Design Thinking
Agile Innovation Projects

By
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You Need

A. Motivation to make a difference and/or become your own boss

B. A problem that you would like to solve:
   – To make or not to make money out of it by innovating with a
     • new or
     • better or
     • New application of existing(s)
     • Product
     • Process
     • Service
     • Solution: product, process, service
   – Address an organization’s threat, weakness, opportunity. This maybe your employer, your business, someone else business/organization, etc.

C. To come up with one or many questions that define one or few problems. See next slide

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We start with a question...a Challenge

• The entrepreneur’s: how can I make money?
  – How can I address the problem of skiers dying in avalanches to reduce the number of deaths?
  – How can I solve the problem of people eating my lunch when I leave it in the office’s fridge?

• The social entrepreneur’s: how can I help people?
  – How can we provide lighting to low income families in rural areas to enhance quality of life?
  – How can I avoid kids to harm themselves with the blades when using desk fans?

• The intrapreneur’s: how can I help my employer?
  – How can the company that I work...
  – Make a better toothbrush for kids to gain new markets?
  – Make canoes more enjoyable?
  – Make shopping carts more functional and fun?
  – Improve a current product, service, solution to gain market share, be more competitive?
Water and bleach in bottle of coke was fitted on the roof. It reflects and refracts sunlight and is equal to 55 watts.
FLEXIBLE FOAM BLADES
New process
THIS PURSE IS KEEPING 1 PAIR OF JEANS AND 1/4 YARD OF CLOTH OUT OF A LANDFILL

2PINKPEAS.COM
ONCE A BILLBOARD,
NOW A BAG

HOW IT WORKS ➤
3 BIGGEST FEARS
OF OUR GENERATION
What is a Project?

- Has a start date and an end date (time)
- Has a team (people)
- Has a project manager (responsible person)
- Has a budget (money)
- Has other resources (besides money and people)
- Has objective(s)
- Is a temporary organization
Types of Projects

• New system project (product, process, service, solution)
  – New system research and development
  – Old system applied in new novel ways
  – New system acquisition, installation, integration

• System maintenance project
  – Major changes to keep it working under current specifications (Overhaul)
  – No major changes to keep it working...

• System enhancement project
  – Major changes to enhance performance and capabilities (Change specifications, functions)
  – No major changes to enhance...

• Other types of projects
Project Life Cycle

Initial Phase → Inner Phase → Inner Phase → Inner Phase → Final

PMBOK Guide Model
System = Product, Service, or Solution
(*) = if commercialized
Salerno et al. 2015
Project Approaches to Produce New Systems

Initial Specifications Provided by the Customer (Closed order Flexible)

Request for Proposal Call (Closed order not Flexible)

Understanding End-User’s Needs

System = Product, Service, or Solution
Salerno et al. 2015
What is Design Thinking?

“Design thinking is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success.” —T. Brown
Design Thinking Keywords

- Value creation
- Value proposition
- Creative confidence
- Co-creation
- Cross-disciplinary “T” team
- Iterating, Iterations
- Learning
- Permission to failure “dare to fail”
- Systemic thinking: 2\textsuperscript{nd}, 3\textsuperscript{rd}, 4\textsuperscript{th} order of effects to the past an into the future
What is the problem?

How might we solve the problem?

Take action
Design Thinking Process

What is the problem?

How might we solve the problem?

Take action

UNDERSTAND NEEDS (RESEARCH PROCESS)

GENERATE IDEAS (INVENTION PROCESS)

IMPLEMENT IDEAS WITH IMPACT (INNOVATION PROCESS)

LEARNING

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Design Thinking Agile Project
Defining The Design Project

• Long title: Design thinking agile project innovation challenge
• Design thinking team / development team
• Funded / contracted / empowered
• Project manager / Agile PMgr/ Design manager
• War room / knowledge room
• Timeboxed
The Timeboxes

• Constrain of work time
• Internally and/or externally defined
• Focusing time on a particular(s) action/task/process/result(s)
• Amount of time depends on
  – Available time
  – Capacity of team
  – Available resources and capabilities
• The shorter timebox is preferred:
  – Reduce risks by learning
  – Reduce financial and other risks by small commitments
Timeboxes in a Design Project

What is the problem?

