Business Creation Toolkit

... using human-centered innovation
to explore business opportunities
in healthcare

Volume 03

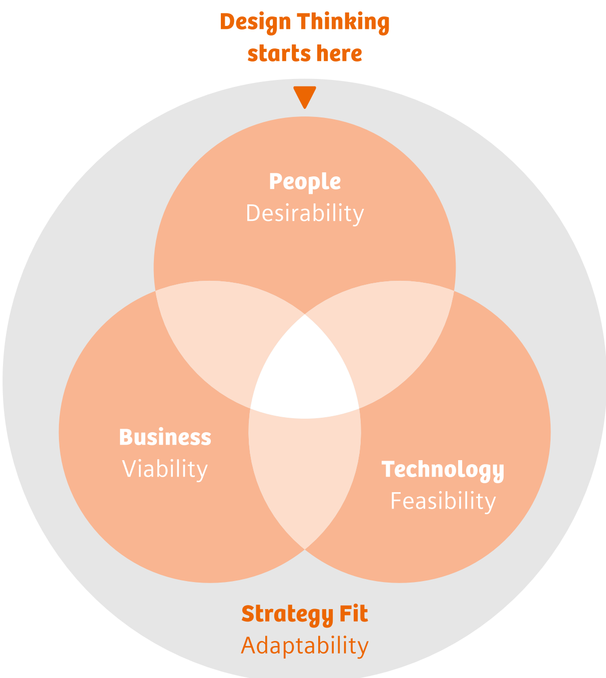
SIEMENS
Healthineers

Introduction to Human-Centered Innovation

Applying human-centered innovation, or Design Thinking, to healthcare encourages a focus on people and an openness to developing and testing ideas to find innovative and far-reaching solutions.

This creative, human-centered approach works well for addressing complex healthcare challenges. It starts by establishing a thorough understanding of problems before developing solutions to them. It is iterative and ensures that we get early and consistent feedback as we move forward. Developed solutions have been iterated many times with customers and key partners and have achieved a high level of acceptance by the time they are brought to market. If substantial changes need to be made, this is usually done in the early phases, keeping down the costs of implementing such changes.

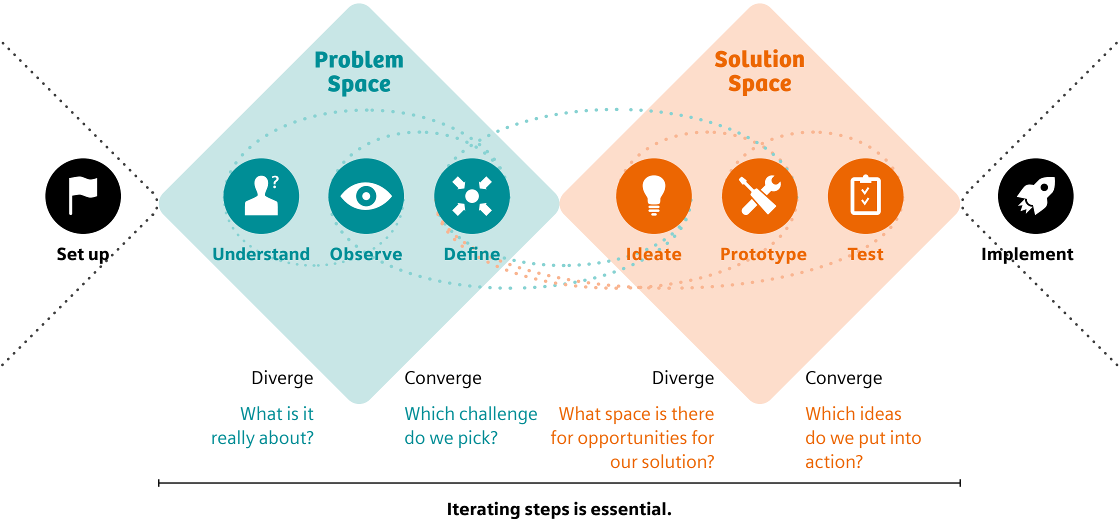
In healthcare, for example, this approach is used in the design of new patient pathways, spaces, services, products, etc., in order to achieve better clinical outcomes, an improved experience for patients and healthcare professionals, and lower costs.



Design Thinking is a mindset & an approach

There are many versions of the Design Thinking approach. Some feature a different number of steps, others use different terminology. All have in common two distinct mindsets:

- The Problem Space, where the “right” problem and a business opportunity arising from it should be identified.
- The Solution Space, where the best possible solution at the intersection of what is desirable, viable, and feasible should be generated.



Design Thinking is a mindset with a set of principles:

Focus on human values
Empathy for the people you are designing for and feedback from them are fundamental to good design.

Show, don’t tell
Communicate your vision in an impactful and meaningful way by creating experiences, using illustrative visuals, and sharing good stories.

Craft clarity
Produce a coherent vision out of messy problems. Frame it in a way that inspires others and fuels ideation.

Embrace experimentation
Prototyping is not just a way of validating your idea: it is an integral part of your innovation process. We build so that we can think and learn.

Be mindful of the process
Know where you are in the design process, what tools to use at each stage, and what your goals are.

Bias toward action
Design Thinking is a misnomer: it is more about doing than thinking. Bias toward doing and making, rather than thinking and meeting.

Radical collaboration
Bring together innovators with varied backgrounds and viewpoints. Enable breakthrough insights and solutions to emerge from this diversity.

Source: https://dschool.stanford.edu

Set up

Start Prepared

Relevant elements

Interview questions for all experts:

- Introduction to How to Use the Toolkit and what kinds of tools you will find in it
- Turning a group of individuals into an effective team though creative team building
- Agreeing on a team ethos and generating a collaborative rule set
- Informing all team members about the project brief, stakeholder expectations and envisioned outcomes

Outcomes

- An agreed project setup and inputs from main stakeholders
- A shared understanding of the approach, expectations, and mindset
- Clarity on collaboration, mode of working, playbook, and decision making
- Assigned resources – e.g. team members, budgets, customer access, space

Selected content and tools

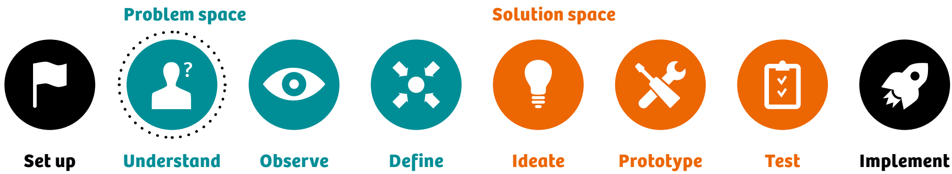
- **How to Use the Toolkit**
- **Overview**
- **Warmup Exercises**
- **Systematic Triangle**
- **Team Contract**

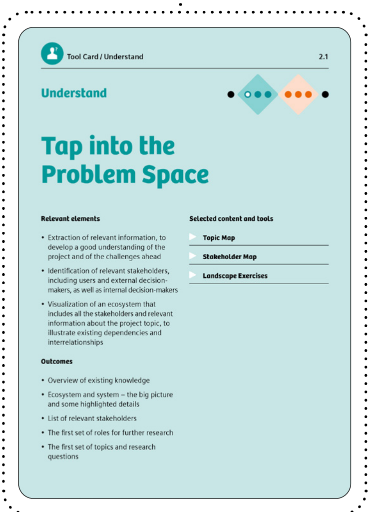
Notes

How to Use the Toolkit

Steps & tools

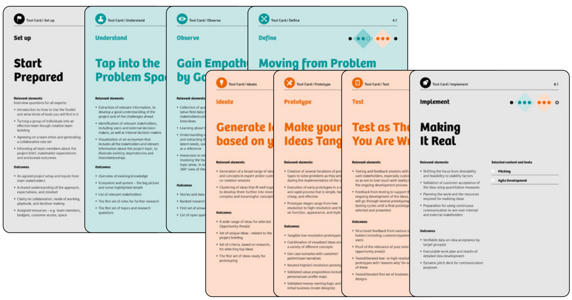
Design Thinking is a mindset and a human-centered approach that comprises two basic phases: the problem space and the solution space. In the problem space, it is very important to gain an in-depth understanding of the problem from different perspectives by adopting 'a beginner's mindset'. In the solution space, unique creative solutions are developed in a similarly unbiased way. The two main stages are subdivided into six steps that are implemented in an iterative manner. This means that one step will be iterated several times, e.g. ideate – prototype – test, define – ideate.

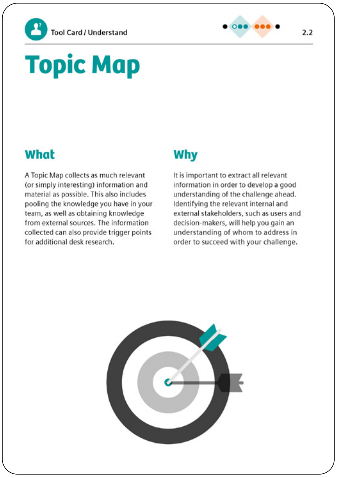




Overview of the steps

Each of the eight steps is introduced on a separate card. Each card will inform you about the relevant elements, the expected outcome, and the tools you will use/select for that step. If you want to check which step you are at, look for the white circle in the icons at top right. We have included the tools we consider to be most useful, but please bear in mind that tools should be adapted to suit your needs and wants.




Tool Card / Understand 2.2

Topic Map

What

A Topic Map collects as much relevant (or simply interesting) information and material as possible. This also includes pooling the knowledge you have in your team, as well as obtaining knowledge from external sources. The information collected can also provide trigger points for additional desk research.

Why

It is important to extract all relevant information in order to develop a good understanding of the challenge ahead. Identifying the relevant internal and external stakeholders, such as users and decision-makers, will help you gain an understanding of whom to address in order to succeed with your challenge.


Tool Card / Understand

Source: Design Thinking @Siemens Healthineers AG

How

Make visible what you already know: what relevant subtopics and information already exist within your project topic? Also, separate out what you do not know and the questions and hypotheses you have formed and share them with the group. A diverse team with different pers-pectives is an essential part of this step.

Activities

#1 Knowledge Mapping
Write (on Post-its) your thoughts and knowledge on the topic. Write (on a different board) what you do not know or do not understand fully. Start with a broad discussion and discuss and challenge these assumptions.

#2 Benchmarking
Who are your competitors (old and new)? What are the relevant competitor/market activities? What are your competitors' current product, solution, service, and business model offerings? What are the advantages and disadvantages, as well as any other lessons learned?

#3 Foresighting
Brainstorm/Research trends within the project scope. Give a brief written explanation of why these trends are relevant. Explore where you can get more infor-mation about these trends.

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Tool card: front

The color and upper headline tell you which steps the card refers to. The icons at top left indicate which step in the Design Thinking approach the tool can be used in. The double-diamond icon at top right shows where you are within the overall approach.

Tool card: back

On the back of each tool card, you will find a description of how the tool should be applied, and an example or visual to provide some context.

Overview

Set up

- Start Prepared
- How to Use the Toolkit
- Overview
- Warmup Exercises
- Systematic Triangle
- Team Contract

Problem Space

Understand

- Tap into the Problem Space
- Topic Map
- Stakeholder Map
- Landscape Exercise

Observe

- Gain Empathy by Going Out There
- Interview Guide
- Recruiting
- Cultural Probes
- Shadowing
- 5 Whys (Laddering)

Define

- Moving from Problem Space to Solution Space
- Personas
- Customer Journey Map
- Opportunity Areas
- How Might We...?

Solution Space

Ideate

- Generate Ideas based on your Insights
- Brainstorming Rules
- Crazy 8s
- 6 Thinking Hats
- Headstand Method
- Idea Selection
- Storytelling

Prototype

- Make your Ideas Tangible
- General Prototyping Tips
- Remember the Future
- Visual Scenes
- Digital Mockups
- Value Proposition Design
- Designing Business Models
- Understand Ecosystems
- Customer Value Quantification

Test

- Test as though You are Wrong
- General Testing Tips
- Critical Assumptions
- Feedback Capture Grid
- Expert Review

Implement

- Making it Real
- Pitching
- Agile Development

Notes

Warmup Exercises

What

Key Ring
During this exercise, interesting stories often come to light: e.g. a team member might talk about areas of their work life and private life based on their keys. This enables participants to share more about themselves in a lighthearted way.

1 lie – 2 truths
This warmup exercise is designed to cheer everyone up with funny or astonishing facts (and lies) about all the other participants. By trying to make the best possible guesses, they will find out more about one another.

Colleague Bingo
Participants are challenged to match the statements on the bingo cards to each of their colleagues. This game helps participants get to know each other very quickly.

Why

These exercises allow participants to introduce themselves in a casual way. They also create a good atmosphere, which eases communication.

... loves reading.	... has milked a cow or performed similar farm work.	... has had the most years of service with the company.	... works in a field that differs from the one he/she trained for originally.
... loves jogging.	... plays a musical instrument.	... has lived in four different countries (for at least three months per country).	... has held a position at Headquarters.
... was born the farthest north of all colleagues.	... has had to pay fines for traffic violations totaling at least €150.	... loves beach holidays.	... has moved the most often.
... has a very unusual leisure interest/activity.	... spends the highest number of work hours on-site at customer facilities.	... has won an athletics competition.	... speaks the most languages.
... has traveled abroad to watch a favorite (sports) team or attend the concert of a favorite band.	... used to hate school.	... has more than two siblings.	... is part of an amateur theater group or musical band.

Colleague Bingo

How

Key Ring
The key ring game requires no preparation and takes about 5-15 minutes. The participants show the others their key ring and talk about themselves. As a variation, you can perform the introductory round using shoes, smartphones, wallets/purses, jewelry, or other personal items.

1 lie – 2 truths
Sheets of card, pens, and masking tape are needed for this exercise. Each participant writes down three statements (2 truths - 1 lie) on a sheet of card. The participants stick their card to themselves and take a pen. Then everyone moves around the room and guesses which statements they think the other participants made up. They indicate their guess on each card by adding a dash. In the end, everyone reveals which statements are true and how many correct guesses they have gotten.

Colleague Bingo
This exercise requires pens and printed bingo cards. Each square of the bingo card contains a statement which refers to one colleague. The participants try to match each statement to the appropriate colleague by writing his/her name next to the statement. The same participant can be named multiple times. The participant whose card is filled out first wins the game.

Systemic Triangle

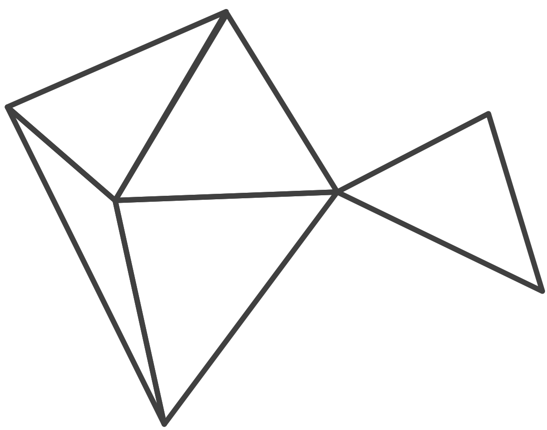
What

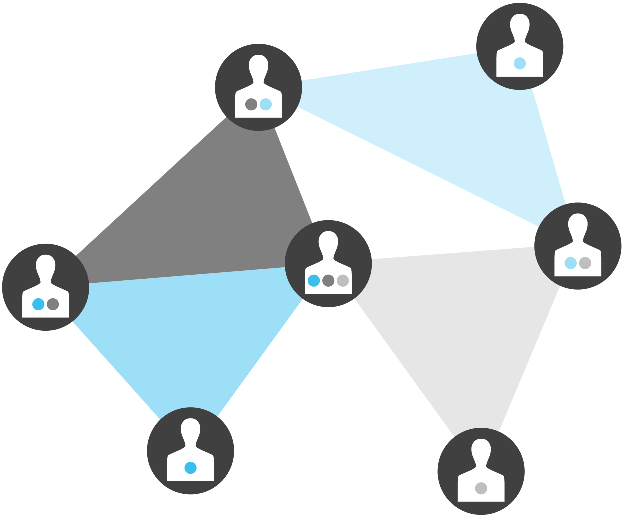
Structures in teams, departments, and organizations are usually complex. This exercise is intended to demonstrate the complexity of these systems to participants in an interactive way, and it is a fun way of illustrating the mutual relationships and dependencies in organizations. Participants develop an understanding of the often surprising "side effects" of change projects and the need for broad involvement.

Why

This exercise helps participants experience the complexity of organizations not just in a cognitive way but also physically. Colleagues will be fascinated by the surprising complexity of this apparently simple task. Key findings are:

- Each cause has an effect, and each effect has a cause
- The behavior of our colleagues affects our own behavior, and vice versa
- The consequences of our own behavior are not necessarily predictable
- Just one individual is capable of setting a whole system in motion





How

Explain the rules for this task to the participants: no communication is allowed, either verbal or nonverbal. Each participant mentally picks two partners from the group. No one must know who the other participants' partners are. To evaluate this exercise, each participant picks a partner to discuss their findings. Everyone writes down their most important insight on a moderation card and pins it on a board. Then everybody comments briefly on their most important finding.

Rules
Once each person has chosen two partners, they position themselves so that they form an equilateral triangle with their partners. If one of the two partners moves, the participant must move too, in order to restore the equilateral triangle. The task is complete when all the triang-les are equilateral and every¬one has stopped moving.

Trigger questions
- "What has this experiment shown us?"
- "How did you like the activity?"
- "What does any of this have to do with our innovation project?"

