

## Ganpat University – Institute of Computer Technology

Course on: Entrepreneurship Development (2HS309)

{ Unit 2: Session 4 }

# Design Thinking

{ Strategic Approach to Innovation & Creating Start-up }

By Karmjitsinh Bihola,

Founder, Innodesk Designovation Services

Design Thinker, Innovation Strategist, Start-up Ecosystem Enabler

एक कदम #आत्मनिर्भर भारत की ओर...

11<sup>th</sup> August, 2021 | 8.10 to 9.00 AM



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# About INNODESK

Design Thinking | Innovation | Entrepreneurship | Emerging Technologies

## AatmaNirbhar Bharat, NEP 2020

Aims to nurture and enhance creativity, problem solving and innovation

## various flagship programs and custom-made courses

Design Thinking, Creativity & Innovation, Entrepreneurship and Emerging Technologies

## Practical, Hands-on, Experiential Learning

To empower individuals & teams of multidisciplinary for development of Mindset, Attitude & skills



'design driven' innovation strategy firm

To foster entrepreneurship, intrapreneurship and 21<sup>st</sup> Century skills

inspired by **human-centred design**

Businesses today not only focusing on functional and aesthetics aspects of products/services but on emotional, social and symbolic aspects too.

**highly reputed and educated mentors**

From diverse fields to scale ideas into real marketable products; hand holding by 1:1 mentoring & domain specific guidance

# KARMJITSINH BIHOLA

*Founder,*  
**INNODESK**  
**Designovation**  
**Services,**  
**Ahmedabad.**



Engineer (BE Mechanical, 2008)

Designer (MS – Design, USA, 2011)

Entrepreneur (INNODESK, 2020)

Design Thinking Trainer, Facilitator & Practitioner

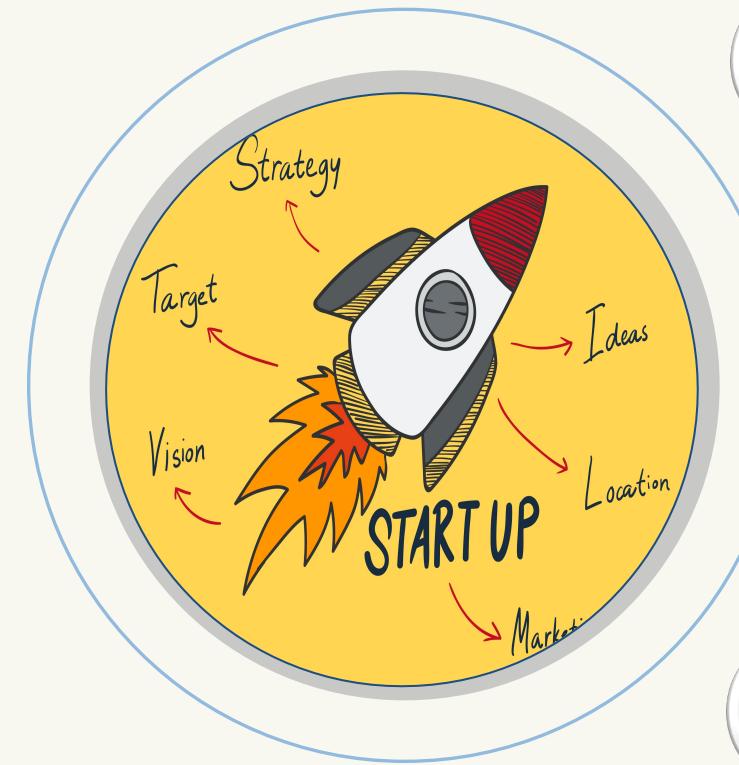
**Mentor of Change (MoC)** for ATL, Atal Innovation Mission, NITI Aayog, MHRD

Mentored **100+ Start-ups** & Trained more than **4500 faculty members**

Delivered **400+ workshops** and training programs



# Course Learning Objectives



**1 Entrepreneurship: WHY, WHAT, HOW**

**2 Understanding Entrepreneurial Journey**

**3 Idea Generation, Business Model & Process**

**4 Company Structures, Operations and Legal**

**5 Develop a Mindset, Attitude, Skills**

# Course Modules

- Entrepreneurial Mindset, Needs of Innovation & Entrepreneurship
- Design Thinking Approach:
  - Problem Identification - Business Goals & Opportunity Discovery
  - Problem Solution: Ideation, Prototyping and Testing your Solution
- **Value Proposition & Business Model**
- Types of Funding, Investment Strategy, Government Schemes
- Introduction to Economics and Market Dynamics
- Legal Aspect: Company Structure, HR, Operational, Accounting
- Marketing & Sales Plan, Quality assurance
- Branding and Social media (Digital) marketing
- Startup Pitch

# 3 REASONS WHY INNOVATION IS IMPORTANT



# WORLD needs it.....



# From DESIGN to DESIGN THINKING

from

**MAKING  
PEOPLE  
WANT  
THINGS**



to

**MAKING  
THINGS  
PEOPLE  
WANT**

From **Aesthetics, Functional** to **Experience**

# INDUSTRY need it.....



YOU.....need it.....ME



## 21st-Century Skills

### Foundational Literacies

How students apply core skills to everyday tasks



1. Literacy



2. Numeracy



3. Scientific literacy



4. ICT literacy



5. Financial literacy



6. Cultural and civic literacy

### Competencies

How students approach complex challenges



7. Critical thinking/problem-solving



8. Creativity



9. Communication



10. Collaboration

### Character Qualities

How students approach their changing environment



11. Curiosity



12. Initiative



13. Persistence/grit



14. Adaptability



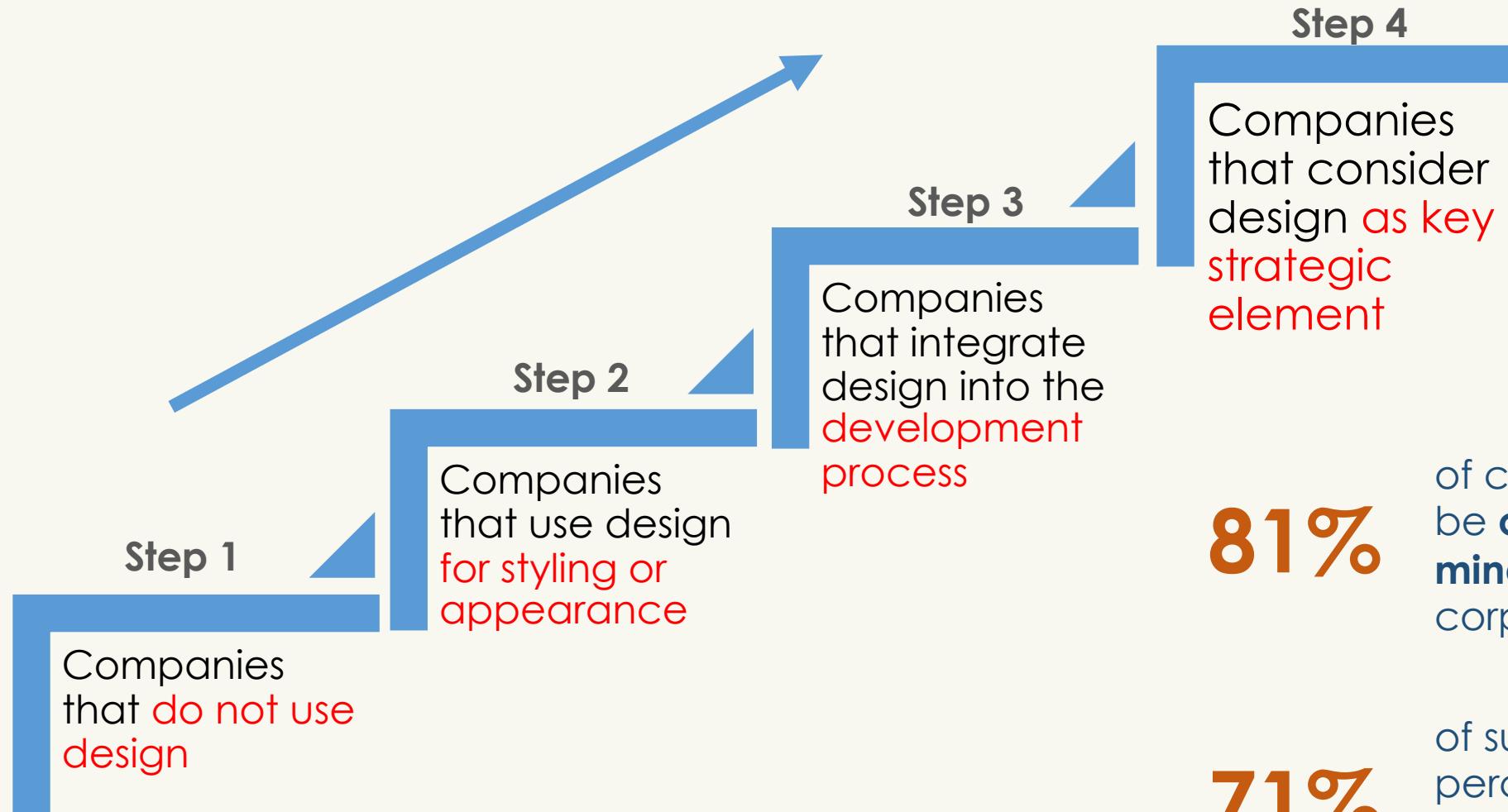
15. Leadership



16. Social and cultural awareness

Lifelong Learning

# Innovation Ladder



81%

of companies say they would be **open to a design thinking mindset** in the context of corporate strategy

71%

of suitably **trained employees** perceive that design thinking has improved the **working culture**

Google



SAMSUNG



Microsoft

3M



IBM

P&G

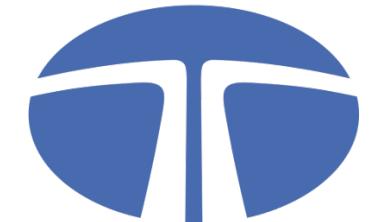


**Infosys®**

**FCBULKA**



**LARSEN & TOUBRO**



**TATA**



**PHILIPS**



**PEPSICO**



**mahindra**

WHAT IS  
DESIGN THINKING

“

Innovation is NOT eureka moment.

It is a **structured and thoughtful process.**

That process is called **Design Thinking.**

”

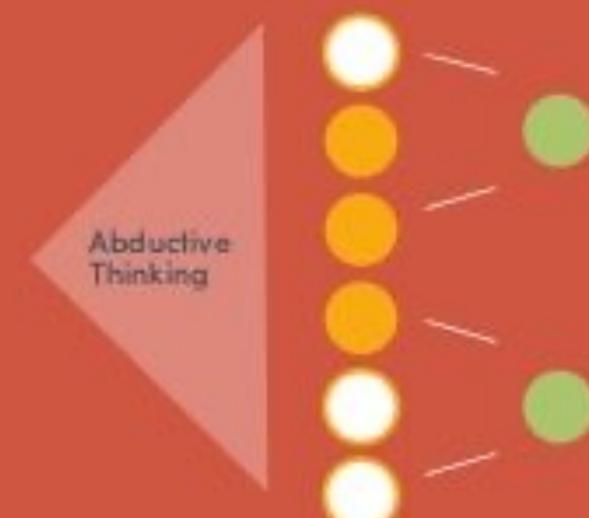
# Business Thinking

Problem      Solution



# Design Thinking

Understand      Problem      Solution



# Traditional Thinking vs Design Thinking

## Traditional Thinking

What is the **RIGHT ANSWER**

Repeatable, proven

**THINK** for Insight

**TELL** more

Design **FOR**

## Design Thinking

What is the **RIGHT QUESTION**

Intuitive, Creative

**BUILD** for Insight

**LISTEN** more

Design **WITH**

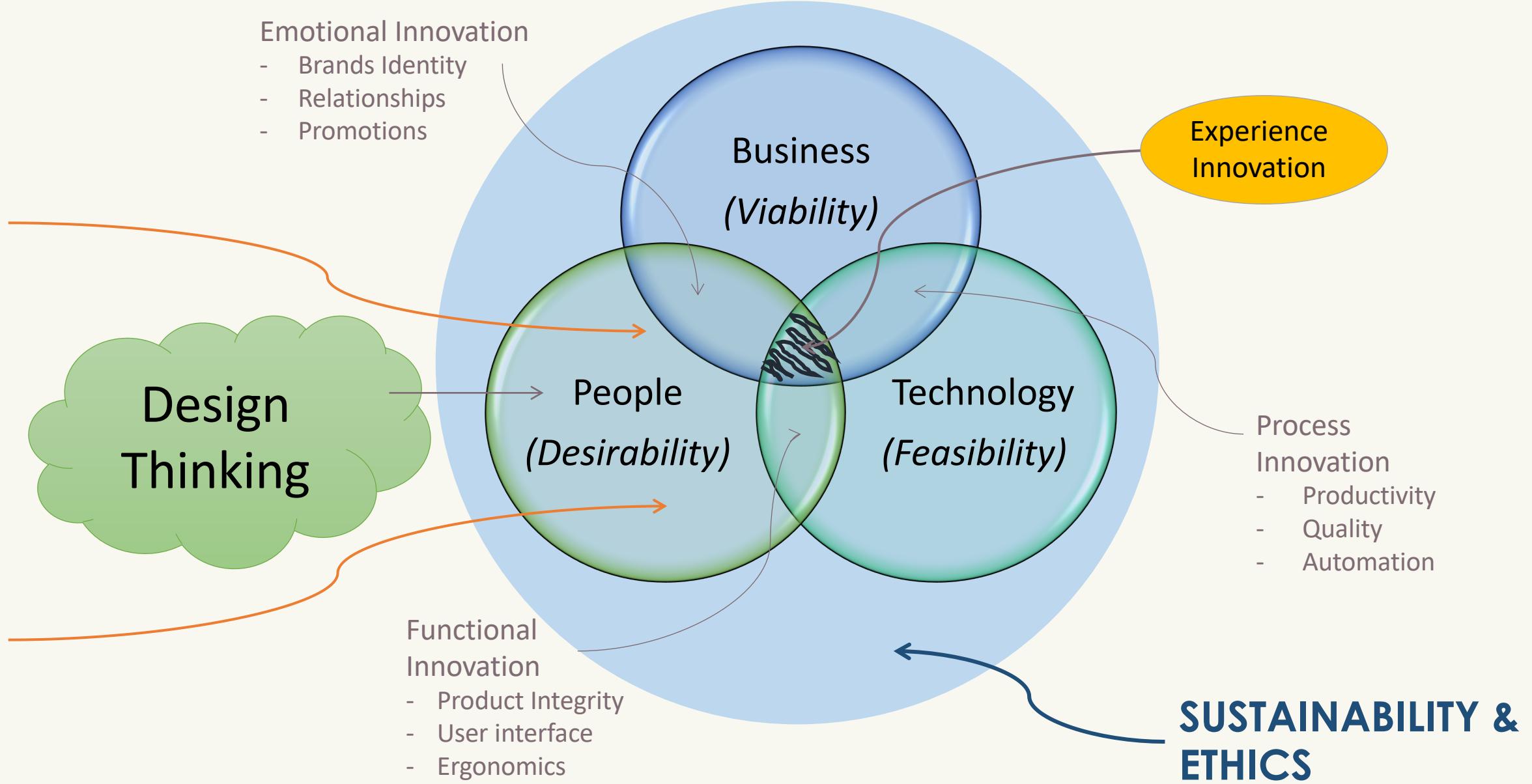
# Design Thinking is....

- ✓ **Mindset of creative process** for Problem Solving
- ✓ **Divergent – Convergent/Analysis - Synthesis**
- ✓ Calls for a deep understanding of **user's emotional needs**
- ✓ **Multidisciplinary approach**
- ✓ Seeing **Problems as Opportunities**
- ✓ Failure should be celebrated (**Build-Test-Fail-Iterate**)
- ✓ Can be applied to almost **any field**
- ✓ **Contextual approach** (not a template based)

“Design Thinking  
is a **human-centered** approach to innovation  
that draws from the designer's toolkit to  
integrate  
the **needs of people**,  
the **possibilities of technology**,  
and the **requirements for business success**.”

— *Tim Brown, President And CEO Of IDEO*

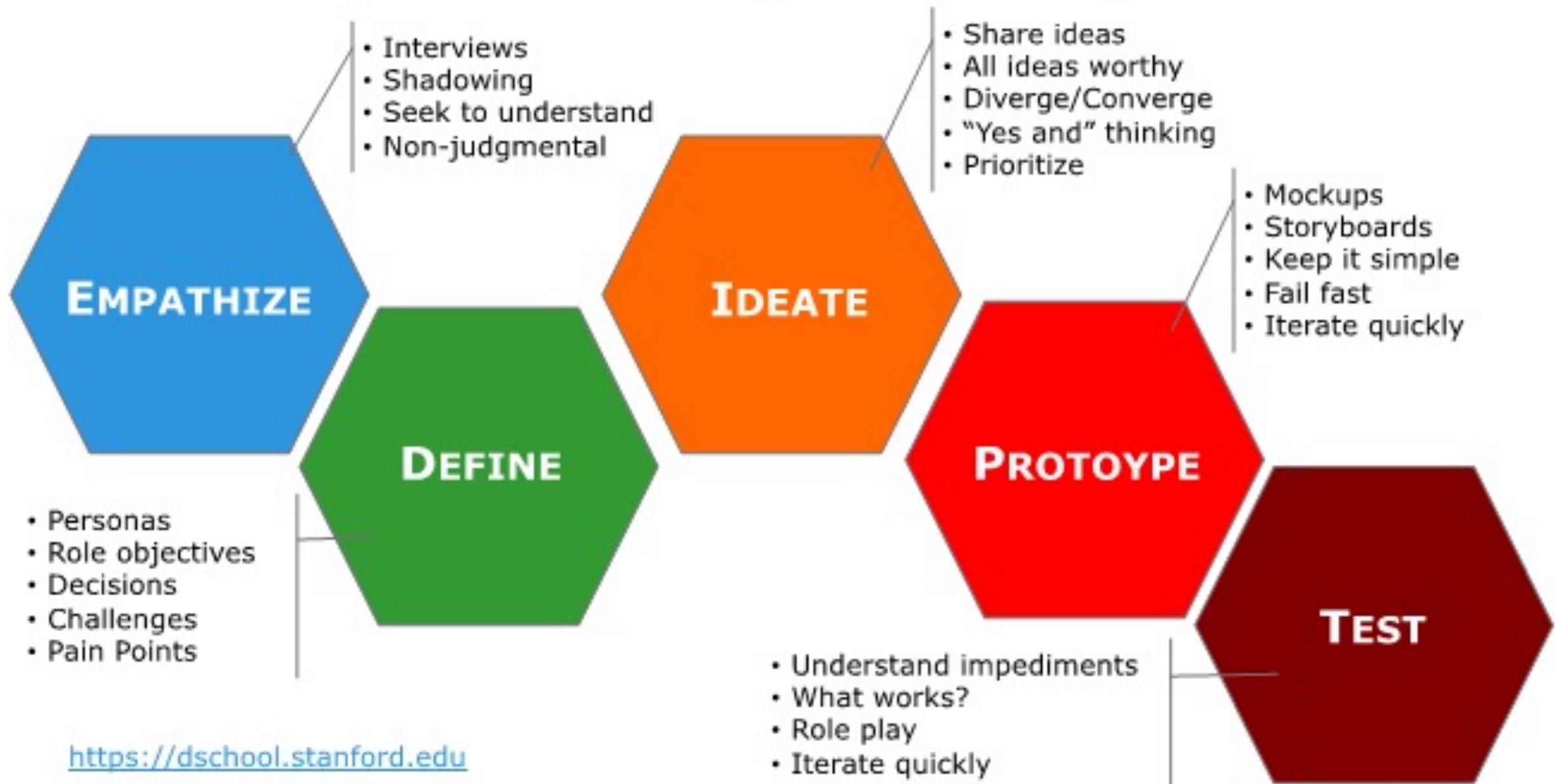
*Source: <http://www.ideo.com/pages/design-thinking>*



