



# CSSE 372 Software Project Management: Monitoring and Controlling Projects

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**ROSE-HULMAN**  
INSTITUTE OF TECHNOLOGY

**When the Postman started**

**carrying Mace**

**It kind of escalated things**

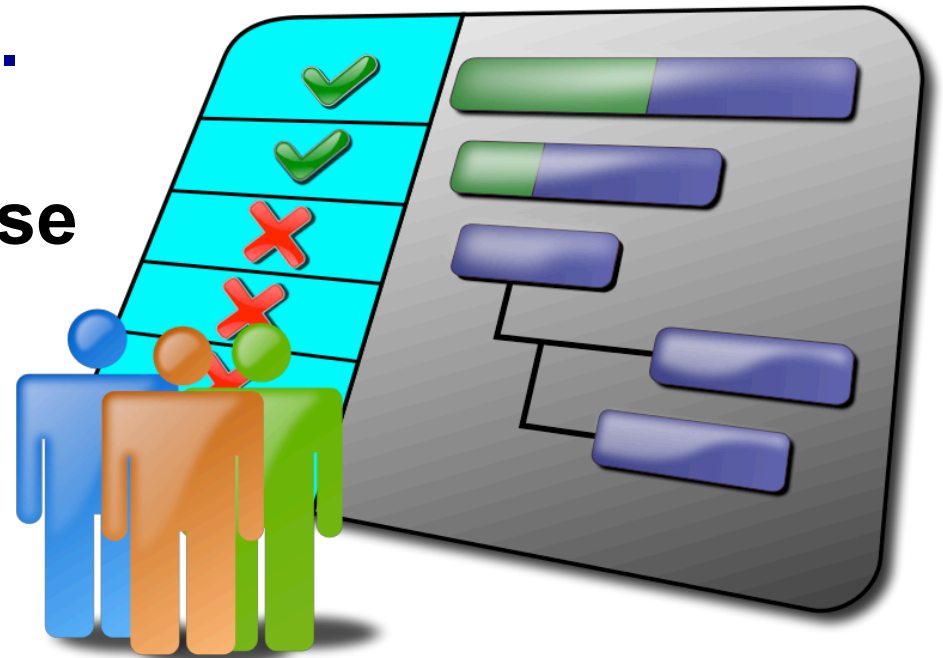
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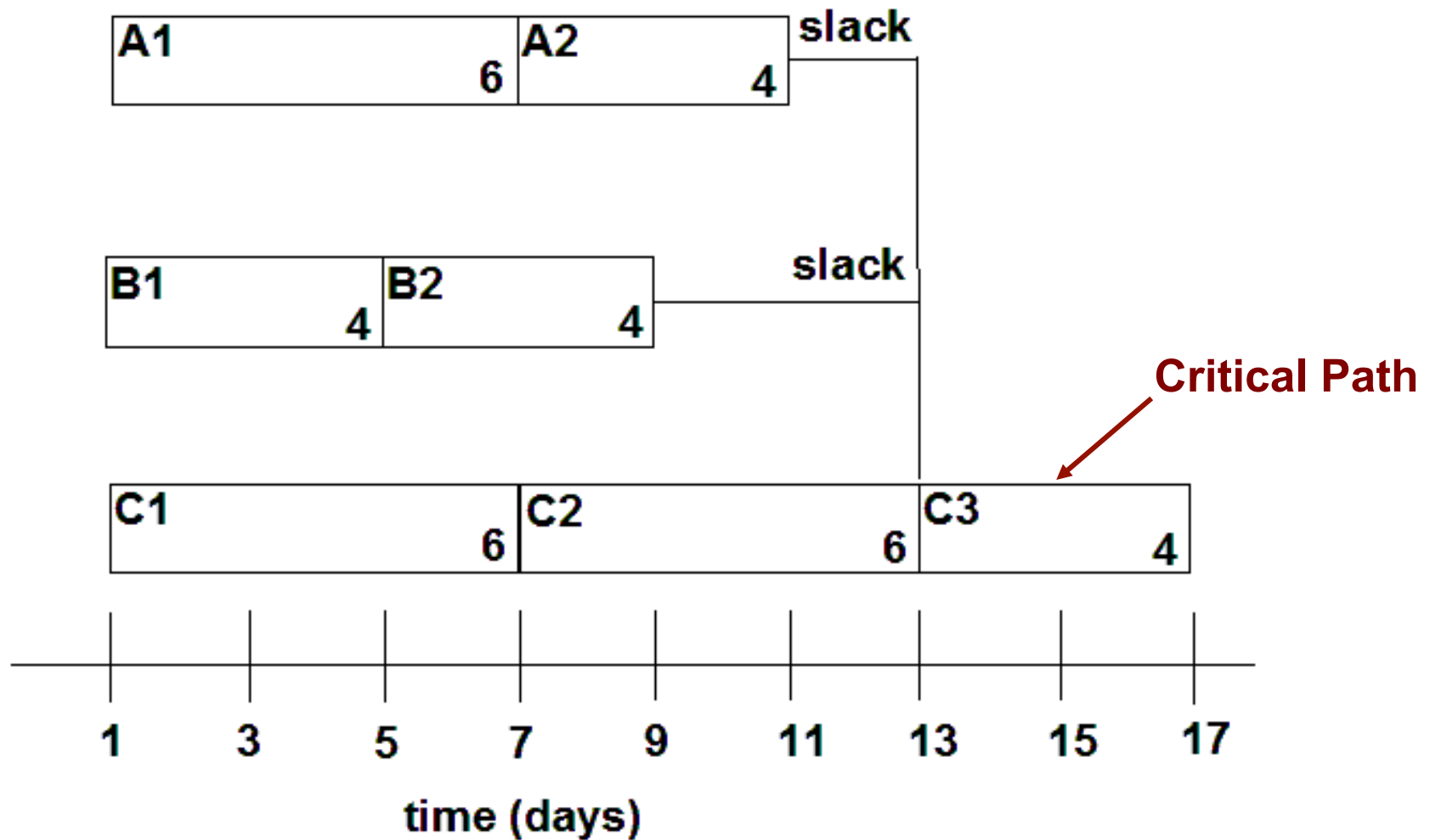
# Learning Outcomes: Schedule

