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THE **DESIGN THINKING** PROCESS

AN INNOVATION JOURNEY **IN SIX PHASES**

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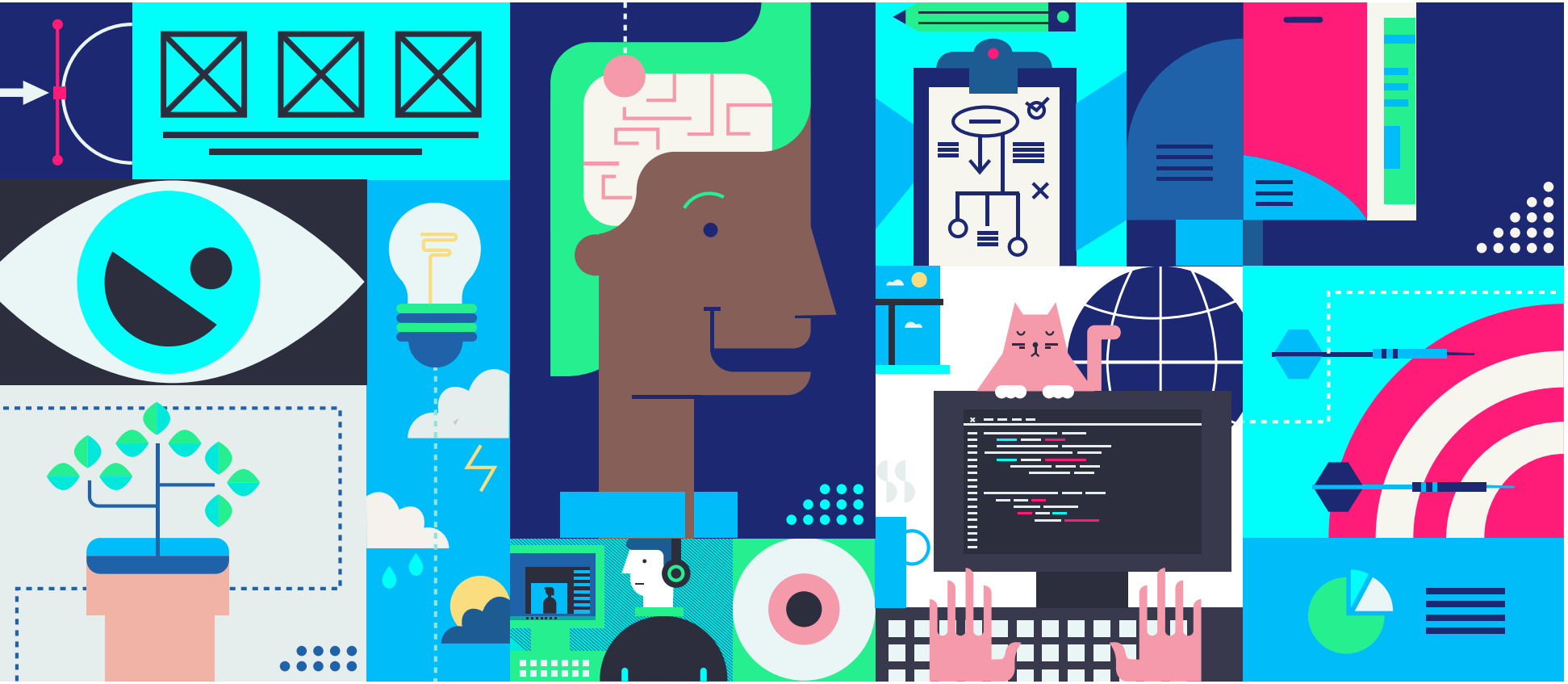


Design Thinking is more than a buzzword. We at Valtech help our clients to create award winning experiences for their customers (e.g. Valtech wins UX Design Awards). How do we do this? A central success factor is a design thinking mindset. The other part of the equation is how we structure a project and inject innovation into the project delivery. This white paper discusses what it takes to establish a design thinking mindset and how it works. What makes a project approach a design thinking process? Maybe you are not far away from living the culture of design thinking already, even if you do not call it as such? The white paper provides one perspective to these questions. If you have a different point of view, please feel invited to challenge the author. She will love to discuss it!

"It (**Design Thinking**) **is** not only **human-centered**; it is deeply human in and of itself."

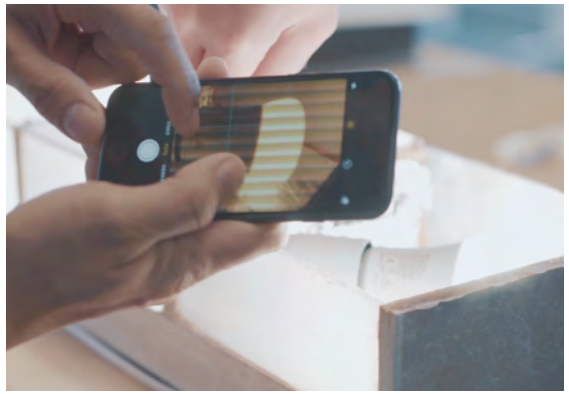
Tim Brown / Change by Design, Revised and Updated, Harper Business, 2019

WHAT IS DESIGN THINKING?

Basically, Design Thinking is a cluster of approaches that some people pulled together to find better answers to complex challenges.

Originally, it was inspired by the way professional designers are trained to work, but that does not mean it is something that just designers do.

For that matter, the term “design” is ambiguous, and its meaning is changing with time and context. Sometimes, “design” is understood as finishing the form and aesthetics of a product after the product has been specified by business development, engineering or other subject matter experts. In other contexts, however, “design” refers to the actual draft or construction plan of the product or solution. And often, “design” is used to denote the respective process, that is creating the look and feel or the construction plan. In the context of design thinking, “design” is understood as referring to all aspects of creating a solution plan.



The core lesson to take away from the routine of professional designers is putting the user into the center of all considerations in a systematic way. Design Thinking takes the practice some steps further! It tells an alternative story to the one of the lone genius inventor bringing break-through innovations into the world. Design Thinking believes in innovation being a team sport. For that to work, it requires bringing together the right ingredients.