Team Contract

What

The Team Contract is a written agreement on how a team wants to work together. It describes the aspects that will be defined and decided by the team.

Why

The quality of collaboration within a team has a strong influence on the quality of the project outcomes and therefore its impact. It is crucial to set expectations regarding project outcomes, the mode of working, and the process for articulating a shared agreement.

Team development and behavior

Forming
- Questioning
- Socializing
- Displaying eagerness
- Focus on group identity and purpose
- Sticking to safe topics

Storming
- Resistance
- Lack of participation
- Conflict
- Competition
- Strong emotions

Norming
- Reconciliation
- Relief, reduced anxiety
- Members are engaged and supportive
- Developing cohesion

Performing
- Demonstration of interdependence
- Healthy system
- Ability to perform effectively as a team
- Balance of task and process orientation

Goals

- What do we want to achieve as a group?
- What are our feasible, measurable, and time-bound key goals?
- What are our individual personal goals?

Roles and skills

- What are our names?
- What skills and strengths do we have on board of our group?
- What composition of roles would help us get where we want to be?

Purposes
Why we are doing what we are doing in the first place?

Values

- What do we stand for?
- What are our guiding principles?
- What are the shared values that we want to keep at the core of our team?

Guidelines and activities

- What are the guidelines we want to introduce after this session?
- How do we communicate and keep everyone up to date?
- How do we make decisions?
- How do we execute and evaluate what we do?

How

Define and discuss the relevant corner-stones of your teamwork. Pay attention to practical aspects, e.g. length of work time, communication, decision-making process and cultural aspects. You can consider values, creativity, attitudes, communication etc. Write down how your team wants to collaborate and get each team member to agree to abide by the contract.

Understand

Tap into the Problem Space

Relevant elements

- Extraction of relevant information, to develop a good understanding of the project and of the challenges ahead
- Identification of relevant stakeholders, including users and external decision-makers, as well as internal decision-makers
- Visualization of an ecosystem that includes all the stakeholders and relevant information about the project topic, to illustrate existing dependencies and interrelationships

Outcomes

- Overview of existing knowledge
- Ecosystem and system – the big picture and some highlighted details
- List of relevant stakeholders
- The first set of roles for further research
- The first set of topics and research questions

Selected content and tools

- **Topic Map**
- **Stakeholder Map**
- **Landscape Exercises**

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Topic Map

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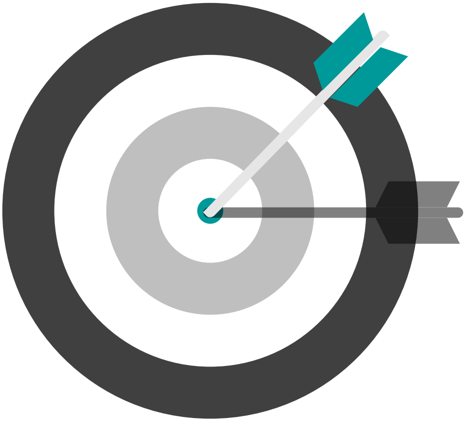

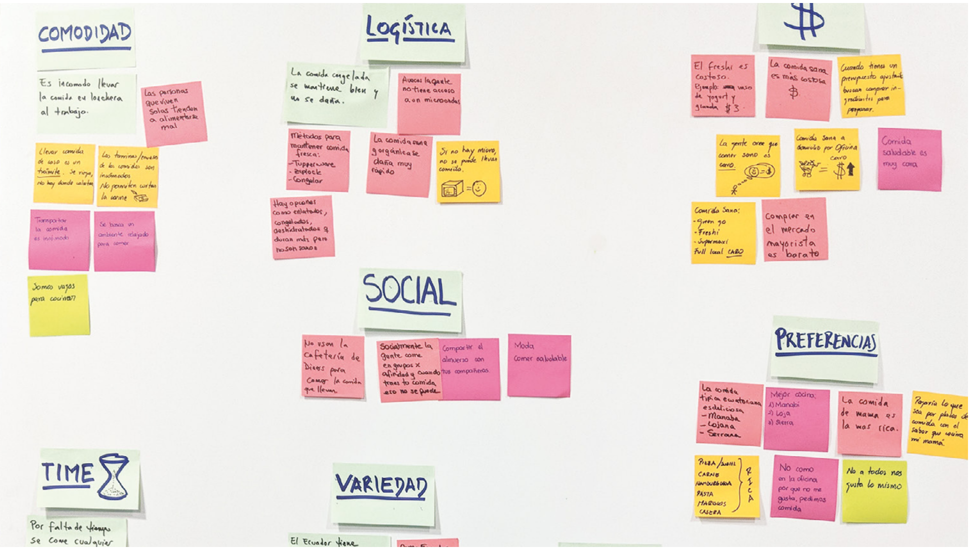

Source: Design Thinking @Siemens Healthineers AG

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Stakeholder Map

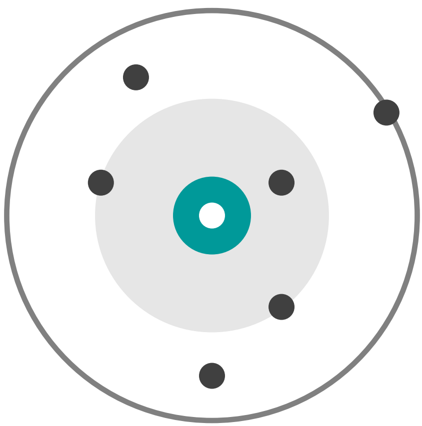
What

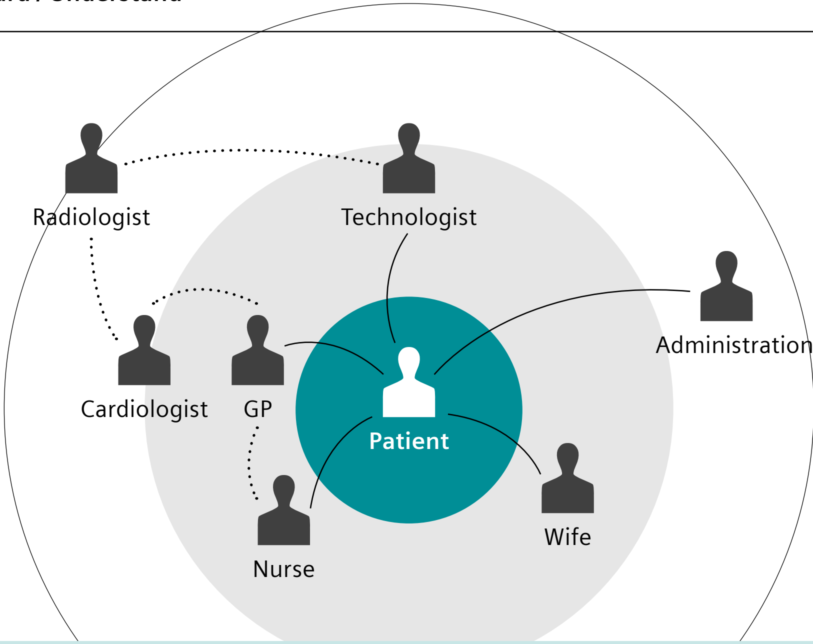
The Stakeholder Map is a visual representation of a system of actors and their relationships. It provides a systemic view of the people involved and their impact on each other.

The map is structured from a specific point of view that forms the center of the entire map: e.g. if the selected subject is the user, then the map will show all the actors and their relationships with the user.

Why

Mapping is an important step toward identifying your key stakeholders and understanding where they come from and what they are looking for in relation to your business. It is also very helpful preparation for the observation phase.





How

- **Define your stakeholders**
  A stakeholder is anyone who can affect or be affected by an organization, strategy, or project. They can be internal or external, and they can be at the senior or junior levels. Some definitions suggest that stakeholders are those who have the power to impact an organization or project in some way. A more inclusive definition extends to all parties who are affected by a solution, service, or product.

- **Analyze your stakeholders**
  Stakeholder Analysis is a systematic way of analyzing stakeholders based on their power and interests. Stakeholders with a lot of influence and interest are key players. Stakeholders with limited power and interest are less important.

  The process of identifying stakeholders will often result in a long list of individuals and groups. However, once you have analyzed the list, you will find that a significant proportion is made up of clearly identifiable groups of people with similar interests. A common method is to plot each stakeholder group's interests, power, and influence on a quadrant.

- **Create a map**
  Put your main stakeholder in the center of your map. The stakeholders who are directly involved are placed in the second ring of the diagram. This indicates that their relevance to and impact on the system decreases with their distance from the center.

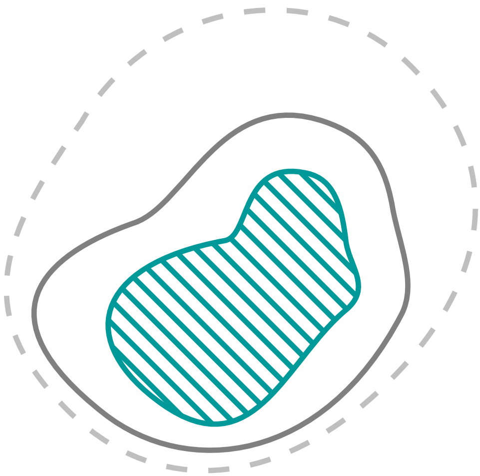
Landscape Exercise

What

The Landscape Exercise involves creating a visual representation of the project in the form of a two-dimensional topography. Peaks represent barriers and obstacles. Valleys represent skills, resources or opportunities that can help you overcome the obstacles and successfully achieve your desired outcome / project goal. There is a start and an end point, and the path between them is extremely important and may even change over time.

Why

The goal is to get an overview of the entire project. The map should also help you to locate opportunities for improvement and to choose a different approach or perspective. It is a good metaphor for understanding the project journey, and it also functions as a visual stimulus for inspiring reflection.



Source: Design Thinking @Siemens Healthineers AG

How

- Start to think about the challenges, barriers, and obstacles that you are facing in the project. Choose a color and a peak on the template provided. Ask yourself what you are spending a lot of time doing, and if this is supporting or slowing your progress.

- In the next step, think about positive aspects of the project that will help you to reach your goal. Again, pick a color and use the valleys on the landscape template to represent them. What resources do you have? What worked well the last time?

- You can also add extra contour lines to show steeper inclines and declines. You could shade the levels differently, with darker shading representing steeper gradients.

- If you have identified a particular barrier or disadvantage, you can also add fault lines / borders that represent points of great tension or conflict. Rivers are intended to depict special or unexpected things which helped you reach your goal.

Observe

Gain Empathy by Going Out There

Relevant elements

- Collection of qualitative and/or quantitative field data by conducting on-site stakeholder/customer observations and interviews
- Learning about their context
- Understanding stakeholders' behavior and extracting their explicit and latent needs, using the real world as a reference
- Immersion in relevant experiences involving the focal topic and adjacent topic areas, in order to generate a 360° view of the project

Selected content and tools

- **Interview Guide**
- **Recruiting**
- **Cultural Probes**
- **Shadowing**
- **5 Whys (Laddering)**

Outcomes

- Stories and data from observations
- Ranked research questions
- First set of answers
- List of open questions

Notes

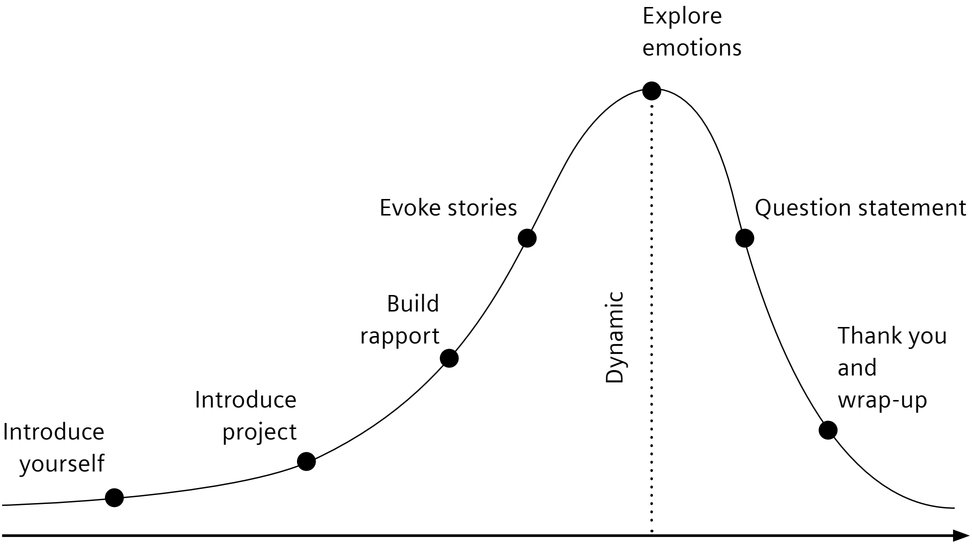
Interview Guide

What

Interviews provide greater detail and depth than a survey that asks yes/no questions, offering an insight into how individuals understand and narrate aspects of their lives. Interviews can also be tailored specifically to the knowledge and experience of the interviewee. Although qualitative research is about letting people tell their stories, it is necessary to have a plan for the interview, in order to keep the focus on the relevant topic. Interview Guides help the interviewer ensure that the participants talk about the desired topics.

Why

The Interview Guide is a document that details what will happen in the interview. Creating this plan is an essential preparatory step. The interviews themselves never happen as you imagine, but having a detailed plan prepares you to be flexible. This is the step where you translate "questions that we want answers to" into "questions that we will ask."



How

We have defined a structure for the flow of an interview (▶ see graph):

- **Background/introduction:** Start by introducing yourself and the project you will be talking about.
- **Meet 'n greet:** Let your interviewee do the same.
- **The "facts":** Start with a couple of simple questions that your interviewee will feel comfortable answering (for example, about their job or family status).
- **The heart of the matter:** As soon as you see that your interviewee feels comfortable, you can start to ask topic-/issue-related questions.
- **Show me, don't tell me:** If an opportunity presents itself for your interviewee to show you something, e.g. a workaround, take it.
- **Don't come empty-handed:** Try to bring something tangible – try to find a way to underline your questions with e.g. sacrificial concepts, scribbles.
- **Let's explore:** Now comes the part where you start to dig deeper. Follow up on answers or statements your interviewee gave in the previous section. Ask about their feelings, and ask a lot of "why?" questions.
- **Wrap-up:** Make it clear when the interview is ending. You can also check to see if your participant has anything else to tell you that you did not ask about. Say thank you!

Recruiting

What

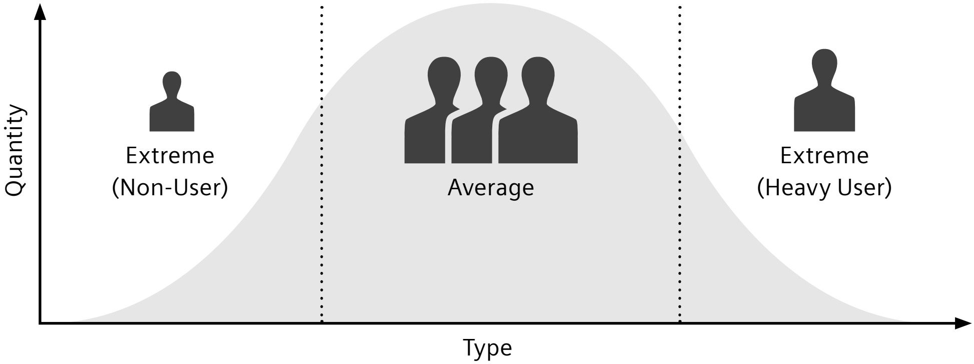
Plan and conduct your recruiting. Look at the Stakeholder Map and Topic Map from the Understand phase and identify the individuals you think will bring something new/inspiring. Decide which ones should ultimately be approached and recruited for an observation or interview activity.

Try to get the whole picture:

- Direct/Indirect stakeholders
- Extreme users
- Relevant experts
- Unaffected parties

Why

The quality of the observation results depends very much on the individuals participating. Try to find people who enjoy talking and who do not feel uneasy among strangers. Always strive to situate your observations in the context of the participants (e.g. at home, in their office or during leisure activities). This might be a bit different when talking to experts. You should meet them in their working environment. Plan where and for how long you want to meet the participants.



How

The team creates a "primer" for the recruitment process, which is a list that roughly describes the intended participants. Make sure that the primer is not too long or set out in too much detail. It should be formulated so that people can relate to it or are at least encouraged to inquire further. The time at which contact is made is the key moment for recruitment. This usually takes place on the telephone: therefore, the person on the team with the most pleasant telephone voice should be responsible for recruitment. Briefly describe what the recruitment process is about, who you are, how you found out about them, and how the interview will proceed. Ask questions to test the individual's willingness to talk. Tell them how many people will be present and inform them that photographs and videos will be part of the interview. Offer an expense allowance (and mention the fact that you need a receipt for this). Study the list of people to be observed with a view to ensuring a good mix.

Take into consideration e.g.:

- the age mix
- the gender mix
- different ethnic origins
- phases of life
- individuals v. groups
- the person v. their role
- experts

It is also recommended that extreme users be included in the mix of interview participants. These could be non-users or heavy users of a product or a service. The advantage of interviewing them often lies in their ability to articulate "why" they use a particular product/service or "why they do not". Also, they often use a product/service in unintended, forward-looking ways.

Results from expert interviews often offer a wealth of inspiration and ideas. But never forget that, in the end, the solution developed has to provide value for the majority of customers/users/patients and needs to be tested with them.