Create and maintain a software project schedule.

- Do Critical Chain Exercise
- Monitoring & Reporting Project Progress
- Controlling Software Projects

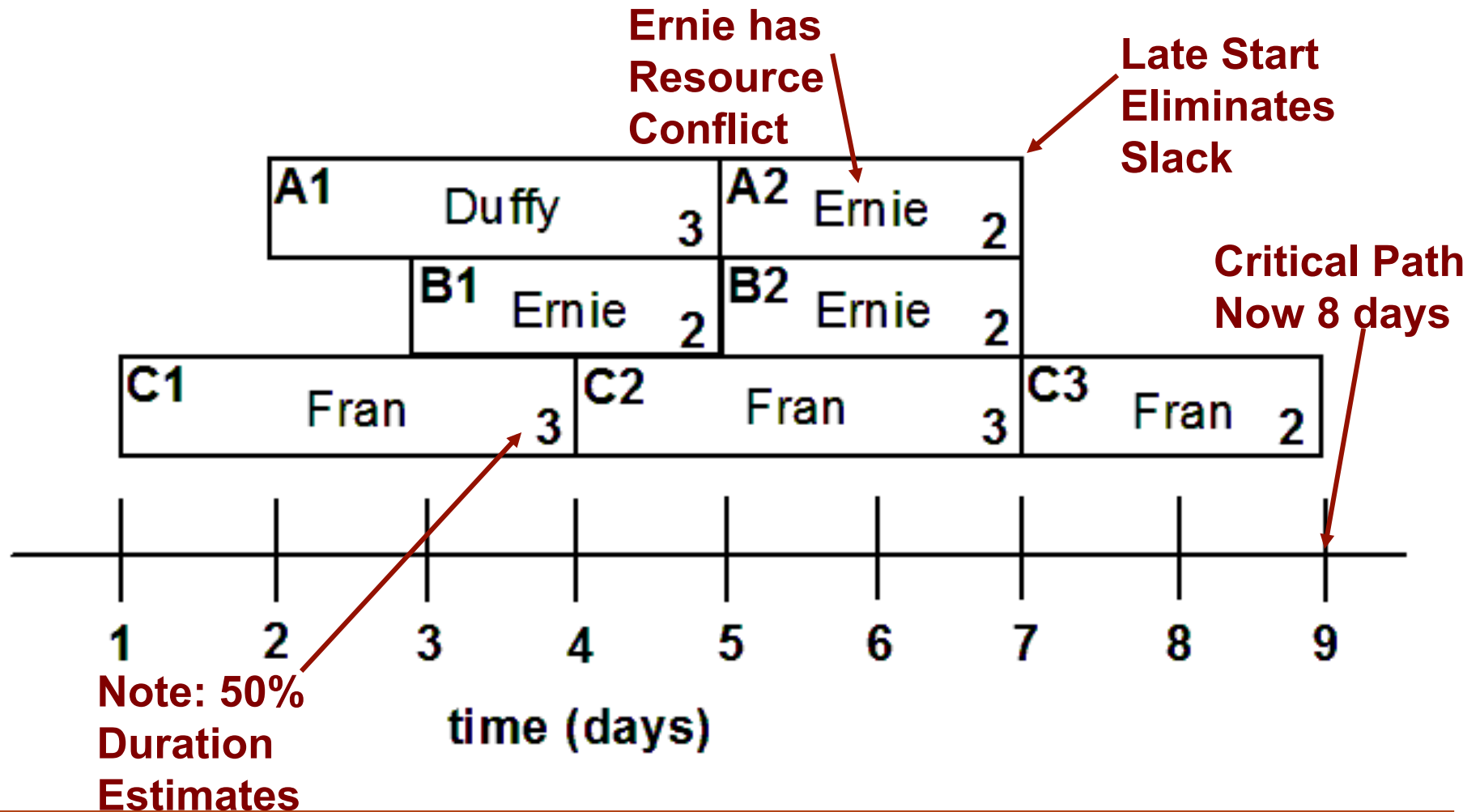


# Recall: Step 1: Create the Early Schedule

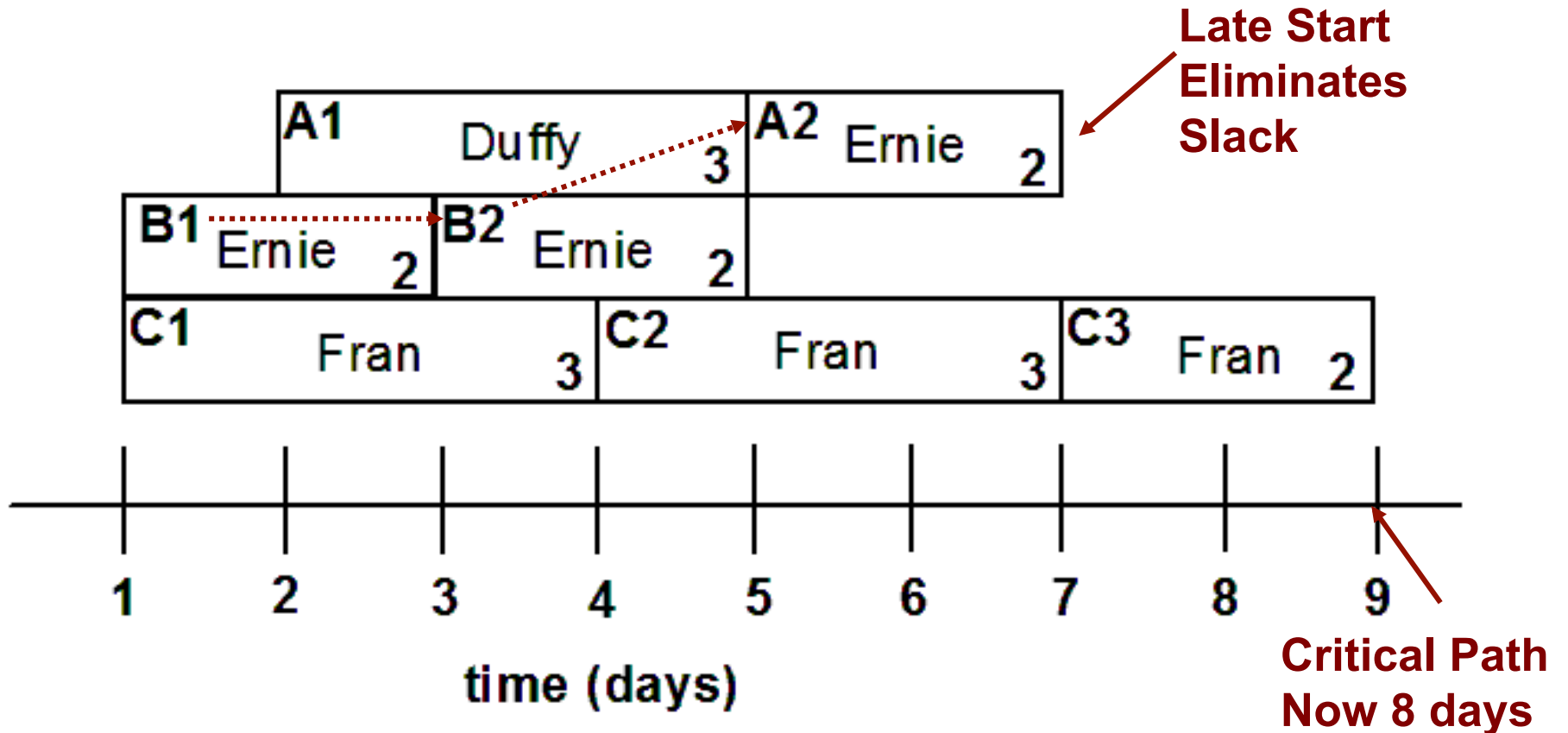