1 Understand

How might we solve the problem?

2 Ideate

3 Selection

4 Prototyping

Take action

5 Validation

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3 Different Approaches to Define the Design Thinking Agile Innovation Project

I. Having all the steps of design thinking in a single project

II. Combining sequential steps into a single project resulting in more than one and less than 5 projects

III. Defining each step of design thinking as a single project resulting in 5 projects
Some Criteria for Selecting the Approach

• Team capabilities
  – Resources available (e.g., time, # members, $)
  – Infrastructure available (e.g., war room, ITCs)
  – Overall experience and knowledge of the team

• Project client needs
  – Deadline
  – Funding
  – Articulation of needs

• System
  – Access to quality and quantity of data
  – Complexity
Approach I

1. Understand
2. Ideate
3. Selection
4. Prototyping
5. Validation

Project
Approach II

Note: This is one of the many examples of combining sequential steps in projects
Approach III

1 Understand

2 Ideate

3 Selection

4 Prototyping

5 Validation

Project 1

Project 2

Project 3

Project 4

Project 5
### Examples of Timeboxes

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<tr>
<td>Understand</td>
<td>Ideate</td>
<td>Selection</td>
<td>Prototyping</td>
<td>Validation</td>
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<td>Monday</td>
<td>Tuesday</td>
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<td>Thursday</td>
<td>Friday</td>
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<td>20min AM</td>
<td>20min PM</td>
<td>20min AM</td>
<td>20min PM</td>
<td>20min AM</td>
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Understanding
Understanding Process of the Design Challenge Problem
Basics of Understanding

Key Critical factors:
- Data (availability, validity, quantity)
- Absorptive capacity (velocity, power, bias)
- System Thinking—cause and effect, several order of effects, conditional relationships
• I saw a black mouse in my bedroom 2 months ago
• I saw a white mouse last week
• I saw 2 grey today
• I live over a restaurant

• The number of mouse I see is increasing
• I always see them at night

• They are reproducing*
• I have an infestation

• My pest control efforts are not working
• I cannot sell the house**

For Example...
• Understanding the innovation problem is needed before producing innovation ideas

• Understanding comes out of our ability to generate valid meanings from information produced from structuring raw data

• The ideal learning/research process collects different types of data, from different sources, throughout time, and analyze it in a ways (e.g., triangulation) that generate valid and reliable understanding
• Collecting data from uncommon sources enhances understanding
  ➢ Deep understanding of the needs comes by looking at special not normal subjects
  ➢ E.g., Observing how kids handle kitchen tools provide ideas of how adults have developed practices to counteract handling problems

• In the development of new products and services, observation and empathy with end users is critical
  ➢ Watching what users don’t do, listen to what they don’t say
  ➢ Observation is about quality not quantity
Understanding vs. Time vs. Team

Learning can be speed up by a capable team.
Base Knowledge vs. Understanding

- Build base knowledge with teammates
- Careful with the illusion of knowing
Agile Design Team
Agile Design Team

1. Subject matter experts
2. 5 to 9 members
3. Integrated cross-functional
4. Estimate the size of the requirements/functions to be produced
5. Define the tasks needed to develop a system (HOW) “it does not make sense to hire smart people and then tell them what to do; we hire smart people to tell us what to do”SJ
6. Estimates the duration of the task in hours
7. Defines how much work they can produce in a given time or iteration (HOW FAST)
8. Collaborates closely with the product owner (customer)
9. Leadership within the team is emergent, not pre-defined/appointed.

10. Commits to complete work in iterations and delivers it.

11. At all times makes team status visible.

12. Self-organizes: self-managing making its own decisions of inputs, processes to meet requirements under a time constraint.

