# Human-Centered Design (HCD) Training

An introduction to HCD for CMS OIT
Winter 2020

TANTUS

# Our Team

**Human-Centered Design**

Center of Excellence (CoE)

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**TANTUS**



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# Agenda

# Ice Breaker

- Tell us your name

- What is your role?

- Describe a product or service that provided a great experience

# CMS Mission

To ensure that the **voices and needs of the populations we represent are present** as the agency is developing, implementing, and evaluating its programs and policies.

# HCD at CMS

The process we use to **understand the people** for whom we are writing policies and creating programs and services.

> To design an easy-to-use interface, pay attention to what users **do**, not what they say. Self-reported claims are unreliable, as are user speculations about future behavior.

– *Jakob Nielson, Web Usability Authority*

**HUMAN CENTERED DESIGN**

**DESIGN**

# Why HCD is Needed

Case studies to be covered:

- From Terrifying to Terrific: The Creative Journey of the GE Adventure Series

- Designing a Medical Device for Nurses

- Improving a Hospital's Patient Experience
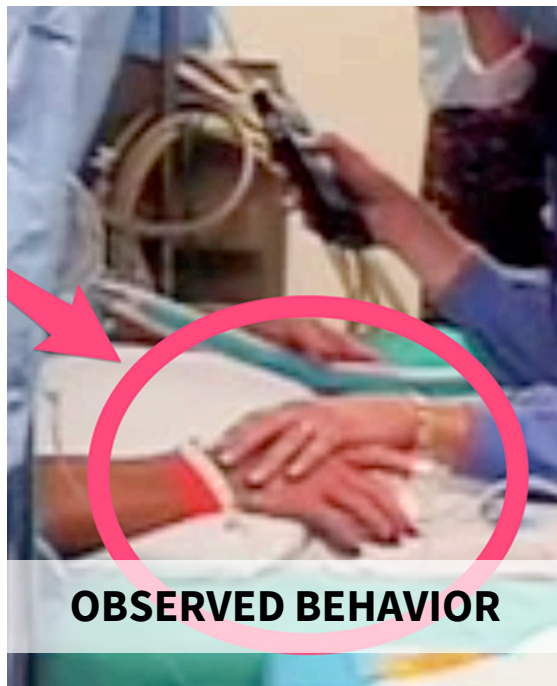
# Designing a Medical Device for Nurses



EXPECTED

# Designing a Medical Device for Nurses



EXPECTED

OBSERVED BEHAVIOR

# Designing a Medical Device for Nurses



**EXPECTED**

**OBSERVED BEHAVIOR**

**END RESULT**

# Improving a Hospital's Patient Experience



**OBSERVED BEHAVIOR**

*When you're a patient in the hospital you spend all day lying in a bed staring at the ceiling for a really long time—and it's a really bad experience.*
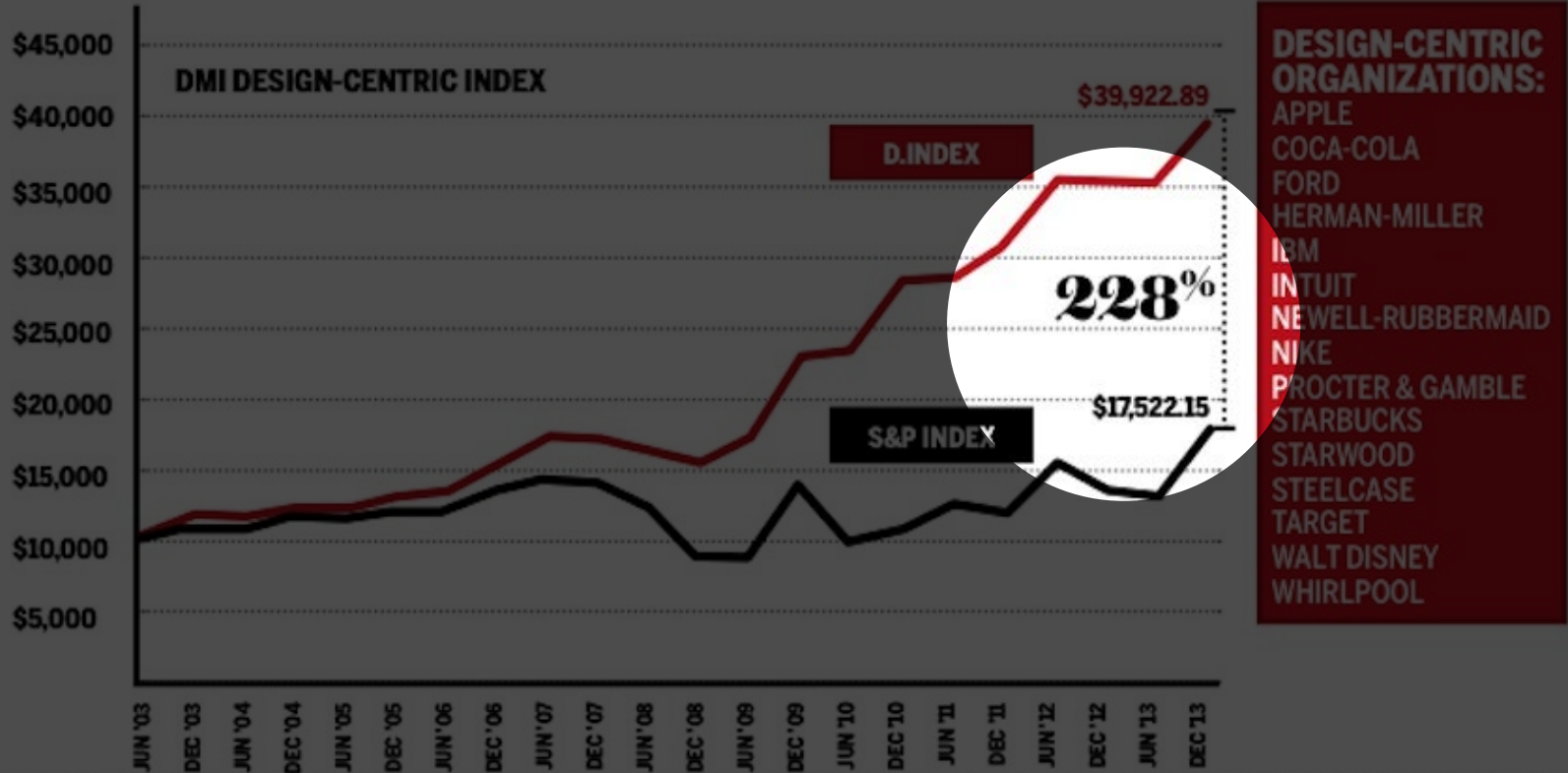
"We're not competitor obsessed, we're customer obsessed.

**We start with the customer and we work backwards.**
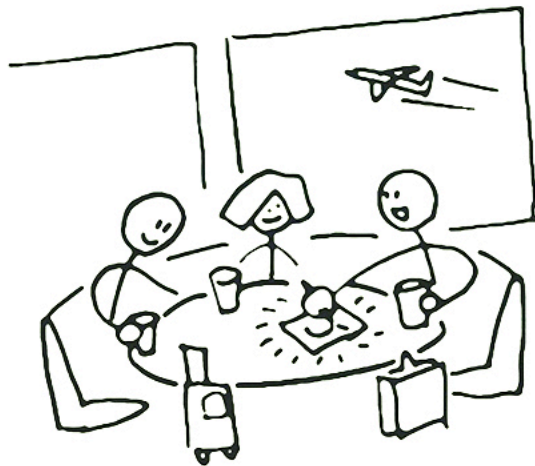
*– Jeff Bezos, Amazon CEO*

# S&P vs D.INDEX



**DMI DESIGN-CENTRIC INDEX**

D.INDEX

$39,922.89

228%

S&P INDEX

$17,522.15

$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000

JUN '03 | DEC '03 | JUN '04 | DEC '04 | JUN '05 | DEC '05 | JUN '06 | DEC '06 | JUN '07 | DEC '07 | JUN '08 | DEC '08 | JUN '09 | DEC '09 | JUN '10 | DEC '10 | JUN '11 | DEC '11 | JUN '12 | DEC '12 | JUN '13 | DEC '13

**DESIGN-CENTRIC ORGANIZATIONS:**
APPLE
COCA-COLA
FORD
HERMAN-MILLER
IBM
INTUIT
NEWELL-RUBBERMAID
NIKE
PROCTER & GAMBLE
STARBUCKS
STARWOOD
STEELCASE
TARGET
WALT DISNEY
WHIRLPOOL

"Design-driven companies outperform the S&P by 228% over ten years." (March 10, 2014). Design Management Institute.

