DESIGN THINKING FOR INNOVATION

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FIND A SOLUTION TO THE PROBLEM

"How can we help premature babies in developing countries, given the lack of incubators"

(Stanford D.School)

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USER-CENTERED DESIGN

In user-centred approaches, design takes into user needs and desires

Most of the time research on needs takes place through questionnaires or interviews

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DESIGN AND INNOVATION

In the future, all problems will be design problems (Tim Brown, Change by Design)

- Education
- Health
- Poverty
- Energy
- Sustainability
- Natural resources management

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DESIGN THINKING

Designers strive to understand the actual, real problem

To see the world from the user's standpoint

To design solutions from the user perspective

To take into account needs, desires, and feelings

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DESIGN THINKING

Design thinking goes several steps further than user-centred design

In which simple research tools, such as questionnaires, are deployed

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DESIGN THINKING

Designers try to understand **actual, real** user needs, as opposed to perceived

User feelings and experiences from the deployment of a solution

Consider that **users may not be able to express their needs**

- E.g. The first car story by Ford (Tim Brown, Change by Design)

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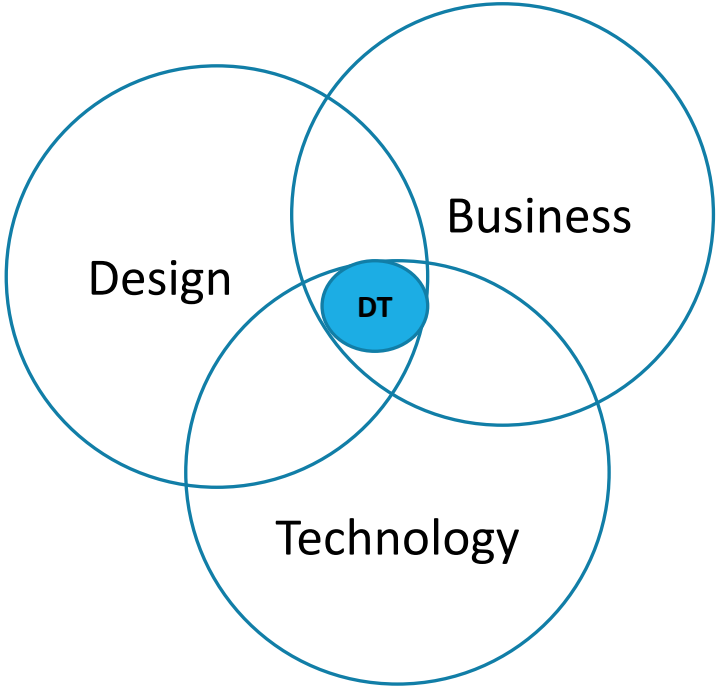
DESIGN THINKING



What is feasible

The intersection of design, business, and technology

(Standford D.school, IDEO)

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UNDERSTANDING THE PROBLEM

Designers put themselves “in the users’ shoes”

They observe, empathize

They live in the user’s environment to experience needs first-hand

- E.g. To design solutions for a small village, the designers live in the village for a few days

This allows understanding **latent needs**

- That users may not be able to express (Tim Brown, Change by Design)
- It allows understanding of **functional** and **emotional** aspects

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UNDERSTANDING THE PROBLEM

Observe users in their everyday activities

Observe unusual, subconscious acts that demonstrate a need

- E.g. users use a book as doorstop (Tim Brown, Change by Design)
- Users label the cables under the table in different colors to easier identify them

- These show latent needs that users solve with simple hacks

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UNDERSTANDING THE PROBLEM

Observe a team of non-characteristic users

- E.g. To design kitchen utensils observe
- Children, who need ease of use
- Chefs, who need easy cleaning of utensils

- How can we get ideas for maximizing usability?

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UNDERSTANDING THE PROBLEM

Observe different situations

- E.g. The pits for tire changing in formula 1, a team of specialists working in high precision conditions

- How can we get ideas for designing an emergency room?

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UNDERSTANDING THE PROBLEM

Try to understand the **actual, not perceived,** problem

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ANOTHER DIFFICULT DESIGN PROBLEM

"How can we bring electricity to sub-Saharan Africa, where no power distribution lines exist"

To introduce a solution, think about how inhabitants will use electricity

- To light a house?
- To power a TV?

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THE VALUE OF DESIGN THINKING

By understanding the **real**, as opposed to perceived, needs

Designers can **solve difficult problems, even if a solution does not appear to exist at first sight**

- E.g. Consider the example of incubators

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DESIGN THINKING AND ICT

"50% of the world does not use internet. How can we bring internet to everyone?"

To introduce a solution, think about how the internet will be used

- For communication, education, else?

