Design Thinking For Dummies

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Design Thinking

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Christian Müller-Roterberg

Design Thinking

by Christian Müller-Roterberg

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Design Thinking For Dummies®

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Introduction

Ready for an adventure? That's where design thinking will take you. You'll learn a lot, cope with a lot of uncertainties, and discover many new things. Design thinking offers you a method to develop innovative products, services, business models, and concepts. With design thinking, you can use the obstacles in your path to create something new, learn to think outside the box, and still move straight to your goal. Design thinking lets you answer questions that your customers never thought they would have, and later your customers will say: "This is exactly the solution I was always waiting for."

Developing innovative ideas always takes some effort. Compared to traditional product development processes, this effort is manageable. Asking yourself whether you can afford design thinking is the wrong way to start. Ask yourself instead whether you can afford to skip design thinking. Yes, design thinking costs money, but not investing in design thinking costs you more in the long run.

About This Book

The book you're holding in your hands is a guide for practitioners with a 360-degree view of the innovative approach known as design thinking. It

- **Takes a look at the entire process, from beginning to end:** You start with the customer's problem and end with a solution for the customer.
- **Examines all significant success factors for design thinking — the five Ps:**
  - Practices
  - People
  - Principles
  - Processes
  - Places

- **Follows different perspectives on design thinking:** You learn which steps you must take in order to succeed with design thinking, from these perspectives:
  - The company
  - The project
  - The employee
  - The customer

This book answers your questions about what design thinking is, which conditions must be created at your company in order for it to succeed, how you can plan a project, and how to implement it successfully. This book can be used in myriad ways and is a Swiss army knife in paper form. It is

- A step-by-step manual for using design thinking to identify a problem and come up with a solution
- A guidebook with practical suggestions for the implementation of a design thinking strategy
- A reference book divided into parts, chapters, and sections so that you can quickly find the content you're looking for when you need it

This book, which is designed so that you can swiftly get a grasp on everything, features many examples, instructions, checklists, illustrations, and tables. It's also structured systematically according to the design thinking process.

Conventions Used in This Book

This book doesn't have many rules. The entire book is structured so that you can quickly find everything you need and get a grasp on the contents. The detailed table of contents helps you jump right to the information you need, and each chapter begins with a brief and succinct description of the chapter's main topics. Whenever topics overlap or other chapters are mentioned, cross-references help you conveniently jump back and forth between the chapters. If you're interested in a particular term, you can look it up in the index.

Foolish Assumptions

This book is not (only) for designers. Design thinking is too important for you to let only designers develop attractive products. Whether you work at a company, an educational institution, a research institute, a public agency, or a nonprofit

organization, you can benefit from the people-based approach that is at the heart of design thinking. Whether you have an education in the technical, economic, or social field, this creative approach gives you new stimuli and ideas.

On an individual level, I make the following assumptions about you:

- You're working in a department at a company and want to see the bigger picture.
- You want to apply design thinking at your organization and need to know how to implement it.
- Your company is already working with some design thinking methods. You want to enhance your previous work with new methods, tips, and tricks for its implementation, and you want a set of comprehensive instructions.

You don't need to have any specific skills for this book — you only have to be curious.

What You Don't Have to Read

It's worth your time to read the entire book. You can find important tips everywhere in it. Even if you can use only a few of its suggestions, the time and money you invest will be worth it. I guarantee that you'll be able to use more than just a few of the tips, regardless of whether you're a novice or an expert. Some of the text in this book appears in a gray box, in order to highlight background information. You don't absolutely need this info, but it's always helpful.

How This Book Is Organized

To make things easier for you, I've arranged this book into four distinct parts, as described in this section.

Part 1: Getting Started with Design Thinking

This section gives you an overview of the principles and methods of design thinking. You'll find out how to create the necessary conditions for design thinking in order for it to succeed at your company, how to plan a project, and how to organize teamwork.

Part 2: The Problem Phases

The first phase of the design thinking process is all about giving you an in-depth understanding of what your target users need. Observations and interviews give you a better grasp of your customers' perspective. At the conclusion of the problem phase, you summarize your task in the form of a defined problem.

Part 3: The Solution Phases

Only when you reach the solution phase do you develop new ideas. After implementing creative principles and techniques, you evaluate your ideas and make a selection. Customers can use prototypes to tangibly test your selected ideas, and you can benefit from their feedback.

Part 4: The Part of Tens

No *For Dummies* book exists without The Part of Tens. In this part, you learn about ten (or so) success factors for interviews and ten (or so) success factors for implementing design thinking projects.

Icons Used in This Book

Now and then you'll find symbols in in the margins of this book. Their purpose is to make you aware of important information.

This icon points to tips and tricks that should be helpful when you apply and implement an idea. They show you how you can improve your project.

This icon highlights illustrative examples from practical experience. They should offer inspiration for your project.

This icon makes you aware of potential stumbling blocks and shows you how to *not* do something. If you avoid errors that others have made before you, you'll save time, money, and effort.

Beyond the Book

In addition to what you're reading right now, this publication comes with a free, access-anywhere Cheat Sheet that offers a number of tips, techniques, and resources related to data science. To view this Cheat Sheet, visit `www.dummies.com` and type **"Design Thinking For Dummies Cheat Sheet"** in the Search box.

Where to Go from Here

You can start immediately, by choosing one of these two strategies:

- Read the book straight through, from cover to cover.
- Find individual chapters that you want to read first. (Each chapter covers an entire subject area so that you can read and understand it independently of the other chapters.) If you have no experience with design thinking yet, I recommend starting with Chapter 1, which offers a crash course in design thinking principles.

My advice to you: Read the way design thinkers would do it. Experiment with the reading strategy that works best for you. Jump to different sections while you read the book, if that makes sense to you. If necessary, reread a chapter multiple times or look up individual terms in the index. The idea here is for you to come up with your own way to read this book effectively.