# Visual Alphabet

| point | line | angle | arc | spiral | loop |
|-------|------|-------|-----|--------|------|

| oval | eye | triangle | rectangle | house | cloud |
|------|-----|----------|-----------|-------|-------|
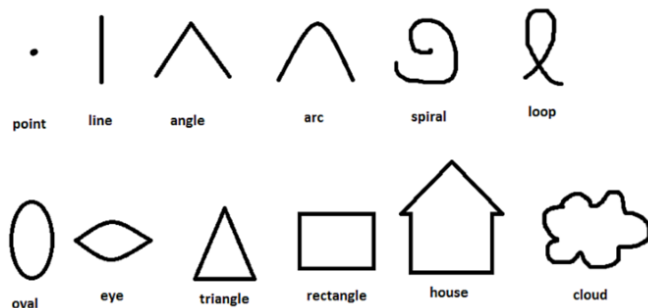
With this alphabet as a tool, you can draw anything with these 12 shapes,

like a DNA helix,

which is simply eyes and lines.

# Design Ice Breaker
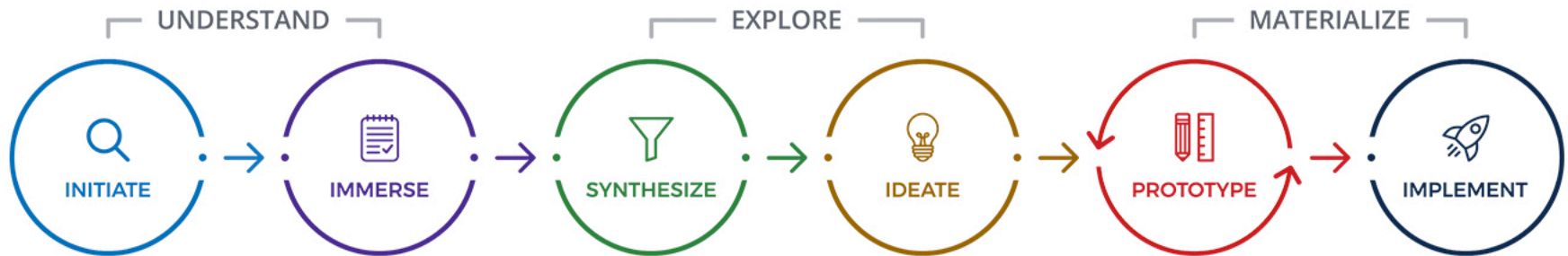
## Draw Toast Exercise (3 Minutes)

Draw a picture of how to make toast.

- Sticky Notes (one per "step")

- Markers
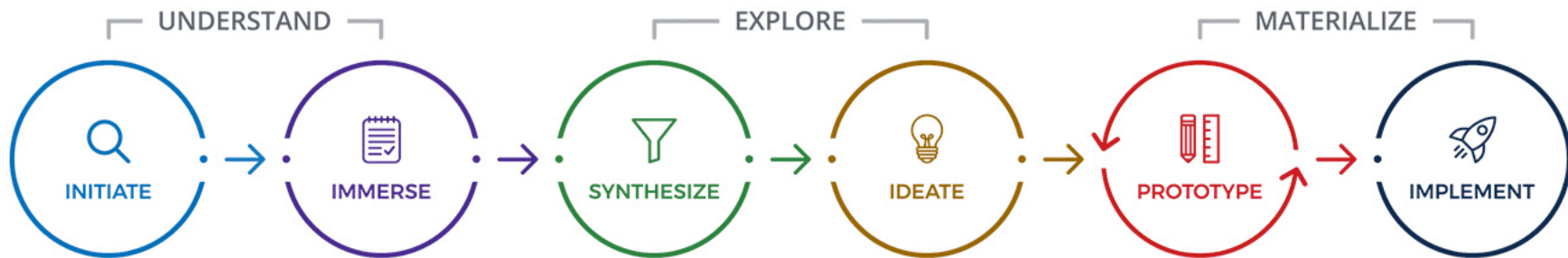
- No Words

- 3 Minutes

# HCD Process

*Starts with the people you're designing for and ends with new solutions that are tailor made to suit their needs.*

# Learning HCD Hands on

- Wallet example

- Break into teams

- Teach the phase

- Experience the phase

- Think outside the box

UNDERSTAND

EXPLORE

MATERIALIZE

INITIATE

IMMERSE

SYNTHESIZE

IDEATE

PROTOTYPE

IMPLEMENT

# Initiate

The first phase of the HCD process, in which existing data is collected, scope is defined, and a project brief is created.

# Method Cards

| Project / Design Brief

| Stakeholder Mapping

| How Might We…?

| Stakeholder Interviews | Requirements Gathering | Empathy Maps |
| --- | --- | --- |
| User Stories | How Might We…? | Storyboard |
| Project Kickoff Meeting | Project / Design Brief | Stakeholder Mapping |
| Analysis & Synthesis | Problem Statement | Bodystorming |

# Project / Design Brief

A Project Brief or Design Brief, sets the project tone by succinctly stating the Who, What, When, Why, and How.

🔍 INITIATE

## VISION (Why)

We live in a fast-changing world. Modern technology encourages an always-on-lifestyle that makes it hard to switch off and experience true rest and rejuvenation. But it doesn't have to be like that.

Equilibrium is a new offering that uses technology to your advantage to help you make better choices about how you use your time, and to maximize quality time in your life. Unlike to-do-lists, complicated productivity systems or ambitious bucket lists, Equilibrium takes the burden of maintenance off your plate and gives you options that lead to long-term happiness.

## REQUIREMENTS (What)

- Socially networked. Integrates with other social networks. Easy for users to import data from other social networks and easy for them to share what they've been doing.
- Device interoperable and mobile enabled. Designed for mobile first. Smartphone and text capabilities create daily dialog with the user.
- Supports formal and informal goal setting. System suggests and detects possible goals, and also enables users to manually create their own goals.
- Brings in data from a variety of places. This is the heart of the system. Integrates with tools like Outlook, iCal, Google Calendar, and other productivity software.
- Rich information visualizations. Data is repackaged and displayed in surprising and engaging ways.

## DESIGN PRINCIPLES (How)



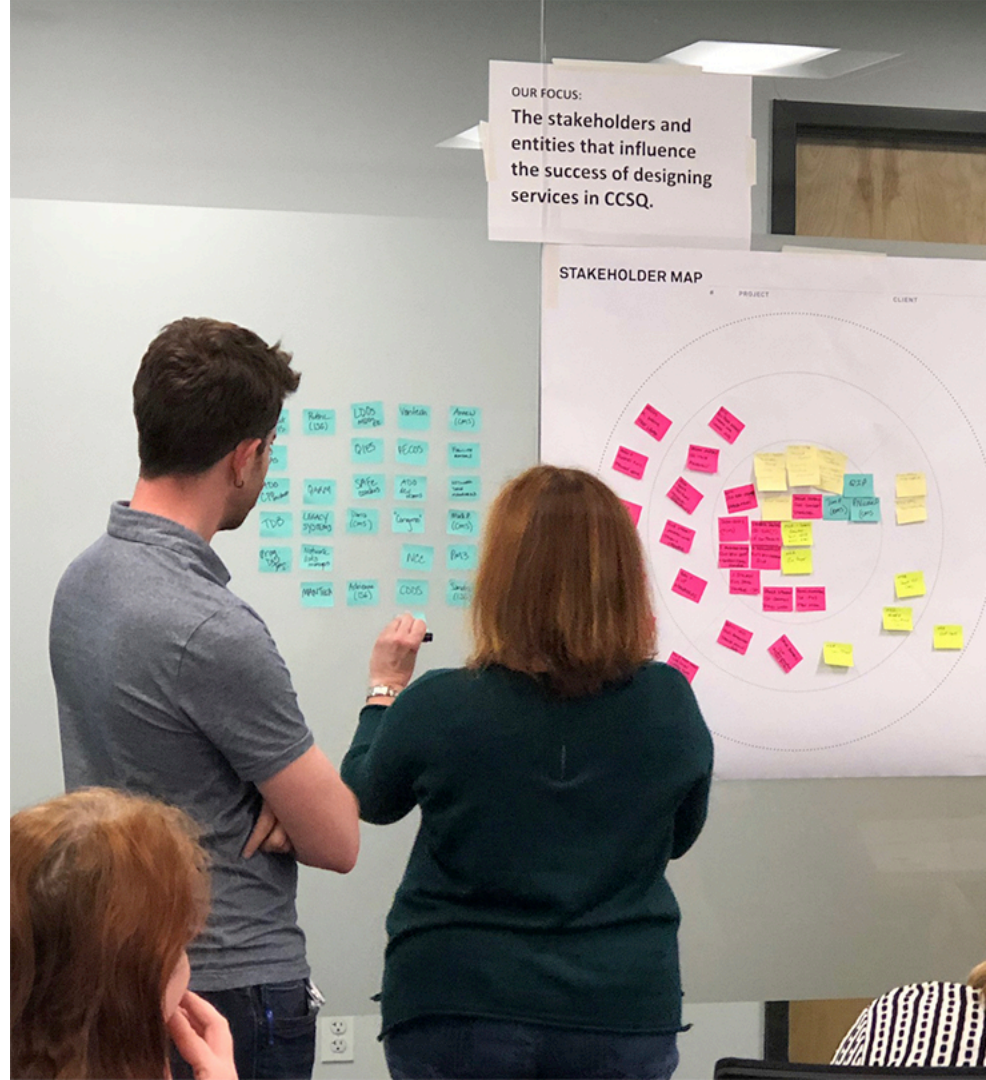**It does the work for you.**
(minimal maintenance)



**It reflects your passions.**
(mirroring you)



**It's not overwhelming.**
(minimal maintenance)

# Stakeholder Mapping

**Stakeholder maps** help visualize project stakeholders and identify those critical to the project.

🔍 INITIATE

# How Might We...?

"How Might We...?" questions are a way of framing a design challenge in a way that encourages possibilities.

