DESIGN PROPOSAL ASSIGNMENT & PROJECT PLANNING

WEEK 6, STUDIO DAY 1

LEARNING OBJECTIVES

6- Present technical ideas and solutions graphically, orally, written, and through prototype demonstrations.

→ 6.1 Compile idea generation, stakeholder needs, and contextual information to create and deliver an oral/visual design proposal (pitch) presentation.

5 - Apply common workplace practices, tools and software in a semester long team project,

→ 5.1. Break down a project into tasks and create a dynamic, shared, and continuously updated basic project schedule / Gantt chart.

DESIGN PROPOSAL SUMMARY

- **Due next week, Oct 4, 5 pts, team grade**
- Team oral presentation to propose the best course of action
- Individual demonstrations of each of concepts considered by the team
  Each person to **make a "looks-like" prototype** of a different concept
- 12 minutes in length, around 8-10 slides
  - *Need a timekeeper*
- Demonstrate each of your prototypes
  - Within flow of presentation, within the allotted time
  - Prototype worth 5 pts, individual grade
- Include a *preliminary* project plan
- Dress code is business *casual*
- CITE your sources**, use IEEE! *(and they should be _____ & _____?)*
- *Check out the library's EPICS resource site.*
- Your mentor will give a go/no-go decision on your team's proposed direction within the week