IN THIS CHAPTER

- Getting to know the design thinking approach
- Comprehending the method
- Understanding the principles
- Implementing design thinking quickly

Chapter 1
Everything You Need to Know About Design Thinking

Do you want to invent something, design something, or implement something new? Design thinking offers you a method to develop innovative products, services, methods, business models, and concepts. This chapter gives you an overview of the potential, the basics, and the principles of this approach to innovation. You'll learn how to proceed with design thinking and what you must consider when carrying out the individual steps. You'll form a team and manage the collaboration; organize the project work by structuring a logical order for the tasks; assign resources; and respond flexibly to changes. You'll even learn about the importance of your work environment — from office floor plans to furnishings — when it comes to supporting the creativity of your team members.

This Is Design Thinking

Design thinking is a human-based approach to innovation that aims to establish creative ideas and effective business models by focusing on the needs of people. The basic idea behind design thinking is that you apply the approaches

and methods of designers to the development of innovations (this is what the word *design* stands for) while also engaging in a systematic, fact-based analysis of the feasibility and economic viability of these innovations — just like what a researcher does (this is what the *thinking* part of the term stands for).

Designers start with their customers' problems or wishes and consider them from the perspective of their target users. With this knowledge, designers develop the first user-oriented ideas, visualize their creative solutions at an early stage, and then design prototypes. They quickly request their customers' feedback and change their concept on this basis. Step by step, the designers approach the best solution for their target users. The approach and individual methods of the design are supplemented by a mindset that purposefully analyzes the feasibility and economic viability of the product during development. Like a researcher, you set verifiable goals for each step, make assumptions, and test these assumptions with the help of observations and surveys regarding their validity.

More than just design

The shaping and design of material products is just one application area. You can use this approach for all areas in life and business. Maybe you want to enhance your customer service, introduce new ways of executing your business processes, or change the corporate culture. Then you're dealing with many-layered issues. When you have no simple solutions, design thinking helps you find an innovative solution.

More than just a workshop

Design thinking is a process consisting of various steps — individual steps you complete multiple times. During the process, you rely on group work in the form of workshops as well as individual work.

TIP

Provide variety. Complete individual work after a workshop phase. This increases motivation, and you can more easily tap into your team members' different kinds of potential. When it comes to individual work, you can utilize the expertise of team members who don't feel comfortable with group work.

You complete various forms of group work and supplement them with results from the individual work. The team members work individually to conduct interviews with potential customers, and then everyone presents their results in a workshop. The group evaluates the results together. This leads to the creation of new assumptions about your target users or potential solutions, which the individual team members can then test in surveys.

More than just brainstorming

Brainstorming for the creative idea is just one phase in the design thinking process. The idea here is to fully comprehend the problem and understand your target users. Analyze the starting situation and make assumptions that you investigate with observations and surveys with potential customers. Creative phases with a lot of design freedom alternate with phases in which you summarize your results and focus on the priorities.

More than just methods

Different methods can help you during the individual phases of the design thinking process. You can describe your target users with the Persona method, where you come up with a profile of your target audience, made up of the most important characteristics, modes of behavior, problems, and preferences of that audience. With the Customer Journey method, you can analyze the individual steps that the customer experiences while using a product. However, you must apply creative techniques that have assisted you when searching for a new idea as well as the various methods you may have made use of during the creation of the prototype. You can test your assumptions and ideas by applying methods from experimental research. The right application of the right methods is crucial for the success of the project.

The methods are just one factor. In design thinking, you have to keep the 5 Ps in mind:

- **Practices:** You apply proven methods from various disciplines, such as design, market research, ethnology, psychology, engineering sciences, and strategic management.
- **People:** You assemble a team that contributes different competencies and perspectives.
- **Principles:** You follow principles that determine the team's approach and position — mindset, in other words — and that serve as a guideline for the team's collaboration.
- **Processes:** You're flexible and you handle the different work and decision-making processes in an agile manner.
- **Places:** You offer places for group and individual work that encourage creativity and also enable focused work.

Seeing What Design Thinking Can Do

It takes new ideas to handle social challenges such as climate change, population growth, food security, health, mobility, or energy supply. These ideas are the foundation for economic growth. Some ideas develop into worldwide standards, and others cover niches in local and regional markets. Design thinking supports you in your creative work regardless of whether your question deals with a big or small problem, and it provides you with possible solutions. The approach can be used for all kinds of questions. These might be new products, services, business models, or social and organizational concepts.

Developing new products

New technologies such as artificial intelligence or nanotechnology definitely offer opportunities for new products. When it comes to product development in these areas, however, the difficulties don't necessarily lie in the limitations of the new technologies themselves. Difficulties arise when you have to recognize the right application areas of technologies in order to present the greatest benefit for a large number of people. You have to know who might be the product's target users and which of your potential customers' needs you might satisfy. Design thinking can help you find applications that promise success.

EXAMPLE

New ideas don't have to come from the high-tech area. At General Electric Healthcare, people noticed that children were afraid of the high-tech equipment, such as the magnetic resonance image scanners (MRI) used for diagnostic imaging procedures. Some of the children had to be sedated before the examination. Engineers subsequently tried to view the entire examination process through the eyes of a child, which led them to completely redesign the equipment and spatial environment. The walls in a children's hospital were painted to look like a pirate ship, and the exam table like a shipwreck. The exam procedure was designed as a child-friendly, role-playing game, in which the even the equipment's background sounds were integrated as an adventure game.

Creating new services

Service innovations involve changes in how the services are delivered — a new service for customer consultations, the automation and digitization of business processes, or new payment options for customers, for example. The potential of service innovations is often underestimated. Services involve particularly in-depth exchanges with customers so that a human-based approach like design thinking can offer numerous ideas when it comes to improving and redesigning services.

EXAMPLE

As early as the 1940s, the brothers Dick and Mac McDonald already used an approach similar to design thinking. While observing their customers, they realized that the truck drivers who made up a significant portion of their customer base wanted to have simple food served quickly and often ordered the same meals. The brothers limited their meal selection and offered mainly the bestselling hamburgers and French fries. At the same time, they improved the processes in the kitchen and service area. They also redesigned the dining spaces in their restaurant, with the result that only 30 seconds passed between the order and the food delivery.