🔍 INITIATE

# Activity: How Might We…?

Create a wearable wallet for a cashless society?

Provide easy access to one's most frequently used credit/debit card?

Create a wallet that can be on a person when swimming?

# INITIATE

## Key Takeaway

Create a shared understanding of the problem that you're trying to solve; Who, What, Where, Why and How.

COFFEE
BREAK

# Immerse

The second phase of the HCD process, in which a research plan *is developed* and *the team* immerses themselves in the customer's experience.

# Immerse

Why does empathy matter?

# Method Cards

| Contextual Inquiry
| Customer Journey Maps
| Interview

IMMERSE

| Interviews | Contextual Inquiry | Cognitive Mapping |
|---|---|---|
| Empathy Map | Diary Studies | Participatory Design |
| Focus Groups | Customer Journey Maps | Ethnographic Research |
| Design Studios | Personas | Desirability Testing |

# Contextual Inquiry

**Contextual inquiry** is an anthropological approach focused on individual and group behavior in context. This method uses observation, interviews, diaries, and artifact collection to investigate customs, rituals, and myths.
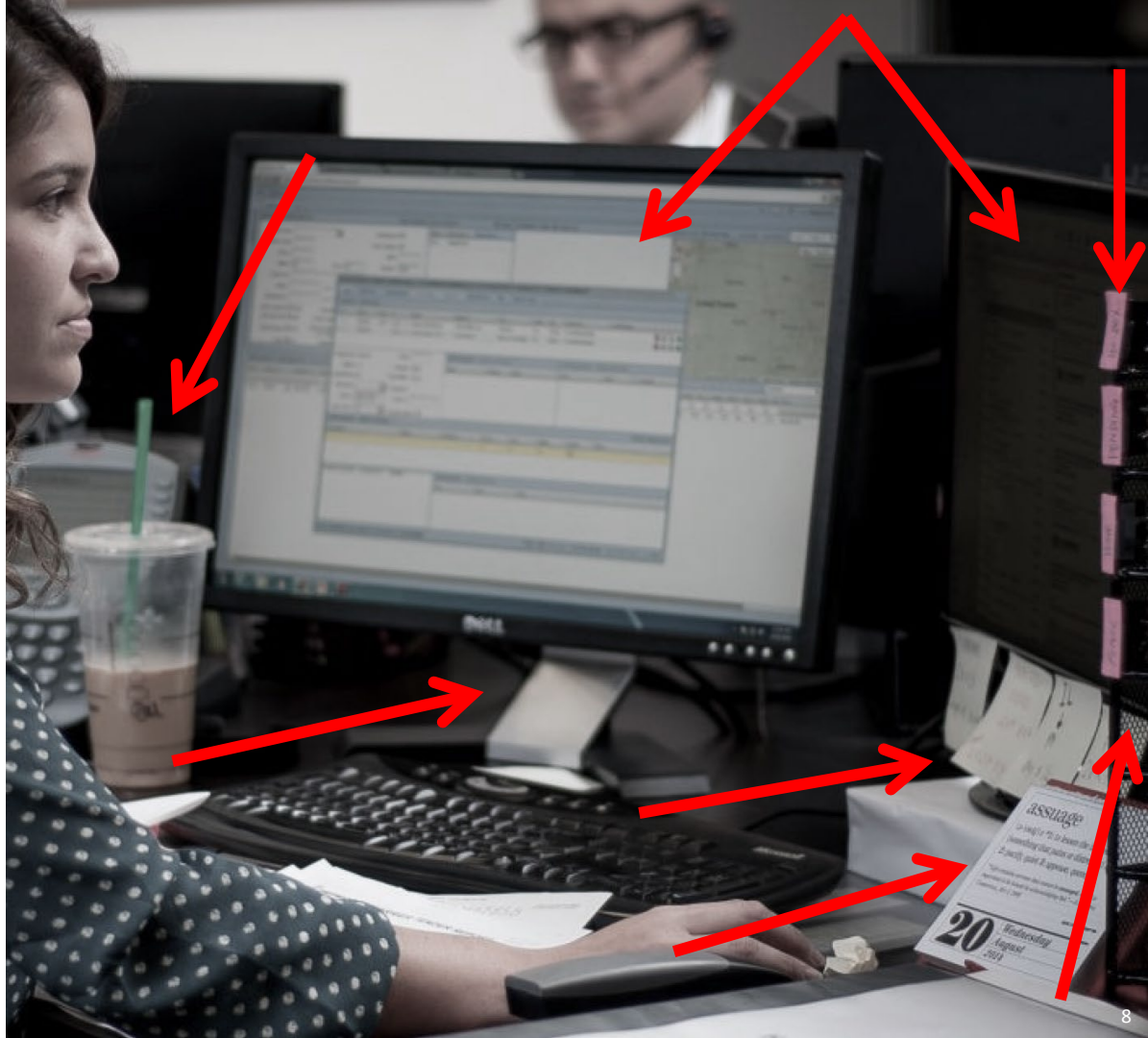
IMMERSE
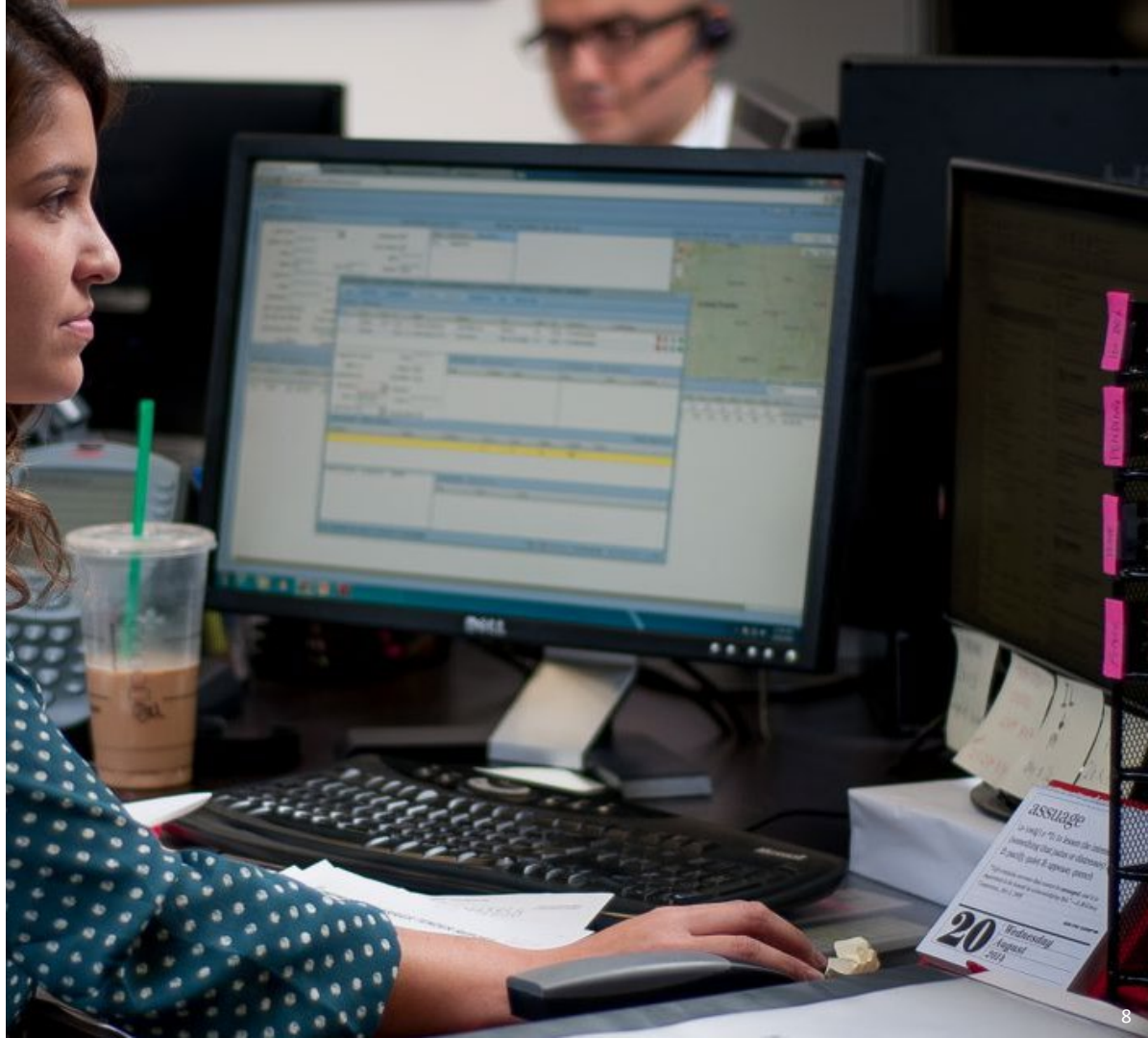
# Contextual Inquiry

