

# SE 329 – Software Project Management

## Time and Cost Planning

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# Lecture Plan

1. Identify project activities
2. Estimate activity resources
3. Sequence activities
4. Estimate project cost

# Questions

- How much does it cost to develop the system?
- How long does it take to develop the system?

**Project goal:** The goal of the project is to develop a low-cost fleet monitoring system. It includes a device installed in a bus collects data from their in-vehicle networks and sends them to a remote server along with the the locations.

## Deliverables

1. Data collection component: A device that collects data from the car and sends it to a remote server along with the location of the vehicle
2. Data visualization: A web application that visualizes the position of each vehicles along with information collected from its network
3. Data analysis: A web application to run ad-hoc statistics using the data

# Popular PM Tools

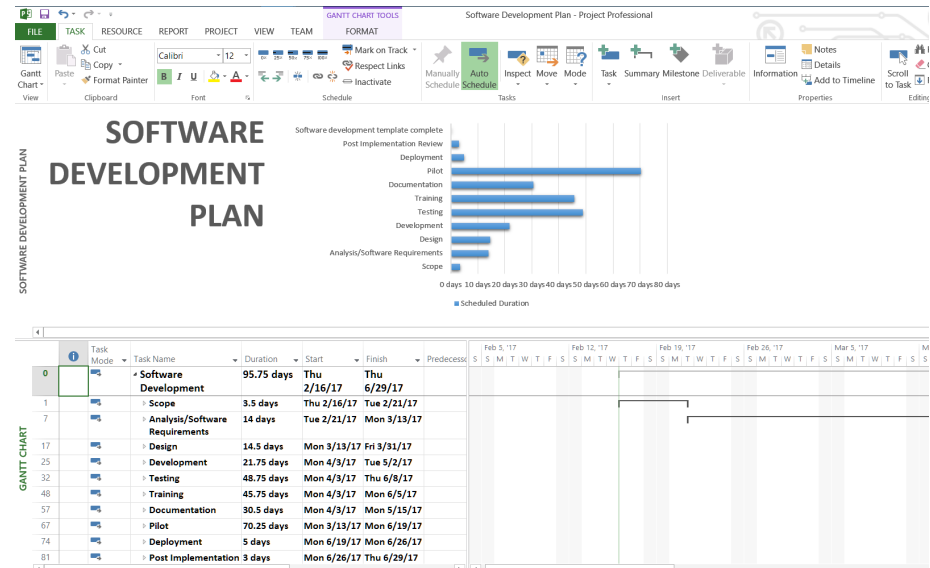
- Bootcamp
- Trello
- Teamwork Project
- Jira
- Microsoft Project
- Redmine
- Asana
- Gitlab
- etc.

# Why Do We Use PM Tools?

- Scheduling
  - Time and resources
  - Critical Path
- Overview and Estimation
  - Time spent and time estimation
  - Workload distribution
  - Resource distribution
  - Risk estimation
- Communication
  - Issues and Request
  - Idea discussion

# Microsoft Project

- Features
  - Project Scheduling
  - Resource Allocation
  - Gantt Chart
  - Critical Paths
  - Report Generation

















- Link for tutorials: <https://support.office.com/en-us/article/Project-2013-videos-and-tutorials-af7d1e17-5fa7-421f-a452-9bbe2cd7b082?ui=en-US&rs=en-US&ad=US>