Designing new business models

With a business model, you describe the way in which a company creates added value for certain customers, how it produces this value, and how it generates permanently growing revenue from it. The introduction of the *freemium* principle (a combination of *free* and pre*mium*), in which a basic version is offered for free and a premium version is based on charges, was initially a business model innovation and is now widespread even outside of online offers.

Designing social and organizational innovations

Social innovations are solutions for social problems and challenges that aren't driven by the goal of making profits. Design thinking starts with the problems and wishes of people and makes them the top priority. With design thinking, you can systematically solve tasks in the social domain. The solution can be a product, a service, or a concept of how to solve a social problem.

EXAMPLE

Students at Stanford University applied design thinking to develop a simply designed lamp to be used in developing countries — a lamp that could illuminate a room in a cheap, maintenance-free, and ecofriendly manner. Equipped with a mobile solar system that can function off the grid as well as LED lights and rechargeable batteries, the lamps are designed particularly for the needs of people in developing countries.

Examples of organizational innovations include new decision-making processes at a company or a new organizational form.

EXAMPLE

The Swiss web app company Liip has changed its organizational structure so that it eliminates hierarchies — individual teams at the company now organize themselves. Each team decides on its strategy, the type of customer acquisition it means to employ, and the applied techniques it feels are necessary for success.

Each team also handles the recruitment of new employees on its own. (If you think this means anarchy, know that there are clear rules on how to coordinate among the equal teams.)

Establishing a culture of innovation

In a dynamically changing environment, some companies continue to achieve competitive advantages through the agile, creative, and flexible recognition and utilization of entrepreneurial opportunities. They develop new markets and successfully position themselves as global players. These companies have a culture of innovation that promotes their employees' creativity and successfully turns it into new products, services, processes, or business models. With these principles and approaches, they set the foundation for a corporate culture that promotes innovation.

Understanding the Basics of Design Thinking

Before you try some of the methods of design thinking in a workshop, you should become familiar with the basics. The principles and methods of this approach to innovation are probably unfamiliar to many in your organization. New ideas are always met with skepticism, reservations, or resistance. Overcome your reservations and foster your curiosity.

Following and communicating the principles

In design thinking, you should observe a few principles that will guide you toward success:

- **Align yourself with people and their needs at an early stage:** You start with people by either taking up a problem your target users have pointed out or a wish they may have expressed. Look for *lead users* — the ones who are ahead of their time and anticipate future needs of the target market. They are especially useful because their needs precede those of all other customers in the market and they have a strong incentive to resolve the need. Actively involve these customers in the development of your idea.

- **Develop empathy:** Put yourself in the position of your target users and explore these users' emotions, thoughts, intentions, and actions.
- **Illustrate ideas:** Visualize your idea and demonstrate it with a prototype for potential users to experiment with. Prototypes can be hardware of various kinds, drawings, stories, role-playing games, model designs, or online applications in the form of Internet pages or apps.
- **Learning from failure:** Establish a culture that welcomes the value of mistakes at your company so that errors are tolerated as well as learned from. Make sure that mistakes are understood as a fixed component in the design thinking process and perceived as opportunities to learn.
- **Ensure diversity in the team:** Rely on diversity in the team so that you offer different perspectives. Diversity is shown in age, gender, education, cultural background, and personality type.
- **Offer team-oriented and creative workspaces:** The workspaces for individual and group work as well as spaces for the group as a whole must have a flexible and inspiring design. You should choose different locations, rooms, or furniture arrangements for the different design thinking phases.
- **Make the process flexible:** The design thinking process promotes a gradual approach. Analyze the problem, use it to formulate a task, develop initial possible solutions, test them, and learn from the feedback.

TIP

You don't strictly go through these phases in sequence. Whenever you get information that you have to analyze in detail, jump back to a previous step.

Consider and observe these principles during the entire innovation process. Discuss the principles in each workshop, write them down, and display them in communal spaces so that they're easily visible. As a team, check whether you've consistently adhered to the principles after each phase.

Getting an overview of the whole process

In the first part of the design thinking process, you analyze the problem. This is the *problem space*, where you address the What and Why. (What is the problem? Why is it a problem?) Only in the second part, the *solution space*, are specific solutions developed and tested: Here you ask about the How. (How can something be solved?)

In this process, you combine two phases. In the *divergent* (dispersing) phase, you collect information or develop numerous ideas that result in expanding your perspectives. In the convergent (combining) phase, you sharpen the field-of-view and compile the results or decide on choices.

These divergent and convergent phases alternate. According to the British Design Council, the change between expanding and focusing resembles the image of a double diamond (Double Diamond Process Model), as shown in Figure 1-1.