**Contextual inquiry** focuses on observing customers, providing rich insights into behavior, experience, and expectations within a system.
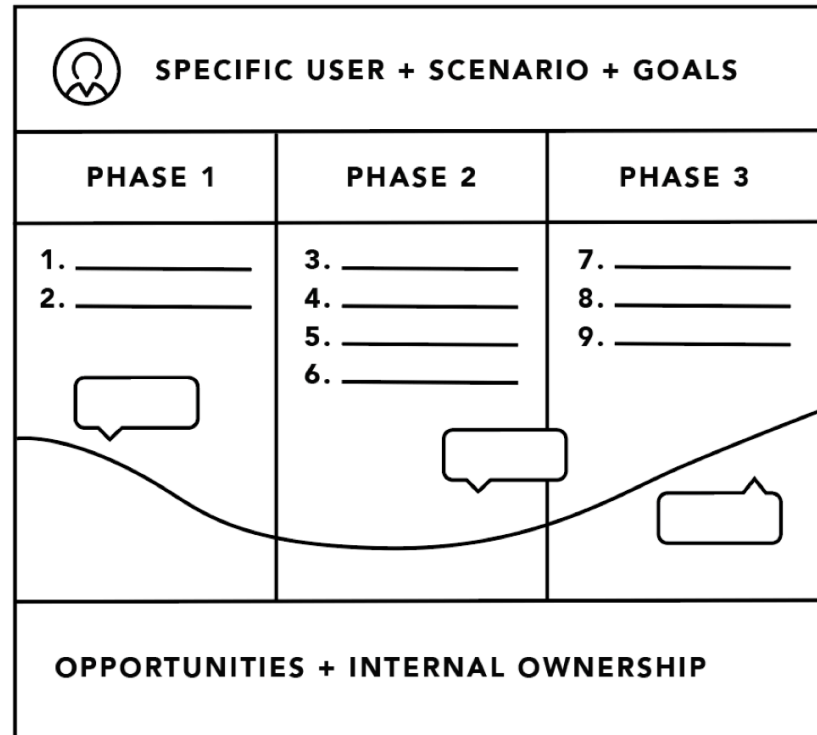
IMMERSE

8

# Journey Map

A journey map visualizes a customer's experience with a product or service across locations, time, and channels. This holistic view helps promote better understanding of the customer, helps coordinate cross-channel design and reveals opportunities for new or improved interactions.

IMMERSE



CUSTOMER/USER JOURNEY MAP

SPECIFIC USER + SCENARIO + GOALS

| PHASE 1 | PHASE 2 | PHASE 3 |
|---------|---------|---------|
| 1. _____ | 3. _____ | 7. _____ |
| 2. _____ | 4. _____ | 8. _____ |
|  | 5. _____ | 9. _____ |
|  | 6. _____ |  |

OPPORTUNITIES + INTERNAL OWNERSHIP
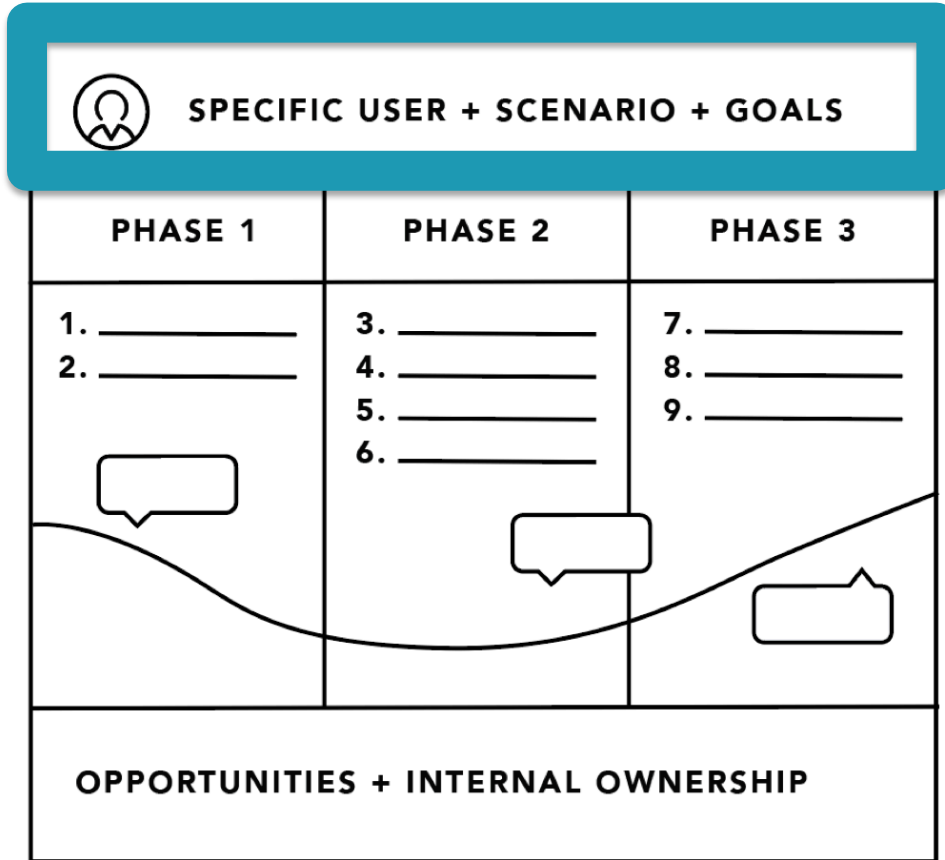
# Context

- Persona
- Journey
- Goals

CUSTOMER/USER JOURNEY MAP

SPECIFIC USER + SCENARIO + GOALS

PHASE 1 | PHASE 2 | PHASE 3

1. ____
2. ____

3. ____
4. ____
5. ____
6. ____

7. ____
8. ____
9. ____

OPPORTUNITIES + INTERNAL OWNERSHIP

IMMERSE

NNGROUP.COM  NN/g

# Journey



**CUSTOMER/USER JOURNEY MAP**

SPECIFIC USER + SCENARIO + GOALS

| PHASE 1 | PHASE 2 | PHASE 3 |
|---------|---------|---------|
| 1. _____ | 3. _____ | 7. _____ |
| 2. _____ | 4. _____ | 8. _____ |
|         | 5. _____ | 9. _____ |
|         | 6. _____ |         |

OPPORTUNITIES + INTERNAL OWNERSHIP
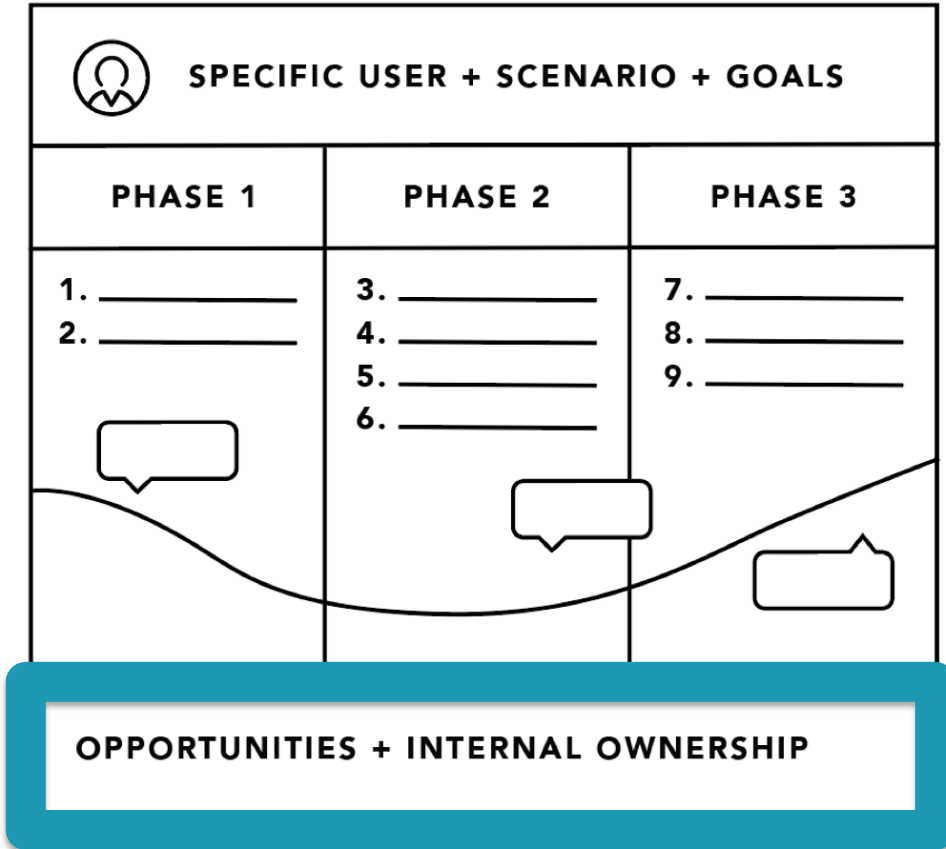
- Phases

- Doing

- Thinking

- Feeling

- Touchpoints

IMMERSE

# Business

- Pain Points
- Opportunities
- Ownership

# Interviews

- How do you complete the task today?