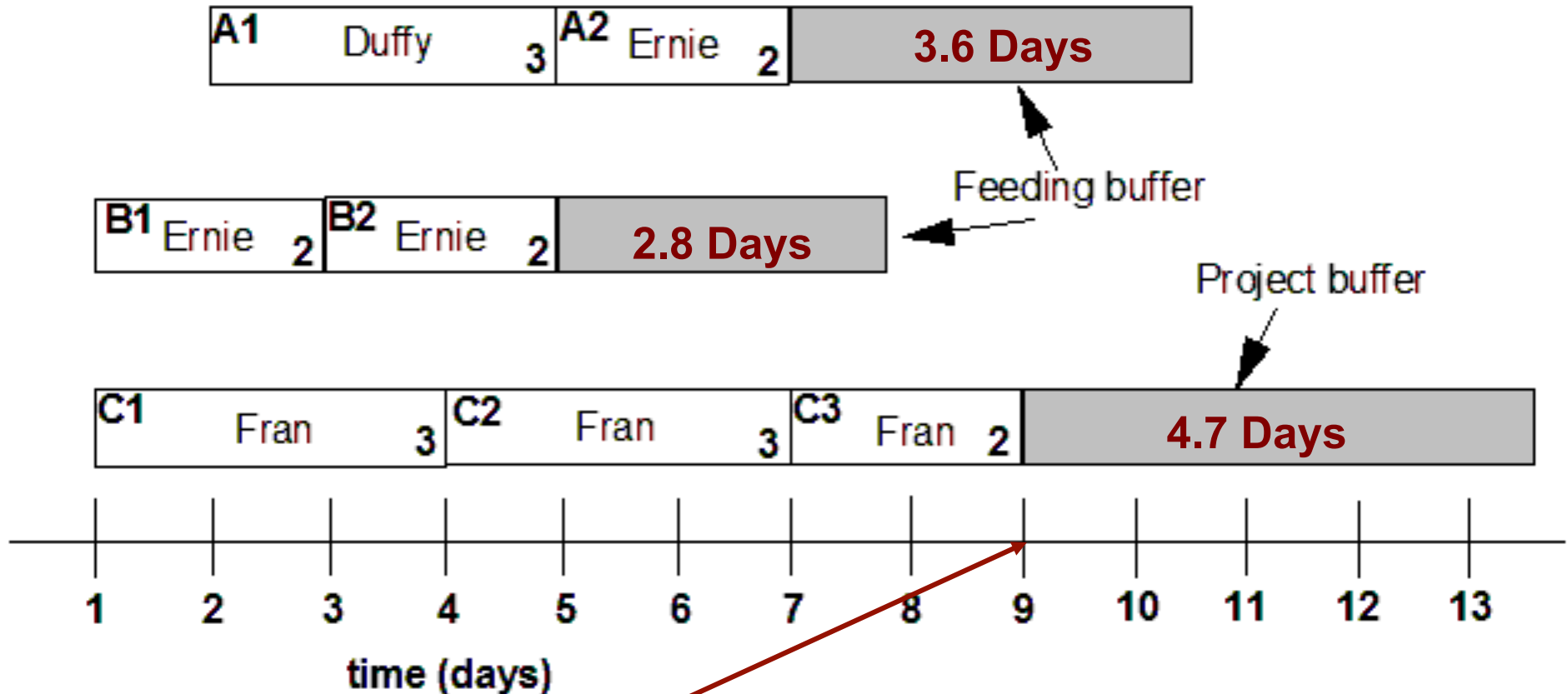
## Recall - Step 2: Convert to Late Schedule with 50% Durations & Resources Added