In a nutshell

Design Thinking is about humans creating solutions for humans. It is a problem-solving framework that puts the human at the center of the challenge. And even more so, it acknowledges and exploits the human perspective of the team solving the challenge as well.

What are the ingredients to a successful **Design Thinking Process**?

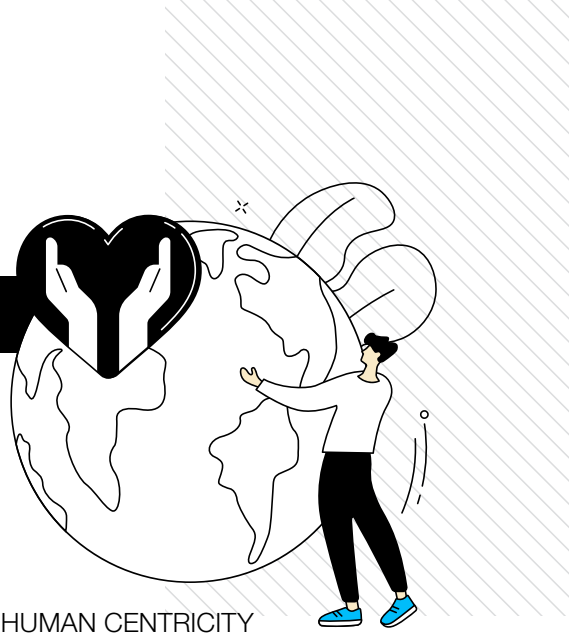
The term Design Thinking Process is misleading.

In fact, it is not a process with a well-defined sequence of steps. In many ways, the practice of Design Thinking is reminding of a continuous balancing act of opposing forces. The core of the balancing exercise consists of selecting the people who form the team to solve the design challenge. In order to get as many creative impulses as possible, the team should comprise a certain degree of diversity in terms of skills, experience, background and personality. The idea of having a team, however, is that individuals collaborate, and that by doing so, the team can produce more and better results than the individuals would on their own. A relevant focus of research about Design Thinking (e.g. see HPI) is on investigating and applying factors that enable a group of diverse people to collaborate, act as a team and as an innovation catalysator.

In the following, we discuss the key success factors in a more structured way in view of three main ingredients to a design thinking project:

- a common **mindset**
- a **process** that provides the team with a common structure
- a common **space** or context that is surrounding the team and that fosters and encourages the people to join their creative, collaborative and innovative abilities.

What is a Design Thinking **Mindset**?



A mindset is a set of attitudes.

Our attitudes follow and express our individual and shared values and culture. Hence, when bringing a group of humans together, it is no surprise that their attitudes determine significantly how they interact and what they achieve. If the group of individuals is supposed to collaborate, a common ground of values and beliefs is a prerequisite. In fact, experienced design thinkers consider a specific shared mindset more relevant to a project's success than the steps of the process.

Design Thinkers consider six attitudes as crucial to foster innovation. The following sections characterize the attitudes in detail.

01 HUMAN CENTRICITY

The basis for design thinking is a deep love for people in all their "varieties" and "flavors." Before you can figure out how to solve a problem or how to build a business model around it, you need to identify and be able to empathize with what people want or need in essence.

When seeking to understand why people do what they do, you need to be curious about the diversity in people in general with an open and non-judgemental attitude. You need to train the ability to grasp emotions and needs of people with backgrounds, perspectives, and personalities other than your own.

This attitude is also essential for seeking to understand each other within a team, thereby unleashing the synergetic creative energy of individuals collaborating with each other.

02 DIVERSE COLLABORATION

Design Thinking builds on the power of diverse and cross-functional teams working collaboratively. It is commonly understood that the sweet spot for a new service or product innovation lies in the balance point between the constraint's desirability, feasibility, and business viability. There is no general recipe, however, for attaining the balance.

Technology-driven innovation strategies often lead to low user and market acceptance, resulting in higher expenses in sales, marketing and services. A design-driven approach might seem the obvious remedy to create really cool products. The design team, however, may come up with a proposal that is hardly technically feasible. Making it feasible might lead to losing the coolness and user friendliness factor in the end.

The design thinking way is to pull all the diverse perspectives together in one team from the start. In the ideal case, the customer or user representative is part of the team as well. That way, conflicts and synergies are discovered and addressed early in the process and the team is enabled to identify the ideal intersection of all perspectives.

For this approach to work, all team members need to share an open and curious attitude towards diversity. Team members need to sense when to accept group decisions and when to change their own opinions in view of new insights and for the sake of the team's common learnings. This attitude does not mean, however, that all team members tend to seek the perfect harmony and try to avoid conflicts at all costs. The attitude is more like striving for the right balance between alternative or even controversial views and the willingness to advance the project.

Only by aiming at a **deep understanding** of the challenge will you be able to find solutions which **will evoke** people's enthusiasm.

03 AN EXPLORER'S OR RESEARCHER'S SPIRIT

The foundation of a proper design thinking approach is a sound and thorough research of the problem space described by the challenge.

Only by aiming at a deep understanding of the challenge will you be able to find solutions which will evoke people's enthusiasm.

Imagine a design thinking journey as an adventurous expedition into a jungle of yet unknown dependencies and behavioral rules. Like a researcher, a design thinker is driven by curiosity and is of an explorative, daring and fact-driven nature. And like a researcher, a design thinker's working style is characterized by iterating through cycles of collecting findings, deducing insights and interpretations, and verifying assumptions and hypotheses.

It requires a certain level of persistence, patience, honesty and thoroughness when ploughing through research from the field, identifying knowledge gaps, postulating interpretations and hypotheses, collecting experiences and perspectives from users, mapping systems and relationships between stakeholders in order to build a holistic picture of the problems at stake.

The process to get there is described in the section "PHASES OF A DESIGN THINKING PROCESS" below.