ASSIGNMENT OVERVIEW –

https://www.youtube.com/watch?v=7iECvtY_Nzo

- **Old content at the beginning - Start at 1:58**

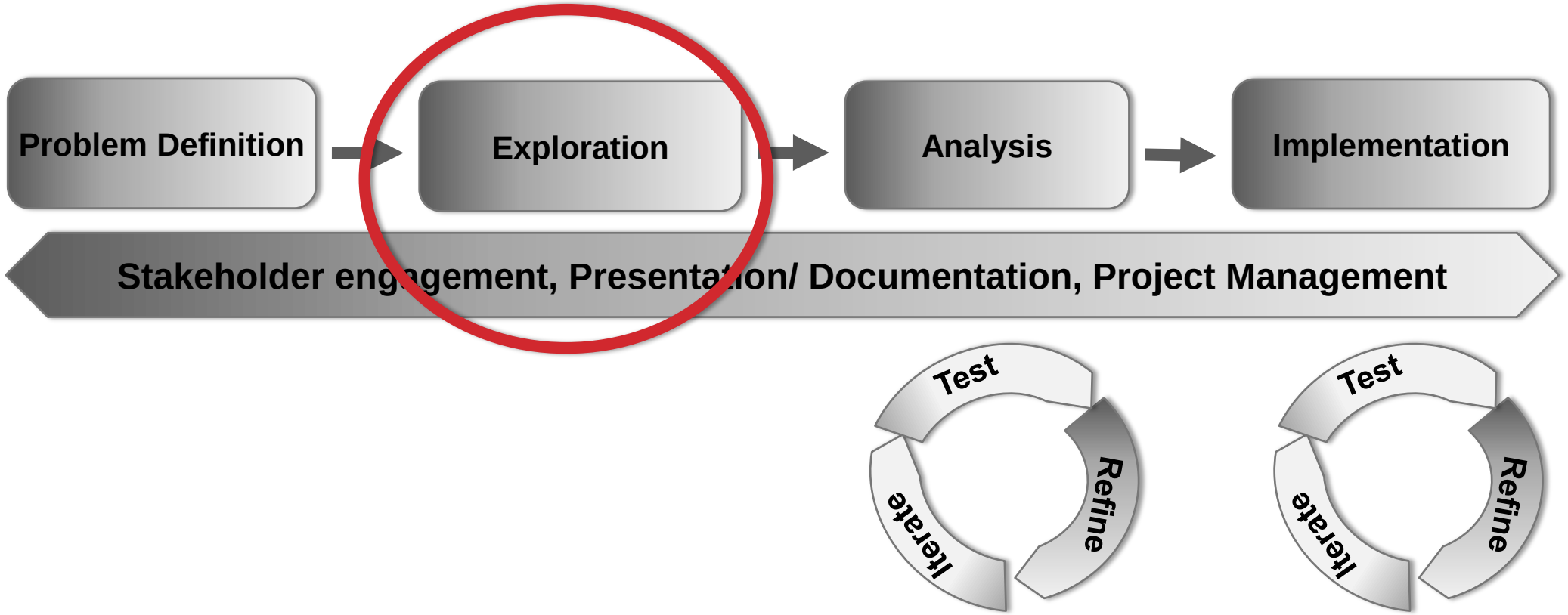
EPICS 151 AND COURSE DELIVERABLES

Yosef Allam

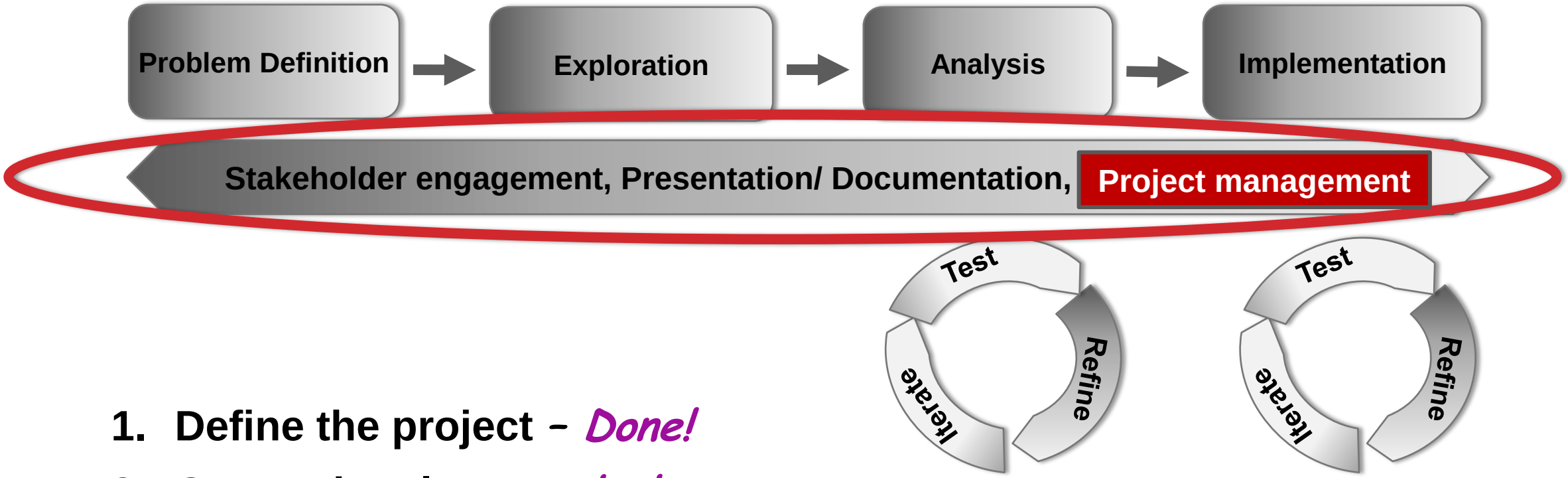
Design EPICS I Weekly Schedule Fall 2016 V1 *(subject to change, check back)*