Cultural Probes

What

Cultural Probes are an approach to qualitative user research that has been developed in order to gain interesting insights about customers, participants and users. Cultural probes gather inspirational information about people's lives, thoughts, values and emotions. They consist of questions, prompts and artifacts for reporting thoughts and feelings. The artifacts range from diaries to elaborate single-use cameras.

Why

Capturing insights about user experience is crucial. This method allows you to gain largely unbiased data from the users' perspective. Cultural probes create a better understanding of users' needs and behavior in their everyday lives. Also, you are able to analyze users over a prolonged period instead of merely obtaining a snapshot at the time of observation.

A glance on the desk of a remote scanning technologist
Source: Design Thinking @Siemens Healthineers AG

How

Briefly explain the purpose of the procedure to participating customers, patients and users. Provide them with the necessary tools, including memory cards, notepads, pencils, cameras, and any other material you would like them to use.

Ask your participants to compile a visual diary and have them take pictures or even short videos of certain situations with accompanying notes. After a two-week period, you will collect all the materials and start analyzing them.

Shadowing

What

Shadowing is a research technique where the researcher acts as an observer for a set period of time. During this period the oberver trys to act "like a fly on the wall", in oder to avoid causing the research subject to deviate from their natural behavior. You will gain fresh insights and new perspectives.

Why

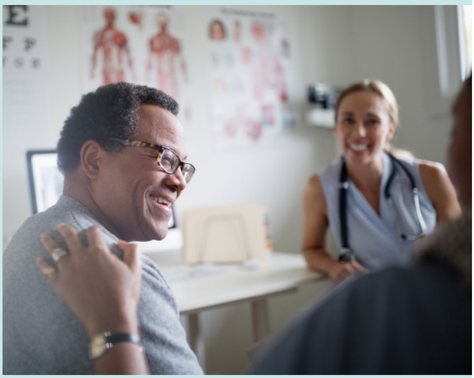
This method offers real-time data collection and is truly user-centered. Meaningful insights which would otherwise go unnoticed are obtained. We gain a deeper under-standing of how situations unfold, the connections between different kinds of situations, the environment in which they take place, and behavioral patterns. The use of this method therefore also creates greater empathy for the users.

Activities	Environment	Emotions	Objects	Users
What are they doing? What are their tasks?	What is the environment like? How would they describe the atmosphere?	What are they feeling and thinking? What do they communicate?	What objects are in use? How are they being used?	Who is involved? What are their roles and responsibilities?

How

Be open-minded while observing and pay attention to what they are trying to communicate. Consider the following:

- How do they feel?
- What obstacles do they face?
- What do they appreciate the most?
- What are they missing?
- When do they make decisions?
- How do they interact?



Source: Design Thinking @Siemens Healthineers AG

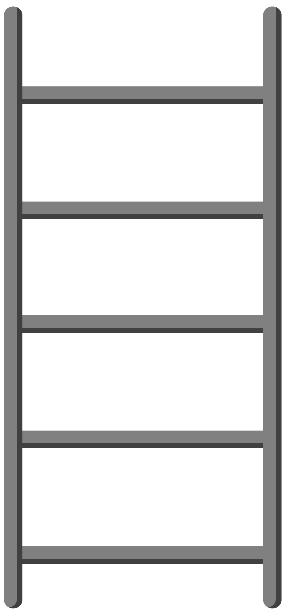
5 Whys (Laddering)

What

The 5 Whys strategy is a simple and effective strategy to keep in mind during interviews. It allows you to look beyond what people say and uncover their hidden pain points and needs.

Why

The key to solving a challenge is firstly to really understand it. Often, we try to solve the problem without understanding the root cause. In many cases, what we think is the cause is just another symptom of a particular problem. The aim of using the 5 WHYs is to shed more light on the underlying cause-effect relationship.



Example of 5 Whys

Challenge:
Delay in performing CT scans

1
WHY are the CT scans delayed?
Because the procedure takes longer than scheduled

2
WHY does the procedure take longer?
Because the technologist is busy with other things

3
WHY is the technologist busy?
Because they have to answer the phone

4
WHY do they have to answer the phone?
Because there's a phone that rings in the area

5
WHY does the phone ring in the area?
Because it hasn't been programmed to ring only at the front desk

How

When you are interacting with customers/ users/patients and conduct interviews or other kinds of research, do not take anything they say at face value. In the case of statements that are important, ask "WHY" until you have understood the basic needs and goals behind the statement.

Asking "WHY" five times is usually enough to reach a deep understanding. You can stop asking "WHY" when the interview partners start to repeat themselves.

Define

Moving from Problem Space to Solution Space

Relevant elements

- Analysis of existing data and information in order to identify common patterns and possible connections that lie beneath the obvious
- Articulation of emergent insights and distillation of findings into rich areas of strategic opportunities and potential for innovation

Selected content and tools

- **Personas**
- **Customer Journey Map**
- **Opportunity Areas**
- **How might we...?**

Outcomes

- Framework for research results
- Insights based on field research findings
- Reframed challenge based on insights
- Overview of research results
- Explored Personas
- Current (and future) Customer Journey
- Set of research-based Opportunity Areas

Notes

Personas

What

Personas are archetypes constructed after thorough observation of the potential users. Each Persona is based on a fictional character whose profile combines the features of an existing group of people. This means that the Personas assume the attributes of the groups they represent, from their social and demographic characteristics to their needs, desires, habits, and cultural backgrounds.

Why

Creating a Persona gives us a deeper understanding of the user by categorizing essential aspects. The use of Personas provides a significant advantage during the research and conceptualization stages of a project by supporting previously unfounded hypotheses. They can also improve communication between teams and facilitate more constructive and user-focused discussions.

Name:
Monica Smith

"Our job is done well only if we do not lose our focus on the patients' needs"

Age	50
Job	Radiographer
Location	Baltimore, United States
Archetype	Patient-oriented with lengthy work experience
Motto	Technology should make our job easier, not more complex

Short Bio:

Monica grew up in Philadelphia, where she was educated and began work as a radiographer. She has worked in a variety of clinics and departments: urology, surgery, and radiology (since 1998).

Motivations & Perceived Responsibilities:

- Humane patient treatment, best possible diagnosis, support for colleagues
- Importance of self-efficacy in workplace
  ●●○ Medium

Personality:

Fairly high medical skills ●●●◐

Fairly low technology affinity ●○○

Main Tasks:

- To organize a smooth patient-handling process
- To register, manage, and handle patients
- To operate the CT system and release radiation
- To post-process and archive images
- To deliver high-quality images

Expertise with Modalities and Interface:

- Works mainly on CT, but also on conventional X-ray
- Somaris 7 on Somatom Definition AS
- Somaris 10 on Somatom go. up
- RIS
- Quote: "In the past, I have always had a hard time re-learning new scan interfaces."

Biggest Fear:

Making major mistakes leading to "re-takes" or injuries to the patient

Positive Moments:

"Working with patients is my life. Taking care of people has been my dream since I was a little girl."

Institutional Context:

- University hospital
- Radiology department
- Medium - high throughput
- Wide range of examinations

Team Set-Up:

- Usually, 3 techs are involved when scanning (clear responsibilities: 1) RIS and organization, 2) Scan UI, 3) Patient care and preparation)
- During night shifts, Monica is responsible for all these tasks
- Radiologists are located in a different area and automatically receive images on PACS

How

Through analysis and refinement, the data from user interviews and observations is turned into one or more fictitious characters. Each character is created in realistic detail. The Persona also predicts how that character will potentially interact with proposed solutions. As a result, it is critical to make sure that your Persona's needs are crystal-clear, in order to guide decision-making within your team and among other stakeholders.

Through role-play and Q&A sessions using the Persona, the merits of ideas and solutions can be evaluated against the needs of the Persona.

Customer Journey Map

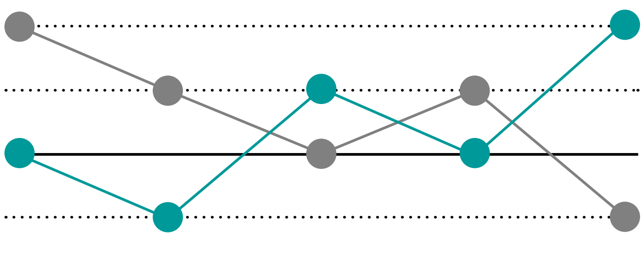
What

The Customer Journey Map is a graph that depicts the journey of a user (or even of multiple users). The map can optionally represent the various touchpoints that characterize the user's interactions with a system, service, or product (product-centered journey map), or even go further and show how the touchpoints are embedded in the overall experience (experience-centered journey map).

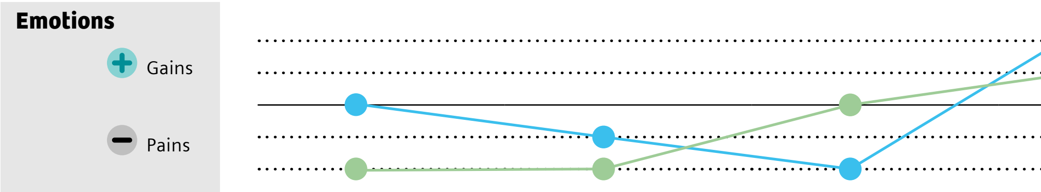
Why

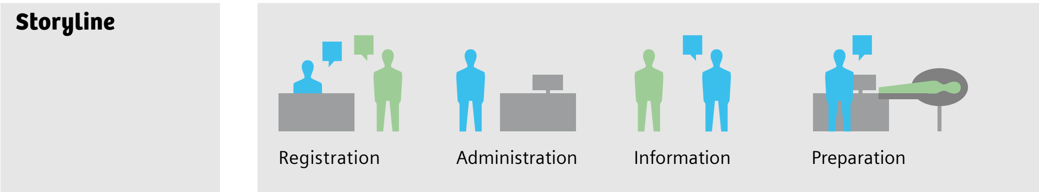
A journey helps represent the relationships and interdependencies of a (usually time-based) sequence of events. The key moments of an experience are made visible. The individual stages can also be weighted. The journey is especially suitable for analyzing services or experiences, because they represent a sequence of actions.

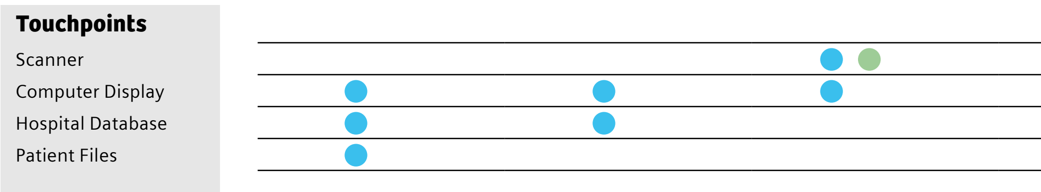
Think about these three dimensions if you would like to understand a specific journey: breadth (high-level journey map), depth (detailed journey map), and consistency. It is important to consider all the levels in the journey.



Process Stage	Administration	Patient Care	Definition of Exam
Personas — Technologist	Manage patient Select patient Check request Register patient	Call patient Receive & instruct patient Prepare patient Connect infusion	Assign exam protocol Check patient's position Validate protocol Adjust protocol
Patient	Register for procedure Show your own patient file	Answer questions Take infusion Sit & lie down	Wait for the scan to start Follow the instructions given by staff







Source: Design Thinking @Siemens Healthineers AG

How

Visualize the stages you identified in your research on your topic. Draw a timeline on a sheet of paper and mark several stages of the journey on it to represent the overall experience. Fill the individual stages with insights from the observations.

Identify and list the obstacles and drivers based on the stages. Highlight critical aspects of the journey. Give a weighting to the individual stages – from both the supply and the demand perspective! **Note:** Once you have created a journey, always make sure that you iterate and validate the current and future state with custo-mers in the ongoing project.

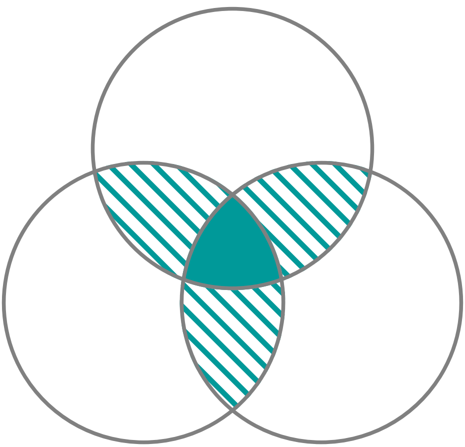
Opportunity Areas

What

Synthesis transforms the acquired data and information into meaningful insights. This occurs in three steps: take data, craft insights, and identify Opportunity Areas. The Opportunity Areas are the areas or action fields where the team sees innovation potential. These are formulated based on the insights. It is rare for only one Opportunity Area to be identified; usually, there are a number of areas. The Opportunity Areas shape the direction of the next steps.

Why

The goal is to draw insights from the information collected and to translate them into addressable Opportunity Areas. At this point in the project, the Opportunity Areas may still point in many different directions. This will also depend on the setup of the project, i.e. whether it is more about new Opportunity Areas that are specifically intended to explore new territories, existing business, or new business.



Observe

"I have around twenty experts that I reach out to when needed. I know them personally."
Radiologists, Sweden

Define

Clinicians' main collaboration resource is their circle of trust: a small group of long-term collaborators that fulfills the majority of their clinical needs.

Ideate

When seeking an outside perspective, clinicians could benefit from tools for collecting and sorting material, while expanding their network in the process.

"I trust them because I know them. I have met them, I have worked with them. I would never trust anyone that I have not met."
Surgeon, Spain

"I have the private phone number of at least one person in each section I am working with so that I can just call or send a WhatsApp."
Cardiologist, Germany

How might we incentivize clinicians to grow their circle of trust and benefit the scientific community beyond their institution?

Data

Bring it all together – data from all interviews and observations

Cluster

- Connect & Cluster
- Notice themes and patterns

Insights

Tips for crafting good insights

- **Learn** – Does it help to unders-tand what people need and want?
- **Inspire** – Does it provoke new ways of thinking about a challenge? Does it spark ideas?
- **Sticky** – is it simple and easy to share with others?

Transfer and get concrete

Opportunity Areas

- **Build on one or more insights** – provoke new ideas and reframe the challenge
- **Make it juicy and inspiring**
- **Outline your audience clearly** – make it specific enough
- **Open up a space, people can connect to** – emotionally, functionally and socially

How

- Discuss in the team where you see opportunities for innovation.
- Try to formulate each of the opportu-nities in one sentence.
- Collect these formulations and discuss in-depth which ones best reflect the understanding of the team.
- Then formulate a short description of the Opportunity Areas. It is often useful to back this up with a few quotations and images from the research to illustrate the observations brought into play.

Important

The boundary between the formulated insights and the Opportunity Areas is often blurred. The difference consists mainly in the way that they are articulated.

How might we…?

What

"If you define the problem correctly, you almost have the solution" (Steve Jobs). So "How might we ..." is maybe the most important question for your human-centered innovation project, as it is the starting point for systematic problem-solving. Take your Opportunity Areas and try to formulate inspiring questions for them, each high-lighting one aspect of the challenge.

Why

The Opportunity Areas identified at the end of the Synthesis stage are phrased in a way that emphasizes the potential for innovation. However, they are still too broad to generate concrete ideas directly. It is therefore necessary to perform another formulation exercise that makes them more tangible and ready for the generation of specific ideas.

How

In addition to describing the problem, make sure you define a target customer for the project. Also, try to point out the benefit for the user once the problem is solved.

The following sample introductions are ideal for launching a brainstorming session:

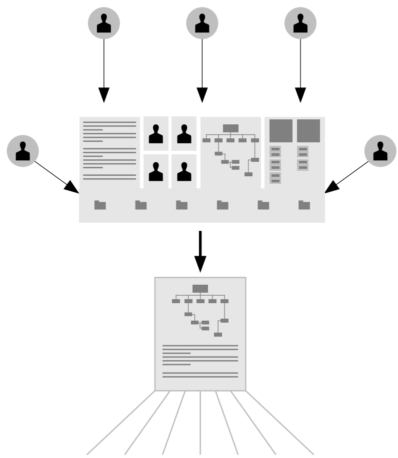
- "How might we prepare the organization for digital transformation to improve acceptance?"
- "What if workers in the assembly line had a mobile system to support their workflow?"

Above all, try to ensure that the questions are neither too broad nor too detailed.

Examples

How might we...
create a collaborative tool
Who for closed research groups
(intra-institutional and inter-institutional)
Why to facilitate consensus generation
What and structured protocol-building?

How might we...
incentivize
Who clinicians (young professionals)
Why to grow their circle of trust
What and benefit the scientific community beyond their institution?



