

The background is a dark teal gradient. In the corners, there are decorative white line-art patterns resembling circuit traces or data paths, with small circles at the end of the lines.

PROJECT MANAGEMENT AND RISK TRACKING

A Primer for Capstone

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ALL CAPSTONE TEAMS MUST:

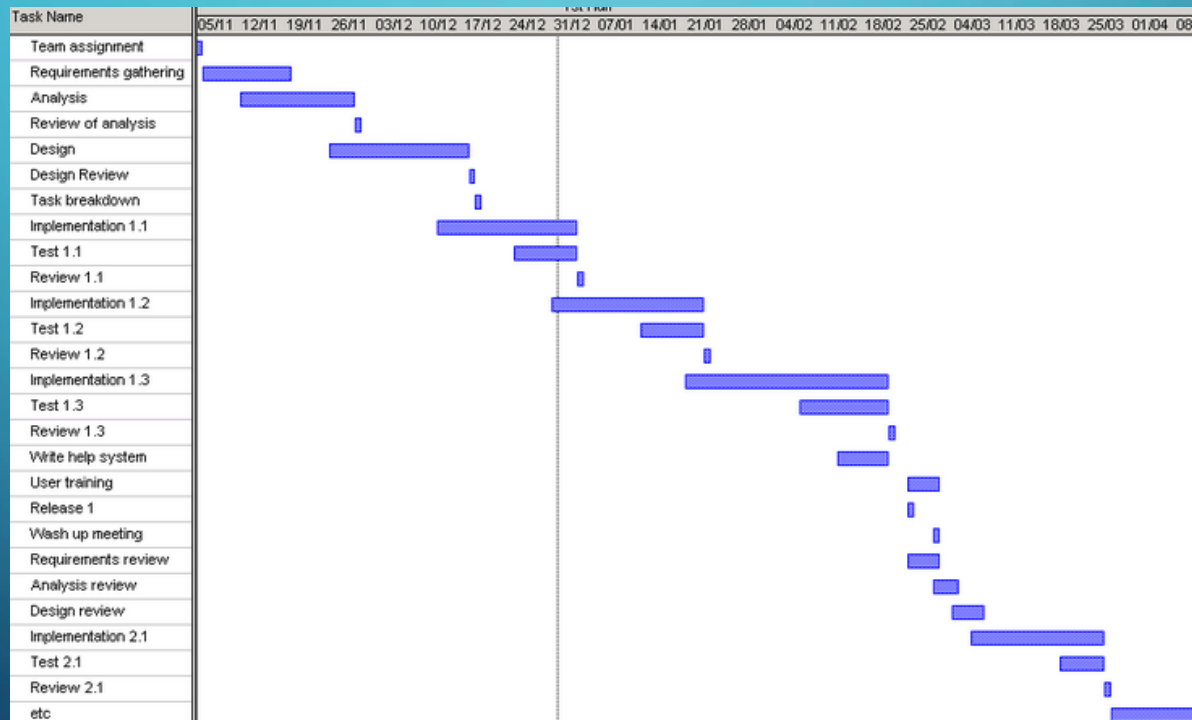
Choose a project management tool to maintain project status

Identify and track risks to their Anticipated Best Outcome

TRADITIONAL METHODS

- Traditional waterfall (Gantt chart) planning
 - List tasks and duration
 - Plan everything up front

- MS Project Training [link](#) available on the website



AGILE DEVELOPMENT



Iterative and incremental development methodology



Organize work into short duration "sprints"



Team commits to specific work for that period



Tasks are well defined



Members focus on a single task



Deliver something of value to the customer each sprint

The background is a dark blue gradient. In the corners, there are white, stylized circuit board traces with circular nodes, resembling a network or data flow diagram.

