An Introduction to Design Thinking
Innovation (in one word)
Delivering Breakthroughs (in two)
Founded in 1985
Dr. Patrick Sullivan
Hawaii, California, Texas, DC
www.oceanit.com
Hostile Fire Detection System
Non-Invasive Deep Tissue Surgery
100% Effective in treating intracranial hemorrhage
With this technology, it will reduce barnacle growth & improve equipment maintenance.
# Experimentation vs. Implementation

## VALUE CREATION

- Why?
- Leaders
- New Organizations
- Exploration
- Research & Development
- Beginners
- Planting
- Discovery
- “Yes and…”
- Uncertainty
- Infinite
- Culture of Experimentation

## VALUE CAPTURE

- What & How?
- Managers
- Mature Organizations
- Exploitation
- Products & Services
- Experts
- Harvesting
- Validation
- “Yes but…”
- Certainty
- Finite
- Culture of Implementation
Why?
“If I had asked my customers what they wanted, they would have told me a faster horse.” - Henry Ford
In just **SIX SHORT YEARS**, the popularity of cryptocurrencies have soared.

<table>
<thead>
<tr>
<th>Year</th>
<th>Avg BTC Transactions Per Day: ($USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>&lt;$100,000</td>
</tr>
<tr>
<td>2011</td>
<td>$1.1 MILLION</td>
</tr>
<tr>
<td>2012</td>
<td>$1.7 MILLION</td>
</tr>
<tr>
<td>2013</td>
<td>$40.5 MILLION</td>
</tr>
<tr>
<td>2014</td>
<td>$74.3 MILLION</td>
</tr>
</tbody>
</table>

Today, over **100,000 MERCHANTS** accept bitcoin.
est. $10B rev. 2015
launched 2010
40K new drivers per month

Uber doesn’t own any cars!
Get the car delivered around town or to nearby airports

List your car, earn extra money, fuel an adventure

Airbnb for Cars
What’s the real need? Why did they fail?
From 
MAKING PEOPLE WANT THINGS 
To 
MAKING THINGS PEOPLE WANT
Public Food Service System
Holstebro Municipality, Denmark

125 000
Inadequate nutrition is a huge problem among the elderly. 60% living in assisted living have poor nutrition and, of those, 20% are actually malnourished.
Feltstudier
Interviews og observationer af, hvordan de ældre planlagde, tilberedte og spiste maden fra madservice
Idéudviklingsworkshop
Idéudvikling sammen med bl.a. køkkenpersonale, hjemmeplejen, ældrerepræsentanter, byrådspolitikere og designere
Test af idéer
Prototyper på løsninger og forslag til serviceforbedringer blev evalueret af de ældre brugere og personalet
Nyt menukort
Nye dialogværktøjer
Et nyhedsbrev og et simpelt postkort-værktøj giver nye muligheder for dialog mellem køkkenet og de ældre.
Redesign the Reading Light
Focus on Users and their Needs
Redesign the Reading Light
“Make the human element as important as the technical & business elements.”

- David Kelly
My design thinking CHEAT SHEET

1. **Empathize**
   - Search for rich stories and find some LOVE

2. **Define**
   - User + Need + insight = **POV** (point of view)

3. **Ideate**
   - YES! and...
   - YES! and...
   - YES! and...
   - YES! and...
   - YES! and...
   - YES! and...

4. **Prototype**
   - **BUILD** to LAST LEARN

5. **Test**
   - Show, don’t tell

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*By Guido Kovalevskys*
What’s the big deal about DT?

**Common Process** – enables collaborations across all groups, i.e., TEAMWORK

**Common Language** – reduces miscommunications (think Pidgin)

**Human Centered** – understand the human need before developing solutions. Can be applied to many situations

**Cultural Catalyst** - leads to mindset change, that leads to cultural change. Failing = Learning
“Returning Adult Students”
Empathy
Engage with users
Observe environments
Immerse in experiences
When you feel what the other person is feeling. When you can mirror their expression, their opinions, and their hopes.

"I know exactly how you feel."
empathize: what?

When you feel what the other person is feeling. When you can mirror their expression, their opinions, and their hopes.

Talk Story
Imagine a scenario of Redesigning a Motorcycle Helmet
What questions would you ask a motorcyclist about their helmet?
Helmet Questions (traditional)

• What do you like and dislike about your helmet?
• Why did you buy your current helmet?
• What did you not like about your old helmets?
• Where did you buy your helmet?
“I like the full visor style of my helmet.”

“I like black matte helmets...they look cool”

“I wish my helmet was lighter. It can be heavy.”