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WHO USES DESIGN THINKING

Entrepreneurship: For designing commercial products

Social entrepreneurship: For designing solutions to complex social challenges

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STANFORD D.SCHOOL

https://dschool.stanford.edu/#post-hero

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COMMERCIAL EXAMPLE: AIRBNB

AirBnb was not always successful

- Users did not rent the apartments

They used design thinking to upgrade services

They hypothesized that the problem was unclear pictures

The used a professional camera to capture clear pictures and improved the text

- A simple adjustment made all the difference

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ANOTHER DIFFICULT DESIGN PROBLEM MALNUTRITION IN SOUTH EAST ASIA

Malnutrition was widespread

Designers observed that some very poor families had well fed children

They observed everyday practices

Villages collected rice from the rice fields

- They also collected small organisms, such as shrimp, providing protein

Designers taught all parents this technique with excellent results

ICT-INOV
MODERNIZING ICT EDUCATION FOR HARVESTING INNOVATION

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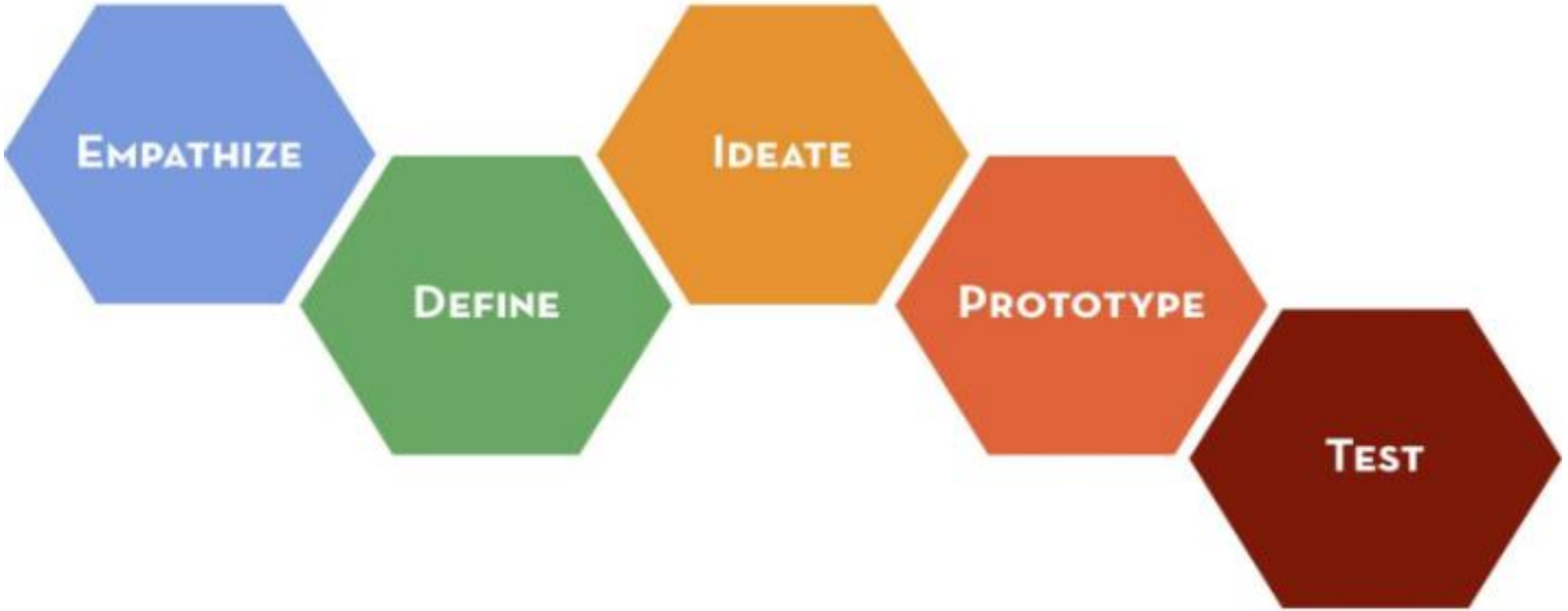
DESIGN THINKING MODEL

** STANFORD D.SCHOOL, IDEO



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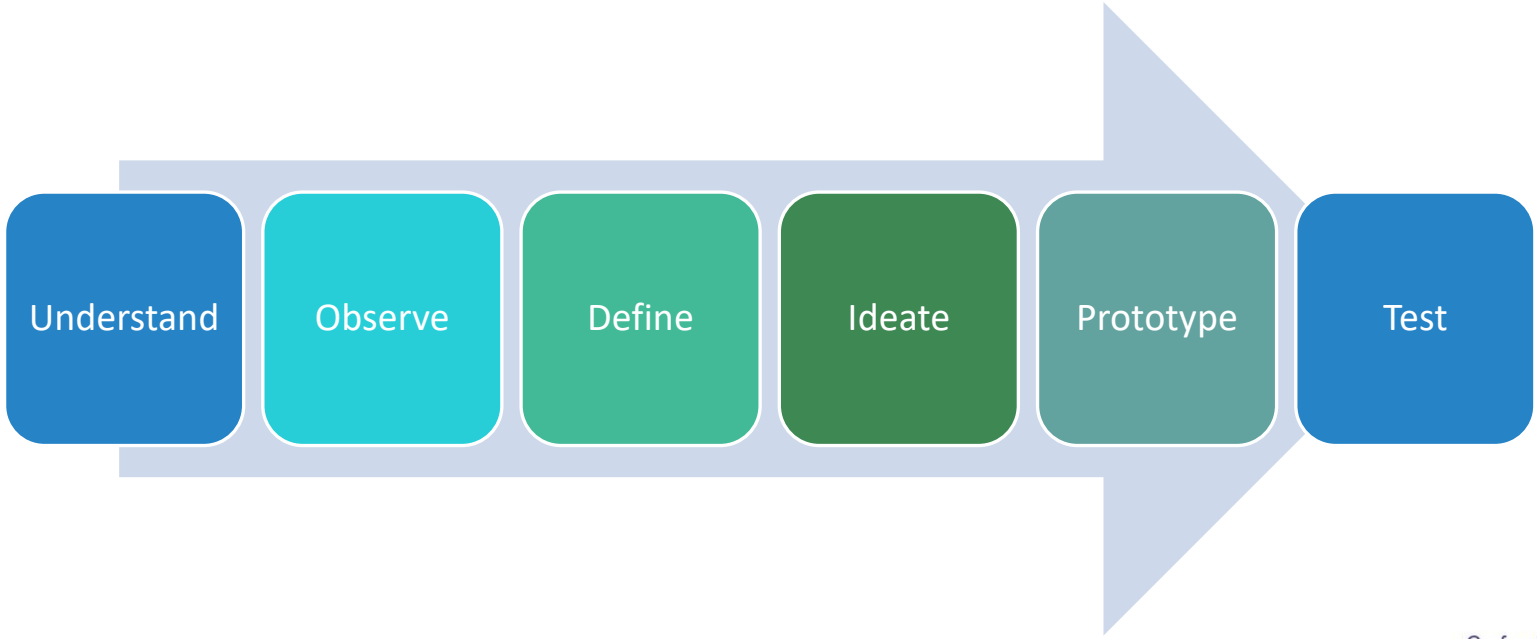
DESIGN THINKING MODEL

