

Tangible dreams

Critical Function Prototyping & Testing
OPER.CBI 2025

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Idea^s



Why do we prototype?



 **Exploration through action**
Experimenting and learning by doing

 **Challenging assumptions**
Investigate assumptions through building and testing, instead of theoretically thinking

 **Internal communication**
Can make internal communication more focused

 **External communication**
Tool to communicate, test and validate with externals

 **Creating serendipity**
Create unplanned discoveries

Prototypes vary in fidelity

- Distance to the final solution
- Refers to the level of details and functionality built into a prototype

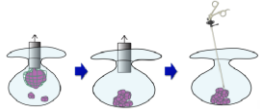
- Low vs. High Fidelity
- Horizontal vs. Vertical
- Paper vs. Tool



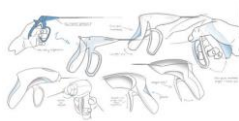
Example of a **product** prototype

Low fidelity

High fidelity



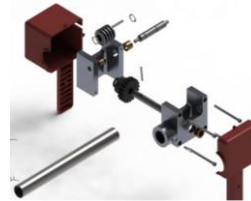
Concept
visualization



Sketching



Quick & dirty
mockup



3D model



Functional
Prototype

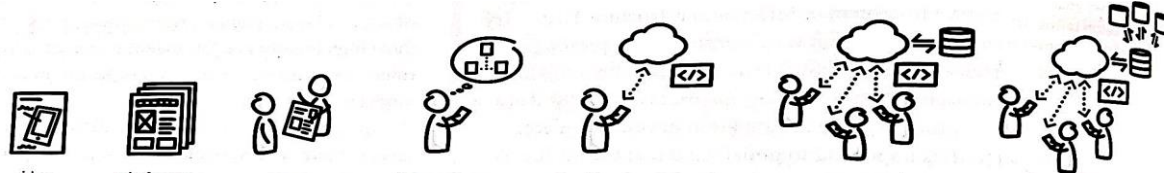


Pre-production
prototype

Service / process

Digital

Physical



Prototypes have an audience



Who gets/uses the prototype?

- User
- Customer
- Colleague
- Manager
- Venture Capitalist

Prototypes have a purpose

Communication

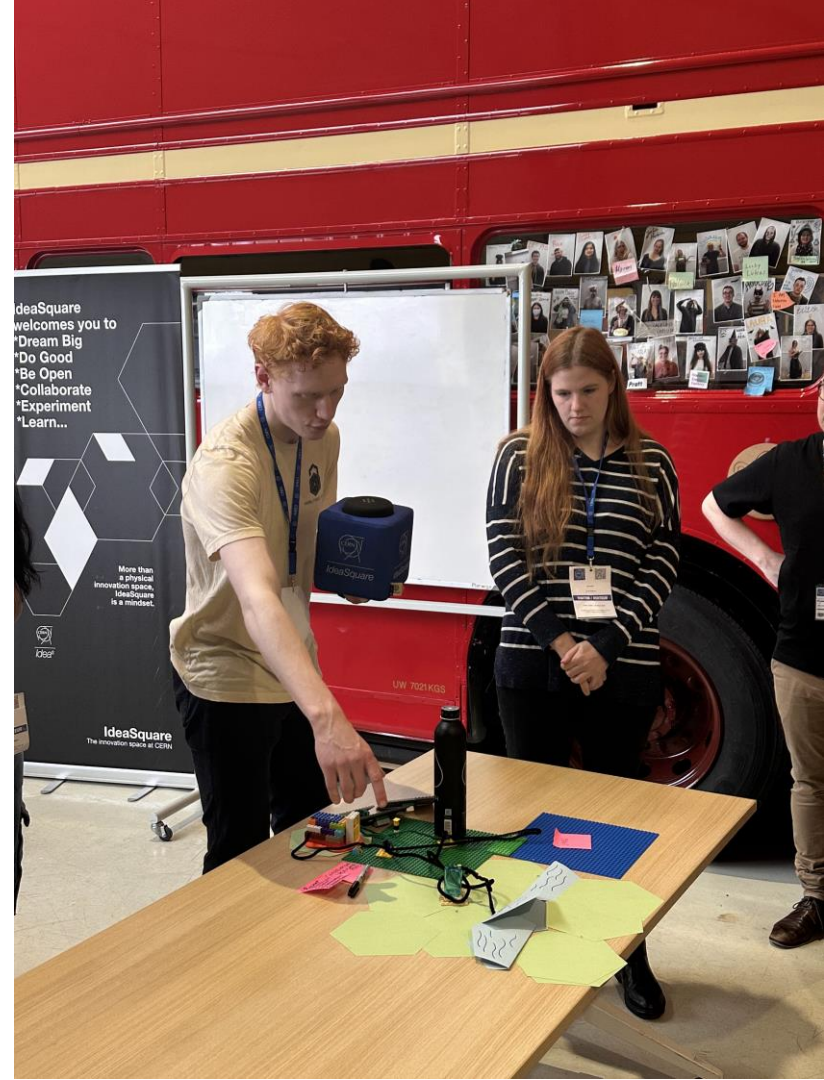
- To decision makers; or to other roles in the development process.