THE AGILE PROCESS

STEP 1: FUTURE TASKS (BACKLOG)

The To-Do List

- A large group of ideas that together capture all of the features the customer wants
- Prioritized
- Not necessarily well defined
- Can be changed as needed:
 - Capture ideas for new work as you think of it
 - Remove work that is no longer necessary

STEP 2: SPRINT PLANNING (GROOMING)

Preparing To-Do Items That Will Be Started Soon

- Further define ideas in the backlog
- Agree on relative size of the task
- Break up extra large tasks into manageable pieces
- Prioritize tasks
- Only go far enough to fill 1.5-2 sprints

STEP 3: THE SPRINT ITSELF

Doing the Work

- The team commits to a set of tasks from the backlog
- You only get credit for tasks you complete
- Tasks move from To Do → Doing → Done

STEP 4: DEMO

Deliver Something of Value from Each Sprint

- Show what the team has done in the sprint
- Get feedback and forward direction from the customer

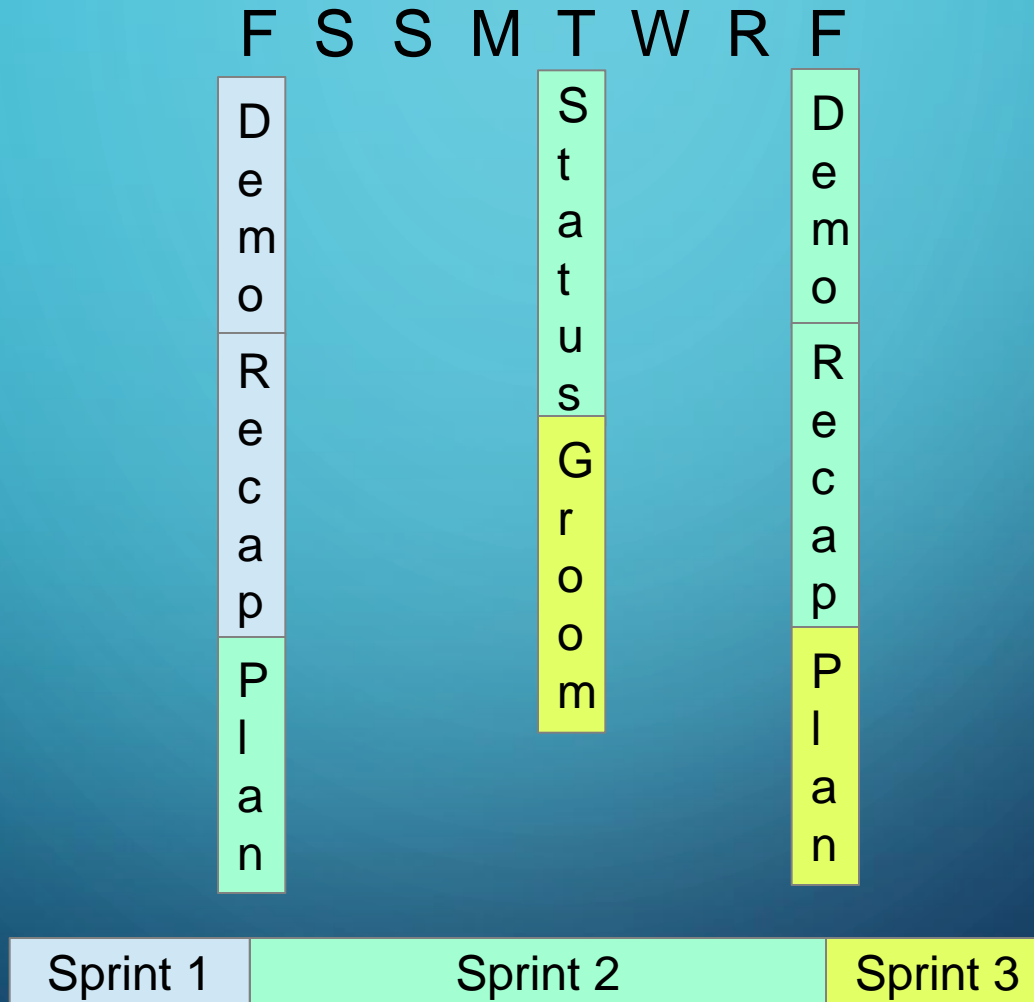
TRELLO IMPLEMENTATION

The screenshot shows a Trello board with five columns, each representing a different stage of a project. Each column has a title, a progress bar, and a list of tasks or cards. The 'Future Tasks' column has three cards: 'Android App Development', 'Hardware/Software Integration', and 'Final System Demonstration'. The 'Next Sprint' column has two cards: 'Electronic Sensor Eye Interface Circuit' and 'iOS App development'. The 'Current to Do' column has three cards: 'Site Survey', 'Setup Feeder and Webcam', and 'Server Software'. The 'In Progress' column has one card: 'Webcam Capture Software'. The 'Done 10/28' column has two cards: 'Component Research [3]' and 'Order Materials [1]'. Each column also has an 'Add a card...' button at the bottom.

Future Tasks	Next Sprint	Current to Do	In Progress	Done 10/28
Android App Development	Electronic Sensor Eye Interface Circuit	Site Survey	Webcam Capture Software	Component Research [3]
Hardware/Software Integration	iOS App development	Setup Feeder and Webcam	Add a card...	Order Materials [1]
Final System Demonstration	Add a card...	Server Software		Add a card...
Add a card...		Add a card...		

[Example Training Link](#)

CAPSTONE ONE WEEK TIMELINE



START OF PROJECT

The image shows a Kanban board for a project named "Capstone". The board is divided into five columns: "Future Tasks", "Next Sprint", "Current to Do", "In Progress", and "Done 10/28". The "Future Tasks" column contains a list of tasks, each with a progress bar and a menu icon. The other columns are currently empty, each with an "Add a card..." button.