** UNIVERSITY OF LODZ



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THE MENTAL MATRIX

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THINKING WITH THE USERS, NOT FOR THE USERS

Traditionally, companies use design teams to create products, which marketing promotes

Contrary, design thinking is about **designing products with the customers**

Inviting the customers into the design process can be scary, they will see the chaos

- Think of a theatregoer being invited behind the curtain

Traditionally, we use focus groups: characteristic individuals that are observed by the design team

But, we can also do an **unfocus group**: carefully designed individuals that are invited to engage in design

- E.g. For designing shoes, invite individuals with specific preferences to discuss that is important in a shoe

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DIVERGE TO CONVERGE

In western problem solving, the **design process** is based on **logic** and **deduction**

We take a series of **inputs, analyse** them, and **conclude to a single solution**

We are inclined to **converge,** find the **best answer** and not necessarily the **right**

- Think 5 friends deciding where to go to dinner

Converging allows us to select from pre-existing choices

It does not help create new ideas

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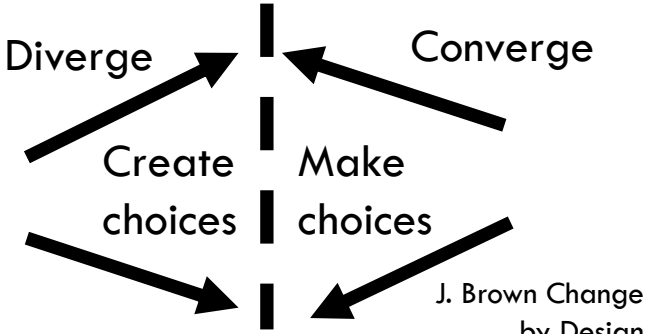
DIVERGE TO CONVERGE

New ideas on consumer behaviour

Alternative ideas for new products

Alternative ways for creating the user experience



"To have a good idea, you need first to have a lot of ideas", L. Pauling

"Chance only favours the prepared mind" L. Pasteur

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DIVERGE TO CONVERGE

It can be hard to apply and costly

Most companies **encourage working on select ideas**

But … we may miss a breakthrough idea, the organization becomes complacent, and vulnerable to disruptive ideas from outside

Divergent thinking is the route, not the obstacle, to innovation

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DESIGN THINKING AND DIVERGENCE

Design thinking looks into the **exchange between divergent and convergent** phases

Each iteration is less broad and more detailed than the previous

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EXPERIMENTATION, TOLERANCE TO RISK, OPTIMISM

New ideas stem from **experimentation**

The tolerance of an organization on experimentation is similar to its **tolerance on risk**

People who are closer to the "outside world", i.e. changing customer base, strategic threats or opportunities, are the best placed to come up with new ideas

Optimism refers to our belief that things could be better and that it is within our power to have new ideas that will address unmet needs

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PROBLEM DISCOVERY

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PROBLEM DISCOVERY

Look for problems

Which areas in a process are problematic?

1. Identify problematic areas
2. Identify areas of possible change
3. Identify things that can be improved

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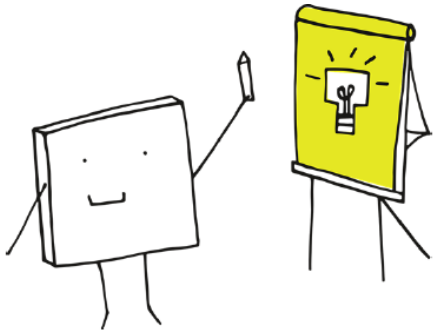
PROBLEM DISCOVERY



Select **1 problematic area**

Perform short research

Try to answer the following questions:

- **Find 3 pictures demonstrating the problem**
- Find an article on the problem
- Find a short video on the problem
- **Present the problem and the proof to the group**

Objectives of the exercise: identifying a specific challenge within the wider topic of the workshop, on which the team will focus; research the challenge

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PROBLEM DISCOVERY

** CREATIVE ACTS FOR CURIOUS PEOPLE, E, SUSIE WISE, MELISSA PELOCHINO, ALEXANDRA HOROWITZ

Neighborhood walk

- Alone
- With an engineer
- With a gardener
- With a maintenance worker

USER PERSONA

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INTERVIEW ESSENTIALS

** CREATIVE ACTS FOR CURIOUS PEOPLE, MICHAEL BARRY, MICHELLE JIA, ROLF FAST

Who you will interview

Create the space, where the interviewee feels comfortable

Pre-design the questions, the order is not important

Envision the arc of the interview (think of it as a hike)

- You cannot predict how the interview will evolve, be prepared to adapt

Conduct at least 5 interviews, each interview 30 minutes (or 1 – 2 hours)

Color, advance, reflect

- Admire a detail, advancing questions, reflection questions back to statements

Consider a reward, for example professional, or at least bring a gift

Objective of the exercise: prepare effective interviews

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INTERVIEW PREPARATION CARD

** UNIVERSITY OF LODZ

Interview preparation

WHO?
(Why that group?)