13. Defines what ‘done’ means for a requirement/function and the acceptance criteria as agreed with the product owner.

14. Delivers quality assured (tested) system increment as soon as possible (software-1,4 weeks; hardware-depends on tech. constraints)

15. Defines and comply to team norms (where to meet, when to meet, communication, etc)

16. Follow the agile project management process
17. Development process’ innovation is enabled, expected

18. Dedicated, long-term make them more effective because of learning

19. Works under subtle pressure of timeboxes in iterations in the agile project management cyclical process:
   a) Daily standup +
   b) Planning +
   c) Iteration work +
   d) Demo +
   e) Review and Retrospective
Self-Organizing Teams
Traditional Project Team Work Flow

Functional “Knowledge” Silos

- Product Owner: User Stories, Constraints
- Project Manager: High Level Plan
- Business Analyst: Costs, ROI
- Designer: Concept
- Line Managers: Detailed Plan
- Developer 1: Mechanical Work
- Developer 2: Electrical Work
- Tester: Functional Test & Delivery

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Agile Team

Integrated Cross-Disciplinary
Integrated Cross-Functional Teams

Members come from across all necessary functional departments, such as quality assurance, engineering and marketing and may incorporate other stakeholders including the customer and end-users.

(DeSanctis and Jackson, 1994; Pinto et al., 1993; Vadapalli and Mone, 2000; Zirger and Hartley, 1996).
Integrated Cross-Functional Teams

• Address the impediments (i.e., challenging communication, coordination, problem solving) created by the strong functional specialization (i.e., silos) of key stakeholders of complex projects (Lovelace, et al. 2001)...

• through lateral synchronous communication (Slinger and Broderick, 2008)...

• that enhances the amount and quality of information exchange at the project level needed for robust decisions...

• consequently enhancing team’s operations (Scott-Young and Samson, 2008) and...

• generating a high capacity of learning and creating new knowledge due to their members' wide array of knowledge and experiences (Lovelace, et al. 2001).
Integrated Cross-Functional Teams

Provides the advantages of:

• Multiple sources of communication, information, and perspectives
  – Promote creativity and cross-fertilization of ideas, which in turn generate innovations.

• Enhances the outside network → access to resources

• Inclusion of downstream concerns in upstream design

• Speed to market
  – Example: Chrysler’s was able to reduce “the time from design through prototyping, production, and commercialization stages of autos from 5-7 years to 18 months”

(Keller, 2001;p.547; Leenders et al. 2003; Pinto, 2002, p.30)
Integrated Cross-Functional Teams

• As members of these teams become more knowledgeable on the project topic and get more used to work with each other, the team tends to get stronger, flexible, resilient, and agile.
  
  – Develop social and intellectual capital that makes them highly capable to cope with the complexities of the project environment.

(Hobbs and Andersen, 2001; Nahapiet and Ghoshal, 1998; Slinger and Broderick, 2008).
Integrated Cross-Functional Teams

• Nevertheless, this social capital can easily become a weakness when the membership of the team changes during the project life cycle
  – Affects the relational, cognitive, and network dimensions of their social capital that provide access to the intellectual capital of the team

(Hobbs and Andersen, 2001; Nahapiet and Ghoshal, 1998; Slinger and Broderick, 2008).
Integrated Cross-Functional Teams

Fully integrated when
• has a single focus and objectives for the project
• operates without boundaries among the various organizations
• members works towards mutually beneficial outcomes by ensuring that all
  the members support each other and achievements are shared throughout
  the team
• is able to predict more accurately, time and cost estimates by fully utilizing
  the collective skills and expertise of all parties
• shares information freely among its members such that access is not
  restricted to specific professions and organizational units within the team
• has an extended member composition and therefore able to respond to
  change over the duration of the project
• has an identity and it is co-located usually in a given common space
• offers its members equal opportunities to contribute to the delivery process
• operates in an atmosphere where relationships are equitable and members
  are respected
• has a ‘no blame’ culture”

(Baiden et al., 2006, p.14).
Initial & Refined Design Challenge Question

1. Write your initial design challenge question (first pass)
   – In one sentence
   – In a question format

2. Re-write your design challenge (second pass)
   – Consider the context and constraints
   – Available technical capabilities
   – Design limitations, users’ limitations

3. Is the challenge too broad or too narrow?
   – Too narrow challenge constraints creative solutions
   – Too broad challenge makes difficult find starting points

4. Iterate-go back to 1
   – Can the team produce 5 ideas in 2 minutes? Yes, you are done.
Initial & Refined Design Challenge Questions

1. Write your initial design challenge question (first pass)
   – In one sentence
   – In a question format
     How can I exterminate the mice in my house?