- What are your needs and goals?

- What are your pain points?

IMMERSE

# Activity: Interview

What's in your wallet? Why do you carry one?
Do you carry one?

- Ask why, dig for stories, feelings, emotions.

- Take notes on Post-Its – 1 observation/note

- Jot down anything else you observed or heard

# Key Takeaway

Gain empathy by talking to and observing your customers.

# Discussion

## Application to CMS

| Contextual Inquiry

| Customer Journey Maps

| Interview

IMMERSE

| Interviews | Contextual Inquiry | Cognitive Mapping |
|---|---|---|
| Empathy Map | Diary Studies | Participatory Design |
| Focus Groups | Customer Journey Maps | Ethnographic Research |
| Design Studios | Personas | Desirability Testing |

# Synthesize

The third phase of the HCD process, in which analysis & interpretation of data occurs, & themes, insights, and customer pain points are identified.
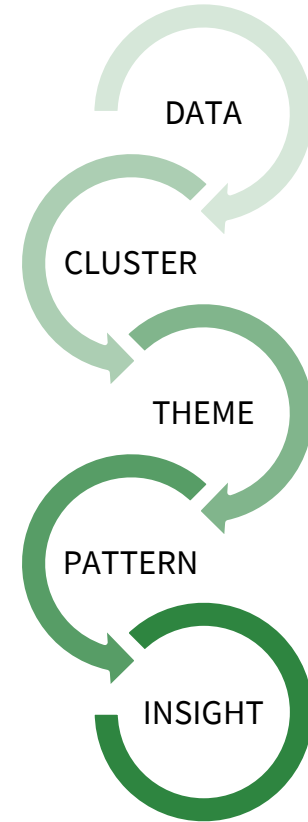
# How

**Data**: empirical and objective

**Cluster**: small group of related data

**Theme**: description of a cluster

**Pattern**: complete sentence that conveys an observation of the human story

**Insight**: insight that goes beyond empirical observation; a "provocative statement about human behavior."

SYNTHESIZE

DATA

CLUSTER

THEME

PATTERN

INSIGHT

# Method Cards

| Mind-mapping
| Card Sorting
| Affinity Diagramming

SYNTHESIZE

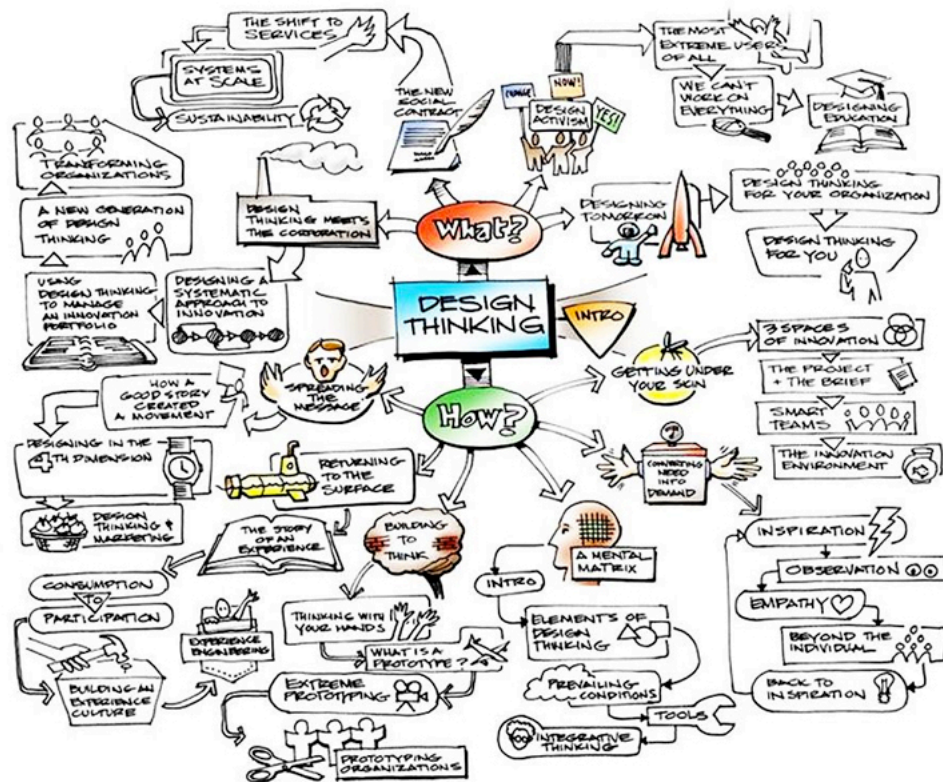| Journey Mapping | Data Visualization | Mental Modeling |
| Mind-mapping | Empathy Maps | Proto Personas |
| Top Task Analysis | Card Sorting | Affinity Diagramming |
| User Stories | Content Audit | Comparative Analysis |

# Mind-Mapping

Mind-Mapping is a method of visually organizing a problem space to help better understand it.

# Card-Sorting

Card-Sorting is a technique that involves asking users to organize information into logical groups.



SYNTHESIZE

# Affinity Diagramming

**Affinity Diagramming** helps make sense of large amounts of data by sorting them into meaningful groups.

SYNTHESIZE

# Activity: Affinity Diagram

## Find Themes & Insights

- **Use the Walls**: As a group, post your sticky notes with all of your findings on the wall

- **Look for Patterns**: Group similar ideas together, move them around on the wall

- **Create clusters**: Make them meaningful

- **Capture Insights**: Put a different color sticky note **above** each group with the key insights you find

SYNTHESIZE

# Key Takeaway

Sense-making by gathering available research/data/information to find themes, organizing into patterns and discovering insights.

# Discussion

## Application to CMS

| Mind-mapping
| Card Sorting
| Affinity Diagramming

SYNTHESIZE

| Journey Mapping | Data Visualization | Mental Modeling |
| --- | --- | --- |
| **Mind-mapping** | Empathy Maps | Proto Personas |
| Top Task Analysis | **Card Sorting** | **Affinity Diagramming** |
| User Stories | Content Audit | Comparative Analysis |

FOOD

# Ideate

The fourth phase of the HCD process, is to dream up many potential solutions, generating ideas via sketching, and co-designing with users and other stakeholders.
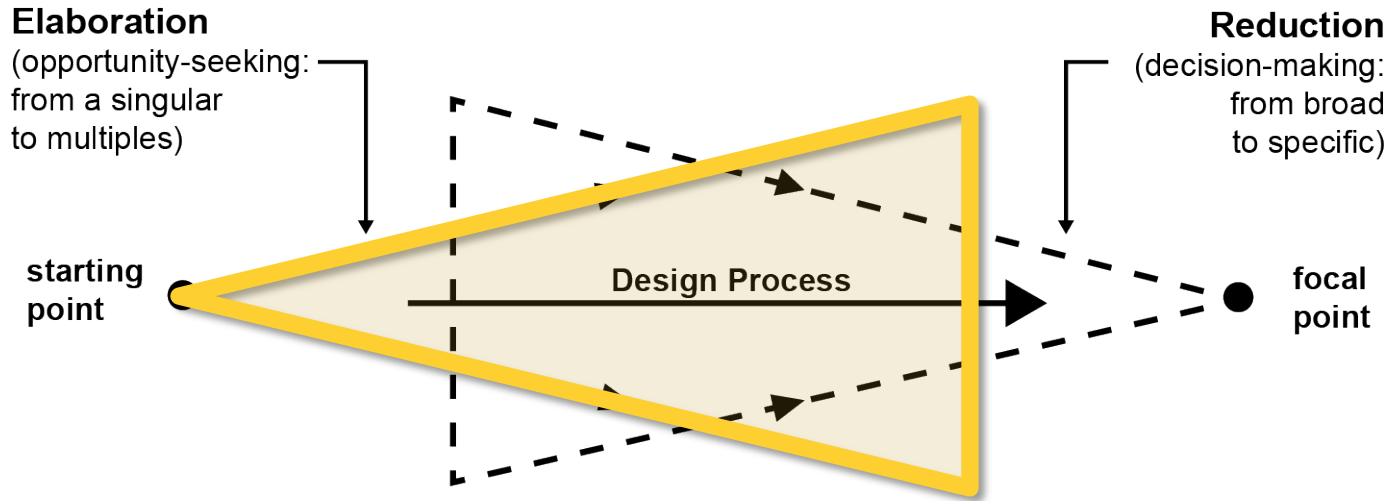
" If at first the idea is not absurd, then there is no hope for it.