WHERE? (interview surrounding)
(Why there?)

QUESTIONS

1.
2.
3.
4.
5.
6.
...
...

Tips

1. Plan the location where you conduct interview!
2. Plan who can give you the most valuable information.
3. 3 team members are needed: one who conducts interview, one who takes notes, one who observes the interviewee/take pictures.
4. Come to interview with pre-defined questions, but don't focus of their order.
5. Remember that you can't predict the whole course of the interviews, be prepared but open to.

INTERVIEW FINDINGS CARDS

** UNIVERSITY OF LODZ

Interview card

Picture / Photo

Name:
Sex:
Age:
Occupation:

Tips

1. Note everything!
2. Ask questions WHY?
3. Be curious as a child!
4. Observe your interlocutor!

WHERE? (interview surrounding)

Notes

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CREATE A USER PERSONA

Create a poster that describes a characteristic user

This is not a specific person

It is an imaginary person that has the characteristics of individuals that will use your solution

Objectives of the exercise: describing a characteristic user using text, images, and graphics

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CREATE A USER PERSONA

Picture + features, not very creative, but can serve as an early draft

Roadmap - journey or story for a person, where they come from, education, what they do now, etc. Age of the person, how they became what they are now, what is their experience. Create a "picture" with images and graphics

Mind map, in the middle is the picture of the person, then around make notes with information

Empathy map. What this person or group does, what they hear, what they feel. Make it visual by drawing or finding pictures to put on a paper

Or make our own template using elements from above

Objectives of the exercise: create a map of the user experience

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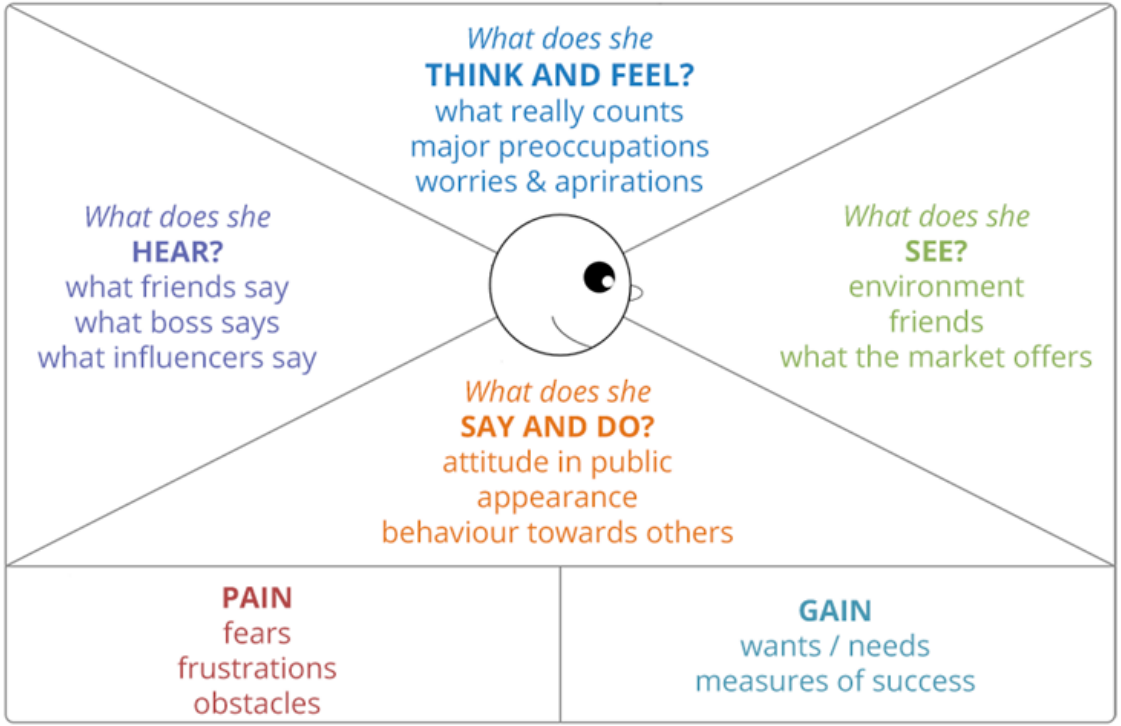
CREATE A USER PERSONA EMPATHY MAP EXAMPLE