Exploration

- To explore alternatives for design

Evaluation

- To validate the effect of the concept on the user
- To find out, if it is technically feasible
- To evaluate the users experience with the design



Prototypes have a purpose

Communication

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Exploration

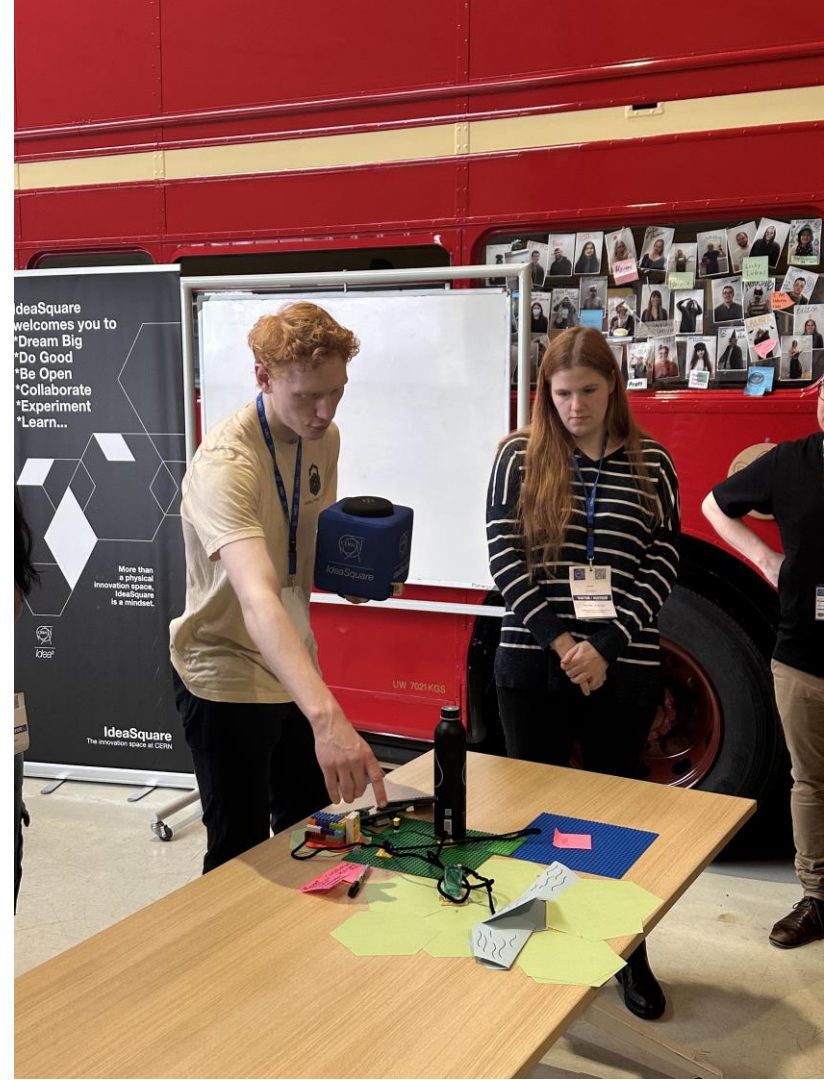
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Back in
December