Capstone Demo ☆ Private

Future Tasks	Next Sprint	Current to Do	In Progress	Done 10/28
Android App Development	Add a card...	Add a card...	Add a card...	Add a card...
Server Software				
Component Research [3]				
Order Materials [1]				
Webcam Capture Software				
Setup Feeder and Webcam				
Site Survey				
Hardware/Software Integration				
iOS App development				
Electronic Sensor Eye Interface Circuit				
Final System Demonstration				
Add a card...				

DETAILED TASK EXAMPLE

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Future Tasks

- Android App Development
- Server Software
- Component Research [3]**
- Order Materials [1]
- Webcam Capture Software
- Setup Feeder and Webcam
- Site Survey
- Hardware/Software Integration
- iOS App development
- Electronic Sensor Eye Interface Circuit
- Final System Demonstration
- Add a card...

Next Sprint

Add a card...

Component Research [3]

in list [Future Tasks](#)

Description [Edit](#)

Research possible bird feeders, electronic eyes, and wifi webcams. Total material budget is limited to \$150.

Acceptance Criteria: Generate a Bill of Materials for all components with price and lead time.

Points: 3

Add Comment

M Write a comment...

Send

Activity [Show Details](#)

Add

- Members
- Labels
- Checklist
- Due Date
- Attachment

Actions

- Move
- Copy
- Subscribe
- Archive

[Share and more...](#)

READY FOR SPRINT 1

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Future Tasks

- Android App Development
- Server Software
- Hardware/Software Integration
- iOS App development
- Final System Demonstration
- Add a card...

Next Sprint

- Component Research [3]
- Order Materials [1]
- Setup Feeder and Webcam
- Site Survey
- Electronic Sensor Eye Interface Circuit
- Webcam Capture Software
- Add a card...

Current to Do

Add a card...

In Progress

Add a card...

Done 10/28

Add a card...

SPRINT IN PROGRESS

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Future Tasks

Android App Development

Server Software

Final System Demonstration

Add a card...

Next Sprint

Hardware/Software Integration

iOS App development

Add a card...

Current to Do

Setup Feeder and Webcam

Electronic Sensor Eye Interface Circuit

Webcam Capture Software

Add a card...

In Progress

Site Survey

Order Materials [1]

Add a card...

Done 10/28

Component Research [3]

Add a card...