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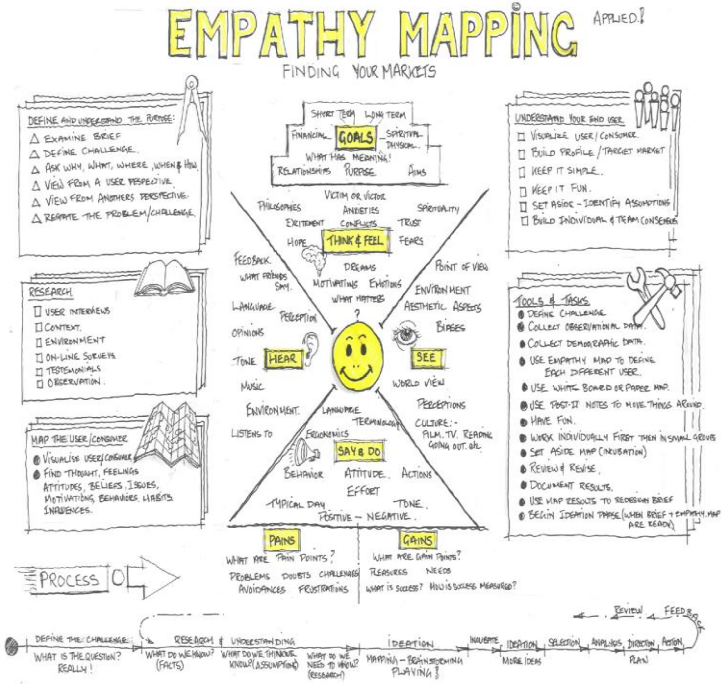
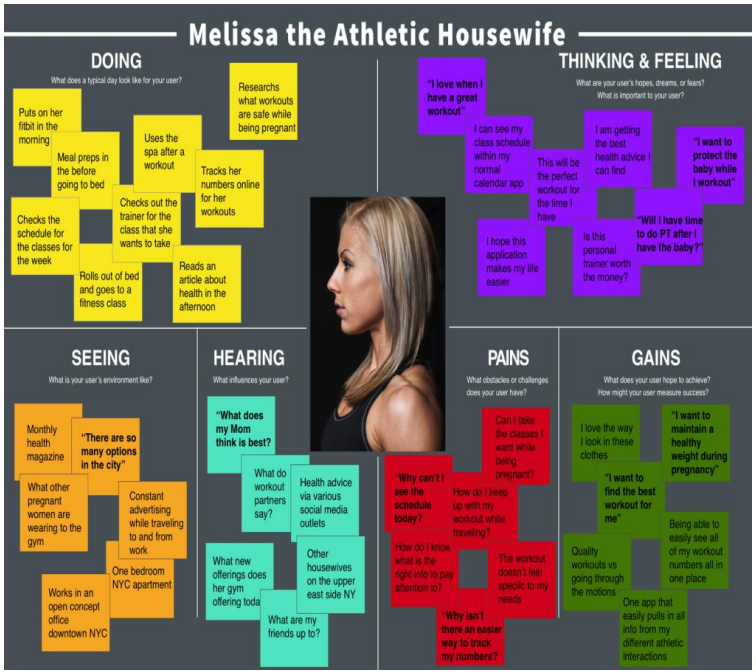
CREATE A USER PERSONA EMPATHY MAP EXAMPLE





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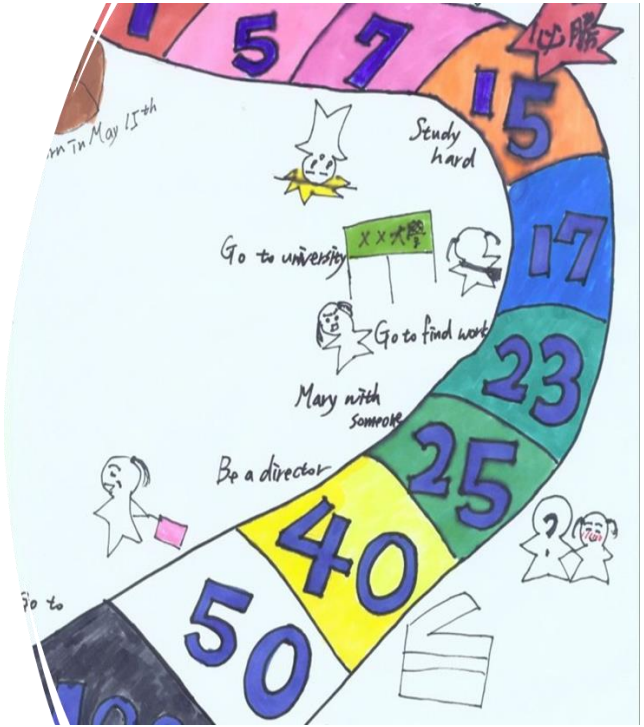
CREATE A USER PERSONA USER JOURNEY EXAMPLE



CREATE A USER PERSONA USER'S JOURNEY EXAMPLE

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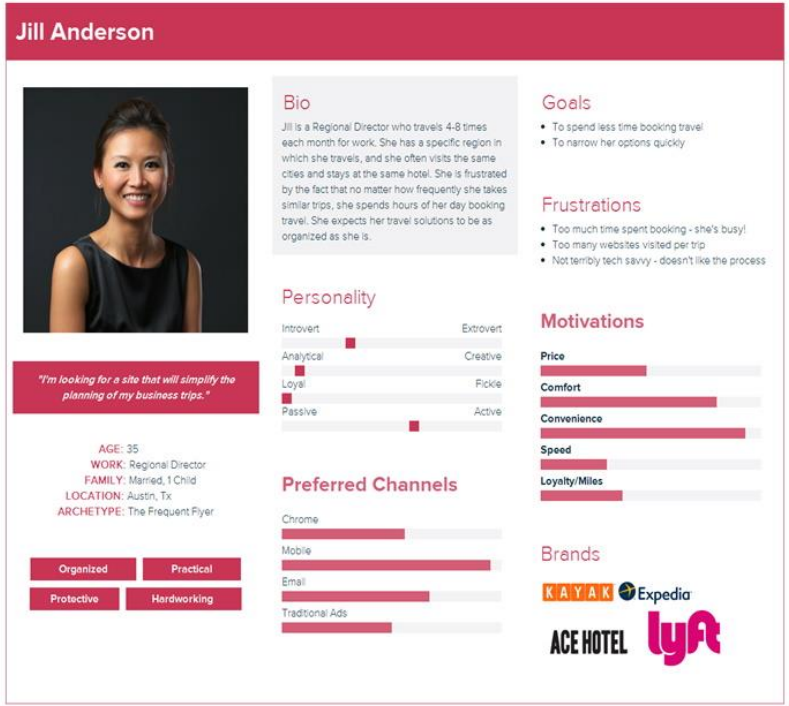
CREATE A USER PERSONA
PERSONA LIST EXAMPLE