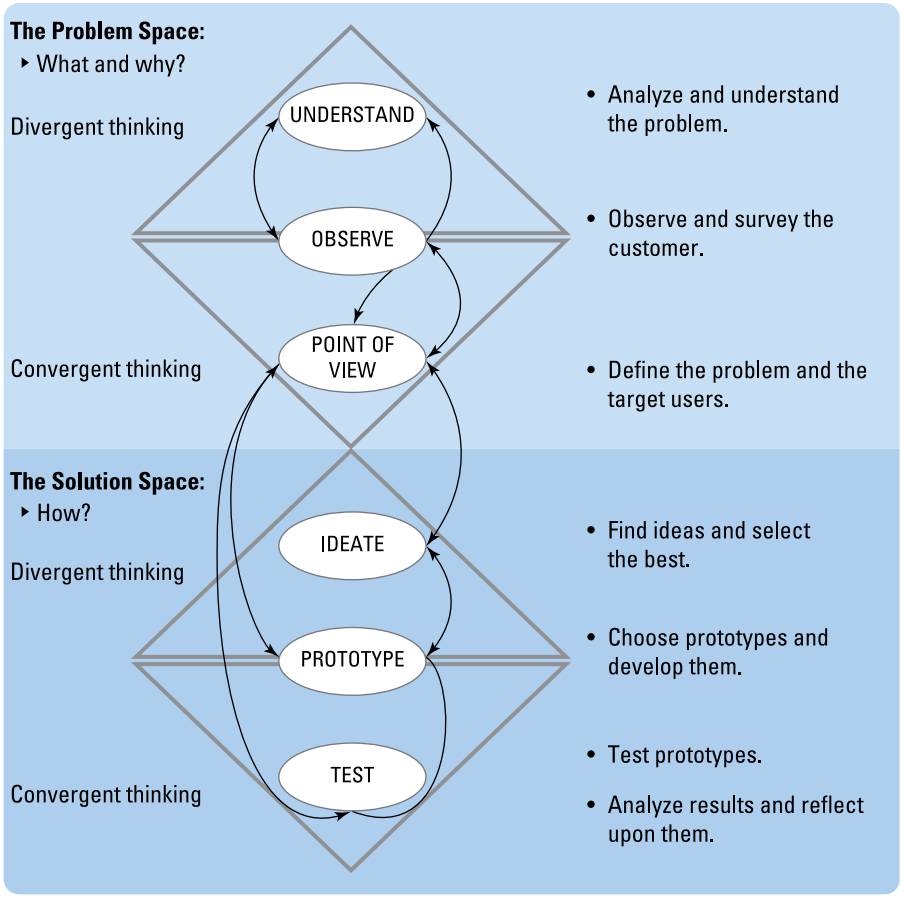

FIGURE 1-1: The design thinking process.

The design thinking process is similar to the approach of members of the Hasso Plattner Institute of Design at Stanford University (commonly known as the "d.school"). They spell out these six distinct phases:

1. **Understanding the problem:** In the first phase, you create an in-depth understanding of your target users' problem or need. You have to clarify which information you're still lacking about the target users, their needs, and their problems.

2. **Observing customers:** This phase consists of detailed research and on-site observations about the customer's need or problem. It utilizes observations and surveys so that you can put yourself in the customer's shoes.
3. **Defining the question:** After the observations and surveys, you should focus the insights on a selected group of customers or users and summarize their problems and needs in a defined question.
4. **Finding and selecting ideas:** Only in this phase do you actually find ideas. You need to employ creative principles and techniques so that you prepare multiple possible solutions. Evaluate the usefulness, economic viability, and feasibility of your ideas and make a selection.
5. **Developing prototypes:** In this phase, you should visualize the ideas, make them tangible, and then outline, design, model, or simulate them so that the potential customer understands your idea and can test it.
6. **Testing assumptions:** In this concluding phase, you test your assumptions or ideas with systematic customer feedback. You receive responses, learn from them, and continue developing your idea.

Even if the phases are shown in sequence, as shown in Figure 1-1, there are numerous feedback locations between the phases. You can skip phases (at first). If you already find interesting solutions while researching the problem, you can design initial prototypes and test them with the help of customer surveys. If you see that the customer doesn't care for the idea, take a few steps back and analyze the needs of your target users again. Critically ask yourself whether you chose the right target users.


TIP

Run through the individual phases quickly. The principle is to fail early and often so that you can learn from the failure. The feedback between the process phases helps you learn.

If necessary, terminate the process if the customer doesn't give you positive feedback. This saves you time and money that you would have spent on something that flops in the market.

Going through the process in detail

The path toward creating an attractive solution for your target users' needs can be complex and can carry great uncertainties regarding its success. In situations of uncertainty and complexity, there's often little information available about the best solution. The best way to achieve your goal is to proceed gradually: Collect information about your task so that you can accumulate knowledge.

Collecting and evaluating information about the task

In the first phase, you have to understand the task you want to solve. Take enough time for the task analysis, which can be presented as a problem brought up by your target users or a wish expressed by them. When analyzing your task, it's helpful to systematically answer the six "W" questions:

- What is the need of your target users?
- Who has this need?
- In what way is this need of your user group revealed?
- Where is this need evident?
- When does this need show?
- Why do your target users have this need?

Compile all the information and describe what you know about your target users and the problem. A problem or wish can refer to a service, a design, user friendliness, usage period, price, or environmental or social compatibility. Focus on just a few significant characteristics of the need.

TIP

You need convincing and up-to-date information to close the gaps in your knowledge. You can use the following sources:

- Publications and patent databases
- Customers surveys or direct customer observations
- Supplier surveys
- Joint workshops with customers or suppliers

Search online and offline for studies, articles, and newspaper reports about your target users, and be sure to collect statements, contact details, or other relevant information in social networks. Finally, don't forget to search for blogs by or about your target users.

Observing the target users

Collect important impressions and information about the problems and needs of your target users through observations in real environments. Only through observations can you capture the authentic and spontaneous behavior of people in their natural environment.


TIP

Don't immediately evaluate the people and situations you encounter. Ask yourself what kinds of actions are underway and which situations are being created. Don't immediately categorize it. The focus should be on the respondent's actions instead of on their disposition, values, and norms. You can better get to the bottom of those aspects through interviews.

Observations aren't just about the specific superficial activities — the persons and situations must be considered as a whole. Capture the surroundings, including all relevant objects, the situation itself, and all actions and interactions of the people as well as their emotions.


TIP

Link the observation with a survey, for example, by asking the target users about their motivations behind specific actions. You can perform a survey before, during, or after the observed situation.

When you start recognizing patterns in the observations, you have invested enough time. Write down as much as necessary — but as little as possible.

Defining the task

The analytical phases are followed by the consolidation — the *synthesis* — of the gained information in a concise form. The question or problem is your task — the design challenge that you and your team want to master.

The information must answer two basic questions that are important for solving the problem:

- Who are the target users that matter here?
- What is the specific need that you want to satisfy?


TIP

In this phase, don't offer any indication of what a possible solution might look like. Always separate the wording of the challenge from finding the solution.