– Albert Einstein
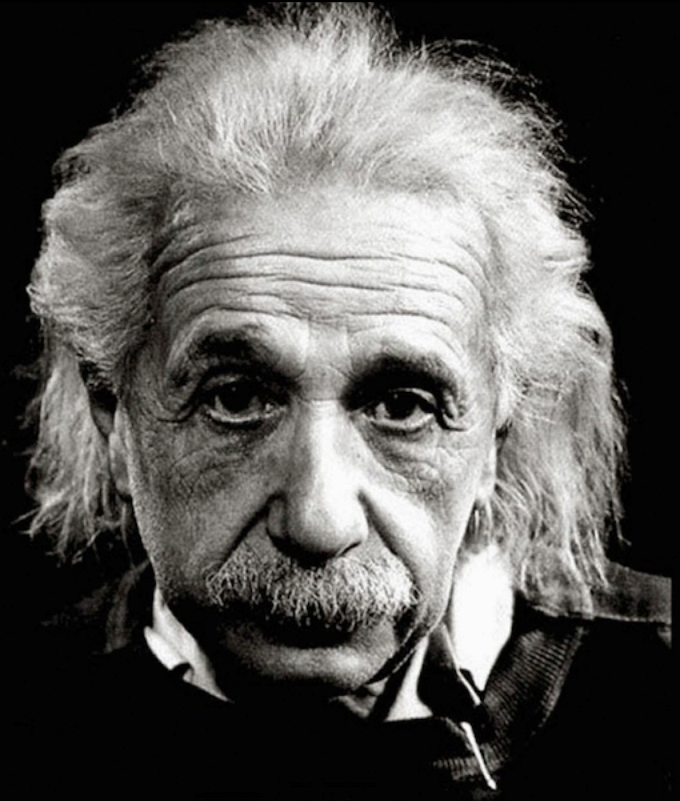
# Laseua's Funnel

# Method Cards

| Mash-up
| Design a Superhero
| Collaborative Sketching

IDEATE

| Brainstorming | Mash-up | Storyboarding |
|---|---|---|
| Forced Connections | Brain-Writing | Zero Draft |
| S.C.A.M.P.E.R. | Design a Superhero | Wishing |
| Questioning Assumptions | Collaborative Sketching | Six Thinking Hats |

# Mash-up

**Mash-ups** force people to think of new ways to solve problems by bringing odd or unexpected things together to spark new ideas.

IDEATE

# Design a Superhero

The design a superhero method encourages participants to think of ideal solutions to customer problems by identifying "super powers" that can help the common customer achieve extraordinary results.

IDEATE
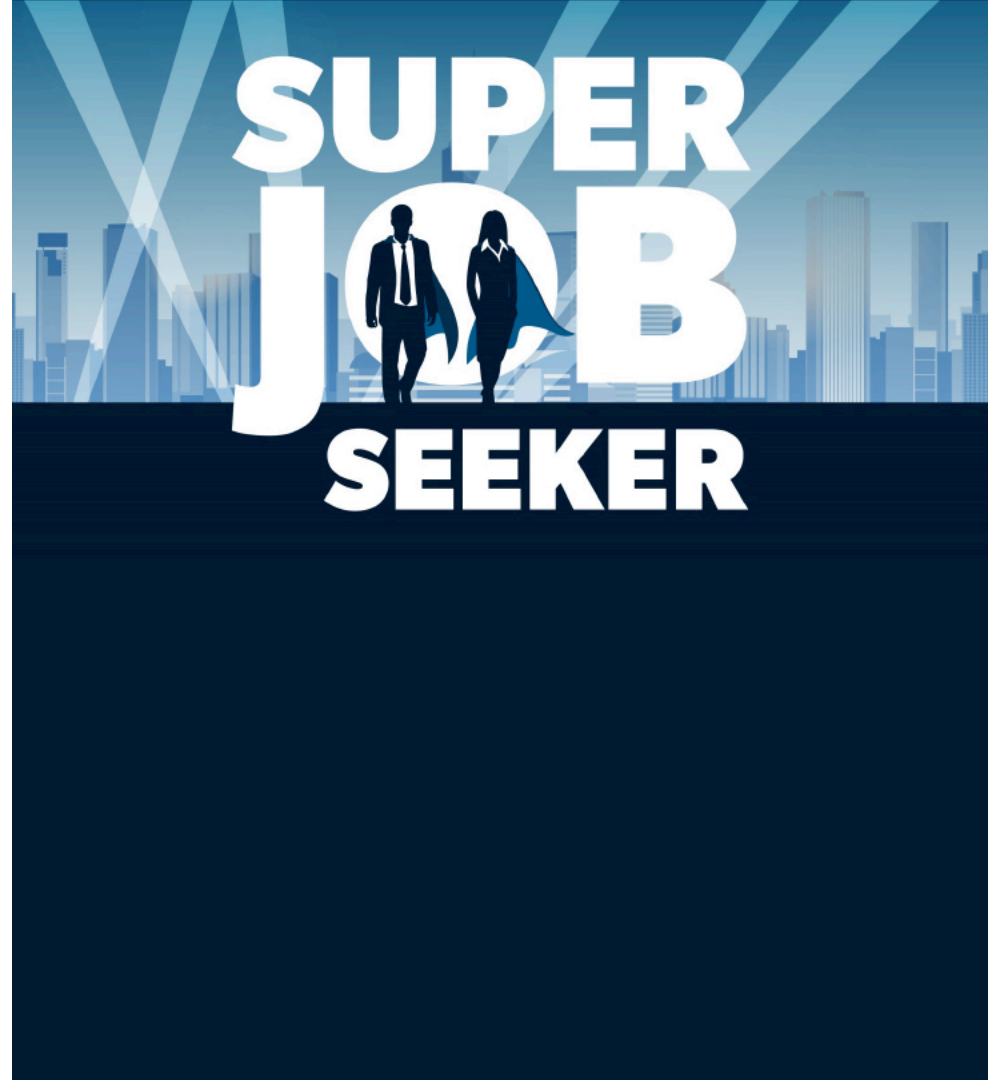
> "You are designing the *[role/persona]* superhero. This superhero has secret weapons that make it possible to overcome the things that frustrate *[role/persona]* like you and me. What secret weapons would you give this superhero?

– *Leah Buley, Adaptive Path*

# Collaborative Sketching

Collaborative sketching provides cross functional teams the opportunity to sketch their thoughts about possible design solutions. Sketching helps participants express their ideas in a concrete form, which can clarify design objectives and requirements.
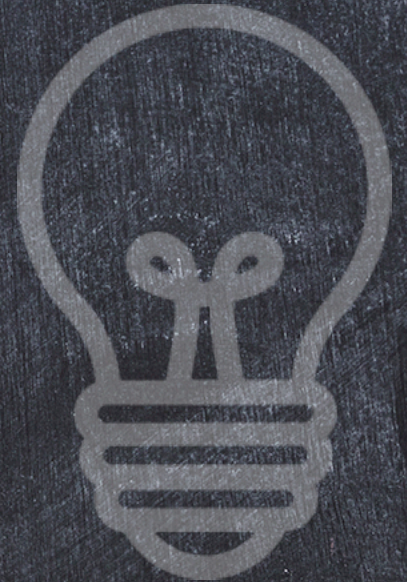
IDEATE