# Recall: Resolve Resource Conflict



# Recall: Project Schedule w/ Buffers Added

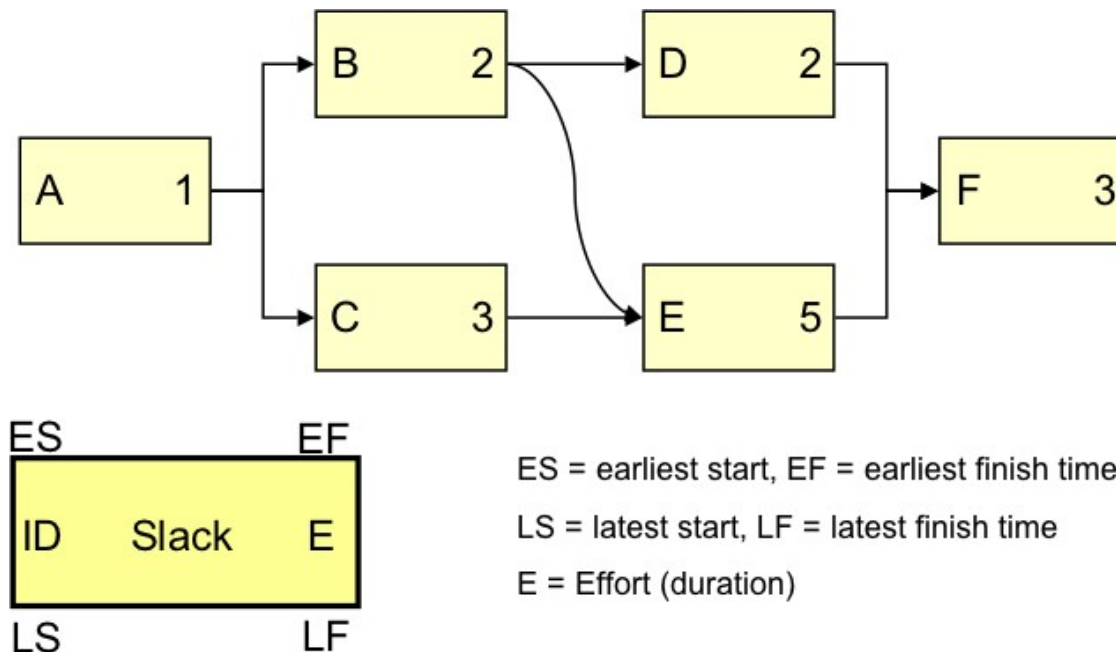


**Optimistic 8 days  
(no risk realized),  
But, even Pessimistic  
is less than original 16 days**

$$(\text{Variance})_{path} = \sqrt{\sum (\text{Variance})_{task}^2}$$

# Exercise: Critical Chain Calculation

- WBS done, start with network below
- Based on 50% estimate, determine late-finish schedule
- Fred does A, F; Barney does B, C; and Dino does D, E
- Allocate resources and deal with resource contention
- Add project and feeding buffers





# **Comparing CPM/PERT and CCPM**

## **CPM/PERT**

## **Critical Chain**

**Uses worst-case estimates**

**Uses average-case estimates**

**Protects individual tasks with safety**

**Protects project with buffers**

**Starts and finishes tasks  
at scheduled start and  
finish times**

**Starts tasks as soon as  
predecessors are done,  
finishes tasks as quickly as  
possible.**

**Individual ownership of  
task completion**

**Team ownership of  
project completion**

**Project health is based  
on individual task  
completion**

**Project health is based  
on days used from the  
project buffer**

# Dog's Diary

8:00 am - Dog food! My favorite thing!

9:30 am - A car ride! My favorite thing!

9:40 am - A walk in the park! My favorite thing!

10:30 am - Got rubbed and petted! My favorite thing!

12:00 pm - Milk bones! My favorite thing!

1:00 pm - Played in the yard! My favorite thing!

3:00 pm - Wagged my tail! My favorite thing!

5:00 pm - Dinner! My favorite thing!

7:00 pm - Got to play ball! My favorite thing!

8:00 pm - Wow! Watched TV with the people! My favorite thing!

11:00 pm - Sleeping on the bed! My favorite thing!

# Cat's Diary

Day 983 of My Captivity

My captors continue to taunt me with bizarre little dangling objects. They dine lavishly on fresh meat, while the other inmates and I are fed hash or some sort of dry nuggets. Although I make my contempt for the rations perfectly clear, I nevertheless must eat something in order to keep up my strength.

The only thing that keeps me going is my dream of escape. In an attempt to disgust them, I once again vomit on the carpet. Today I decapitated a mouse and dropped its headless body at their feet. I had hoped this would strike fear into their hearts, since this clearly demonstrates my capabilities. However, they merely made condescending comments about what a "good little hunter" I am. Bastards!

There was some sort of assembly of their accomplices tonight. I was placed in solitary confinement for the duration of the event. However, I could hear the noises and smell the food. I overheard that my confinement was due to the power of "allergies." I must learn what this means, and how to use it to my advantage.

Today I was almost successful in an attempt to assassinate one of my tormentors by weaving around his feet as he was walking. I must try this again tomorrow, but at the top of the stairs.

I am convinced that the other prisoners here are flunkies and snitches. The dog receives special privileges. He is regularly released, and seems to be more than willing to return. He is obviously retarded. The bird must be an informant. I observe him communicating with the guards regularly. I am certain that he reports my every move. My captors have arranged protective custody for him in an elevated cell, so he is safe . . . for now.