Ideate

Generate Ideas based on your Insights

Relevant elements

- Generation of a broad range of ideas and concepts in expert and/or customer co-creation sessions
- Clustering of ideas that fit well together to develop them further into more complex and meaningful concepts

Outcomes

- A wide range of ideas for selected Opportunity Area(s)
- Set of unique ideas - related to the project briefing
- Set of criteria, based on research, for selecting top ideas
- The first set of ideas ready for prototyping

Selected content and tools

- **Brainstorming Rules**
- **Crazy 8s**
- **6 Thinking Hats**
- **Headstand Method**
- **Idea Selection**
- **Storytelling**

Notes

Brainstorming Rules

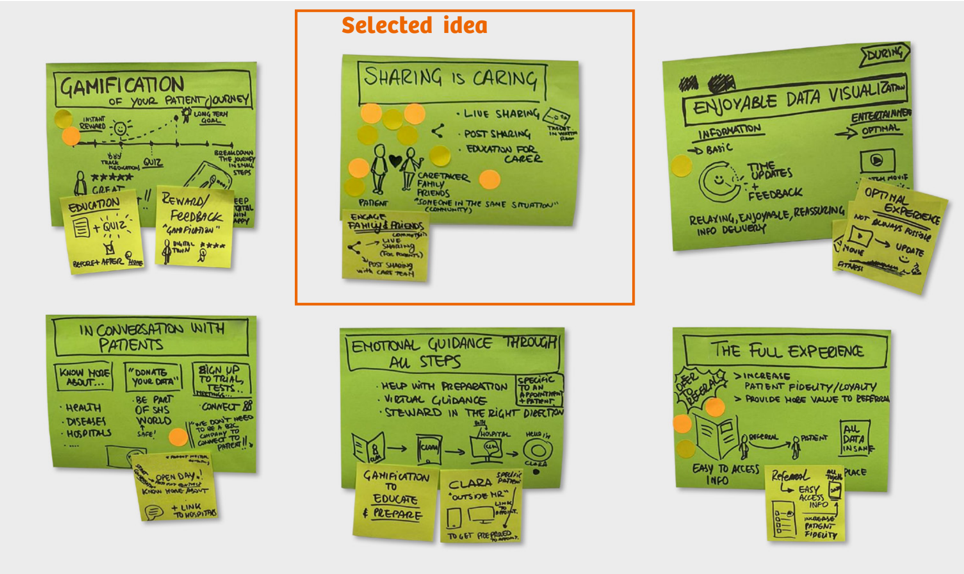
What

Brainstorming aims to take advantage of the collective creativity of a group. Its strength lies in joint activity, in listening, and in building on the thoughts of others. Brainstorming also encourages the conscious activation of the generative part of the brain. Brainstorming takes place in every step of the process.

In order to conduct an effective brainstorming session, certain preparations have to be made and a few rules need to be followed. It is also helpful to assign the roles of the facilitators of the brainstorming session in advance. Make sure that you have a lot of wall space and materials like Post-its and pens ready!

Why

Brainstorming is a helpful tool for opening up and exploring new spaces, thinking freely in all directions and overcoming conventional boundaries without fear of being judged. For an open and ongoing discussion to bring forward ideas and address challenges, it is helpful to have brainstorming rules. Brainstorming aims to generate opportunities and ideas that can sometimes lead in unexpected directions, and to stimulate co-workers by throwing up opposing or disruptive ideas.



Source: Design Thinking @Siemens Healthineers AG

How

1 **Defer judgment!**
No evaluations. At this point in time, there are no bad or meaningless ideas.

2 **Encourage wild ideas!**
Try to overstep boundaries with your ideas. Go crazy.

3 **Be visual!**
A picture usually says more and inspires better than a thousand words. Avoid lengthy descriptions and use simple sketches.

4 **Build on the ideas of others!**
Ideas belong to everyone on the team. Others can therefore also use them to make them crazier, better, more perfect.

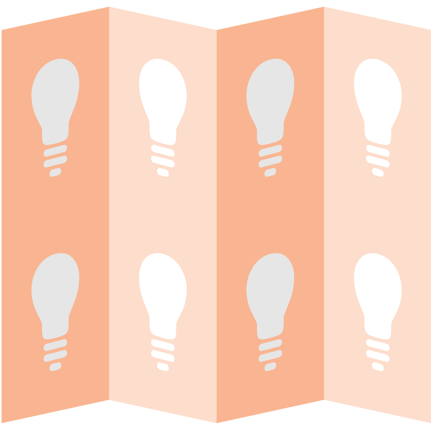
5 **Stay focused on the topic!**
Try to focus on the current brain-storming topic and continue to generate ideas. Discussion is out of place here.

6 **Go for quantity!**
It is the amount that counts. The chance of producing good ideas when you have created 1,000 of them is higher than when you have come up with just ten. Screening comes later.

Crazy 8s

What

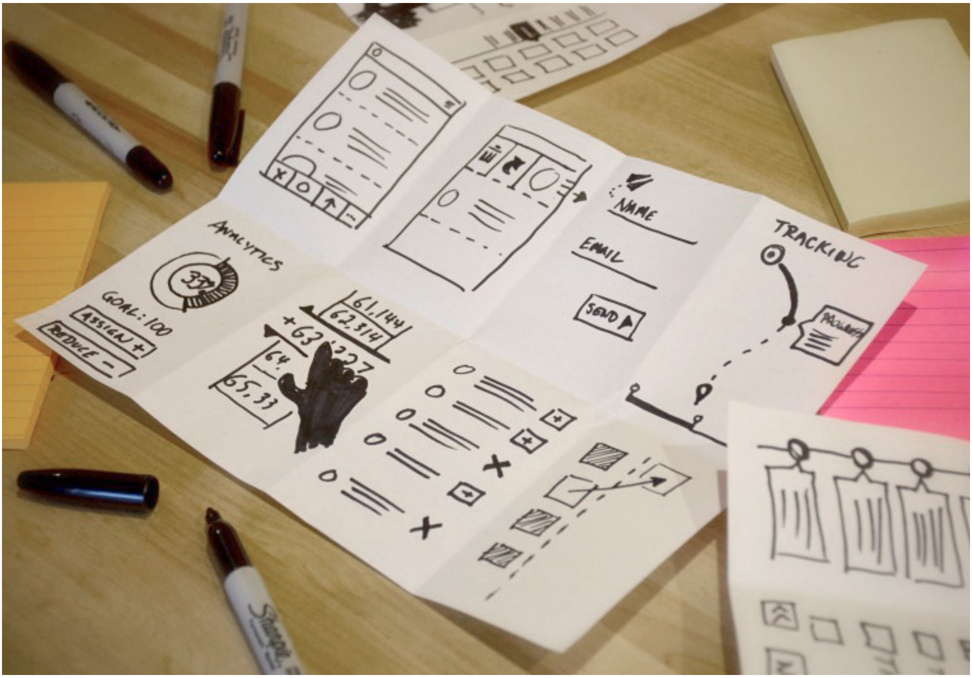
The Crazy 8s is an ideation tool that helps you generate and visualize a lot of ideas in a very short amount of time. It takes effort due to the time pressure, but that is intentional. It helps you get as many ideas out there as possible without discussing or judging them. Timekeeping is a crucial part of this activity.



Why

This exercise helps you to formulate your thoughts and to come up with alternatives to your ideas. This provides a new starting point, often leading to surprising twists and turns. And it is certainly a lot of fun for the whole team. Write down your ideas and select one to start with. Use sketches, headlines, simple diagrams – whatever helps you convey the idea. Each person is responsible for creating solutions for their proposed idea. Keep these rules in mind when sketching your solution:

- **Make it self-explanatory:** The sketch needs to speak for itself
- **Keep it anonymous:** No names: Everyone uses the same colored paper and pens
- **Ugly is okay:** You do not need to be an artist
- **Words matter:** Strong writing is important, regardless of the industry, so do not use squiggles or lorem ipsum – words matter
- **Give it a catchy title:** Since your name will not be on the sketch, give it a title so that people can refer to it



Source: Design Thinking @Siemens Healthineers AG

How

Focus on good ideas. Take a piece of paper and fold it into eight. You will have 60 seconds to create a drawing in each square that is a variation on the idea you just selected (making a total of eight minutes). Keep going until you cannot think of any other variations on that idea. If you run out of new ideas, go back to your ideas page, choose a new one, and start creating variations.

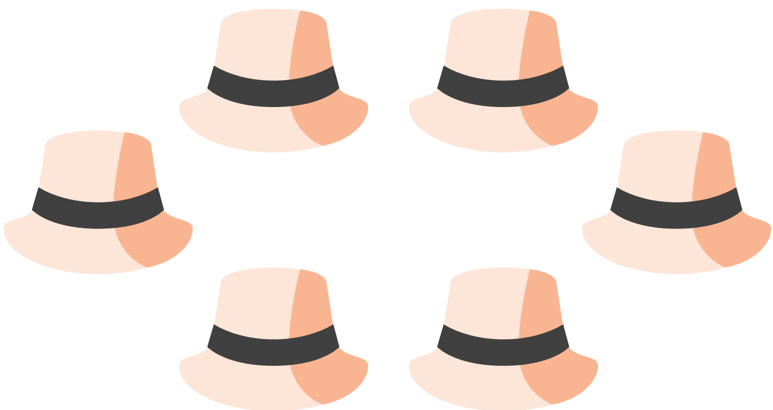
6 Thinking Hats

What

6 Thinking Hats is a tool that helps you to select ideas for realization from the pool of ideas that you have generated and to choose the best ones. It will help you apply the idea criteria that are right for your current design challenge. Then you can start prototyping and testing.

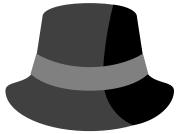
Why

At some point in your ideation sessions, you will have reached a critical mass of ideas, and it will become counterproductive to keep pushing for more. This is referred to as the "convergent stage", where ideas are evaluated, compared, ranked, clustered, and even ditched in an attempt to pull together a few great ideas to act on. Right now, the goal is to spot potential winners or combinations of winning attributes from a pool of ideas.



White — facts

Red — feelings



Black — critical

Green — creativity

Yellow — benefits

Blue — process

How

The facilitator should encourage the participants to evaluate and consider all the ideas using six different mindsets and thinking styles, in order to reveal the widest range of possible angles on the ideas being assessed. This helps break participants out of their fixed styles of thinking and forces them to look at the ideas being assessed from multiple viewpoints and based on multiple assessment criteria. Each participant can either adopt one specific role (hat) or iterate through all the roles.

White Hat: The White Hat calls for information that you already know is needed. The facts, and nothing but the facts.

Yellow Hat: The Yellow Hat symbolizes optimism, confidence, and brightness. Wearing this hat, you explore the positives and probe for value and benefit.

Black Hat: The Black Hat is all about judgment. When you put on this hat, you are the devil's advocate and you try to figure out what or why something may not work. It is your job to spot the difficulties and dangers and ask where things might go wrong. This is probably the most powerful and useful of the hats, but it is a problem if you overuse it.

Red Hat: The Red Hat calls for feelings, hunches, and intuition. When you use this hat, you should focus on expressing emotions and feelings and share fears, likes, dislikes, loves, and hates.

Green Hat: The Green Hat focuses on creativity: the possibilities, alternatives, and new ideas. It is your opportunity to express new concepts and new insights.

Blue Hat: The Blue Hat is used to manage the ideation process. It is the control mechanism which ensures that the 6 Thinking Hats guidelines are observed.

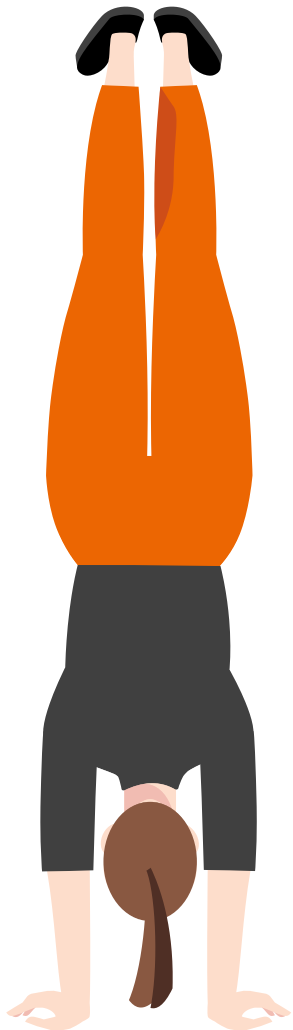
Headstand Method

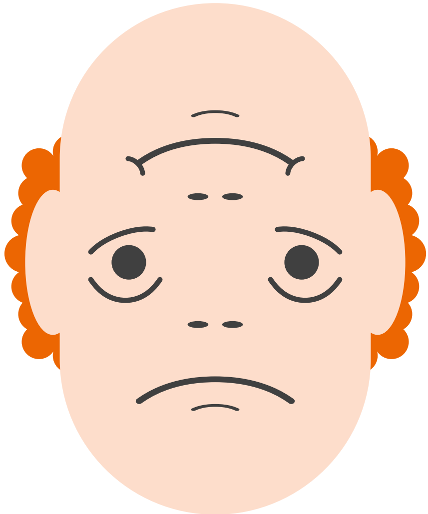
What

The Headstand Method is a creative variant of the classic brainstorming technique. You reverse the meaning of the original key question in order to collect ideas and focus on approaching a problem from a negative angle. This method enables participants to move away from their usual thought patterns and promotes unexpected responses and insights. Afterwards, the answers can be flipped into the positive.

Why

Paradoxically, we know exactly what does not work and why it does not work. We see mistakes, stumbling blocks and problems much more clearly than we see solutions. These “paths to failure” can be used as inspiration for solving the original problem.





How

- The challenge or problem is reworded and displayed on a bulletin board.
- Participants are asked to write their ideas for solving the reformulated challenges on cards: they should not be spoken aloud ("brainwriting").
- When the participants eventually run out of new ideas, the cards are collected in the middle of the table, read aloud, and arranged systematically: for example, by category.
- The cards are now pinned in order on the board, alongside the inverted challenge, so that everyone can see them.
- Finally, the "negative ideas" are turned back into positive ones to be used as a direct source of inspiration for solving the original challenge.

Example:
The challenge is: "What do we have to do to attract lots of visitors to our booth?" The Headstand Technique inverts the question: "What do we have to do to keep all visitors away from our booth?" This can produce some bizarre ideas: "We will spread tacks on the floor!"

Note:
It is helpful to note the following tips when reformulating:
- Do not use negative terms like "not" and "none" in the sentence
- Use new, strong verbs
- Rearranging the sentence can be helpful
- The sentence should be clearly worded
- Strong and extreme scenarios have a bigger impact

Idea Selection

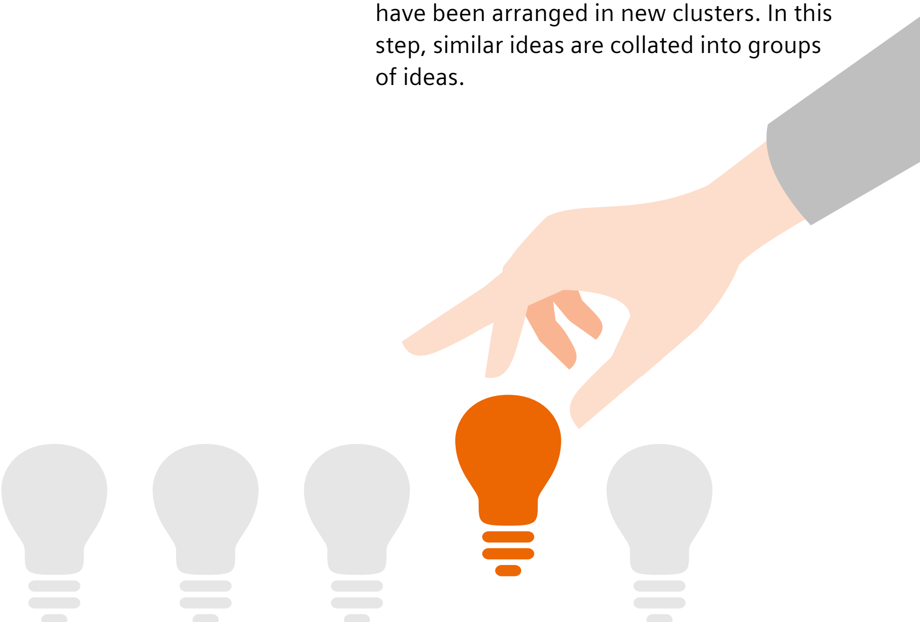
What

Selection is the next logical step after creating ideas. We will not be willing or able to realize all the ideas we created in the preceding step. After all, our energy is limited, and some ideas might not be worth putting into practice.

Why

Because we do not want those ideas to just sit on the board, we have to start a process of selection. In order to find out which ideas are the most exciting and relevant for our project, it is also good to have the team choose which ones to follow up.

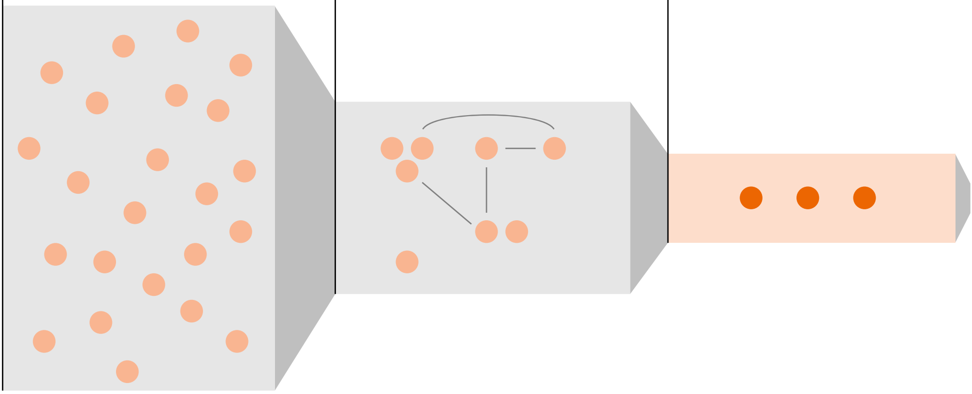
The actual selection of ideas takes place after the many ideas that have been generated have been arranged in new clusters. In this step, similar ideas are collated into groups of ideas.