Date (Mon)	Week	Project Studio 1 (Monday or Tuesday, Engineering Annex)					Project Studio 2 (Wednesday or Thursday, Engineering Annex)					Graphics (Wed, Thu, or Fri, CT129)			
		Due	Pre-Class	Topic	Assigned	Learning Objective	Due	Pre-Class	Topic	Assigned	Learning Objective	Due (SW HW due Tue 11:59 PM on BB)	Topic	Assigned	Learning Objective
Aug 22	1		Welcome Email	Introduce course, instructor, design log, marshmallow challenge in mini-teams.	IDEO video	3.1		Buy Comp. Notebook IDEO Video Syllabus & Course Map	Where do problems come from? Bug lists; "Fix the classroom" exercise.	Buglist, problem definition, and solution, on food.	1.1		Field & Engineering Sketching: Why hand sketching? Design, lettering, Human Figure, Landscape	Sketchbook (I); Process with Lettered Instructions; Landscape with Human Figure (I)	7.2, 7.3, 7.5, 8.8
Aug 29	2		Food solutions; mini-teams with informal presentations	Part 1: Problem Definition Part 2: Stakeholders		1.2, 2.4, 2.5		5 Dysfunction Pre-reading	Team work part 1 (5 dysfunctions), Team Assignments	Videos, User Empathy Reflection (I)	4.1, 4.2	In-class: Process w/ Lettered Instructions; Landscape w/ Human Figure (I)	Field & Engineering Sketching: 1-Point & 2-Point Perspective, Isometric Pictorials	Perspective & Isometric Drawings (I)	7.1, 8.5
							Release Call For Proposals								
Sept 5	3	**Labor Day : NO EPICS 151 CLASS Mon 5th or Tues 6th** ***(note: you may have other classes in session Tuesday)***					Design Log Food Desert Reflection & Notes	Read Call for Proposals; empathy articles	Part 1: Project questions. Observing and Interviewing stakeholders. Part 2: System breakdowns	Problem Definition	1.3, 2.4, 2.5	In-class: Perspective & Isometric Drawings (I)	Field & Engg Sketching: Obliques, 3rd Angle Ortho Multiview Projections, Ellipses, Dimensioning	Ortho, Iso, Dim 1 Packet Portion (I)	7.1, 8.4, 8.8
Sept 12	4		Draft Problem Definition	Scholarly and Authoritative sources, and guided research. (meet @ Engg Annex lower classroom) Problem Definition Checkpoint	Attend 1-2 SME talks	2.1, 2.2	User Empathy Reflection (I)	Problem Definition	Part 1: Finalize Problem Definitions. Project questions. Begin idea generation. Part 2:Team contract.	Team Contract (T); Refined Problem Definition	1.1-3, 2.3, 4.1, 4.5		Intro to SolidWorks: setting up, interface, intro to CAD sketching, reading orthographic drawing	SolidWorks HW 1 (I)	8.1
Sept 19	5	Team Contract (T)	Refined Problem Definition;	Part 1: Idea generation. Part 2: Rapid prototyping - how and why. Workshop safety and tour.	Idea log peer feedback; Looks-like Prototype (I)	5.3, 3.2			Focusing and decision-making tools.	Project Proposal (T)	5.4	Blackboard: SolidWorks HW 1 (I)	SW: Basic part modeling; design intent, sketching tools, contours.	SW HW 2 (I)	8.9, 8.10
Sept 26	6		360 Review Reading	Part 1: Teamwork part 2, peer reviews, 360 reviews. Part 2: Presentation skills, and overview of Proposal		4.1-5, 6.1	Online shop safety quiz		Part 1: Project Planning Part 2: Why Sketching?	Project Plan (T)	5.1,5.2, 7.1?	BB: SW HW 2 (I)	SW: Features and applied features.	SW HW 3 (I)	8.9, 8.10