# What does the team need to know about a software project to determine how everything is going?

- Think for 15 seconds...
- Turn to a neighbor and discuss it for a minute



# How to Keep a Project on Track

- ✓ Hold daily team meetings
- ✓ Complete tasks ASAP
- ✓ Report problems ASAP
- ✓ Don't fall victim to the "creeps"
- ✓ Don't guess – ask questions
- ✓ Good enough is good enough
- ✓ Meet, but do not exceed requirements
- ✓ Be open and honest with your team mates



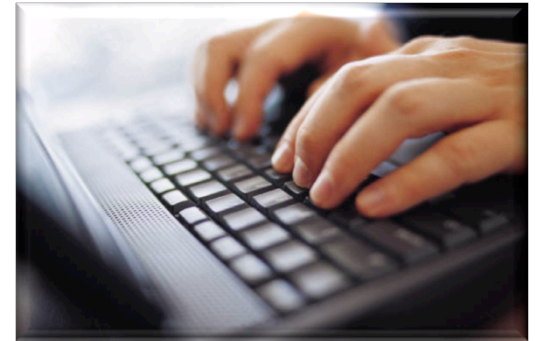
# Indicators of Effective Progress Reporting

- Timely, complete, accurate and intuitive
- Isn't burdensome and counterproductive
- Readily acceptable to senior management
- Readily acceptable to the project team
- An effective early warning system



# Software Project Information to Report

- Establish Period of time for reporting
- Record historical progress and re-estimate remaining
- Record calendar days (duration) completed and remaining
- Report actual work accomplished during this period
- Report start and finish dates
- Report effort expended & remaining
- Report percent complete

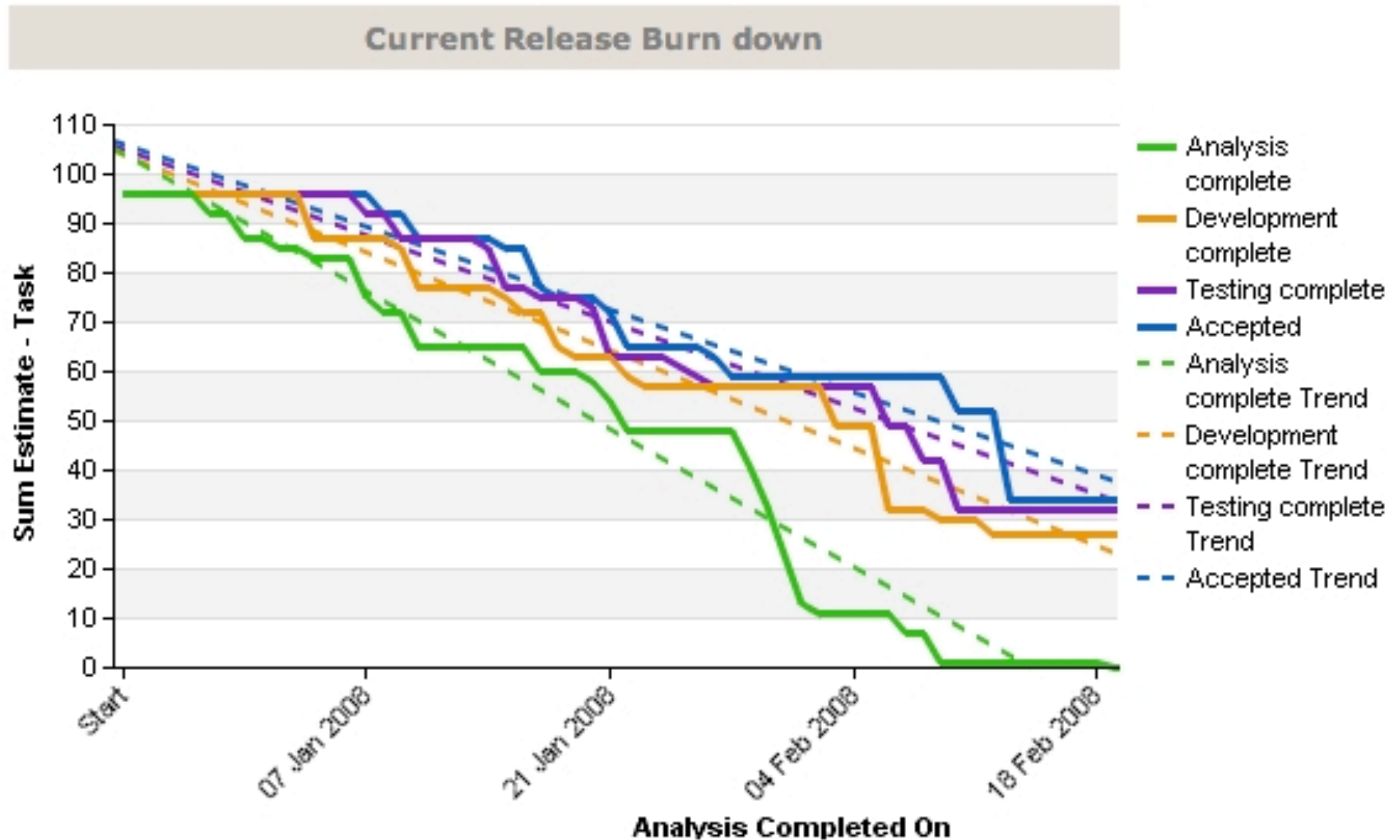


# Monitor and Control Mechanisms

- Current period reports
- Cumulative reports
- Exception reports
- Stoplight reports
- Variance reports
- Gantt charts
- Burn charts
- Milestone trend charts
- Earned value analysis
- Integrated milestone trend charts
- Project status meetings
- ...