The Persona method is the best way to summarize the relevant information when it comes to describing the target users. A *persona* is a real or fictitious person with individual characteristics that represent the target users (or at least some of them). Describe the characteristics of this person (age, gender, education level, opinions, hobbies, and modes of behavior) with keywords or in short sentences. (For more on the Persona method, check out Chapter 7.)

When you describe customer needs, ignore the fact that your target users want to get a certain product or specific service. Ask yourself what and why your target user wants to achieve something in a particular situation. The problems and

frustrations of your target user when handling a task are often the starting points for the subsequent solution. In addition to the problems, consider the (unstated) wishes of the target user. These wishes enable you to find new offers for the target user. Ask your target user about the motivations behind the needs.

Finding solutions

Based on how you define your task, your goal must be to develop as many ideas as possible for potential solutions. For the initial search for ideas, you can use these sources:

- General Internet research in the area of your task
- Articles in trade magazines
- Descriptions of patents in databases
- Participation in specialized presentations or discussions at trade shows and conferences
- Surveys and observations of lead users or suppliers who have already found initial possible solutions


TIP

Be sure to integrate experts with a scientific background as well as those with practical experience into your design thinking process. Organize joint workshops, execute your projects together, or ask experts about your assumptions and ideas. Many years of experience with creative processes have yielded some general principles regarding the search for problem-solving ideas:

- **The decomposition principle:** The idea here is to disassemble the problem, task, process steps, or redesigned product into its various parts and then vary or combine these parts in a new way.
- **The association principle:** Here, you want to link together ideas, information, perceptions, and emotions. One example is brainstorming and its variants.

  Brainstorming is common enough, and probably doesn't need defining here. The idea is for participants to spontaneously express ideas, leading to many ideas being produced in a short amount of time. The participants give their imagination free reign to find new and original ideas — even the craziest ideas are welcome. The free expression of ideas also stipulates that only one person speaks at a time. Ideas by others can and should be picked up, modified, or refined. The most important rule to follow is to focus just on finding ideas — actually evaluating the ideas you find should wait until later. (For more on brainstorming, see Chapter 11.)

- **Analogy and confrontation:** These involve specific methods for adopting a new perspective on a problem. With analogies, you compare your task with a task from a completely different area and then use the commonalities and differences you discover as a stimulus for new ideas.

  
  TIP

  Use the principle of analogy to put yourself in the situation of another person or another company. Ask yourself what would happen if you were another person or a company. One example is, "What if I were a billionaire?" A billionaire symbolizes infinite riches that would be available for the solution to the problem. This analogy method, known as the *what-if* technique, allows you to overcome your own mental barriers.

  As for confrontations, the selected area you choose is intentionally posed as a counterpart to your task. Setting the two areas side-by-side forces you to change perspective and thus get new ideas.

- **Provocation:** With the Provocation technique, you formulate the solution as provocative statements in order to get new stimuli from exaggerations, contradictions, or wishful thinking. Consider how you might make the customer's problem more extreme.

- **Abstraction and imagination:** The idea here is to move out from your problem so that you can view it from a higher, more abstract, or pictorial level. Get as much distance from the problem as possible so that you can understand the problem from a "helicopter perspective" and get ideas for solutions. Use your imagination to create a more image-based view of the problem, abstracting out even further.

- **Simplification:** As with abstraction, the simplification of products and processes is a successful formula for innovative solutions. The idea here is to remove or decrease process steps, characteristics, or functions that aren't relevant for the customer or aren't perceived and acknowledged as relevant. Instead, you should focus on the necessary functions, streamline your products, and standardize and automate your processes.

The greatest potential of creative principles and techniques lies in their combination. Test the various principles and techniques in a team, and then go with what works best.


TIP

Remove all obstacles to your creativity. Avoid stress and unhealthy behavior — it can influence your creativity. Renovate non-ergonomic workplaces, replace inadequate work equipment, reduce noise levels, and fix rooms that are too cold or hot. On an organizational level, rigid and strict controls, numerous regulations, and a dry formalism result in a bureaucracy that limits the flourishing of creativity. Scrutinize the regulations and formalities. Create breathing spaces where no regulations apply.

Selecting solutions that work

If you pursue every possible solution, you'll soon reach your limits because you probably aren't working with an unlimited budget. Admittedly, people want to see quick results — usually, a newly developed product poised for great success — but despite such pressures, you should avoid initiating multiple developments simultaneously. Have the team make a selection at an early stage.

There is no single correct evaluation method. If you employ several kinds of evaluations, you will develop a comprehensive picture of your idea. *Dot-voting* — where you have every participant distribute five adhesive dots to the various individual ideas, including giving multiple dots to one idea — is a great way to make a rough selection. Just sort the ideas according to the number of dots received.


TIP

Employees from different departments often assess the opportunities and risks of the same potential solutions in different ways. Utilize the range of perspectives and rely on variety in the evaluation. This makes the idea easier to implement later, when you integrate persons from different departments during the decision.

When the rough selection is completed, look at the advantages, opportunities, and implementation barriers of your proposed solutions. Use checklists like the following to review whether the ideas can meet the stipulated criteria:

- **Feasibility:** You must check whether the idea is feasible.
- **Fit (strategic and cultural fit):** The idea must fit the vision, strategy, and culture of the company.
- **Desirability:** Your idea must have a customer benefit.
- **Business viability:** An idea with business viability is one where the income is higher than the expenses.
- **Scalability:** This refers to the idea's ability to accomplish high growth with relatively little effort.
- **Sustainability:** Your idea must be successful in the long run; it must have a long-lasting economic, social, and ecological benefit.
- **Adaptability:** In a dynamically changing environment, your idea must be adaptable.

Developing prototypes

With a prototype, you can vividly present and test the essential functions and characteristics of your idea. Create a prototype early on, without elaborate planning and with little effort. You can choose from different types, and the selection

depends on the maturity of your idea and whether you want to develop an innovative product, a service, or a business model.