END OF SPRINT

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Future Tasks

- Integrated PCB Development
- Research Prototype Vendors
- Refine BOM
- Generate New Schematic Symbols
- Generate New PCB Footprints
- Schematic Capture
- PCB Layout
- PCB Fab
- PCB Assembly
- Etc. Etc. Etc.
- Add a card...

Next Sprint

- Hardware/Software Integration
- iOS App development
- Android App Development
- Server Software
- Final System Demonstration
- Add a card...

Current to Do

Add a card...

In Progress

- Webcam Capture Software
- Add a card...

Done 10/28

- Component Research [3]
- Site Survey
- Order Materials [1]
- Setup Feeder and Webcam
- Electronic Sensor Eye Interface Circuit
- Add a card...

START OF SPRINT 2

Capstone 10/25 Demo ☆ Private

Future Tasks	Next Sprint	Current to Do	In Progress	Done 11/11	Done 10/28
Integrated PCB Development	Add a card...	Webcam Capture Software	Add a card...	Add a card...	Component
Refine BOM		Hardware/Software Integration			Site Survey
Generate New Schematic Symbols		iOS App development			Order Mater
Generate New PCB Footprints		Android App Development			Setup Feed
Schematic Capture		Server Software			Electronic S
PCB Layout		Final System Demonstration			Add a card...
PCB Fab		Research Prototype Vendors			
PCB Assembly					
Etc. Etc. Etc.					
Add a card...		Add a card...			



RISK TRACKING

WHY TRACK RISK?

Better
understand
your current
project
status

Manage
Expectations

Plan
Mitigation
Strategies

Probability
of Unlikely
Events
Occuring

CAPSTONE GUIDANCE

- Only track risks with a reasonable likelihood of occurring
- Remember that risks have a negative impact and may occur
Once it happens, it's no longer a risk but an issue
- Identify:
Critical decisions that need to be made, Findings that need to occur,
Schedule targets that need to be hit, Points of failure, Assumptions
made, Critical resources, etc
that would impact the Best Anticipated Outcome of the project.
- Work backwards from your Best Anticipated Outcome

CAPSTONE IMPLEMENTATION

- You'll create a risk table in your logbook, from the template provided to include:
 - Description of Risk
 - Impact to the Project (Consequences if risk comes true)
 - Likelihood of Risk Occurring
 - Seriousness of Risk Occurring
 - Grade of Risk
 - Mitigation Strategy, if applicable
- Revisit weekly to update grade and action, add new risks, retire items that are no longer risks.
- Your current risk table will be included in your major progress reports throughout the year.

Grade		Seriousness			
Likelihood	Low	Low	Medium	High	
	Medium	D	C	B	
	High	C	B	A	

Recommended Action by Risk Grade	
Grade	Risk mitigation actions
A	Immediately identify and implement actions to reduce the likelihood and seriousness as a top priority.
B	Identify actions to reduce the likelihood and seriousness to implement as the risk become more likely/serious.
C	Identify actions to implement should the risk occur.
D	Monitor the risk for changes in the future.

RISK EXAMPLE

- **Description:** A critical system component is currently out of stock and may not be available in time for integration and testing
- **Impact:** A major feature of the project might not be implemented
- **Likelihood:** Medium
- **Seriousness:** High
- **Grade:** B
- **Mitigation Strategy:** Identify when the part would be needed to stay on schedule. Check stock daily or pay premium price (reduces likelihood of risk occurring) if it becomes available. As the need by date approaches, investigate alternative components that could be used instead. (reduces seriousness)

Grade		Seriousness		
		Low	Medium	High
Likelihood	Low	D	D	C
	Medium	D	C	B
	High	C	B	A

Recommended Action by Risk Grade	
Grade	Risk mitigation actions
A	Immediately identify and implement actions to reduce the likelihood and seriousness as a top priority.
B	Identify actions to reduce the likelihood and seriousness to implement as the risk become more likely/serious.
C	Identify actions to implement should the risk occur.
D	Monitor the risk for changes in the future.

REQUIRED NEXT STEPS

**Review your
project
management
choice with TDs**

**Start identifying
risks to add to
your logbook**