MICHIGAN STATE UNIVERSITY

01/23: Schedule and Teamwork

The Capstone Experience

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Spring 2018

From Students…
…to Professionals

Announcements

- Project Plan Presentation Conflicts
  - Request from TAs and Dr. D.
  - Ask now!
- Amazon Information Session
  - 7:00-9:00 p.m.
  - Anthony 1279
- Capstone Lab
  - Take out the garbage.
  - Keep the lab clean.
  - Check the PowerPoint on the LCD TV. Email me if busted.
- Alumni Distinguished Scholars
  - Friday, January 26, February 2
  - 2:00 pm-ish
- Issues? Problems? Questions?

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
  - ~~01/18: Status Report Presentations~~
  - 01/30: Project Plan Presentations
  - 02/20: Alpha Presentations
  - 04/03: Beta Presentations
  - 04/23: Project Videos
  - 04/25: All Deliverables
  - 04/26: Design Day Setup
  - 04/27: Design Day
  - 05/03: Project Videos

Hint: Plan for your Alpha Presentation in your schedule.

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
  - GNU RCS (Revision Control System)

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

[3 of 6]

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

Spring 2018 Grade Distribution Goal	
Grade	Number
4.0	120
3.5	0
3.0	0
2.5	0
2.0	0
1.5	0
1.0	0
0.0	0

Grading

[5 of 6]

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 20 out of 20.
- I did a lot of research about stuff we never used.
- Etc…

Grading

[6 of 6]

- We reserve the right to make changes with sufficient notice.
- No special consideration will be given for final grades including but not limited to
  - 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,
  - commute to MSU,
  - graduation,
  - mortgage,
  - wedding,
  - visa status,
  - ability to enroll in CSE498 next semester,
  - 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

1. Describe the technical contributions (or lack thereof) of each team member, starting with you. 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.
2. Describe the team contributions (or lack thereof) of each team member, starting with you. That is, describe what each team members 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.
3. Whom do you feel did the best (either in effort or overall contribution to the team)? Why? Be specific.
4. Whom do you feel did the worst (either in effort or overall contribution to the team)? 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?

[1 of 2]

All-Hands Meetings

- ~~01/23: Schedule and Teamwork~~
- 01/25: Resume Writing and Interviewing
- 01/30: Team Project Plan Presentations
- 02/01: Team Project Plan Presentations
- 02/06: Team Project Plan Presentations
- 02/08: Team Project Plan Presentations

What's ahead? [2 of 2]

- Project Plan Documents and Presentations
  - PowerPoint Template
    - Download Now
    - Read the Read Me Slides (Over and Over and Over…)
  - Submission
    - Both Project Plan Document and PowerPoint Slide Deck
    - Due 4:00 a.m., Tuesday, January 30 ← Get on it now!
    - See Submission Instructions in Template
  - Presenting
    - 6 Teams Per Meeting Over 4 Meetings
    - Schedule Posted Sunday Evening
    - Strict 13 Minute Time Limit
    - Use Team Member Laptop
      - Bring Power Cord
      - Test In Meeting Room (in Advance)
    - Rehearse
    - 5% of Final Grade
    - Business Casual Dress ← *Nota Bene*!
  - Formal Team Photos
    - Immediately Following Meeting
    - In Capstone Lab
  - Schedule Conflicts
    - Only for Interview Trips
    - Notify Dr. D. Well In Advance

Read Me (Delete this slide.)

[1 of 2]

- 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 (April 26) and on budget ($0).
  - The time limit for your presentation is 13 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 your presentation. Business casual does not include sneakers, hats, coats, hoodies, or t-shirts. Google "what is business casual."
  - "Formal" team photos of the presenting teams will be taken in the Capstone Lab immediately following these all-hands meetings. Plan on it.

DELETE ME.

Read Me (Delete this slide.) [2 of 2]

- 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 working 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 GM Project Plan".
  - 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 four meetings, all teams must be prepared to present on the first day scheduled, Tuesday, January 30.
  - 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
  - Email your Word Document and PowerPoint slide-deck to Dr. D. by 4:00 a.m. on Tuesday, January 30. (Think Monday night.)
  - 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.ppt" as in "team-urban-science-project-plan-presentation.ppt".
  - Attach the Windows Word source file named "team-[team-name]-project-plan-document.docx" as in "team-urban-science-project-plan-document.docx". (Submit the Word source file, not a PDF.)