04 LEARNING THROUGH EXPERIMENTATION

Design Thinking advocates a learning style biased towards action. It builds upon the belief that once all available facts and research have been gathered and understood, the best way to explore the solution space is to create tangible bounded experiments as soon as possible instead of trying to assemble all interpretations and hypotheses into a comprehensive, detailed but abstract solution concept first. The experimentation attitude advocates an iterative or agile approach.

Design Thinkers love to try things and are not afraid of "failing." They see the value when experiments do not produce the anticipated results.

See, for example, the renowned designers Charles and Ray Eames who sometimes prototyped over many years just to explore and refine their ideas. They are famous for the iconic Eames Lounge Chair. The design success in 1957 was the reward for a long series of experiments testing forms, functions, materials and production techniques. It actually started with the participation in a competition for "Organic Furniture" in 1940 with a design for a molded plywood chair. During WWII, the Eames team continued experimenting with molded plywood, but this time experimented with applying it to other uses such as airplane parts, splints or stretchers. Building on these experiences, they returned to working on chairs, this time testing different materials such as polyester. Up to this point, all items were only design prototypes. Another series of experiments helped the team to understand the constraints influencing the production and economics of the solution before a first true Eames Chair was commercially available.

Another example is Sir James Dyson who never lost confidence while creating more than 5.000 prototypes before he came up with the vacuum cleaner that made Dyson a famous brand.

05 EMBRACING UNCERTAINTY

A design thinking endeavor resembles an expedition into uncharted territories. Hence, a design thinker should not be afraid of any surprises or unclear situations! The attitude is not just about tolerating but being comfortable with ambiguity, incomplete information or contradictions and even actively enjoying working on challenges with unpredictable outcomes. It requires the ability to move forward constructively in the process, despite uncertainty and invisible dynamics, accepting that results might not be final. Opinions and directions may have to be changed iteratively.

06 OPENNESS TO POSSIBILITIES

The objective of a design thinking challenge consists of discovering new and innovative solutions. This requires the team members to stay open-minded, conscious of multiple options and pathways, and always willing to explore alternatives. In particular, this attitude avoids jumping to conclusions too quickly even if the solution seems to be within the team's grasp.

> “To experience design thinking is to **engage** in a dance among four mental states.”
>
> *Tim Brown / Change by Design*

Phases of a Design Thinking **Process**

Design thinking does not require a strictly defined process.

There is a general understanding that all you need, is a deep understanding of the principles of design thinking and the ability to embrace the right mindset.

But there is no question that following a structure or framework makes it easier to get started. It is crucial, however, to understand the intention of each phase and being able to adapt or change the steps instead of following the procedure by the book.

How might such a process model or framework look? There is no unique answer. You will find different solutions from different design thinking practitioners. The following sections discuss one approach to an answer.

Design Thinking Is Not a Standard Operating Procedure

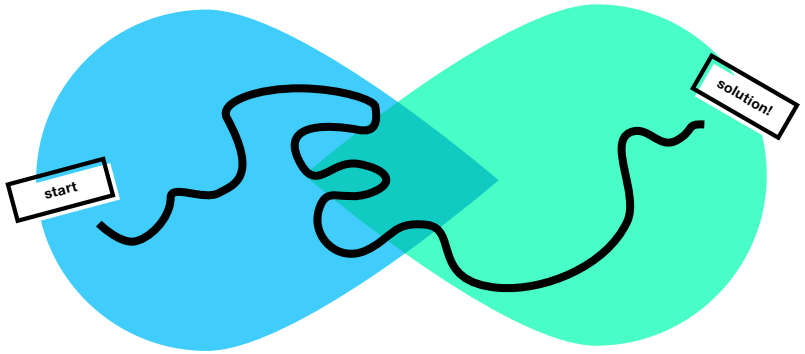
There are different ways to describe what is happening during a design thinking process. From a bird’s eye view, the process can be perceived as having two phases or two perspectives: **exploring** the problem space and **discovering** the solution space.

The intention of differentiating between problem space and solution space is to prevent a team starting to create solutions too early when still relying too much on their assumptions of what the problem might be. A typical outcome for a design process neglecting the problem space exploration would be an over-engineered, expensive piece of equipment which brings little extra value to the user and is therefore more difficult to sell. It is crucial for the team to dig deep into the problem space first without any bias. This will lay the foundation for discovering and developing

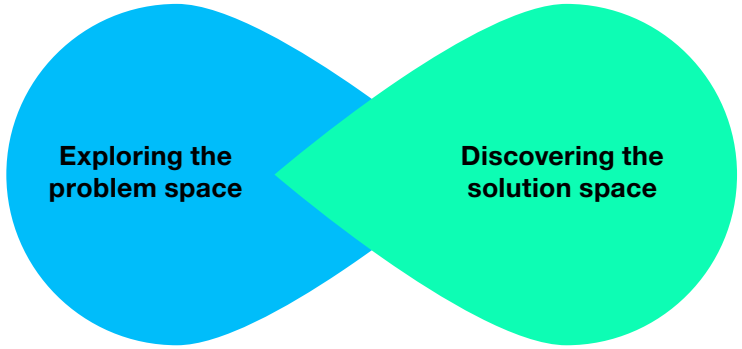
solutions which are inspired by and address real-world problems.

The transition between the problem and solution space cannot be marked with a dedicated milestone. Findings made while discovering the solution space might force the team to go back to a deeper exploration of the problem space. Then if the team is looking back at the development path they went through, they might discover that the path was more like a meandering dance back and forth than a straightforward line.

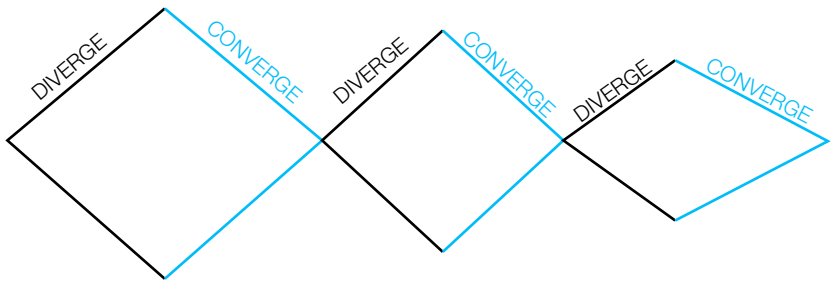
CHALLENGE CURRICULUM



CHALLENGE CURRICULUM



On a mental level, the design thinking process is being driven by alternating phases of ***Divergent Thinking***, or phases where a team's view of the space is broadened, where new insights emerge or where the team decides to explore alternative options and ideas, and ***Convergent Thinking***, that is phases where the team's view of the space is narrowed, where choices are to be made and options are to be prioritized or eliminated.