This time
around

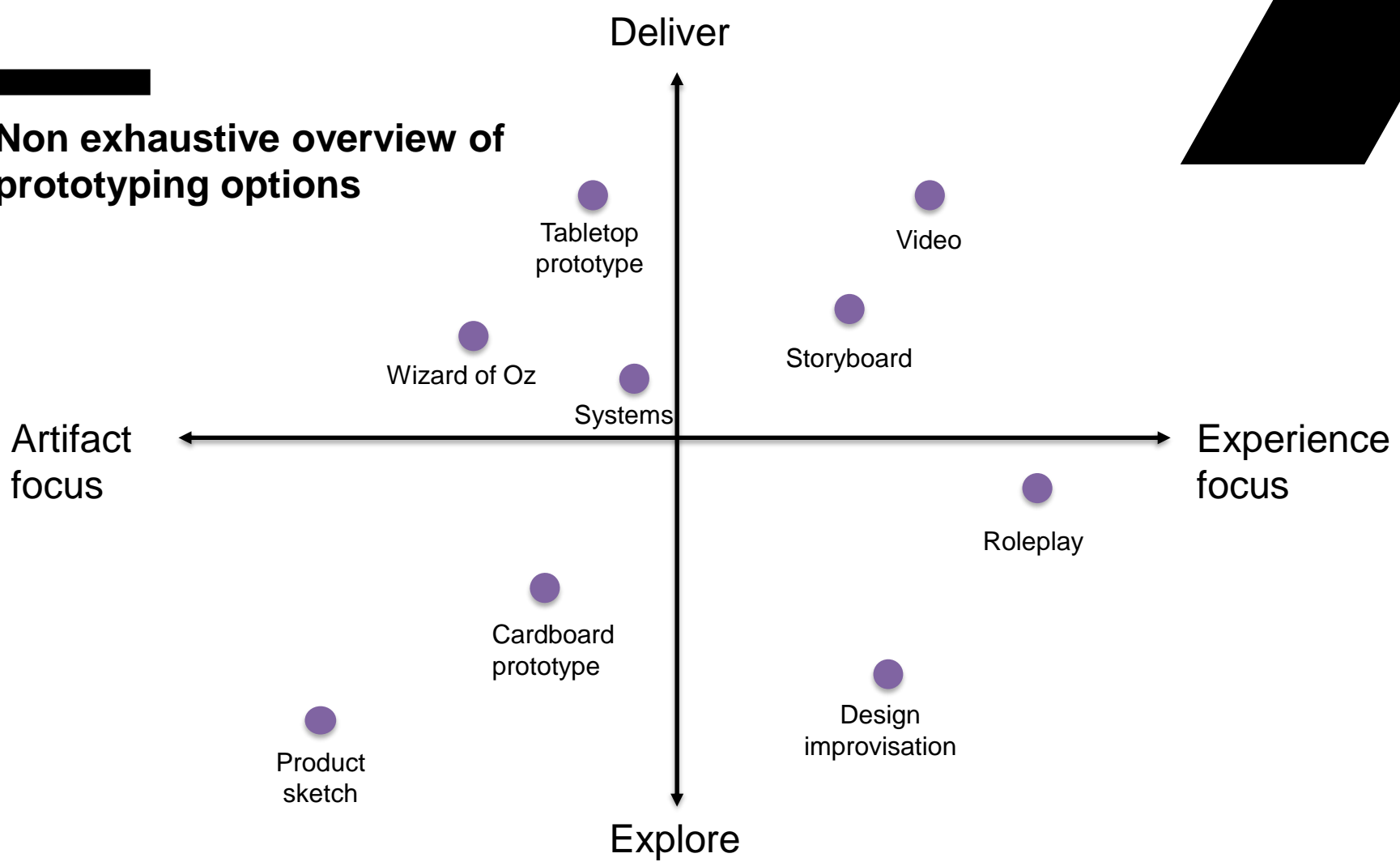


Prototypes have different methods

- i. Sketching*
- ii. Role-Play*
- iii. Storyboard*
- iv. Cardboard Mock up*
- v. Table top*
- vi. Wizard of Oz*
- vii. Wireframing*
- viii. ...*



Non exhaustive overview of prototyping options





Where to start?



**Let's zoom into the touchpoints
you identified this morning**



CRITICAL =

Something fundamental and necessary to the success of the design.
In other words: the thing you are most worried about.

If this component/experience were to fail, another approach would be needed.

PROTOTYPE =

Something tangible that you have made
It allows you to perform real tests and obtain useful results.
It does not necessarily reflect the final design.



What is a critical function prototype?



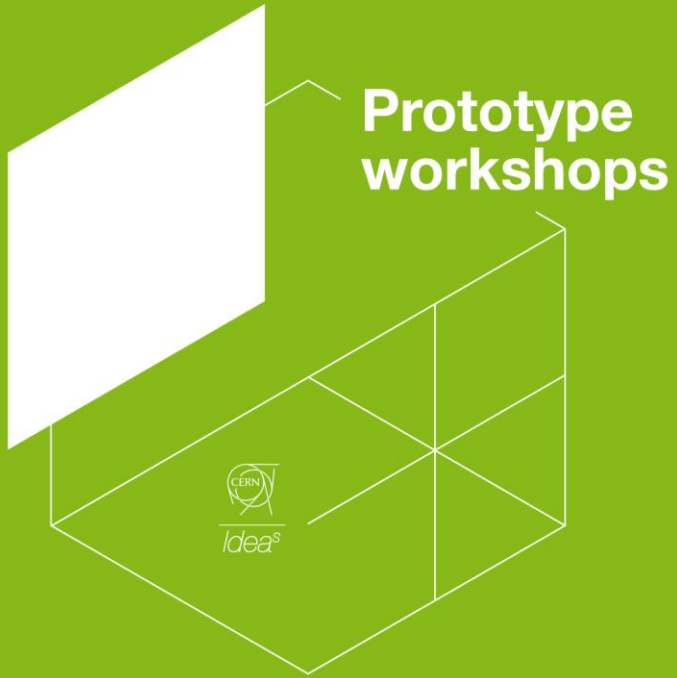
- Prioritise an element from your blueprint – what is the most critical step for your concept to succeed (or not)?
 - E.g. if the main value is to test how to stimulate social connection, we are not going to focus on the color of the flyers.
- Identify the **type of experience** you want to learn more about: mental, physical, emotional, spiritual, virtual and more.
 - Keep in mind where it sits in your map/blueprint – what is happening before, during and after?
- Focus on **the perceptions and feelings** of the users.
- Focus on the function that you are **not sure if it is feasible** to be implemented.
- What the element, piece or subsystem **must do to bring value.**



Checking the boxes



- Why do we want to prototype? What do we want to learn?
- For whom do we want to prototype?
- Which time and effort is appropriate?
- Which materials/methods are the most suitable?
- What is the question we want to answer?



**Testing your
prototype**

Why testing?

- We test to learn.
- We test to answer the questions we have.
- We test to get honest feedback.
- We **don't test to get confirmation.**
- We **don't test by selling our idea.**





Planning your test



- What do we want to find out?
- What is the setup?
 - With whom will we test? How do we get to them?
 - Where will we do the interview? What context is appropriate?
 - How much time do we have?
 - How many of us will be there, what are the roles?



