09/23: Schedule and Teamwork

The Capstone Experience

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Fall 2020

Schedule and Teamwork

➢Schedule

➢Teamwork

Where do you start?

- Project Plan

- Prioritized Risks

- Feature Set(s)

- Fixed Milestones
  - Course
  - Client

Tradeoffs...

Features

vs.

Time

Are there fixed milestones in the "real" world?

Schedules

- Schedules > All-Hands Meeting

- Schedules > Major Milestones
  - 09/16: Status Report Presentations
  - 09/28: Project Plan Presentations
  - 10/19: Alpha Presentations
  - 11/16: Beta Presentations
  - 12/07: Project Videos
  - 12/09: All Deliverables

Project Parts

- Break Down Project
  - Main Parts
  - Sub-Parts
  - Sub-Sub-Parts
  - Etc...
- Categorize
  - Risks
  - Dependencies (Particularly Risk Dependencies)
  - Priorities
- Worry About
  - Interfaces Between Parts
  - Integration of Parts

Building A Project Schedule

- Start With Fixed Course Milestones
- Estimate Times for Tasks for Parts
  - Building
  - Integrating
  - Testing
- Assign Tasks to Team Members
- Must Keep Everyone Busy All the Time
- Use "Short" Deadlines (E.g., 2-3 Days) Why?
- Document and Track
  - Microsoft Project?
  - Collaboration Tool?

Estimating Time for Tasks

- Rough Estimate
  - Intuition
  - Experience
- Refined Estimate
  - Prototype or Partial Build
  - Extrapolation
  - E.g., 2 Days to Build 1 → 6 Days to Build 3
- Keys
  - Be Realistic
  - Include Buffer Time if Unsure
- Adjust Schedule Accordingly

Typical Build Cycle

Until Project Done Do

1. Divide Next Big Task Into Little Tasks
2. Assign Little Tasks to Team Members
3. Complete Little Tasks
   a. Implement
   b. Test
4. Integrate Little Tasks Into Big Task
5. Test Big Task

Very Important

High Priority Risks Get High Priority Scheduling

Version Control

- Versioning
  - Discrete "Internal" Versions (States)
  - May Correspond to Builds
- Version Control Systems
  - Check Code In and Out
  - Mark Specific States as Versions
- Motivation
  - Build Breaks System
  - Revert to Earlier Build
  - Avoid Bridge Burning
- Examples
  - GitHub
  - Visual SourceSafe

Can Be Serious Problem

Living Schedule

- Schedule Is Dynamic
  - Unforeseen Problems
  - Added Features (Avoid Feature Creep)
  - Etc..
- Track Your Progress
  - Microsoft Project?
  - Collaboration Tool?
- Revisit Schedule Often
  - Weekly Team Meetings
  - Weekly Triage Meetings with TAs
  - Identify Slippage
  - Hold Each Other Accountable (or Contact TAs or Dr. D.)
  - Set Corrective Action
  - Adjust Schedule

Schedule and Teamwork

✓Schedule

➢Teamwork

Team Organization

- Up to Each Team

- Organize into Roles
  - Client Contact
  - Program Manager
  - Developer
  - Tester
  - Systems Administrator
  - Etc…

- Everyone must make technical contributions.

Team Dynamics

- Key to Success

- Significant Component of Course Grade

- Address Problems Immediately
  - Within Team
  - With Dr. D. and/or TAs

- Be Ready to Discuss During Interviews

Grading

- Team (70%)
  - Project Plan Document & Presentation   10
  - Alpha Presentation   10
  - Beta Presentation   10
  - Project Video   10
  - Project Software & Documentation   25
  - Design Day   05
  - Total   70
- Individual (30%)
  - Technical Contribution   10
  - Team Contribution   10
  - Team Evaluation   05
  - Meeting Attendance   05
  - Total   30

Grading

- Final Grade Sum Of...
  - Individual Total
  - % of Team Total Based on Team Contribution
- Grand Total =

  (Individual Total)

  +

  (Team Total) * (Team Contribution) / 10.0

- *Nota Bene*: Your Team Contribution will have a very significant effect on your final grade.

Grading

Effect of Team Contribution					
Technical Contribution	Team Contribution	Team Evaluation	Meeting Attendance	Team Total	Grand Total
10	10	5	5	70	100
10	9	5	5	70	92
10	8	5	5	70	84
10	7	5	5	70	76
10	6	5	5	70	68
10	5	5	5	70	60
10	4	5	5	70	52
10	3	5	5	70	44
10	2	5	5	70	36
10	1	5	5	70	28
10	0	5	5	70	20
Nota Bene: Assumes Perfect Score In Every Other Category					

Grading

Grade Distribution Goal	
Grade	Number
4.0	137
3.5	0
3.0	0
2.5	0
2.0	0
1.5	0
1.0	0
0.0	0