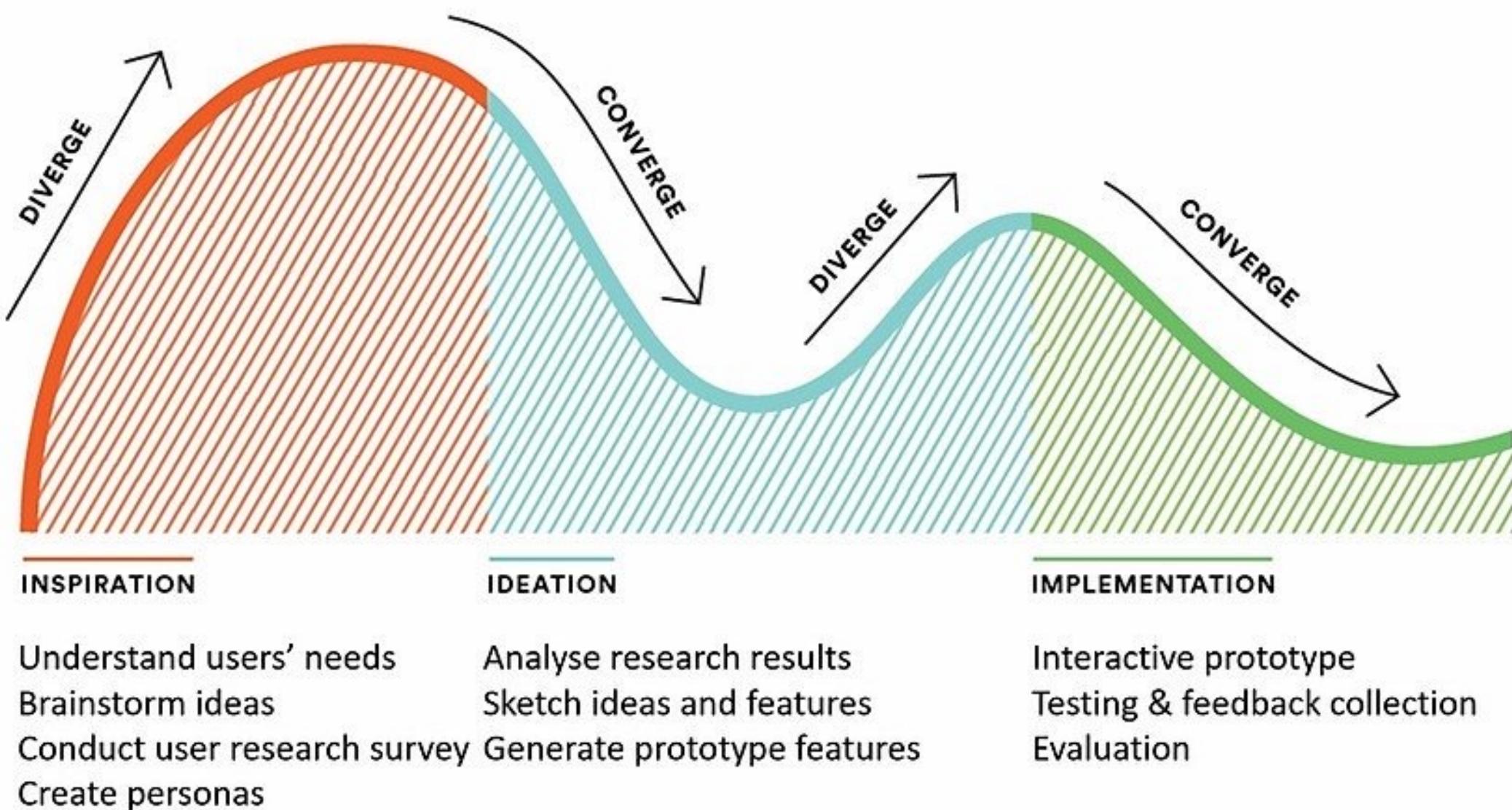
# DESIGN THINKING

VARIOUS MODELS GLOBALLY

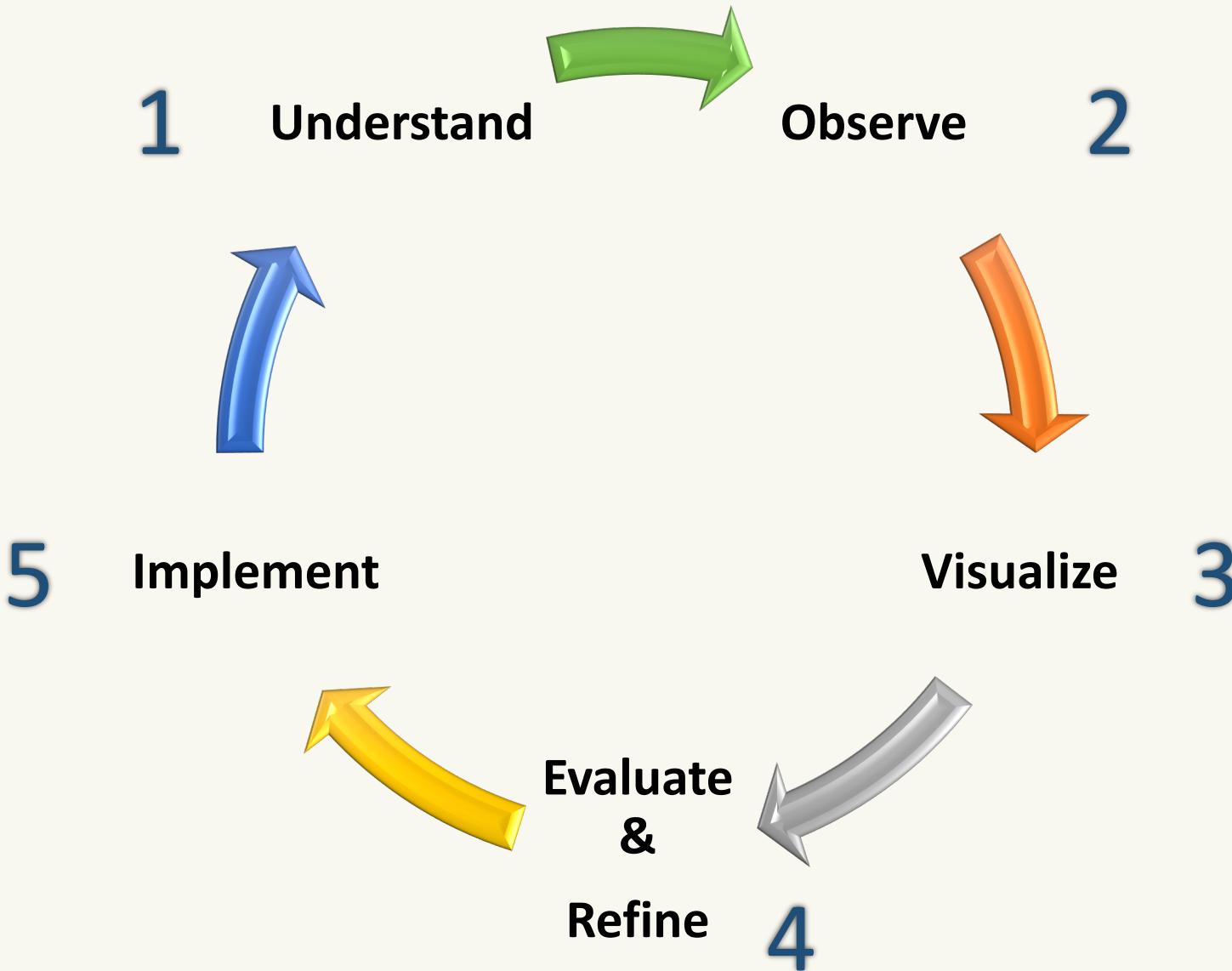
# Stanford d.school Design Thinking Process



# IDEO Design Thinking Process



# MIT Approach : Starts with Product



# SAP Approach

## OUR APPROACH

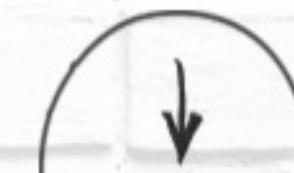
Explore & Empathize



Generate ideas,  
make connections



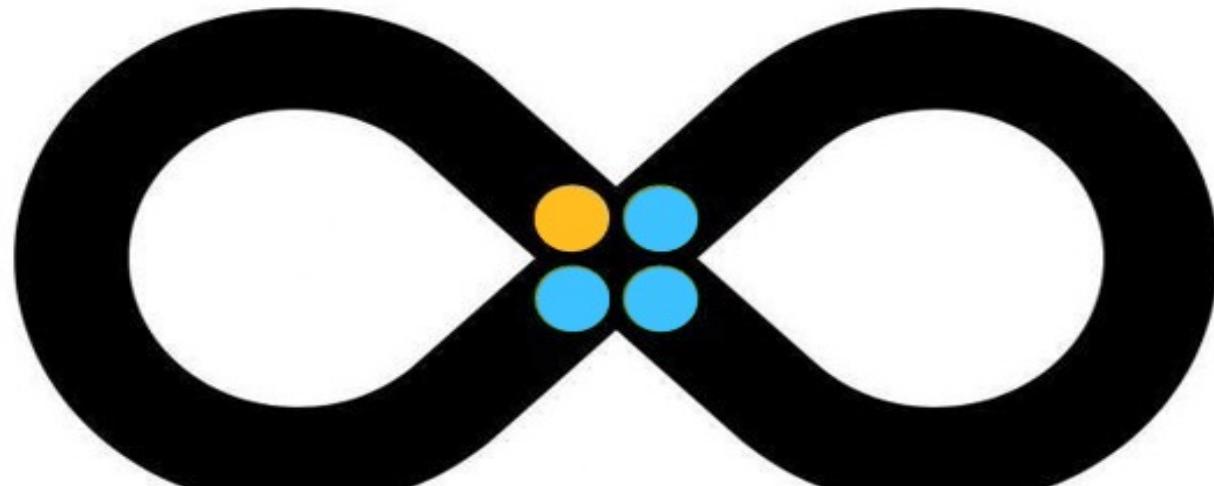
Try, experiment, prototype



# IBM Approach

## The Loop

Understand user's needs and continuously deliver outcomes



OBSERVE

REFLECT

MAKE



### A focus on user outcomes

When using IBM Design Thinking, put your users' needs first



### Multidisciplinary teams

Collaborate across disciplines to move faster and work smarter

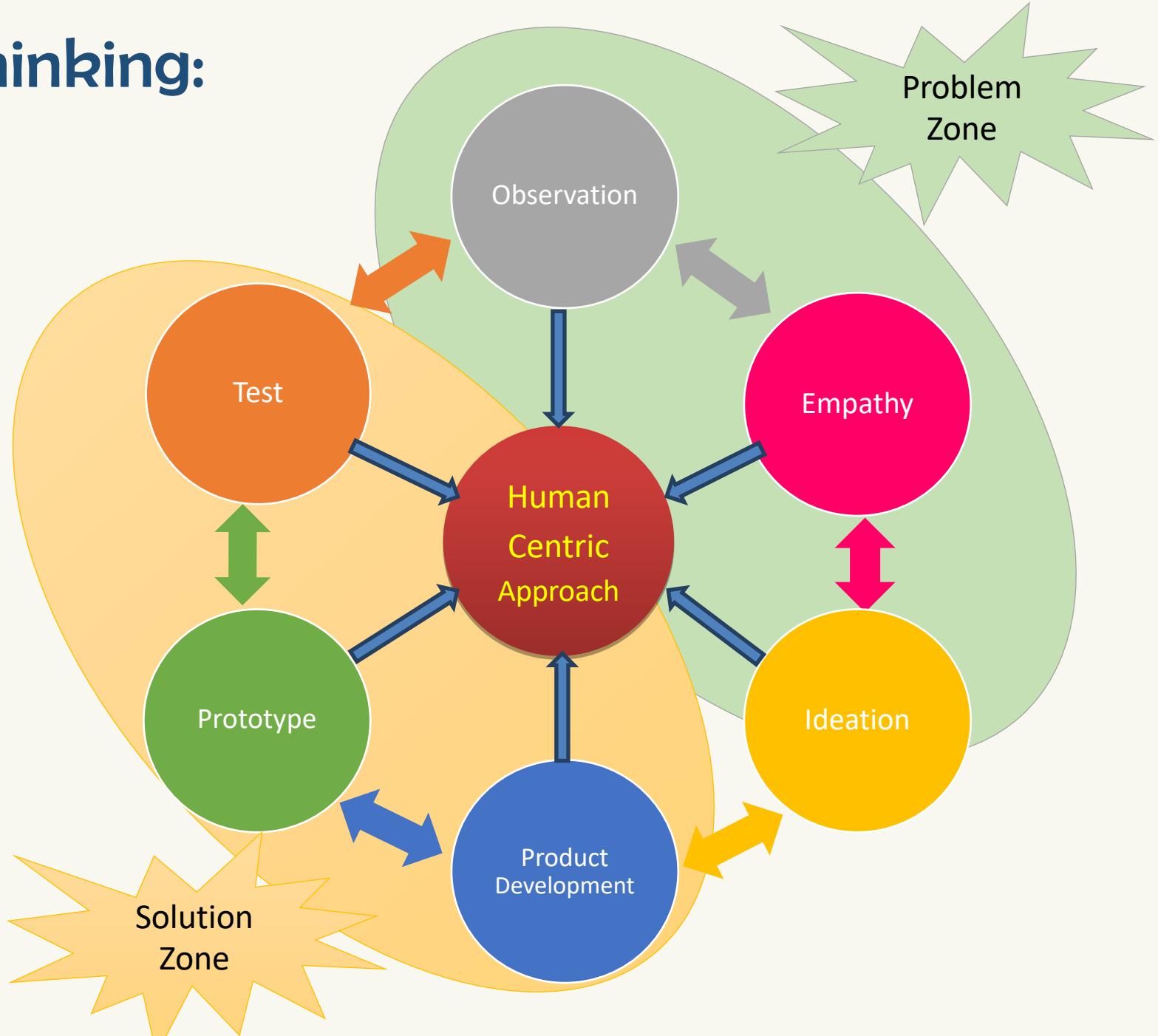


### Restless reinvention

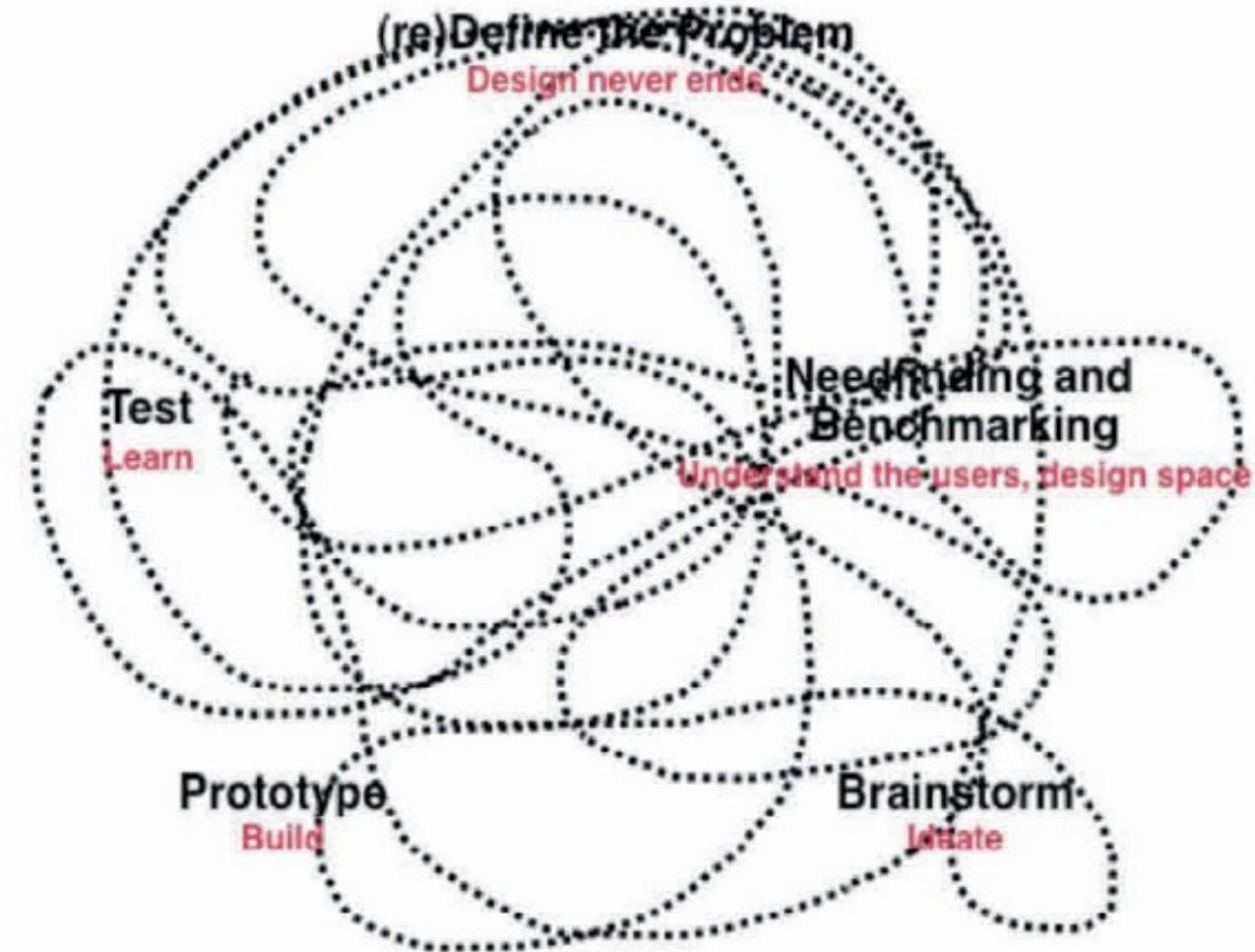
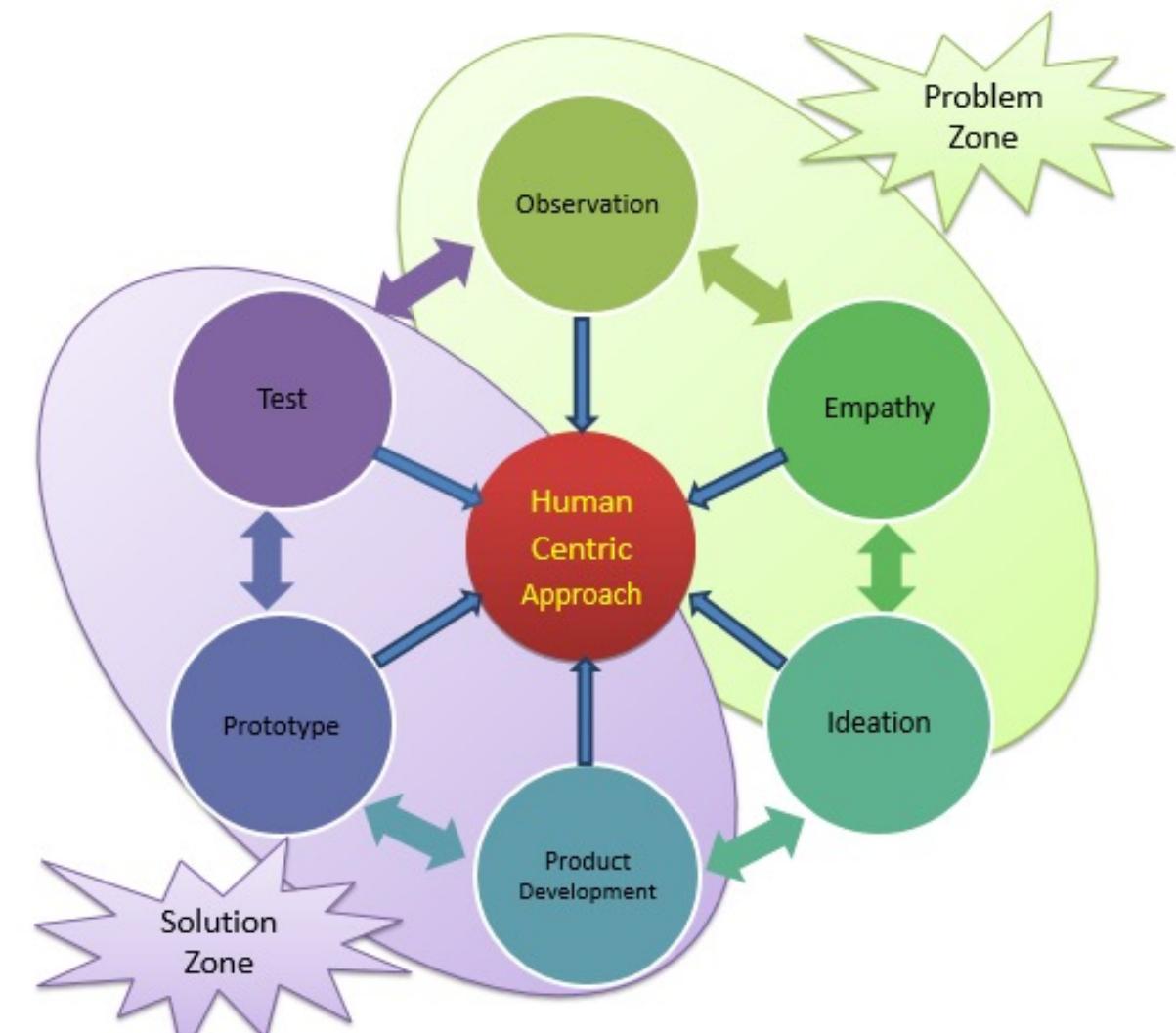
Everything is a prototype. Listen, watch, learn and correct