2. Re-write your design challenge (second pass)
   – Consider the context and constraints
   – Available technical capabilities
   – Design limitations, users’ limitations
     How can I exterminate the mice in my house without putting in danger my family?

3. Is the challenge too broad or too narrow?
   – Too narrow challenge constraints creative solutions
   – Too broad challenge makes difficult find starting points
     Too broad

4. Iterate-go back to 1
   – Can the team produce 5 ideas in
     How can I eradicate mice from my house without using chemicals that can affecting my family and without mechanically dangerous devices? $? Size? Materials?
Develop Understanding through Empathy

• The goal is to learn as much as we can about the needs of the users by putting ourselves in the position of the end-user
  - Human: physical and emotional necessities
• No judgment
• Respectful
• Capture data:
  - Observe, take notes, record-video, pictures
  - Interview, take notes, ask users “why?” but don’t ask for a solution
    • Henry Ford: “If I had asked my customers what they wanted they would have said a faster horse”
    • Ask “what are your needs not what do you need”
  - See proposed framework for Empathy
Empathy Framework: Observation

• Activities: What are people doing?
• Environment: How are people using the environment and how the environment influence people?
• Interactions: what type of behavior is being exerted by people? Between people and objects?
• Objects: What is there and being used or not used?
Empathy Framework: Observation + Interview

What people are...?
Empathy Framework: Observation + Interview

Doing vs. Saying vs. Thinking vs. Feeling?
CAREFUL!

Bias

– Too close to the problem is both good and risky
– If that is the case, reduce bias by enrolling others
Example: How did you feel using a Palm?
How do you feel using one of this?
The Factory’s Consumer Research at Work

In October 2010 P&G launched the Gillette Guard razor in India, a transformational-sustaining innovation whose strategic intent was simple: to provide a cheaper and effective alternative for the hundreds of millions of Indians who use double-edged razors. The company’s researchers spent thousands of hours in the market to understand these consumers’ needs. They gained important insights by observing men in rural areas who, lacking indoor plumbing, typically shave outdoors using little or no water—and don’t shave every day. The single-blade Gillette Guard was thus designed to clean easily, with minimal water, and to manage longer stubble. The initial retail price was 15 rupees (33 cents), with refill cartridges for five rupees (11 cents). Early tests showed that consumers preferred the new product to double-edged razors by a six-to-one margin. Its breakthrough performance and affordability position it for rapid growth.
Understand the Needs of: Passengers, Air Lines, Security Agencies
Understanding the Needs

2-Develop insights from the data (WHY?)

Users need___________because_______

Users need___________in a way that_______

Users need___________so_____________
Again....What is your design problem after collecting this understanding?

Insights → Refined Design Question

What is your **accurate** design question?
2

Ideate
What is the problem?
- Design question
- Build a capable team
- Collect objective data
- Develop insights from data

How might we solve the problem?
- Enroll others
- Idea generation
  - Out-of-the-box
  - Inside-the-box
- Idea refinement

Take action:
Six Steps for Ideation

1. Bound the problem:
   – Open-ended question (refined design question) how might we...
   – Do not describe means, methods, tools
   – Ask without describing the solution
     - How do I deliver shipments fast? (verb use) Vs.
     - How do I optimize the route of a delivery truck? (noun use)
   – Do not be too abstract
     - How can we turn bad people into good people?

