Course of
Economics of Innovation

Design Thinking. Introductory Concepts

These slides have been designed
together with Dr. Daniele Binci and Dr. Niloofar Kazemargi

Prof. Corrado Cerruti

Design Thinking. Introductory Concepts

- Design Thinking. A General Overview
- Steps of Design Thinking Approach and Iteration
- Design Thinking as Divergent and Convergent Perspectives

Daniel Ling. "Complete Design Thinking Guide for Successful Professionals"
https://courses.edx.org/courses/course-v1:Microsoft+DEV241x+3T2019/course/

Michael Shanks. "An introduction to Design Thinking process guide
https://web.stanford.edu/~mshanks/MichaelShanks/files/509554.pdf

IDM-Altitude Design Process Video
https://www.youtube.com/watch?v=9fJVgJIpbJs&t=434s

Design Thinking: an overview

Design Thinking is an iterative process in which we seek to understand the user, challenge assumptions, and redefine problems in an attempt to identify alternative strategies and solutions that might not be instantly apparent with our initial level of understanding.

Design Thinking provides a solution-based approach to solving problems. It is a way of thinking and working as well as a collection of hands-on methods.

Design Thinking revolves around a deep interest in developing an understanding of the people for whom we're designing the products or services. It helps us observe and develop empathy with the target user.

Design Thinking helps us in the process of questioning: questioning the problem, questioning the assumptions, and questioning the implications.

Design Thinking is extremely useful in tackling problems that are ill-defined or unknown, by re-framing the problem in human-centric ways, creating many ideas in brainstorming sessions, and adopting a hands-on approach in prototyping and testing.

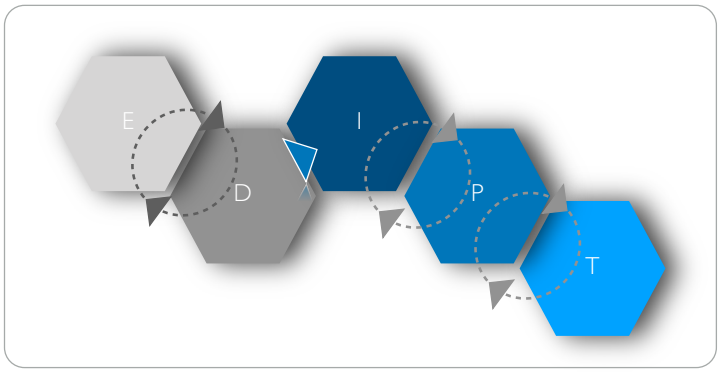
Design Thinking involves ongoing experimentation: sketching, prototyping, testing, and trying out concepts and ideas.

Quotation from: **What is Design Thinking and Why Is It So Popular?**
Interaction Design Foundation, 2019

Design Thinking: an overview

Design thinking is a non-linear, iterative process which seeks to understand users, challenge assumptions, redefine problems and create innovative solutions to prototype and test.

It is most useful for tackling problems that are ill-defined or unknown.



Empathize — to understand customers / users
Define — to define clear project / business objectives
Ideate — to explore ideas and solutions
Prototype — to build and visualise ideas and solutions
Test — to review and decide

Steps of Design Thinking Approach

Empathize

During this phase, you will need to be immersed in learning about others (end users), and the problem that you are trying to solve.
You can talk to experts and other key stakeholders, or even conduct research and interviews.
The aim is develop the background knowledge, and use these insights as a springboard to address design challenges.

Activities:	Tools to use:	Deliverables:
User interview	Interview checklist	List of user feedback
Informal chats	Observation checklist	Problems identified
Observation	Writing tools	
	Flipcharts and paper	

Transition: Emphatize -> Define

Unpack: When you move from empathy work to drawing conclusions from that work, you need to process all the things you heard and saw in order to understand the big picture and grasp the takeaways of it all.