“I wish there was better ventilation. My head sweats during the summer months!”

HMW create a lighter, cooler, and more comfortable helmet?
Redesign the Motorcycle Helmet
Redesign driven by user need
So how did they do it?
What questions would you ask?
User Need Questions (DT)

• Why do you ride?
• What does it feel like to ride?
• Tell me about the last time you went for a ride?
• What was the best and worst ride? Why?
• What got you started riding?
"I ride for the freedom...I am stuck in a box called an office. So when I ride, it makes me feel alive."

"I like to feel the wind on my face, and through my hair."

"I don’t wear a helmet but I know riding is dangerous. My kids worry."

"I would wear a helmet if I didn’t have to wear a helmet."

HMW enable Motorcycle Jane to ride safely but feel the wind blowing through her hair?
Helmet vs. User Need Questions

What do you like and dislike about your helmet?

Tell us about the last time you went for a ride? What does it feel like to ride?
TIP: focus on asking questions that reveal user needs.
College questions vs. User Need

What do you like and dislike about community college?

Can you tell us a bit about your journey to the community college?
empathize: how?
Empathy Mindset

- Listen...really listen
- Without judgement
- Beginner’s eye
- Intense Curiosity
- Optimistic
- Respectful
Tips for Asking Questions

• Ask questions that will reveal who they are and what they do, and why.

• Every question creates a box. So start with broader “who is this person” vs. “why you quit school?” questions.

• Discover vs. Validate
Empathy: exercise 1
Open ended questions are questions that lead to a further discussion. They are questions that do not have a simple answer like yes or no or a number. Together share a list of questions you will ask your interviewee.

1. Pair up and list as many questions you can think of.

2. Analyze them and make them open ended if they are not.
Empathy: exercise 2
interview: preparation!

**Identify and order themes:** Identify themes or subject areas into which most questions fall. Determine the order that would allow the conversation to flow most naturally.

**Refine questions:** make sure that you leave room in your planning to ask plenty of “why?” questions, plenty of “tell me about the last time you _____?” questions, and plenty of questions that are directed at how the user FEELS.
What do you want to learn?

Who is this person?

What is their life like?
What things do they love, hate and fear?
What do they do?

Why community college?
interview: things to remember

• ‘Tell us a bit about yourself’ is a good start.
• Ask a question, listen, let the response guide your next question.
• When you’re not interviewing, take lots of notes and observe. Keep each note small...like less than 5-6 words.
• Write down quotes, stories, feelings, and other observations.
• Ask lots of follow up questions, and go deep into the drivers of their enthusiasm.
Ways to ask more when you are curious about certain things:

- “Can you tell us a bit more about that...?”
- “Why?”
- Let the conversation continue. Don't be afraid of silence.
- Make sure to note down quotes and interesting things mentioned during the interview.

Debrief as a team after each interview if possible.
Interview
Logistics
Define
Synthesize information
Reframe the problem
Decide what is important
define: why?

You pick what is worthy to be pursued.
The team is on the same page.
You can try multiple ways to achieve this.
define: how?

come together and understand the experience
identify user, reveal the needs, articulate insights
reframe the problem into a new point of view
Debrief each interview with entire team.

**Interview: Synthesis**

- What are some quotes and defining words your user said?
- What actions and behaviors did you notice?
- What might your user be thinking? What does this tell you about his or her beliefs?
- What emotions might your subject be feeling?
unpacking your interview: empathy maps

<table>
<thead>
<tr>
<th>say/do</th>
<th>think/feel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tbody>
</table>
Build Empathy Maps
One per Interview
Empathize
Define
Ideate
Prototype
Test
define: how?

point of view

user + need + insight

Information into Intelligence
what’s an insight?
most times it’s not!
“that’s interesting…”
“I wasn’t expecting that…”
“Wow…I don’t get it?”
“What did he mean by that…”
“What he said, doesn’t jive with what she said”
“Where is that coming from”
“Something doesn’t make sense”
“We should have asked ‘why’”

**Insight**

an accurate and deep intuitive understanding of a person or thing
**point of view: components**

<table>
<thead>
<tr>
<th>user</th>
<th>need</th>
<th>insight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents with young kids</td>
<td>To engage their children in continuous learning moments throughout the store</td>
<td>They see grocery shopping as an educational adventure</td>
</tr>
<tr>
<td>Young couples in love</td>
<td>To enrich their relationships while engaging in routine activities like grocery shopping</td>
<td>They see grocery shopping as an extended date</td>
</tr>
</tbody>
</table>
point of view: **worksheet**