Generate ideas
Generate as many ideas as possible, without judging them

Evaluate ideas
Allow your ideas to be rated and condensed

Develop concepts
Take the most promising ones into the next phase



Note: What are your evaluation criteria? The nature of your project will entail considering questions such as:
What are you selecting for?
Are you exploring new business or exploiting existing business? Or both?
If you are going for totally new customer groups or growth markets, you may have to rate ideas in different ways.

How

- Generate a broad range of ideas and concepts in expert and/or customer co-creation sessions.
- Cluster ideas that fit well together to develop them into more complex and meaningful concepts.
- Select and refine the most valuable ideas and concepts with the highest potential in terms of desirability, viability, feasibility, and adaptability.

Do this activity on an individual basis, never as a group discussion. Give each participant three to five small sticky dots. They can then distribute these among the ideas on the walls. They can give several ideas one dot each or allocate several of their dots to one idea. To convert individual ideas into concepts, you can create a profile for each idea group. This profile should contain the following elements:

1. Title of the idea
2. Small schematic drawing
3. Short summary description with information answering every "W" question that appears to be relevant to you for each idea:
   - What motivations are taken into account and what needs are satisfied?
   - What customer group is addressed?
   - What makes the idea work?
   - What are the challenges associated with the implementation of the idea?

Storytelling

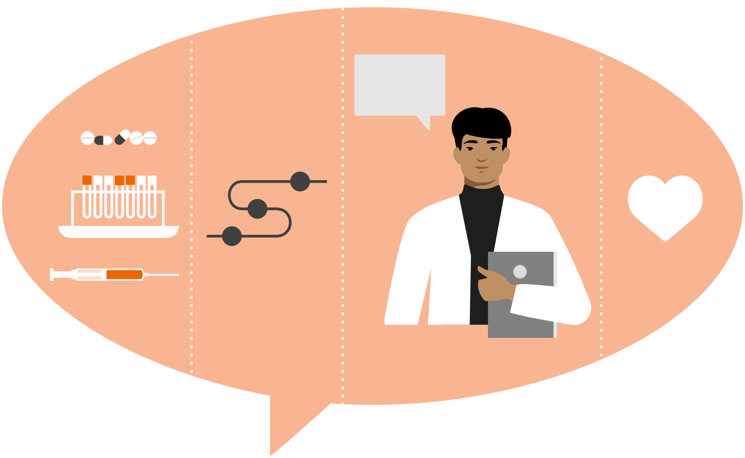
What

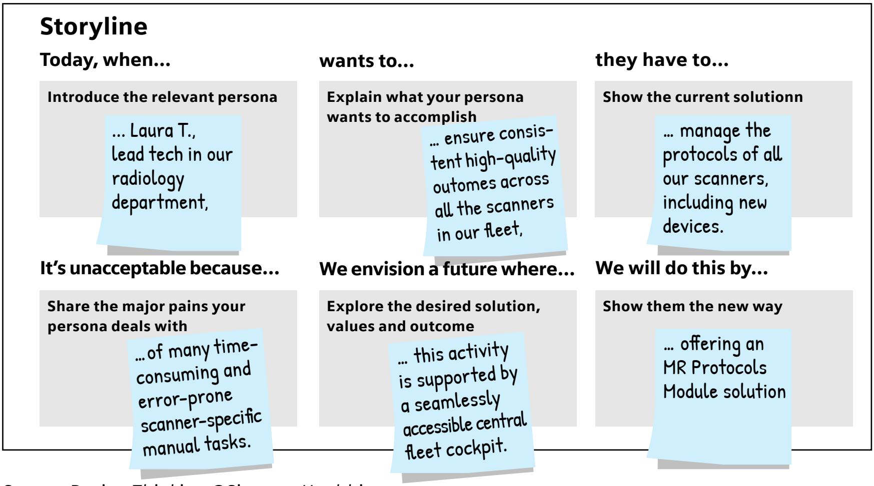
When considering ideas and prototypes, it is important to share the underlying narrative. Users should be able to understand what value is being created, what needs are being served, and what challenges are being met in an innovative way.

An accompanying story is also very helpful to the project team for communicating the essential elements of the innovation project.

Why

Storytelling can be a more persuasive and more effective way of communicating than merely conveying dry facts. Stories are vivid and easy to remember, and enable innovation teams to build a stronger emotional bond with their customers. Share your prototype or innovation idea – accompanied by a story – to convey key messages and values.





Source: Design Thinking @Siemens Healthineers

How

Following the structure given below, build your story based on these elements:

- Today, when...
  – introduce the relevant persona
- wants to...
  – explain what your persona wants to accomplish
- they have to...
  – show the current solution
- It's unacceptable because...
  – share the major pains your persona deals with
- We envision a future where...
  – explore the desired solution, values and outcome
- And we will do this by...
  – show them the new way

In this context, it is important to tell the customer, user or patient narrative and, above all, to illustrate the added value of the new solution.

It is very helpful to visualize the story, e.g. by including value scenes and/or role plays. This helps to formulate the team's assumptions explicitly, and the subsequent test phase helps to show the way in which the assumptions need to be adjusted. Visualizing the story also clarifies how a further iteration of the prototype should be changed and how far it has progressed toward the point where an implementation can be initiated.

We have had positive experiences of recording the story as a video. This allows team members who are not directly in-volved in building the prototypes or in the subsequent test phase to understand how changes have been made and thus enables them to communicate them to others.

Please note: Sticky stories are short and crisp and tell an easy-to-understand story that is both plausible and factually and emotionally consistent.

Prototype

Make your Ideas Tangible

Relevant elements

- Creation of several iterations of prototypes to solve problems as they arise during the implementation of the ideas
- Execution of early prototypes in a rough and rapid process that is simple, fast, cheap, and effective
- Prototype stages range from low-resolution to high-resolution and focus on function, appearance, and style

Outcomes

- Tangible low-resolution prototypes
- Combination of visualized ideas and a variety of different concepts
- Use-case scenarios with customer/patient/user narratives
- Iterated high(er) resolution prototypes
- Validated value propositions including persona/user profile maps
- Validated money-earning logic and initial business model design(s)

Selected content and tools

- **General Prototyping Tips**
- **Remember the Future**
- **Visual Scenes**
- **Digital Mockups**
- **Value Proposition Design**
- **Designing Business Models**
- **Understanding Ecosystems**
- **Customer Value Quantification**

Notes

General Prototyping Tips

What

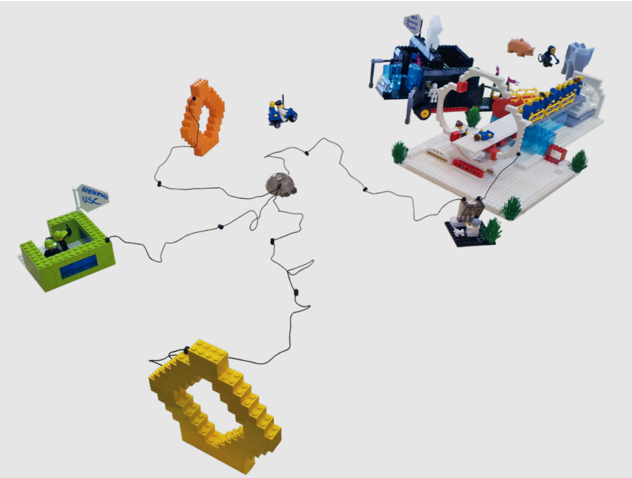
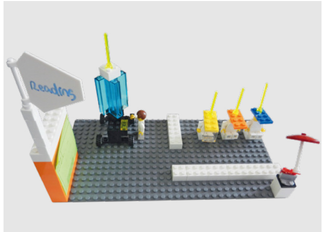
Different versions of your prototype will exist, but in the early stages of prototyping there is only one version. This means that more complex ideas are divided up into parallel prototypes so that the overall solution is broken down into its parts. The main purpose is to increase the speed of this rough approach to making your ideas tangible. At a later stage of development, multiple prototypes that combine the various insights gained from the various versions will be created.

Why

To fully develop the true purpose and positive impact of prototyping, there are certain rules, or rather principles, that need to be followed:

- Fail early and often
- Show, don't tell
- Do not fall in love with your early ideas or your favorites

If these principles are adhered to during prototyping, an agile culture of trial and error will emerge automatically.


Source: Design Thinking @Siemens Healthineers AG

How

Right: Every prototype has a specific goal, so you should always ask yourself what goal you want to achieve with your prototype. Will it be used to convince the decision-maker? Is it intended to provoke a reaction from a potential customer? Or do you merely hope to get a feeling for the scope of a product? Depending on the objective, your team should determine the purpose of your prototype and, based on that, the appropriate tool for building it.

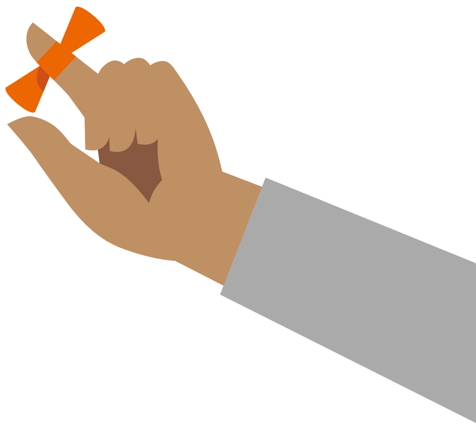
Rapid: Early prototypes should never involve much cost or effort. The first rapid prototype should be created as soon as possible, so that it can be iterated based on the feedback obtained. This also prevents the emotional attachment referred to previously. Another advantage is that you will learn an effective method for developing complex ideas efficiently, in other words, quickly. This skill can be very helpful in the subsequent development of market readiness.

Rough: One aspect of the rapid transformation of an idea into a prototype is the resolution applied. The level of detail that you give the prototype will depend in part on its task. “Good enough” is the rule of thumb here, because the ultimate purpose of every prototype is to learn something about the idea, not to confirm it. Confirmation is required elsewhere, during the validation of final prototypes.

Remember the Future

What

The goal of implementing this tool is to better understand the customer's definition of success. Thinking of a future product or service as already completed enables us to make more effective decisions. It helps to reduce the total set of possible outcomes that must be considered before a suitable plan is selected.



Why

"What should our offering do?" Whether we are dealing with a product, service, or process, when we are thinking about the next generation of the status quo, this question often receives a trite answer: "It should provide a better solution."

This activity enables you to generate collective images and thoughts about the future in order to strengthen your confidence in your product or service. It helps you to simplify the difficult process of detaching yourself from reality. During this process, the vision (e.g. company vision, project vision, team vision, personal life-planning) could also be fantasized. A design and some guidance are therefore needed.

Source: gettyimages

How

Staging a fictitious interview in the future will enable you to create a detailed vision of the future, and you will come up with concrete ways of achieving it.

Step 1. Individual work (30 mins)
If all your visions and most ambitious dreams were to come true in the next five years, what would the product or service be like? Consider the following possible aspects: relationship with customers, relevant feature or technology, market position, etc. What makes you proud to be a part of this?

Step 2. Role play
Imagine the product or service being presented at conferences and exhibitions in five years' time. Why and how (through what measures, decisions, processes) did you manage to achieve this desired outcome? As an interviewee, try to be as specific as possible in your answer.

Step 3. Summary
Summarize your thoughts and ideas about the further work on the vision that will have to be done in plenary sessions.

Visual Scenes

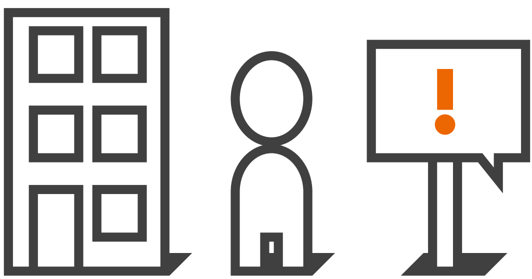
What

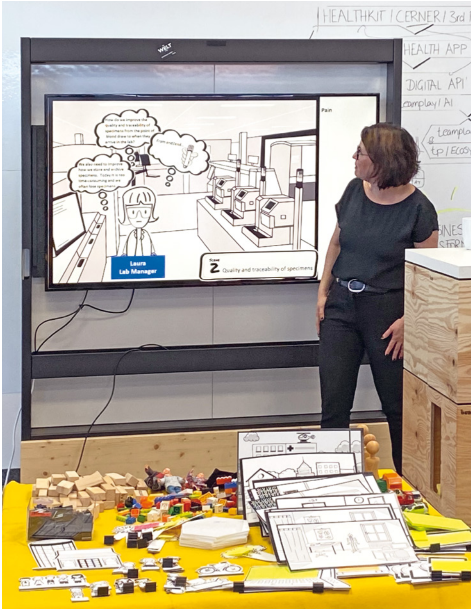
The Visual Scenes tool helps you to quickly visualize stories and communicate ideas for new products or services. It provides illustrations of characters, signs, speech bubbles, devices, and backgrounds, which enable workshop participants to illustrate their ideas and to refine them iteratively as a team.

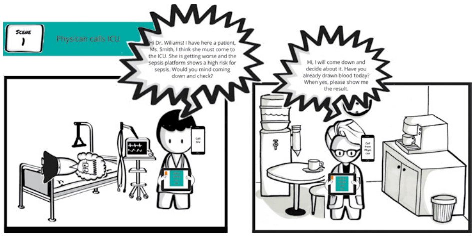
By simply cutting out, labeling, and positioning the illustrations, people who cannot draw or illustrate can create a visually appealing story in a short time.

Why

Storyboards created using scenes can be utilized in several ways. They can be used to communicate research results from a customer perspective. Visualizing the pains and gains of existing solutions through the use of scenes can create empathy among listeners. Scenes are also helpful for presenting ideas for new solutions and showing step by step how they will work. They are a great way to collect feedback on your ideas at a very early stage. The scenes are not too detailed, which helps to keep the focus on the story and avoid unnecessary information.







Source: Design Thinking @Siemens Healthineers AG

How

Prepare Download the free toolkit on the SAP home page (https://experience.sap.com/designservices/resource/scenes) and select the elements you need for your task. There is also a laminated set you can purchase, but the paper version works fine. There are a few industry-specific add-ons that might be useful. We also have some add-ons which have been specifically designed for Siemens Healthineers. Print out the elements you need before the workshop and make sure you have enough for every group.

Create Think about your storyline and the scenes you will need. In general, it is helpful to first explain the problem and then present a solution. Your story should contain at least two or three different scenes. Pick the characters that will play a role, cut them out, and customize them by drawing a facial expression and giving them names. Choose your backgrounds for the different scenes. Then start picking out the various objects that you need and use the speech bubbles for conversations.

Document Make sure you document your results, either by taking pictures of the different scenes or by videotaping the whole story with your smartphone. When you make a video, you can also record the conversations. There is also a PowerPoint version if you want to create a digital storyboard.

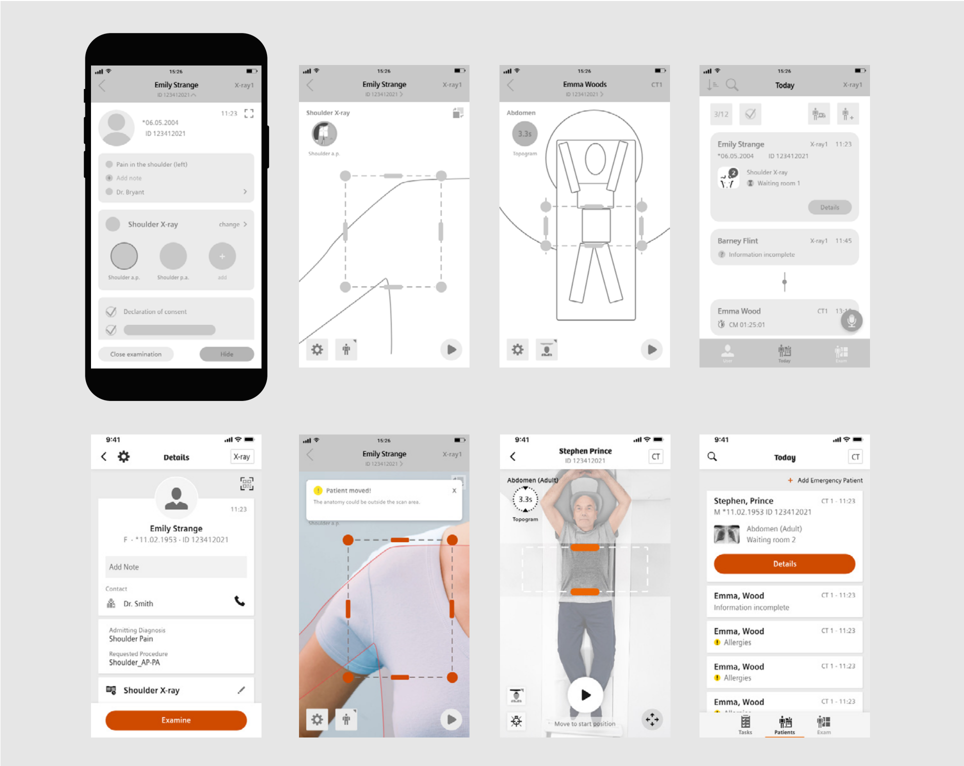
Digital Mockups

What

Digital Mockups visualize your ideas and concepts without you ever needing to build a physical model. At the same time, digital mockups can describe the entire life cycle of a product. It's a great method to use at the beginning of the design process in order to gain a better understanding of the benefits and potential of your future product or service as well as any possible obstacles.