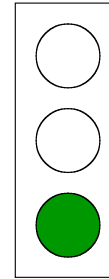


# Example Burndown Chart



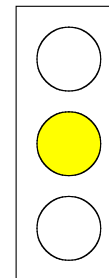
# Five Types of Project Status Reports

1. **Current period reports**



The project is progressing according to plan.

2. **Cumulative reports**

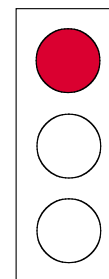


The project has a problem. A Get Well plan is in place. The situation will correct.

3. **Exception reports**

4. **Stoplight reports**

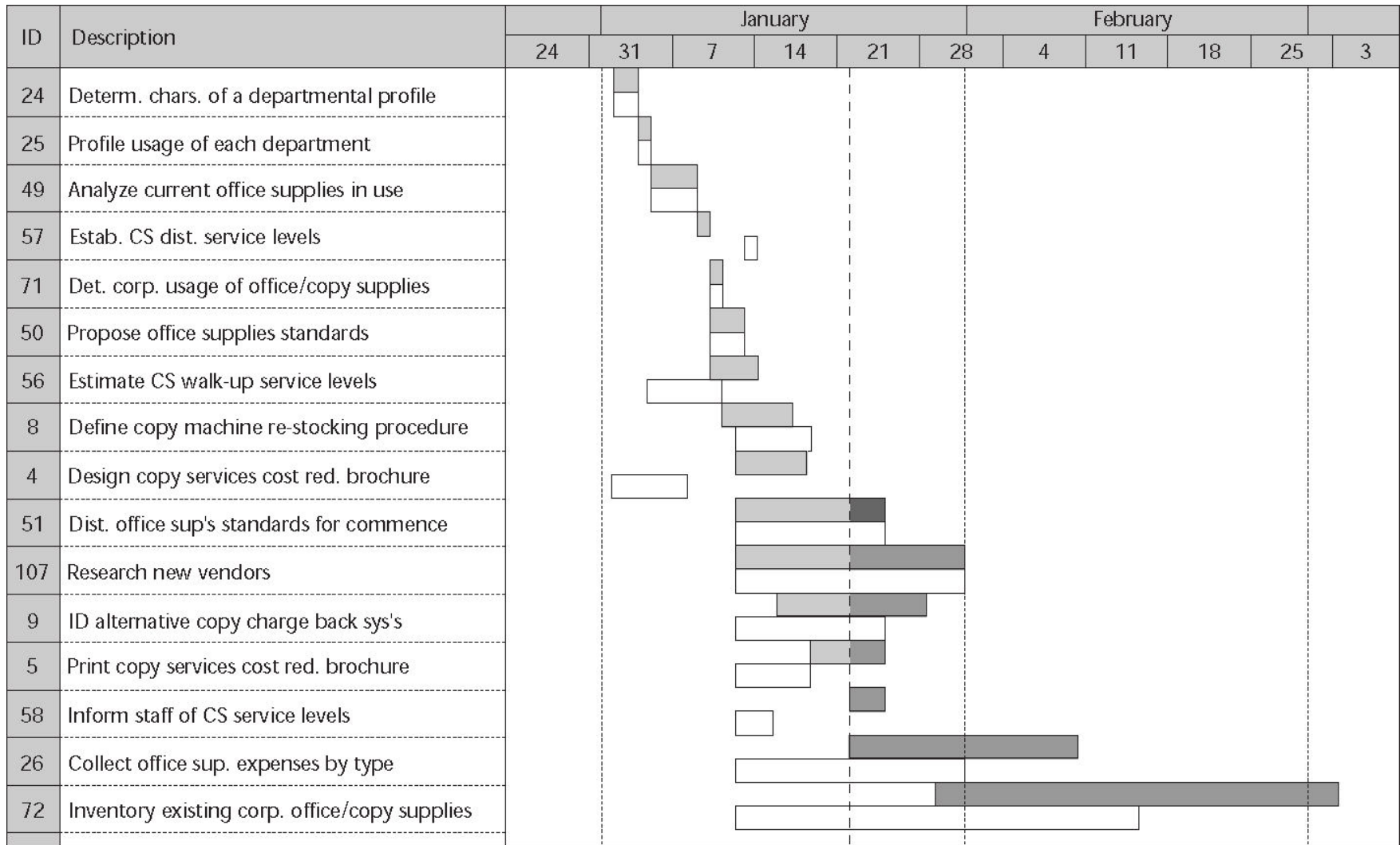
5. **Variance reports**



The project is failing. Intervention is required.