Oct 3	7	Looks-Like Prototype (I); Project Proposal (T)		Team Presentations: Design Proposal; 4-5 "Looks-like" prototypes; pitch & justify best idea.		6.1, 3.2,		Teammate Evaluation	Part 1: conduct 360 review Part 2: confirm chosen design direction		4.1-5, 3.4	BB: SW HW 3 (I)	SW: working with planes, multiple bodies, modeling (equation, variables, Boolean)	SW HW 4 (I)	8.9, 8.10
Oct 10	8			Part 1; Breaking down a big project: Subsystems and interfaces. Part 2: Works-like prototype: why / how, design of prototype tests.	Works-like prototype (T)	1.3, 2.3, 3.3, 3.5		Industry research, Design Log notes	Part 1: Subsystems approval and direction. Part 2: Risk assessment	Testing protocols and safety plan	1.3, 3.6	In-class: Ortho, Iso, Dim 1 Packet Portion (I), Sketchbook (I)	Field & Eng Sketching: Auxiliary Views, Section Views, Detail Views, More Dimensioning	Auxiliary, Section Views, Dim2 Packet Portion (I)	8.6, 8.7, 8.8
17-Oct	9	**FALL BREAK -- No class Mon 17th or Tue 18th**					Testing Protocol w/ Safety Plan		Part 1: Team time - subsystems, testing, prototypes. Part 2: Overview of susbystems report.	Subsystems Report (I)	3.4	BB: SW HW 4 (I)	SW: sweep, shell, split, revolve, dome, patterns, ribs, holes.	SW HW 5 (I)	8.9, 8.10
Oct 24	10	Subsystem functionality testing (T)	*interview an engineer or scientist*	Part 1: Subsystems Testing Part 2: Technical writing		3.3, 3.4, 3.5, 6.3			Stakeholder feedback on works-like prototype. Coaching of design iterations.	Stakeholder Feedback	2.5, 3.1, 3.4	BB: SW HW 5 (I)	SW: Assemblies and exploded views; smart fasteners.	SW HW 6 (I)	8.9, 8.10
Oct 31	11	Iterations based on feedback (T)		Subsystem testing.		3.3-5	Subsystems Report (I)		TBD Part 1 Embedding graphics, tables.Part 2- validating claims		6.2, 6.3	In-class: Packet Corrections (I); Auxiliary, Section Views, Dim2 Packet Portion (I)	Field & Engg Sketching: Working Drawings; Field and Engg Sketching Mini-Exam		7.1-7.5, 8.1-8.9, 8.12
Nov 7	12	Interface testing iterations (T)		Prototype testing.		3.3-5	Project Plan Due (T)		Overview of final report, tradeshow presentations.	Final Design Report (T); Trade Show Presentation (T)	5.6, 6.2, 6.3	BB: SW HW 6 (I)	SW: Drawing sheet, dimensioning, Bill of Materials, design intent.	SW HW 7 (I)	8.6, 8.7, 8.8, 8.11, 8.12
Nov 14	13	Works-Like system testing (T)		Prototype testing.		3.3-5	Works-Like Prototype Testing Progress (T)		Part1: Wrap up prototype tests. Part 2: Materials list and cost estimation.		3.3-5, 5.5	BB: SW HW 7 (I)	SW: Exam review, tips & tricks		8.9, 8.10
Nov 21	14	Works-Like system testing (T)		Part 1: Prototype testing (for teams not cleared yet) Part 2: Other catch-up		3.3-5	**THANKSGIVING -- No class Wed 23rd, Thu 24th or Fri 25th**					**No GRAPHICS**			
Nov 28	15	Final Teammate Evaluation (I)		Part 1: Trade fair presentations and artifacts. Part 2: Supervised feedback: peer and team.		6.2, 4.4			Course evals. Supervised team time.		4.4	In-class: Design Log (I)	SolidWorks Exam. 180-minute CSWA exam is mandatory.		8.9, 8.10
Dec 5	16	Final Design Report (T); Trade Show Presentation (T)		Exhibit final solution; judging		6.2, 6.3			*EPICS 151 Final Competition 5-7:30 pm Wednesday, Location TBD*		6.2	**No GRAPHICS**			