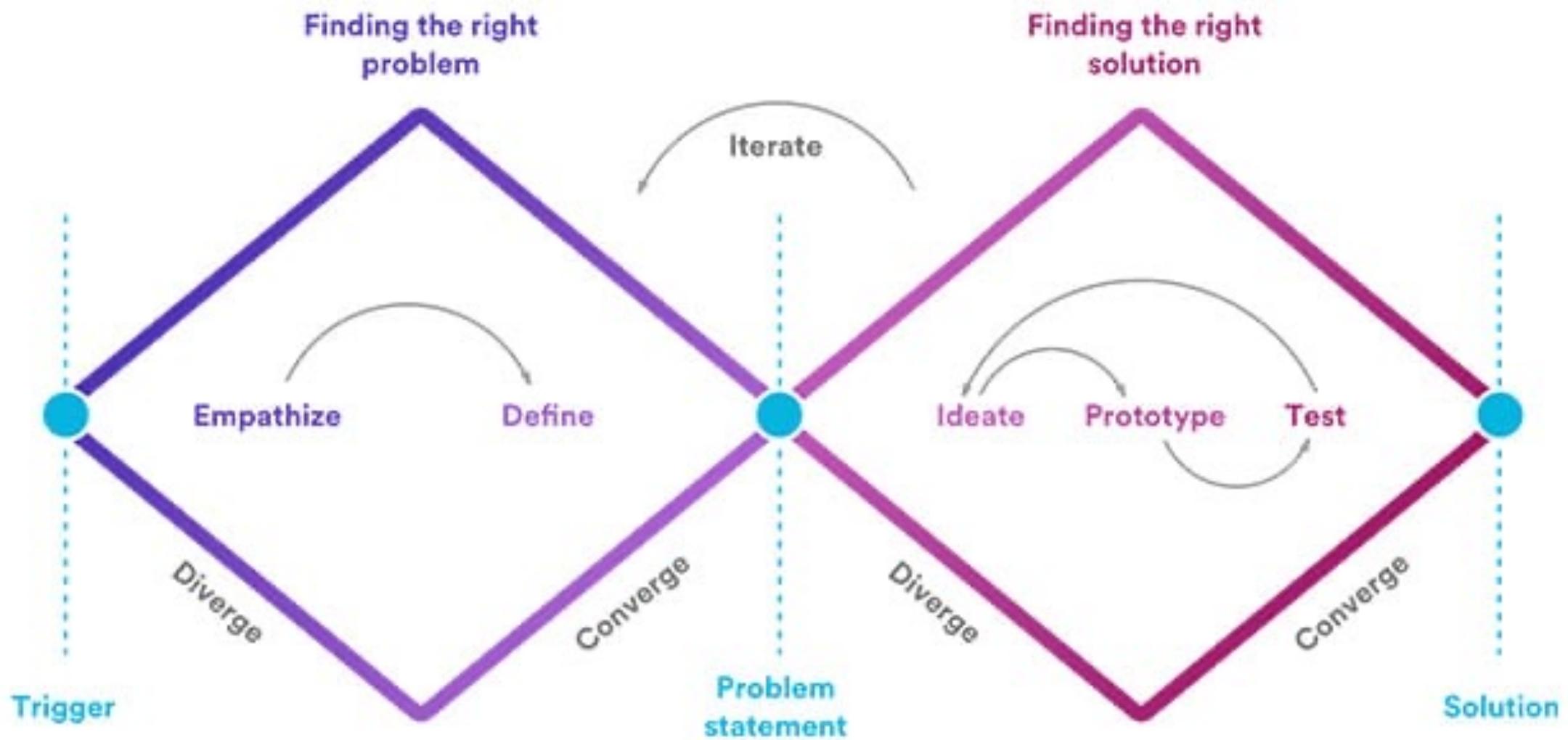
# INNODESK Design Thinking:

## Modes/Phases



# Theoretical v/s Real process flow





The **double-diamond process**, initially introduced by **The Design Council in 2005**, and adapted by ICF International.

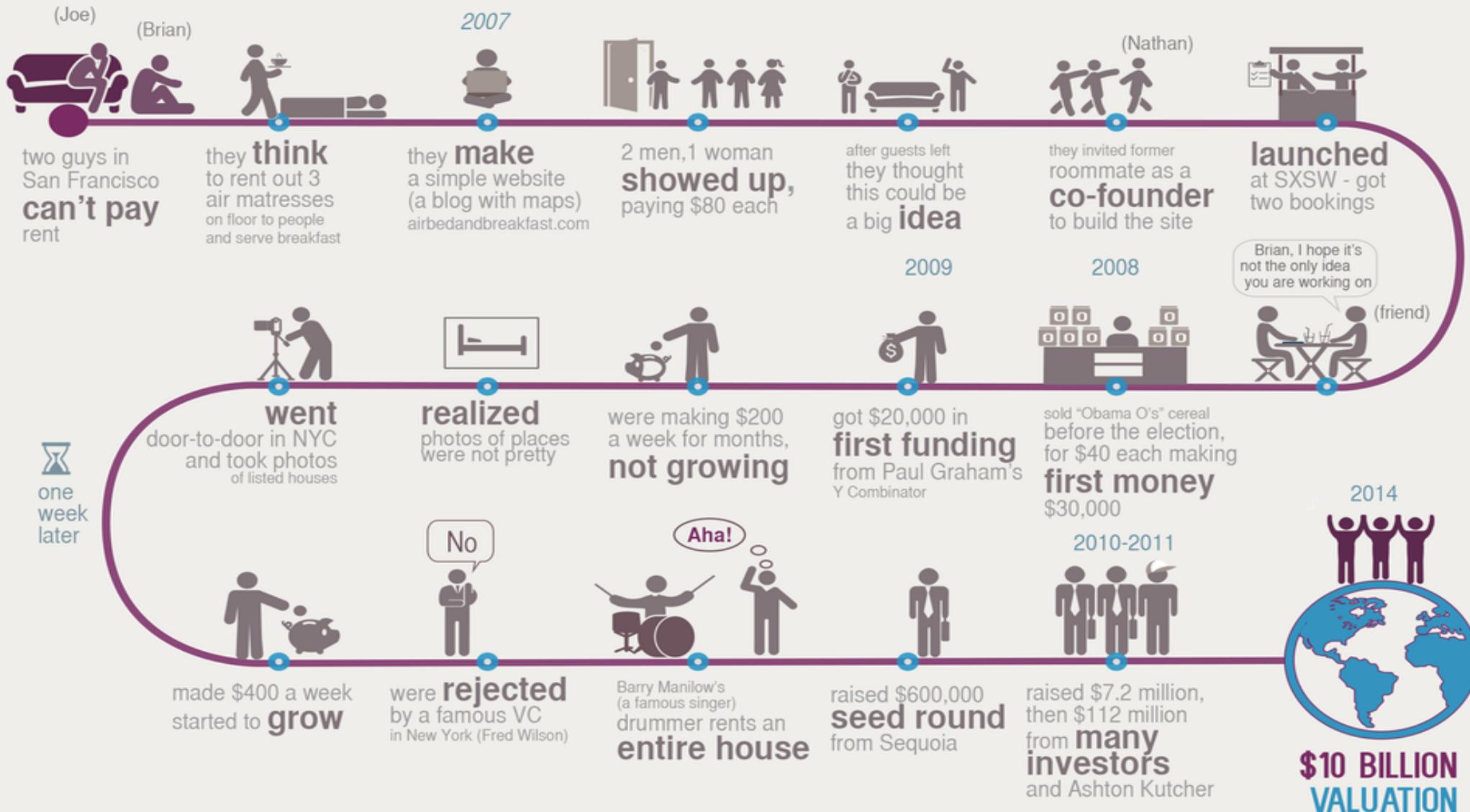
## Case Study:

How *Design Thinking* Transformed **Airbnb** from  
a **Failing Start-up** to a **Billion Dollar Business.**

# HOW AIRBNB STARTED

Or How 3 Guys Went From Renting Air Mattresses To A 10 Billion Dollar Company

BY ANNA VITAL



# What comes first?



Product

OR



Customer

## **Customer Needs....always comes first**

# Main reasons of startup businesses failures

According to CB Insights research report.

- 1. No market need - **42 %**
- 2. Ran out of cash - **29 %**
- 3. Not the right team - **23 %**
- 4. Got outcompeted - **19 %**
- 5. Pricing/Cost issues - **18 %**
- 6. User unfriendly product - **17 %**
- 7. Product without a business model - **17 %**
- 8. Poor marketing - **14 %**
- 9. Ignore customers - **14 %**
- 10. Product mistimed - **13 %**



# Design Thinking Project (20 Marks)

**Team Formation:**

Group of 6-7

**Domain Selection:**

Select an organization/location/scenario/area of  
your interest

You may also select START-UP idea



Observe  
your surroundings  
&  
Identify  
Opportunities.

# There are 3 types of problems

1

Known knowns

You know how to solve them

2

Known unknowns

You know ways to find out, how to solve them

3

Unknown unknowns

You don't know how to solve them because you don't know the **root cause**

# There are 3 types of problems

1

Known knowns



**Bad weather during flight.  
Switch off Auto Pilot.**

**Required activities:**  
Execution &  
Implementation

**Required Mindset**  
Checklist Thinking

2

Known unknowns



**My smartphone crashed.  
How can I fix this?**

**Required activities:**  
Search, learn, sort, solve

**Required Mindset**  
Analytical Thinking

3

Unknown unknowns



**Customer ignores my products.  
How can I understand why?**

**Required activities:**  
**Immersion, Engagement**

**Required Mindset**  
**Design Thinking**

# OBSERVATION & EMPATHY

DESIGN RESEARCH : PROBLEM IDENTIFICATION

# EMPATHIZE

OBSERVE

- Observing users' action and hypothesizing why they are acting a certain way
- Generate the questions like – What, Why, When, Where, How.....

IMMERSE

- Become the user and live their experience by Role Playing
  - Shadowing user
  - Camera study

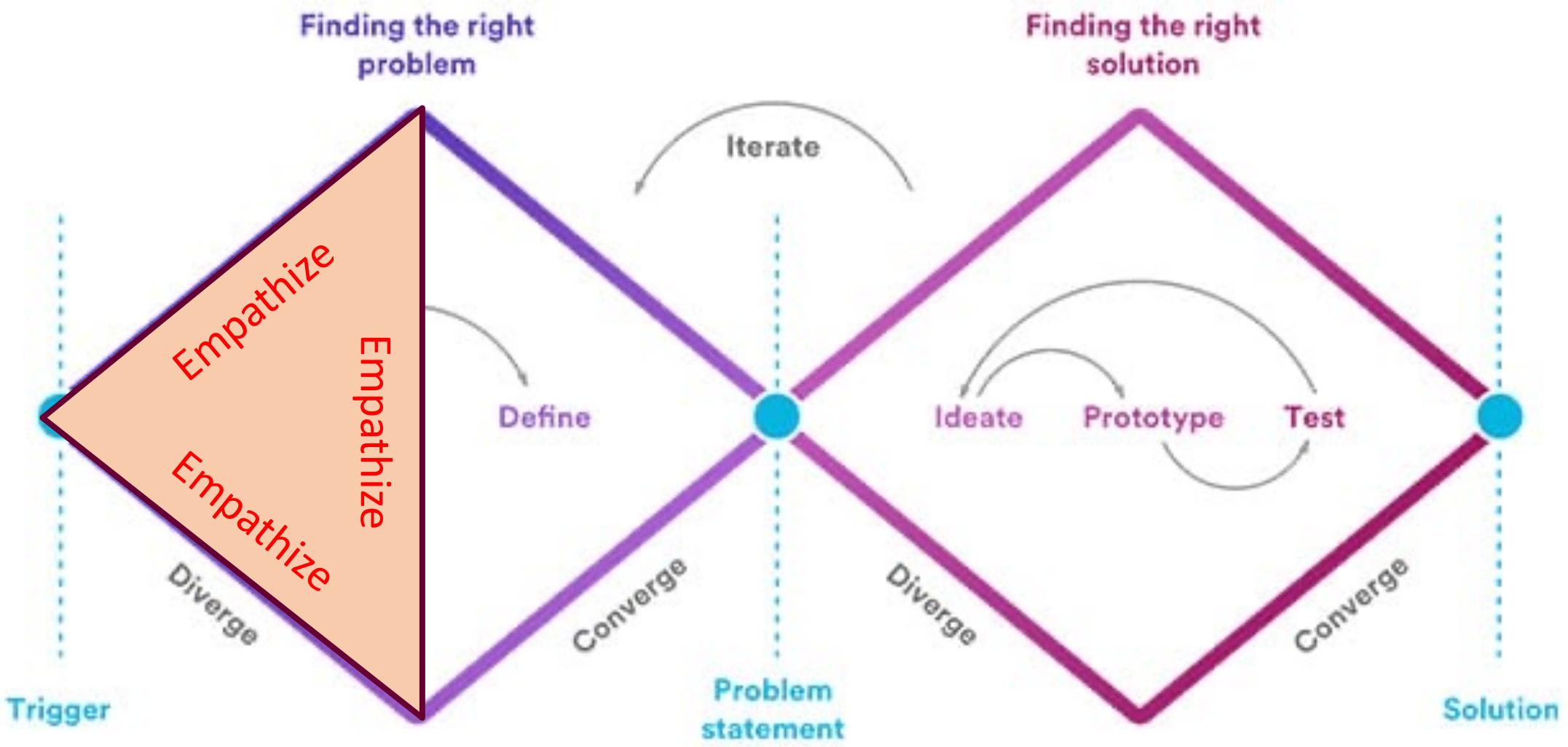
ENGAGE

- Interacting with User/Industry people about their products, processes and all related queries
  - Visual & Verbal
  - Formal & Informal Interviews

To Empathize, one need to have Observation, Immersion, Engagement again and again.

## Traits of Empathetic Person:

Curious, Respect, Observance, Good Listener, Intuition, Emotional Intelligence, Presence of Mind, Open Minded, Kind



*The double-diamond process, initially introduced by The Design Council in 2005, and adapted by ICF International.*

# Research Types

## Primary Research

- Ethnographic Research
  - Observe
  - Interview
  - Immerse

## Secondary Research (Prior Art Search)

- Online research
- Data sets and past facts & figures

# Research Plan :

Keep in mind: When on field to find Problems & Possibilities

**Where** to look for – Select time, place and stakeholder to study

**What** to look for – Capturing individual data points and insights

**How** to look for it – Tools & Techniques

**How** to interpret what you find - Themes & Cluster, Pattern  
Recognition

**Listen** carefully to understand different viewpoints

# Study of AS IS

**Problem / Possibility Finding:** Find answers to these,

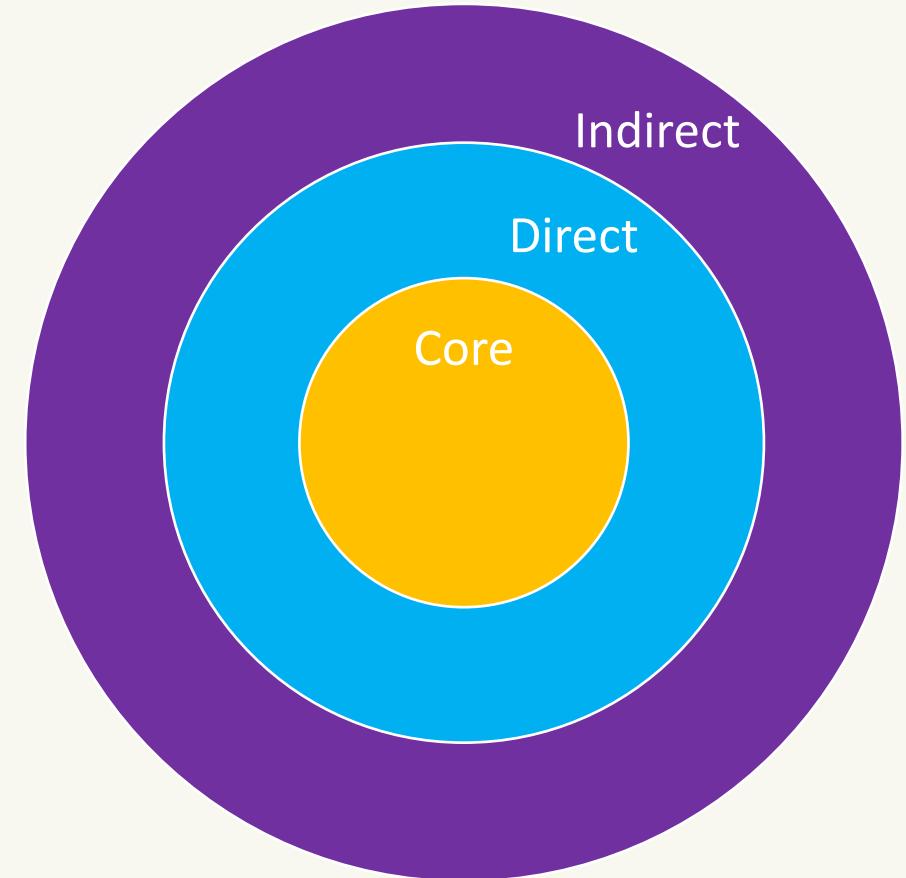
1. Activities in the problem space
2. Existing Systems & Processes, Products used
3. Customer/User Touch Points
4. Technologies/techniques presently being used to make things easy for the Customer
5. Gaps that exist (problems & possibilities) - **INSIGHTS**

# Problem Scenario

## Stakeholder Mapping

Identify,

- Core SH
- Direct SH
- Indirect SH



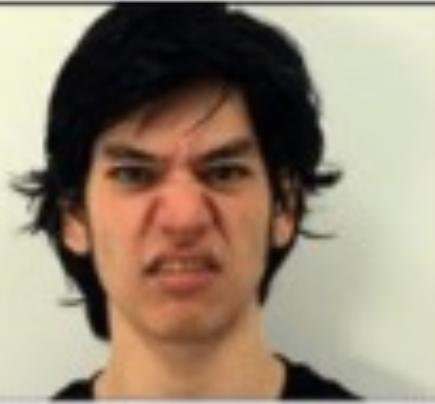
# Observe Expressions/Behaviours



Anger



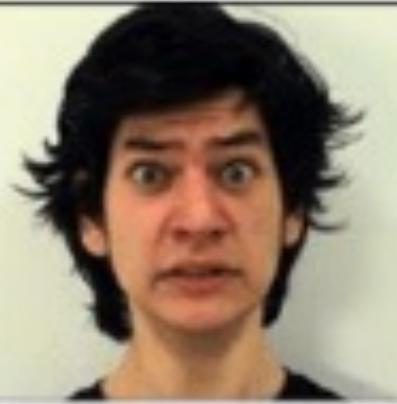
Contempt



Disgusted



Embarrass



Fear



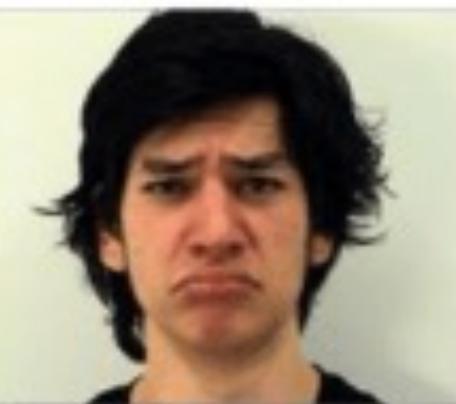
Happy



Neutral



Pride



Sad



Surprised

# Observation tools & frameworks

- Beginner's mindset
- Fly on the wall
- Camera Study
- Shadowing
- **Frameworks:** AEIOU

# Observation helps-

To broaden & perhaps even change the perception of problem or opportunity we are focusing

To uncover the unarticulated needs of user – which are the keys to innovation



Without understanding -  
what people see, feel and  
experience;  
**Design & Innovation is a  
pointless task.**

**“Towards identifying the user’s unarticulated needs”**

# Empathy Vs. Sympathy

## Empathy

- **Experiencing** the feeling of others
- You **have** and **feel** similar experiences
- **Emotions**
- **Observe, Feel** and **Solve** their pain points

## Sympathy

- **Understanding** the suffering of others
- You **acknowledge** another's circumstances
- **Recognitions**
- **See** and **Understand** their sufferings

# Empathy Tools & Frameworks

- 5W & H: Create questionnaire for different stakeholders
- Laddering (Multiple WHYs): for deeper interventions to find root cause
- Persona
- Customer Journey Map
- Empathy Map
- Problem Scenario → Problem Statement

# Persona



Name:

Fictionalize it

Profession:

Be very specific

Age:

Choose a number,  
Not a Range

Personal

BG:

Mini Life Story -  
Hometown, Family,  
Schooling, Work, etc

## INTERESTS:

What does she spend her time on?  
What enlivens her?  
What does she read, watch, ?  
listen to?