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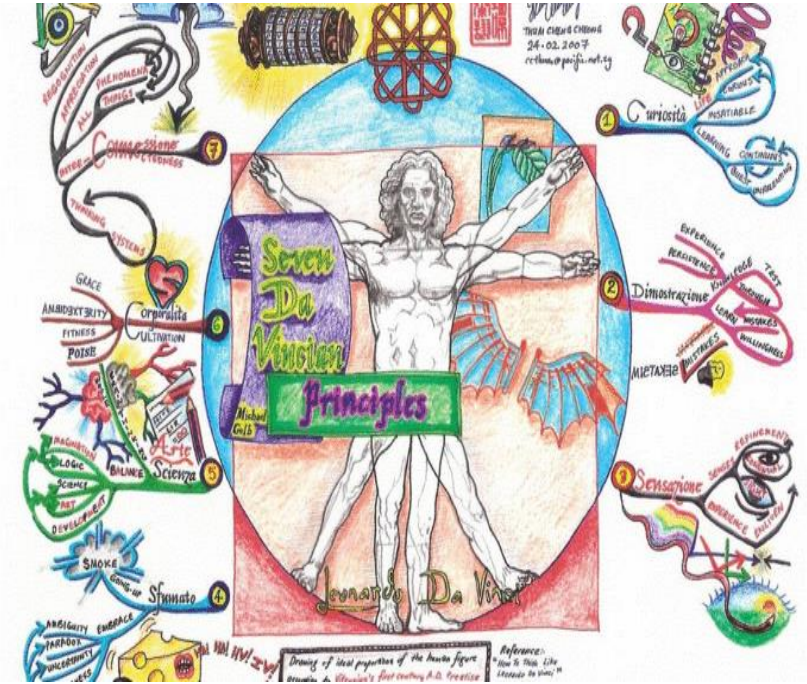
CREATE A USER PERSONA MIND MAP EXAMPLE



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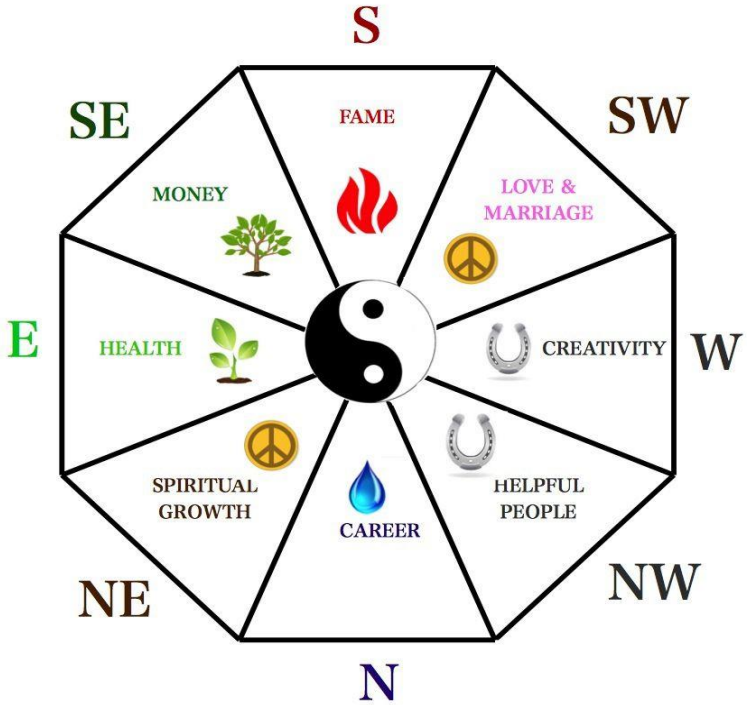
CREATE A USER PERSONA
BAGUA (FENG SHUI) MAP EXAMPLE



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PROBLEM DEFINITION

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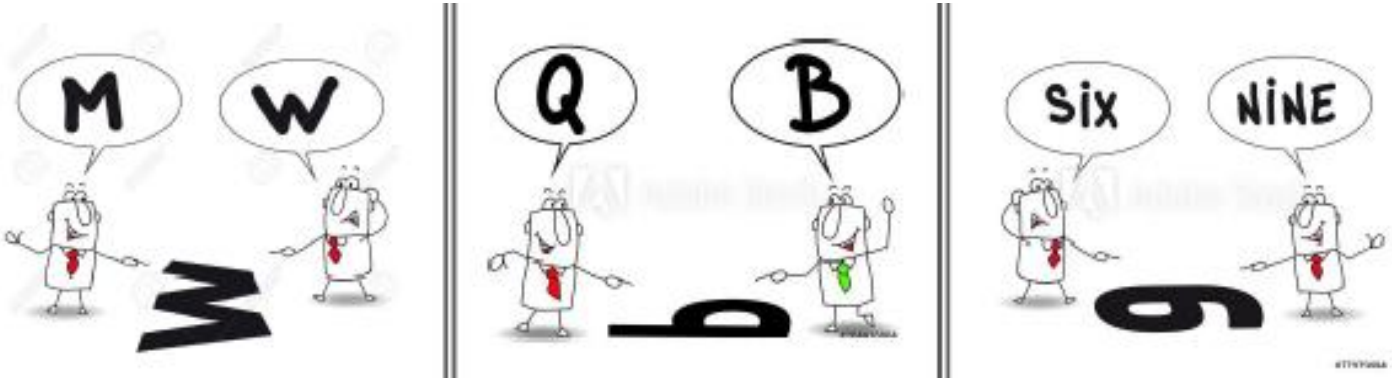
UNDERSTANDING DIFFERENT VIEW POINTS



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POINT OF VIEW

Integrates the results of:

- Your problem research
- The users' input
- Your understanding of the problem

Objectives of the exercise: define a problem accurately, taking into account the results of empathic research

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POINT OF VIEW

Define the problem as follows:

Who	What	Why
• The user	• … needs a way to … (use verbs)	• … because … (insight)

Objectives of the exercise: define a problem accurately, taking into account the results of empathic research

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POINT OF VIEW (ALTERNATIVE)

How might we ... find a way to … allow the user to …

What are the ways we could …

What kind of scenarios could we imagine?