How to conduct the test?

- Explain the context of the test (your project objective, your scenario...).
- Introduce and explain the prototype.
- Let the test user interact with the prototype, you provide guidance.
- Ask the test user to think out loud.
- Ask rich and open questions: “Can you tell me more about what you said? Why do you think so? What do you think this [something you are testing] is for?”



Questions to evoke conversations

Trace behaviour

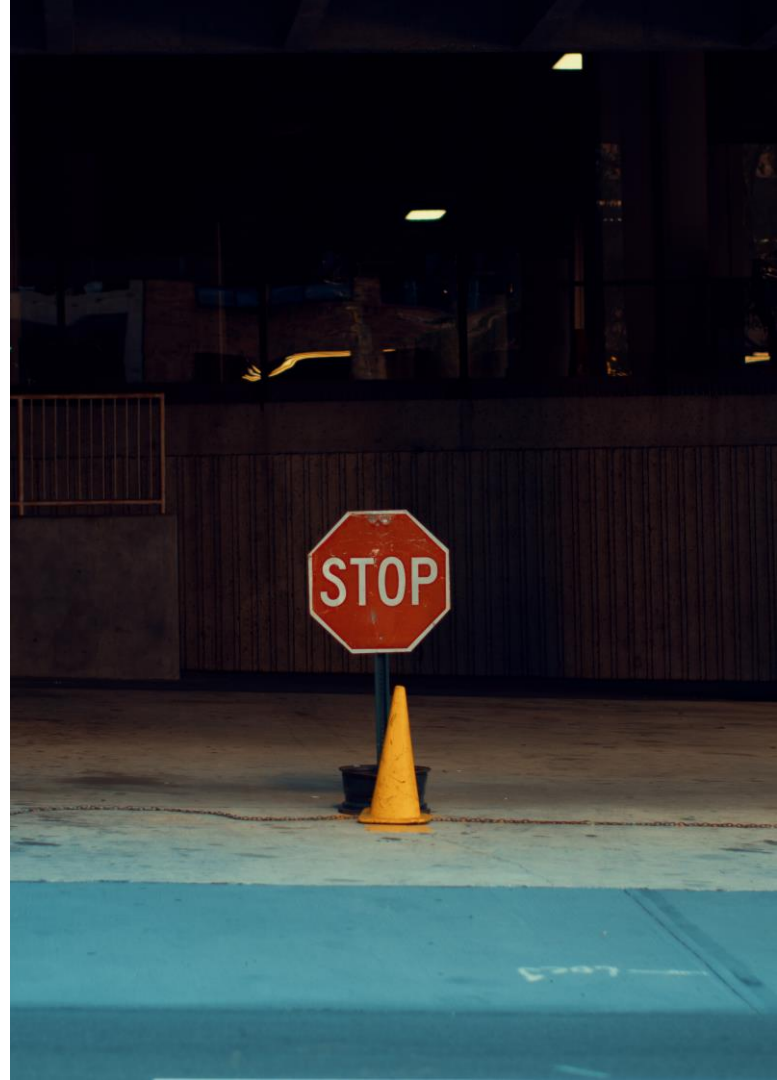
- Why do you smile when you say that?
- How did it happen that...?
- What does (not) work?

Gain clarity

- What exactly do you mean by?
- How would you describe it in your words?
- You say this is difficult. What exactly is difficult?
- A difficult task. Why exactly is it difficult for you?