MICHIGAN STATE UNIVERSITY

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>

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Spring 2018

From Students…
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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 TEXT BOX.

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 TEXT BOX.

Screen Mockup: <Title 1>

You may include as many screen mockups as you have like, but you must include at least two examples.

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

Give each mockup slide a title.

See below for examples and instructions.

DELETE THIS TEXT BOX.

Screen Mockup: <Title 2>

You may include as many screen mockups as you have like, but you must include at least two examples.

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

Give each mockup slide a title.

See below for examples and instructions.

DELETE THIS TEXT BOX.

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).

Notes on Making Your Mockups

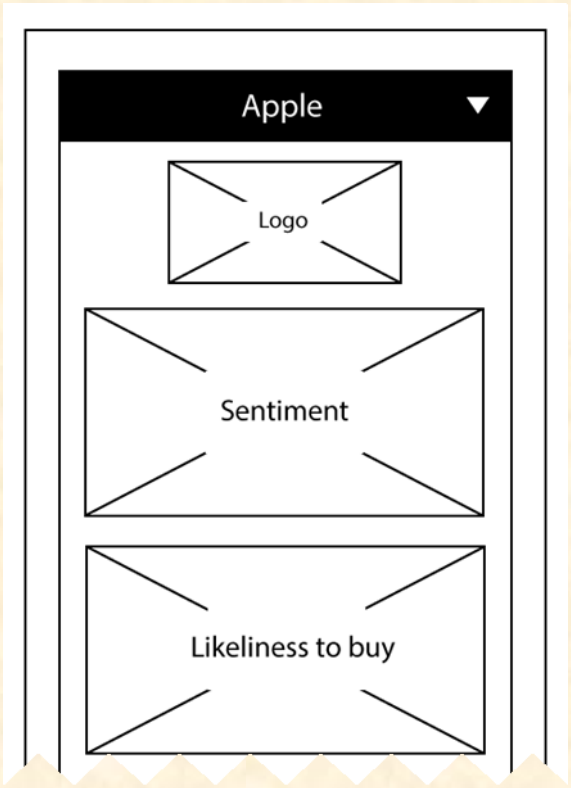
Delete this slide.

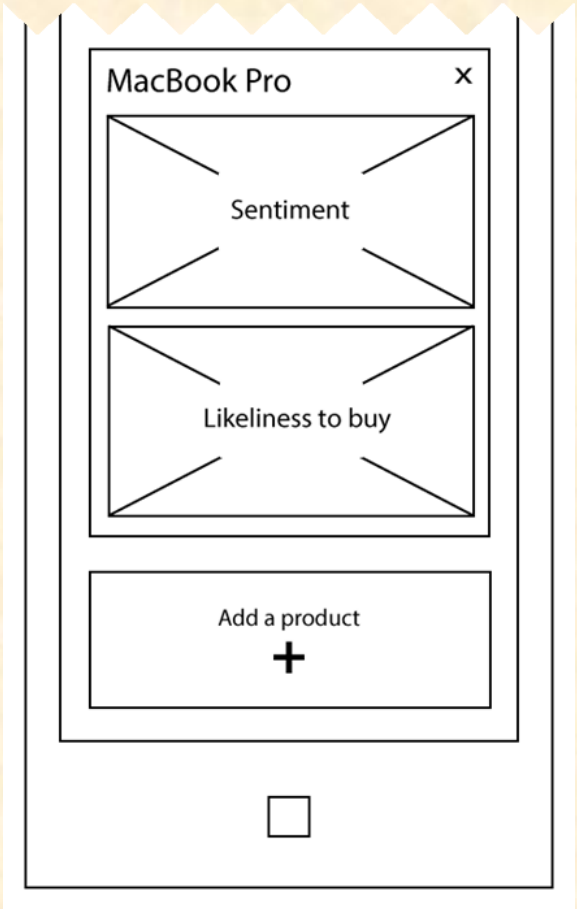
DELETE ME.