Depending on where the team is on its journey, the team members have to apply more analysis or analytical thinking, or synthesis or synthetical thinking where meaningful patterns are identified, and pieces are combined to create ideas.

Trying to force all these aspects into a linear standard operating procedure will not work very well. A design thinking process follows essentially an iterative and agile style of working.

In the following, I describe the process phases as promoted by HPI (Hasso-Plattner-Institute, Potsdam, Germany). Usually, it is described as a six stage design thinking process: **understand, empathize, synthesize, ideate, prototype and test**. Please do not read it as a strict linear procedure. Consider it more as an orientation or as six phase elements with some suggestions for transitions in-between. A team may and should adapt the elements and sequence according to the needs of the particular design challenge they are working on.

Some other sources refer to four or five stages in a design thinking process. A closer comparison of the approaches would reveal different perspectives on the same thing. It depends on the level of process granularity or how you want to shape the transition between problem space exploration and solution space discovery.

Design Thinking Phase
“Understand”

Or what do we want to solve?

A design thinking endeavor is a project.

At the center of the project is a design challenge that a project sponsor requests a team to resolve. As in any kind of real-world project, a design challenge is often just a statement that can mean all or nothing to different people. Sometimes, not even the challenge sponsors themselves are aware of the ambiguity in their request. So it starts with understanding the challenge.

At this stage, it is crucial that all stakeholders related to the context of the design challenge are identified and that their respective needs beyond the first sight are brought to consideration. At the same time, it is the first opportunity to start forming a team.

Given the team, the design challenge and the timeframe for the project, the goal of the Understand phase is getting a better understanding and digging deeper into the meaning of the challenge, and as a team, finding a common understanding of what it is that needs to be solved.

Relevant tasks of the Understand phase are:

- Forming a team: building up empathy between team members,
- Identifying all stakeholders related to the context of the challenge,
- Bringing the stakeholders’ needs beyond first sight into consideration,
- Opening the team’s mind to the breadth of the challenge, i.e.
  - Sharing existing knowledge about the challenge topic among team members,
  - Making explicit which knowledge is missing,
  - Becoming aware of assumptions and blind spots,
  - Making explicit where the team members differ in their understanding and evaluation of the challenge and its context,
  - Deciding which assumptions need verification and further research,
  - Deciding which people need to be considered in research and how,
  - Identifying research focus topics (e.g. extreme users, locations, or topics).

Team building should be initiated with some explicit kick-off workshop event where the team gets sufficient time to get to know each other, to exchange individual expectations and individual context. Usually this is the phase where the right kind of “warm-up” or “icebreaker” exercise can work wonders to stimulate a team spirit building process.

There are a couple of methods or tools which are not special to design thinking but typically used in this phase, such as semantic analysis, design charrette, stakeholder mapping, or customer journeys just to name a few.

As a result of the Understand phase, the team will come up with a list of research requirements, listing:

- questions which need answering or assumptions that need verification,
- people who can help answering or investigating the questions,
- contexts how to approach the people or investigations,
- and methods to be used.

The next phase will process the list further.

Design Thinking Phase “**Observe**” or “**Empathize**”

Or who has which needs?

The Observe phase is all about getting out of the lab into the real world, exploring the problem space and getting a deep understanding of the people at the core of the challenge up to the point that the design thinking team develops an empathetic intuition for the key person’s needs.

The starting point is the list of research requirements delivered by the preceding Understand phase:

- Topics or **questions** where knowledge is missing or incomplete
- **Assumptions** or interpretations that need verification
- **Research** tasks that should be performed

The goal of the Observe phase is to collect as many findings as possible for the team to be able to fill in as many blind spots as possible and build empathy with the users.