Grading

Unacceptable Excuses for Not Contributing

- They never asked me to do anything.
- They never let me do anything.
- I wrote 1000's of lines of code, but they weren't included in the project.
- My features were not included in the project.
- I work 40 hours per week at my job.
- I live 60 minutes from MSU.
- I didn't want to work on this project team.
- I ranked this project 30 out of 30.
- I did a lot of research about stuff we never used.
- I was busy interviewing.
- Etc…

Grading

- We reserve the right to make changes with sufficient notice.
- No special consideration will be given for final grades, including but not limited to
  - effect on GPA,
  - status in any academic program including CSE,
  - financial aid,
  - rank in the armed forces,
  - job while a student at MSU,
  - job after anticipated graduation from MSU,
  - graduation,
  - mortgage,
  - wedding,
  - visa status,
  - effect on graduate school application,
  - or anything else.

Team of Peers

Effective Team Members

- Relate as Equals
- Have Specific Roles and Responsibilities
- Respect Specific Roles and Responsibilities
- Empowers Individuals in Their Roles
- Have Specific Skills
- Hold Each Other Accountable
- Drive Consensus-Based Decision-Making
- Give All Members a Stake in the Project

Potential Problems

Over and/or Under

- Bearing

- Qualified

- Achiever

- Etc…

Team Evaluation Form

- 5% of Final Grade
- Rate Each Team Member
  - Describe the technical contributions (or lack thereof) of each team member. That is, describe what each team member contributed as a software developer to your project. Be specific. Contributions may include things like architecture, design, algorithms and code. Include comments about the quality of their work.
  - Describe the team contributions (or lack thereof) of each team member. That is, describe what each team member contributed as a team member to your team. Be specific. Include comments about attendance at meetings, timeliness of completing work, commitment to the project, reliability and effort put forth.
  - In the table above, you rated one of your team members as the **worst** team member. Why? Be specific.
  - In the table above, you rated one of your team members as the **best** team member. Why? Be specific.

Team Problems

- Can Be
  - Really Hard
  - Awkward
  - Frustrating
- Addressing Problems
  - ASAP
  - Directly
  - Respectfully
  - Maturely
- Resolving Problems
  - Internally First
  - See Dr. D. and/or TAs Next but ASAP (Don't Wait)
- "Bad" Team Not an Acceptable Excuse
- Dr. D. and TAs
  - Can Help
  - Have Limited Experience with Time Travel

Potential For Bad Effect on 70% of Your Grade

Schedule and Teamwork

✓Schedule

✓Teamwork

What's ahead?

- All-Hands Meetings
  - ~~09/02: Capstone Overview~~
  - ~~09/09: Capstone Overview~~
  - ~~09/14: Risks and Prototypes~~
  - ~~09/16: Team Status Report Presentations~~
  - ~~09/21: Project Plan~~
  - ~~09/23: Schedule and Teamwork~~
  - 09/28: Team Project Plan Presentations
  - 09/30: Team Project Plan Presentations
  - 10/05: Team Project Plan Presentations
  - 10/07: Team Project Plan Presentations

What's ahead?

- Major Milestones
  - 09/28: Team Project Plan Presentations

  - 10/19: Team Alpha Presentations

  - 11/16: Team Beta Presentations

  - 12/07: Project Videos

  - 12/09: All Deliverables

What's ahead?

- Team Photos
  - During Triage Meetings Next Week
  - Via Zoom
  - Dress Business Casual
- Names and Hometowns
  - Posted on Team Project Page
  - Will Be Used in Design Day Booklet
  - Email Corrections to Dr. D. by COB Today
  - Fair Warning: Last Chance to Change
- Meeting Attendance
  - Excused Absences
    - On for Job Interviews
    - Not Reschedulable and Verifiable
    - Do not schedule anything else during our meeting times.
  - Late, Attendance Check Failure, Leave Early
    - No Excuses
    - One Such Will Not Affect Final Grade
  - Contact TA

What's ahead?

- Project Plan Document and Slide Deck
  - Due Sunday, September 27
  - Read Submission Instructions Carefully
- Project Plan Presentation Schedule
  - Every Team Must Be Prepared to Present on First Day
  - Schedule Posted Evening Before First Presentation
- Project Plan Presentation Conflicts
  - Request from Dr. D. via Email
  - For Interview that Can Be Verified and Cannot be Scheduled Another Time
  - Due by COB Today
- Split All-Hands Meetings
  - Split by James' and Luke's Capstone Teams
  - Two Microsoft Teams Channels
- Each Team Presents
  - One team member will use Microsoft Teams to…
    - Share PowerPoint Presentation
    - Advance the PowerPoint Slide Deck
  - At Most 14 Minutes Including "Setup" Time (Rehearse Timing)
  - Multiple Team Speakers
  - Practice

READ ME

- Presenting
  - The purpose of the project plan presentation is to convince everyone that your team has scoped your project, understands the functional, design and technical specifications, and that your team has a crafted plan to develop, debug and deliver your project to your client on time (Wednesday, December 9) and on budget ($0).
  - The time limit for your presentation is 14 minutes, which will be strictly enforced. Practice your presentation to ensure that you will finish within the allotted time.
  - All team members are required to dress business casual on the day of their presentation. Business casual does <u>not</u> include sneakers, tennis shoes, hats, coats, hoodies, t-shirts or shirts that are not tucked into pants. Google "what is business casual."