## NEEDS:

WHAT does she NEED,  
IN her Life, IN her WORK?  
WHAT's ESSENTIAL for her,  
what does she require?  
WHAT's MISSING?

## VALUES:

WHAT carries MEANING For Her?  
WHAT's her MORAL COMPASS?  
WHAT makes her INDIGNANT,  
SATISFIED, FRUSTRATED?  
WHAT does she WANT for the World?

## POWERS:

What Resources does she control?  
What can she do, muster?  
Who does she have INFLUENCE OVER?

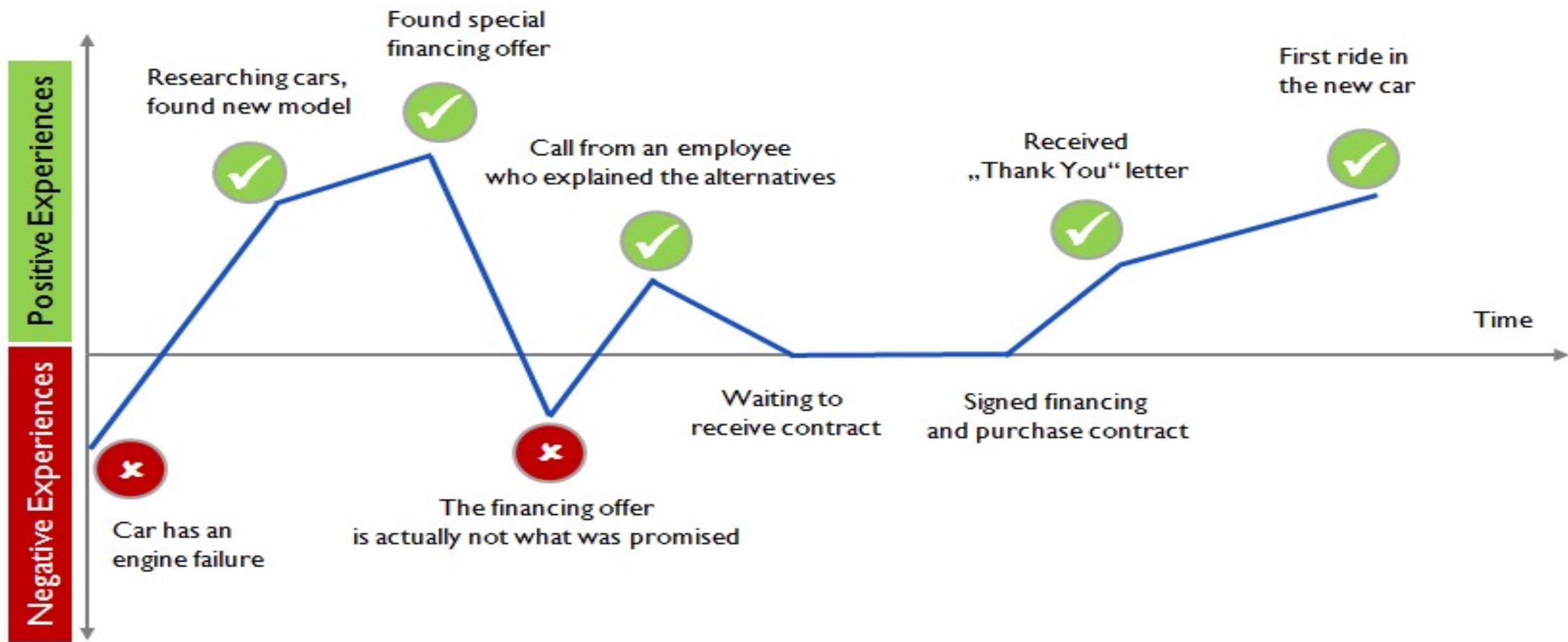
## BEHAVIORS:

WHAT ARE her  
ROUTINES ↗  
BUYING  
Free Time  
Rituals

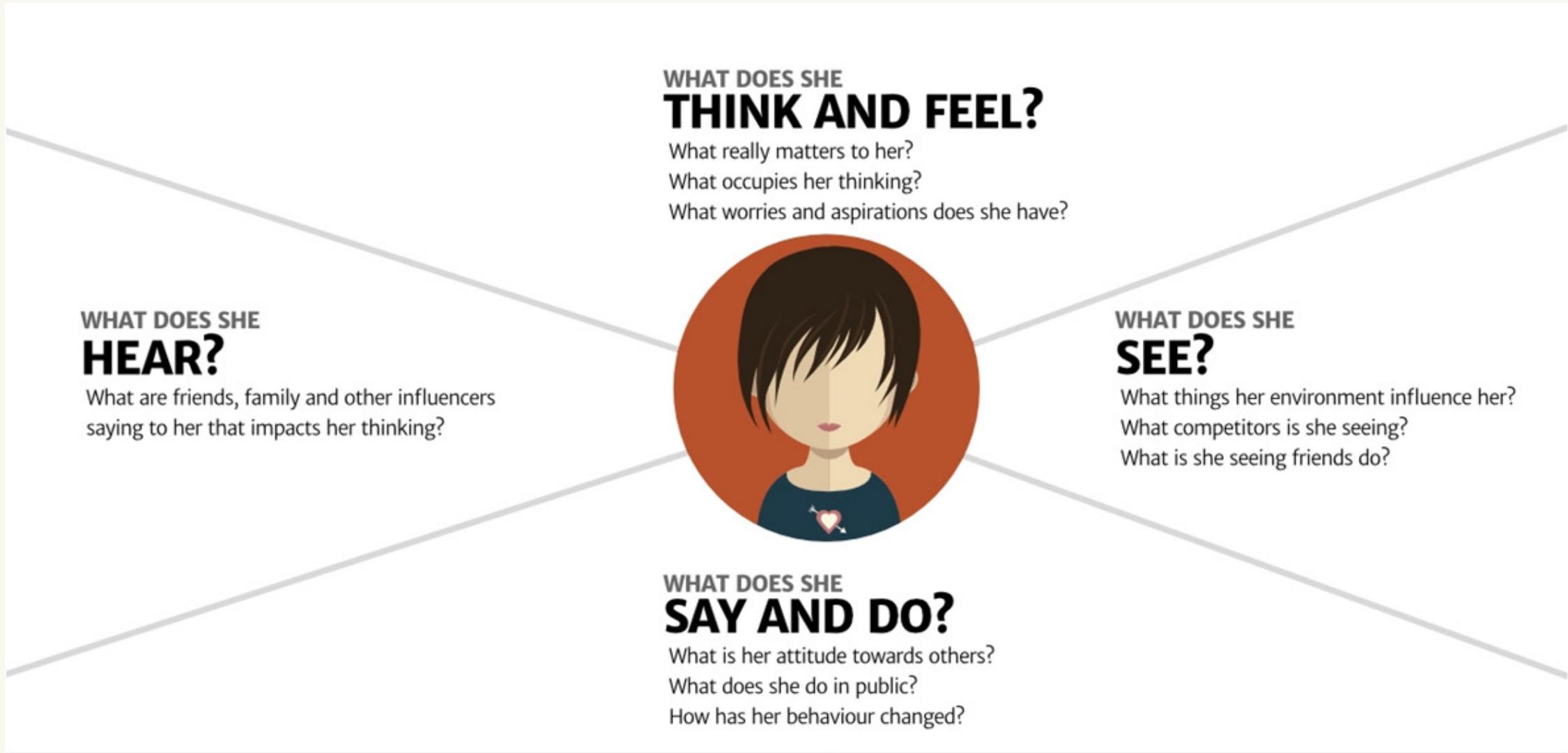
## ASPIRATIONS:

WHAT KIND of PERSON  
DO THEY WANT to BE?  
BRANDS?  
SPENDING Patterns?  
Life Dreams? Heroes?  
Role Models?

# Customer Journey Map



# Empathy Map

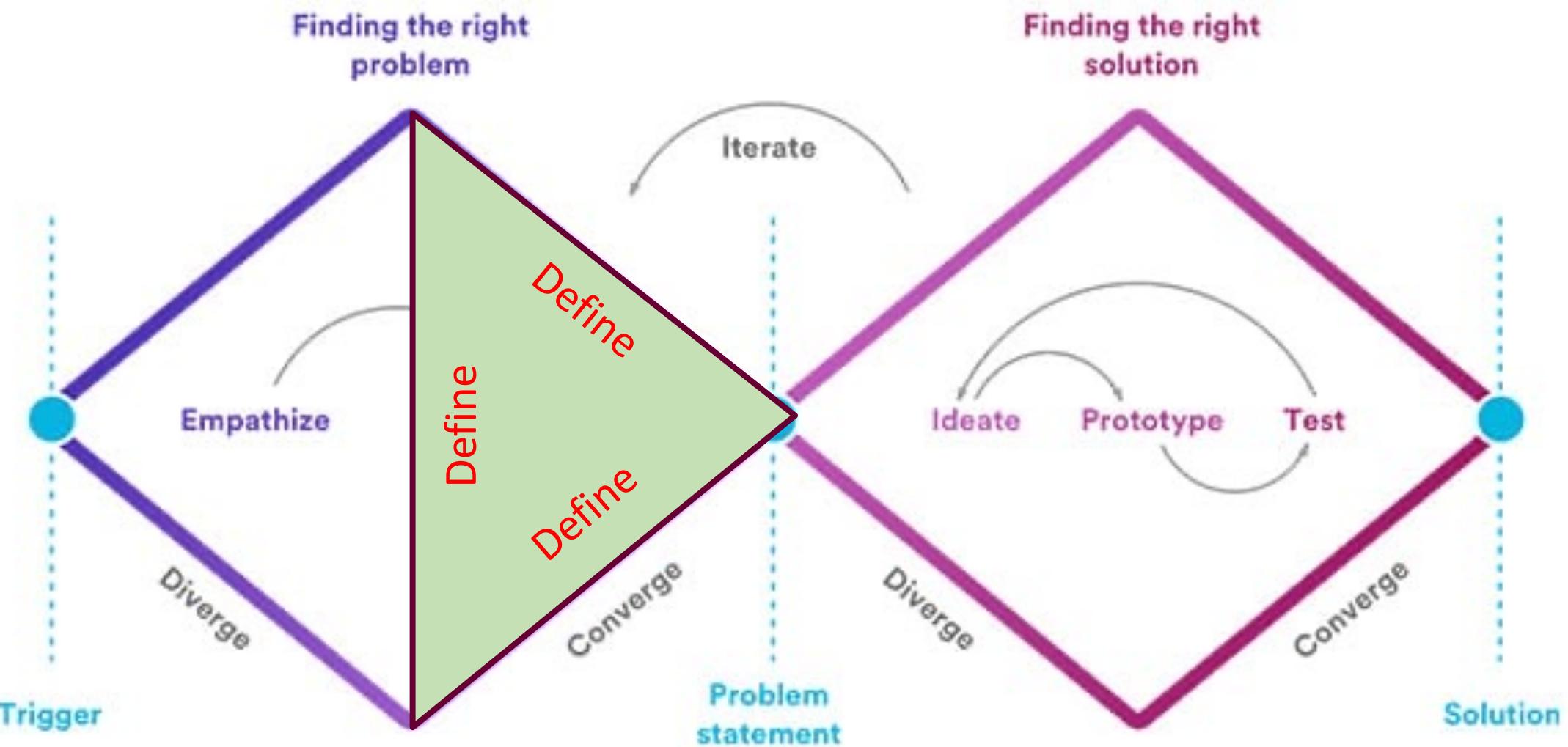


## PAIN

What fears, frustrations or obstacles is she facing?

## GAIN

What is she hoping to get? What does success look like?



*The double-diamond process, initially introduced by The Design Council in 2005, and adapted by ICF International.*

# Sharing Insights with Group

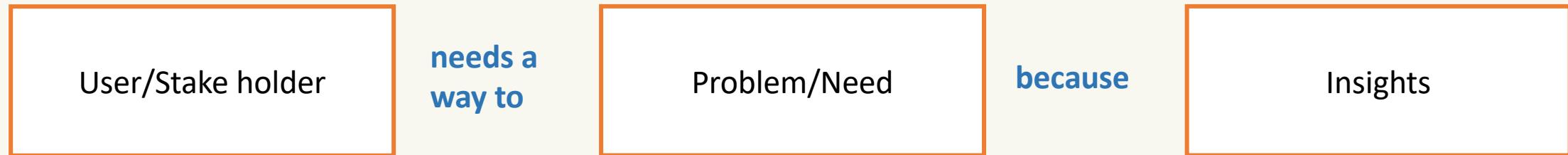
- Share individual data points and insights with others
- Put all data points and insights on big canvas
- Cluster similar data points – Themes and Pattern
- Map the hidden insights and identify problems

# HOW MIGHT WE

These three little words point the team in a direction that is:

- ✓ Solution-oriented (How) {Triggers action}
- ✓ Optimistic (Might) {We are still exploring and not defined things}
- ✓ Collaborative (We) {Engages all stake holders & team members}

# Problem Articulation



## Example.

### Persona

Laxman who is a middle aged man with low income

needs a way to

### Need (Verb)

To be more aware of cheaper options for health treatment

because

### Insights

He is worried of will he mange such expenses

UNLEASHING CREATIVITY

# IDEATION

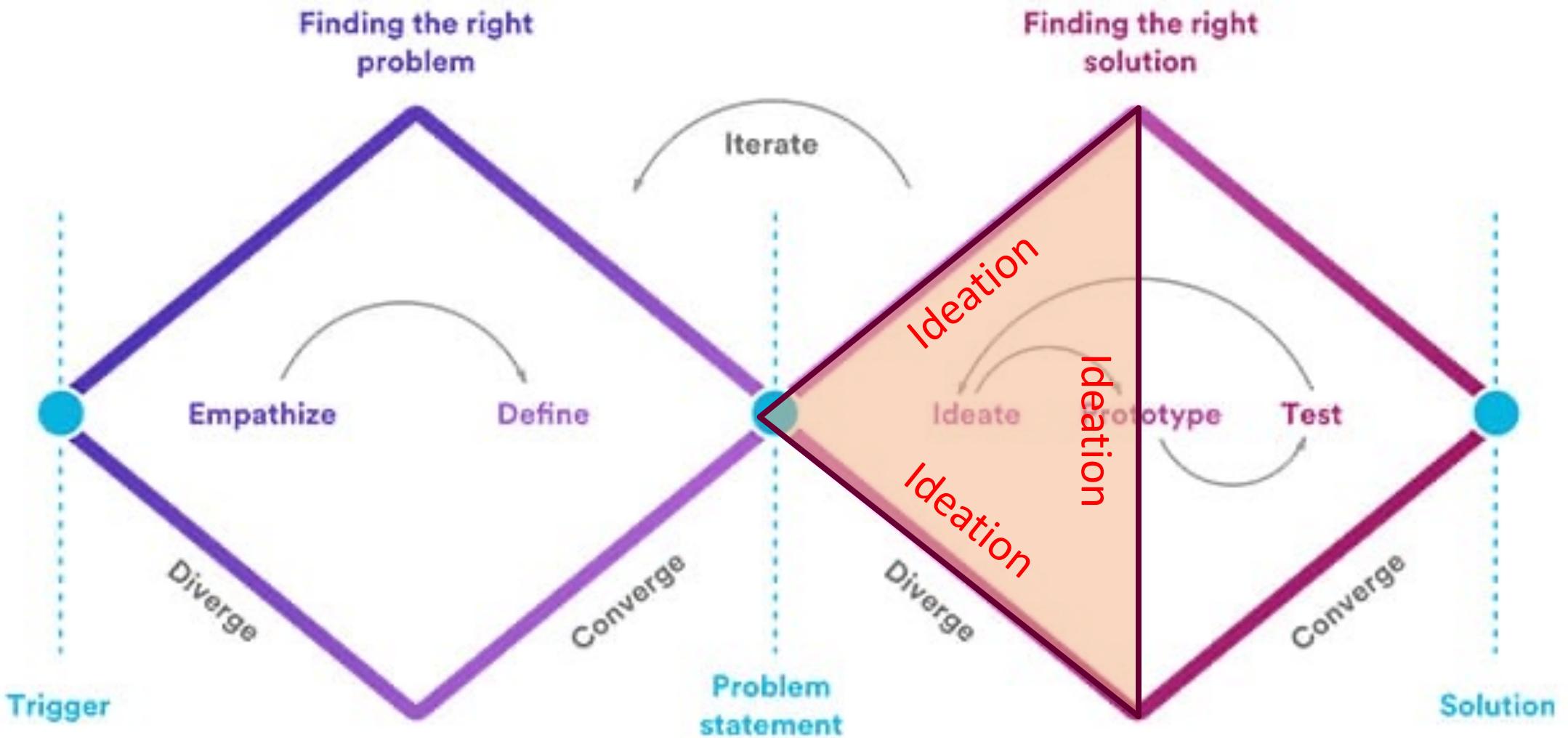
- BUILDING A CREATIVE CONFIDENCE -

# I have an IDEA

“

- What does it **look** like?
- What **problems/pain points** do I solve?
- How do I **convert** it into solution?
- Do **customers** want it?
- How do I get **funding**? How much?
- Is it right for my **business**?

