

TEAM CONTRACT

IDEATION START

WEEK 4, STUDIO DAY 2

AWARENESS TRAINING

The secret to success is constancy of purpose.

-Benjamin Disraeli

If we change our words, we can change our world.

- Andrea Gardner

They say that time changes things,
but you actually have to change them yourself.

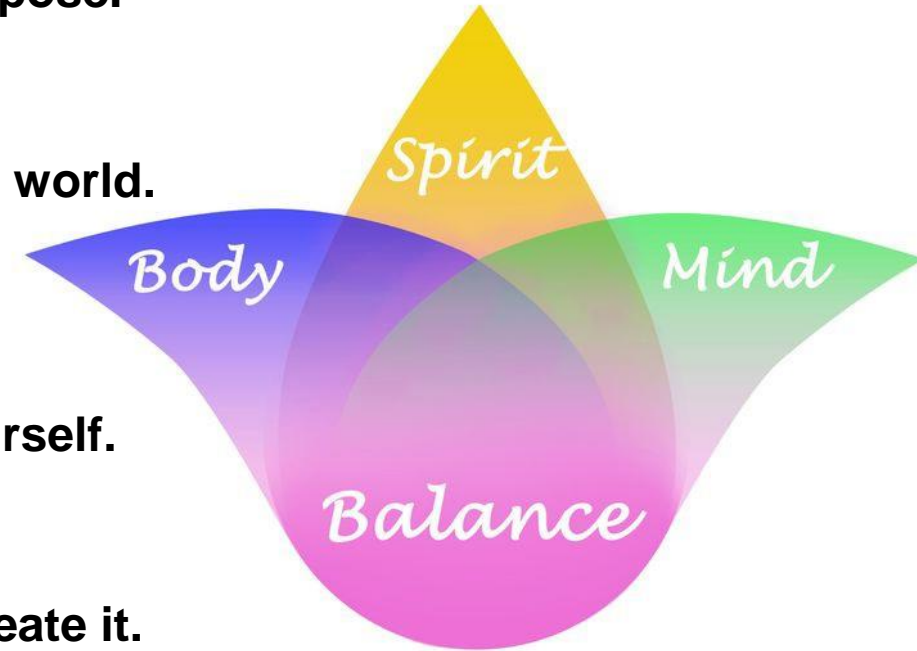
-Andy Warhol

The best way to predict your future is to create it.

-Peter Drucker

It is a funny thing about life;
if you refuse to accept anything but the best you very often get it.

– W. SOMERSET MAUGHAM



LEARNING OBJECTIVES

4 - Determine equivalency and equitably contribute to team efforts

- 4.3. Recognize individual weaknesses, set goals for improvement, and learn from other teammates.
- 4.5. Use team contract as guide for working together and overall code of conduct.

5 - Apply common workplace practices, tools and software

- 5.3. Apply idea-generation techniques to create a diverse pool of project solutions.

GROUP WORK AND PERSONALITIES: DISC

REVIEW OF DISC BEHAVIORAL STYLES (DISC MODEL)

- **D** = Dominance
- **I** = Influence
- **S** = Steadiness
- **C** = Compliance

D I S C IS A UNIVERSAL LANGUAGE

- ▶ **DISC** is a neutral language
- ▶ **DISC** has nothing to do with right and wrong
- ▶ **DISC** has no better or preferred style
- ▶ **DISC** is not a predictor of success or failure

“All people exhibit all four behavioral factors in varying degrees of intensity”

W. M. Marston

IN-CLASS EXERCISE (FROM PRE-READING)