# Microsoft Project

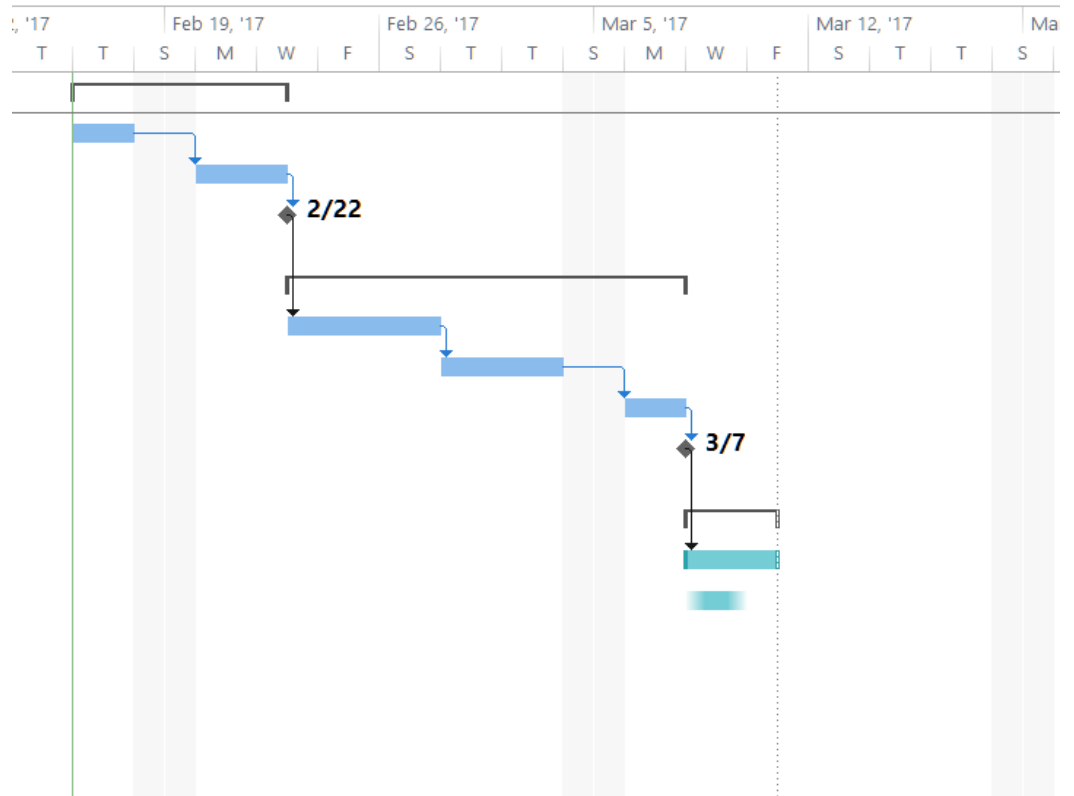
## Project Scheduling

- Creating tasks and subtasks
- Adding task dependencies

	 Task Mode	Task Name	Duration	Start	Finish
1		Summary #1	5 days	Thu 2/16/17	Wed 2/22/17
2		Task 1	2 days	Thu 2/16/17	Fri 2/17/17
3		Task 2	3 days	Mon 2/20/17	Wed 2/22/17
4		Summary #1 Complete	0 days	Wed 2/22/17	Wed 2/22/17
5		Summary #2	9 days	Thu 2/23/17	Tue 3/7/17
6		Task 3	3 days	Thu 2/23/17	Mon 2/27/17
7		Task 4	4 days	Tue 2/28/17	Fri 3/3/17
8		Task 5	2 days	Mon 3/6/17	Tue 3/7/17
9		Summary #2 Complete	0 days	Tue 3/7/17	Tue 3/7/17
10		Summary #3	3 days	Wed 3/8/17	Fri 3/10/17
11		Task 6	3 days	Wed 3/8/17	Fri 3/10/17
12		Task 7	2 days		
13		Task 8	TBD		

# Microsoft Project

Gantt Chart and  
Critical Path





# Microsoft Project

## PROJECT OVERVIEW

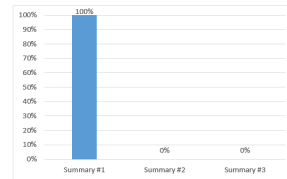
THU 2/16/17 - FRI 3/10/17



MILESTONES DUE  
Milestones that are coming soon.

Name	Finish
Summary #2 Complete	Tue 3/7/17

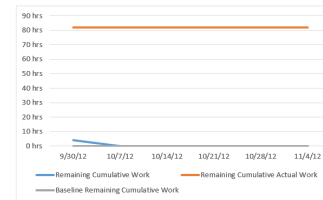
% COMPLETE  
Status for all top-level tasks. To see the status for subtasks, click on the chart and update outline level in the field list.



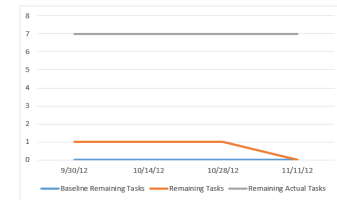
LATE TASKS  
Tasks that are past due.

Name	Start	Finish	Duration	% Comp
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## BURNDOWN



WORK BURNDOWN  
Shows how much work you have completed and how much you have left. If the remaining cumulative work line is steeper, then the project may be late.



TASK BURNDOWN  
Shows how many tasks you have completed and how many you have left. If the remaining tasks line is steeper, then your project may be late.

# Report Generation

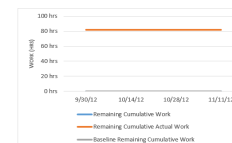
## CRITICAL TASKS



• Status: Late

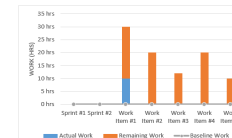
A task is critical if there is no room in the schedule for it to slip.  
[Learn more about managing your project's critical path.](#)

Name	Start	Finish	% Complete
Sprint #2	Mon 11/5/12	Fri 11/16/12	0%

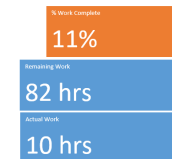


WORK BURNDOWN  
Shows how much work you have completed and how much you have left. If the remaining cumulative work line is steeper, then the project may be late.