How might we ACTION WHAT for WHOM in order to CHANGE SOMETHING

Objectives of the exercise: define a problem accurately, taking into account the results of empathic research

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IDEATION

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IDEATION EXERCISES

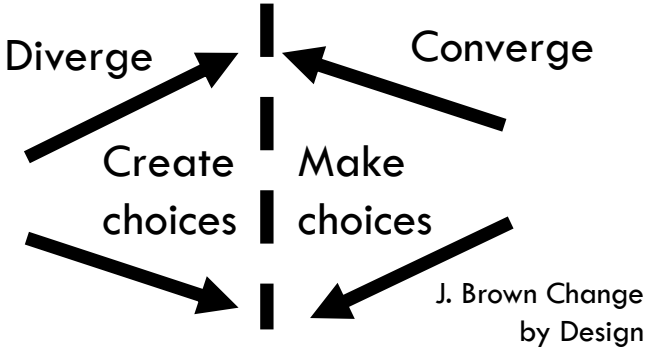
Expensive ideas

Economic ideas

Avalanche

Magic

6-3-5



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SELECTING AN IDEA FOR PROTOTYPING

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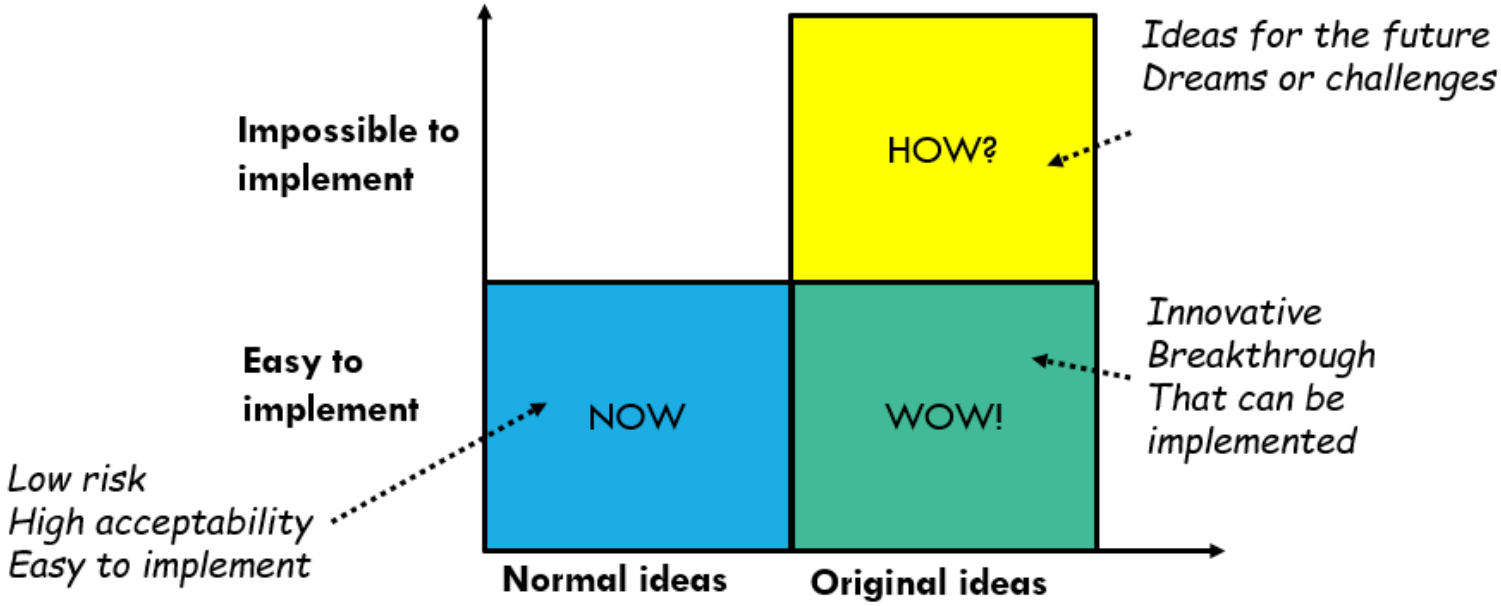
SELECTING AN IDEA



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PROTOTYPING

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PROTOTYPING IS EXPERIMENTATION

Children use Lego® to build towers, vehicles, dinosaurs

Prototyping is **willingness to go ahead** and **try something** by building it, it is **experimentation**

Prototyping is **thinking with your hands** (D. Kelley)

Early **prototypes should be fast, rough, and cheap**

- Easy to use materials: cardboard, wood, objects lying around

Their construction should command enough time and effort to generate feedback, no more

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PROTOTYPING SOMETHING INTANGIBLE

For example, a service, a virtual experience, an organizational system

In software, the user interface is often designed with stickies well before starting to code

Some companies use **story boards,** example is in movies to make sure the story holds up before it is shot with complex special effects and multiple cameras

Other options: **scenarios, story telling, customer journey** (for example making a video that demonstrates an experience)