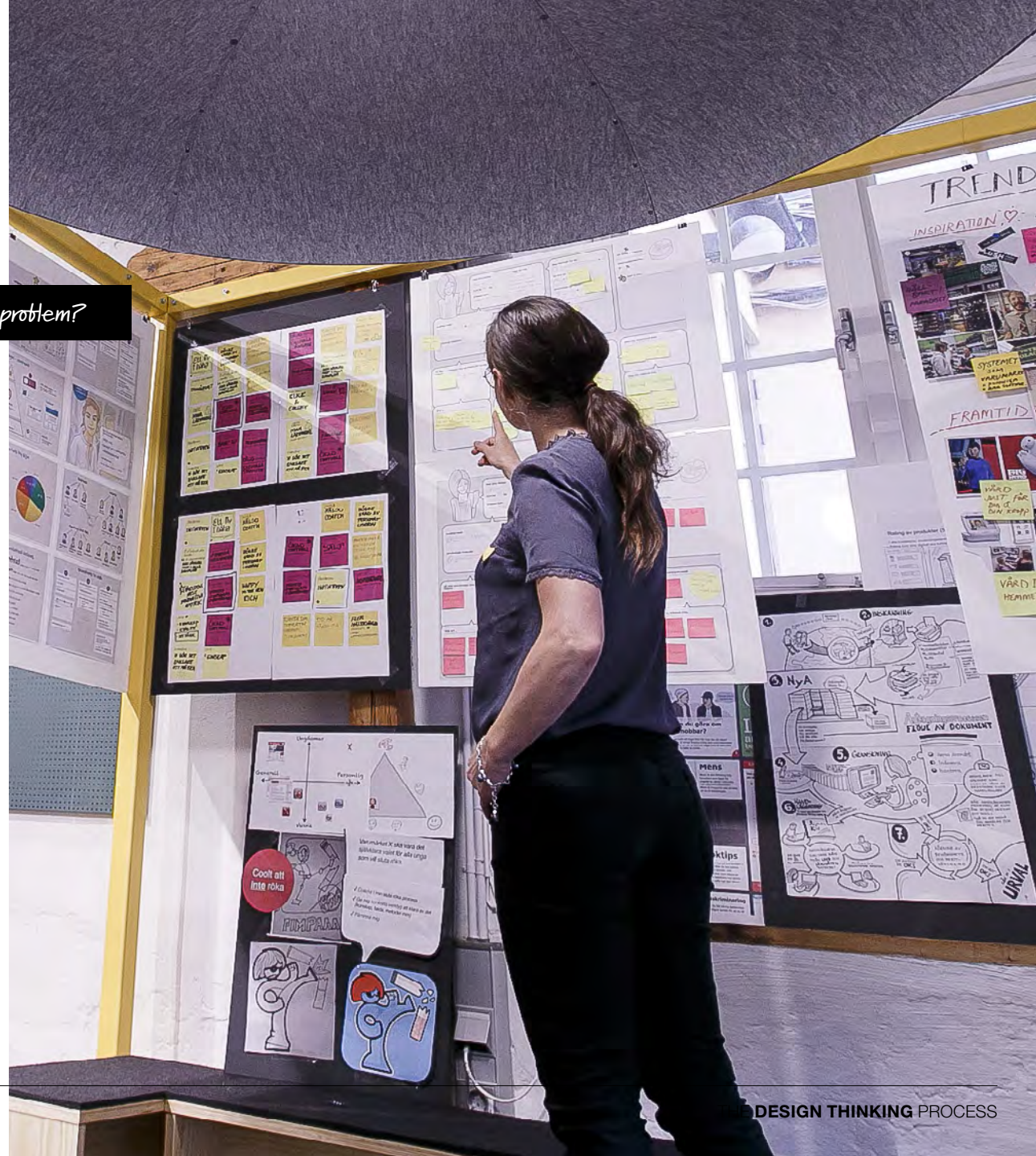
Basically, this phase consists of processing a list of research tasks. In principle all known user and other research methods can be used depending on the team’s understanding of the challenge. But since the overall objective is to see the world through the eyes of the affected users and stakeholders, methods which get a deeper understanding of a single person’s needs as opposed to quantitative user research methods are particularly relevant, e.g.:

- **Qualitative** user interviews, with a particular focus on collecting original quotes from users,
- **Observing** users in their context,
- **Immersing** oneself into the actual situation of a user,
- **Ethnographic methods**, e.g. asking the target users themselves to create diaries of their routines maybe by recording pictures or videos.

The result of the Observe phase will be a potentially big package of findings from the different research tasks.

Design Thinking Phase
“Synthesize”

Or for whom do we want to solve which problem?



The Synthesis phase is all about making sense out of a potentially large and kind of messy heap of data and findings resulting from the previous two phases.

It is the pivot where the transition from the problem space to discovering the solution space is prepared and where the divergent way of working transforms and must be turned into a convergent team effort. It is a critical phase in many ways.

The mission at this stage is to synthesize a statement boiling down the insights of the research into a comprehensive interpretation that the whole team agrees on. The synthesis is the basis for generating hypotheses about the future solution. It marks the team’s choice of what to focus its energies on for the next phases.

The intention within the phase is to extract new insights from or make new sense of the findings. It is not unusual that the process leads to reframing the overall design challenge. This is a good thing because reframing the design challenge will open new conceptual space for innovation! For this to happen, the team will toggle around

different perspectives and apply different ways to read the data. The more diverse the team is in terms of multi-disciplinarity and background, the easier it is to discover different perspectives.

The activities of the team in this phase are:

- **Sharing** the gathered information between all team members, e.g.
  - By telling each other the stories they have gathered from engaging, observing and immersing in the field,
  - collating and displaying the findings
- **Inferring** meaning and making sense of the information and data gathered by applying different ways of unpacking or structuring the data,
- **Identifying** key insights or incidents of “We were surprised to learn …”
- **Looking** for alternative ways of reading the data and viewing the challenge,
- **Selecting** a perspective on the challenge which the team would like to focus on,
- **Rephrasing** the challenge from the perspective of a selected user,
- **Building** empathy with the selected user and their needs and pain points.

Methods applied in this phase might be familiar to you from other project contexts, e.g. empathy maps, persona building, storytelling, customer journeys, jobs to be done, 2x2 matrix, dot voting etc.

Usually, there are more findings than can be accounted for given the limited time frame of the project. It can be particularly hard for the team to make choices. Moreover, the team might have found out that the challenge seems much more complex than they assumed initially or that the findings indicate that they have to let go of some favorite initial interpretations and related solution idea. Given the explicit requirement of team diversity, it is no surprise that teams tend to struggle during this step. But this struggle is an important source for opening creative energies.

Therefore, knowing which methods to apply and how to apply a method in the right way is particularly critical at this stage. A Design Thinking coach guiding the team, keeping watch of the process without being involved in the challenge can be of great value here.

A handy method for paving the way to the next phase is using the “Point of View” or “PoV” statement as a tool for boiling down

The more **diverse** the team is in terms of multi-disciplinarity and background, the easier it is to discover **different perspectives**.

the essence of the insights. A “Point of View” statement is structured somewhat like:

- “We met <a person xyz> …”
- “…and we were amazed to learn that <experience / need based on observation/finding>,”
- “We understood that it would be life changing if …<insight based on interpretation of the findings>…”
- “….in a world where …<context, restriction>.”

The trick is that such a statement can be transferred quite easily into one or more actionable questions “How might we help <person xyz> to <cover the need in the life changing way> while <the context>.” These questions are often referred to as “How Might We” or “HMW” or “H2” items and provide a perfect base for the next step which is creating solution ideas.

Design Thinking Phase “Ideate”

Or which ideas could solve which problem?

The Ideate phase of a design thinking process starts the discovery of the solution space.

Now the design thinking team has to switch into a divergent and creative mental mode.

