Forming and Evaluating
Human-Centered Design is

The discipline of generating new solutions to problems and opportunities through the process of making “something” where the process is driven by the needs, desires and context of the people being designed for.

“Design is not a one-shot vaccine; it’s an ‘innovation fitness program’ that puts an organization on top of its game. It is not an ‘event’, it is a way of thinking, communicating and doing every day.”
Human-Centered Design is

- Interdisciplinary collaboration
- Engagement with users and stakeholders
- Rapid iteration
HCD Benefits to Your Company

- Get the right product to market faster
- Lower product development costs
- Minimize product support costs
- Build relationship and shared-vision with your customers
- Insure product success
- Strengthen company brand and competitiveness

HCD benefits to your Customer

- Satisfied users – Less frustration and more confidence
- Reduce training time/expenses
- Increased user productivity
Cost of Technology
At the turn of the century, powerful/complex systems were expensive and rare. Today, powerful/complex systems are cheap and ubiquitous.

Amount of Information, Complexity and Products
Information doubles every 11 hours. Trillions of connected nodes and devices. Product and Services with richer feature sets (because we can).

Human-Centered Design
Balance
Ease of Use vs. Power

Human Evolution
Our ability to deal with the varied complexity inherent in everyday powerful systems.
Complexity causes 50% of product returns

AMSTERDAM (Reuters) - Half of all malfunctioning products that are in full working order, but customers can't figure out how to use them, was said on Monday.

Product complaints and returns are often caused by poor design. Many companies frequently dismiss them as "nuisance calls," Eike de Weerdt, the Technical University of Eindhoven in the south of the Netherlands, study found.

"A wave of versatile electronics gadgets has flooded the market, including MP3 players and home cinema sets to media centers and wireless routers. Consumers still find it hard to install and use them, she said.

"Hardly a day goes by that we don't see an announcement for some new product or technology that is going to make our lives easier, solve some of all of our problems, or simply make the world a better place," writes Bill Buxton in the "Why Products Fail".

"It's more information than any soldier ever had..."

"It's just a bunch of stuff we don't use..."
“Once a system is in development, correcting a problem costs 10 times as much as fixing the same problem in design (concept). If the system has been released, it costs 100 times as much...”

“Usability methods raised user satisfaction ratings for a system by 40%; when systems match user needs, satisfaction often improves dramatically.”

(Bias & Mayhew, 1994)
Human-Centered Design

Design

UNDERSTANDING
- Concept Mapping
- Stakeholder Mapping
- Interviewing
- Field Studies
- Contextual Inquiry
- Walk-a-Mile
- Personas
- Workflow Diagramming

CONCEPTING
- Sketching
- Ideation
- Participatory Design

FORMING
- Frame-work
- Rapid Prototyping
- Drawing & Modeling

EVALUATING
- Usability Testing
- Questionnaires
- Usability Heuristics
- Priority Matrixes
Information Architecture provides a template and guiding principals for a product or service and how a user experiences it.
What are the guiding principals and hierarchy behind these designs?
What are the guiding principals and hierarchy behind these designs?
Bullseye Diagrams help a product development team understand what is significant and what is less relevant to users.

Information Architecture
Relative Importance of Measures

This diagram organizes the measures by relative importance to users. It is intended to go along with the High-Level Overview information architecture diagram on the next page. It informs the design of navigation and information presentations that follow. These measures were taken from the Instructions for 1Q Analyzer Electrical Distribution System Monitor, Table 5.2.

THE INNER CIRCLE
Critical Items
The inner circle in this diagram represents the most critical and most-used measurements. These are the measurements that must be at one's fingertips to get a sense of power usage and quality.

THE MIDDLE CIRCLE
Important Items
The middle circle in this diagram represents the next level of importance. These measurements are not so detailed that they are only used by a few people or in a few circumstances, but they are not as important as those in the inner circle, either.

THE OUTER CIRCLE
Details
The outer circle contains the
“You can use an eraser on the drafting table or a sledge hammer on the construction site.”

—Frank Lloyd Wright

“Fail early and often.”

—Popular Mantra
Typical user engagement in product development.