”



*The double-diamond process, initially introduced by The Design Council in 2005, and adapted by ICF International.*

# **IDEATION (Idea + Innovation)**

is creative process of  
**GENERATING IDEAS.**

## **What is an IDEA?**

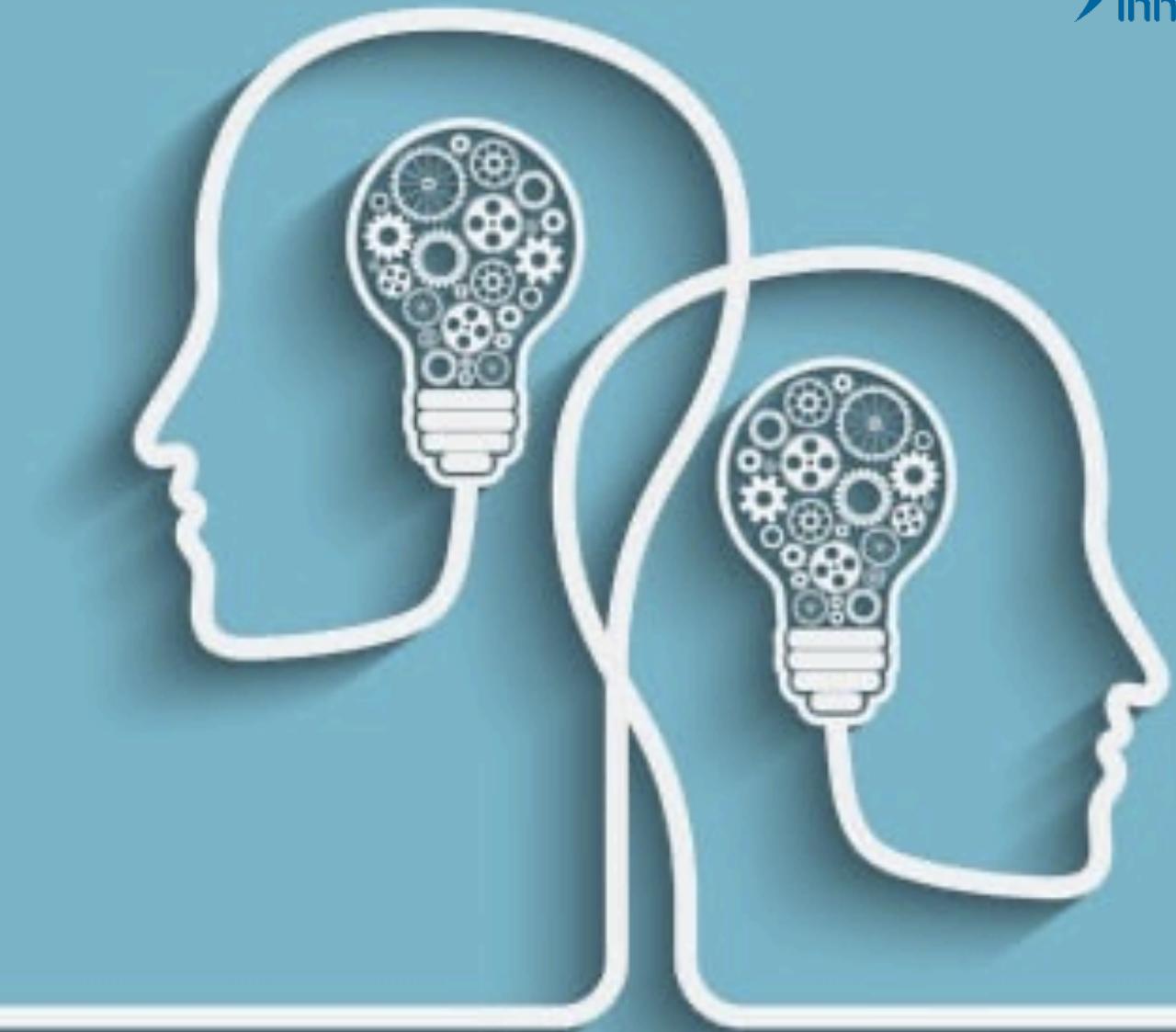
Preliminary, Abstract, Piecemeal solution

Creativity is not gifted one, It is  
innate talent all of us have.

It can be nurtured and developed  
with continuous practice.

# What is Innovation?

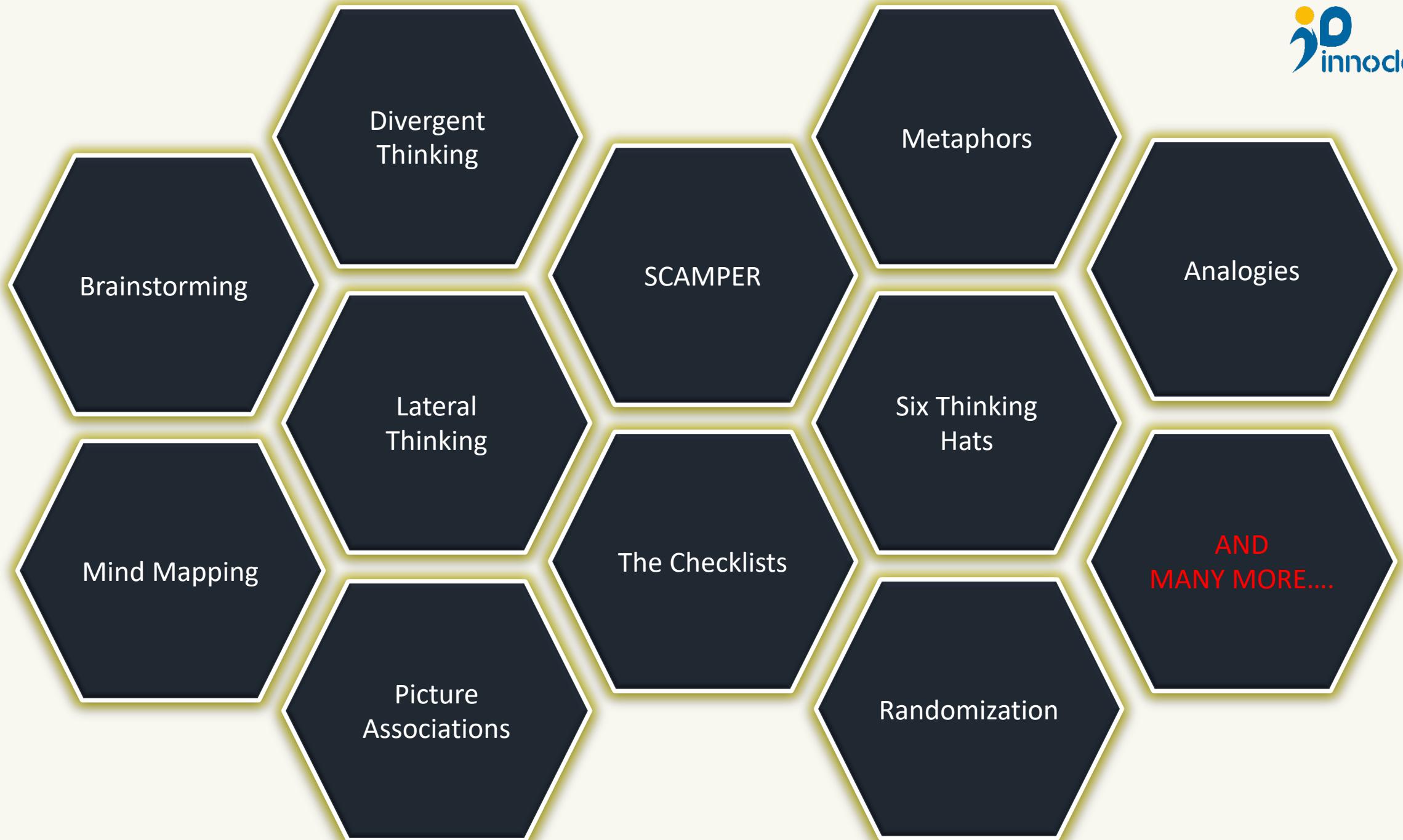
A NEW IDEA IS A  
NOVEL  
COMBINATION OF  
EXISTING IDEAS.



- 1. OPEN MIND**
- 2. SPONTENIETY**
- 3. CURIOSITY**
- 4. CO-CREATION**
- 5. QUANTITY OVER QUALITY**
- 6. JUDGEMENT FREE ENVIRONMENT**
- 7. COMBINE & REFINER**

# Tools for **IDEATION**





# What is Brainstorming?

## Definition:

**Brainstorming** is a **Creativity Technique** by which efforts are made to find a conclusion for a specific problem by gathering a list of **Ideas Spontaneously.** (Source: Wikipedia)

The term was popularized by Alex Faickney Osborn in the 1953 in his book *Applied Imagination*.

# Ground rules for better brainstorming

(Credit: IDEO)

Stay On **TOPIC**.



Allow **ONE** Conversation.



Go for **QUANTITY**.

**HEADLINE!!!** Be **VISUAL!!!**



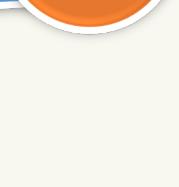
Welcome **WILD** Ideas.

Defer **JUDGMENT**.



**BUILD** on Ideas of Others.

**COMBINE & REFINEx Ideas.**



# - MIND MAPPING -



# SCAMPER

**S – SUBSTITUTE** – What elements of this product/service can be substituted?

**C – COMBINE** – How can this product/service be combined with other products/services?

**A – ADAPT** – What idea from elsewhere can be altered or adapted?

**M – MODIFY/MAGNIFY** – Can any component be greatly enlarged or greatly reduced?

**P – PURPOSE** – What completely different purpose can the product/service have?

**E – ELIMINATE** – What elements of the product/service can be eliminated?

**R – REVERSE/REARANGE** – How can the product/service be rearranged / can the process be reversed?

“

IDEATION IS **NOT** ABOUT COMING UP  
WITH THE RIGHT IDEA.

IT'S ABOUT GENERATING  
THE **BROADEST**  
RANGE OF POSSIBILITIES.

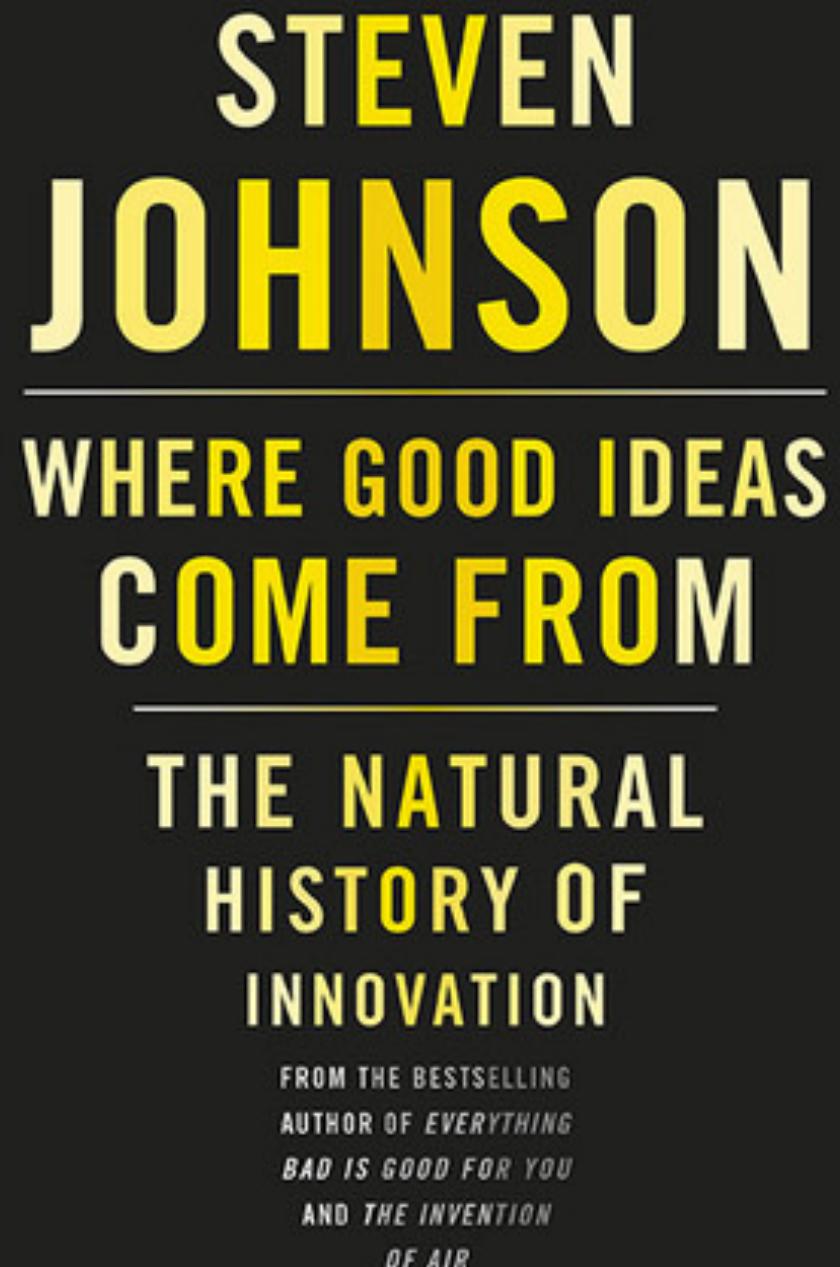
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# Where does Good Ideas Come from?

Good ideas do not – for the most part – come from inside someone's head.

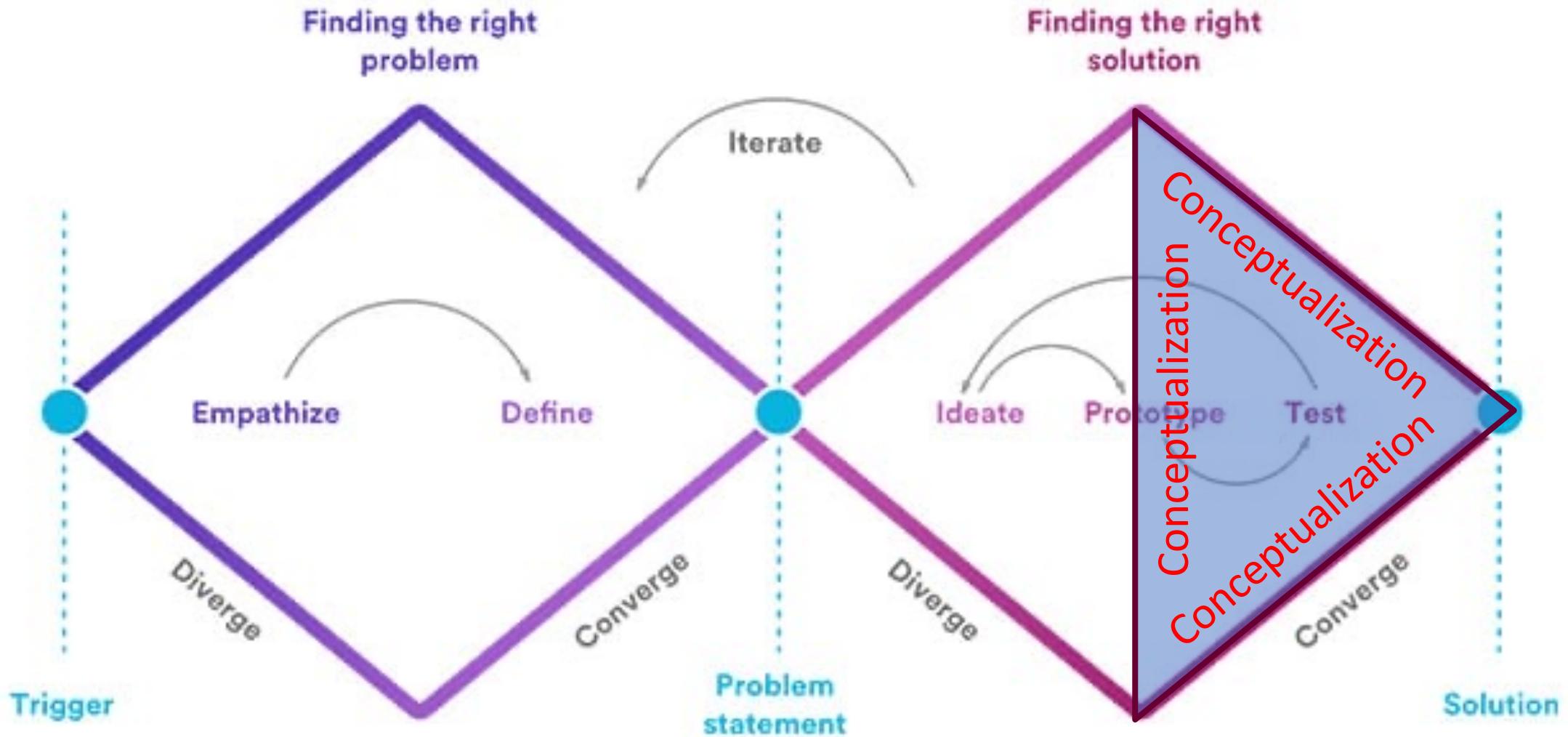
Instead, they come from outside – specifically from social interaction, Observation and Constant practicing of Ideation tools.

A study conducted in leading research laboratories found that scientists rarely, if ever, had a *flash of inspiration* or *eureka moment* alone in the lab.



PRODUCT REALIZATION

CONCEPTUALIZATION



*The double-diamond process, initially introduced by The Design Council in 2005, and adapted by ICF International.*

# What should the CONCEPT ACHIEVE?

- It should be able TO SOLVE THE PROBLEM with relevance to ***the context*** and ***add value***.
- Other practical aspects including **USABILITY**, **FEASIBILITY**, **SCALABILITY** and **BUSINESS MODEL** will follow.