READ ME

- Content
  - Do not include any company confidential information in your presentation since all presentations will be posted on the web site.
  - Submit your presentation to your client for approval at least two days in advance.
  - Throughout the PowerPoint template, replace placeholders […] with the appropriate information.
  - Edit the center footer by clicking the Header & Footer button on the Insert ribbon. Change [Team Name] in the footer to your company name as in "Team TechSmith Project Plan Presentation". If necessary, extend the width of the center footer textbox on the master slide, making sure that you re-center the enlarged textbox.
  - Delete the example Screen Mockups and System Architecture slides and all Read Me slides from your presentation.
    - The screen mockups should contain little or no bordering transparent or whitespace. Use paint.net to crop them appropriately.
    - If a slide contains more than one screen shot or additional artwork (like an arrow), group all of the items into a single grouping so that it can be copied-and-pasted and resized as a single unit
- Required Template
  - Do not edit the Slide Masters.
  - Do not change the organization of slides.
- Presentations
  - Although the presentations are scheduled over the course of up to four meetings, all teams must be prepared to present on the first day scheduled, Monday, September 28.
  - The order of the presentations will be posted on our All-Hands Meetings page in the evening of the day before the first day scheduled for presentations.
- Submission ← **Read this carefully.**
  - Both your PowerPoint slide deck and Word document are due by 11:59 p.m. on Sunday, September 27. Email your slide deck to Dr. D. and your document to your TA. Email both your slide deck and document to your client in a separate email; do not cc me.
  - For subject, use "Team [Team Name]: Project Plan Presentation" as in "Team Amazon: Project Plan Presentation".
  - Attach the Windows PowerPoint source file named "team-[team-name]-project-plan-presentation.pptx" replacing "[team-name]" with your team name (using all lower case and replacing all blanks with dashes) in your filename as in "team-urban-science-project-plan-presentation.pptx".
  - Attach the Windows Word source file named "team-[team-name]-project-plan-document.docx" replacing "[team-name]" with your team name (using all lower case and replacing all blanks with dashes) in your filename as in "team-urban-science-project-plan-document.docx".
  - Include some text in the body to practice being a professional and to avoid having your email sent to my junk folder.

MICHIGAN STATE
U N I V E R S I T Y

Project Plan
[Project Title 36pt]

The Capstone Experience

Team [Team Name 24pt]

[Team Member 1 16pt]
[Team Member 2 16pt]
[Team Member 3 16pt]
[Team Member 4 16pt]
[Team Member 5 16pt]
[Team Member 6 16pt]

Department of Computer Science and Engineering
Michigan State University

Fall 2020

From Students…
…to Professionals

Functional Specifications

- Point 1

- Point 2

- Point 3

- Etc…

This is your project overview.

Describe what problem your project solves.

Answer the question "What does your project do?"

This is your "elevator pitch".

Delete this textbox.

Design Specifications

- Point 1

- Point 2

- Point 3

- Etc...

Articulate a summary of your project's major features as well as its overall design.

Delete this textbox.

Screen Mockup: [Title 1]

You may include as many screen mockups as you have like, but you must include <u>at least four</u> examples.

To include more than four, you can duplicate this slide as many times as necessary.

Good screen mockups should help you elicit project specifications from your client.

Do <u>not</u> include screen mockups of trivial things such as splash screens or login screens.

Do <u>not</u> include screen grabs of other software.

Give each screen mockup slide a title.

See below for examples and instructions.

Delete this textbox.

Screen Mockup: [Title 2]

You may include as many screen mockups as you have like, but you must include <u>at least four</u> examples.

To include more than four, you can duplicate this slide as many times as necessary.

Good screen mockups should help you elicit project specifications from your client.

Do <u>not</u> include screen mockups of trivial things such as splash screens or login screens.

Do <u>not</u> include screen grabs of other software.

Give each screen mockup slide a title.

See below for examples and instructions.

Delete this textbox.

Screen Mockup: [Title 3]

You may include as many screen mockups as you have like, but you must include <u>at least four</u> examples.

To include more than four, you can duplicate this slide as many times as necessary.

Good screen mockups should help you elicit project specifications from your client.

Do <u>not</u> include screen mockups of trivial things such as splash screens or login screens.

Do <u>not</u> include screen grabs of other software.