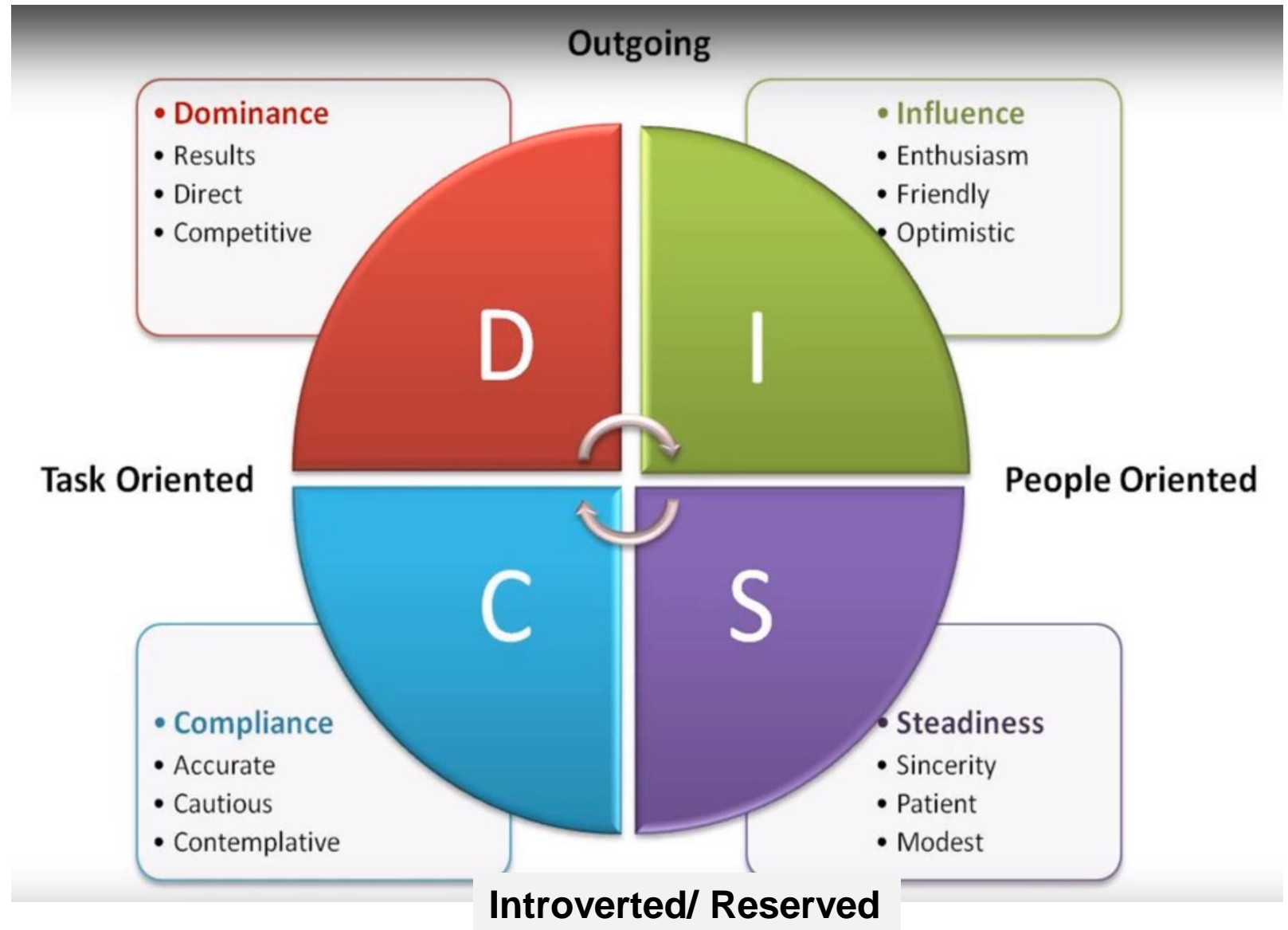
MAP YOUR TEAM

Use the white boards.

Record your team map in your Design Logs.



3-4 minutes



REFLECTION

What thoughts/insights on how this can be used to improve the effectiveness of your team?

What might you do?

What might the team do?

Be intentional – clarify assumptions

3-4 minutes



TEAM CONTRACT

... is a way to get on the same page (**alignment**) with your team members, despite different personalities, different ambitions, and different work habits. **Common set of assumptions and expectations when the impacts of pressure are less.**

- Team objective(s)
- Team roles
- Guidelines for working together
- Consequences for not playing your part



TEAM CONTRACT MAY ADDRESS COMMON TEAM ISSUES

Effective communication method

Participation by all members

Decision-making

Problem solving approaches

Management of conflict or differences

Responsibilities and conduct

OTHER COMMON EXAMPLES:

To **leverage** to people's strengths

To **resolve** conflict

To **influence** each other

To achieve **alignment**

To make **better** decisions

To find **better** solutions

To build **strong, effective** relationships

These mean different things to all of us

**Alignment on expectations – measurable
and intentionally discussed**



TEAM CONTRACT 1/3

Review your team dynamics bug list, your DISC team map, and your reflections on the 5 team dysfunctions.

Discuss team guidelines.