2. Prepare (warm up) the brains
   – Get to a not judgmental creative state of mind
   – Mood people out of the analytical mind using arts-based methods, warm up exercises

3. Brainstorm

4. Grouping and pre-selecting ideas

5. Individual reflection time

6. Selection of idea

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Bound the Ideation Problem

• Open-ended question (refined design question) how might we...
• Do not describe means, methods, tools
• Ask without describing the solution
  – How do I deliver shipments fast? (verb use) Vs.
  – How do I optimize the route of a delivery truck? (noun use)
• Do not be too abstract
  – How can we turn bad people into good people?
Warming up the Brain

1. Pick one of the following and find out how many uses can you give to:
   - Plastic straw (new, used, one, many)
   - Pencil (new, used, one, many)
   - Car tire
   - Plastic bottle (new, used, one, many)
   - Silicone material in the kitchen

2. Use arts-based methods
Brainstorming

• Starts with a question
• Focus on generation
• Focus on generate as many ideas as you can
• Defer judgment-let people feel safe
• Stay on topic
• Small group 7+/-2
• Draw, write
• Wild ideas as you can (on problem statement)
  – Shiritori for example (check Ted Talk)
Other Best Practices for Brainstorming

• Have timebox for idea generation
• Set a minimum number of ideas
• Learn from other ideas
• Provide simple tools for idea generation and capture
• Let a leader (not by rank) lead the group
• Bias is a big negative, focus on the data, insights
• Add wild ideas to push thinking out of the box
  – If you were superman, if you were Bill Gates
Brainstorming
Grouping & Pre-Selecting Ideas

- Judge what was accomplished
- Take time to select
- Group/cluster ideas
- From groups/cluster down select to a few ideas (2-5) that seem promising
  - Down selection criteria:
    - Pick a “down selection” criteria with respect to the impact upon people (Assess Desirability), for example:
      - How much it produces Joy, Pride, Desire...? → target positive emotions
      - Vote/Consensus
    - Do not use selection criteria with respect to Feasibility and Viability of the ideas “yet”
Individual Reflection Time

• Best ideas come after reflecting upon the ideas that were generated during brainstorming

• During the reflection process capture:
  – New boundaries or rules of the problem
  – New ideas to present to the group
  – New assumptions needed to be made

• Reflection time should be “alone time” in a “creative mind-set state” during the day

• Bring back the new ideas to the team
Selection of the Idea(s)

• Group dynamic
• Focused on evaluating the results of the “individual reflection time”
• Group vote for the best idea(s)
• Group may vote to do another Brainstorming
3

Selection
What is the problem?
- Design question
- Build a capable team
- Collect objective data
- Develop insights from data

How might we solve the problem?
- Enroll others
- Idea generation
  - Out-of-the-box
  - Inside-the-box
- Idea refinement
  - Idea selection

Take action
Desirability

- Human/People centered
- What do people need?

Feasibility

- Organization centered
- What is technical & organizational possible?

Viability

- Financially centered
- What can be financially realistic?

Originality

- Only if the intent is to develop a business
- How different is from existing systems?
- What patents already exist?

Idea needs to meet these criteria
Desirability: Assessing Emotions

• Empathy
  – Sympathy
  – Kindness
  – Respect
• Affection
  – Love
  – Admiration
  – Dreaminess
• Aspiration
  – Desire
  – Worship
  – Lust
• Enjoyment
  – Euphoria
  – Joy
  – Amusement
• Optimism
  – Hope
  – Anticipation
• Animation
  – Surprise
  – Energized
• Assurance
  – Courage
  – Pride
  – Confidence
• Interest
  – Inspiration
  – Enchantment
  – Fascination
• Gratification
  – Relief
  – Relaxation
  – Satisfaction

How many positive emotions are produced by your 2-5 ideas?

Do you need to refine some ideas?