Give each screen mockup slide a title.

See below for examples and instructions.
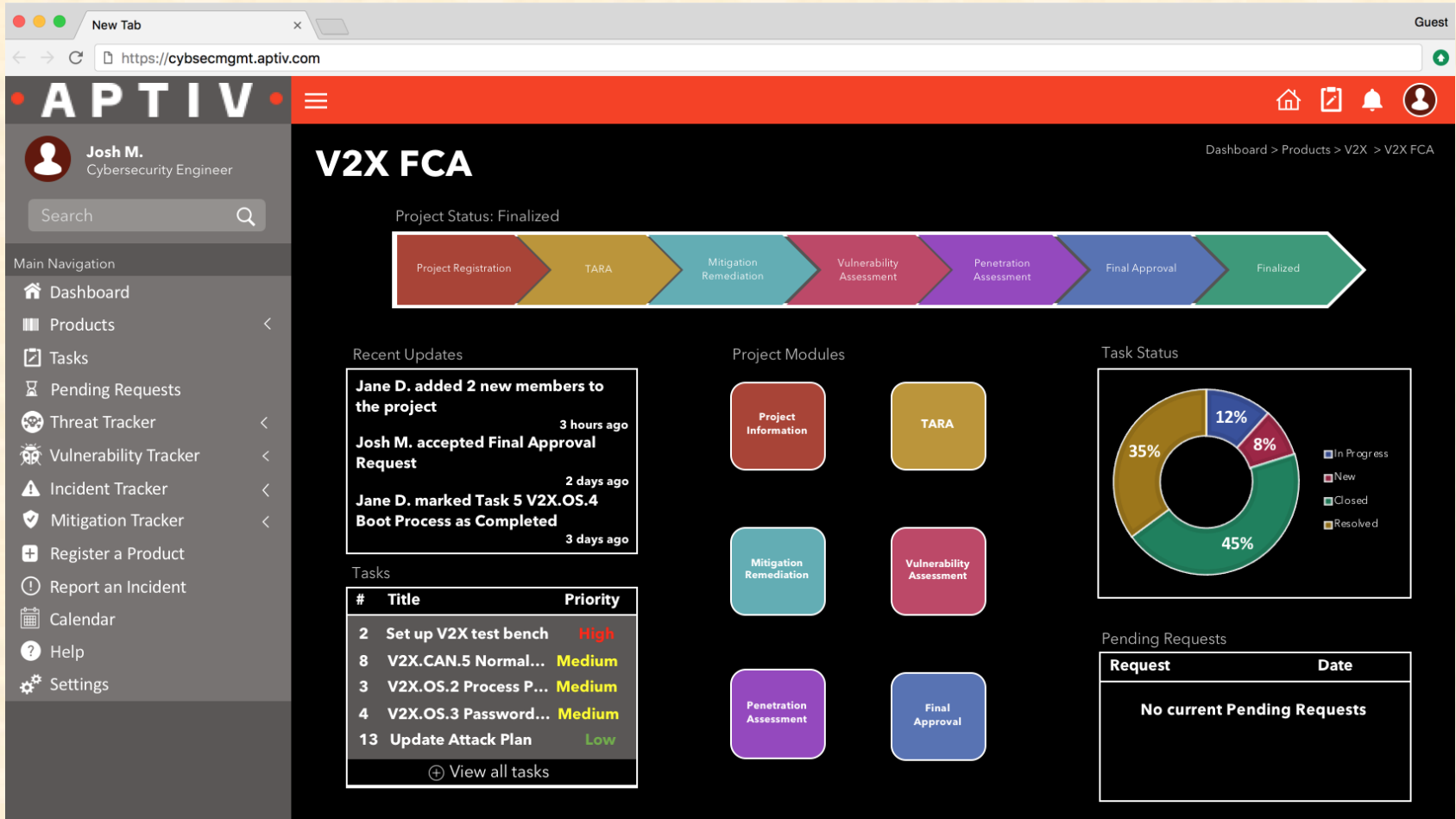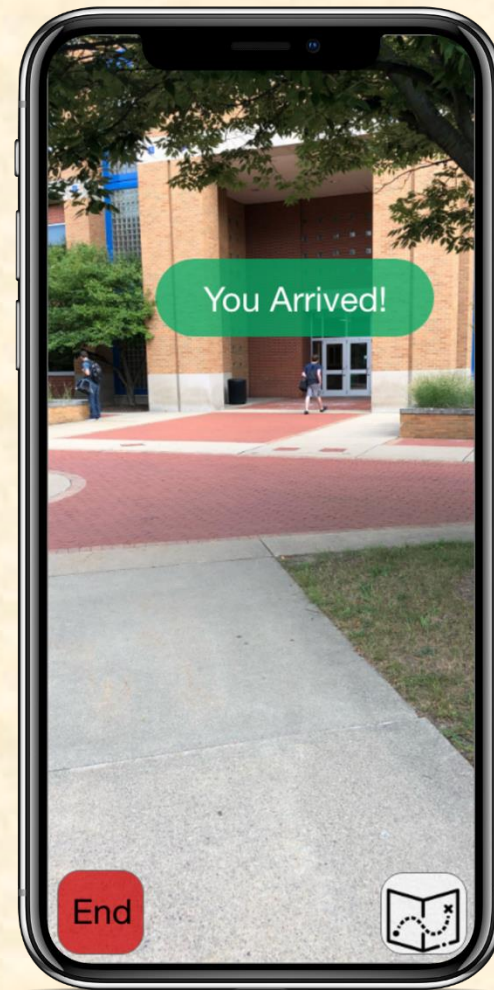
Delete this textbox.