- In working together happily, what is important to each person?
- In working through disagreement/conflict what is important to each person?
- What forms of recognition are important to each person?

measurable and intentionally discussed!



6-8 minutes

TEAM CONTRACT 2/3

Consider the learning outcomes of this course and your personal ambitions at Mines.

Discuss team goal / mission.

→ What precisely do you all want to accomplish together this semester?

→ What is a good team name, considering your mission and your problem statement?

measurable and intentionally discussed!



4-6 minutes

TEAM CONTRACT 3/3

Review your DISC profile and your team map.

Discuss team roles.

→ Who might be especially well-suited for which roles?

→ Think beyond topical roles.... peace-keeping roles, or leadership roles?

measurable and intentionally discussed!



4-6 minutes

TEAM CONTRACT GENERAL CONTENT

... is a way to get on the same page (alignment) with your team members, despite different personalities, different ambitions, and different work habits. Common set of assumptions and expectations established when the impacts of pressure are less.

- Team objective(s)
- Team roles
- Guidelines for working together
- Consequences for not playing your part
- Project Plan / schedule

ASSIGNMENT: TEAM CONTRACT

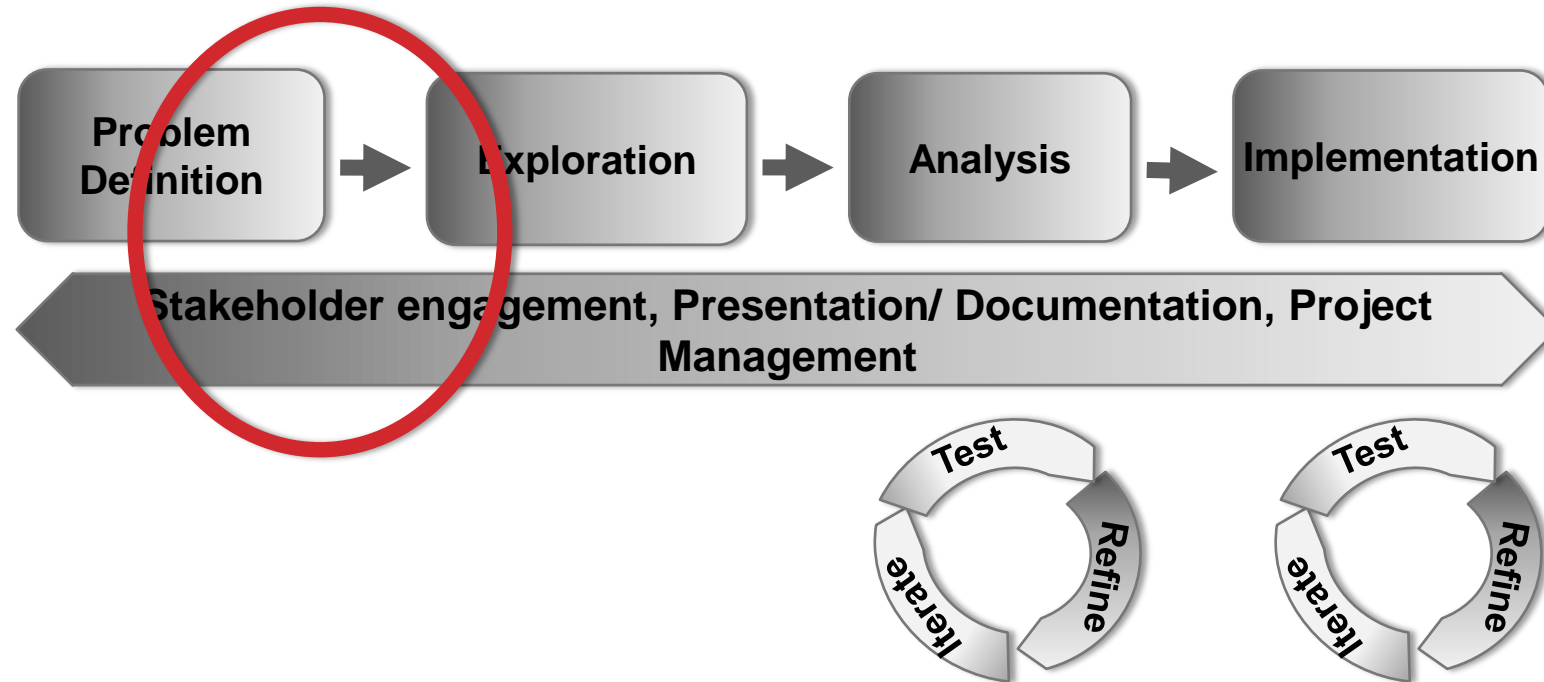
- See posted guidelines & rubric
- Complete all portions of the assignment and turned in a **SIGNED team contract** on September 20th.