# Activity: Collaborative Sketching

**SKETCH**…6-8 unique ideas in 5 mins

**TEST**…to gather feedback

**VOTE**…on which ideas to prototype

# Key Takeaway

Ideas without limits

IDEATE

# Discussion

## Application to CMS

| Mash-up
| Design a Superhero
| Collaborative Sketching

IDEATE

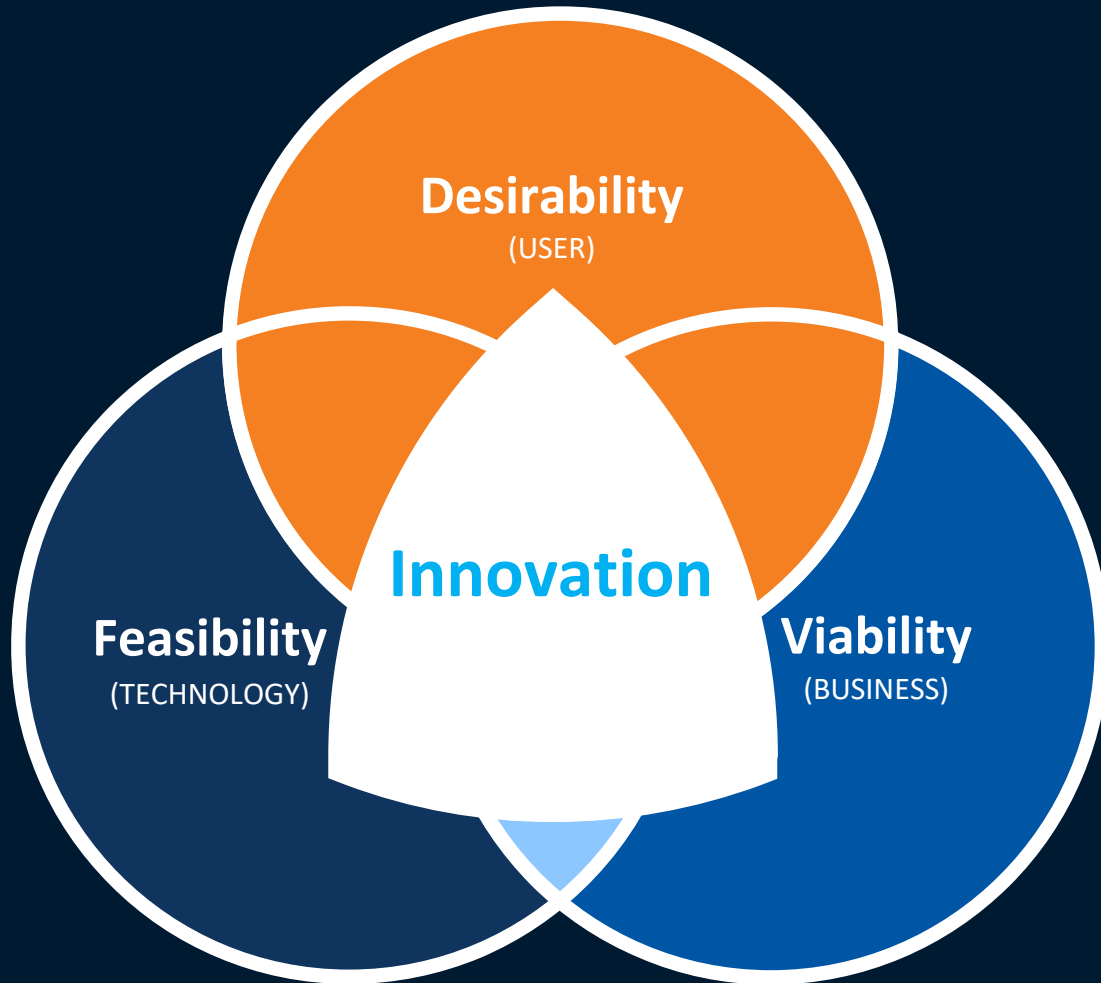| Brainstorming | Mash-up | Storyboarding |
|---|---|---|
| Forced Connections | Brain-Writing | Zero Draft |
| S.C.A.M.P.E.R. | Design a Superhero | Wishing |
| Questioning Assumptions | Collaborative Sketching | Six Thinking Hats |

# Prototype

The fifth phase of the HCD process, is to create an interactive solution that simulates how things should actually work, to elicit feedback, refine and test.

# Laseau's Funnel
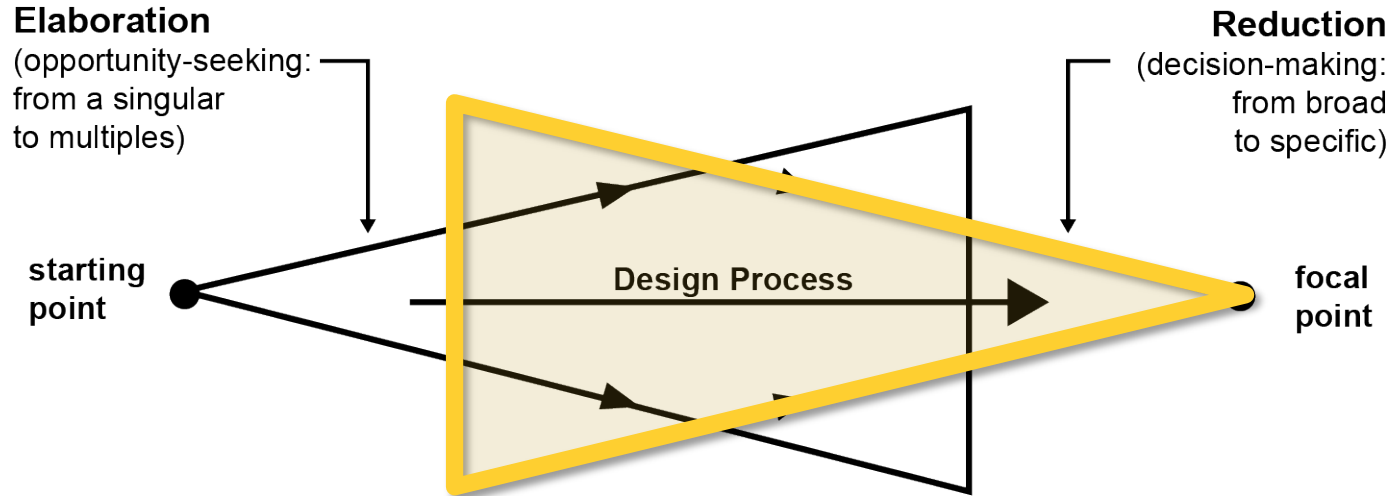
# Method Cards

| Storyboarding

| Product Prototype

| Service Prototype

PROTOTYPE

| Sketch | Usability Testing | Tree Testing |
|---|---|---|
| Paper Prototype | Storyboarding | Cognitive Walkthrough |
| Interactive Prototype | Wireframe | Service Prototype |
| Role Playing | Product Prototype | Wizard of Oz Prototype |

# Storyboarding

Storyboarding succinctly takes abstract ideas and makes them more understandable by showing how a product or service can solve a specific customer pain point.
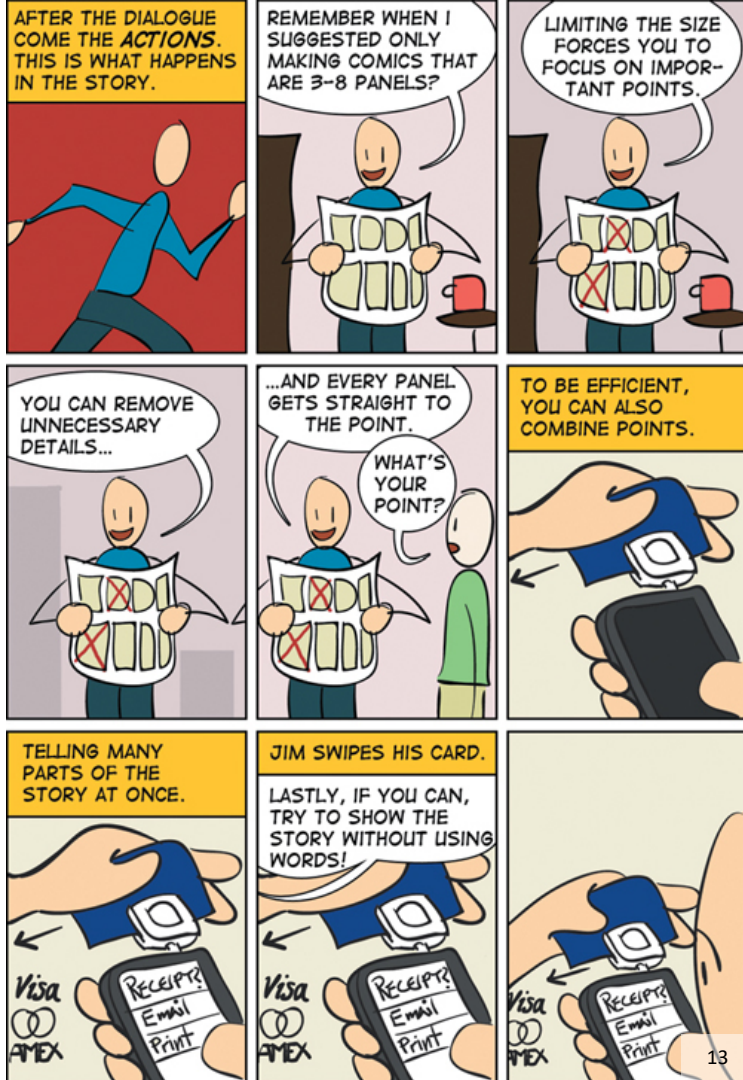
PROTOTYPE

# Product Prototype

**Product prototyping** provides the opportunity to move through a variety of iterations, building on what you've learned from the people you're designing for. Building only enough to test your idea, making it better once you've gotten the feedback you need.
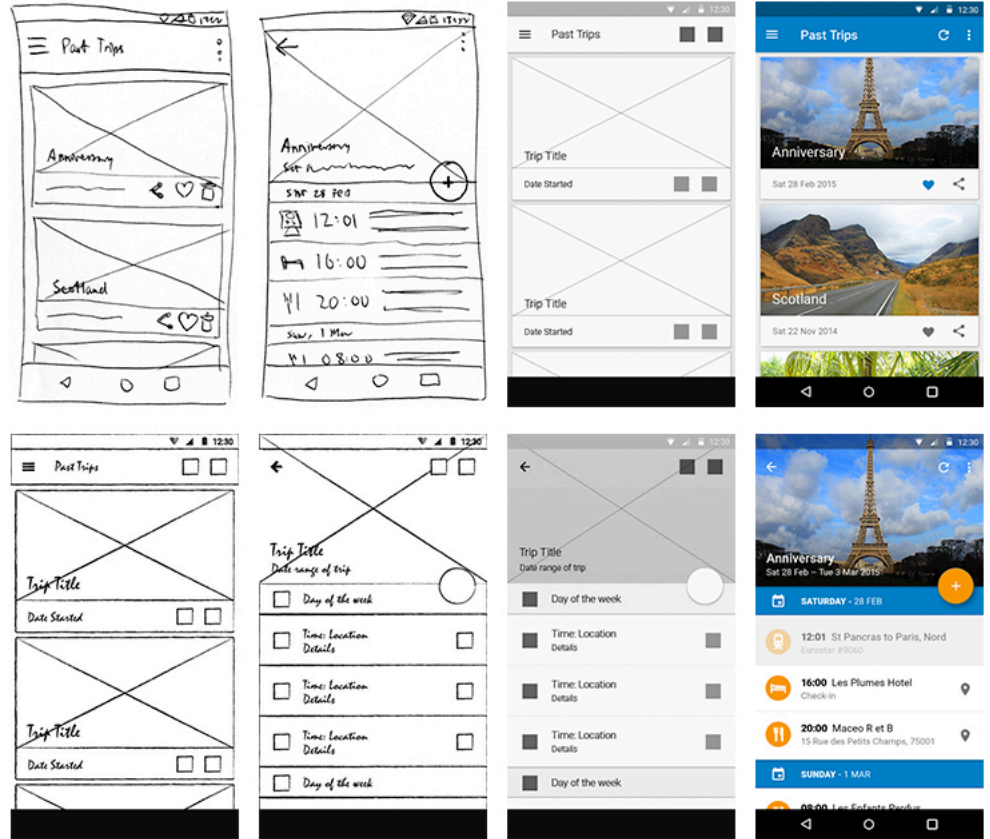