- **Drawings and photo collages:** You can easily and quickly create a prototype of your idea on paper, a whiteboard, or an electronic device with a drawing or an image made of collaged photos. Outline the product design or create drawings from the individual functions and characteristics of your idea.
- **Model constructions:** Use paper, cardboard, modeling clay, or Styrofoam to illustrate certain functions or characteristics of your idea. A 3D printer makes it possible to create realistic models.
- **Stories and role-playing games:** Tell a story about the use of a product so that you get feedback about its usefulness and ease of use. With storytelling, describe the advantages or the use of your idea as a real or fictitious story. You can also act out the story in the form of a video or role-playing game or with toy building blocks.
- **Digital prototypes:** You can prepare initial visual representations of control elements and buttons with wireframes. Create a web page on which you present your ideas and evaluate the user behavior on this web page.


TIP

If the creation of a prototype involves a significant amount of effort, you can also simulate how a prototype functions in an experiment for test subjects. For example, if you want to test whether customers accept the use of artificial intelligence by a consulting service, you can offer an entry screen on a computer and explain that the answers to the test subject's questions are provided by a computer. Simulate this for the test subjects, and have an employee answer the questions. Check whether customers generally accept such a consulting service. You will also find out how to design artificial intelligence for the consultation. This is a *Wizard of Oz* prototype. Just as in the classic movie *The Wizard of Oz*, something happens behind a screen, and it's not necessarily what the customers expect. Tell the test subjects that this is an experiment.

Testing solutions

Design thinking lives off early feedback from potential customers about ideas and assumptions. You can learn from this and adapt your assumptions and solutions. The idea here is to formulate and check various assumptions about the behavior and needs of your target users as well as your ideas for a solution. Ask the customers for an evaluation based on a single characteristic that the customers can most easily test on a prototype. If you get negative feedback from a customer, you have to respond quickly and flexibly. Use what you learn to design a new prototype and test it again.

TIP

You can gain respondents in various ways. Use your friends and your contacts in the social networks, ask friends of friends for recommendations, or create emails describing your project for others to forward, along with a note that you're looking for contacts to test your assumptions or ideas. You can approach your employees or colleagues at your own company and survey them in the role of the customer.

Always be thinking about where you might find potential customers. The place might be understood as a real location (cafés, shops, trade shows) or a virtual place (social networks, trade forums). Research where your customers shop, work, or spend their time off. During the first contact with anybody from a new pool of potential customers, emphasize that this is not a sales pitch but that you're looking for advice and need that person's evaluation.

Conduct personal interviews, if at all possible. During each interview, don't just consider content-specific claims — pay particular attention to statements that have some emotion behind them or that come as a surprise. You know that you have conducted enough interviews when you recognize a clear response pattern. When you create an online prototype in the form of a web page or an app, you examine the visitor behavior on this page. With this online prototype, you can test individual functions or the user friendliness of these online offers.

If your assumptions aren't confirmed or if your observations and surveys show ambiguous results, you might need to return to an earlier stage in the design thinking process. You learn from the failure, change the idea according to the feedback from your target users, create an improved prototype, and perform new tests. With this approach, you'll gradually reach a promising product, service. or business model innovation.

Start Design Thinking Right Away

After you know the principles behind design thinking and the approach you need to take, you can start immediately. Form a team, define the roles and communication channels, plan the first steps, and prepare the technical setup and work environment.

Assembling the team

You should form a team with at least five, and no more than nine, people for the design thinking project. When approaching individuals, keep in mind that you want the final makeup of the team to be as diverse as possible. Don't just consider characteristics such as age, gender, or ethnic affiliation. Look at the professional

and personal experiences and values so that you can utilize the various perspectives, methods, and knowledge of the team members for the project's success.

Defining team roles and communication practices

At the beginning of a design thinking phase, discuss the individual tasks the team will take, and then have each member independently select their tasks. Settle the responsibilities within the project team as well as with internal organizational units and external partners. Who is responsible? Who performs the work? With whom does a task need to be coordinated, and who must be informed?

Avoid extensive documentation in the form of reports. Your preferred communication method should be spontaneous talks and project discussions face-to-face. Hold daily status meetings in the form of a daily scrum, which follows these rules:

- Meetings occur daily and always in the same place.
- Meetings should never last more than 15 minutes.
- Always stand during meetings. (No chairs!)

In design thinking, group work and focused individual work alternate. One element is the workshop format, which is designed to promote an in-depth exchange between team members. Arrange workshops in each phase of a design thinking project so that you can complete the tasks while working together. The goal of the workshop can be that you develop a shared understanding of the task, characterize the target users more precisely, compile the results of observations and surveys, find ideas, or create prototypes.


TIP

Vary the composition and type of group and individual work in the scope of a workshop so that it continues to be diverse and inspiring. You can change work times and break times, switch rooms and furnishings, recruit external moderators, and apply different methods during the workshops, for example.

Planning the project work

For a design thinking initiative, you plan and execute the project according to an agile method. First, write down all necessary set tasks in any order. (In project management terms, these set tasks are referred to as *work packages*.) Then ask yourselves what you have to do to reach the selected goal. Make a detailed plan for the next steps that need to be carried out. When a step has been completed, that progress as well as any developments outside of the confines of the project

will have worked to improve the knowledge base. Then you can make a better plan for the next step. With this agile approach, you can quickly and flexibly integrate emerging changes — ideally, in the form of customer feedback — into your planning at an early stage.


TIP

The form your planning takes can be illustrated with the pencil-and-pen rule: Write down the next steps permanently with a pen, and then outline the later steps with a pencil so that they can be easily changed.

With sequence planning, you determine the logical succession of the tasks. A rough outline consists of the phases of the design thinking process:

- Understand the task.
- Search for solutions.
- Create the prototype.
- Test the proposed solution with the customer.

In addition to planning the sequence, you should define interim goals, where the progress of the project can be reviewed and a decision can be made about how to proceed (with Go to continue or Kill to terminate the project).

Use buffer times if only particular time slots are available for the employees or the tasks. Take into account a particular time requirement (5 to 15 percent of the total time needed) for the coordination of your design thinking project. A bar graph is the best way to illustrate the timeline.