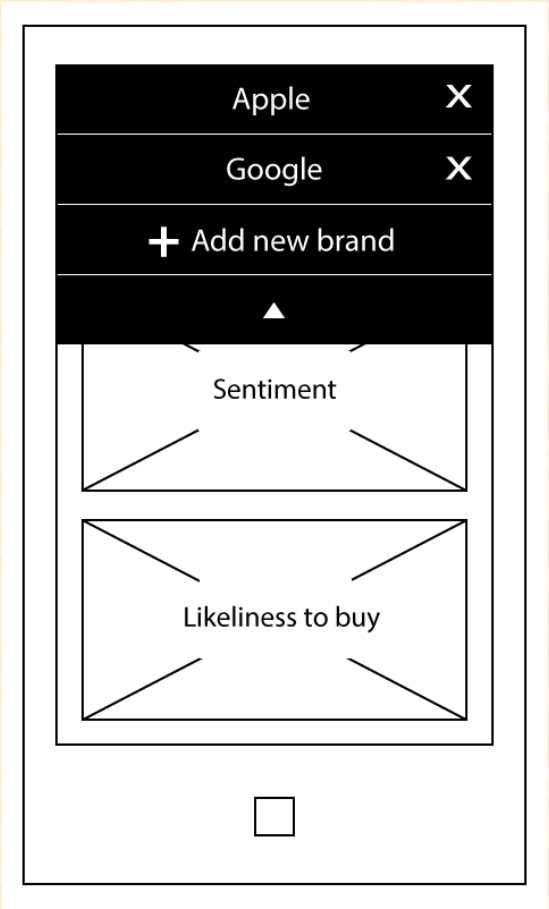
Example Screen Mockups

Delete this slide.

Screen Mockups: Phone Interface





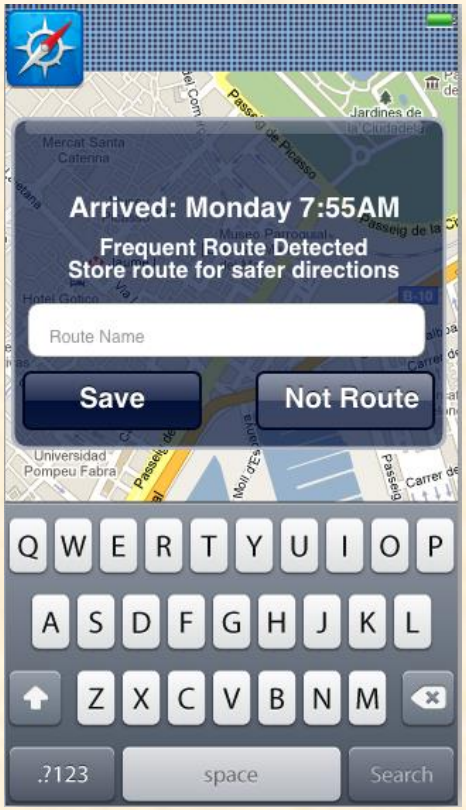


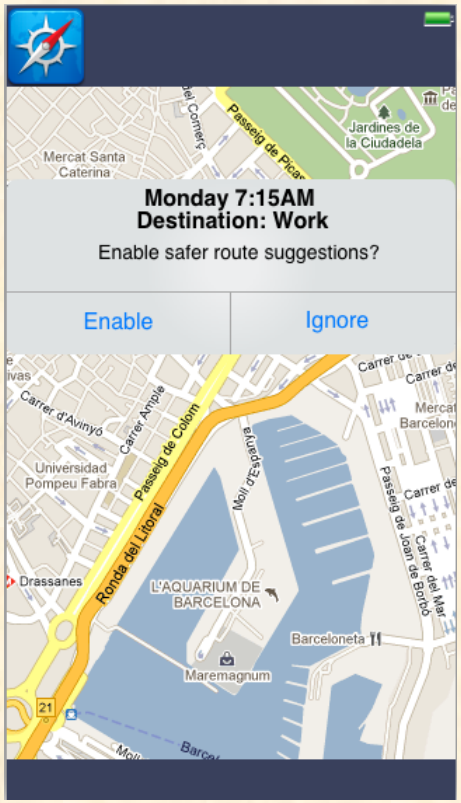
DELETE ME.

