

# Welcome 2 CERN IdeaSquare



Ole Werner, Nick Lindsay  
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Educational Programmes



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**Saamiya Adow**  
Events



**Jimmy Poulailon**  
Communications



**Pablo Garcia Tello**  
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Prototyping

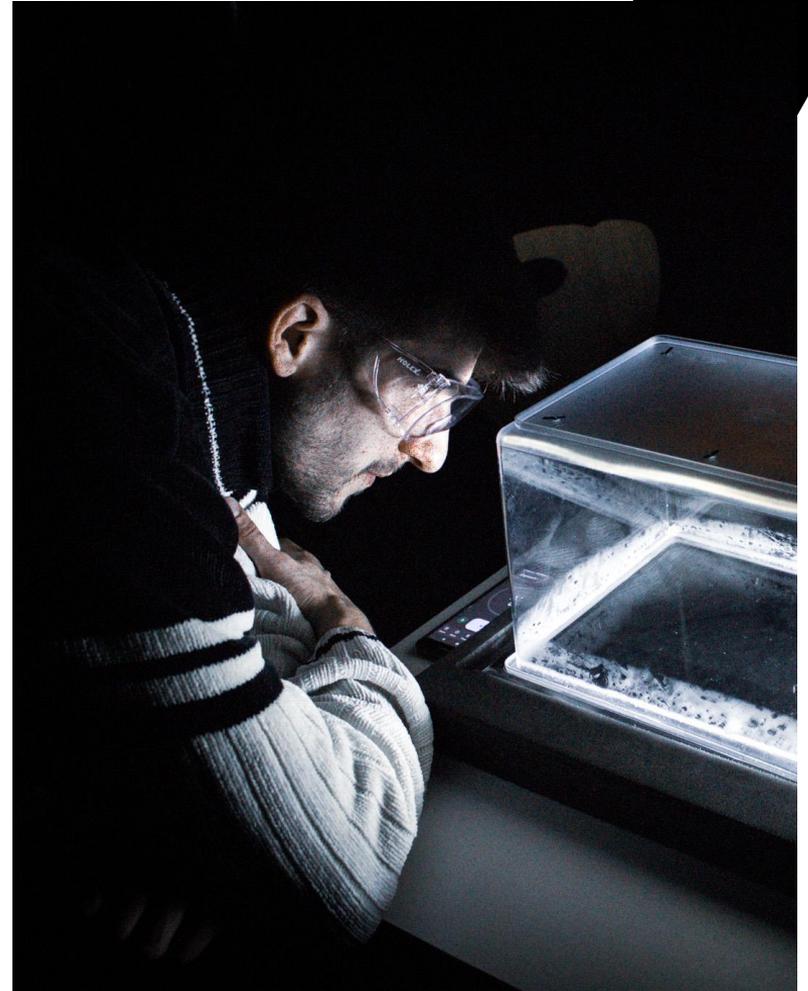


**Mikko Sairanen**  
CIJ

# Who am I to talk to you

## Ole Werner

- Galactic Firefighter at CERN  
IdeaSquare
- BSc Psychology, MSc Behavior Change
- Love curiosity, Trivia Knowledge and being the devils advocate





	Free to use	
		green
	Work under supervision	
		yellow
	Restricted area	
		red

red  yellow  
blue 

# In case of an emergency

While evacuating, always **go away from the danger!**



**Do NOT return**  
to collect your  
belongings



**Walk quickly and calmly** to your  
building's designated **assembly point** or as  
advised by an Emergency Guide or Fire  
Brigade personnel



**Wait at the assembly  
point until counted  
and released** by the  
TSO/DSO or the Fire  
Brigade.

Give to the Fire Brigade all the information they need! **+41 22 767 44 44**



# Things you can avoid for these days

- ...climbing on top of the containers or the bus
- ...consuming or storing alcohol inside IdeaSquare
- ...entering unauthorised areas
- ...walking around without your visitor card and ID
- ...not exiting through an authorised gate

Idea<sup>s</sup>  
THINK. DO. COLLABORATE.



# Keeping places tidy

- Please, Please:
  - Bring all coffee cups, plates, dishes to kitchen, and put them inside the dish washer in status “Dirty”.
  - Clean more than you mess, to fight our common enemy called Entropy.
  - Help collaboratively to clean up the space at the end of the day.
  - Each day, one of the spaceships takes charge of keeping an eye on the space.