# “Design depends largely on constraints”

— Charles Eames



- Cost/Budget
- Time
- Quality
- Technology
- Processes & Operations
- Performance
- Usability
- Integration/ Compatibility
- Efficiency
- Compliances
- Environment
- Material
- Logistics
- Safety
- Ethics

# Conceptualization

- **Technical feasibility**
- **Market opportunity (Competition)**
- **Aesthetic and Ergonomics**
- **Business or cost restrictions**
- **Quality and Reliability**
- **Value Creation, Execution, Scalability**
  
- Don't narrow too fast – it's a gradual process
- Don't immediately worry about feasibility or scalability
- Discuss about the ideas to which team is very excited, surprised or curious

# PESTLE Analysis

Is a tool used **to analyse and monitor the macro (external) factors** that may have a profound impact on an organisation's performance. **This tool is especially useful when starting a new business or entering a foreign market.**



## Political

- Stability of Government
- Potential Legislation Changes
- Global Influences



## Economical

- Economic Growth
- Employment Rates
- Inflation Rates
- Budget policy
- Consumer buying capacity



## Social

- Demographic influences
- Lifestyle factors
- Income distribution
- Population growth
- Social Stigma



## Technological

- Technological Changes (R&D)
- Technological Comm.
- Emerging Tech
- Feasibility & Viability
- Automation



## Legal

- Taxation policies
- Employment laws
- Industry regulations
- Health & Safety



## Environmental

- Regulations & Restrictions
- Customer behaviors
- Global trends
- Sustainability



## Opportunities and Challenges to pursue KPIs (Basic SWOT analysis)



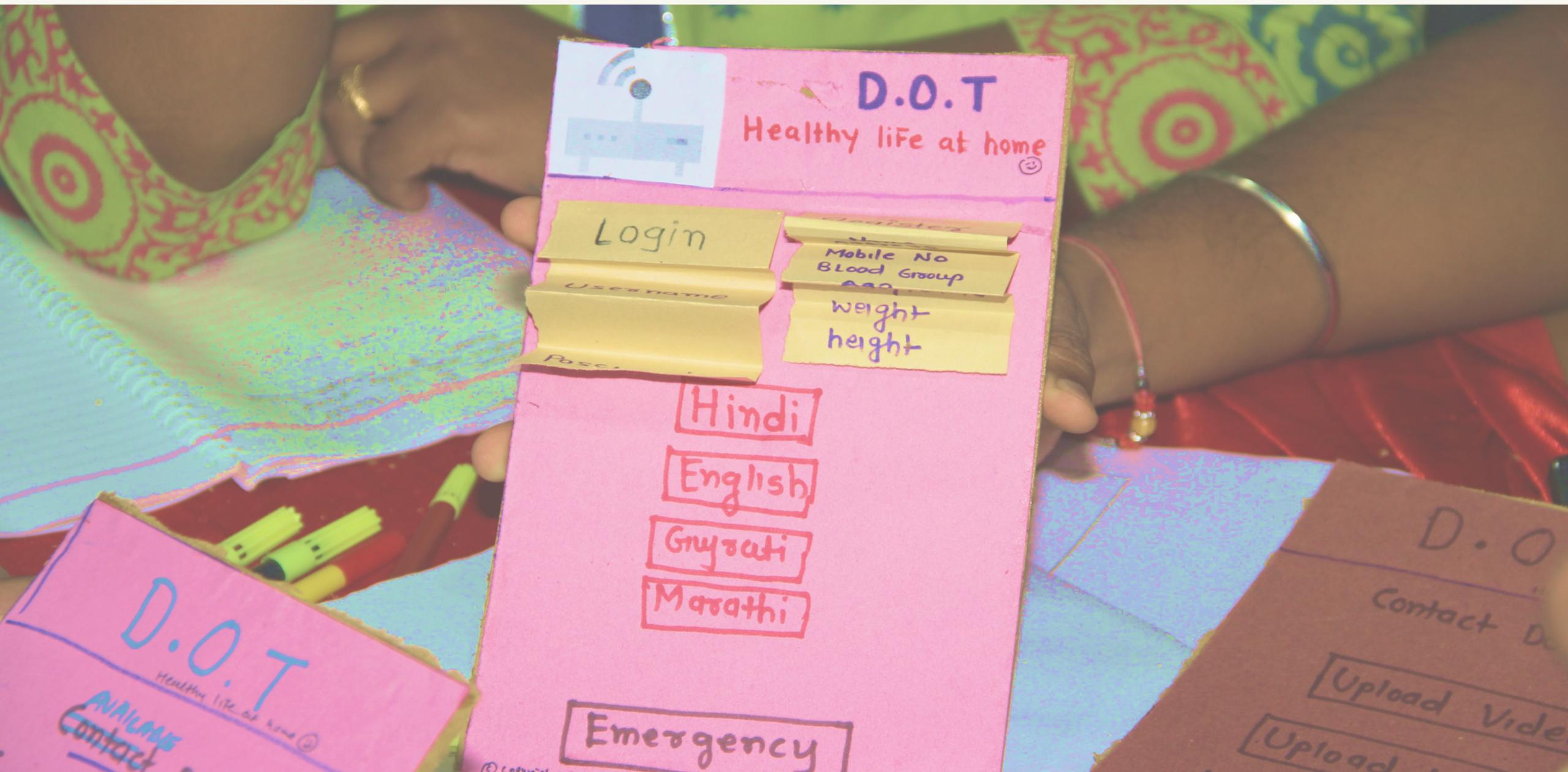
# NEXT

## MAKING IDEAS HAPPEN....

COMING UP WITH AN IDEA IS ONLY HALF OF THE STORY.....

# Thinker + Maker = Innovator

# PROTOTYPE: Design Thinking



# What is Prototype?

A prototype is a **simple experimental model** of a **proposed solution** used to test or validate ideas, design assumptions and other aspects of its **conceptualisation** quickly and cheaply, so that the designer/s involved can make appropriate refinements or possible changes in direction.

Building prototypes means

**making ideas tangible,**

**learning while building them** and

**sharing them** with other people.

Even with **early** and **rough** prototypes, you can **receive** a direct

**response** and learn **how to further improve** and **refine** an idea

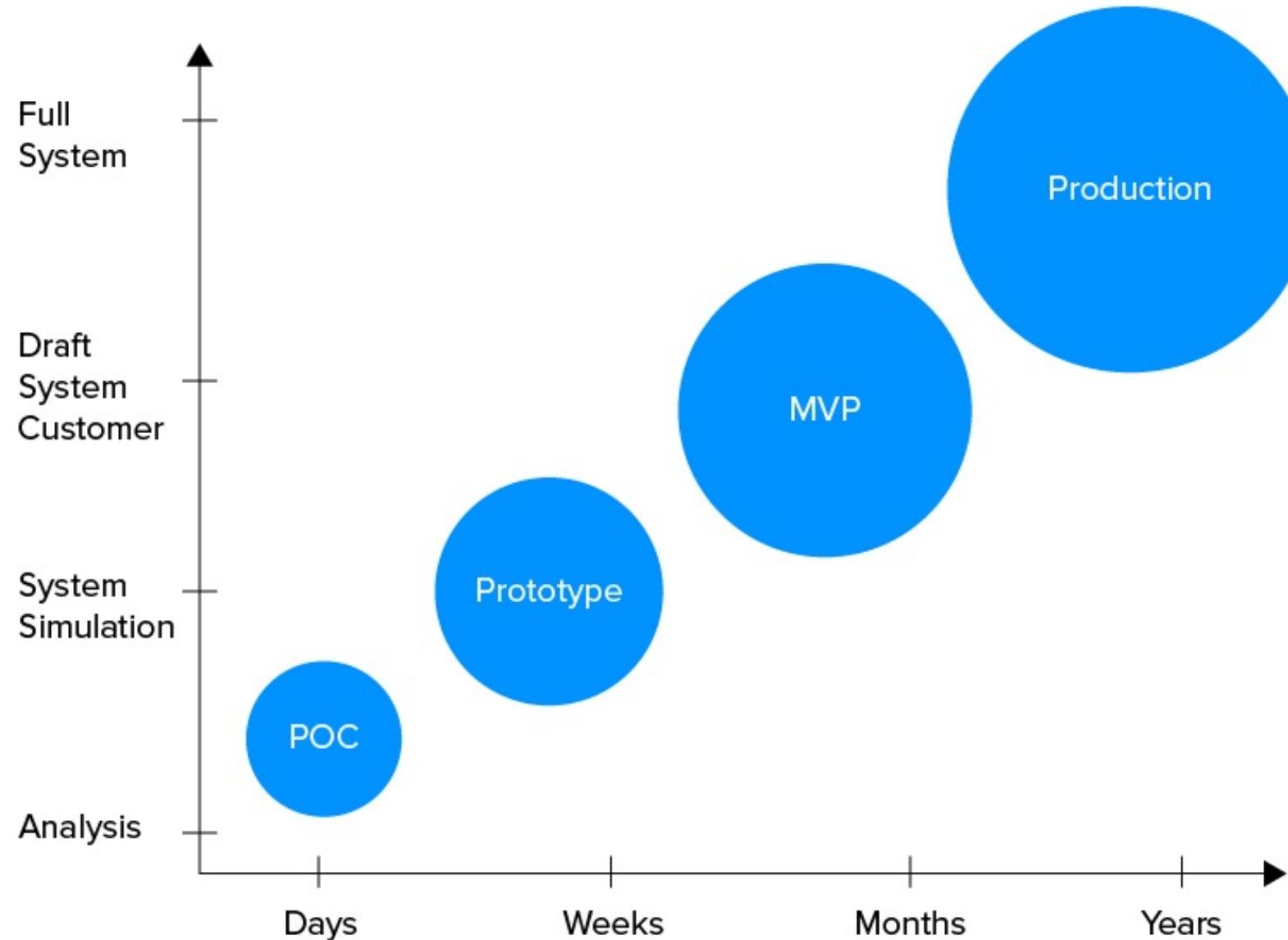
Whereby **saving** time & money.

**Fail Fast. Fail Safe. Fail Cheap.**



**Failed Experiments are better than Failed Businesses.**

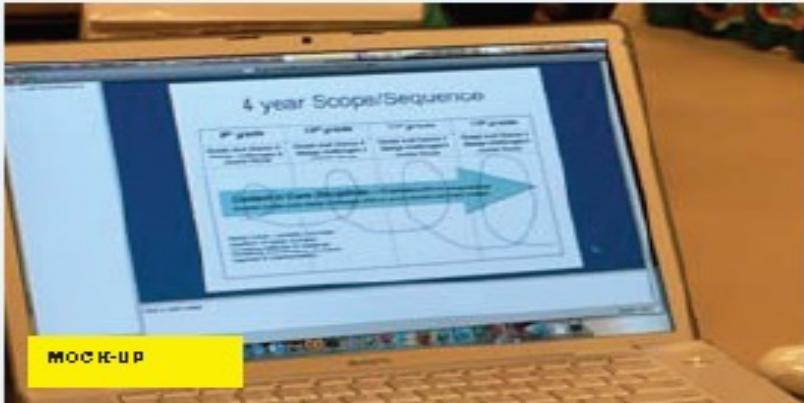
# Stages of Prototype



# ***Ways to Prototype***

Prototyping is not about getting it right the first time; the best prototypes change significantly over time.

Challenge yourself to come up with at least three different versions of your idea to test multiple aspects of the possible solutions your team has come up with.



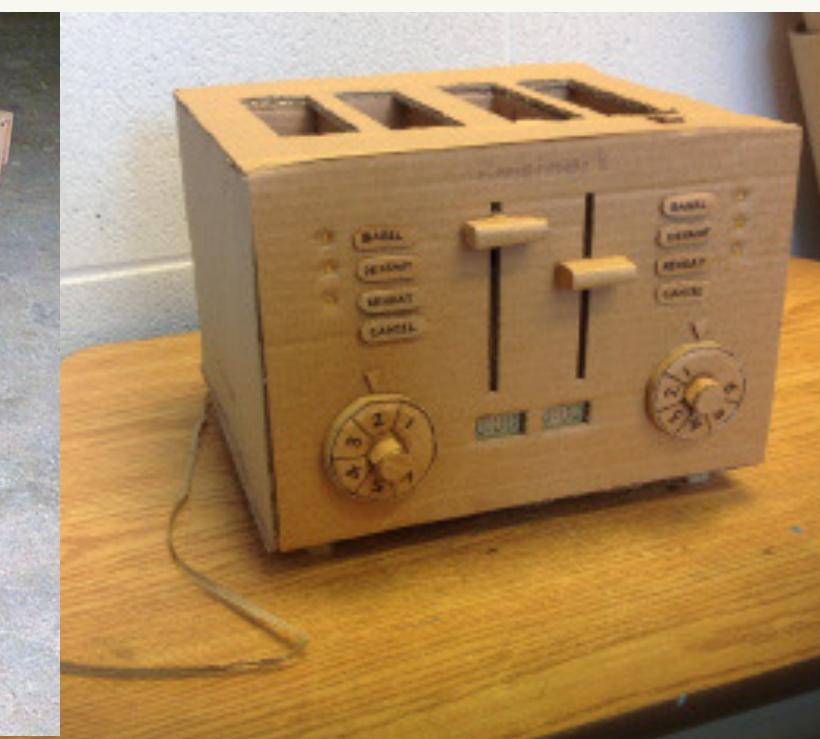
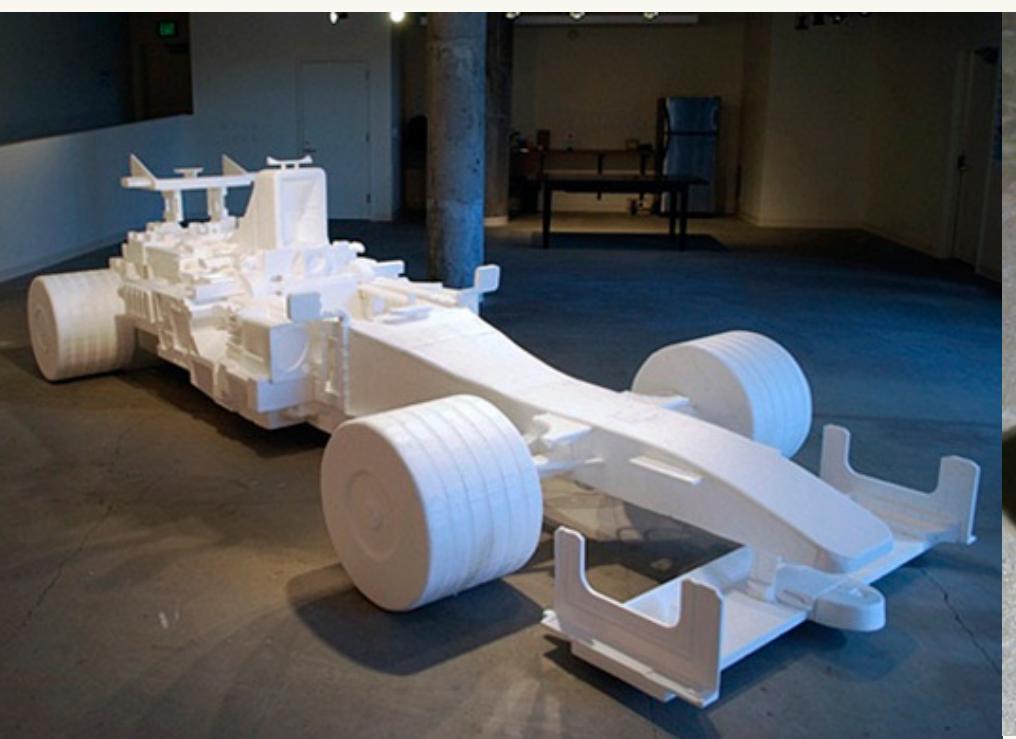
- Diagram
- Interaction
- Model
- Role Play/Drama
- Story board
- Mock up
- 3D Printing