Example Screen Mockups

Delete this slide.

Screen Mockup: iOS Application





DELETE ME.

Technical Specifications

- Point 1
- Point 2
- Point 3
- Etc…

List the technical components of your project.

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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 TEXT BOX.

System Architecture

Notes on Making Your Diagram
Delete this slide.

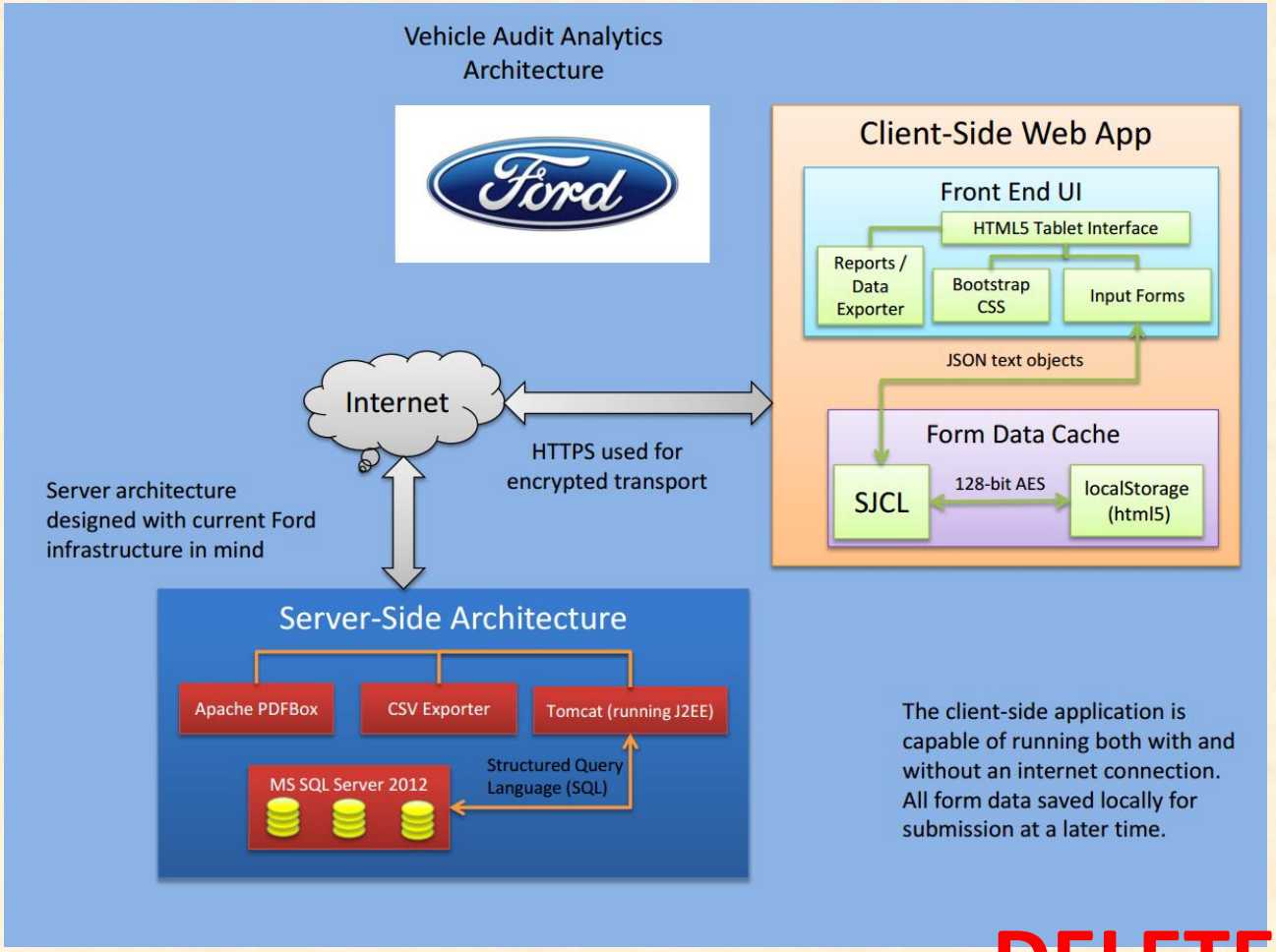
- Draw your system architecture diagram natively in PowerPoint; do not cut-and-paste a diagram from your project plan document.
- Create your system architecture diagram in a separate PowerPoint file.
  - Use a white background with a blank slide layout.
  - Use Home > Arrange > Group to group all of 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),
  - 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 ME CAREFULLY.

