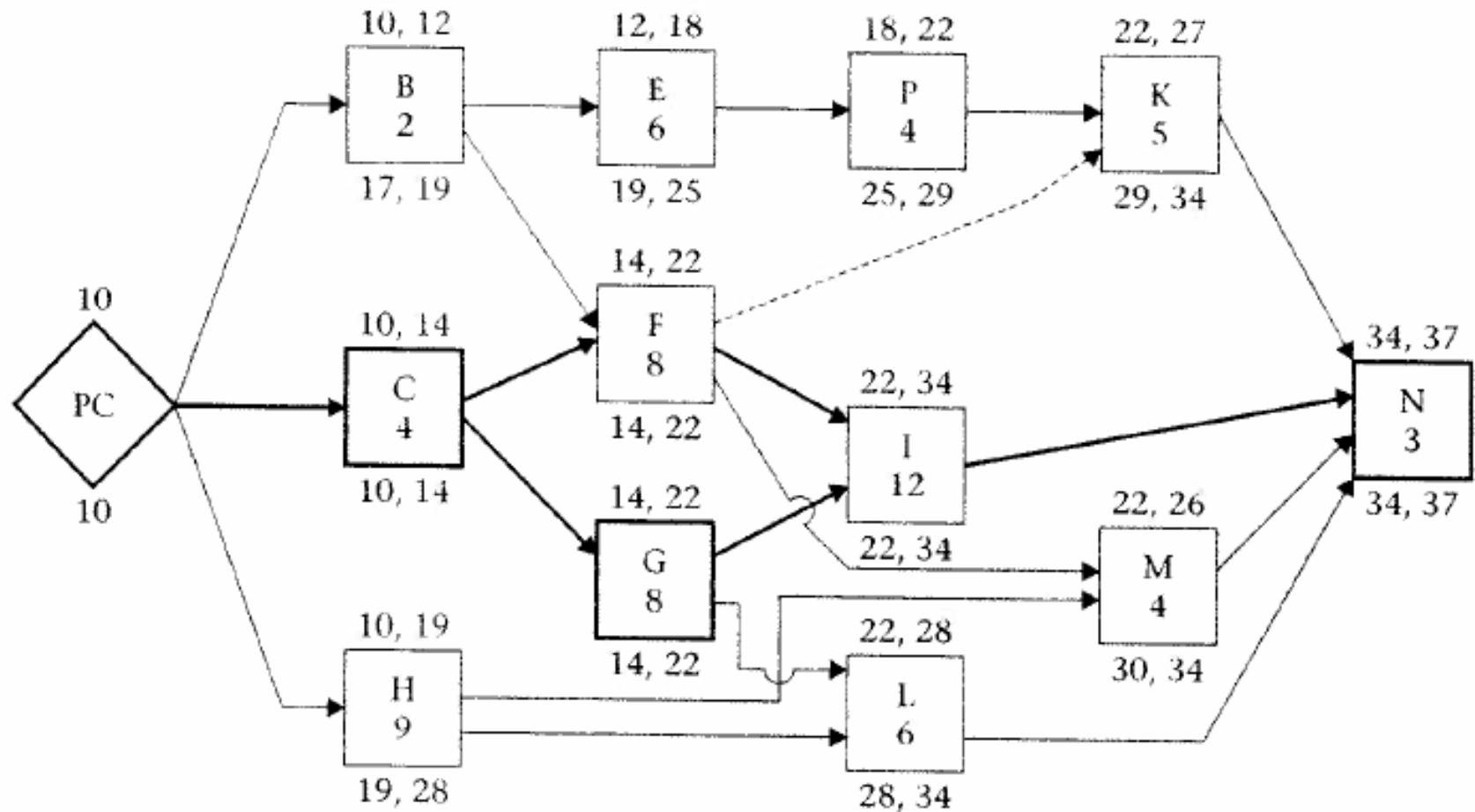
Retained Logic or Progress Override?

- In many cases, schedulers overuse the FS relationship when planning.

- This may cause problems during updating if the logic between activities is not FS (but rather SS)
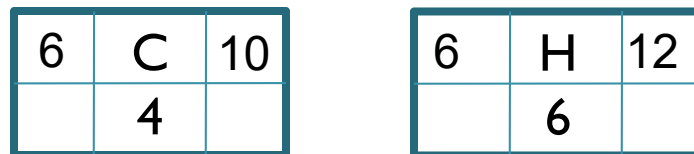
0	C	10
	10	

→

10	H	18
	8	

- Assume that on day 6 activity C has 4 days left and 2 days of work have been done on activity H with 6 days left of work on activity H

Retained Logic or Progress Override?

6	C	10
	4	

10	H	16
	6	
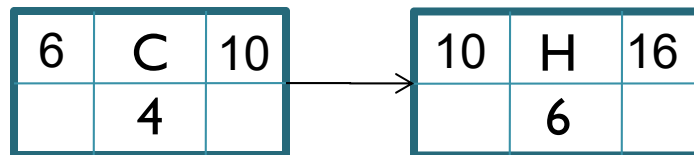
Retained Logic:
Here we assume that the reaming 6 days on activity H will not start until C has been completed. Here we have respected the logic.

6	C	10
	4	

6	H	12
	6	

Progress Override:
Here we assume that the reaming 6 days on activity H will start immediately. Here we have respected the progress that has already occurred on activity H.