2.009 Product engineering processes

Are you creative? (check as appropriate)

Yes ✔ No ☐

People who believe they are creative, are; people who don’t, aren't.
“if you think you can do a thing or think you can't do a thing, either way you're right.”

Henry Ford

founder of Ford Motor Company, father of modern mass production

1863-1947
2.009 Product engineering processes
last week

- motivation
- + creativity
- + informed craft
- + process

project theme and context
idea generation strategies
typical PD milestones/structure
2.009 Product engineering processes today

- mini-quiz from Friday
- brainstorming milestone
- project idea fair (tonight)
- teams
- teamwork challenge

informed craft process
Building an innovation team

Friday mini-quiz

innovation recipe?

(motivation + creativity + informed craft + process)

desperation  Alana Peters
sugar + spice + everything nice + wallace  Jacob Tims

---

Motivation  Creativity  Informed Craft  Process

number of students
Building an innovation team

Friday mini-quiz

retention? (motivation + creativity + informed craft + process)
Mini quiz!

One minute

write your name on the top of your index card

list 4 individual creativity strategies
strategy #1
look for the next right answer

guide the left side of your brain to be quiet

strategy #2
look from multiple viewpoints

strategy #3
defer all judgments

tell the left side of your brain to be quiet

strategy #4
challenge assumptions

question assumed boundaries or norms
Number of ideas in 5 minutes improvement after instruction (Lincoln lab)

- **Listed ideas**:
  - Group 1: 100%
  - Group 2: Viewpoints + ideas

- **Viewpoints + ideas**:
  - Group 2: Up to 250%
Brainstorming deliverable for lab this week
at least 20 project ideas in notebook
you might be pleasantly surprised if you have many more

top 5 sketched on separate sheets

everything that follows depends on this!
feasible, preliminary market research
Rigor in breadth
the importance of exploration

![Graph 1: Final review results vs. hours spent on research/brainstorming during ideation phases.]

![Graph 2: Final review results vs. total number of hours on project.]

?
Project idea fair
7 PM (sharp) to 8 PM tonight

See *ideas fair session* link on homepage
Project idea fair
7 PM (sharp) to 8 PM tonight
conference with parallel sessions
use team mailing list to coordinate
use project management site for files

Schedule for the red team

7:05-7:30 PM
Alex Konradi
Kira Street
McCall Huston
Rachel Nations
Experience Design: Delight and Amaze
room 3-434
5 Wits Productions

7:35-8:00 PM
Amy Ishiguro
Claire Patterson
Negin Abdolrahim
Poorheravi
Teddy Ort
Online+Onsite
room 1-134
Tellart

Experience Design: Delight and Amaze
room 3-434
5 Wits Productions

Bringing an ancient art form to a mass market
room 1-246
Artaic

CivicEngagementMobile
room 1-273
City of Cambridge/dangerawesome

interpret information carefully!
a team is...?
more than a group

a group that is interdependent for overall performance

-team!
why?

the need for teamwork grows with the challenge

none of us is as good as all of us

a good team!
meaningful purpose

clear performance goals

mailing lists
team management site
notebooks
peer reviews
team reviews
communication instructors
yoda

communication

dream team
well-defined work approach
meaningful purpose
clear performance goals
complementary skills
mutual accountability
communication
dream team
shared values

- clear performance goals
- complementary skills
- communication
- mutual accountability
- meaningful purpose
- well-defined work approach

dream team
most important team success factor

- Shared values
- Mutual trust
  - (mutual accountability)
- Inspiring vision
  - (meaningful purpose)
- Complementary skills
- Rewards

percent of respondents

Ten3 global internet polls
Teamwork
characteristics correlated with effectiveness

Positive:
taking the initiative
results orientation
attention to detail
clear guiding philosophy
  (e.g., meeting rules, team code of conduct)

Negative:
informality
high level of praise for performance

Hitt et. al. *The birth, life, and death of a cross functional new product design team*,
HF5415.2.M37 no. 96-111
Teamwork
design success factors

Positive:
effective communication
management support (system integrators, lab instructors)
involvement of all relevant parties (e.g., user feedback)

Negative:
team members unable to see different viewpoints (strong mental set)
organizational politics

Meetings
more on Wednesday

meeting ≠ chillaxin in a room around a big table
Teamwork challenge

team role-playing and problem solving

task

build the tallest free standing balloon structure

materials

144 balloons (in team color), 3 rolls packing tape, 3 tape dispensers, 3 pair scissors, pens and paper

where

outside, Killian court

deadline

1:50 PM during today’s class
Teamwork challenge

roles and rules

assemble your 2.009 team around the materials box
make sure you are with the right team
select at team manager
pick roles from envelope—keep confidential
all but team manager play assigned roles
do not tie balloons together
only use the materials provided
do not use chairs, ladders or climb objects to assemble structure
Teamwork challenge
reflection

at 1:50 PM
judging
discuss your roles and how they impacted team performance
discuss ways that the team manager was effective
cleanup

start now!