WHERE ARE WE?


Problem Definition
Exploration
Analysis
Implementation
Stakeholder engagement, Presentation/ Documentation, Project Management
Test
Refine
Iterate
Test
Refine
Iterate

AND A FOCUS ON PM…



1. Define the project – *Done!*
2. Create the plan – *today!*
3. Implement the plan and keep it updated
4. Monitor progress and keep updated
5. Complete and document

Much Iteration Here!

PROJECT PLANNING

Why is it necessary?

- **Is it necessary to write a project plan for getting to school in the morning? *Why or why not?***
- **How about for planning your solo camping trip? *Why or why not?***
- **How about for expanding a bedroom onto the house you grew up in? *Why or why not?***
- **How about if CDOT is analyzing and fixing a road wash-out?**

Why or why not?

PROJECT PLANNING STEPS

List/Breakdown Tasks

Create a Project Plan

Make a Project Schedule

- Anticipate problems
- Establish linkages
- Track the schedule
- Revise the schedule

Assign Task Champions

Designate a PM

Hold team meetings

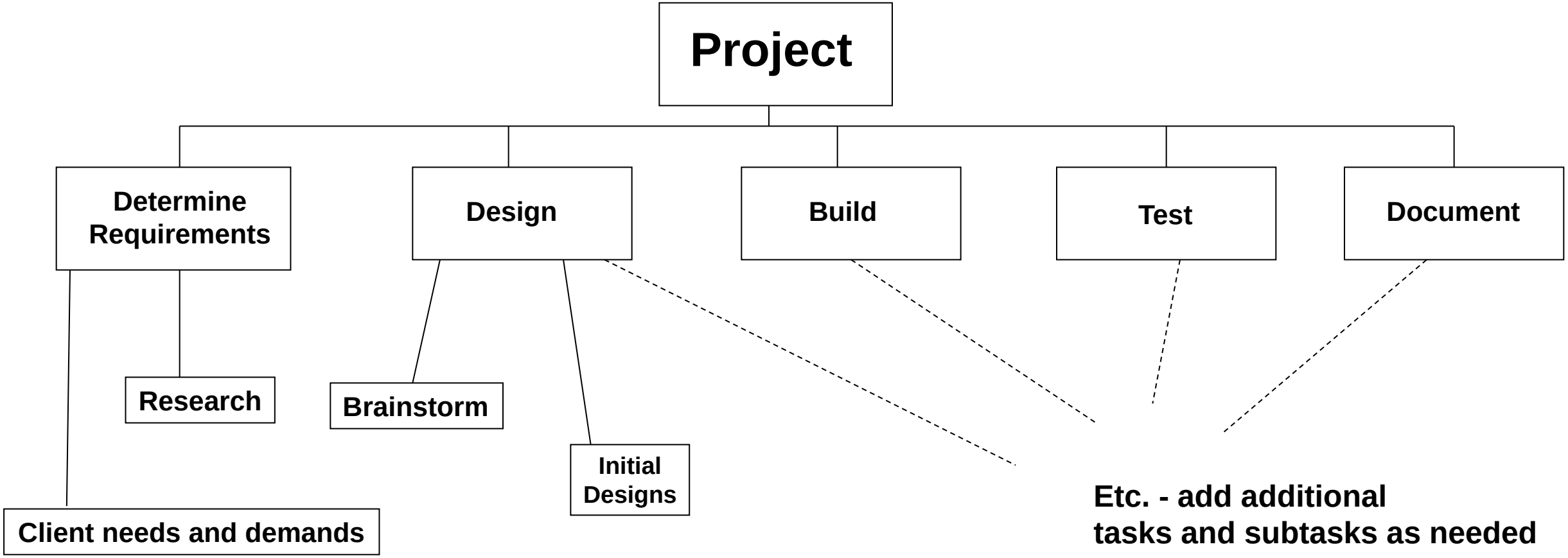
Establish meeting agenda

Solve problems

Meet the deadlines

Revise and Repeat as Necessary

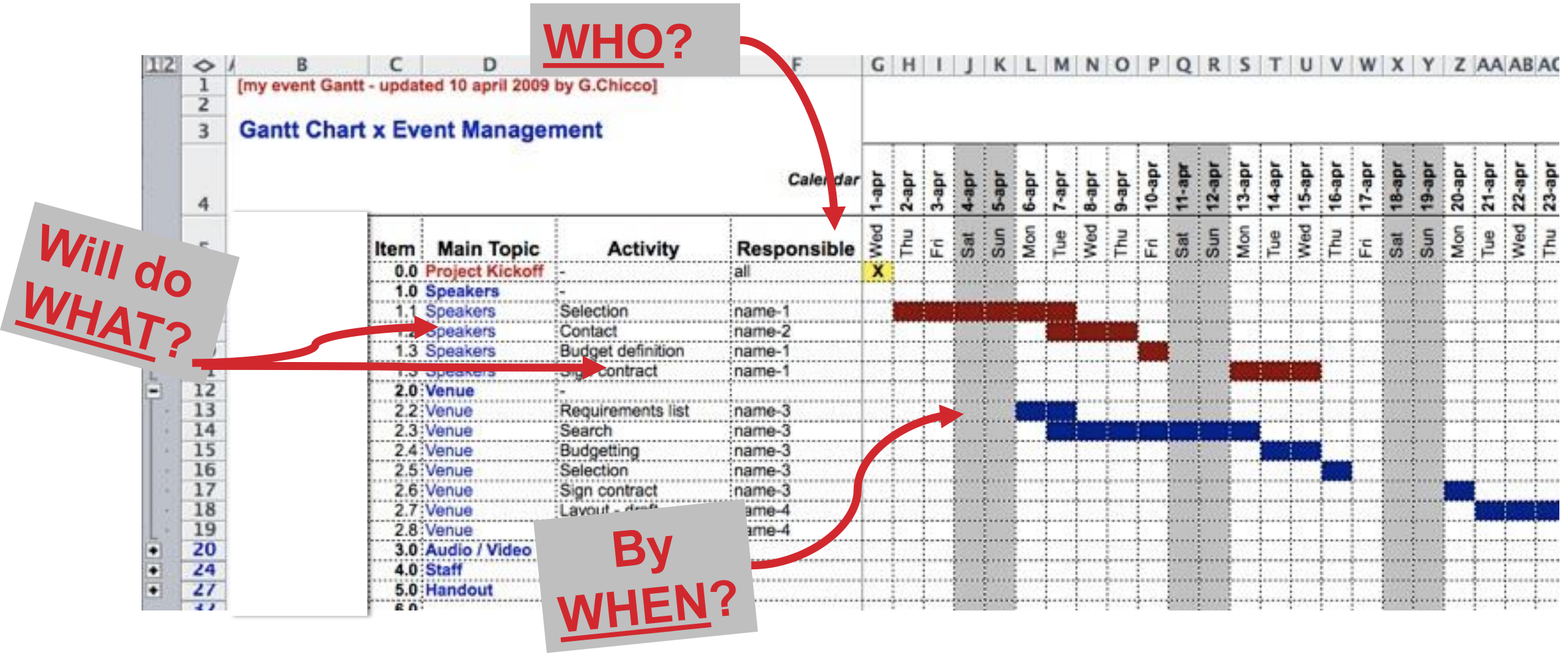
SAMPLE WORK BREAKDOWN STRUCTURE



Based on the WBS, determine sequencing, precedence, and timing of all identified tasks based upon resources and deadlines

PROJECT SCHEDULE – *HIGH LEVEL TASKS ARE DUE BY DESIGN PROPOSAL*

Example of a visual way to plan WHO will do WHAT, by WHEN:



UPDATING YOUR PROJECT PLAN

- **Update and revise your schedule regularly (at least weekly!)**
- **If the project schedule falls too far behind, you should re-plan the remaining tasks to complete on time.**
- **The project schedule should be a planning document that is used real time, not just a project history!**