# Prototype Materials



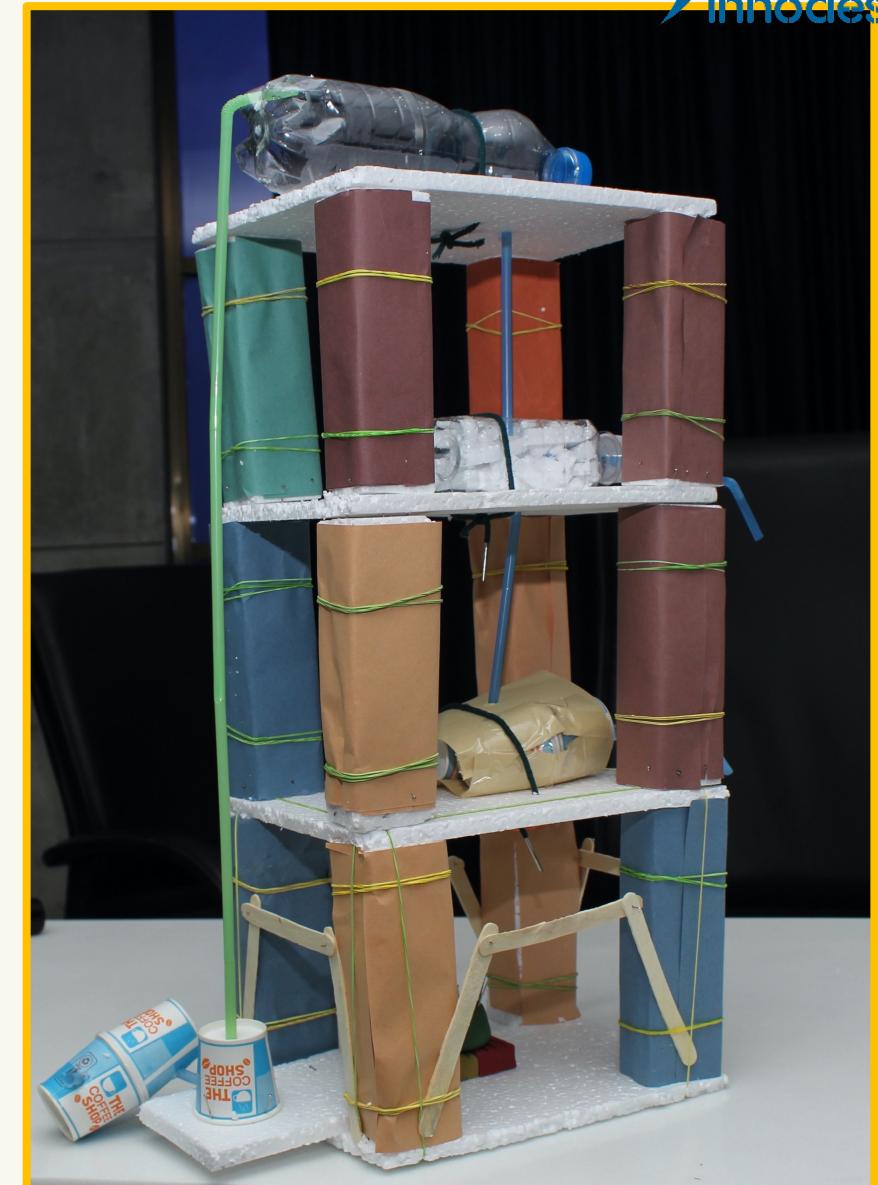
# Prototyping in Action



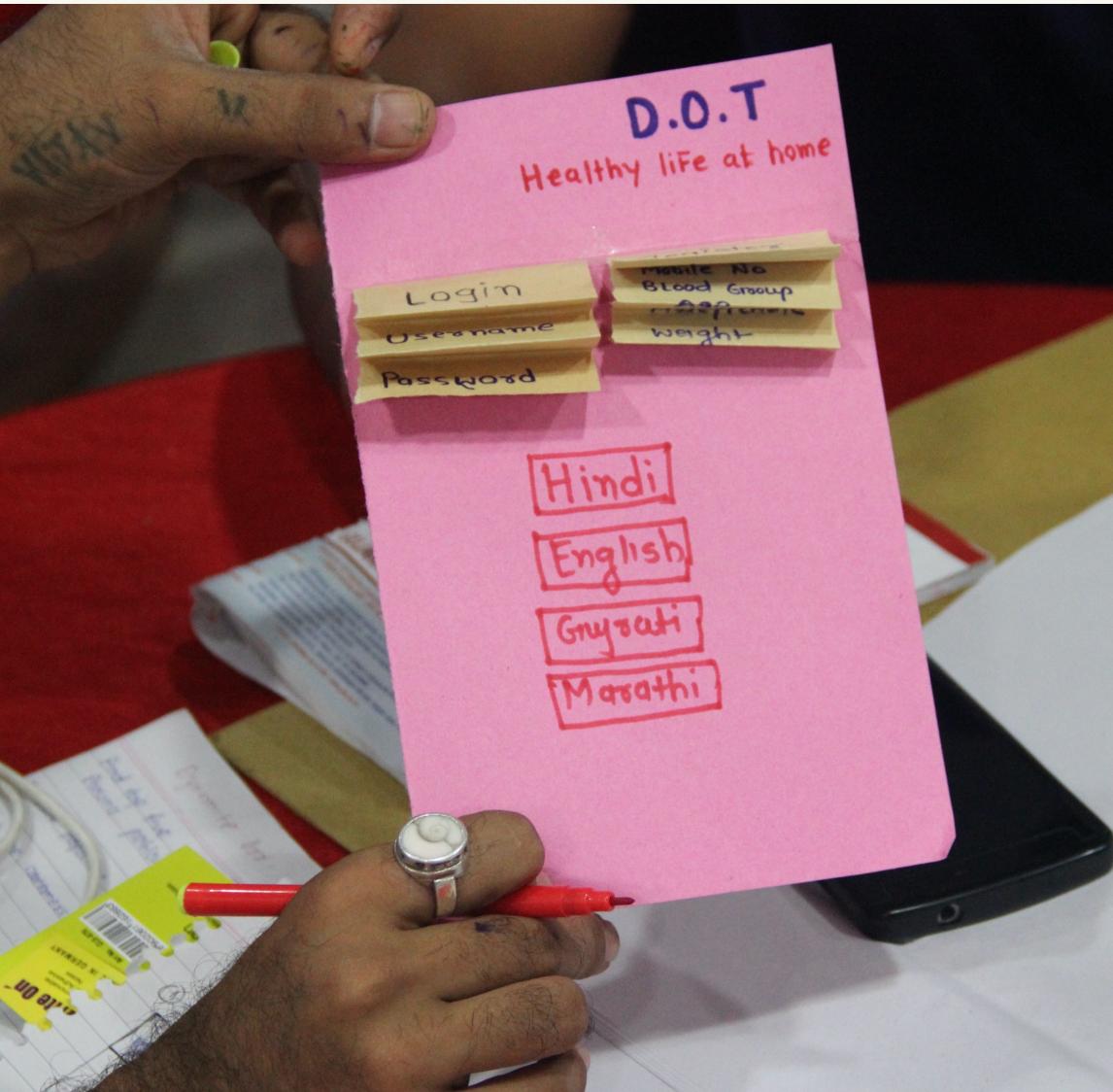


# Quick Prototyping

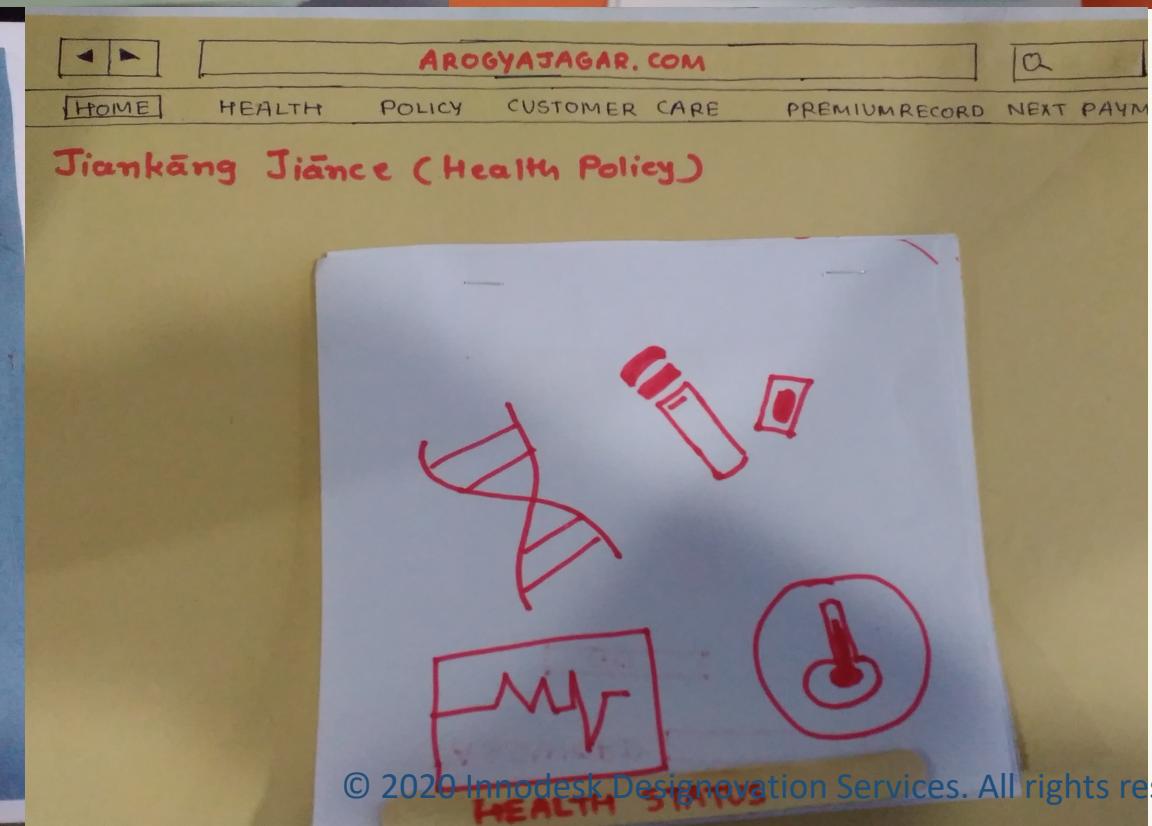
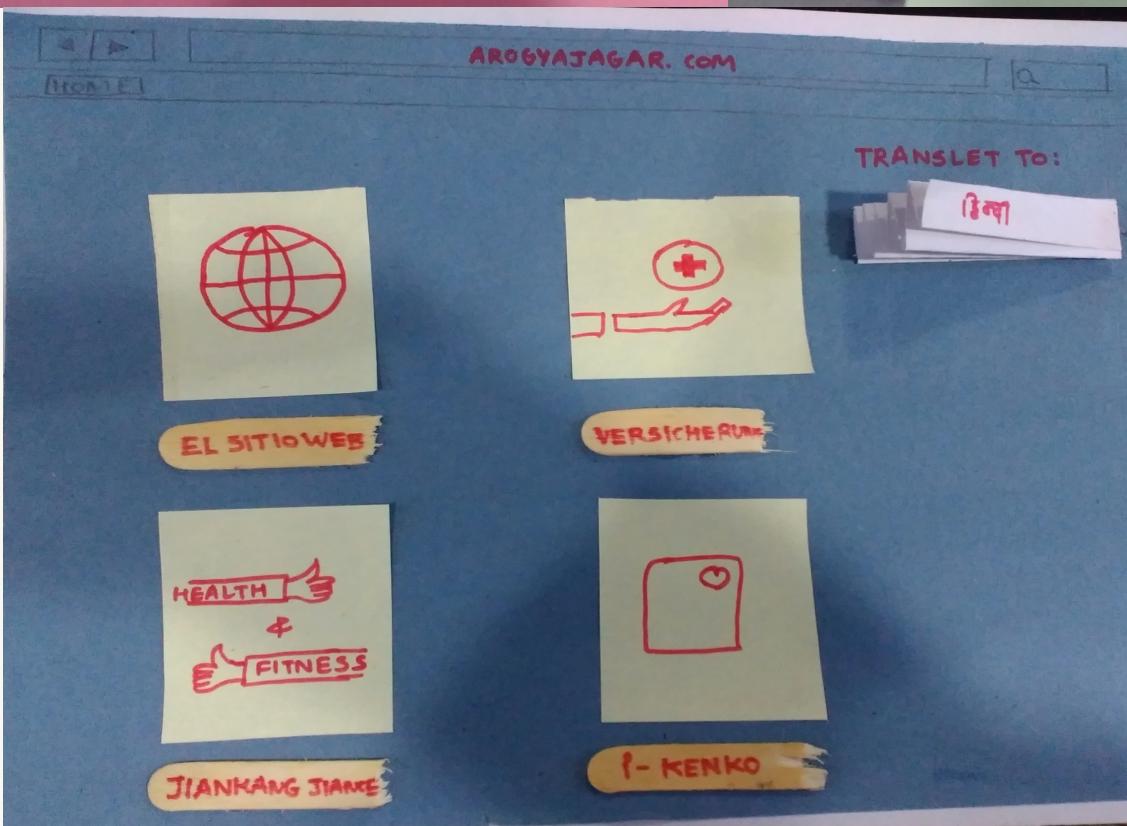
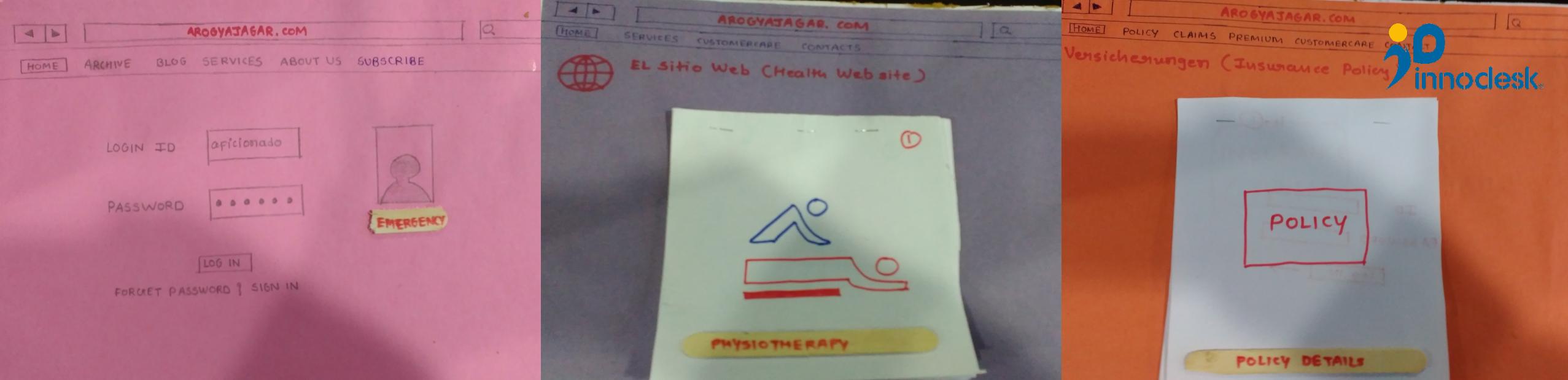




# Prototype for Mobile App







(3)

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**MEDIHOME AT YOUR DOOR**

### Registration

Name: \_\_\_\_\_  
Location: \_\_\_\_\_  
Age: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Blood group: \_\_\_\_\_

**Submit** **[ADD RELATIVES]**

**MEDIHOME AT YOUR DOOR**

### Services

- get immediate remedy**
- Call Doctor @ home**
- Order Medicines**
- Emergency**

**MEDIHOME AT YOUR DOOR**

### Enter Symptoms

Fever ▼

Show Details

Take XYZ Medicine

**MEDIHOME AT YOUR DOOR**

### Filters

Speciality \* \_\_\_\_\_ ▼

Cost \_\_\_\_\_ ▼

Urgent Visit \_\_\_\_\_ ▼

**Submit**

# MEDIHOME

## AT YOUR DOOR



**MEDIHOME AT YOUR DOOR**

### Orthopaedic Service

Select Doctor: Dr. N. Patel ▼

**Give a call**

Appointment booked.  
Doctor will arrive soon.  
Appoint no: 5642

**MEDIHOME AT YOUR DOOR**

### Track Doctor

Doc. @ home

○ Yes  
○ No

**OK**

**MEDIHOME AT YOUR DOOR**

### Payment Details

MODE  
○ CASH ○ CARD

DETAILS  
CONSULTATION CHARGE: Rs 400  
VISIT CHARGE: Rs 100

**OK**

**MEDIHOME AT YOUR DOOR**

### Order Medicine

Name of medicine \_\_\_\_\_ ▼

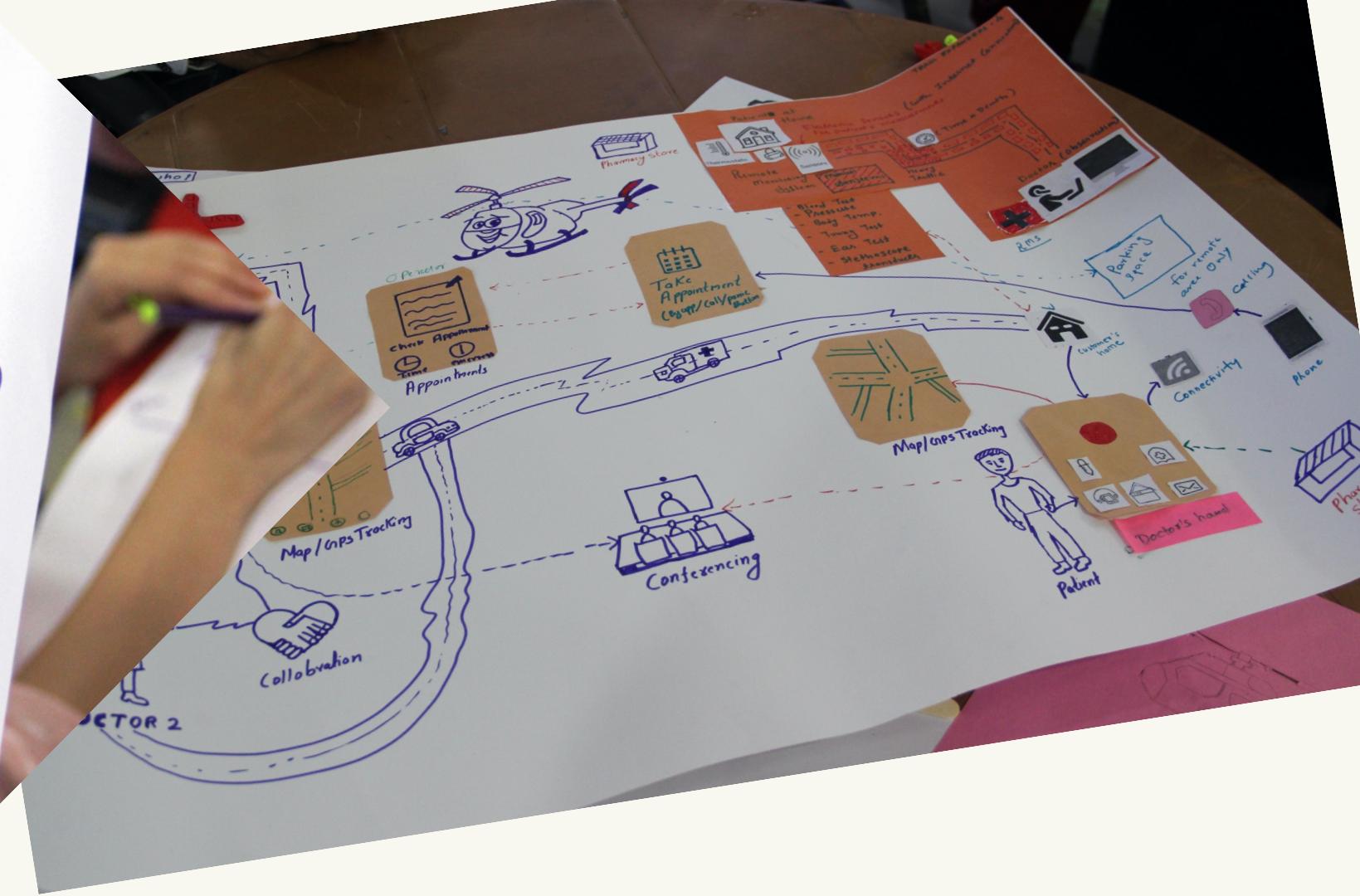
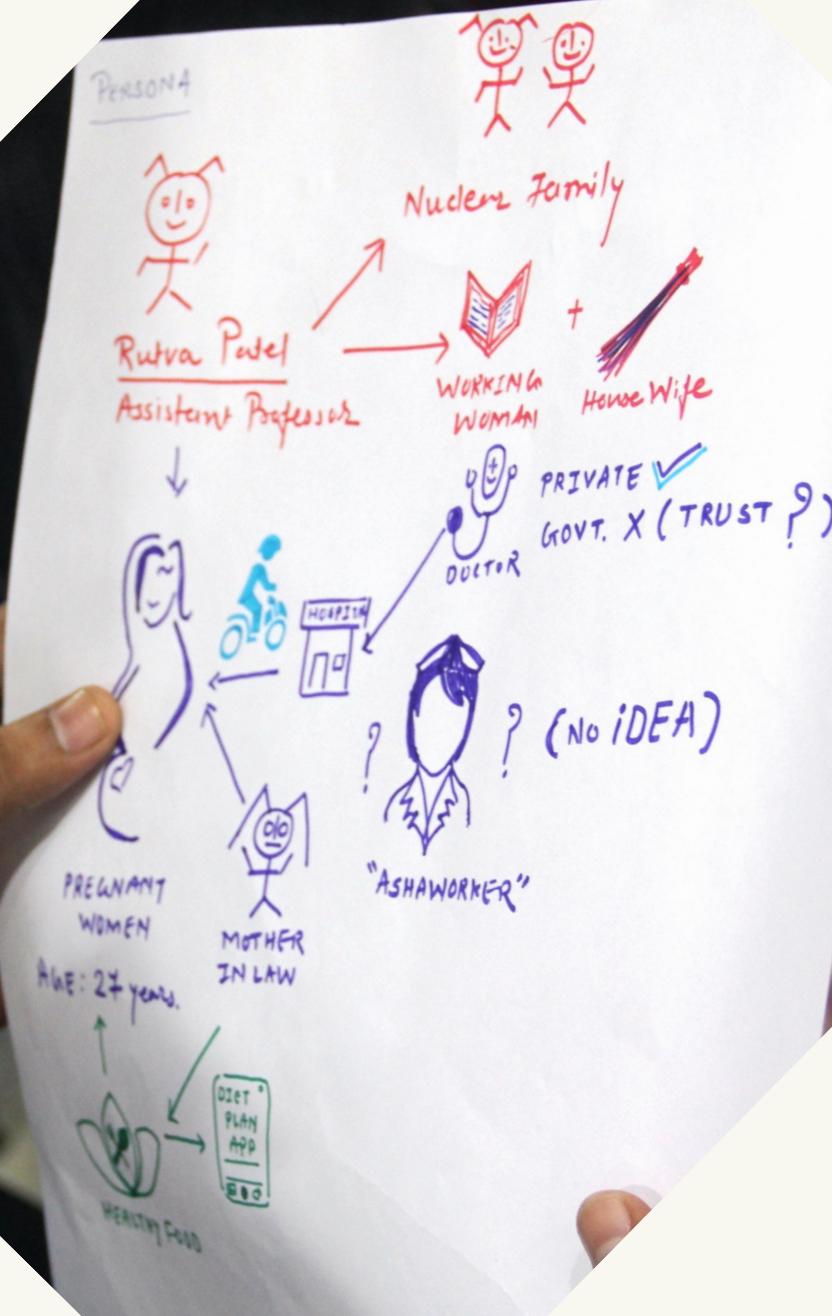
List of selected medicines \_\_\_\_\_