Ideation is about selecting and applying different and combined idea generating techniques. The more granular, detailed and focused the synthesis result has been stated in the previous phase, the more inspiring and value promising will be the range of ideas generated. “What if…” or “How-might-We” questions help the team to embrace a future vision on how a solution can be designed and to derive hypotheses that can be verified by way of respective prototypes.

Ideation is done in several iterations extending and refining the ideas. In the very first rounds, it is about generating quantity or as many ideas as possible. Nevertheless, at the end not all the ideas will be taken over to the next phase for prototyping. So, the design thinking team will have to switch back and forth between divergent and convergent mental modes, or between ideation and decision making.

The function of the converging steps in-between is to encourage the exchange of thoughts within the team besides the mere reduction of alternatives to pursuit. Then round by round alternative ideas emerge and are refined and/or extended. The ideation phase may benefit considerably from a co-creation approach, that includes customers or users into the team.

Relevant tasks of this phase are:

- **Deciding** how to split the overall time frame into different iterations.
- **Brainstorming** possible solution ideas to solve the problem(s) formulated during synthesis.
- Opening and **exploring** directions for possible solutions
- “Thinking outside the box” to **identify** new paths and possibilities.
- **Deciding** as a team which ideas to take forward for further refinement and eventually to prototyping.
- **Adding** sufficient detail to the idea description.

Methods used in this phase are manifold. The most widely known ideation method is brainstorming. It has been known for a long time and since then many brainstorming offshoots or other idea generating methods have been described. The methods, however, differ in their characteristics and effects. When selecting an ideation method be sure that it matches your current situation and intentions.

There are methods which focus on just creating a set of ideas within a given category and there are other methods which rather explore a given idea by adding more detailed ideas or generating alternatives starting from this one idea.

Overall, the methods can be grouped according to:

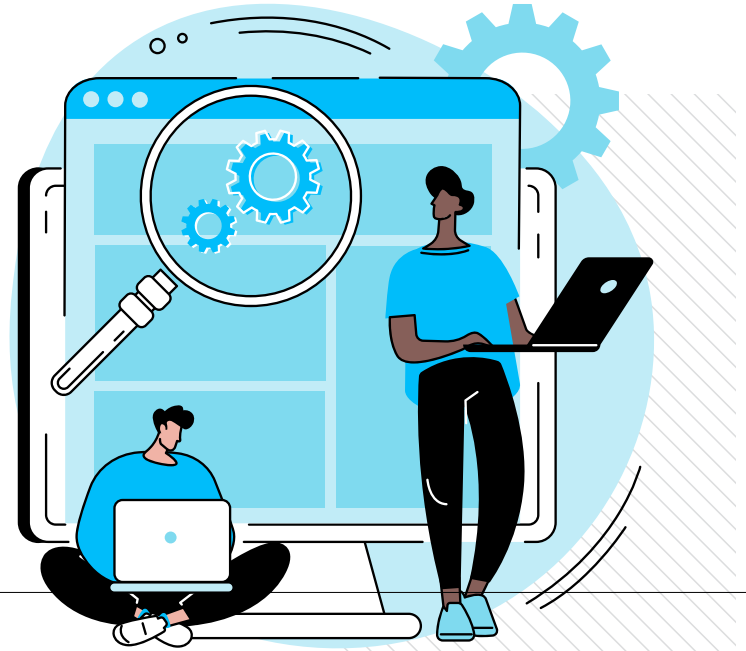
- **Individual** methods, e.g. silent brainstorming, 6-3-5 method, idea sketching;
- **Associative** methods, e.g. what would …<superhero>…do?, object brainstorming, idea shopping;
- **Bodystorming** methods, e.g. hot potato, idea train, starfish;
- **Build-upon** methods, e.g. plus five, Osborne checklist;
- **In-depths** methods, e.g. idea interview, news from the future.

The magic of ideation emerges from building on top of each other’s ideas. And as design thinking values diversity in teams, methods exploiting this trait are favored.

In addition to methods for creating ideas, methods for helping the team to find a team decision about which ideas to take forward will be applied. Again, this can be hard as this is always a decision about which ideas to leave behind. It is important to set up an idea-parking mechanism freeing the team of the fear of losing valuable ideas.

The method most often used for decision finding is dot voting or “dotmocracy.” Another method widely used within ideation is the idea funnel where each idea has to pass a prioritized list of three to four decision criteria, e.g. first “does it add true value to the user?” second “is it feasible with reasonable effort?” and third “does it have a true wow-effect?”

The result of the ideation phase is a description of the one or few ideas with sufficient detail to take it forward into prototyping. A typical format for an idea description sometimes referred to as an idea napkin would be a one-pager consisting of sections for name or slogan for the idea, the core function of the idea, a sketch of how the idea might look, who the user is, and what it will trigger.



Design Thinking Phase
“Prototype”

Or what is our solution?

Starting with one or two idea sketches, the design team will have to switch into another mental mode again.

In a sense, prototyping can be considered as a continuation of ideation. The big difference, however, is that now the ideas have to get out of the heads of the team and become tangible. The team has to switch into a “doing” mode and reduce the ambiguity in the concept ideas.

The objective of prototyping has more than one aspect. On a high level, it is about making a possibly abstract idea more concrete and tangible. In doing so, the team can achieve different effects. The process of creating the prototype will help the team themselves to get an even deeper understanding of the idea and of its impact and success conditions. Splitting the prototyping phase into different iterations and creating a series of prototypes will increase this effect. And having customers or users as part of the design thinking team in a co-creation setup will speed up the learning curve even more.

The ultimate intention is to create something tangible that can be used to verify the “How-might-we” hypotheses and that can be experienced by other people.

The prototype will have to be tested, or rather experienced, by the target users to verify or refute the assumptions about their needs. That means that creating the prototype should include the creation of the testing setup or script. Additionally, a prototype might be used for communicating the idea to other relevant stakeholders.