Testing **Don't's**

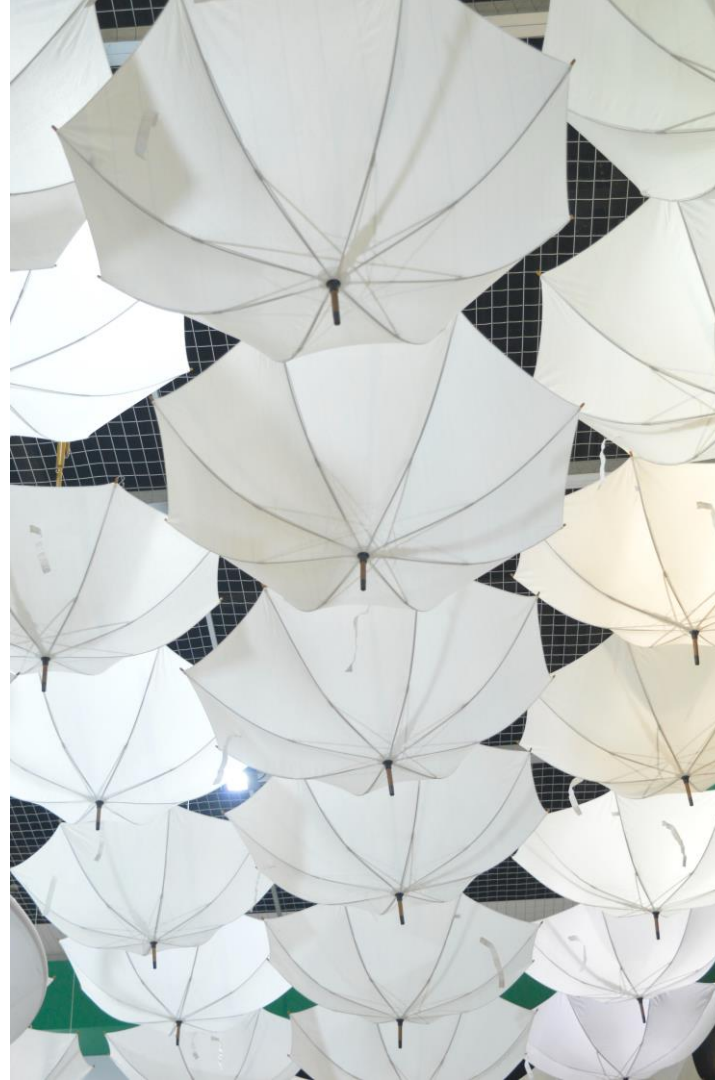
- Don't explain too much
- Don't try to sell your prototype
- Don't ask suggestive questions
- Don't get defensive when exposed to criticism
- Don't make up new features



How to conduct Sensitive Research

What potential risks are associated with conducting interviews?

- Cultural aspects („men should not do field research about menstrual health“).
- Anonymity
- Ethics.
- Do no harm approach.



Interview Testing Tips

- Ask „why?“
- Avoid general questions or using „usually“.
- Encourage stories.
- Pay attention for non-verbal cues.
- Don't be afraid of silence.
- Be neutral.
- Don't try to „sell“ any idea.
- LISTEN and OBSERVE.



Investigating behavior

Motivation: WIIFY - “What’s in it for you?”

- What is the **benefit** of the behavior for the one expected to perform it?
- What is the **current behavior** exhibited?
- **Why** is the current behavior exhibited instead of the one you desire?

Case Example: 3\$ fine if pickup from daycare is >10 min late

- After fine was implemented, # weekly delays more than doubled
- Motivation to be delayed (more time without child) > Fine punishment (3\$)

→ Consider the alternative you are “competing with”.

Gneezy, Uri and Rustichini, Aldo, A Fine is a Price. Journal of Legal Studies, Vol. 29, No. 1, January 2000, Available at SSRN:
<https://ssrn.com/abstract=180117>



Measuring behavior

What is the behavior you're observing and how do you observe it?