You have to know the type and amount of materials needed to complete any set task. When estimating the projected required amount of work, each set task is considered in detail so that you can reach the task's goal. All members initially estimate their own required effort for each individual activity. Then the estimated results are compared with each other and the group reaches an agreement when it comes to the shared value.

Furnishing the work environment

You have to make communal workspaces and separate individual spaces available. These are referred to, on one hand, as *we spaces* for groups or as meeting rooms for everyone to communicate openly and, on the other hand, as *me spaces* for quiet individual work.

TIP

Because of the distribution into small groups, the use of bulky partitions, the communal nature of the work on prototypes, and the desired movement of the participants, design thinking workshops require a lot of space.

During design thinking, you switch between group and individual work within just a few minutes. The rooms and furnishings have to support flexibility. It should be possible to spontaneously divide large work areas that can support team work according to the work requirements (type of work, group size) by means of sliding doors or easily movable partitions. You can also establish small groups that don't want their work to be disturbed by using sliding whiteboards, pin boards, or metaplan walls as room dividers. Make sure that the participants relax during the breaks, and encourage informal exchanges.

TIP

Furnish the group work areas with upright tables and movable stools so that new groups that encourage movement can form. Movement promotes creativity. Don't hesitate to post sticky notes on windows, doors, and white walls.

Depending on the product area or industry, the technical equipment for the workshop rooms can vary. In addition to the standard office and telecommunication equipment, you can include 3D printers, scanners, crayons, smartboards, or virtual reality devices in rooms for design thinking. These devices simplify the communication and visualization of work results. You initially have to provide paper and transparencies in various sizes and colors, presentation cards, sticky notes, different types of pens, and magnets and adhesives to cover the basic supplies.

TIP

Remember the important role of the moderator when you plan a workshop. Find an appropriate person. A moderator brings the participants together, structures the process, summarizes the results, and keeps an eye on the goal and time span of the workshop. An external moderator can help you overcome the operational blindness and divergent interests of the participants.

Asking for support

Request support for your project, especially from your supervisors. Look for allies at your company who know or want to know about design thinking. Make employees at the company curious about this innovative approach. Point out the need for innovation in order to achieve sustainable corporate success. Explain the use, principles, and methods of design thinking. Counter objections by suggesting that you start on a project with limited duration and a manageable budget. At the same time, ask for freedom to design the contents of the project. This is how you can create ideal conditions for the successful implementation of your design thinking project.

IN THIS CHAPTER

- Planning and completing interviews correctly
- Learning from discussions
- Tackling surveys using different formats

Chapter 15
Ten Success Factors for Interviews

Sharing information with your target users is an essential part of the design thinking process. You can use interviews to learn more about your target users — their wishes as well as their problems. You'll get decisive feedback and new suggestions for your idea for a solution. To succeed with design thinking, it's important that you plan and complete interviews quickly and efficiently. In this chapter, you'll find ten factors for successfully carrying out interviews.

Ensuring Good Preparation

Walk through the situation in your mind before the interview. Look at the previous information about the person with whom you want to speak. Think about their character, problems, and needs. You can find information about their educational background, publications, lectures, or job descriptions through social networks or Internet research.

A good way to prepare is to practice the interview with friends or colleagues in advance. Before you start, test whether your questions are clear. You should check each question to see whether it will help you reach your goals and whether it should be shortened or deleted. The less you ask, the better.

TIP

For structuring and for an efficient and effective interview, create a binding interview guide — it lists the essential assumptions in the form of questions. (For more on the individual assumptions you have to know about, see Chapter 14.)

Prepare so that you can adhere to the schedule. You should prioritize your questions and ask them in that order so that you can at least test your key assumptions if time is short. Consider the focus of the interview in advance so that you can concentrate on it.

Finding the Right Entry

During your initial contact with people you don't know, you should emphasize that this isn't a sales pitch but that you're looking for advice and need that person's evaluation. It's often surprising how many people are glad to help you, even when time is short, because they feel flattered or consider the problem relevant. Communicate at the beginning that the conversation will take only a few minutes (from 5 minutes to no more than 20 minutes). Describe the topic in two or three sentences. Start by asking about their personal preferences or their own experiences with the topic. This question can be an icebreaker.

Taking Notes Correctly

Before starting to test your assumptions or your prototype, think about how you want to record the customer feedback (logging, filming). In principle, you shouldn't use recording devices in interviews with people you don't know. The interview partners hold back more when they're being recorded. Asking for their consent to be recorded isn't a good way to start the interview. You can also attend with another teammate. One person asks, and the other takes notes. However, this can also have a deterrence effect and is cost- and time-intensive.

Notes are certainly helpful for phone interviews, but they can prove to be more hindrance than help in personal interviews. Avoid using a laptop in personal conversations, because it creates a protective "shield" between you and your interview partner. Tablets are more practical. When you take notes, you should be aware that you'll pay less attention to the interview partner at that time. You might miss the gestures and facial expressions of your discussion partner. On the whole, the interview can seem less natural with a recording.

You can take the notes electronically or per handwriting, using notepads, sticky notes, or index cards to write on. The advantage of using sticky notes and index cards is that you can rearrange them and order them on a wall. While taking notes either during or after the interview, you can mark the results with simple symbols to highlight interesting statements. Quote important (especially the emotional) statements word-for-word. You can use emojis so that you can capture the type of emotions (annoyance, worry, frustration, curiosity, excitement). Putting down in writing the scope and type of emotions can provide important information.

Listening Actively

Listen more, talk less. The interview partner should speak 80 percent of the time; the person asking questions, 20 percent. During the conversation, confirm the discussion partner's statements by nodding affirmatively, asking additional questions in case of ambiguities, and occasionally summarizing the contents with your own words. Maintain eye contact, but don't hide behind a laptop. Avoid judging your discussion partner and their statements during the course of the interview. When talking, don't consider what you could do with the information. Focus on what and how your interview partner says something. Evaluate and utilize the information only after the discussion ends.