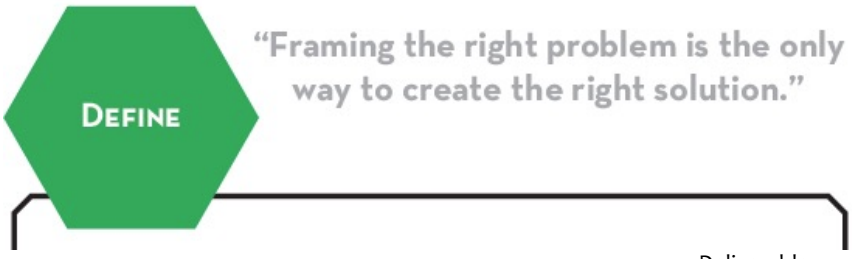
Unpacking is a chance to start that process – sharing what you found with fellow designers and capturing the important parts in a visual form.
Get all the information out of your head and onto a wall where you can start to make connections—post pictures of your user, post-its with quotes, maps of journeys or experiences—anything that captures impressions and information about your user.
This is the beginning of the synthesis process, which leads into a 'Define' mode.

Michael Shanks. "An introduction to Design Thinking process guide»

Steps of Design Thinking Approach

Define is the convergent phase to make informed decisions from the insights gained from Empathize.
It is important to. develop clarity by asking the right critical questions to the stakeholders or team members involved in the same project. It is also important to be curious and find out things. This step challenges the status quo

Based fully on the insights, you ask these questions:
— What is the problem we are trying to solve?
— Where are we heading?
— Who are we helping?
— What is the value proposition?
— What is our situation?
— How did this happen?



Activities:
Workshops
Stakeholder meetings

Tools to use:
Drawing and writing tools
Post-its
Flipchart / Whiteboard
User feedback (from Empathize)

Deliverables:
Design brief
Stakeholder map
Context map
Customer journeys
Opportunity map

Transition: Define -> Ideate

In the Define mode you determine the specific meaningful challenge to take on, and in the Ideate mode you focus on generating solutions to address that challenge.

A well-scoped and -articulated point-of-view will lead you into ideation in a very natural way. In fact, it is a great litmus test of your point-of-view to see if brainstorming topics fall out your POV.
A great transition step to take is to create a list of "How-Might-We . . .?" brainstorming topics that flow from your problem statement.
These brainstorming topics typically are subsets of the entire problem, focusing on different aspects of the challenge.

Then when you move into ideation you can select different topics, and try out a few to find the sweet spot of where the group can really churn out a large quantity of compelling ideas.

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Steps of Design Thinking Approach

Ideate

This phase is the critical and most celebrated phase of the design thinking process. You will be challenged to think out of the box and to brainstorm a myriad of ideas. You will suspend all kinds of judgment to your ideas and solutions. No idea is too far-fetched and no one's ideas are rejected. Ideating is all about creativity and fun. Quantity is encouraged. Your team will generate a hundred ideas in a single session. You and your team will be encouraged to be dreamers of the impossible and visionaries of the future.

Activities:
Workshops
Stakeholder meetings

Tools to use:
Drawing and writing tools
Post-its
Flipchart / Whiteboard
User feedback (from Empathize

Deliverables:
Ideas / concepts
Sketches
Prioritisation map
Affinity map
Idea evaluation

Transition: Ideate -> Prototype

In order to avoid losing all of the innovation potential you have just generated through ideation, we recommend a process of considered selection, by which you bring multiple ideas forward into prototyping, thus maintaining your innovation potential.
As a team, designate three voting criteria (such as "the most likely to delight," "the rational choice," "the most unexpected") to use to vote on three different ideas that your team generated during brainstorming.

Carry the two or three ideas that receive the most votes forward into prototyping. In this way, you preserve innovation potential by carrying multiple ideas forward—a radically different approach than settling on the single idea that at least the majority of the team can agree upon.

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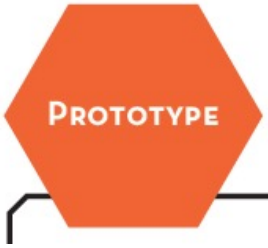
Steps of Design Thinking Approach

A prototype can be a paper model, storyboard, wireframe or a cardboard box - it allows you to quickly visualize and identify the best solution among several concepts. It is a way to convey an idea quickly. The fidelity of the prototype does not matter.
You are asked to learn to experiment and that it is better to fail early and often.