Which one is the most promising so far?
Feasibility Assessment: Are your few ideas Nuts!?
Aha!?
Dah!? Is the idea possible for this team?
Can the team have what is needed?
“Nuts!” ideas: Nonsense

“Aha!” ideas: Radical/disruptive innovation

“Dah!” ideas: Incremental innovation
Example: Enhancing Global Education

“Nuts!” ideas: Nonsense

Teletransport to Classroom

“Aha!” ideas: Radical/disruptive innovation

Oculus/Hololens

“Dah!” ideas: Incremental innovation

Videoconferencing
System Road Map

• Identify what major functionality is going to be released at different points of time in the future
• It changes over time as more is learned about the system, the market, the environment
• Great strategic planning tool
• Can vary in terms of complexity
• Also called product road map
Example

- Vision: to produce the next generation of cranes for the maritime sector

- System roadmap:

  - Release 1
    - Version 1: Crane propulsion
    - Fall 2020
  - Release 2
    - Version 2: Crane propulsion and loading system
    - Spring 2021
  - Release 3
    - Version 3: Premium Crane propulsion & loading system
    - Summer 2021
  - Release 4
    - Version 4: TBD by Market
    - Fall 2021
# Another Type of System Road Map

<table>
<thead>
<tr>
<th>Date</th>
<th>1st quarter</th>
<th>2nd quarter</th>
<th>3rd quarter</th>
<th>4th quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Version 1</td>
<td>Version 2</td>
<td>Version 3</td>
<td>Version 4</td>
</tr>
<tr>
<td>Goal</td>
<td>Acquisition: Free app, limited in-app purchases</td>
<td>Activation: Focus on in-app purchases</td>
<td>Retention</td>
<td>Acquisition: New segment</td>
</tr>
</tbody>
</table>
| Features   | * Basic game functionality  
* Multiplayer  
* FB integration | * Purchase dance moves  
* Create new dances | * New characters and floors  
* Enhanced visual design | * Street dance elements  
* Dance competition |
| Metrics    | Downloads: top 10 dance app | Activations, downloads | Daily active players, session length | Downloads |

How much money do you need to fund your project?
Per iteration, per year, total?
Viability

• How much do we estimate this idea may cost? vs
• How much money is available to the team?
  – Access to more money
    • Network-Social, Professional
    • Family
    • Partners
    • Angel investors
    • Strome Entrepreneurship Center at ODU can help you connect with those that may be interested in your idea
    • Crowdfunding

• Risk the money that you are willing to loose
Angel Organizations Can Help Address Capital Gap

<table>
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<tr>
<th>Pre-seed Stage</th>
<th>Seed/Startup Stage</th>
<th>FUNDING GAP</th>
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<tbody>
<tr>
<td>Founders</td>
<td>Angel Investors</td>
<td>Very few angel deals done above $1 million</td>
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<tr>
<td>Friends &amp; Family</td>
<td></td>
<td>Very few VC deals done below $4 million</td>
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<table>
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<tr>
<th>Early Stage</th>
<th>Later Stages</th>
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<tr>
<td>Venture Capitalists</td>
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</table>
Originality

• The goal is to find out if your idea(s) has been proposed already and are protected
• How different is it from existing systems?
• What is the difference in the value proposition?
  – Direct & Indirect Benefits vs. Costs of acquiring the benefits
• Search using different terms in:
  – Internet: Google, Amazon, Google scholar
  – Patent: Google Patents, USPTO
  – Crowdfunding: Kickstarter, Indiegogo
• File for a provisional patent (less than $200)
Desirability

- Human/People centered
- What do people need?

Feasibility

- Organization centered
- What is technical & organizational possible?

Viability

- Financially centered
- What can be financially realistic?

Originality

- Only if the intent is to develop a business
- How different is from existing systems?
- What patents already exist?

Idea needs to meet these criteria
4

Prototyping
What is the problem?
• Design question
• Collect objective data
• Develop insights from data
• Enroll others

How might we solve the problem?
• Enroll others
• Idea generation
  ✓ Out-of-the-box
  ✓ Inside-the-box
• Idea refinement
• Idea selection

Take action:
• Enroll others
• Start with what you have
• Invest what you are willing to lose
• Take small steps
• Learn as fast as you can
  ✓ Iterate
  ✓ Experiment
  ✓ Prototype

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What is this?
Surgical Tool:
Gyrus ENT Diego
by IDEO
Prototyping