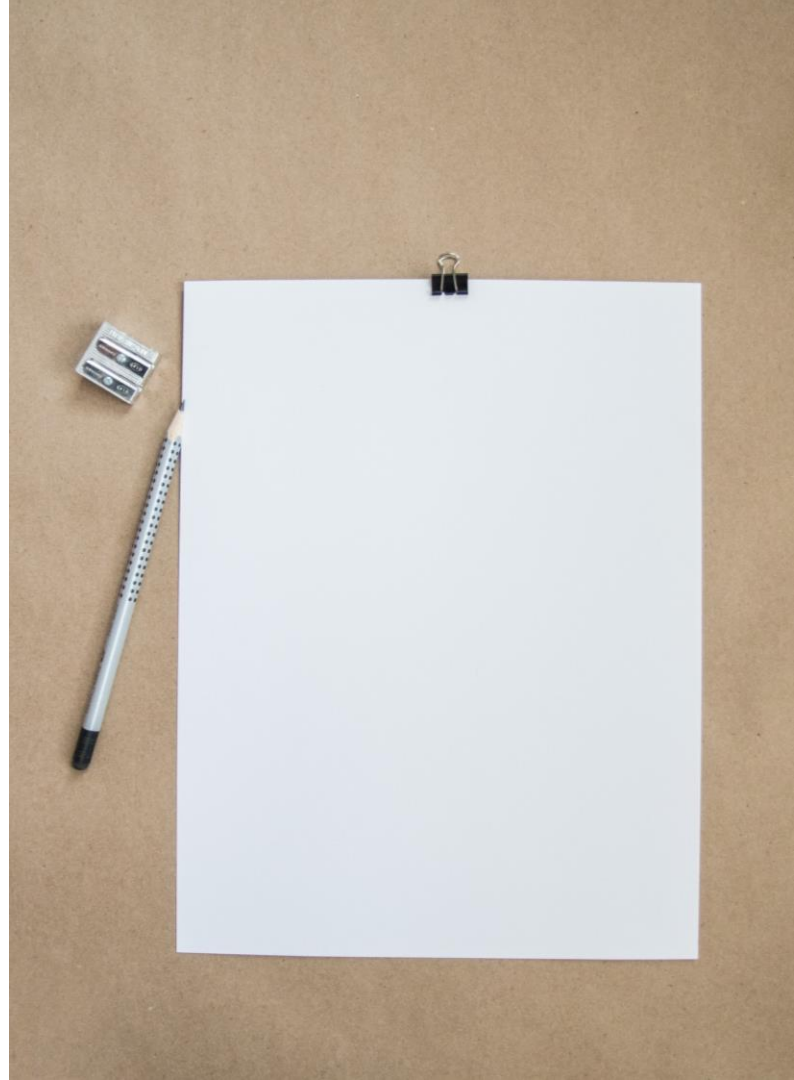
- Quantify the behavior: E.g. When is trash “properly disposed”? Are there “half behaviors”?
- How often/much does the behavior occur in the given context (with and without your intervention)

Keep in mind the **“observer effect”**:

People (particles too - double slit experiment) tend to **behave differently** when being observed.

Evaluation

- Looking at what the intended impact is and look into how to measure that.
- What is important? To the users and to you.
- How are you going to measure that impact?
- How do we measure the before and after?
- How are you introducing your ideas to the users?
- How to distil relevant feedback?





Collecting the Findings



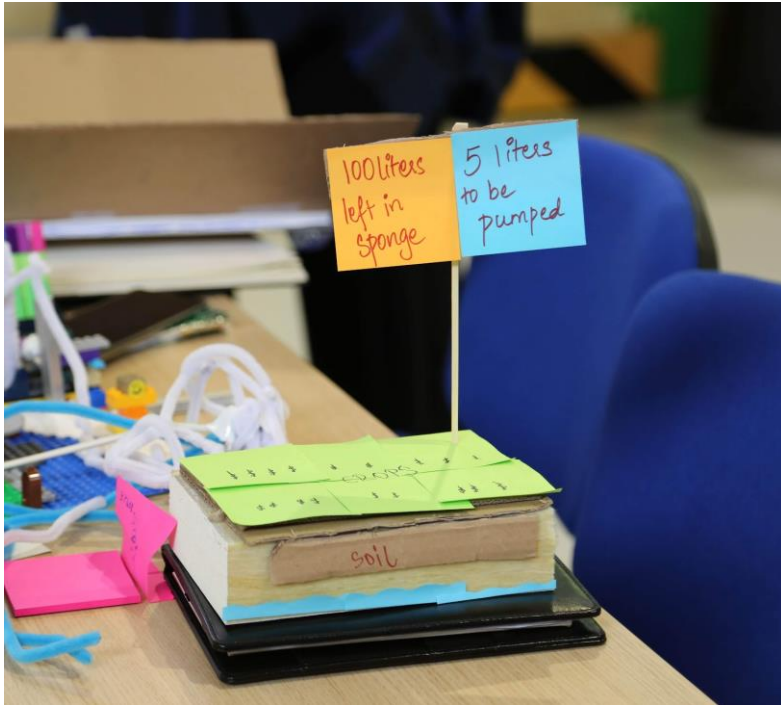
What was surprising?
What was contradictory?