Why

Digital Mockups allow you to showcase your idea without having to invest too much time and money into actually building your product. This enables clients to be more involved in the creation process and to give useful feedback early on. By gaining a clear understanding of the products' benefits and its potential issues, you reduce your time to market. You also minimize product and service development costs by reducing the number of physical prototypes that need to be built. By exploring different design alternatives before choosing a final one, you increase your product and service quality.



Source: Design Thinking @ Siemens Healthineers AG

How

At the beginning, think about the objective of your mockup. You could start by sketching a wireframe, then mock up your wireframe to see it in action. Think about graphics and texts you would like to include. You can even add links or other interactive elements. Here are some tools you can use to make them more realistic:

Figma: https://www.figma.com/
Axure: http://www.axure.com/
Balsamiq: https://balsamiq.com/

You can showcase your digital mockups in storyboards or on paper. Allow time for feedback and adapt your mockups accordingly.

Value Proposition Design

Understand your customer, and design your value propositions and offerings accordingly

Relevant elements

Value propositions are at the heart of every business model. Customers' buying decisions are driven by value propositions and experiences. Products and services enable these value propositions and experiences.

Think about your TV: a potential value proposition for your large, flat-screen TV is that it will allow you to have a great experience watching soccer games with your family and friends. People buy products and services to get certain "jobs" done – in this case, having a realistic experience without the hassle of traveling to a stadium and purchasing expensive tickets.

To create products and services that people want, value proposition design starts with understanding customers/patients/users. What are the relevant jobs to be done, and what are the related pains and gains that customers/patients/users are experiencing today with their current solutions? Based on these findings, we begin to develop ideas for how to address these pain points and how to build on these gains. The goal is to derive a value proposition that addresses the needs of customers/patients/users. The offering then describes how to convey the value proposition to the customer.

Outcome

Value Proposition Design including

- Customer/patient/user profiles describing jobs to be done and today's pains/gains using current solutions
- Value propositions and offerings based on customer/patient/user profiles

Please note: Building Personas of your targeted customers/patients/users can be a great starting point for gathering insights and a source of inspiration when working with customer/patient/user profile maps (▶ see "Personas").

Please note: Value propositions are at the heart of the business model. We strongly recommend that you work through the value proposition design process thoroughly and continuously validate it before turning your attention to the business model.

Selected tools

Value Proposition Design

Customer Profile Map

Jobs to be done	Existing solutions	Happiness/ gains
		Frustrations/ pains

Value Proposition Map

Gain creator	Value proposition	Business opportunities
Pain reliever		

What do customers, users, and patients want?

How can we design successful business opportunities that customers want?

Value Proposition Design

User Profile Map

Understand your customers/patients/users

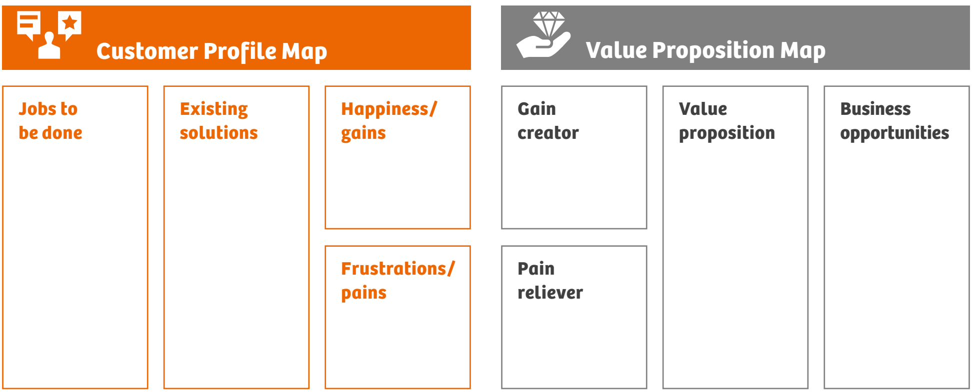
What

Use the Customer Profile Map framework to gain a deeper understanding of your relevant stakeholders. It is a good baseline for crafting a unique customer-centric value proposition design.

Step 1 – Create a User Profile Map to establish an in-depth understanding of current customers'/patients'/users' needs.

Why

Understanding customers'/patients'/users' jobs to be done and designing a compelling value proposition to suit are the basis for any successful offering and business innovation. The User Profile Map enables you to gain an in-depth understanding of customers/patients/users by identifying their jobs to be done, and to reflect on existing solutions and the pains and gains experienced by customers/patients/users.



What do customers, users, and patients want?

How can we design successful business opportunities that customers want?

How

When designing new value propositions, it is crucial to consider the relevant stakeholders for whom you are designing the proposition. These could be e.g. customers/patients/users. For each of these, you can use the User Profile Map to help you "walk in their shoes". This is the first step toward developing a value proposition. It allows you to zoom in on the details of creating value for your customers/patients/users and then takes you back to the big picture.

You start by identifying the most important stakeholders and their roles (▶ see Stakeholder Map and Persona cards). The goal is to choose the most important stakeholder(s) for whom you are going to design value propositions. Fill out a Profile Map for each of the selected stakeholder(s). The goal here is to describe the stakeholders' basic needs by answering four questions:

- What are the jobs they need to get done?
- What solutions do they currently use?
- What causes them frustration?
- What are they happy with?

We recommend that you put Customer Profile Map on a digital whiteboard or print it out on a large canvas (e.g. A0) and use Post-its so that you can easily work on the canvas as a team. Work your way through the map, filling one box at a time. Use timeboxing: set a time limit (e.g. 30 minutes) for filling each box.

Customer Profile Map

Example: General Practitioner

Jobs to be done

What are the main tasks the customer has to complete?

- gain complete overview of patient data
- reassure patient
- write reports
- choose exam for patient diagnosis

Existing Solutions

What solutions is the customer using today to get the "jobs" done

- continuous follow-ups
- medical history
- referral to specialist or exam

Happiness/gains

What does the customer like about the way the jobs are currently being done?

- patient stays with service
- right exam

Frustrations/pains

What is frustrating for the customer about the way the jobs are currently being done? What is the customer's biggest headache?

- lots of back and forth
- high time pressure while talking to patients

Value Proposition Map

User-centric Value Proposition Design

What

Use the Value Proposition Design framework to create and enable customer-centric value proposition design.

Step 2 – Create a Value Proposition Map for designing value propositions and offerings that address the customers'/patients'/users' needs.

Why

Understanding customers'/patients'/users' jobs to be done and designing a compelling value proposition to suit are the basis for any successful offering and business innovation. The Value Proposition Map builds on e.g. the stakeholder map, personas' customer journeys, insights from customer research. Based on what you have learned, you will generate ideas for gain creators and pain relievers, and come up with matching value propositions. The business opportunities describe the offering and convey its value to the stakeholder.

Customer Profile Map

- Jobs to be done
- Existing solutions
- Happiness/ gains
- Frustrations/ pains

What do customers, users, and patients want?

Value Proposition Map

- Gain creator
- Pain reliever
- Value proposition
- Business opportunities

How can we design successful business opportunities that customers want?

How

When developing the value proposition and corresponding business opportunities, you need to ask yourself the following:

- How can you create the benefits your customers/patients/users expect?
- How will you alleviate the customers'/patients'/users' pains?
- How will you help your customers/patients/users accomplish their jobs to be done?

We recommend that you visualize the values and business opportunities in the form of sketches or by modeling them using e.g. Lego or value scenes (▶ see Prototyping).

Before continuing, you need to prioritize and select the value propositions and offerings. A practical way to do this is to take the Post-its from the Value Proposition Map and sort them using a matrix (e.g. impact/effort).

Make sure that you validate your ideas for value propositions and offerings with the relevant stakeholders (e.g. customers) at an early stage and continue to do so. Take what you have learnt into account and pivot accordingly.

Value Proposition Map

Example: General Practitioner

Gain creators

How can you create the benefits your customer expects?

accurate referral

connectivity of tools

Pain relievers

How will you alleviate the customer's pains?

stop running around

Value proposition

How will you help your customers accomplish their jobs to be done?

enable patient-focused relationships

provide logical steps to obtain accurate referral

Business opportunities

How can we enable the value proposition?

automated guidance

software to bring data together

▶ **Designing value-creation concepts**

Designing Business Models

What

More and more companies are actively and systematically applying business modeling to create new value, sometimes disrupting entire industries. Think about Google, which disrupted the newspaper business by offering readers free content that is financed through advertisements using an auction system for customized advertising (AdWords).

Why

The framework offers a way of describing, innovating and testing a business model. There are six modules, each of which defines its own building block (▶ see each module card for more details). The journey from initial business idea to successful implementation involves numerous iterations and validations with customers and internal stakeholders. Rule of thumb: only 1/3 of ideas are successful.

Business Model Design

Revenue Module

How can we generate business volume?

Revenue streams

Invest and Finance Module

How will we get capital?

Invest and finance concept

Cost Module

What are the expenses involved?

Cost structure

Customer Module

Who are the customers?

Target segments

Marketing and sales channels

Customer relationship

Value Proposition Module

What is the value for the customer?

Value proposition

Offering

Delivery Module

How can we drive it?

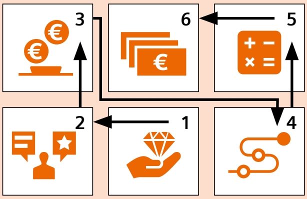
Key processes

Key resources

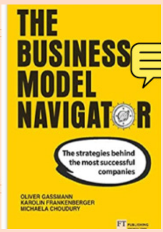
Key partners

How

Decide for whom – and with whom – you will be doing the business model design. Draft the business model, including the six modules.



Iterate business models using Business Model Pattern, and trigger questions.



1. Before starting on the canvas, be clear about your answer to the question "For whom are you designing the business model?". Developing a business model jointly with a customer is only appropriate if you want to support the customer in designing their business model or if you are setting up a joint business model, e.g., as part of a joint venture. Of course, there is also a (potential) business model for Siemens Healthineers behind each value proposition. However, Siemens Healthineers' business models should mainly be designed internally by those responsible for the business model design (innovation, portfolio or product management, etc.).

2. The canvas is a tool for designing business models in a structured way. Put the canvas on a digital whiteboard or print it out large (e.g. A0) and use Post-its to work on it. We suggest that you work on the modules one at a time in a logical order. Start with the Value Proposition Module, followed by the Customer Module. Most input will already have been generated in the value proposition phase. We recommend working on the Revenue Module next, followed by the Delivery Module. Once you have completed this, you may have a better idea about the costs associated with your business model. Finally, you should focus on the Invest and Finance module.

3. Iterate business model canvas and validate alternatives with customers. If you pivot each module, you will see that the content of one module impacts all the other modules: e.g. costs may require adjustments in the revenue structure or your Delivery Module. Using Post-its will allow you to add, change, or remove content easily, whether you are meeting in person or virtually. You can also move Post-its across modules: the customer may become a partner, or vice versa. Do not be constrained by your initial thoughts and ideas. Play around and modify the canvas accordingly. Be brave, even if the results looks weird at first. Using the canvas will generate new ideas and help you get more and more familiar with the topic. In the next step, the Business Model Pattern Cards will help you generate more ideas for business models (▶ see "Business Model Patterns").

Designing value-creation concepts

Challenge and Iterate Business Models using Business Model Patterns

What

When designing business models, we can learn from best-practice examples both within and outside Siemens Healthineers. The business model pattern cards from e.g. St. Gallen and Siemens are a collection of best practices intended to trigger and challenge new ideas.

Why

Using business model pattern cards to trigger and challenge ideas for business model design.

- Data analytics offerings are driven by six dominant business model types drive
- Pivoting business models rapidly helps to create more alternatives

Six dominant business model types that drive data analytics offerings

Business model type	Description of the value proposition
Predictive/Condition-based service contracts	Reduce overall lifecycle costs with predictive and condition-based service offerings
Digital services	Shift customer engagement to a new level by understanding what individual users use our offerings and how
Platform collaboration	Provide knowledge access via analytics platform based on data from Siemens Healthineers and third-party data
Enhanced product value	Add value by enhancing HW/SW products with analytic features
Data-enabled consulting	Optimize performance, cost, sustainability, and/or security of customer’s workflows through consulting services
Pay for performance	Offer an outcome-oriented settlement (or pricing) based on KPIs such as output, reliability, efficiency, availability

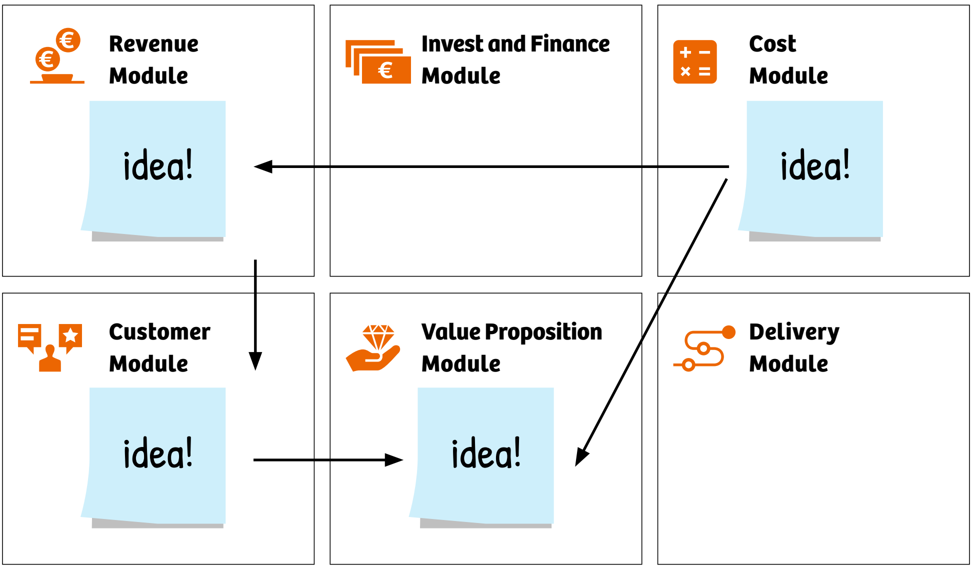
How

Select a business model pattern card and iterate your business model to create alternatives. To trigger and challenge your business model ideas, you can use business model patterns.

- Six dominant business models driving data analytics offerings
- Selection of 70+ trigger questions based on business model patterns

Be aware that changes to a module may lead to modifications in other modules. Select the most appropriate business model for your case. Always keep in mind the need for continuous iteration with customers, and pivot based on their feedback.

▶ Get inspiration for your business model design by selecting a business model pattern card



Create business model options using business model pattern cards

Designing value-creation concepts

Designing Business Models 1. Value Proposition Module

What

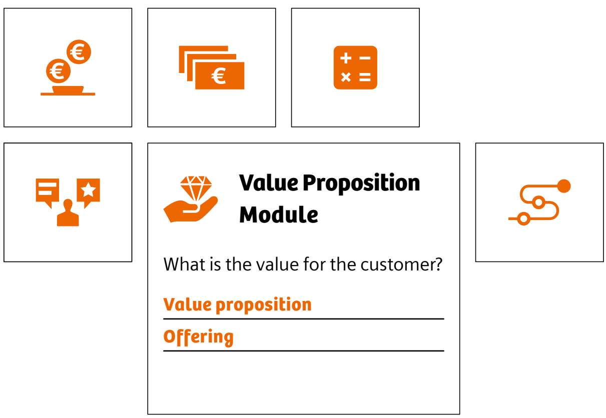
The core element of a business model is the value proposition to the customer. During the previous value proposition design exercise (▶ see the "Value Proposition Design"), the customer's challenges/pains were identified and a customer-centric value proposition was designed accordingly. It is also important to be clear about what makes you and your proposition unique to the market (USP: unique selling proposition).

Offerings are the means of realizing the value proposition. These are the business model objects that have to be defined first when creating a business model.

Why

On the canvas, the value proposition and the offering are the first modules to be addressed.

▶ You can use trigger questions to help you describe the value proposition/offering in appropriate detail. You will find these questions on the back of this card.



How

When describing your value proposition and offering to the customer (= business model object), think about the following questions:

- Which of your customer's problems are you helping to solve? What is the job that you are doing for your customer?
- What value/benefit are you delivering to the customer?
- How would you describe the strategic importance of your value proposition to the customer's business?
- What is your USP? Why would the customer buy from you?
- What types of businesses and/or services are you offering?
- What are the right offering packages to cover the customer's various requirements?
- What offering structure(s) will enable you to scale? E.g. basic, extended, or full offering

Elements that can help you describe and classify your value proposition:

Value Proposition				
Value categories for the customer	Clinical values	Sustainability	Financial optimization	Reduced lifecycle cost
	Enable new offerings	Increase throughput	Risk avoidance	Non-quantifiable values, such as brand
Value categories for the supplier – internal view	Product/service optimization	Process workflow optimization	Sales optimization	Experience optimization

Offering				
Business types	Service	Product, system	Solution, project	
Service types	Consult	Design	Build	Operate
	Maintain	Recycle	Train	Finance
Offering structure	"One size fits all"	Modular: basic functions	Modular: additional functions	
Offering type	Standard offer	Customized offer	Individual offer	

Designing Business Models 2. Customer Module

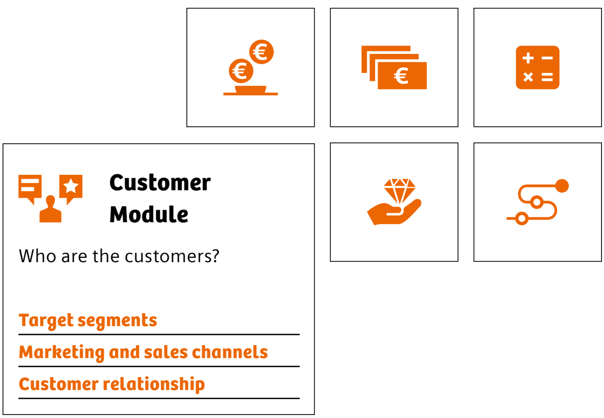
What

Value propositions are designed to address the challenges and needs of certain customers. You therefore require a clear understanding of your target customer(s), and you need a clear plan of how to interact with customers.