IDEATION START

**CAUTION: MUST HAVE PROBLEM DEFINITION
TO PROCEED**

WHERE ARE WE IN THE DESIGN PROCESS?



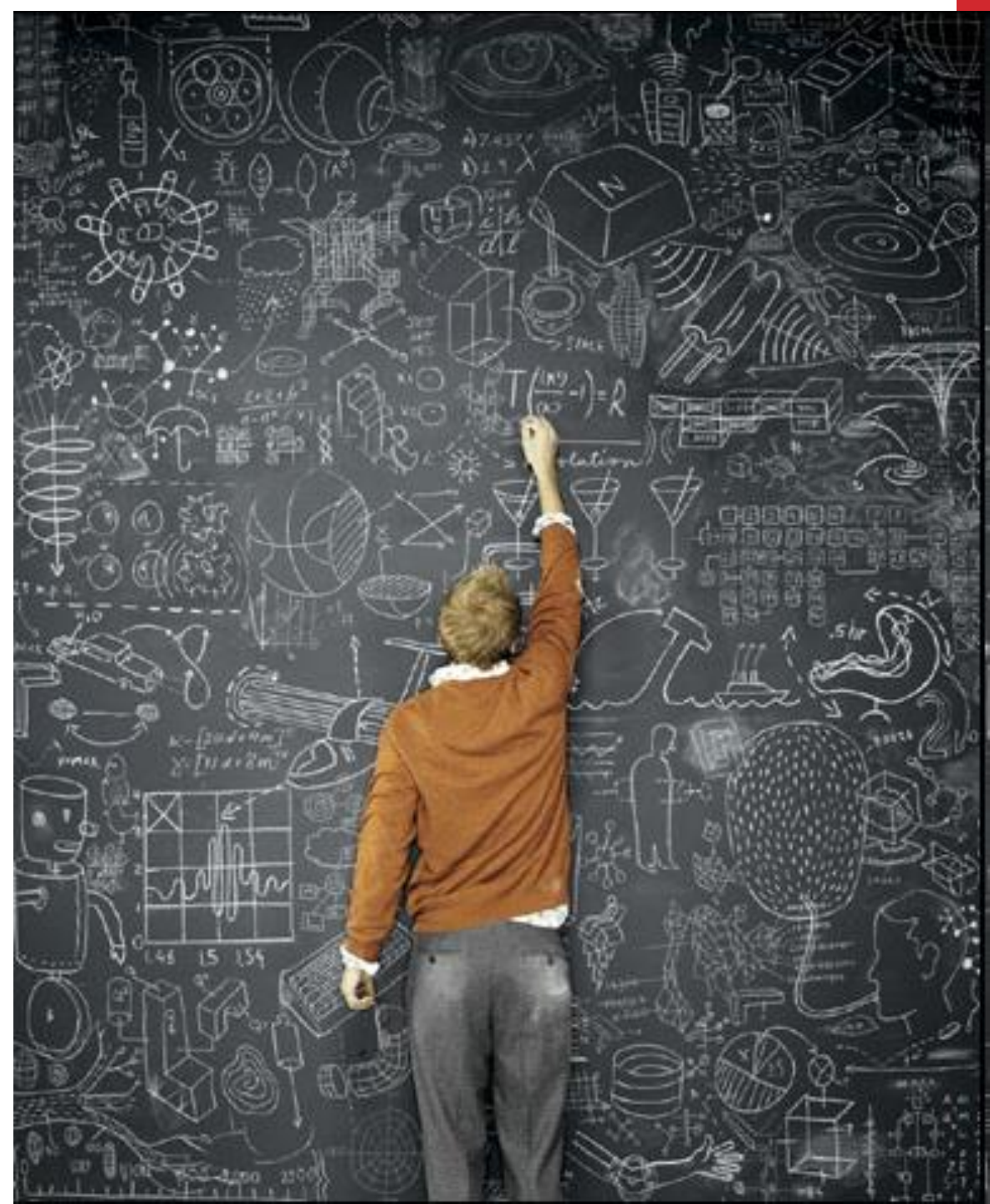
IDEA GENERATION – WHY SO IMPORTANT?