What happened? How often did it happen?
For how long?

What was very important for the user +/-?

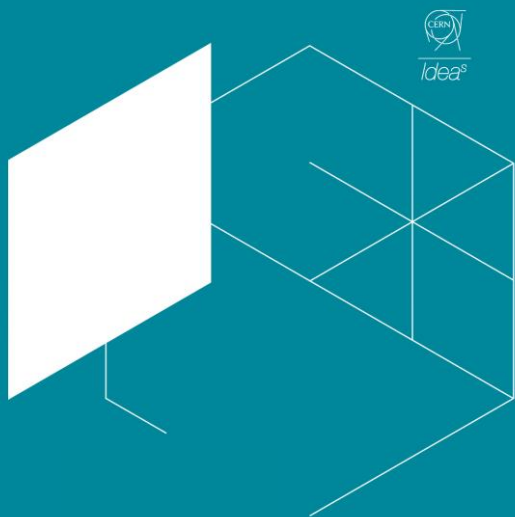
Some quotes/ observations

And then what?



- Iterate!
- Understand and use the feedback.
- Follow a new idea or iterate the prototype.
- Test again!
- Reflect with the team.
- Did the people get the point of your prototype? Or did they focus on something irrelevant?

Remember...

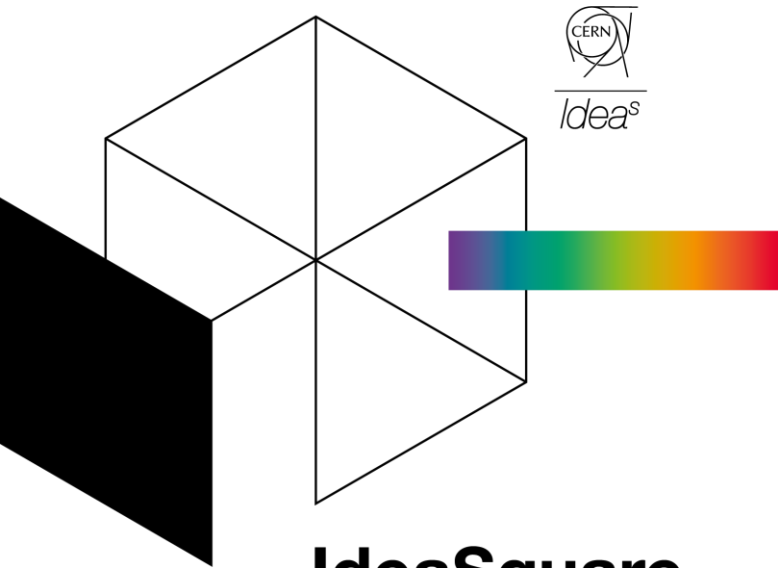


- Don't be afraid to try
- Don't try to be perfect
- Use the space and people! Go around IdeaSquare or CERN and test your prototype.
- Have Fun!



**“After the idea, there is plenty of
time to learn the technology”**

James Dyson



IdeaSquare
The innovation space at CERN

Thank you!