**Order & generate Bill**

**MEDIHOME AT YOUR DOOR**

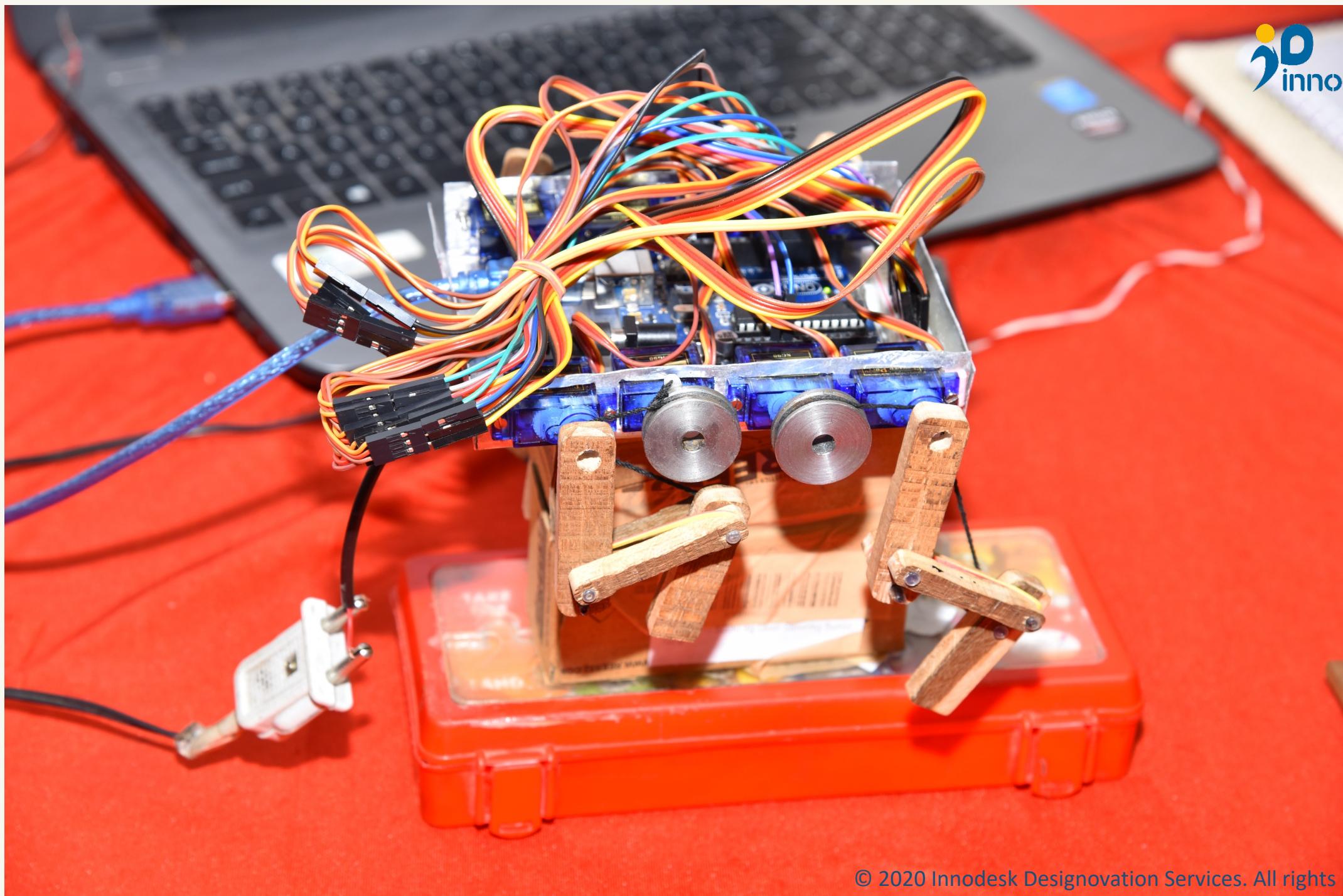
**Thank you & Take care**

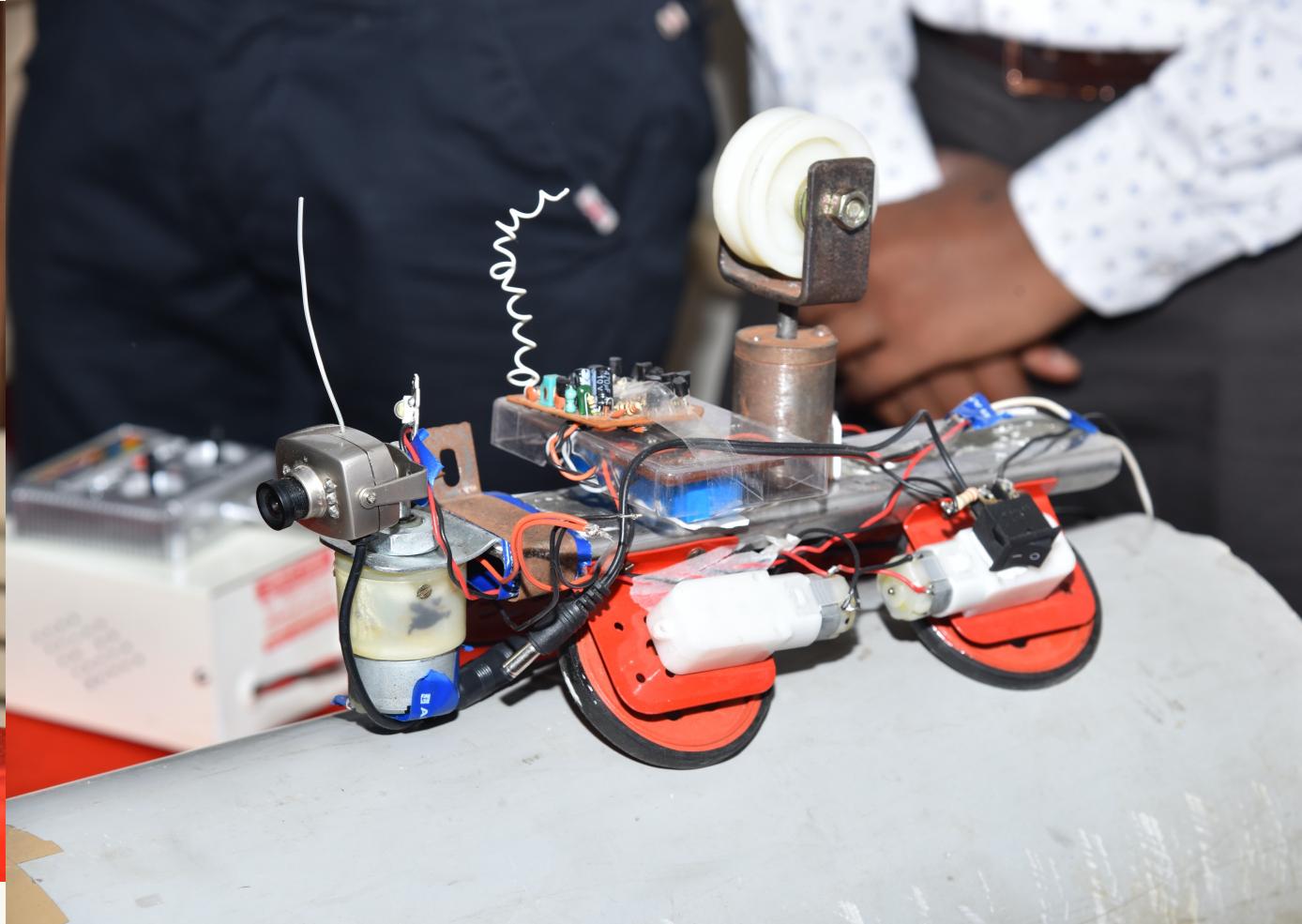
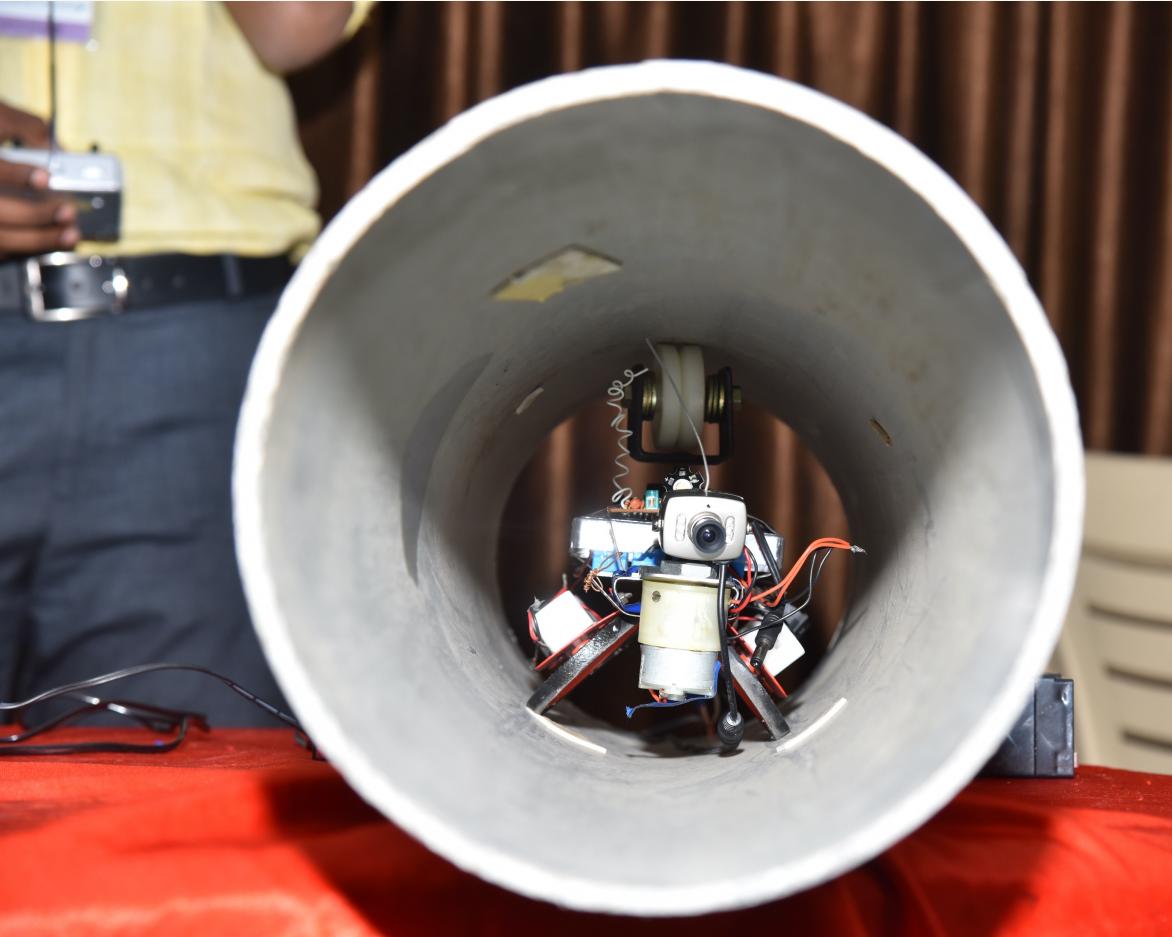
😊

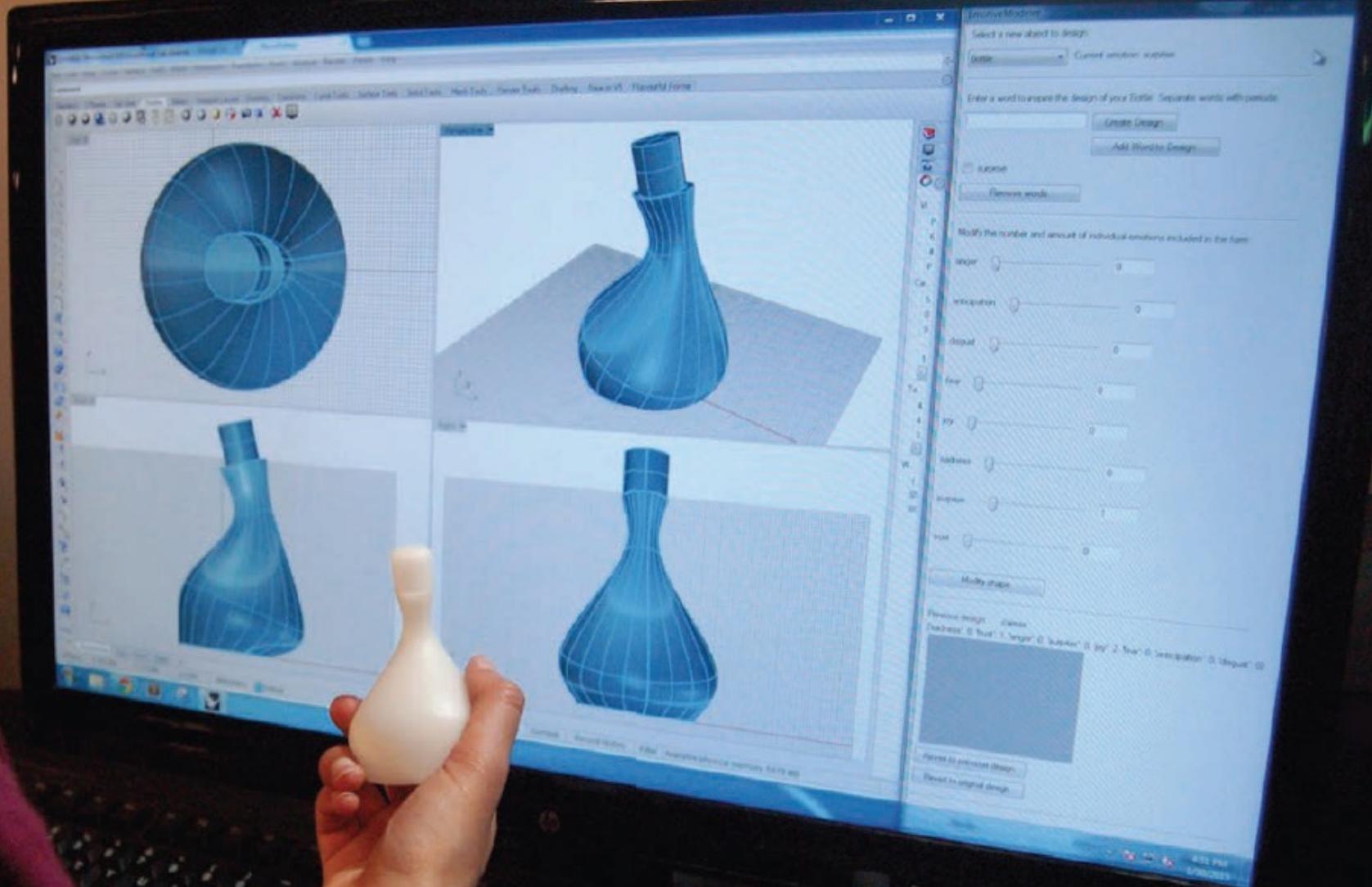


# Functional Prototype











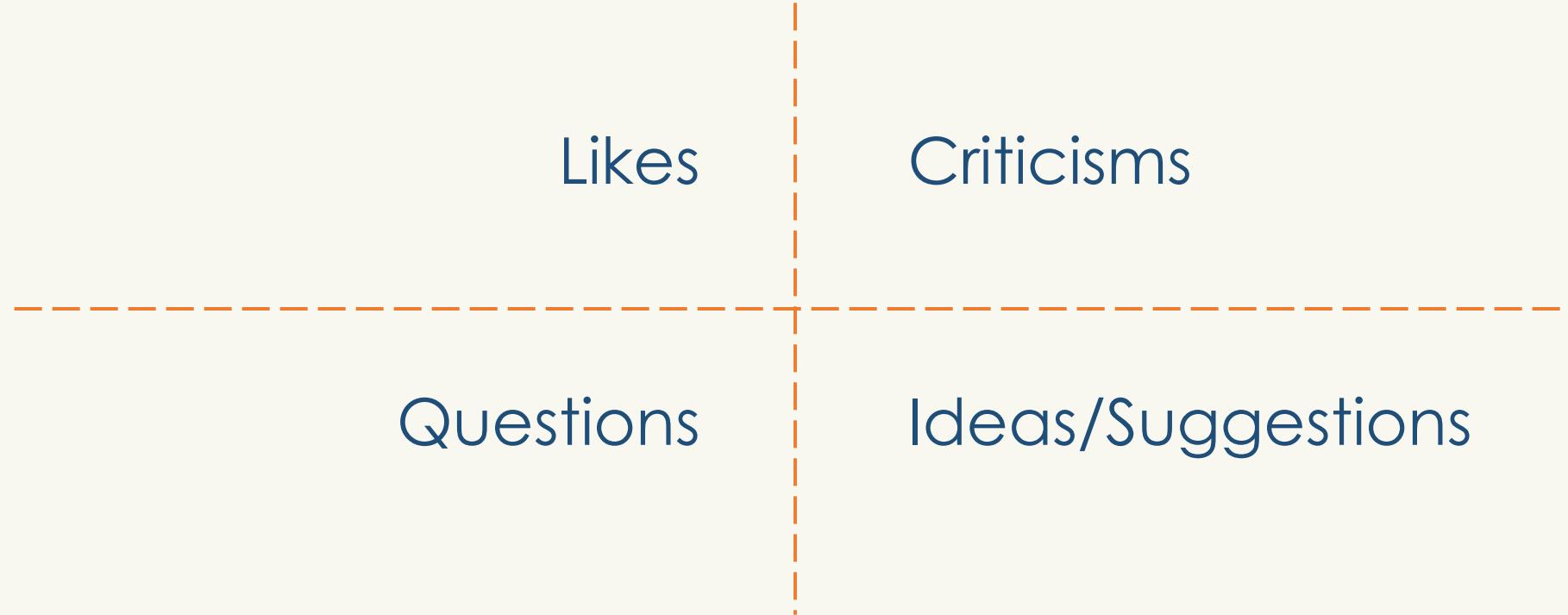
"During an early brainstorm, we used office supplies to prototype an instrument for a neutral hand position."

Source: [https://miro.medium.com/max/635/1\\*KC240S3wJB4D\\_Lh6ldTcTg.jpeg](https://miro.medium.com/max/635/1*KC240S3wJB4D_Lh6ldTcTg.jpeg)



# Test

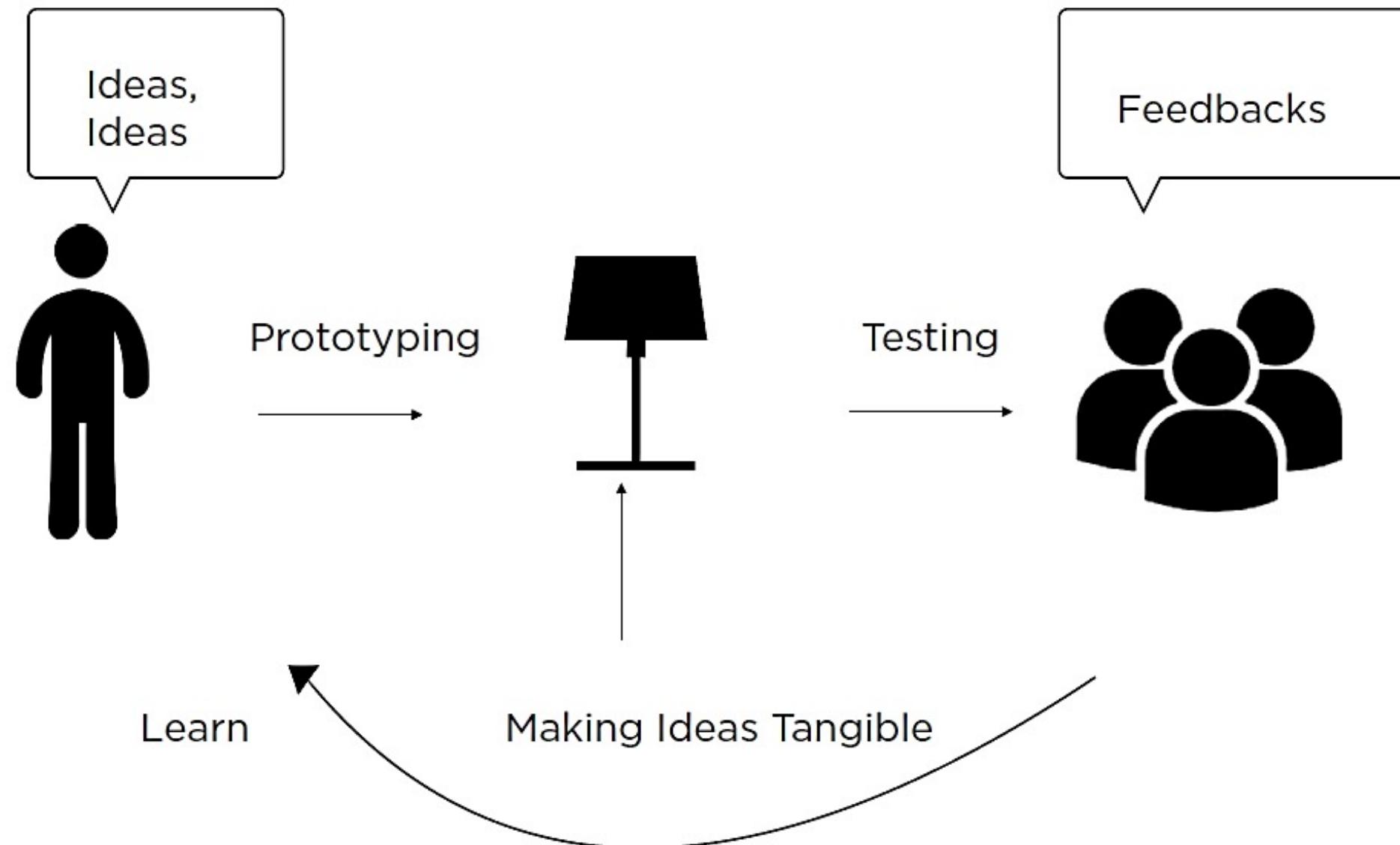
- Assign Roles...
- Show, Don't talk!
- Feedback is a gift
- Tweak as per feedback and needs
- 'failure' just means you need to change something.



# Feedback Capture Grid



i like, i wish, what if?



Design Thinking is - Human-Centered,  
Intuitive & Creative,  
Non-linear,  
Collaborative,  
Iterative,  
Experimental.

Design Thinking is **COTEXTUAL**,

Not a **TEMPLATE** based approach.



Thank  
you



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