Is your baseline work level?  
[Try setting a baseline](#)



WORK STARTS  
Shows work stats for all top-level tasks.



## WORK OVERVIEW

Mon 10/1/12 - Fri 11/16/12

# Redmine

- Popular project management tool (<http://www.redmine.org>)
  - Open source (GPL v2)
- Project management
  - People, roles
  - Projects and issues tracking and assignments
  - Web based, Internet, Intranet, or VM on a Desktop
  - Integration with revision systems
  - Several visualizations
    - Calendar, Gantt, Kanban, Roadmap,
  - Organize loose ideas
    - Files, Wiki for documentation, Forum discussion, Blog

# Redmine

Home Projects Help Sign in Register

## Redmine

Search:

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### Projects

[View all issues](#) | [Overall activity](#)

**Redmine**  
Redmine is a flexible project management web application written using Ruby on Rails framework.

Also available in: [Atom](#)

### Projects

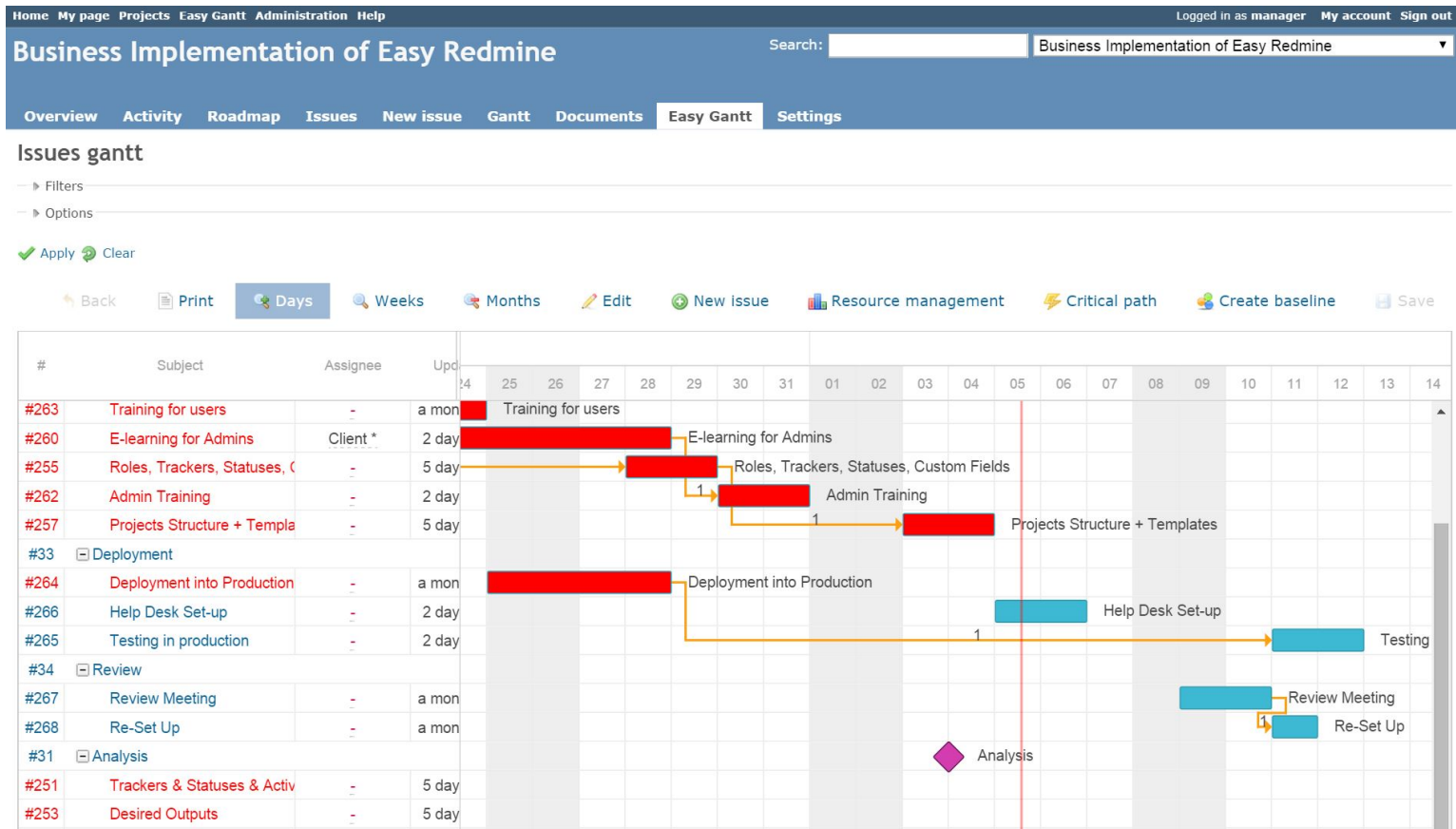
View closed projects

Powered by [Redmine](#) © 2006-2014 Jean-Philippe Lang

# Redmine Extensions

- Lots of plugins available
  - <https://www.redmine.org/plugins?page=1>
  - Some are free, some are commercial
- Can write your own plugins
  - May only be possible in Ruby