DELETE ME.

System Architecture

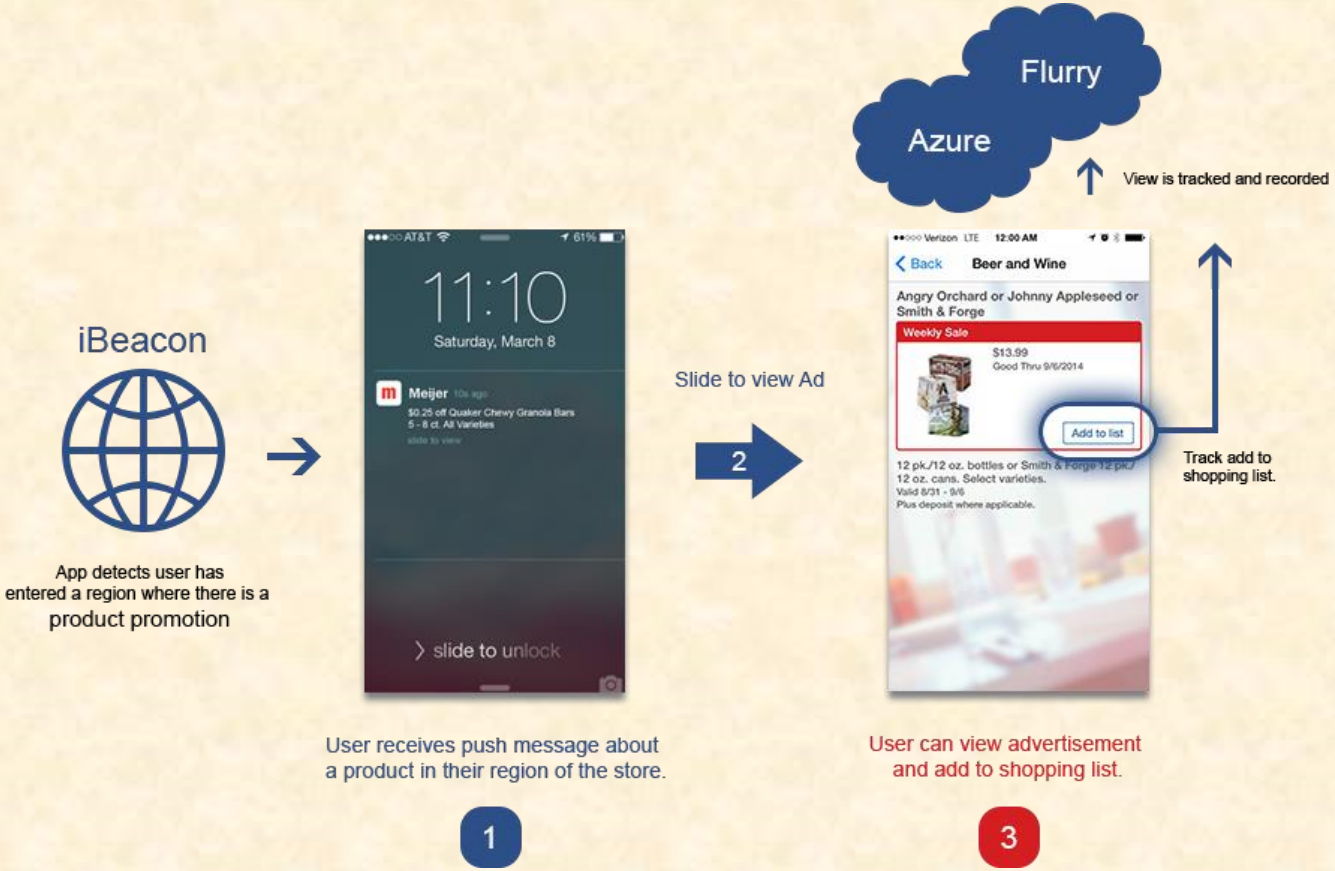
Example System Architecture
Delete this slide.