"Build to think and test to learn."

Activities:
Space prototyping
Physical prototyping
Paper construction
Wireframe building
Storyboards
Role-plays

Tools to use:
Paper
Cardboard
Construction materials
Cutting and writing tools

Deliverables:
Physical prototypes
Wireframes
Storyboards

Transition: Prototype -> Test

Prototype and Test are modes that you consider in tandem more than you transition between. What you are trying to test and how you are going to test that aspect are critically important to consider before you create a prototype. Examining these two modes in conjunction brings up the layers of testing a prototype.
Though prototyping and testing are sometimes entirely intertwined, it is often the case that planning and executing a successful testing scenario is a considerable additional step after creating a prototype.

Don't assume you can simply put a prototype in front of a user to test it; often the most informative results will be a product of careful thinking about how to test in a way that will let users give you the most natural and honest feedback.

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Steps of Design Thinking Approach

Testing is part of an iterative phase of the design thinking process that provides you with feedback, based on rigorous testing of the prototype.
The purpose of testing is to learn what works, and what doesn't and then iterate. This means going back to your prototype and modifying it, based on feedback from the users. Testing ensures that you come back to the essential core of design thinking - empathy of users and designing for their needs.

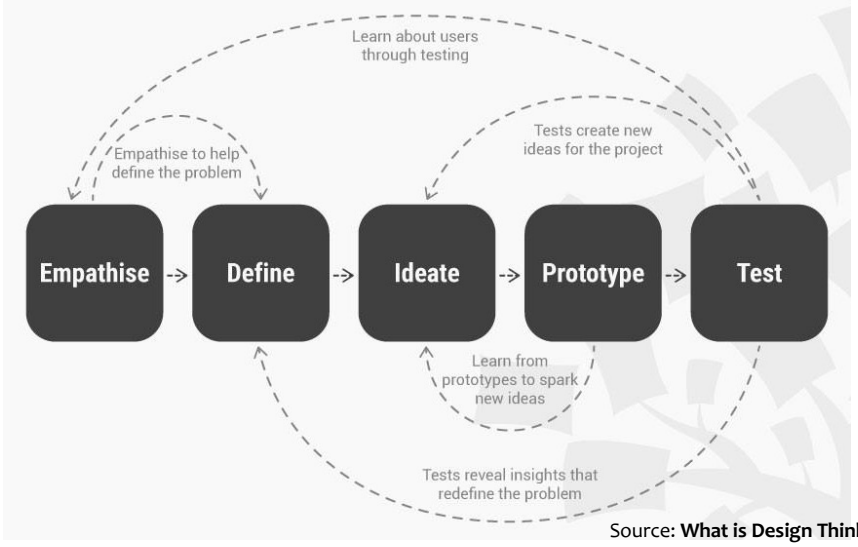
Activities:
User testing
Observation
Picture-taking
Evaluation discussion

Tools to use:
Briefing checklist
Interview checklist
Observation checklist
Prototypes to test (from Prototype)

Deliverables:
Observation
Evaluation map
Proposed refinement

Design Thinking as an iterative process

Iteration is a fundamental of good design.
Iterate both by cycling through the process multiple times, and also by iterating within a step—for example by creating multiple prototypes or trying variations of a brainstorming topics with multiple groups.
Generally as you take multiple cycles through the design process your scope narrows and you move from working on the broad concept to the nuanced details, but the process still supports this development.