→ The more ideas into the funnel, the better the ideas out of the funnel

MANY TOOLS EXIST, WE'LL COVER THREE:

- 1. Brainstorming (today)**
- 2. Mind mapping**
- 3. Analogies**



IDEATION TOOL 1: BRAINSTORMING

Helps small groups consider all possibilities to a problem before deciding what to do next.

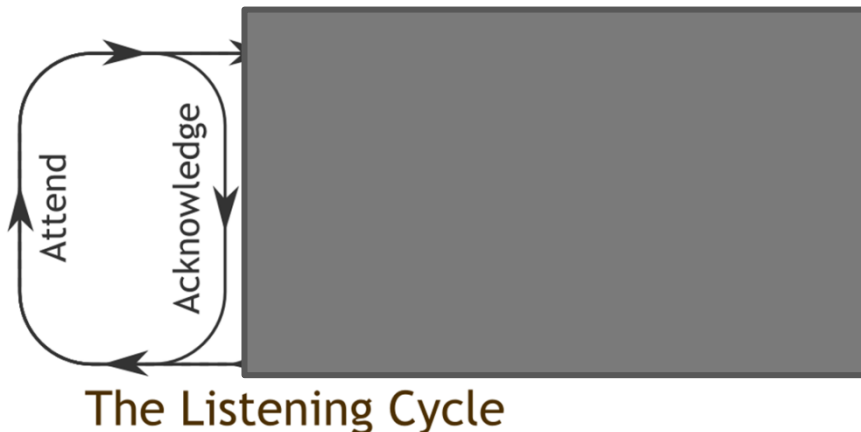
- *Possible solutions*
- *Possible options*
- *Possible problems*
- ... *you get the idea*

→ Helps a team think of many different ideas *quickly*, to sort them out later.

1ST AND FOREMOST...

NO CRITICISM ALLOWED!

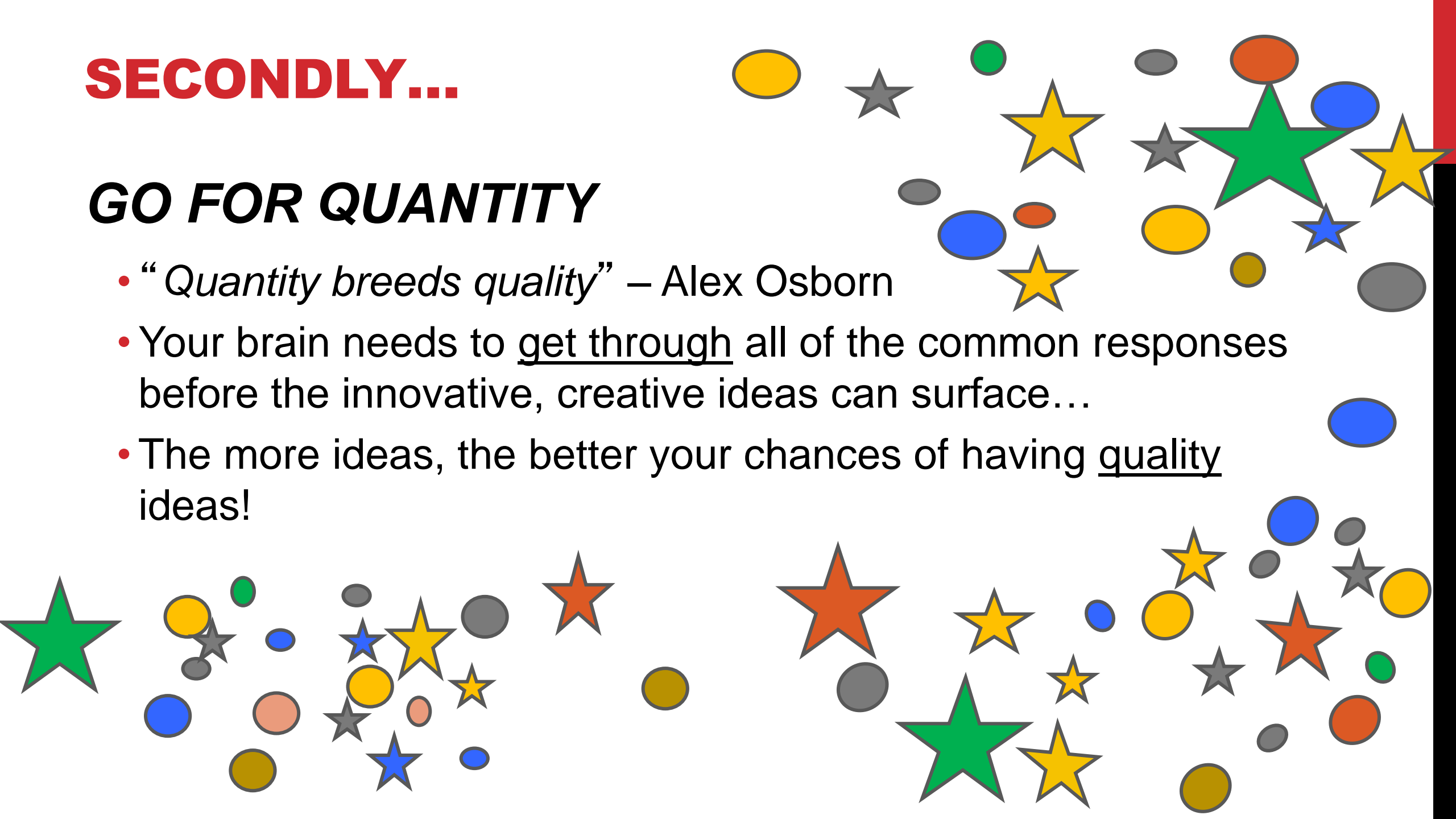
- Our first reaction is to evaluate ideas (your own as well as others')
 - ***Don't do this in a brainstorming session***
- Avoid negative AND positive comments: they eat up time
- Write each spoken idea down, then move on