Screen Mockup: [Title 4]

You may include as many screen mockups as you have like, but you must include <u>at least four</u> examples.

To include more than four, you can duplicate this slide as many times as necessary.

Good screen mockups should help you elicit project specifications from your client.

Do <u>not</u> include screen mockups of trivial things such as splash screens or login screens.

Do <u>not</u> include screen grabs of other software.

Give each screen mockup slide a title.

See below for examples and instructions.

Delete this textbox.

Screen Mockup Instructions

- Ensure that your mockups…
  - are readable (size-wise),
  - have the correct aspect ratio,
  - are scalable, and
  - are centered vertically (between the green bar in the title and the footer) and horizontally (Use Home > Arrange > Align).
- The screen mockups should not contain any bordering transparent or whitespace. Use paint.net to crop them appropriately and change any bordering whitespace to transparent.
- In PowerPoint use Home > Arrange > Group to group the objects in your mockup into a single object that can be copied-and-pasted (and scaled).
- Embed your screen mockups into platform frames, like a mobile phone or a tablet or a web browser. See https://mockuphone.com.

Screen Mockups: Web Interface

Screen Mockup: iOS Application

Technical Specifications

- Point 1

- Point 2

- Point 3

- Etc…

List the technical components of your project.

Delete this textbox.

System Architecture

Show a diagram that illustrates the overall architecture of your project including how all of the parts and pieces are connected and interact.

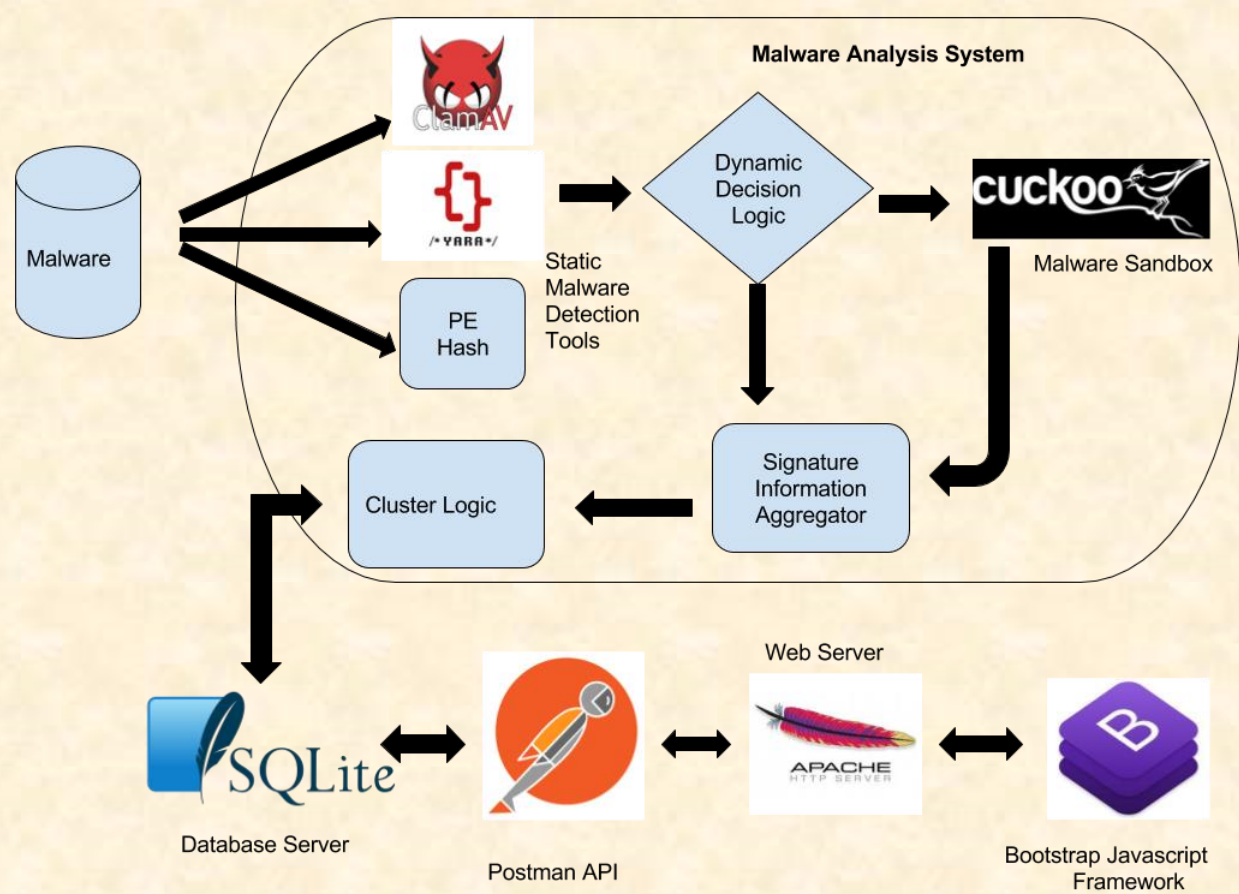See below for examples and instructions.