<table>
<thead>
<tr>
<th>user</th>
<th>need</th>
<th>insight</th>
</tr>
</thead>
</table>

leave this blank for now
<table>
<thead>
<tr>
<th>User</th>
<th>Need</th>
<th>Insight</th>
<th>Combine to make POVs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents with young kids</td>
<td>To engage their children in continuous learning moments throughout the store</td>
<td>They see grocery shopping as an educational adventure</td>
<td>user + need + insight</td>
</tr>
<tr>
<td></td>
<td></td>
<td>They see it as a safe learning environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>It bring them pride to see their children be self reliant.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>It gives them confidence that their kids can handle public situations</td>
<td></td>
</tr>
</tbody>
</table>
Ideate
Generate many solutions
Imagine possibilities
Create diverse options
The best way to get a good idea is to get a lot of ideas.

— Linus Pauling, nobel prize chemist
Prepare for Brainstorming: how?

How Might We ...

POV → HMW → HMW → HMW → HMW
Create HMWs from your selected POV

HMW create experiences in the store that feels like an adventure?
HMW have enriching interactions across children visiting the store?
HMW enable diverse learning opportunities in the store?
HMW create safe learning opportunities for the children in the store?

...

DEMO

Some example connectors: Enable, Enrich, Create, Facilitate, Connect, Provide, Encourage
Step 1: Brainstorm

DEFER JUDGEMENT.
GO FOR VOLUME.

ONE CONVERSATION AT A TIME.
STAY ON TOPIC.

BE VISUAL.
HEADLINE YOUR IDEA.

ENCOURAGE WILD IDEAS.
BUILD ON THE IDEAS OF OTHERS.
idea selection is a critical step

All the creative, wild, bad, OK, and undeveloped ideas from your brainstorm

When evaluated with typical “attractive” and “feasible” criteria before direct implementation

Yield familiar and incremental results
All the creative, wild, bad, OK, and undeveloped ideas from your brainstorm can be developed for feasibility. We will select and develop high potential ideas.
Step 2: Selecting Ideas

**most likely to succeed**
place two votes on the ideas that you think are most likely to successfully **address your “How Might We”**

**most likely to delight**
place two votes on the ideas that you think would **delight customers** (without regard for practical constraints)

**breakthrough if..**
place two votes on the most **breakthrough** ideas (if a fatal flaw or real world constraint were to be ignored)
Prototype
prototype: what?

A tangible, testable representation of your idea
Make ideas physical
Build to Think
Create experiences
prototype: fail early and often

cost of failure vs. project time
prototype: stages

Prototyping

Inspire
Do lot of low-input prototypes, test them, gather input

Evolve
Pick some to pursue, tweak & test, bring in experts

Validate
Go with your 1, hire someone to build
prototype: **why?**

- to gain empathy
- to explore
- to test
- to inspire

get deeper understanding
build to think
learn and refine solutions
inspire with your prototype
<table>
<thead>
<tr>
<th>Early stage prototypes</th>
<th>Pilot Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discovery</strong></td>
<td>Validate</td>
</tr>
<tr>
<td>1hr, 1 day, 1 week, 1 month time scales</td>
<td>Longer time scales</td>
</tr>
<tr>
<td><strong>Abstract and Concrete</strong></td>
<td>Concrete</td>
</tr>
<tr>
<td>Freedom to fail</td>
<td>Risky to Fail</td>
</tr>
<tr>
<td>Failure and success both contribute equally to progress</td>
<td>High cost of failure</td>
</tr>
<tr>
<td>Multiples tried concurrently</td>
<td>Rarely done in multiples</td>
</tr>
<tr>
<td>Reduces Project risk continuously</td>
<td>Uneven risk reduction paths</td>
</tr>
<tr>
<td>Solution confidence increases along the project timeline</td>
<td>Solution confidence high until failure of pilot</td>
</tr>
</tbody>
</table>
The question you are trying to answer early on is NOT, “Can we build it (technically)?”, but rather, “Would it matter to people if we did?”
prototype: start rough and rapid
prototype: **start rough and rapid**
prototype: start rough and rapid
Designing a Low cost Neo-natal Care unit
The Embrace Infant Warmer is

- **INEXPENSIVE**
  Less than 1% of the cost of a standard incubator

- **DURABLE**
  Can be reused up to 50 times

- **PORTABLE**
  Can be used while the baby is held in the mother’s arms or during transport

- **HYGIENIC**
  Easily cleaned using soap and water

- **SAFE**
  Simple and intuitive to use, validated through routine safety testing and extensive clinical trials

- **EFFECTIVE**
  Incorporates an innovative phase change material to rapidly stabilize the temperature of an infant suffering from hypothermia
prototype now!