Why

In the customer module, you will specify your target segment(s) and how to interact with the customer(s) in terms of specifying your marketing and sales channels. You will also set out the details of your future customer relationship. During the previous process, you will have gathered relevant insights on the target segment(s) that can be used as a starting point for working through the customer module.

▶ To help you work through the customer module in appropriate detail, you can use trigger questions. You will find these questions on the back of this card.



How

When describing your customer module, think about the following questions, e.g. regarding the customer target segment.

- What are your target segments for the value proposition?
- What are the differentiation criteria for segments and relevant subsegments?
- Which regions would you prioritize as a first step?
- What drives the decision behavior of your customers?
- ·Who are the key customers in your prioritized segments?

Marketing and sales channels

- Through what channels are you selling, and what is your sales approach?
- How would you describe your CRM process? Who? What? When? How?
- How do you address existing and new customers? E.g. a specialized sales force for new customers.
- What are the requirements in terms of sales and marketing materials? What is available now? How is it distributed? E.g. content, distribution, training.

Customer relationship

- Who are your deciders, users, and influencers, and how do you plan to engage with them?
- What are the current or planned custo-mer contact points? Are they scalable?
- How do you lock in your customers? E.g. contracts, proprietary products, personalized customer intimacy (trusted advisor, ecosystem).

Elements that can help you describe the Customer Module in detail:

Target Segments		
External/internal	Siemens Healthineers	
Local/global	Multinational customers	Local customers

Marketing and Sales Channels			
Sales channels	Direct (Siemens Healthineers)	Indirect (agents, distributors)	Communities
	On-site (show)	Phone	Web
Sales approach	Technology-driven selling	Value selling	Consultative selling

Customer Relationship			
Customer contact	C level	Management level	Operational level
Purchase frequency	One-time	Recurring	Continuous
Type of relationship	Standardized	Customized	Communities / working groups

Designing Business Models 3. Revenue Module

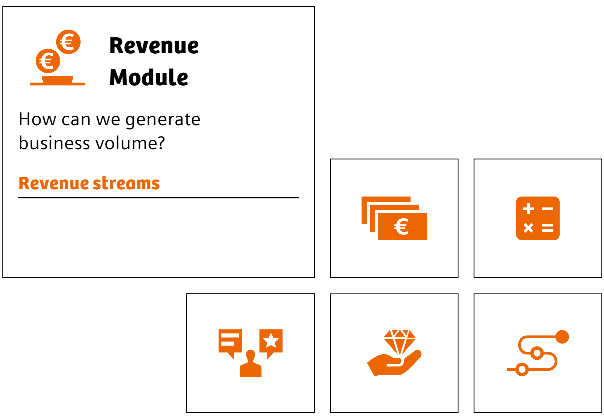
What

This module describes how to generate business volume based on direct or indirect revenues. Please be aware that you can also create revenue streams by means other than direct sales, e.g. generating valuable data, enabling hardware sales, or enabling additional revenue streams such as cross-selling or advertising.

Why

In the revenue model, you specify the value streams you create and detail the contract type, as well as the pricing and billing model.

▶ On the back of this card, you will find trigger questions to help you work through this module.



How

When describing your revenue module, think about the following questions:

- What value streams do you generate?
- What is the contract type?
- What is your pricing and billing model?
- What is your pricing strategy? E.g., fixed pricing (list price, product-feature-dependent, customer-segment-dependent, volume-dependent, performance-dependent), dynamic pricing (negotiation/bargaining, value).
- How have your value streams developed over time?
- ·Can you place an initial quantitative value on the value streams that you generate (e.g. per delivery, per customer, per year)?

Elements that can help you describe the Revenue Module in detail:

<table>
<tr><th colspan="9">Revenue Streams</th></tr>
<tr><td>Contract type</td><td colspan="3">Transactional</td><td colspan="3">Master contract</td><td colspan="2">Project contract</td></tr>
<tr><td>Pricing model</td><td colspan="3">Cost-based</td><td colspan="3">Value-based</td><td colspan="2">Performance-based</td></tr>
<tr><td>Revenue stream</td><td colspan="2">Usage</td><td colspan="2">Subscription</td><td colspan="3">Licensing</td><td>Leasing</td></tr>
<tr><td>Payment flow</td><td colspan="4">Upfront fee</td><td colspan="4">Recurring fee</td></tr>
<tr><td rowspan="2">Billing model</td><td colspan="4">Usage-based</td><td colspan="4">Usage-independent</td></tr>
<tr><td>Time-based</td><td colspan="2">Transaction-based</td><td>(Data) Volume-based</td><td>Number of users</td><td>Number of products</td><td>Limited time</td><td>Un-limited</td></tr>
</table>

Designing Business Models 4. Delivery Module

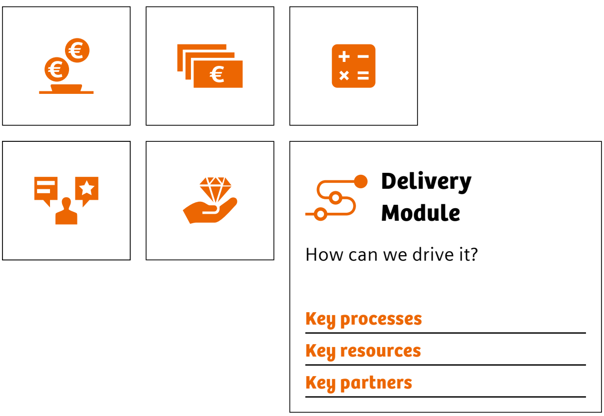
What

In order for you to deliver your value proposition, certain key processes and key resources (e.g. ordering and billing processes) will need to be in place. You will probably need key partners (internal & external) to help you deliver your value proposition. This will depend on the evolution of your business ecosystem: it is important to identify key partners at an early stage and to understand their motivation for getting involved. If necessary, you will have to adjust your business model to match the motivation requirements of your key partners.

Why

Be clear about the key processes, key resources, and key partners you will require in order to deliver your value proposition to the customer. Also think about your channels, relationships, and potential revenue model.

▶ On the back of this card, you will find trigger questions to help you work through this module.



How

When describing your delivery module, think about the following questions:

- What key processes are needed to drive your business model object? E.g. CRM, SCM, PLM, UX
- Which key processes cover the core value of our business model, and which of them do we want to own ourselves?
- Describe the specific requirements for your selected key processes

Key Resources

- What key resources are needed to drive your business model object?
- Which key resources cover the core value of our business model?
- Describe the specific requirements for your selected key resources

Key Partners

- What key partners (internal and external) are needed to drive your business model object? E.g. technology and R&D partners (patent sharing, lead user), marketing and sales partners (sales agents, distributors, social networks), delivery partners (manufacturing partners, suppliers, certified service partners, finance partners.)
- What are the specific requirements (e.g. quality, quantity, experience)?
- What is your motivation in this partnership?
- What motivates your partners to make this collaboration successful?
- What kind of relationship will you have with your partners?
- Do you already have relationships/ partnerships?
- If not, how are you going to select partners and bring them on board?

Elements that can help you describe the Delivery Module in detail:

Key Processes						
Customer relationship	Consult	Understand	Sell		Care	
Supply Chain Management	Plan	Source	Make	Deliver	Return	
Product Lifecycle Management	Plan	Product portfolio	Define	Realize	Operate	Phase out
Support	Quality mgmt.	Config. mgmt.	HR	Training	Knowledge mgmt.	

Key Resources				
Main types	Physical assets	Intellectual property	Human	Financial

Key Partners				
Motivation	Optimization and economies of scale	Reduction of risk and uncertainty	Acquisition/outsourcing of technology/ expertise/resources/activities/research	
	Finance	Market access	Materials	Experiences
Relationship	Loose	Tied	Exclusive	

▶ **Designing value-creation concepts**

Designing Business Models 5. Cost Module

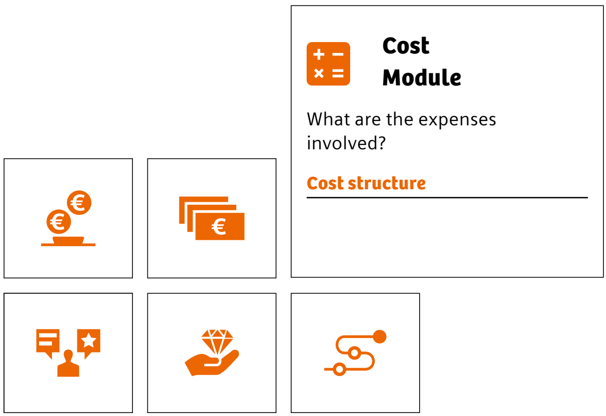
What

Everything comes at a cost! The customer and delivery modules are the basis for determining the cost of providing the proposed value to the customer. Please take a look at the revenue module. Does it still seem worthwhile to pursue this business model? If not, it may be time to do some iterations and to adjust your initial ideas in the other modules.

Why

Get clarity on the expenses (short-term and long-term) associated with your business model. Comparing your revenue and cost modules is a way to determine the viability and attractiveness of your business model.

▶ On the back of this card, you will find trigger questions to help you work through this module.



How

When describing your cost module, think about the following questions:

1. What are the most important cost drivers in your business model?
2. What are the characteristics of these cost drivers?
   Categories:
   - one-time costs (e.g. developing costs)
   - recurring costs (e.g. for each customer or each country launch)
   - continuous costs (e.g. operating costs or data storage costs)
3. How do these costs develop over time?
4. How do the revenues correlate with the scaling of costs?
5. How does the cost structure match your revenues streams?
6. Can you give an initial description of the cost blocks (e.g. per delivery, per customer, per year)?

Elements that can help you describe the Cost Module in detail:

Cost Structure			
Cost drivers	Personnel costs	Asset costs	Sustaining costs (SG&A)
	Material costs	Travel costs	
Type	One-time costs	Recurring costs	Continuous costs

▶ **Designing value-creation concepts**

Designing Business Models 6. Invest and Finance Module

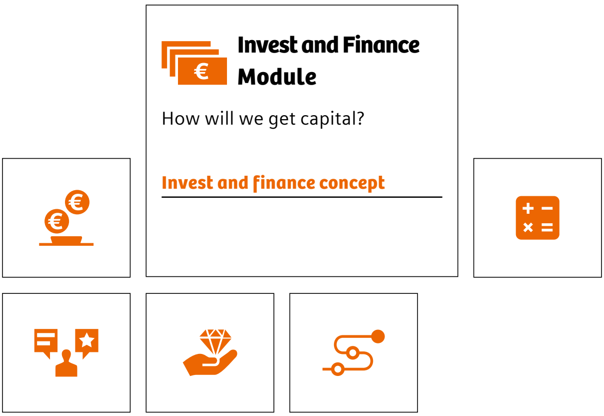
What

An important factor in designing business models is financing: e.g. is it possible to keep financing costs low and make capital-efficient investments? Can you capture new external financing sources (e.g. public funding, crowdfunding)?

Why

Deepen your understanding of investment and financing needs over time and identify financing sources and possible structures.

▶ On the back of this card, you will find trigger questions to help you work through this module.



How

When describing your invest and finance module, think about the following questions:

- What are the investment and financing needs (over time)?
- Where will you get the investments from?
- What is the investor's mindset? (short-term, long-term, environment, customer-centricity, clinical outcomes)
- How can we optimize the financial structure: e.g. capital-efficient investments?

Elements that can help you describe the Invest and Finance Module in detail:

Invest and Finance Concepts				
External financing resources	Own capital	Foreign capital	Venture capital	Joint venture
	Subsidies	IPO	Convertibles	
Internal financing resources	Existing budgets	Refined budgets		

Designing value-creation concepts

Understanding Ecosystems

What

Digitalization is increasingly making it possible for value propositions to be delivered by business ecosystems rather than single players (e.g. platform business models). Business ecosystems can be disruptive game-changers. Think about:

- Uber: the world's largest taxi company, which owns no cars.
- Airbnb: the world's largest accommodation provider, which owns no real estate.

Why

The Understanding Ecosystems module helps you understand value propositions that are delivered by business ecosystems. It also allows you to visualize the roles and interactions of each ecosystem partner. It therefore lays the groundwork for iterating your business model to achieve your preferred role in the ecosystem and helps you understand each partner's motivation for joining the business ecosystem.

Value consumption network

Who consumes the value provided?

Network value proposition

What is the offer, and what makes it superior?

Value provider network

Who are the ideal players, and what is my strategic position?

Network added value

Are the benefits great enough to motivate each player, and who covers the upfront investment?

Examples of roles.*

New Service provider Solution provider System integrator Product provider

***Remark:** consider the following examples of roles when exploring ecosystem(s): new, service provider, solution provider, system integrator, product provider

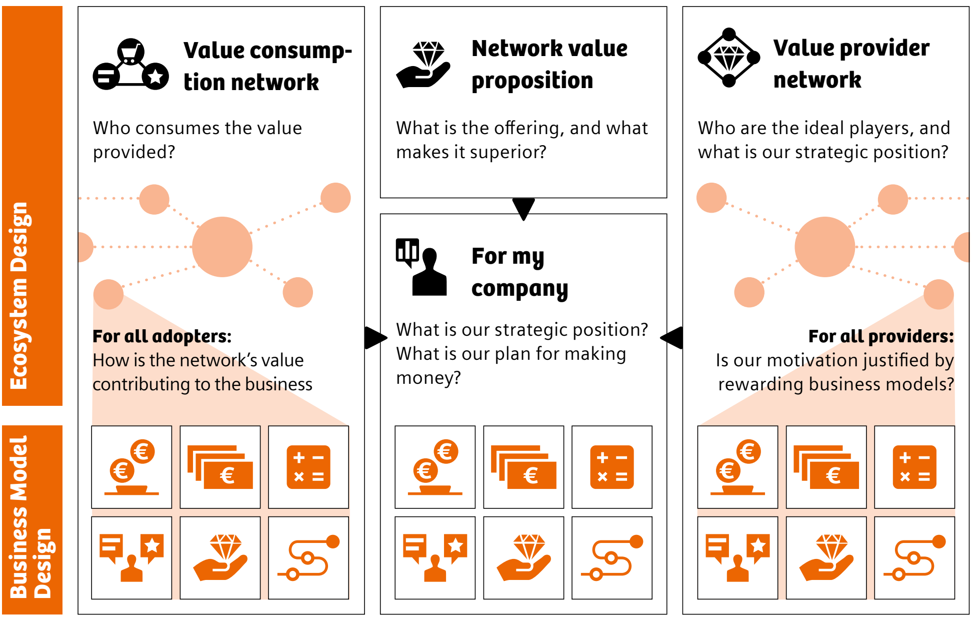
How

Ecosystem Design is the starting point for understanding your current or future role in the relevant business ecosystem. It also provides a starting point for designing new business opportunities in an existing ecosystem. The core of Ecosystem Design is the network value proposition, i.e. concrete offering(s) delivered by the ecosystem with a description of what makes it (them) superior (the unique selling proposition of the network: the network USP). As with Business Model Design, there are customers and users who need to be understood and described (e.g. target segments, roles, and relationships). Finally, there is a value provider network that includes all partners who are delivering the value proposition and who need to be described (players, their roles and relationships, strategies, and motivations).

Now think about the business models of all the players in the ecosystem, including yourself:

- What are the business models, the value propositions, and the overall mindset of all the players?
- What are the benefits and values of the network that motivate each player?
- What is the strategic position / role you would like to fill, and why?
- What are your reasons (your WHY?) for joining an ecosystem or creating a new one?
- How does your business model fit into the ecosystem?
- How does the ecosystem evolve, and who covers the upfront investment?

Ecosystem Design takes business models to the ecosystem level



Customer Value Quantification

What

Digital businesses need new pricing strategies and pricing models. In particular, scalable portfolio elements like digital services and software require a new understanding of their value to our customers.

Value is perceived subjectively and is based on each individual's perceptions, observations, preferences, and judgement.

This means that we need to identify the customer's decision-makers and get them to understand the value in question by communicating with them in using terminology they are familiar with.

Why

If we could quantify the value that we create for a specific customer through an individual offering:

- We could maximize our profit margin by applying a value-based pricing strategy
- We could develop a customer-value-based market segmentation as the basis for a go-2-market strategy
- We could base our portfolio management, R&D roadmap, and budget allocation based on the customer value potential of our portfolio elements
- ·We could prepare the ground with the customer for subsequent value discussions and create awareness of value-based pricing during a customer co-creation project

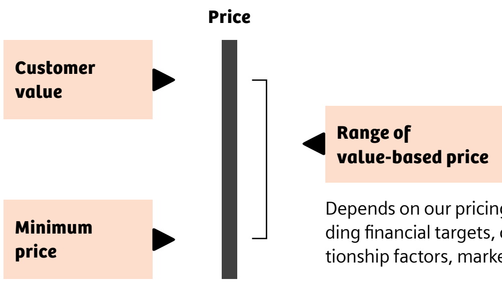
Tool Card / Prototype

Prerequisite: list of value proposition elements ▶ **1 Value categories** ▶ **2 Value drivers** ▶ **3 Value metric** ▶ **4 Value range** ▶ **5 Value calculation**

		Example
1 Value category	Segment of a customer's value system	Output increase
2 Value driver	Element of a value category that can be quantified	Greater asset availability
3 Value metric	Indicator for measuring a value driver and quantifying it monetarily	Fewer days per year of unscheduled downtime

The monetarily quantifiable value that we create for a customer through our offering determines the maximum price that can reasonably be charged

The cost to us of delivering this offering, including all support costs, defines the minimum profitable price



Depends on our pricing strategy (including financial targets, customer relationship factors, market entry strategy)

Source: Service Business Excellence

How

Prerequisite: primary value proposition elements from our offering that best match the users'/buyers' profiles.