• Move ideas into action, move theory to reality
• Test your assumptions
• Not much time investment in the beginning, short iterations
• Not much financial investment in the beginning, short iterations
• Identify & mitigate "early" product’s, market’s, financial ’s and other risks
• Use what you have available
• Build a mock model to try it
• Model does not need to be perfect
  – Needed to articulate the functionality to users, others
  – Focus is not to sell the prototype but to learn
• Collect feedback “early” “quickly”
• Enhanced when used with social media to gain feedback
• Agility: iterative continuous improvement, permission to small fails
• Learn what works and what does not
• Service vs Products
  – Storytelling, Storyboards vs. Physical/Digital mock models

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Prototyping

1. Find the quickest path to experience the new system idea(s)
2. Doing is the best kind of thinking
3. Use materials that move at the speed of thought to maximize your rate of learning

Tom Chi (2013)
Prototyping Tools

Online App Prototype Free: Marvelapp.com

Virtual Reality
GOOGLE: Cardboard Design Lab

https://marvelapp.com/explore/

https://vimeo.com/156485065

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Prototyping Tools

Crowdsourcing Events: Hackathons, Competitions,
5

Validation
Validation

- Testing
- What do users like or dislike of the prototype?
- What would they like to improve?
- Does the prototype meet their needs overall?
- How does the prototype make them feel?
- Is the sponsor satisfied?
- Do we have permission to continue experimentation?
Testing Approaches

• Heavily based on data (digital behavior):
  – A/B Testing
  – Cohort Analysis
  – Funnel Analysis
  – Robust experimentation

• Heavily based on human factors (non-digital behavior, emotions):
  – Usability tests: sitting side-by-side one-on-one with your users as they experience the system, its functions, cosmetics, structure.
  – Crowdsourcing: request the help of society from an open call to analyze a prototype.
  – The unfocus group: unique individuals (mix of end-users, experts) invited to actively participate in a collaborative design team prototype testing exercise in workshop format.
Crowdsourcing Validation

- Groups of 4
- Present your prototype to 2 groups
- Collect feedback from each person of each group (use form or online survey)
  - What do users like or dislike of the prototype?
  - What would they like to improve?
  - Does the prototype meet their needs overall?
  - How does the prototype make them feel?
Experimentation

• Change some parameters* of the first model/prototype and collect feedback from users, others
• Analyze the results and change the second model/prototype and collect feedback from users, others
• Expensive
• Time consuming
• Unpredictable
• Learning, knowledge creation is the goal
• Learning helps in identifying risks and mitigate them
• *Design of experiments
Failing

• Failure and Success are judgements, focus on your purpose
• Fail means
  – First Attempt In Learning
• If you fail, never give up
• You only fail when you give up
• Failing is part of the process
• Remember Baseball
  – If you hit the ball 5 out of 10 times you are a legend
  – Innovation & Entrepreneurship are not exact sciences
• Change your attitude toward failing
  – Fail fast and small, learn fast
  – Fail systematically, so that you know what went wrong
  – Manage the risks of failing, so that the impact is minimized
Entrepreneurial Support

The Institute for Innovation & Entrepreneurship’s programs support the local business community by linking them to the vast resources, expertise and technology at ODU.

ODU Institute of Innovation & Entrepreneurship

- Strive Entrepreneurial Center (SEC): The SEC is a key regional resource and collaborator open to all students, faculty, staff, alumni, and community members to support entrepreneurship and innovation.
- ODU Innovation Center - Norfolk: The Innovation Center fosters entrepreneurial culture with a fresh take on building early stage companies through an incubator program for high-growth, scalable, emerging technology-driven startups.
- Temp0: Temp0 is a program providing Business Creation, Incubation & Acceleration services. Your business idea lives or dies by your ability to get to market. Which path will your business idea take?
- Veterans Business Outreach Center (VBOC): The Veterans Business Outreach Center (VBOC) provides entrepreneurial development services for eligible veterans who own or are
- Women’s Business Center: The Women’s Business Center (WBC) dedicates women to business success through education, counseling, networking resources and
- Procurement Technical Assistance Center (PTAC): The Procurement Technical Assistance Center (PTAC) assists area businesses in establishing
2 Minutes Reflection Journal

What did you learn today?