SECONDLY...

GO FOR QUANTITY

- “*Quantity breeds quality*” – Alex Osborn
- Your brain needs to get through all of the common responses before the innovative, creative ideas can surface...
- The more ideas, the better your chances of having quality ideas!



THIRD RUNNER UP...

HITCHHIKING WELCOME

- One person's idea might produce a similar idea, or an enhanced idea in another member.
- Think “and” instead of “but” when following an idea
- ALL IDEAS should be recorded.



EXAMPLES OF HITCH-HIKING

Solution concepts exist for this problem.

→ Hitch-hiking doesn't mean copying these concepts, but rather building on them to get to a much better solution.



LAST, BUT NOT LEAST...

FREEWHEELING ENCOURAGED

- Off-the-wall ideas are encouraged
 - These often lead to the best (via hitch-hiking)
- Outrageous, humorous, seemingly unimportant, ridiculous, childish

... *write them down!*



A FEW MORE GUIDELINES...

Stay focused on the topic (Free-wheeling - Not Off Roding)

One conversation at a time

Be visual (sketch pictures!)

Use Post-It Notes - *put them on a surface everyone can see*

One idea per Post-it - *this will allow organizing and focusing later*

Make sure everyone in the group puts ideas in

- Go around the circle

READY?



GO!

Brainstorm a million solutions options

Write and draw

Think crazy, think graphically

Build on each other's ideas



10-15 minutes

STOP! *(FOR NOW...)*

Organize your sticky notes and carefully bring them back to class next week.

Continue to think on the problem and add to your lists over the weekend.

→ THINK: root causes, associated problems, user needs

EPICS 151 AND COURSE DELIVERABLES

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	Dimensioning Packet (I)	7.1, 8.4, 8.8
Sept 12	4		Draft Problem Definition	Scholarly and Authoritative sources, and guided research. (Meet @ Arthur Lakes Library) 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. 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			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: Dimensioning Packet (I), Sketchbook (I)	Field & Engg Sketching: Auxiliary Views, Section Views, Detail Views, More Dimensioning	Auxiliary, Section Views Packet (I)	8.6, 8.7, 8.8
17-Oct	9	FALL BREAK - No class Mon 17th or Tue 18th					Project Plan (T); Testing Protocol w/ Safety Plan		Part 1: Team time - subsystems, testing, prototypes. Part 2: Overview of subsystems 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 Packet (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			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)		Part 1: 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			

FRIDAY: SUBJECT MATTER EXPERTS

- Updated on <http://epics.mines.edu/EPICS-151>

NEXT WEEK

Day 1:

- **DUE: Team contract**
- **Idea generation, continued.**
 - **Homework:** Bring all your ideas from today + more!
- **Prototyping**

Day 2:

- **Focusing & Decision Making Tools**

Graphics:

- **SolidWorks**