

# WHAT IS HUMAN-CENTERED DESIGN?

**Human-centered design (HCD)** is an approach to creating solutions for problems and opportunities through a focus on the needs, contexts, behaviors, and emotions of the people that the solutions will serve.

Through research, teams immerse themselves in the situations in which their creations will be utilized and observe the thoughts, actions, and experiences of people within them. This builds empathy – a deep understanding of how and why people behave as they do. From this, teams generate potential solutions and select those that have the most value and best-fit people’s lives. Through prototyping, evaluation, and iteration, solutions are then evolved and produced.

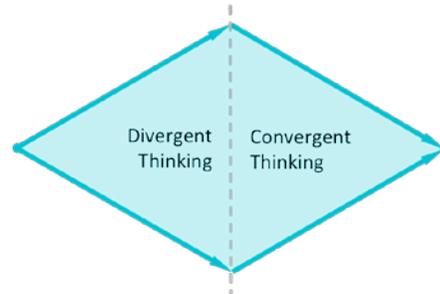
## DESIGN PRINCIPLES

Principles are beliefs that are used to form rules that guide how behave and decide what to do in given situations. While there are many “design principles” there are 5 basic principles that form the foundation for the human-centered design process:

1. *Great design is based on observed, human need (**human centrality**).*  
In other words, in order to create effective solutions we have to see and understand the challenges and opportunities that real people encounter in their lives.
2. *Great design comes from understanding people’s behaviors, thoughts (**cognitive empathy**) and emotions (**emotional empathy**).*  
In order to create solutions that fit into people’s lives we need to know about their understandings and perceptions as they encounter related situations. Additionally, because we know emotions play a significant role in behavior and decision-making, we need to understand how people feel throughout and as a result of these situations.
3. *To make good design decisions, we must first **create possibilities** to choose from.*  
When coming up with ideas, the first one you come up with won’t always be the best. In fact it rarely is. To find effective, innovative solutions we need to create a large pool of possible solutions that we can then examine and select from.
4. *Great design comes from a desire to create **real outcomes**.*  
It isn’t enough to just create something that seems new and exciting or looks great. Design is about achieving objectives. If solutions don’t achieve what they’re intended to then they have not been well designed. Great design understands this and takes into consideration how it will measure and monitor success.
5. *Great design is **iterative**. It leverages **continuous learning** and never truly ends.*  
The design process doesn’t end. A solution, in any form, presents an opportunity to learn more about those who use it, their experiences, and the challenges and opportunities it addresses. These learning should then be used to further refine and evolve the solution.

## THE DIAMOND MODEL

The Diamond Model is an approach to decision making that pairs two types of thinking, divergent and convergent thinking, in order to allow individuals and teams to make effective choices from an expanded understanding of the challenge and possible solutions.



These two thinking modes can be illustrated from left to right as two triangles. In doing so, the illustration takes on the appearance of a diamond, hence the name Diamond Model.

### Divergent Thinking

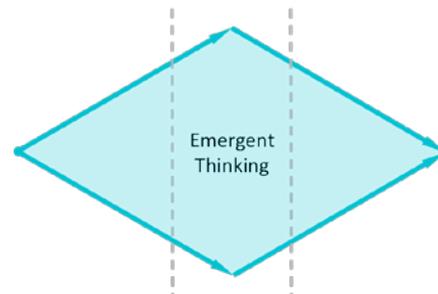
During the divergent phase, individuals/teams work to collect as much information as possible about the given prompt. In this phase any filtering or selectivity is minimized (if done at all) the objective is to acquire as many insights or possibilities as can be.

### Convergent Thinking

In the convergent phase, individuals and teams work towards decisions for their prompt by examining the information gathered in the divergent phase and prioritizing, organizing and eliminating information/options based on their objectives.

### Emergent Thinking

The Diamond Model includes a third form of thinking, emergent thinking, which occurs towards the end of the divergent phase—after a variety of insights/possibilities have been gathered—and into the beginning of the convergent phase.



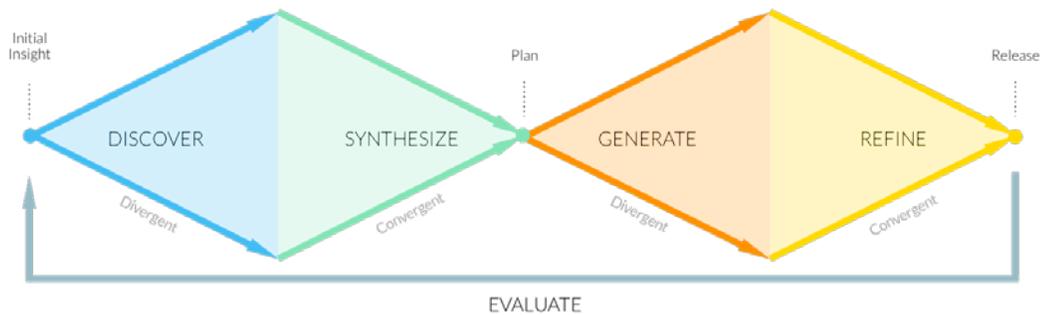
During this period, individuals/teams begin to explore different ways to organize and examine what they've gathered. This exploration may cause them to arrive at new insights or possibilities that they can add to their collection (divergence), or it may cause them to merge and combine insights (convergence).