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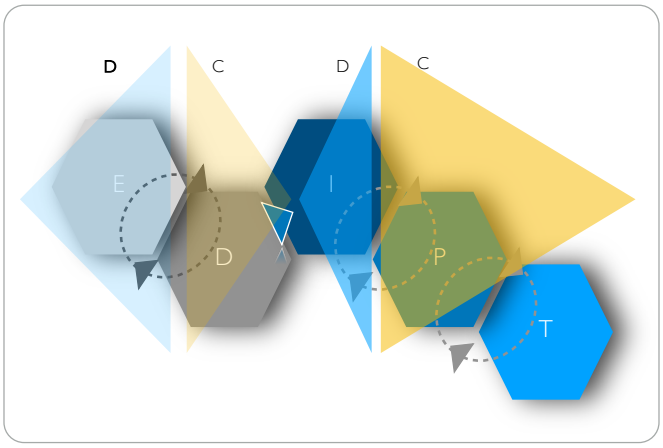
Design Thinking as Divergent and Convergent

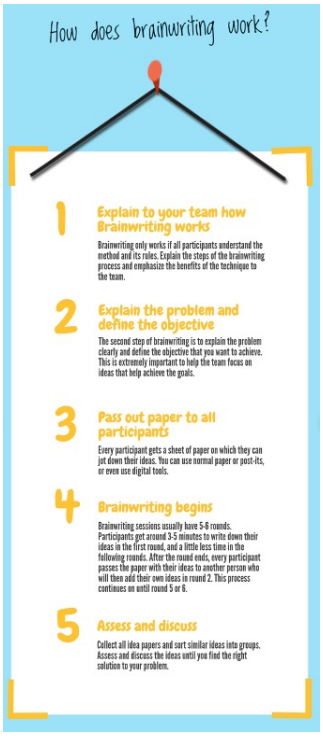


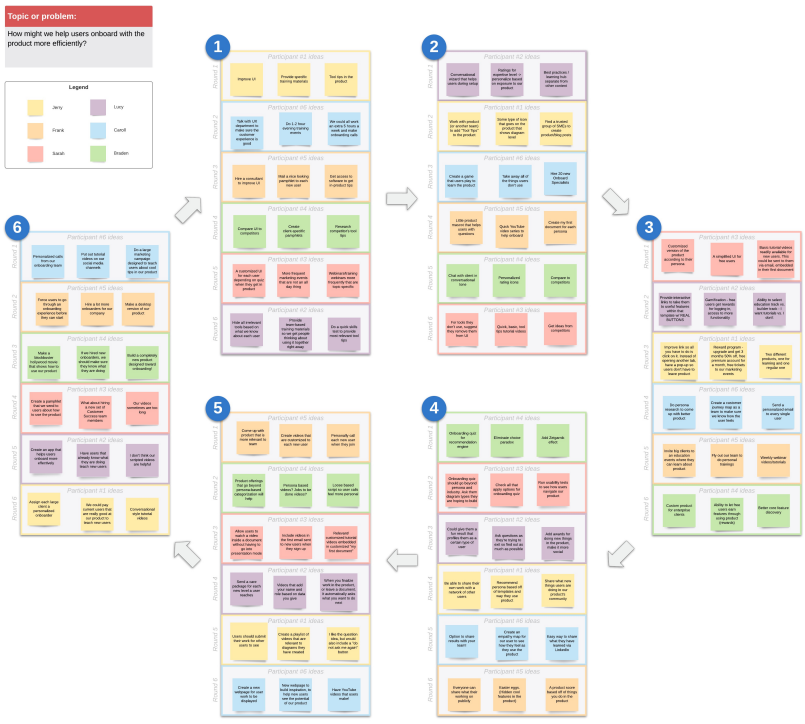
Divergent: common ideation techniques
- Brainwriting
- Scamper
- ... What if?

Convergent: simple ways to converge
- Prioritisation map (MoSCoW)
- Affinity diagram
- … Idea evaluation