Users

The Learning Chasm

Concept
Requirements

The Development Team

Alpha
Beta
Pilot
Launch
Rapid prototyping promotes frequent engagement with users, constant iteration and multi-disciplinary collaboration.
CUSTOMERS CAN'T FIGURE OUT OUR USER INTERFACE.

THEY SHOULD READ THE MANUAL.

OUR MANUAL IS MORE CONFUSING THAN OUR USER INTERFACE.

THEY CAN USE OUR ONLINE SUPPORT DATABASE.

THAT'S MORE CONFUSING THAN OUR MANUAL.

WE HAVE NO MONEY TO FIX ANY OF THAT.

IN SITUATIONS LIKE THIS, I LIKE TO GO TO MY SPECIAL PLACE.

SOMEDAY I HOPE TO HAVE A SPECIAL PLACE THAT'S BIG ENOUGH FOR MY ENTIRE BODY.

http://dilbert.com/strips/

PROBLEM SOLVED.
Why Evaluate?

- To create systems that do not fail people.
- Evaluate work in progress.
- Identify failure points early enough to fix them.
- Compare multiple or competing designs.
- Check solution against requirements
- Solve design disputes
- Overcome our expert blind spot
- To save time and money.
“Usability methods raised user satisfaction ratings for a system by 40%; when systems match user needs, satisfaction often improves dramatically.”

- Bias & Mayhew, 1994
In-Lab Usability Study
In-Field Usability Study
% of Problems

# of People Tested
Conducting a successful Usability Study

1. Identify your test subjects. Sign them up.
2. Create your test protocol.
3. Run a pilot test and make necessary adjustments.
4. Run the test. Capture the test.
5. Codify & share the data with rest of the team
1. Identify your test subjects. Sign them up.

Warm body or targeted user?
Refer to your Stakeholder Map and Persona’s for ideal target user.
You can use a 3rd party company to help you recruit.

2. Create your test protocol

Write your introduction out.
Then write your tasks
Your protocol can also double as structured notes document
Have a time frame in mind.
3. Run a Pilot Test and make necessary adjustments

This can be the guy who sits next to you as you are only testing the test protocol. Some questions it will answer are:

- Is our prototype at an appropriate level of fidelity?
- Will the user tasks teach us what we want to know?
- Does all the recording equipment work?
- How long is each test really going to take?
4. Run the test. Capture the test.

1. Introduce yourself and the purpose
3. Make them Comfortable “This is a test of the interface design, not you.”
4. Demonstrate thinking aloud
5. Inform them that you may not be able to answer some of their questions until the end of the study.
6. Ask them if they have any questions before you begin.
7. Present them with the first task. Ask the participant to tell you when they are done.
8. Keep quiet, observe and take good notes.
9. Remind them to “think aloud”
10. Debrief. Answer any questions they had during the test and thank them for participating.

Things to Avoid doing:

Asking the subject to explain what they are doing.
Soliciting feedback and suggestions about the proposed design.
5. Codify & share the data with rest of the team

- Transcripts
- Stats
- Formal Presentations
- PDF Reports
- Extranet
- Videos
A design solution, or its component and functions should:

1. Match users' mental model. Do what people expect it to do.
2. Be scaled appropriately to the magnitude of the task.
3. Use plain and concise language.
4. Minimize perceived complexity through an organized hierarchy of information.
5. Be legible and of an appropriate size and contrast relative to basic human factors.
6. Anticipate user needs.
7. Provide a sense of place and appropriate way-finding clues.
8. Use form and nomenclature consistently.
9. Leverage conventions except when the convention is insufficient or inappropriate.
10. Provide system feedback and status.
11. Prevent errors or allow graceful recovery from them.
12. Account for visual, hearing and other physical disabilities or specific circumstances.
13. Be aesthetically pleasing to look at, use, and experience.
A design solution and its component functions should:

Match users’ mental models. Do what people expect it to do

Whether it was promised on the packaging or it’s become a standard cultural convention, what you make and it’s composite features should do what people expect it to do.
A design solution and its components and functions should:

Match users’ mental models. Do what people expect it to do.
A design solution and its components and functions should:

Match users’ mental models. Do what people expect it to do.
A design solution and its components and functions should:

Be scaled appropriately to the magnitude of the task

Is the solution or feature overkill for the task at hand? Is it not enough?
A design solution and its components and functions should: Be scaled appropriately to the magnitude of the task.
A design solution and its components should:
Be scaled appropriately to the magnitude of the task
A design solution and its components and functions should:

*Use plain and concise language.*

Enough said.
A design solution and its components and functions should:

Use plain and concise language.
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A design solution and its components and functions should:
Use plain and concise language.