YEARS/ANS CERN  
1954-2024

$$\mathcal{L} = -\frac{1}{4} F_{\mu\nu} F^{\mu\nu}$$

$$+ i\bar{\psi} \not{D} \psi + \text{h.c.}$$

$$+ \chi_i y_{ij} \chi_j \phi + \text{h.c.}$$

$$+ |D_\mu \phi|^2 - V(\phi)$$



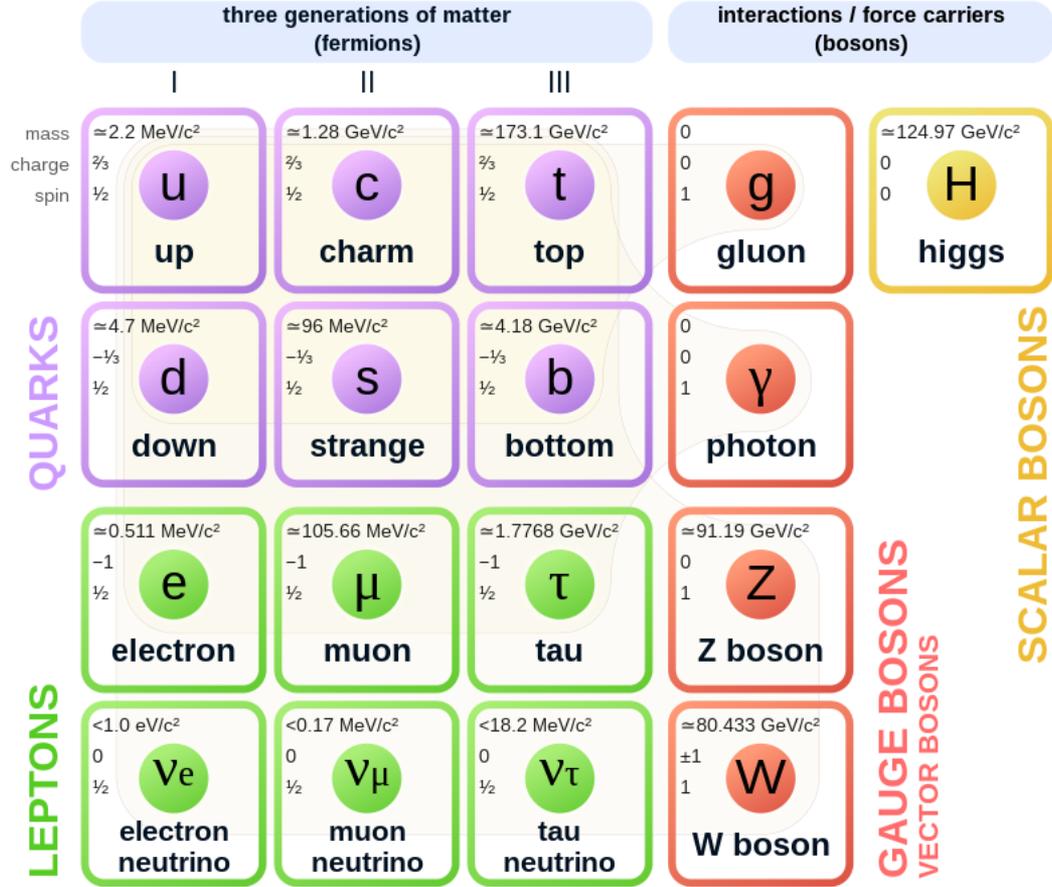
# What is the universe made of?