DELETE ME.

System Architecture

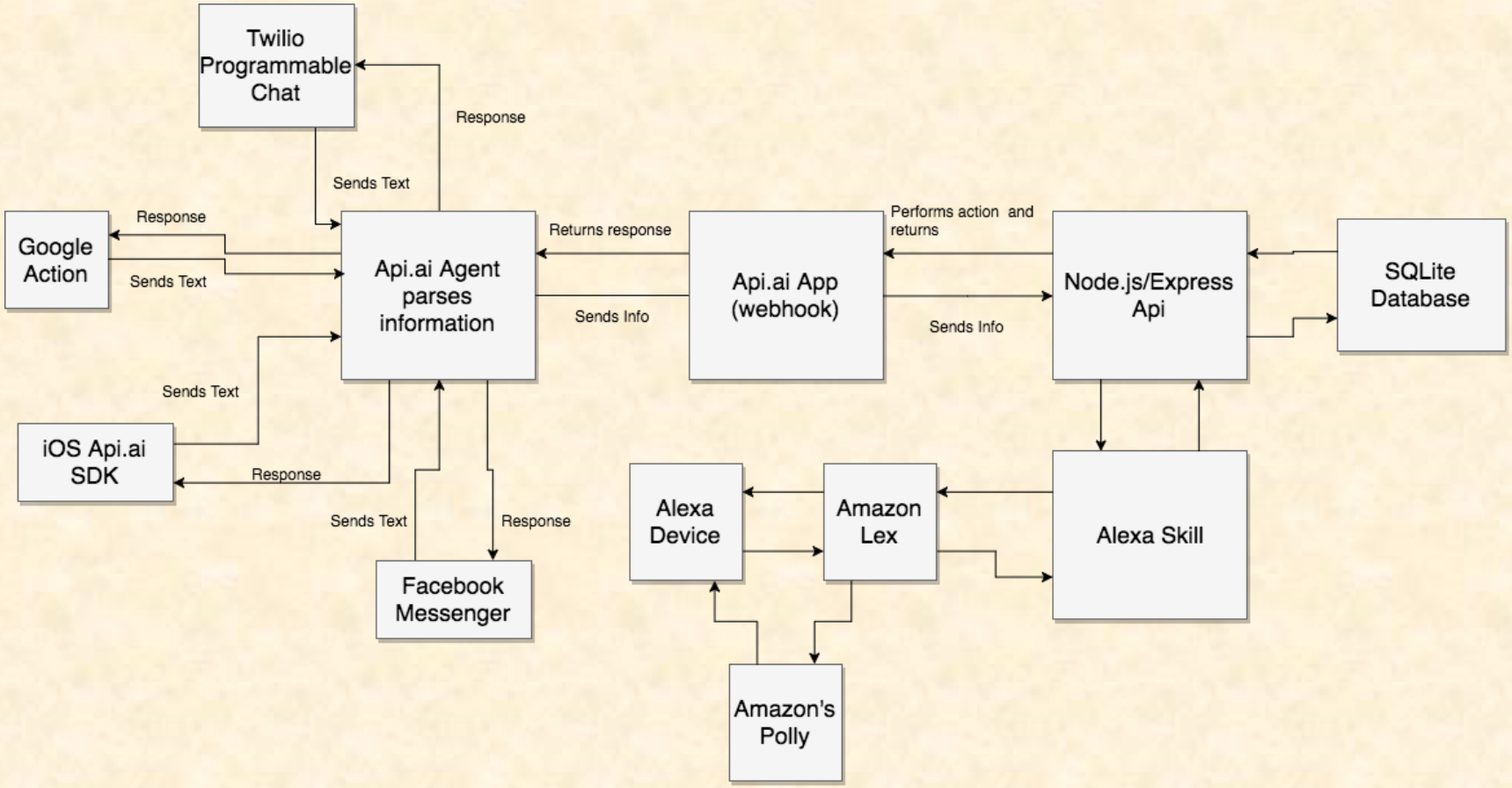
Example System Architecture
Delete this slide.