Paying Attention to Emotions

Pay attention to the language (volume, speech rhythm, melody, emphasis), gestures, and facial expressions during the conversation. Contradictions between what is said and how it is said can be particularly useful for the subsequent analysis. During each interview, your attention should be not just on the content-specific claims but also on surprising and emotional statements. Emotions are expressed in the content of what is being said as well as in the choice of words, pitch, gestures, and facial expressions. Emotions can show annoyance, worries, frustration, curiosity, or excitement, for example.

Always Following Up

Never assume something that your discussion partner might mean in a statement. Never take anything for granted. Ask what your interview partner means or understands. Ask for an explanation if you don't know the alleged reason or if you yourself consider something self-explanatory.

Consider every statement with skepticism. Use statements of a questionable nature as an opportunity to ask more or confront other people with this statement. You should be flexible during the discussions. If the customer talks about something with a certain amount of emotion or reports a failed search for a solution and the problem doesn't correspond to your original approach, ask about details to better understand the issue. This way, you might discover a new business idea and might also have to change direction, or *pivot*, with your original idea.

Concluding Discussions Successfully

The last impression is the one that's remembered, which is why you should finish your discussion with a positive send-off. When the interview is finished, always express thanks and provide information about the next steps — what you'll do with the information, in other words. Keep in mind that your interview partner is a potential customer and, as an influencer, can recommend your innovation to others after the market launch. It might be useful if you end the interview by asking whether you may contact the potential customer for additional questions or if there is interest in your providing information about the subsequent product launch to your interview partner. Ask whether the interview partner might be able to recommend others.

Completing a Sufficient Number of Interviews

You know that you have conducted a sufficient number of interviews when you recognize a clear response pattern. The broader your potential target group, the more interviews you must carry out. If you have a small target group, five to ten interviews might be enough for you to recognize a clear pattern. The number of interview partners depends on the size of the planned target market. If no clear response patterns emerge after a large number of interviews, you should critically consider the selection of your target group again (Who are our customers, really?) or revise your questions (Which problems or needs do the customers actually have?).

Postprocessing Interviews

After the interviews, always follow up by documenting the most important events during the conversation as well as the significant results. For your personal postprocessing, you can ask yourself the following questions:

- What went well and functioned smoothly during the interview?
- What didn't go so well?
- What were the high and low points of the interview?
- Was anything unclear during the interview?
- What did you achieve with the discussion? What didn't you achieve?
- What do you have to do differently during the next interview?
- How can you ensure that the next interview will go (even) better?

You can learn for the next interview from your answers to these questions. Take time for postprocessing, because you're sure to benefit from it.

Using Every Opportunity

Use every opportunity for exchanges with your target users. It's never too early to start with interviews in the design thinking process. Only by inviting early feedback and suggestions from your potential customers can you get the information you need for your own work.

Create a list with the top three questions you will use during spontaneous meetings with your potential customers. This means you will always be prepared in discussions with interesting people and will use them effectively to learn.

If you have no opportunity for a personal conversation, utilize information and communication technologies. In video chats, you can follow the gestures and facial expressions of your discussion partner. This method is recommended for technically savvy customers. You can share additional information with each other electronically. Instant messaging can be used for customers who don't like verbal communication or video transfers. In instant messaging, messages are transmitted immediately via a software program. Just be aware that the instant messaging approach can lead to people misinterpreting each other's statements, even when emojis are used.

If a time delay is acceptable during the exchange of questions and answers, you can also use emails. This is a way to survey customers in distant places and other time zones. Your interview partners can respond to your questions at a time that's suitable for them.

You can gain systematic feedback about your assumptions and ideas by using online surveys with a questionnaire. Although the response rate is often low for an online survey, it's a quick way to solicit quantifiable statements. A few free software solutions are available for the implementation.

Keep in mind the limits of digital media when it comes to surveys. People's response behavior is influenced by electronic recordings or transmissions. You won't get confidential information. The gestures and facial expressions are lost. Emotions are suppressed. That's why you should make the effort to visit your target users onsite and engage in personal discussions without much technical support. Analog is the new digital. On a graffiti wall, users anonymously express their impressions about a product or service on a blank sheet of paper onsite. Make a pen available and ask open questions about how the customer felt about the service, location, or product after using the product or service:

- What was good?
- What annoyed you?
- What could be improved?

This method is a good choice for situations in which personal surveys aren't possible or where you might influence the answer by being present.

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About the Author

Dr. Christian Müller-Roterberg has years of experience in implementing design thinking projects in collaboration with a number of different companies. He works on projects with leading international industries and service companies as well as numerous start-ups. He is a professor in the areas of technology, innovation management, and entrepreneurship at the Ruhr West University in Mülheim, where he gives lectures, leads tutorials, and holds seminars. He also advises companies and holds corporate workshops, using methods such as design thinking, the lean start-up approach, and the business model canvas. He has authored several books and more than 30 German- and English-language publications in the field of innovation management and entrepreneurship.

In his professional life, Christian has been actively involved in several start-up projects and performed the due diligence audit for the IPO of a start-up company. He has also worked at Germany's Federal Ministry of Education and Research, where he oversaw the funding of research projects, particularly with respect to start-ups and cooperation between business and science. Preceding this, he was in charge of technology transfer at the Charité University Hospital in Berlin, where he advised corporate management and consulted on the topic of patents. He completed a correspondence course in the field of industrial property rights and is also a qualified internal auditor in the area of quality management.

Christian's doctoral thesis in business was completed at the Technical University of Hamburg at the Institute for Technology and Innovation Management. The topic dealt with the levels of cooperation between large corporations and start-up companies in the areas of research and development. He spent several months in Japan at the Toyohashi University of Technology to complete a study on entrepreneurship activities in Japan.

Christian received his undergraduate degree from the Technical University of Braunschweig and spent a year at the Massachusetts Institute of Technology (MIT) in the USA for his master's thesis. You can find more information about him at `www.innovationsratgeber.de`.