Very robust understanding of our Earth's "building bricks"  
BUT

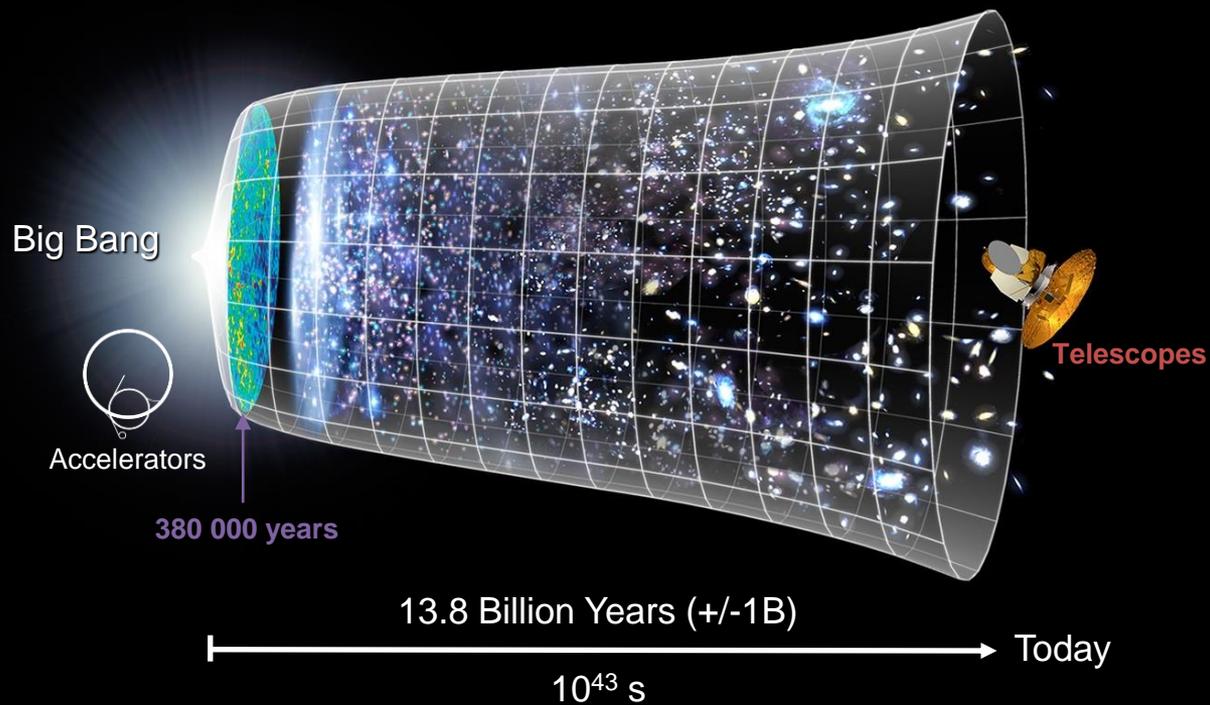
Big Questions left:

Gravity  
Dark Matter  
Dark Energy

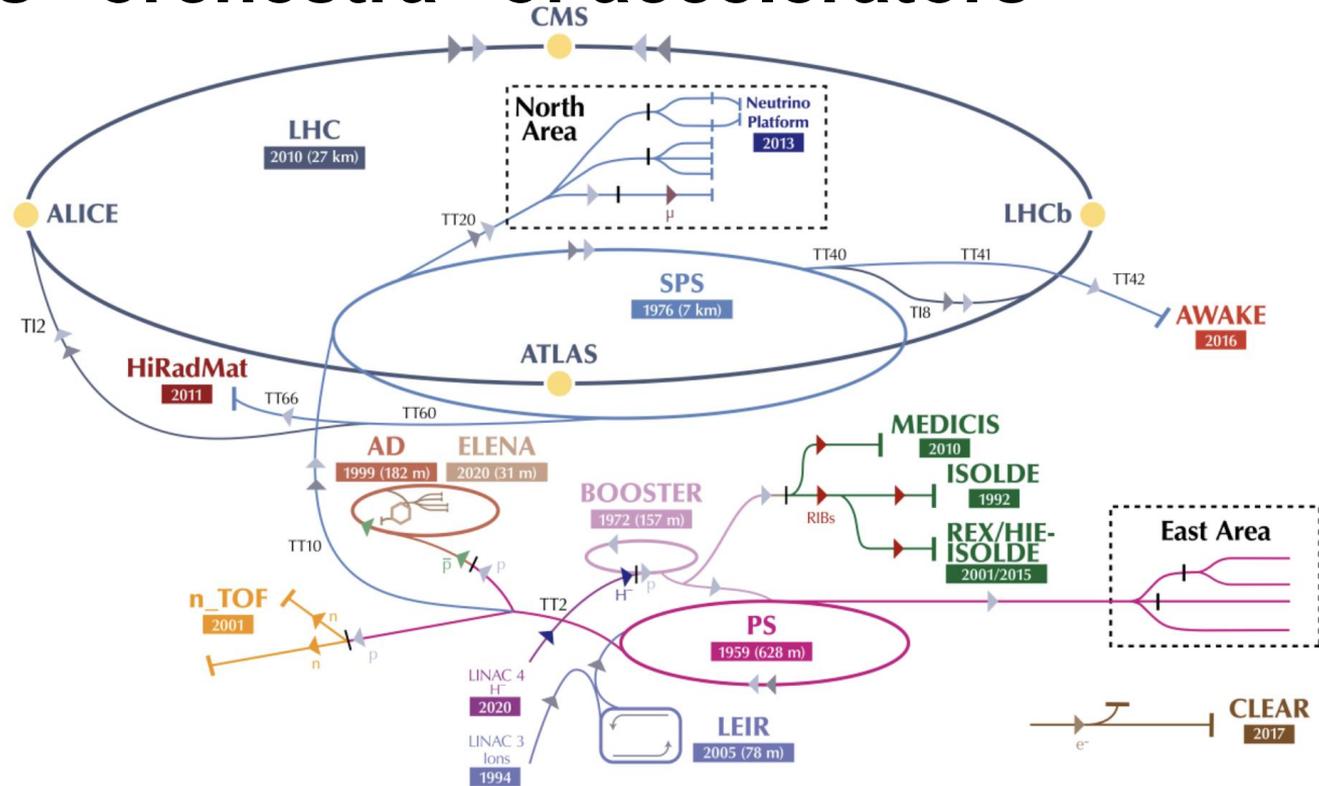
## Standard Model of Elementary Particles