Delete this textbox.

System Architecture

- Draw your system architecture diagram natively in PowerPoint; do not cut-and-paste a diagram from your project plan document.
- Create your system architecture diagram in a <u>separate</u> PowerPoint file.
  - Use a white background with a blank slide layout.
  - Use Home > Arrange > Group to group all of the objects in your diagram into one single PowerPoint object that can be copied-and-pasted.
  - Once grouped, save the diagram as a PNG image so that the entire image will scale including text.
- Use Paint.NET to make the background of your diagram transparent.
  - Download and install it from www.getpaint.net.
  - Copy your diagram into Paint.NET.
  - Select Tool > Magic Wand.
  - Click on a background area.
  - Push the Delete button (on your keyboard).
  - The background area should be a checkerboard pattern.
  - (N.B.: Paint.NET was a capstone project at the University of Washington.)
- Copy-and-paste your PNG image into the slide deck System Architecture slide.
- Ensure that your diagram...
  - is readable (size-wise) when projected,
  - has the correct aspect ratio,
  - is scalable, and
  - is centered vertically (between the green bar in the title and the footer) and horizontally (Use Home > Arrange > Align).
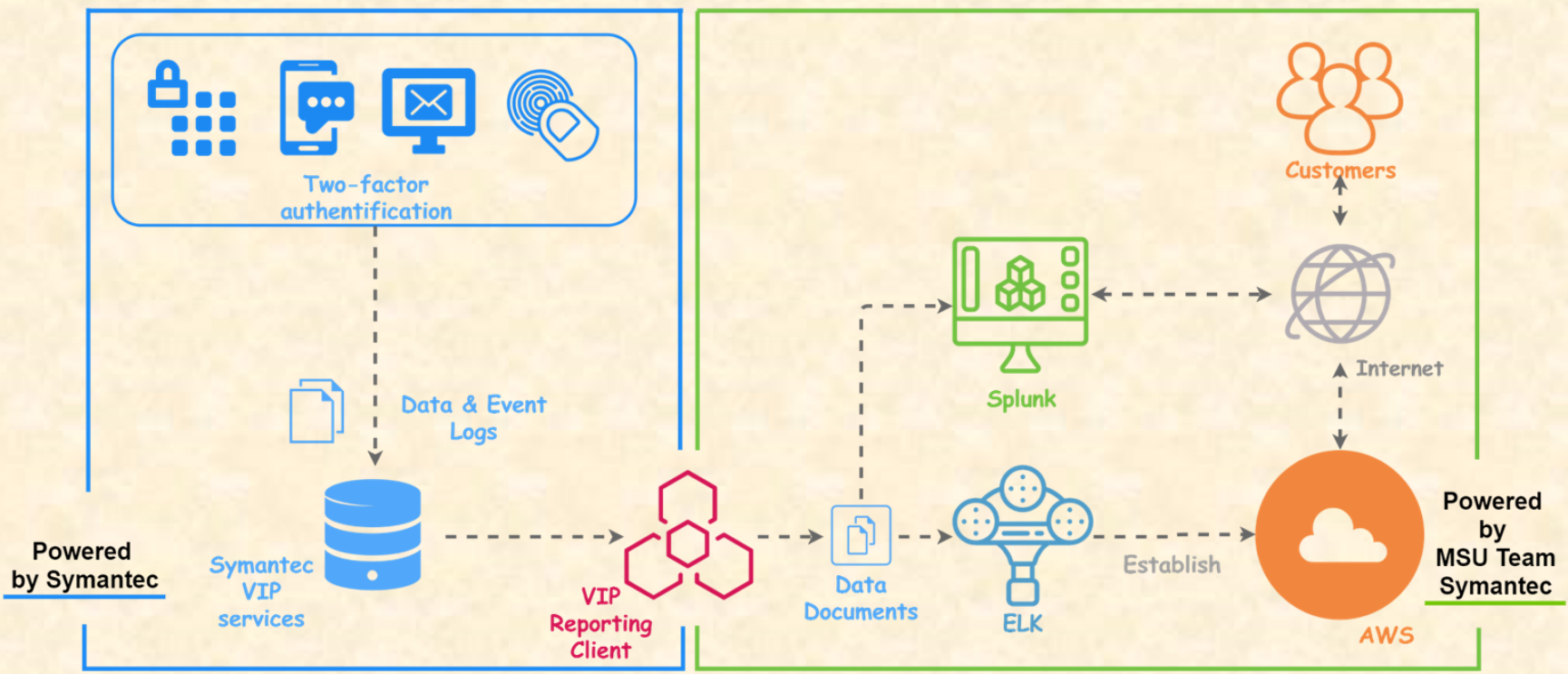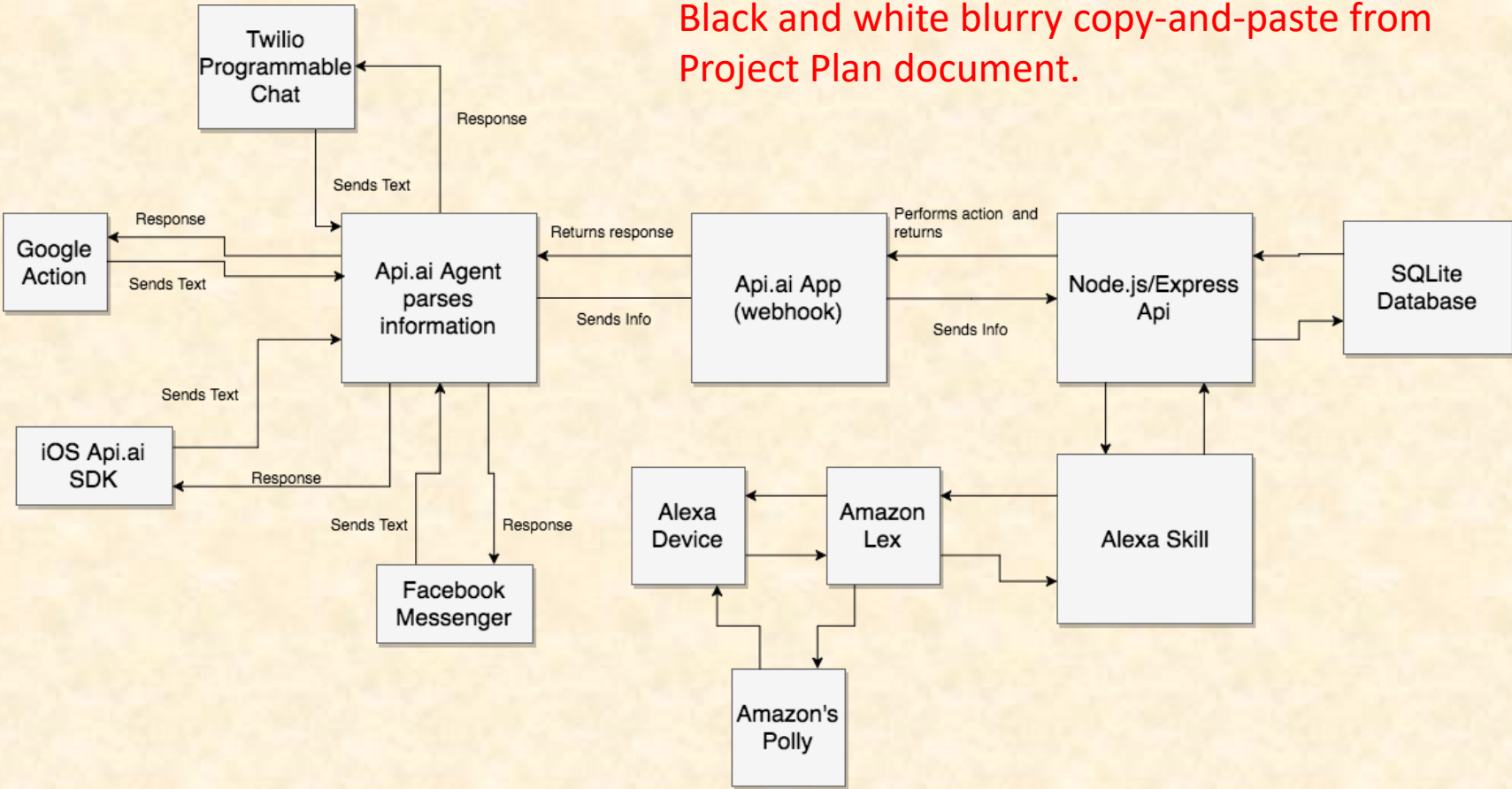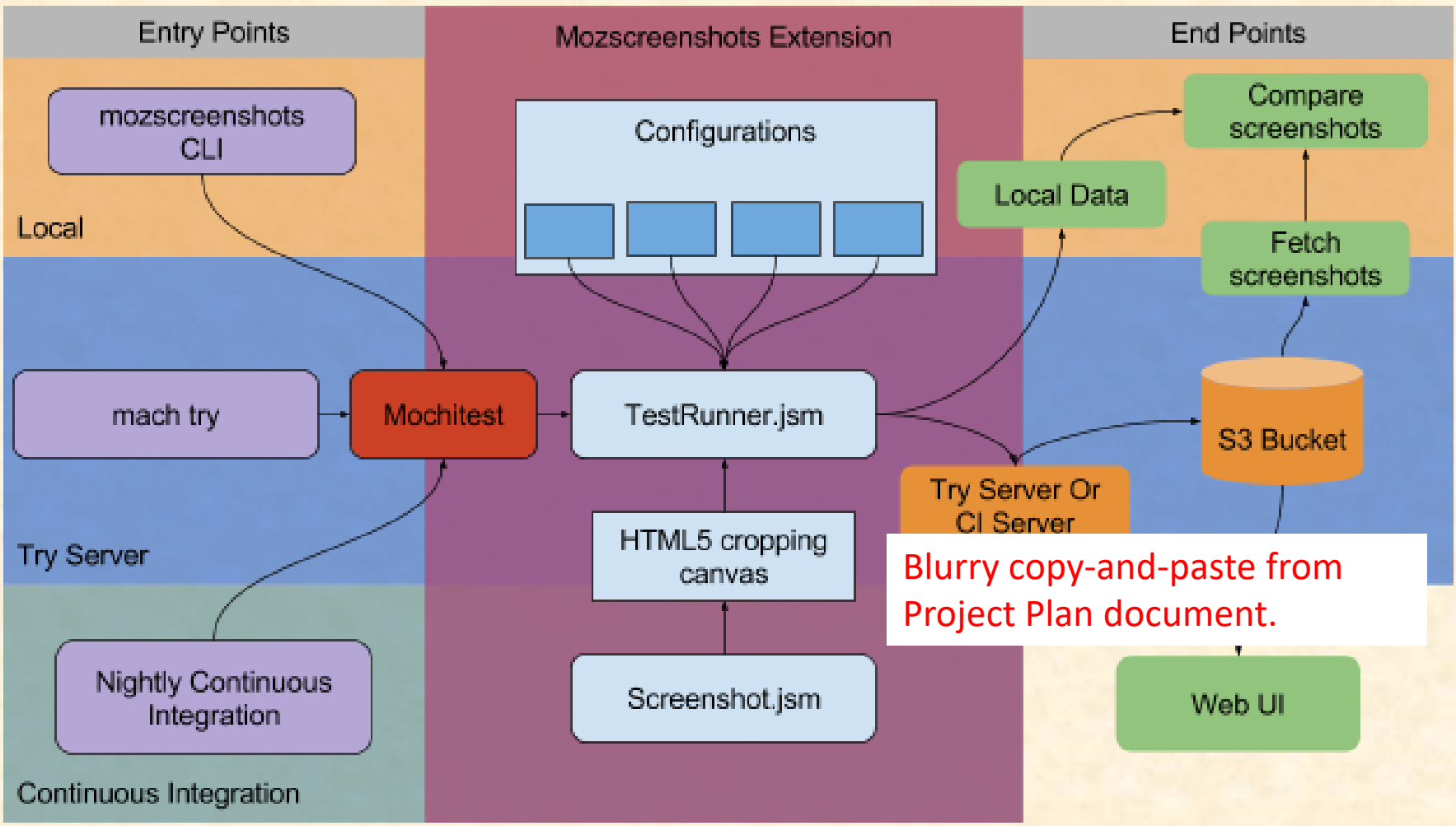
Read this carefully.

System Architecture

Team [Team Name] Project Plan Presentation

System Architecture

System Architecture

Black and white blurry copy-and-paste from Project Plan document.

System Architecture

System Components

- Hardware Platforms
  - Point 1
  - Point 2
  - Point 3
  - Etc…

- Software Platforms / Technologies
  - Point 1
  - Point 2
  - Point 3
  - Etc…

List your hardware and software platforms including all of the technologies that your project will use.

Delete this textbox.

Risks

- Risk 1
  - Description
  - Mitigation
- Risk 2
  - Description
  - Mitigation
- Risk 3
  - Description
  - Mitigation
- Risk 4
  - Description
  - Mitigation

Articulate your major risks.

For each risk, describe what the risk is and how you plan on mitigating it.

DO NOT duplicate this slide. All of your risks must fit on this one slide.

Delete this textbox.

Questions?