20 minutes: Build your team’s idea for testing
Story Telling
storytelling: why?

- it’s a human centered way to communicate.
- a great way to connect people with ideas.
- effects the emotions and the intellect simultaneously.
- it brings people together.
mission:

use *concrete details* to *show the need* you found, and how *your solution* will transform your user’s experience.

your goal:

Audience should re-tell the story to a friend or colleague.
Cinderella

awful life. evil sisters.

gets ball invite. makes clothes.

 prince finds her. they live happily ever after...

back to same awful life. but not as sad as before, because of great experience.

oh no! has to go!

goes to ball & dances with prince.
A sticky idea is understood, it’s remembered, and it changes something. Sticky ideas of all kinds—ranging from the “kidney thieves” urban legend to JFK’s “Man on the Moon” speech—have six traits in common. If you make use of these traits in your communication, you’ll make your ideas stickier. (You don’t need all 6 to have a sticky idea, but it’s fair to say the more, the better!)

**PRINCIPLE 1**

**SIMPLE**
Simplicity isn’t about dumbing down, it’s about prioritizing. (Southwest will be THE low-fare airline.) What’s the core of your message? Can you communicate it with an analogy or high-concept pitch?

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**PRINCIPLE 2**

**UNEXPECTED**
To get attention, violate a schema. (The Nordie who ironed a shirt…) To hold attention, use curiosity gaps. (What are Saturn’s rings made of?) Before your message can stick, your audience has to want it.

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**PRINCIPLE 3**

**CONCRETE**
To be concrete, use sensory language. (Think Aesop’s fables.) Paint a mental picture. (“A man on the moon…”)

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**PRINCIPLE 4**

**CREDIBLE**
Ideas can get credibility from outside (authorities or anti-authorities) or from within, using human-scale statistics or vivid details. Let people “try before they buy.” (Where’s the Beef?)

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**PRINCIPLE 5**

**EMOTIONAL**
People care about people, not numbers. (Remember Rokia.) Don’t forget the WIIFY (What’s In It For You). But identity appeals can often trump self-interest. (“Don’t Mess With Texas” spoke to Bubba’s identity.)

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**PRINCIPLE 6**

**STORIES**
Stories drive action through simulation (what to do) and inspiration (the motivation to do it). Think Jared. Springboard stories (See Denning’s World Bank tale) help people see how an existing problem might change.

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www.MADEtoSTICK.com

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Ocean Discovery

Focused resources to REALLY understand Hawai'i's "stuck" points & causes.

Gain insight into root challenges to leapfrog barriers.

Share insights w/ fellows & other leaders.

Brainstorm & design new strategies & approaches for DF & "member"/ Fellow co's partners.

"Rinse & repeat" for each new level of awareness. Makes of stronger, relevant driver.
Bring ideas to users
Evaluate solutions
Generate feedback
“prototype as if you know you’re right, test as if you know your wrong”

“continue to gain empathy for your users”
test: how?

1. let the user experience the prototype
2. observe the experience
3. engage the user
4. know your role

“prototype as if you know you’re right, test as if you know your wrong”
let the user **experience** the prototype

set the scene for the new world with your prototype

give a **short** explanation to set context

act like a **guide** (not a lead)
provide/capture feedback: now

+ What worked...

"I Like"

- What could be improved...

"I Wish"

? Questions...

"What if"

! Ideas...

"I Wonder"
Share your story with the neighboring team
Instructions:
1. Decide on 3 diverse test subjects who is impacted by your solution (ex: new teachers, evaluators, administrators, HE teachers, etc).
2. Test your prototype and note down “I like, I wish, I wonder and what ifs”
3. Based on feedback feel free to modify your prototype with next test subjects.
4. Describe the ‘insights’ you discovered during each test.
Design thinking mindset

- Human centered
- Bias toward action
- Radical collaboration
- Culture of prototyping
- Show don't tell
- Mindful of process
My design thinking CHEAT SHEET

Empathize

Define

User + Need + insight

= POV (point of view)

Search for rich stories and find some LOVE

YES! and...
YES! and...
YES! and...
YES! and...
YES! and...
YES! and...
YES! and...

Ideate

Prototype

BUILD to LAST LEARN

YES! and...

Prototype

Test

SHOW, don’t tell

start all over
(do it as many times as possible)
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