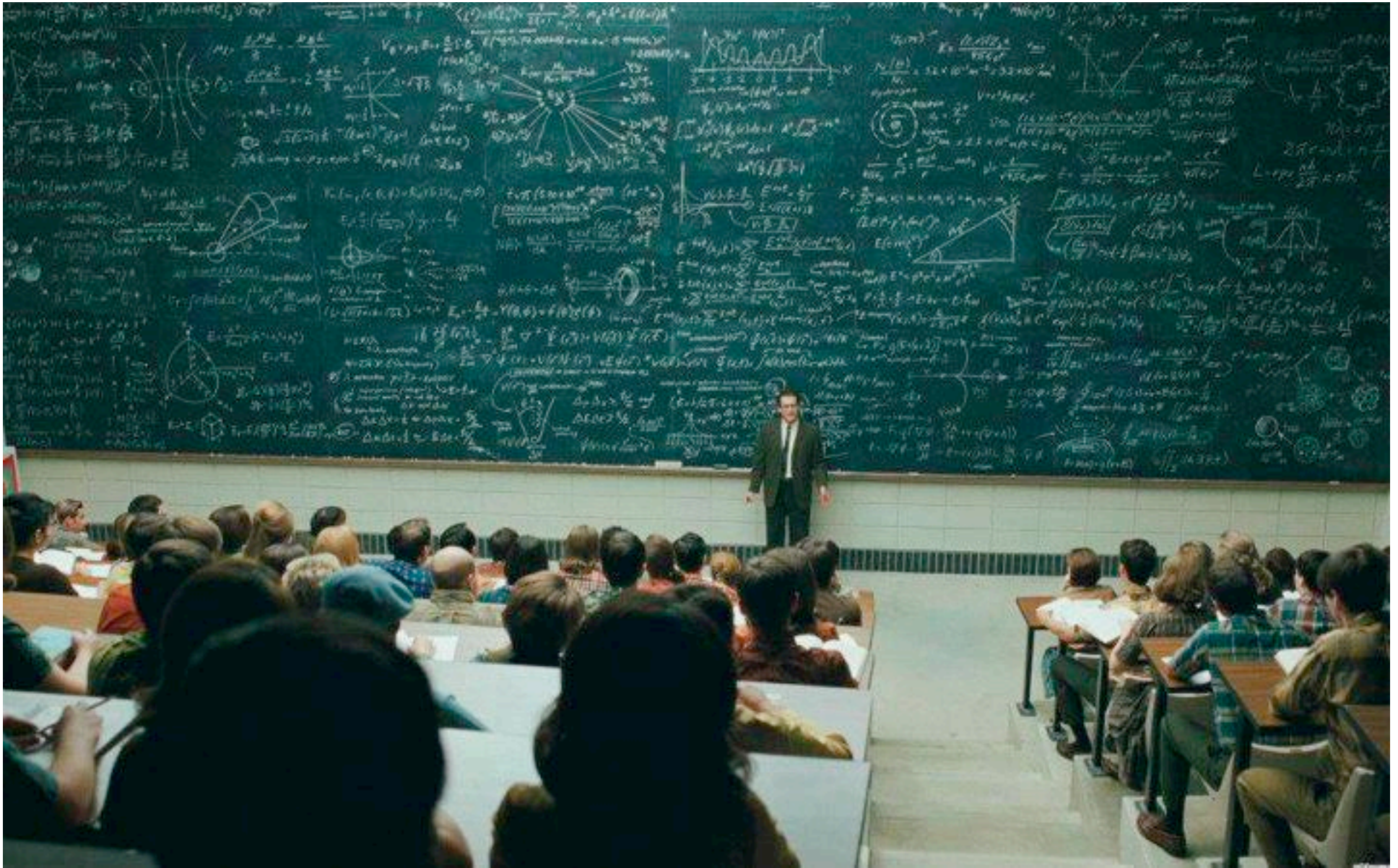
# Gantt Chart Project Status Report





# **Let's talk Final Project: Software Project Management Plan**

- **See Assignment**
- **Template with Rubric**
- **Extensive Example**
- **Work with team effectively – they will be rating you!**
  
- **Due: 11:55pm, Friday, November 2<sup>nd</sup>, 2012.**
  - **No late days – will be reviewed by another team for last homework!**





# Homework and Reading Reminders

- **Read Earned Value Paper**
  
- **Complete Homework 5 – Software Schedule**
  - Due by 11:55pm, Tuesday, October 9<sup>th</sup>, 2012
  
- **Final Project – Software Project Management Plan (SPMP)**
  - Completed by team...
  - Due by 11:55pm, Friday, November 2<sup>nd</sup>, 2012.
  - No late days – will be reviewed by another team for last homework!