1. Select a value category for each value proposition element
2. For each value category, select the value driver that fits best
3. Choose the value metric for measuring each value driver
4. Evaluate the minimum and maximum figures for these metrics jointly with the customer
5. Apply calculation formula to derive the minimum and maximum customer value for this offering

Test

Test as Though You Are Wrong

Relevant elements

- Testing and feedback sessions with relevant stakeholders, especially customers, so as not to lose touch with reality during the ongoing development process
- Feedback from testing to support the ongoing development of the ideas, which will go through several prototyping and testing cycles until a final prototype is selected and presented
- Structured evaluation of critical assumptions
- Ranking of the most relevant elements and critical assumptions for your product or service
- Enhanced quality of iterated concepts and ideas
- Proof of the desirability, viability, feasibility, and adaptability of your service or product

Outcomes

- Structured feedback from various stakeholders including customers/patients/users
- Proof of the relevance of your selected opportunity area(s)
- Tested/iterated low- to high-resolution prototypes with 'reasons why' for each of these
- Tested/iterated first set of business model designs

Selected content and tool

- **General Testing Tips**
- **Critical Assumptions**
- **Feedback Capture Grid**
- **Expert Review**

Notes

General Testing Tips

What

The feedback acquired from testing is one of the most valuable elements when you are developing an idea. Presenting your prototypes to third parties is invaluable for learning what they think of the ideas generated, what the important features are, and what needs improvement. The best feedback brings fresh inspiration and new insights and leads to a redesign of the original idea. While the testing procedure is mainly for checking the idea, it is also for testing the use of the prototype by the user – to assess their reactions and behavior.

Again, do not invest too much time in perfecting your prototype. The purpose of testing is to improve the idea, not to judge it! Good test results have nothing to do with the resolution of a prototype. Users are perfectly capable of coping with very rough visualizations and providing feedback based on these.

Why

As in the observation phase, good feedback always depends on the people who are asked to provide it. For this reason, a good plan is also required for this stage. One of the best sources of insights is (once again) the context: decide from WHOM, HOW, and above all WHERE you want to collect your feedback. Use the activities and tips from the observation phase to help you draw up a plan.

How

As already stated during the observation phase – make a plan:

- Make a list of the people/roles with whom you want to conduct the tests. A mixture of participants from the observation phase and new individuals is recommended.
- Recruit your participants and give them a brief induction on the testing procedure (scope, process, expectations).
- Within the team, decide what aspects of the prototype you want to test and how (especially in the case of activities) and what tools to use (e.g. video camera).
- Do not be afraid of skeptics. You often learn the most from your harshest critics.

People who were previously involved in the observation phase are often very good at providing detailed feedback because they are better able to understand and follow the development of the idea. People who are encountering the idea for the first time can help you to gage what aspects of the idea are the most exciting and what are the most difficult to grasp. These people are also ideal for testing certain general aspects of the idea. For this, it is important to select people from the originally defined target group. When carrying out testing, it is important to think first and foremost about other stakeholders, especially if up to now the research has been conducted mainly with one stakeholder group (such as end customers).

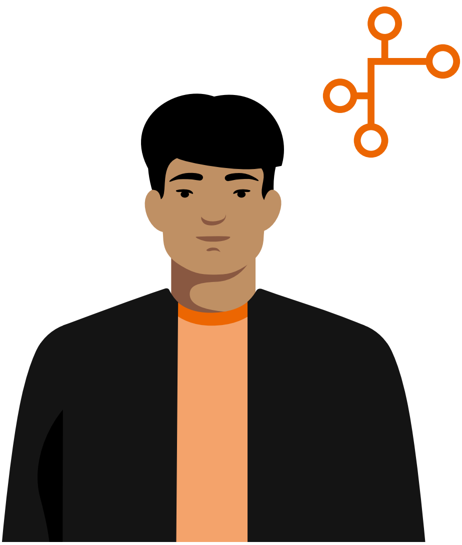
Critical Assumptions

What

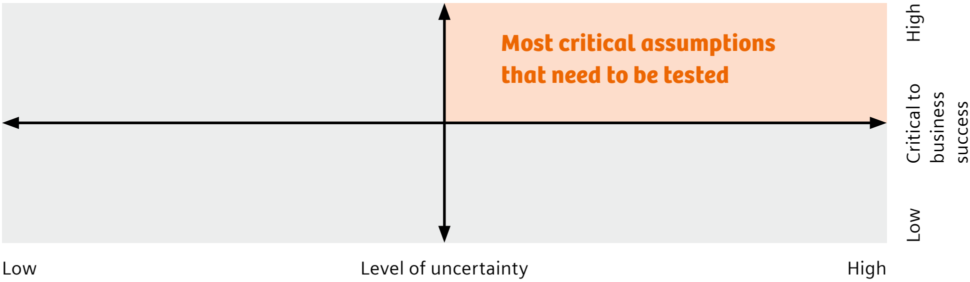
During the development process, we make a variety of assumptions. Some are made consciously, others unconsciously. To guarantee success, you need to identify and test the assumptions that are critical to the success of your project. You will employ a range of testing tools, and these will always need to be adapted to the target group.

Why

Identifying the most critical assumptions prepares you to test them in order to prove or disprove them. This lays the foundation for the success of the project at a very early stage. Being aware early on of potential obstacles to the project allows you to look for alternatives and prevents you from investing too much time and money in a solution that will fail. The most important assumptions contain a high level of uncertainty and are critical to the project's success.



Assumptions



1 Assumption
What are your riskiest assumptions?

2 Test method
Research? Mockup? Prototype? Pitch?

3 Metric
What metric do you use for measuring?

4 Success criteria
What proves your assumption?

5 Findings
What is your conclusion? Pivot or preserve?

6 Next steps
What needs to happen now?

How

- **List assumptions**
  Look at the people, the technology, and the business. What are the assumptions behind your idea? Why do you assume that you can offer added value to your customer? Is there a need that you can satisfy? What aspects of the technology are new and have never been tested? How do you think you are going to make money? What investments are necessary? List your assumptions for the three categories on Post-its or on a (digital) whiteboard.
- **Identify the most relevant ones**
  It is essential to identify your most critical assumptions, because you will probably not have time to test all of them. The most critical assumptions carry a high level of uncertainty and will have a huge impact on the success of your project.
- **Decide on tools for testing**
  Think about ways to prove or disprove the most critical assumptions. The tools you choose for testing will depend on the type of assumption and will have to be adapted to each assumption. Before testing, consider your success criteria and metric. You also need to consider the accessibility of the people you want to carry out the testing with and what remote options are available to you.

  Mockups and prototypes are especially helpful for testing the desirability and technical feasibility of a product.
  To test business viability, you should design a business model.

Note:
▶ see “Business Model Design”

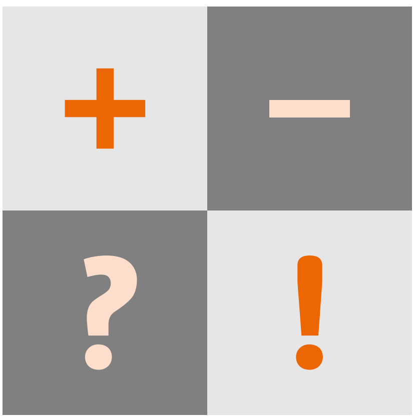
Feedback Capture Grid

What

The Feedback Capture Grid is a tool that helps you to collect and structure your testing feedback.

Why

When designing interactive products and services, it is important to obtain insightful feedback from customers, users, and patients. Comprising four simple quadrants, this grid facilitates structured documentation. It is a great tool for improving the recording of feedback, understanding of commonalities and visualization of priorities. Overall, it is an inexpensive and quick way of gathering feedback.



What worked +	**What could be improved** –
Questions ?	**Ideas** !

How

Learning from and building on your iterations of feedback and new ideas
On a large surface, draw an equilateral cross and mark the fields with the symbols listed below. Then arrange your feedback in the quadrants as follows:

- What worked (top left):
  aspects that received positive or excellent feedback
- What could be improved (top right):
  constructive criticism
- Questions (bottom left):
  questions that need to be addressed
- Ideas (bottom right):
  ideas formed during feedback

By collecting and adding to the feedback over time, you can identify the aspects of the prototype that are well received by users and the areas that still need improvement, allowing you to confirm whether or not you have achieved what you have defined as success. Do not forget the “good enough” principle.

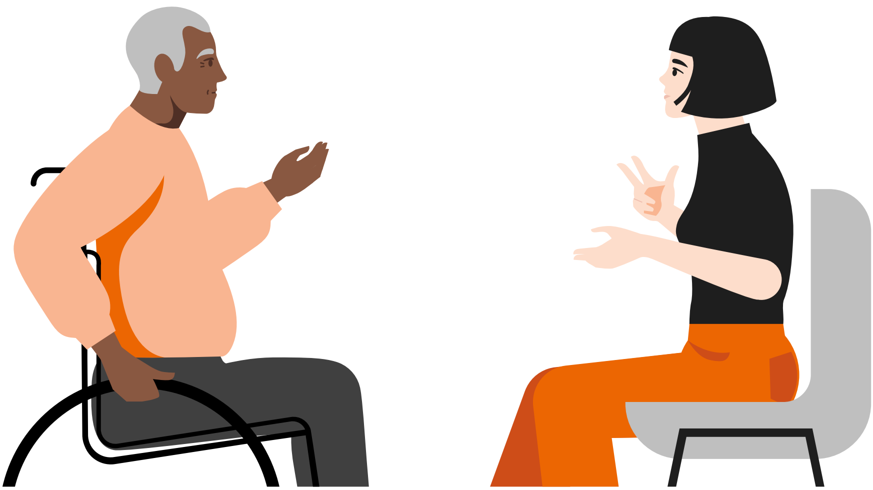
Expert Review

What

Obtaining qualified feedback on new ideas for products or services from colleagues who are in touch with customers and from experts in various fields.

Why

When designing interactive products and services, it is important to obtain fast feedback from customers, users, and patients. The more direct, the better. Where we do not have access to the customer or patient, it may be helpful to ask sales or service colleagues with links to customers, or subject experts. This is a fast and inexpensive way of gathering feedback. Moreover, we respect and can rely on the experience and dedication of these colleagues.



Source: gettyimages

How

1. Start by identifying colleagues or subject experts who are willing to review your ideas and prototypes.
2. Ask them to play the role of your customers, users or patients by adopting your personas' perspectives.
3. Conduct interviews, open discussions, and structured conversations, or observe their behavior while using the product or service.
4. Bear in mind that colleagues and experts are generally not your typical users, so cross-check your findings with real customers, users, or patients as soon as possible.
5. Analyze your findings and use the resulting insights to further develop your idea.

Implement

Making It Real

Relevant elements

- Shifting the focus from desirability and feasibility to viability factors
- Validation of customer acceptance of the idea using quantitative measures
- Planning the work and the resources required for realizing ideas
- Preparation for using continuous communication to win over internal and external stakeholders

Outcomes

- Verifiable data on idea acceptance by target group(s)
- Executable work plan and results of detailed idea development
- Dynamic pitch deck for communication purposes

Selected content and tools

- **Pitching**
- **Agile Development**

Notes

Pitching

What

An elevator pitch, elevator speech, or elevator statement is a summary that quickly and simply defines/sells the features and values of an idea (product, service, business model).

Why

Pitching helps you to present the idea succinctly and capture the attention of the audience quickly. Pitching may be targeted at potential customers/patients/users in order to gain feedback, or at internal and external decision makers in order to obtain resources or support.

AIDA

Attention
- Get the attention of your target group
- Stand out from the crowd

Interest
- Arouse curiosity about what you are offering
- Concentrate on the most important aspects

Desire
- Increase the heartbeat of your target group, emotionalize them
- Generate the desire to have what you are offering

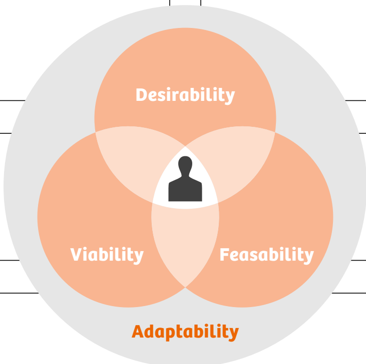
Action
- Provide information about next steps and get a green light from your target group
- Spur your audience into action

Pitch Canvas

What is your statement?
A memorable one-sentence explanation of what you will do for your customer (including the name)

Pain points
current problem
opportunities
stakeholders

Solution
product and / or service



Customer value
gains
positive experience
advantages / benefits

Demo / prototype
live demo
screenshots
hardware parts, wireframes

Business potential
customers / regions
business model / partnerships
sales volume / channels, ROIs

Resources
team, costs /investment,
time, technology,
yourself

Call to action
What are the next steps to make it happen (ideally close the pitch by addressing the statement you made at the beginning)?

How

- Begin by involving your audience (story, body poll, quote)
- Be memorable (think in pictures and emotions)
- Motivate your audience (be yourself, be authentic)
- Use powerful language (no weak language, avoid monotone)
- Plan the choreography (opening, content, closing, body language)

Agile Development

What

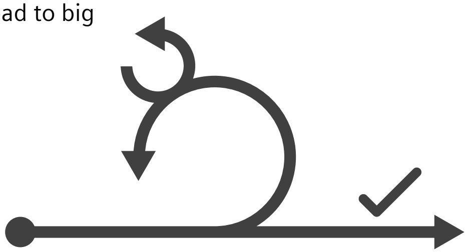
“Agile” is an overarching term that describes a variety of methods. It is about “delivering fast to learn fast” and is based on a shared mindset and set of principles.
These principles are:

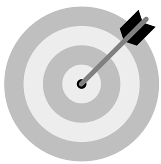
- Individuals and interactions over processes and tools
- Working products over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

Customer focus, trust, learning, and continuous collaboration are characteristics of an agile mindset. Agile is neither unplanned nor uncontrolled; rather, it is about deliverables, not activities. Agile has absorbed some principles from Lean, and from an application perspective, it is not restricted to software. The frameworks most frequently used for product development include e.g., Scrum, Kanban, SAFe. Design sprints lead to big upfront design.

Why

In a fast-paced, uncertain world, Agile offers significant advantages over traditional approaches such as waterfall. Agile enables teams to quickly adapt to change, making it ideal for evolving requirements. It encourages continuous customer feedback, resulting in products that better meet needs. Agile encourages cross-functional collaboration, integrating diverse skills to effectively solve complex problems. It improves team effectiveness through regular interaction and clear communication. Agile also reduces risk by breaking work into smaller increments and checking progress frequently. Its structure supports continuous improvement and efficient delivery of customer value, making it valuable in dynamic business environments.





Kanban board

Backlog

As a fleet manager, I want to monitor the fuel consumption of each vehicle, so that I can identify inefficiencies and reduce fuel costs.

As a fleet manager, I want to assign drivers to vehicles and create schedules, so that I can ensure efficient operations and meet delivery timelines.

In-work

As a fleet manager, I want to track the usage of each vehicle, so that I can optimize the utilization and extend the lifespan of the fleet.

As a fleet manager, I would like to have an overview of what kind of vehicles are available so that I always have sufficient reserves.

Done

As a fleet manager I know when a car has to go on maintenance so that they are all in good condition.

As a fleet manager, I want to have a system for incident reporting, so that I can quickly address any issues and maintain fleet safety.

How

Agile Development is best applied to complex topics by thinking about the value to be created for the customer. This can be done by creating a product vision and deriving a number of user stories from it. These user stories are organised by one person, the Product Owner. The Developers will convert this user story into a customer benefit.
In order to manage a complex topics, it is important to work together across the organisation. A cross-functional team is formed for this purpose. This team will deliver the value to the customer in small chunks to get early feedback and adjust the product accordingly. In addition, the team will continuously reflect on the product development process and implement improvements.

The Scrum and Kanban frameworks support the implementation of these key elements. Scrum involves 3 accountabilities, the Product Owner, the Scrum Master and the Developers. They manage and align themselves in the 5 events called Sprint, Sprint Planning, Sprint Review, Sprint Retrospective and Daily Scrum. There are 3 artefacts with their obligations, the Product Backlog (with the Product Goal), the Sprint Backlog (with the Sprint Goal), and the Increment (with the definition of Done), focusing on outcomes. Kanban emphasizes three change management principles: start with what you are doing now, agree on incremental evolutionary change, and encourage leadership at all levels. It also includes three service delivery principles: focus on customer needs and expectations, manage the work, and regularly review the service network. Kanban is flow-oriented.

Many People were Involved in the Creation of this Toolkit

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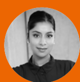 Thurka Sachithanatham

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 Anastasiia Serezhenkova

 Bernd Sieber

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 Alexandra Zahn

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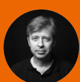 Alexander Gogoll

 Anja Kaiser

 Bettina Maisch

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