Divergent: ideation techniques

Brainwriting 6-3-5

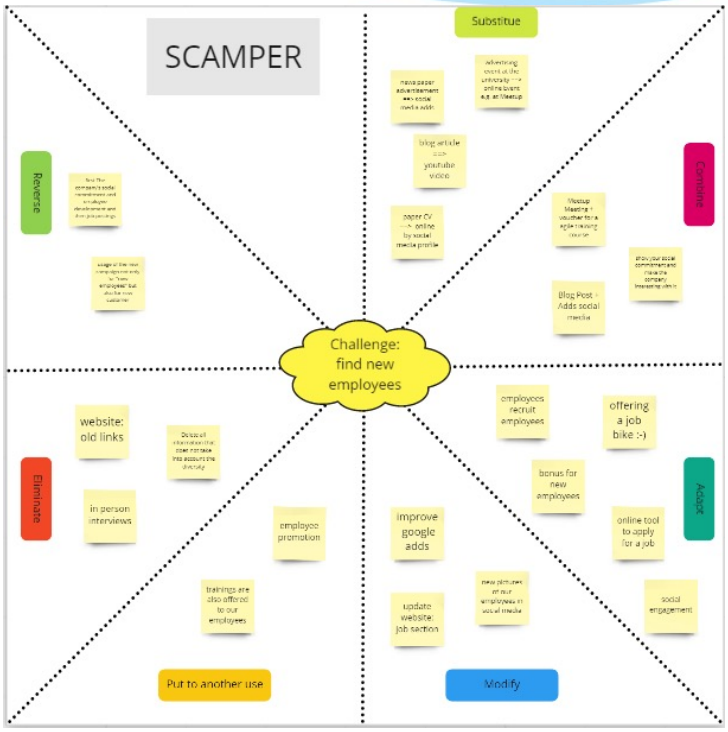




Source: InLoox https://www.inloox.com/

Divergent: ideation techniques

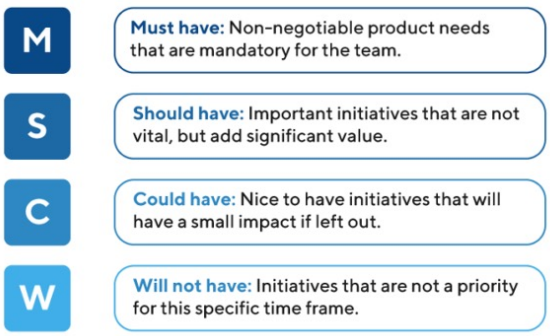
SCAMPER

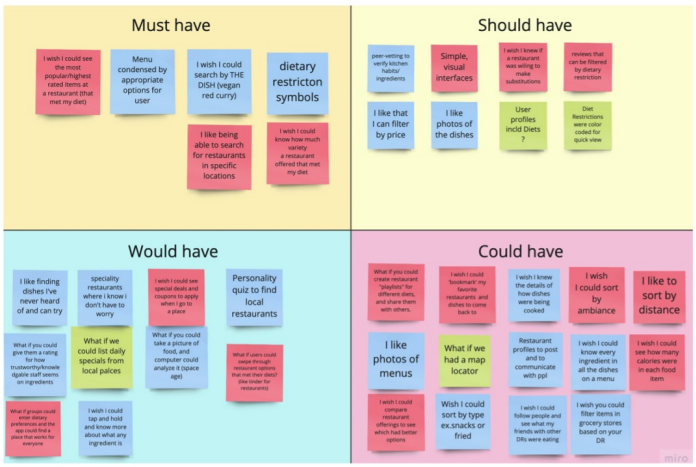


Source: InLoox https://www.inloox.com/

Convergent: supporting tools

MoSCoW Proritisation Map





Convergent: supporting tools

Affinity Diagram

Design Thinker's personality profile

- **Empathy:** imagine the world from multiple perspectives (those of colleagues, clients, end users…), taking a «people first» approach to imagine solutions that are inherently desirable and meet explicit or latent needs.
- **Integrative Thinking:** rely not only on analytical processes but also exhibit the ability to see the all the salient – and sometimes contradictory – aspects of a confounding problem and create novel solutions.
- **Optimism:** assume that no matter how challenging the constraints of a given problem, at least one potential solution is better than the existing alternatives.
- **Experimentalism:**ask new questions and explore constraints in creative ways that proceed in entirely new directions.
- **Collaboration:** have a multidisciplinary attitude, work alongside other disciplines and even more gain significant experience in more than one discipline (marketer, anthropologist, industrial designer, architect or psychologist).

Tim Brown, Design Thinking | Hbr.org | June 2008 | Harvard Business Review