# Redmine Extensions



Easy Gantt <https://www.redmine.org/plugins/easy-gantt>

# Redmine Extensions

Backlog (3)	Development		Closed (4)
	Doing (3)	Done (4)	
<b>Cumulative flow chart</b> (3.50h)	<b>Edit Project</b> (20.00h) with many lines. How will it look like on the board Smith Paul	<b>Setup CI server</b> (3.00h) Pong Steven	<b>Issues burndown chart</b> (16.00h) Stone Elizabeth
<b>Add big avatars</b> (3.00h)	<b>Print Tasks</b> (5.00h) Kutcher Ashton		<b>PDF export</b> (8.00h) Smith Paul
<b>ToDo list</b> (2.00h)	<b>Velocity chart</b> (4.00h) Wozniak Stephen	<b>Backlog and sprint planning</b> (18.00h) Smith Paul	<b>Done/Undone Task</b> (6.00h) Smith Paul
	<b>Sortable board cards</b> (6.00h) Stone Elizabeth	<b>Assign Task to Area</b> (18.00h) Pong Steven	<b>Status, Cards, Trackers and Priority colors</b> (6.00h) Pong Steven

Agile [https://www.redmine.org/plugins/redmine\\_agile](https://www.redmine.org/plugins/redmine_agile)

The screenshot shows a GitLab issue page for the project 'SecureSoftware > VehicleCyberResilience > Issues > #4'. The issue is titled 'Compare Moving Average algorithms' and is in a 'Closed' state, having been opened 3 months ago by user 'lalitha'. The issue description contains two lines of text: 'simple moving average : code + plot' and 'exponential moving average: code + plot'. A comment from user 'othmanel' is visible, stating that the milestone was changed to 'Detection of attacks'. The right sidebar contains a 'Todo' section with fields for Assignee (lalitha), Milestone (Detection of attacks), Time tracking (No estimate or time spent), Due date (No due date), Labels (Task), Weight (None), Confidentiality (Not confidential), Lock issue (Unlocked), and 2 participants.

SecureSoftware > VehicleCyberResilience > Issues > #4

**Closed** Opened 3 months ago by lalitha Reopen issue New issue

## Compare Moving Average algorithms

Related issues 0 +

0 0

othmanel @othmanel · 3 months ago Owner

simple moving average : code + plot

exponential moving average: code + plot

othmanel @othmanel changed milestone to [Detection of attacks](#) · 3 months ago

lalitha @lalitha closed · 3 months ago

**Write** Preview B I ↵ <> ☰ ☰

Write a comment or drag your files here...

**Todo** Add todo »

**Assignee** lalitha @lalitha Edit

**Milestone** [Detection of attacks](#) Edit

**Time tracking** ?  
No estimate or time spent

**Due date** Edit  
No due date

**Labels** Edit  
Task

**Weight** Edit  
None

**Confidentiality** Edit  
 Not confidential

**Lock issue** Edit  
 Unlocked

2 participants

# Demo - Use Gitlab

[https://git.ece.iastate.edu/users/sign\\_in](https://git.ece.iastate.edu/users/sign_in)

- 1- Create milestones
- 2- Create issues
- 3- Assign resources
- 4- Set due date
- 5- Change the tasks status

	Activity	Predecessors	Duration
1.0	Acquire hardware		5
2.0	Setup the development environment		3
3.0	Setup the libraries on the Arduino	1.0	4
4.0	Prepare the server with required libraries		1
5.0	Develop the acquisition component	3.0	
5.1	Send a request to the CAN and get the response	3.0	10
5.2	Format the response and send it to the server	5.1	2
6.0	Develop the server application	4.0	
6.1	Receive CAN data	4.0	5
6.2	Store data in database	6.1	2
7.0	Test the solution	5.2,6.2	10



# Project Budget

## Main categories of expenses

1. Human resources (Internal)
2. Human resources (external)
3. Software and tools
4. Equipment
5. Social activities and travel costs
6. Training
7. Consulting services
8. Other

# Project Budget

- Human resources cost should consider all associated cost such as vacation time
- The budget should include the cost of human resources -
  - expected increases should be specified in the budget.
- Budget should be split by periods
  - often months, semesters, or years
- The budget needs to be in accordance with the proposal
- The budget should include external services if needed such as lawyers, etc.

# Self-check

- What is WBS? What do we need it for?
- What are the activity estimation techniques?
- What is critical path?
- Give an example of a PM tool

Thank you