PROTOTYPE

# Service Prototype

**Service prototyping** includes all the intangible aspects of how an organization seeks to build a relationship over time with its customers. And one goal of prototyping these service design experiences is to bring tangibility to these intangible experiences.

PROTOTYPE

# Activity: Product Prototype

Each team makes a *paper prototype* from the sketch that received the most votes.

**Grab some materials.**

**Create your prototype.**

**Pitch your product.**

# Key Takeaway

Reduce your ideas to those that are desirable, feasible and viable, and make as interactive as possible so you can get feedback about the experience.

# Discussion

## Application to CMS

▌ Storyboarding

▌ Product Prototype

▌ Service Prototype

🖊 PROTOTYPE

| | | |
|---|---|---|
| Sketch | Usability Testing | Tree Testing |
| Paper Prototype | Storyboarding | Cognitive Walkthrough |
| Interactive Prototype | Wireframe | Service Prototype |
| Role Playing | Product Prototype | Wizard of Oz Prototype |

# Implement

The last phase of the HCD process, is to develop a solution; track metrics, manage and communicate change, improve for roll-out.

# Method Cards

| | Change Management
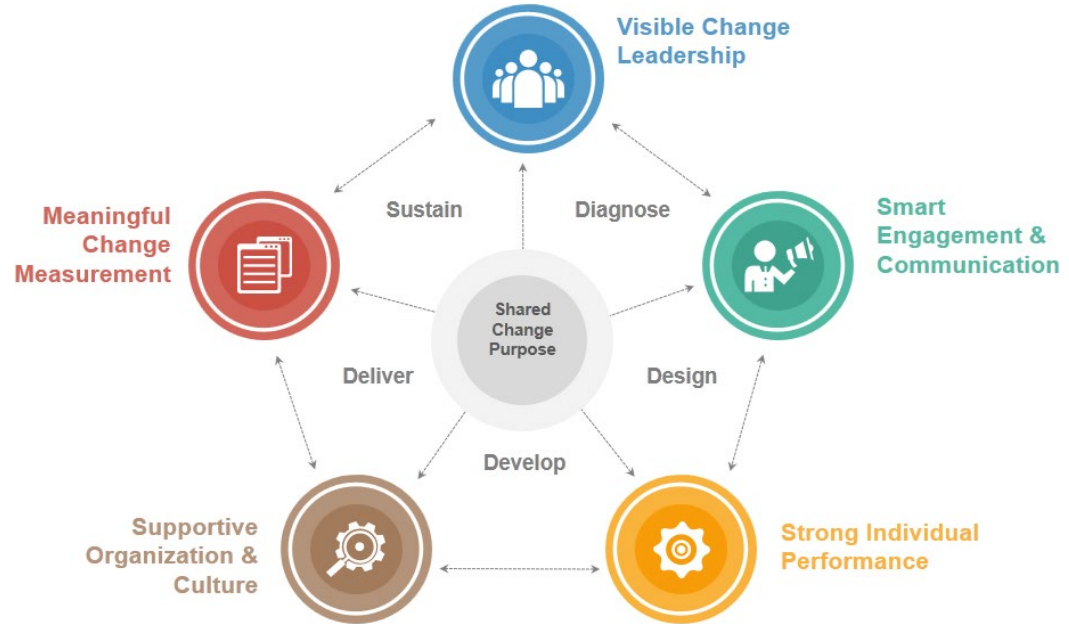| | Feedback Loop
| | Quality Metrics

🚀 IMPLEMENT

| | Performance Testing | |
|---|---|---|
| Beta Version | Change Management | User Acceptance Testing |
| Phased Rollout | Feedback Loop | Quality Metrics |
| | Sunsetting | |

# Change Management



Visible Change Leadership

Smart Engagement & Communication

Strong Individual Performance

Supportive Organization & Culture

Meaningful Change Measurement

Shared Change Purpose

Sustain

Diagnose

Deliver

Design

Develop

IMPLEMENT

# Feedback Loop

- Focused on the customer's feedback - what they say and what they do (i.e. usability)

- Determine all sources of feedback

- Refine based on feedback and get continuous customer validation

- Make this information available to everyone in your organization

IMPLEMENT

# Metrics

| Typical KPIs | Quantitative HCD KPIs | Qualitative HCD KPIs |
|---|---|---|
| • Web analytics<br><br>• Sales & Marketing<br><br>• Financial<br><br>• Customer support | • Task success rate<br><br>• Time on task<br><br>• Use of search vs. navigation<br><br>• User error rate<br><br>• System Usability Scale (SUS) | • Reported expectations and performance<br><br>• Overall satisfaction<br><br>• ***Design principles*** |

IMPLEMENT

we are experience designers. we create products and services that are easy and fun to use. we take the time to understand our users' problems and goals. we make it simpler, no matter how hard it is. **we transform the experience of education.**

**delightful.** our users say "wow!" when experiencing our product. good design pleases the eye and delights the heart. **engaging.** we motivate people to want to use our products. we create collaborative and personal experiences. **reliable.** our products are credible. our designs are consistent and error free. our system is stable and fast. **simple.** our products are easy to use. our designs enable success without training. **useful.** we include just enough design so users can easily meet their needs and goals. we know when to remove excess

# Activity: Metrics

How can we determine if the product launch for the new wallet is successful?

How do we measure success?

How do we measure quality?

# IMPLEMENT

# Key Takeaway

You are not done.

Continue to iterate, refine and enhance based on user feedback and metrics.

# Discussion

## Application to CMS

▌ Change Management

▌ Feedback Loop

▌ Quality Metrics

🚀 IMPLEMENT

# Summary and Wrap Up

**Key Validations**

*(I knew it!)*

**Unexpected Delights**

*(That's awesome!)*

**New Learnings**

*(I didn't know that!)*

**Potential Roadblocks**

*(How will we work around this?)*

# References

1. Photo courtesy Children's Hospital of Pittsburgh of UPMC
   http://www.slate.com/blogs/the_eye/2013/10/18/creative_confidence_a_new_book_from_ideo_s_tom_and_david_kelley.html

2. Photos courtesy of NEC America and Paul Bennett
   https://www.usertesting.com/blog/how-ideo-uses-customer-insights-to-design-innovative-products-users-love

3. Photo courtesy of Inhabitat
   https://inhabitat.com/assisted-living-home-replicates-a-friendly-american-neighborhood-to-help-treat-patient-memory-loss/the-lantern-of-madison-indoor-street

4. http://www.danroam.com/the-back-of-the-napkin

5. http://xplaner.com

6. Photo courtesy of Rosenfeld Media
   https://rosenfeldmedia.com/ux-team-of-one/3641

7. Empathy Video
   http://www.designkit.org/mindsets/4

8. Photo courtesy of White Arrow
   https://www.whitearrow.com/2018/05/29/%E2%80%8Bcustomer-service-representative

# References (continued)

9.  Photo courtesy of Lucid Chart
    https://www.lucidchart.com/blog/how-to-build-customer-journey-maps

10. Photo courtesy of  Tim Brown, IDEO, Change for Design

11. https://medium.com/user-research-practice/meal-planning-windows-app-user-research-plan-79017bd3d225

12. https://www.ideou.com/pages/ideation-method-mash-up

13. Photo courtesy of Kevin Cheng
    https://www.oreilly.com/library/view/see-what-i/9781457102738/ch05.html

14. Photo courtesy of Murdoch Carpenter
    http://murdochcarpenter.com/portfolio/wireframes

15. Service Prototype
    https://www.ideou.com/blogs/inspiration/6-tips-for-how-to-prototype-a-service

16. Photo courtesy of Hanisha Kapoor
    https://www.slideteam.net/blog/11-change-management-powerpoint-slides-for-a-successful-transition