Relevant tasks of this phase are:

- **Deciding** on how to split the overall time frame into iterations producing an evolution of prototypes
- **Preparing** a space and providing base material and tools for the different types of prototyping
- Go for it! Thinking with the hands, letting the "**doing**" guide the inspirational process.
- **Creating** a clearer understanding within the team of what the solution is, and how it works.
- **Making** decisions as a team on which functions and features to include, and which to leave out.
- **Making** functions and features tangible and testable, for gathering feedback from users.
- **Identifying** possible constraints inherent to the solution

A prototype can be anything. It can be a sketch on a whiteboard e.g. of a customer journey, a wireframe on paper or digital, a click dummy, a paper and cardboard construction e.g. simulating a product box, a 3D-print, an alpha software version, an Arduino device etc. Or it can be a role play.

Prototyping is done best by combining different techniques iteratively in different rounds thereby addressing different aspects of turning the idea into reality. For example, a first run can be creating a pen and paper prototype within an hour, in a second run, the team takes three hours to create a tangible version out of a wild mix of materials of their choice, and in a in a third run, the team creates the storyboard and setup of a role play which provides people an impression of how the solution would be experienced in action. With each iteration, the team will collect deeper and more detailed insights about the idea and about which next steps help best to further refine the solution concept.

Prototypes can be created on different levels of fidelity. But beware of producing too refined, detailed, and polished prototypes too early. It is key that the scope for each prototype is limited and that for each prototype in a series it is clear to everyone in the team which assumptions are to be tested with it. Setting up strict timeboxes for each prototyping run helps a lot. There is value in sticking to the timebox even if the design team feels that they need "just another hour or day or week." An experienced prototyper knows when enough is enough.

The result of the prototyping is a prototype that the team can use for testing the solution idea with users within the next phase.

A PROTOTYPE CAN BE ANYTHING

Design Thinking Phase

“Test”

Or what does the user think about our solution idea?

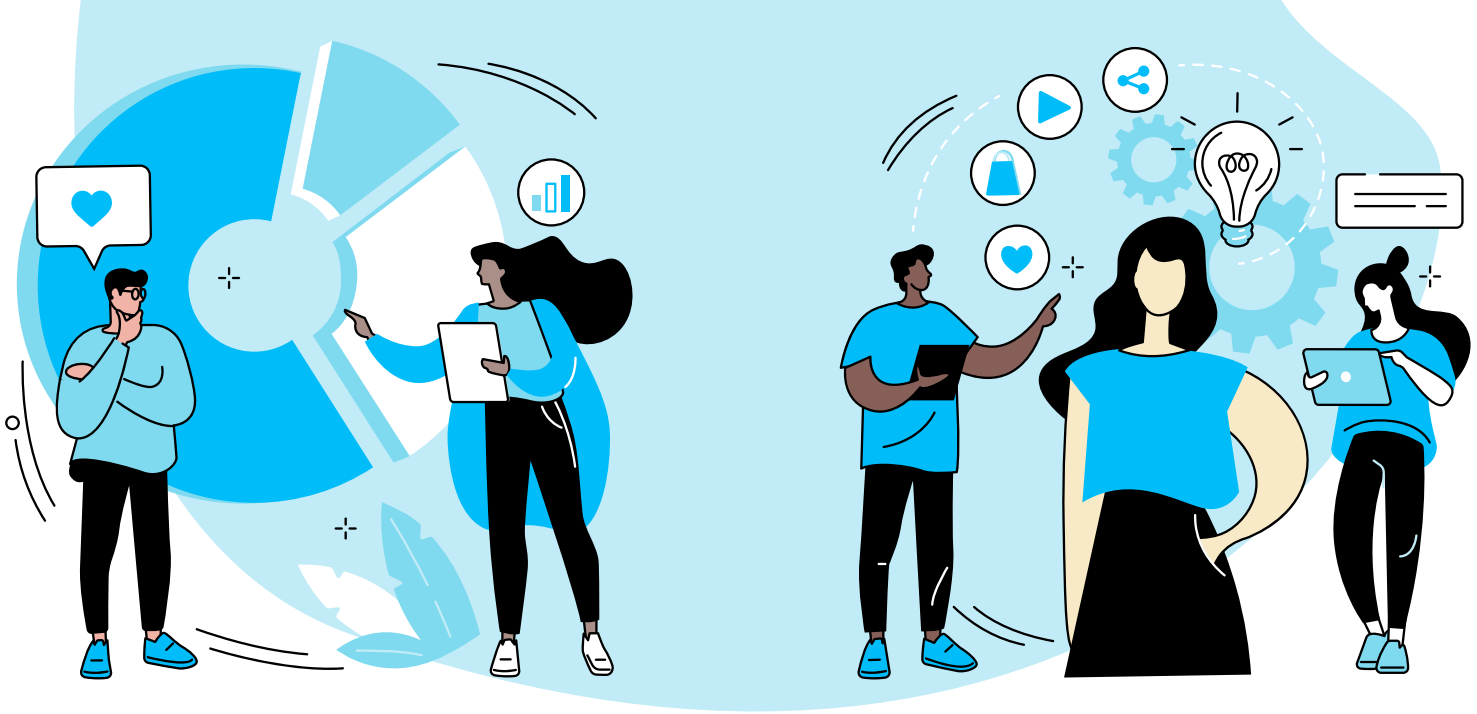
The testing phase brings the moment of truth.

The starting point is the list of questions and assumptions that the design thinking team made about the target users, their needs and the actual prototype for verifying them.

The goal of the phase is to further enrich the knowledge of the team. Of course, the team wants to get confirmation that the solution idea they selected will work. The result of testing, however, might be something completely unexpected. It is important that the team remains open-minded and embraces any surprises even if they are “bad news” despite the emotional bias.

Relevant tasks of this phase are:

- **Run** a test where users and/or stakeholders experience the prototype(s) built in the previous phase.
- **Collect** feedback while testing and analyze the feedback, does it answer the questions or refute hypotheses about user needs, desires and pain points?
- **Decide** based on the feedback what kind of recommendation the design thinking team will provide to the project sponsor, for example whether to switch to a new idea, alter the prototype, refine the solution, improve the testing scenario, etc.
- And while doing all this, **build** even more empathy with the users and stakeholders.