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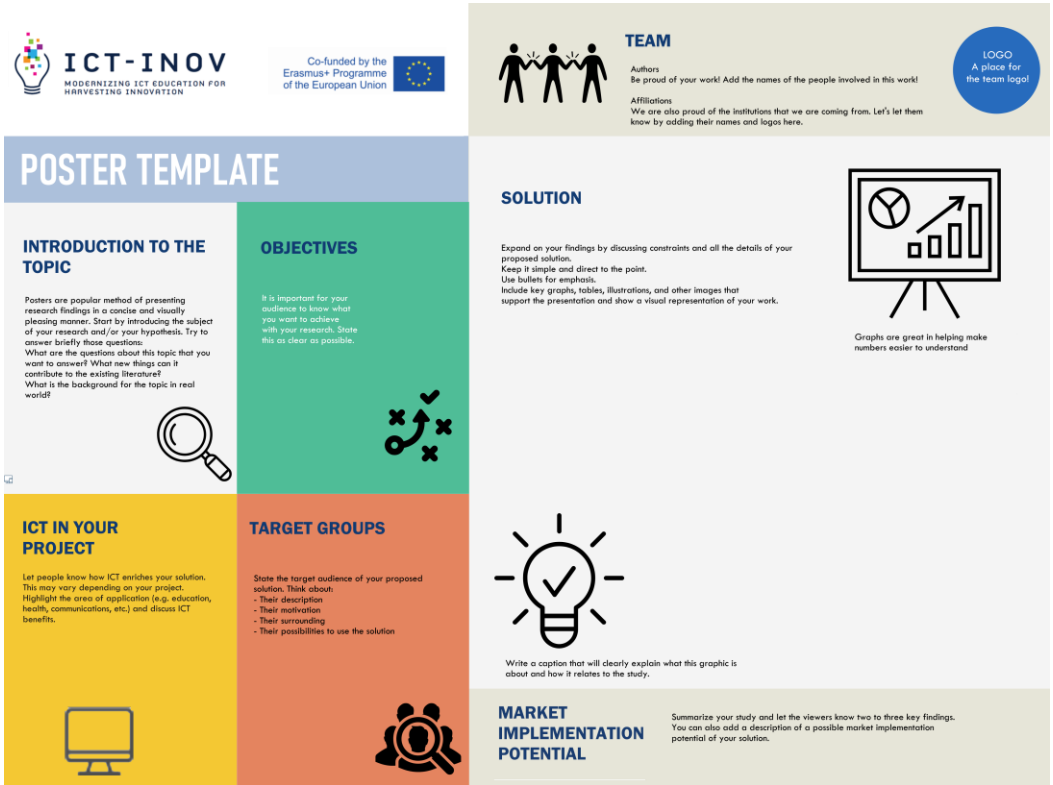
YOUR IDEA IN A POSTER



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MODERNIZING ICT EDUCATION FOR HARVESTING INNOVATION

ICT-INOV

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VISION

"**Modernize and internationalize** ICT **higher education**

through a combination of **design thinking and gamification**

for promoting **innovation and entrepreneurial thinking**"

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ICT-INOV

Physical labs

Digital learning services and activities

Instructor training

Community building

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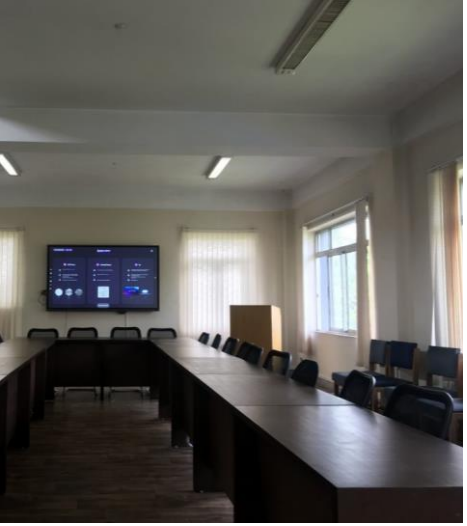

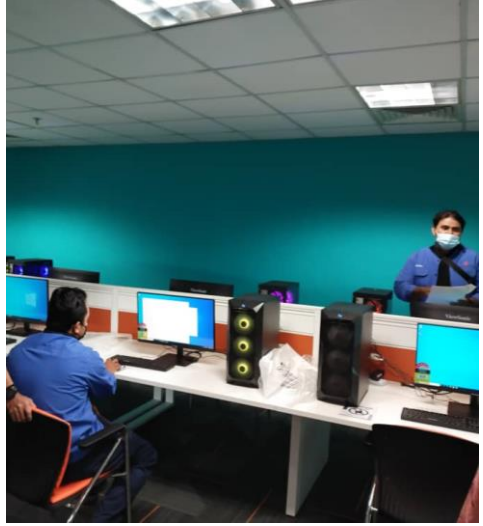

ICT-INOV
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EARLY LABS

Hanoi University, Vietnam

JVN, Vietnam

University Tenaga Nasional, Malaysia

University of Malaya, Malaysia

Tribhuvan University, Nepal

Kathmandu University, Nepal

ISRA University, Pakistan

NUCES, Pakistan

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THE USER EXPERIENCE

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EXPERIENCE ECONOMY

Once their basic needs are met, people look for **meaningful experiences**

This explains the boom of the service industry in the western world

Many offerings are not on basic needs: movies, video games, gourmet restaurants

An experience is something deeper

- Listening to your child sing the Little Mermaid is not about entertainment
- Walt Disney has made this an art: while visits may be stressful, people remember them as happy experiences

The experience economy represents a **shift from the functional to the emotional**

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THE NEW SOCIAL CONTRACT AND DESIGN ACTIVISM

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SOURCES

Change by Design, Tim Brown

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