ASSIGNMENT:
FINAL PROJECT PLAN DUE NOV 10

- **A VISUAL project schedule with detailed tasks (WHAT) with A SINGLE person in charge of each task (WHO) and the due date for which each task is due (WHEN)**
- ***Preliminary plan*** **due in your design proposal on Oct 4**
- ***Final plan*** **due November 10**
  - 8 points, team grade
- ***Rubric and guidelines on BlackBoard***

TEAM TIME

List the tasks your team needs to work on ahead of the assignments *(including research)*

Divide up the tasks

Revisit focusing tools and process, add any last solution ideas

Discuss best options to pitch, and thoughts around prototypes

And, on the project plan.....

TEAM TIME ON PROJECT PLAN

Sketch out a timeline and the major tasks (including questions to research) and subtasks that your team knows it needs to tackle in the upcoming weeks.

Get into details. Make a Work Breakdown Structure

Use the template provided on BlackBoard, or make your own

Put in the key deliverables/deadlines for the course, and any tasks you know will be associated with them.

Now you can create a project plan where each row in the table/spreadsheet gets a task or subtask!

Fill in your task list, the responsible parties, and the timeframes, outside of class.

Columns to the right of the task listings and start/end dates and human resources are the timeline that you can represent visually with horizontal bars.

10-15 minutes

COMING UP NEXT

Studio Day 2

Why Graphics?

Informal review of design logs

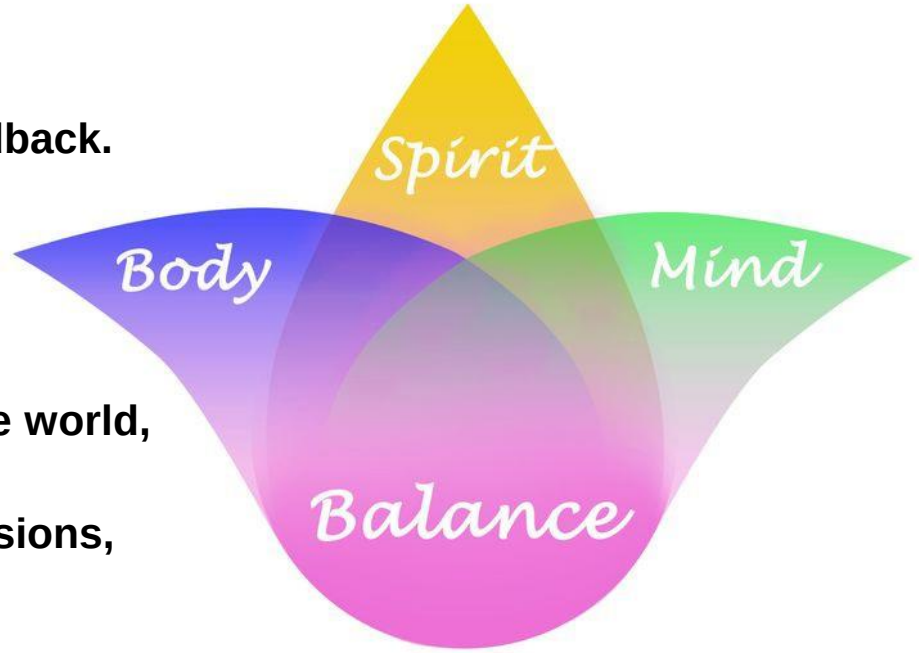
TEAM TIME

→ if you want to work on prototyping, dress appropriately (closed-toe shoes, etc.) and bring your materials