Methods and tools which you consider useful for the Observation phase will be useful for the Testing phase as well. There are some caveats to keep in mind, however. It is not always straightforward to read people's feedback regarding the prototype that they know you built.

Sometimes people do not dare to be open and direct, e.g. if they assume that you invested a lot of work into the prototype already! So, an imperfect prototype may be of advantage for proper testing results.

But then again, sometimes people have trouble in understanding the testing setup or find the prototype too abstract. The testing environment and setup is important and has to be properly planned. In the best case, the setting makes people feel unsupervised and makes them forget that they are testing.

Before starting the actual testing, the design thinking team should be clear about who and how the observations of the testing will be collected. A typical procedure is that the observers group their findings into simple four-category feedback "positive," "negative," "new question raised" and "interesting and surprising."

To get a clearer understanding of the lessons learned from testing the prototype, the team might map their findings to an additional structure with categories relating a finding to "user", "Idea", "protoype", "testing procedure" or "test setup and introduction." This structure helps the team to think explicitly about separating feedback about the prototype from feedback about the actual solution idea. Sometimes, users love the prototype but still do not think that the idea represented by the prototype does solve the actual challenge. Or the other way around, users like the idea but are distracted by their dislike of the prototype. Or they failed to really use the prototype because the explanation or set up of the testing was not good enough. It is important to read the findings properly and be careful and honest about what lessons to conclude.

The testing phase concludes the design thinking process. Therefore, in the very last step, the team has to come to a common decision, create a recommendation and project result documentation for the project sponsor. The recommendation may be the plan for another Design Thinking project for refining the idea and further prototyping. Or the team recommends reiterating back to a previous phase to refine another of the ideas or even further back to exploring the problem space deeper. Or the team recommends to actually start a project for an mvp (minimum viable product, a reduced product version with just enough features for validating the business hypotheses in the market) to be used and tested in a real-world context.

The Role of Space—A Design Thinking Project in Context

There is a third ingredient to a successful design thinking project next to the right mindset and process phases: the space the team collaborates in.

The role of the collaboration context surrounding a team is often underestimated. A particular setup can reinforce a team's creative, collaborative and innovative energies or impede it. It can even prohibit certain behaviors that are useful for collaborative and creative activities.

In general, design thinking is understood as a very physical way of working. But then came COVID. Many of us found themselves in the middle of a worldwide experiment with a lot of prototyping for exploring the virtual collaboration space. We learned a lot in a very short time. In particular, we learned that design thinking can be very fruitful even in a virtual world (e.g. see the blog post Virtual ideation with LNER | Valtech). If the adequate tools are available, virtual collaboration even accelerates project progress as it is much easier to bring together people from all different parts of the world and to provide them with access to the adequate resources wherever these reside.

Whether physical or virtual space, it is the details that make a context collaborative and inspiring or not. In the best case, the team has a context setup that demands their own initiative to arrange the space to their needs and to adapt it along the project phases. From a more general perspective the context should allow for:

- Easy accessibility to all team members;
- encouraging sharing and teamwork;
- making all information easily visible and accessible to everyone at any time;
- Flexibility to arrange and move around the elements defining a space – be they virtual or physical, such as boards, tools, furniture, work surfaces, walls, etc.;
- A stimulating environment where tools or materials be they physical or virtual are within easy reach for everyone and fit to the purpose; e.g. for a prototyping session you do not want to be scared of breaking or spoiling anything; a workshop style environment might better spark creative confidence than glossy and stylish designs or spaces;
- versatility to accommodate for different needs e.g. to phases of loud and energetic collaboration as well as to phases of quiet contemplation and concentrated work alone in silence.

Bringing It All **Together**

The previous sections discussed the different ingredients to a successful design thinking team and provided some substance showing that design thinking is more than a buzzword.

It is not a magic box containing a lot of secret or brand-new tools for producing innovative products and services instantly.

Instead, I would love you to take away that design thinking is more a school of thought harmonizing elements which exist in their own right around the guiding principle of human centricity for the purpose of creating successful innovations. In essence, building innovations is all about humans discovering and creating solutions for humans. This school of thought, design thinking, has been growing over many years and hopefully will continue to grow in the future—fueled by a continuous sharing of experiences among design thinking practitioners.

As an example of a successful discovery in a design thinking style, see how Valtech co-created a new fuel order system for pilots. The result won a UX Design Award.

Please note, that there is no fixed sequence for the design thinking phases described, meaning a prototyping and testing run can be used as a method within an “observe” phase for better understanding a user’s context and exploring the problem space. Phases are iterated as the team sees fit within the given timeframe. Design thinking and agile frameworks are related in many ways.

Moreover, please consider design thinking not only for discovering innovative products or services. It is particularly well suited to address challenges of any kind of complex systems with many dependencies and ambiguities.

WHAT NEXT?

Maybe you discovered that your organization has established some or several of the practices already, even though you never called it design thinking—excellent!

Design Thinking research can provide you answers why you are successful and why your team loves the way you work. Sharing your experiences can help everybody to get better in practice.

If you want to get a deeper understanding of what being a design thinker feels like, you will find training offerings in the market. The best way to become a design thinker, however, is to start doing it. My personal recommendation is to pick some challenge out of your context, engage an experienced design thinking coach and set up a five-day-workshop running through all phases with four to five colleagues and see where it takes you.

Even if all members of a team are experienced design thinkers, a dedicated design thinking coach will add value by taking care of the process while the team can focus wholeheartedly on the challenge at hand. When team dynamics come into play, a coach will be helpful for steering the team.

If you have further questions or want to engage in deeper discussions, please feel free to contact the author.

Claudia Böttcher is an HPI certified Design Thinking Coach[1] and a Senior Consultant, Digital Transformation Strategy at Valtech GmbH.

Her work is guided by a firm belief that sustainable business success is possible only if putting customers and people at the center of all considerations. Building on solid longtime experience as a product management professional, she supports enterprises and product teams to achieve this by using design thinking and agile methods.

1 https://hpi-academy.de/en/workshops-programs/certification-design-thinking-coach.html

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