### Connection to Human-centered Design

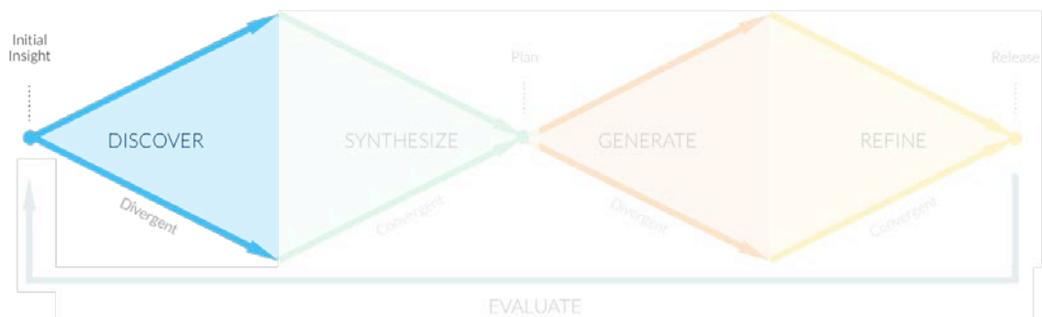
What does the diamond model have to do with human-centered design? It turns out that, when paired with the principles of human centered design, the diamond model provides an effective structure for the human-centered design process.

## THE HUMAN-CENTERED DESIGN PROCESS

Overlaying the human-centered design principles onto the diamond model provides us with a design process that can be broken down into 5 phases.



### Discover



Triggered by an initial insight, typically a problem to be solved or a perceived opportunity, the Discover phase seeks to gather as much information about the initial insight. This discovery focuses on learning as much as possible about the people related to the problem or opportunity. Teams should work to gather both quantitative information (information about what happens and how often) as well as qualitative information (information that describes why things happen).

A simple way to do this is to ask people to tell stories of their experiences, specific or generalized. From these stories, teams can explore:

- **Who:** who are the various “actors” or people involved, as well as any systems or other actor-like influencers that take in information and perform some kind of action based on it.
- **What:** what do they do? What actions do they take or decisions too they make?
- **When:** when do these actions/decisions happen? What triggers them?
- **Where:** where do these things take place?

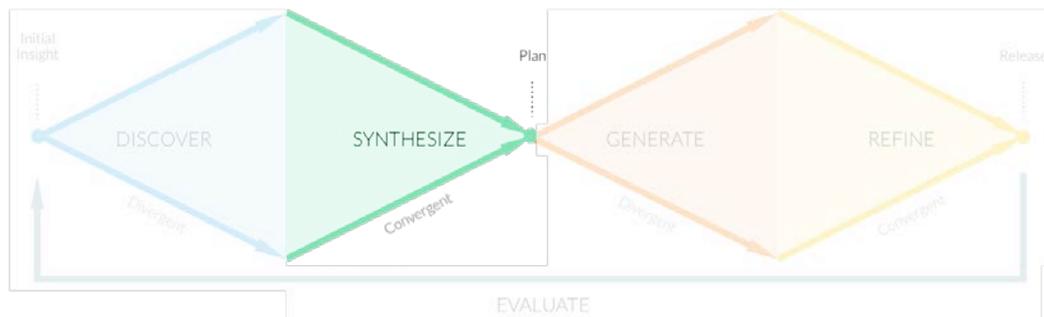
- **Why:** what leads people to make the decisions or take the actions they do? How are they processing information? How are emotions affecting things? What goals or objectives do they have?
- **How:** how do they go about taking their actions? what tools do they use?

In addition to understanding the people involved, teams should also gather information about the systems and tools that are currently related to the topic their exploring. These may be solutions or products people are currently using, processes they use, etc.

#### Example Tools & Techniques

- Ethnographic Studies & Contextual Observations
- Interviews
- Focus Groups
- Surveys
- Diary Studies
- Participatory Design Activities
- Data Mining

## Synthesize



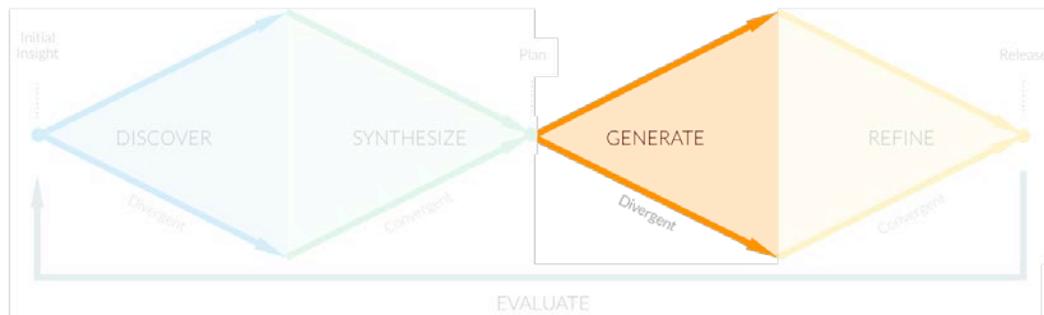
With a wide variety of information gathered, now it comes time for the team not just to make sense of it but to also determine how to use what they learn from it, what aspects of the topic will be focused on, which aspects are most important, which aren't?