Homework: take and pass shop quiz

Bring design log

AWARENESS TRAINING



We all need people who will give us feedback.
That's how we improve.
Bill Gates

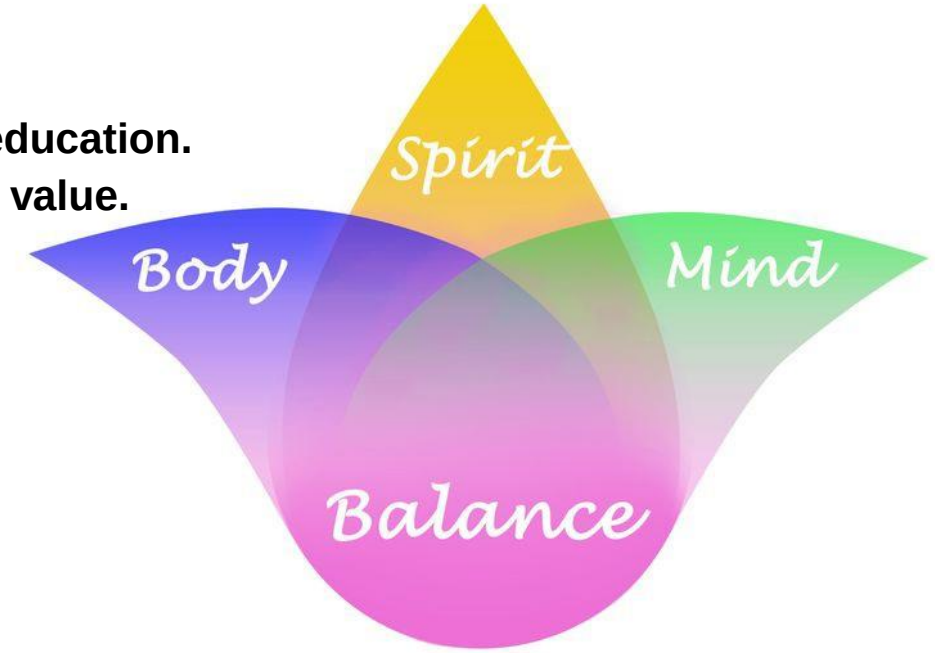
You make decisions, take actions,
affect the world, receive feedback from the world,
incorporate it into yourself,
then the updated 'you' makes more decisions,
and so forth, 'round and 'round.
Douglas Hofstadter

Intuitive diagnosis is reliable when people have a lot of relevant feedback.
But people are very often willing to make intuitive diagnoses even when they're very likely to be wrong.
Daniel Kahneman

Leaders cannot work in a vacuum.
They may take on larger, seemingly more important roles in an organization,
but this does not exclude them from asking for and using feedback.
In fact, a leader arguably needs feedback more so than anyone else.
It's what helps a leader respond appropriately to events in pursuit of successful outcomes.
Jack Canfield

AWARENESS TRAINING

College is about earning a degree and an education.
They are different and each has its own value.
John Kuosman



EMPATHY ASSIGNMENT

Majority Internalized Assignment & Connected with Stakeholder (Community)!

Feedback:

- **Think in terms of your audience and what you want them to absorb (be intentional)**
  - They did not go with you on your trip
  - They did not participate on your research
  - You are not texting or having a conversation with them
  - They may need information presented in different ways (sketches, photos)
  - They are not residing in your mind
- **Use and follow an outline**
- **Ask for different perspectives and assume multiple drafts**
- **Point the direction forward**

TEAM CONTRACT ASSIGNMENT

Great Team Names!

Feedback:

- **Your team is an entity itself**
  - It must be developed and refined (just like your project)
  - It does not happen by chance
  - It takes facilitation, respecting norms, and common goals
- **Be specific on expectations/norms**
- **Set a standing meeting agenda**
  - Include team dynamics as a topic item
- **Show how you care about others by speaking up**
- **You can really help someone see themselves, kindly**

TEAM TIME

Remainder of class

Prepare for your Project Proposal

- **Prototypes – plan or build**
- **Project plan**
- **Decision matrix**
- **Sketches**
- **Etc!**