The Applicant Tracking System seems to have lost communication with the printer.

To solve this problem, make sure that the printer is switched on, and try to print again.

If printing still fails, try wigging the cable that runs between the computer and the printer. Make sure the cable is connected securely at both ends, and try to print again.

If the program still fails to print properly, please call Joe Grant at (212) 555-1212, and tell him that the program is reporting error ATSPR35 at line 31 in module PPINFNC.
A design solution and its components and functions should: Minimize perceived complexity through an organized hierarchy of information.

“Dealing with complexity is an inefficient and unnecessary waste of time, attention and mental energy. There is never any justification for things being complex when they could be simple.” Edward de Bono
A design solution and its components and functions should:

Minimize perceived complexity through an organized hierarchy of information.
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Be legible and of an appropriate size and contrast relative to basic human factors.
A design solution and its components and functions should: 
*Anticipate user needs.*
A design solution and its components and functions should: Anticipate user needs.

It looks like you're writing a letter.

Would you like help?

- Get help with writing the letter
- Just type the letter without help
- Don't show this tip again

Sometimes I just popup for no particular reason, like now.
A design solution and its components and functions should:
Anticipate user needs..
A design solution and its components and functions should:

Provide a sense of place and appropriate way-finding clues.

Users should feel comfortable navigating a system and should be able to orient themselves and easily find their way around at any point. A system should never capture users in situations and give them no visible escape.
A design solution and its components and functions should:
Provide a sense of place and consistent way-finding clues.
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A design solution and its components and functions should:
Provide a sense of place and consistent way-finding clues.
A design solution and its components and functions should:
Use form and nomenclature consistently.
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Use form and nomenclature consistently.
A design solution and its components and functions should:

Leverage conventions except when the convention is insufficient or inappropriate.
A design solution and its components and functions should:
Leverage conventions except when the convention is insufficient or inappropriate.
A design solution and its components and functions should: Leverage conventions except when the convention is insufficient or inappropriate.
A design solution and its components and functions should: Provide meaningful system feedback and status.
A design solution and its components and functions should:
Provide meaningful and actionable system feedback and status.
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Provide meaningful and actionable system feedback and status.
A design solution and its components and functions should:

Prevent errors or allow graceful recovery from them.

Prevent errors from occurring in the first place.
Error messages should be:
• Defensive: Never criticize the user; blame the system.
• Precise: Provide exact information about what caused the problem.
• Constructive: Provide meaningful suggestions about what to do next
A design solution and its components and functions should:
Prevent errors or allow graceful recovery from them.
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A design solution and its components and functions should:
Account for visual and auditory disabilities or contextual constraints
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Account for visual and auditory disabilities or contextual constraints
A design solution and its components and functions should:
Be aesthetically pleasing to look at, use, and experience.

When you product looks good its more than a pretty face. Numerous studies* point out that aesthetic designs are perceived as easier to use than less-aesthetic designs. So avoid haphazard construction and confusing visual and experiential arrangements.
A design solution and its components and functions should:
Be aesthetically pleasing to look at, use, and experience.
A design solution and its components and functions should:
Be aesthetically pleasing to look at, use, and experience.
“Then indecision brings its own delays and days are lost lamenting o'er lost days.”

—Goethe

“It's not hard to make decisions when you know what your values are.”

—Roy Disney
Issue-Value Chart

- Last Priority
- Second Priority
- Second Priority
- First Priority

- Luxury
- Strategic
- Low Hanging Fruit
- High Value

Importance to user/Future sales
“Genius is 1% inspiration and 99% perspiration”

-Thomas Edison
“Good design is good business”

- Thomas Watson