Through this sense making of the information gathered during discovery teams develop empathy, an understanding of how and why people think, feel and behave, for those they are designing for. Teams compare, contrast and organize their information into groupings and models that reflect what they've come to believe about the topic they're exploring, the people involved who will be affected by whatever solutions they come up with, the opportunities to solve challenges and provide value, etc.

Additionally, the teams begin to define the characteristics, requirements and objectives for their solution(s); the foundation for a vision of the future their solutions will give rise to for users. These elements will help guide the team as they generate and select ideas as well as be used to determine whether their creations are effective.

**Example Tools & Techniques**

- Affinity Diagrams
- Process Modeling
- Journey Maps
- Principles & Goals
- Personas

**Generate**

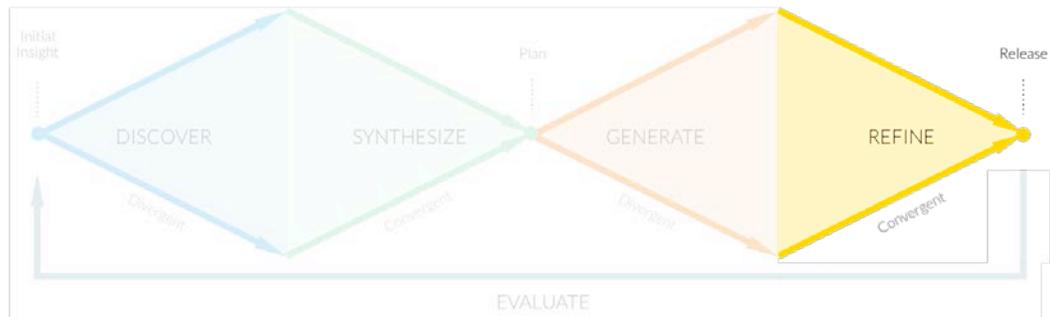
Using the empathy, understanding, and vision found in the synthesize phase, teams now move on to generating a pool of potential solutions for the challenges and opportunities they're looking to address. Emphasis here is placed on quantity over quality as teams aim to create a diverse set of possibilities in order to maximize their potential for finding the most effective, solutions.

Brainstorm-based activities and combined with quick, low fidelity communication and exploration methods like sketching and visual thinking push teams to delve into different aspects of challenges and uncover, combine, and recombine ideas to expand their possibilities.

**Example Tools & Techniques**

- Sketching
- Affinity Diagrams
- Brainstorming & Design Studio Activities
- Critique

**Refine**



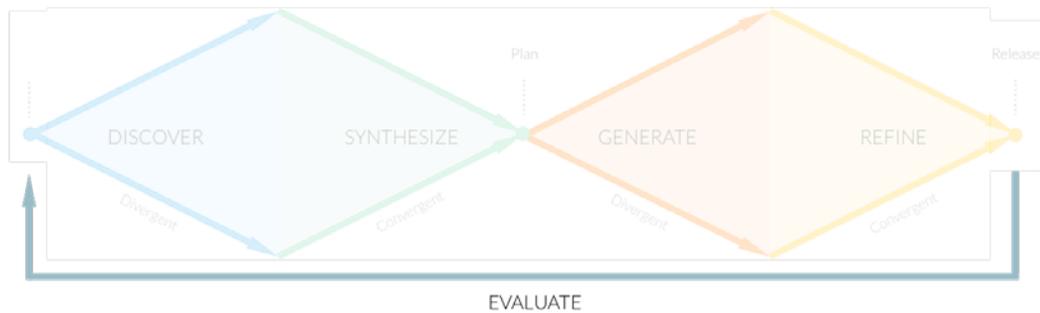
Stepping back from the ideas generated in the previous phase, teams can now examine what they've come up with and begin to make decisions and further explore, develop and refine selected solutions. Looking back to the understanding and vision developed through discovery and synthesis, the team can critique ideas to determine which they feel present the most value or will be the most effective in achieving their objectives and then work to further define those ideas through prototyping.

Prototypes can then be used to provide initial observations for how people will make use of and experience the solutions. This information can then be further used to refine and recombine ideas until the final solutions begin to emerge.

#### Example Tools & Techniques

- Prototyping
- Usability & Desirability Studies
- Critique

## Evaluate & Iterate



Once some form of solution has been created it is deployed for people to use. This might be an initial pilot or beta version or something more fully developed. Regardless, this stage embodies perhaps the most important principle of any effective design process: that it doesn't end. A solution, in any form, presents an opportunity to learn more about those who use it, their experiences, and the challenges and opportunities it addresses.

As people use and interact with whatever solutions have been, steps should be taken by the team to monitor their effect. This monitoring should be both qualitative and quantitative. The information collected in this period is then fed back to initiate the design process again in order to further iterate and evolve the solution(s).