DELETE ME.

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

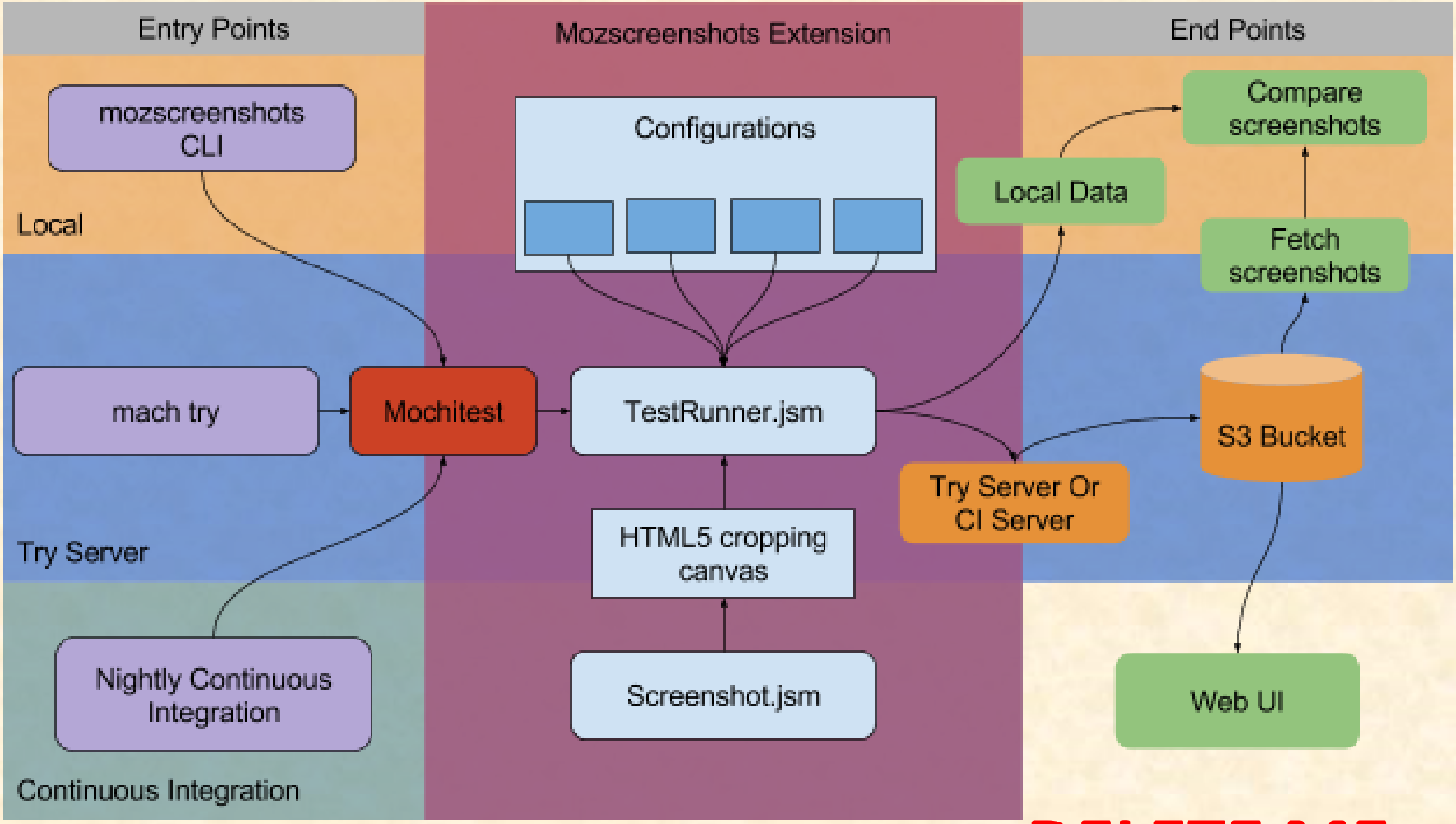
System Architecture: Bad



DELETE ME.

Blurry copy-and-paste from Project Plan document.

System Architecture: Not Good



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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.

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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.

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Questions?