# How did the Universe begin?



# CERN's "orchestra" of accelerators



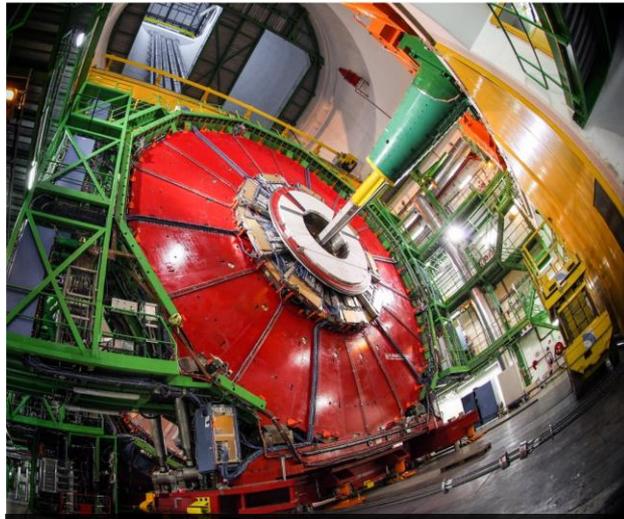
▶  $H^-$  (hydrogen anions) ▶ p (protons) ▶ ions ▶ RIBs (Radioactive Ion Beams) ▶ n (neutrons) ▶  $\bar{p}$  (antiprotons) ▶  $e^-$  (electrons) ▶  $\mu$  (muons)

# Instruments of our orchestra

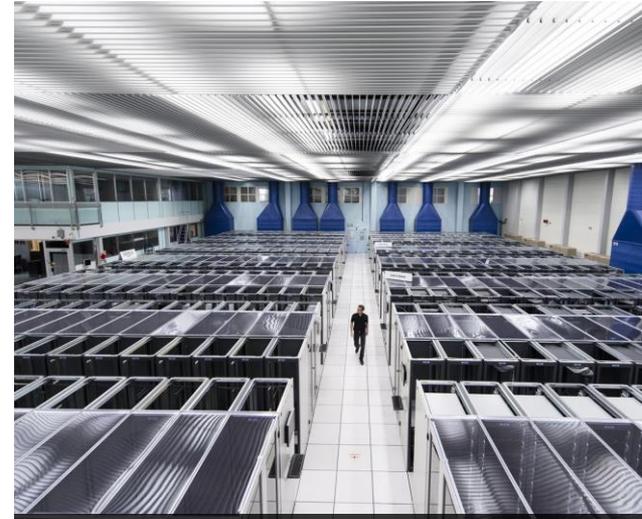
We build the largest machines to study the smallest particles in the universe.  
We develop technology to advance the limits of what is possible.



ACCELERATORS

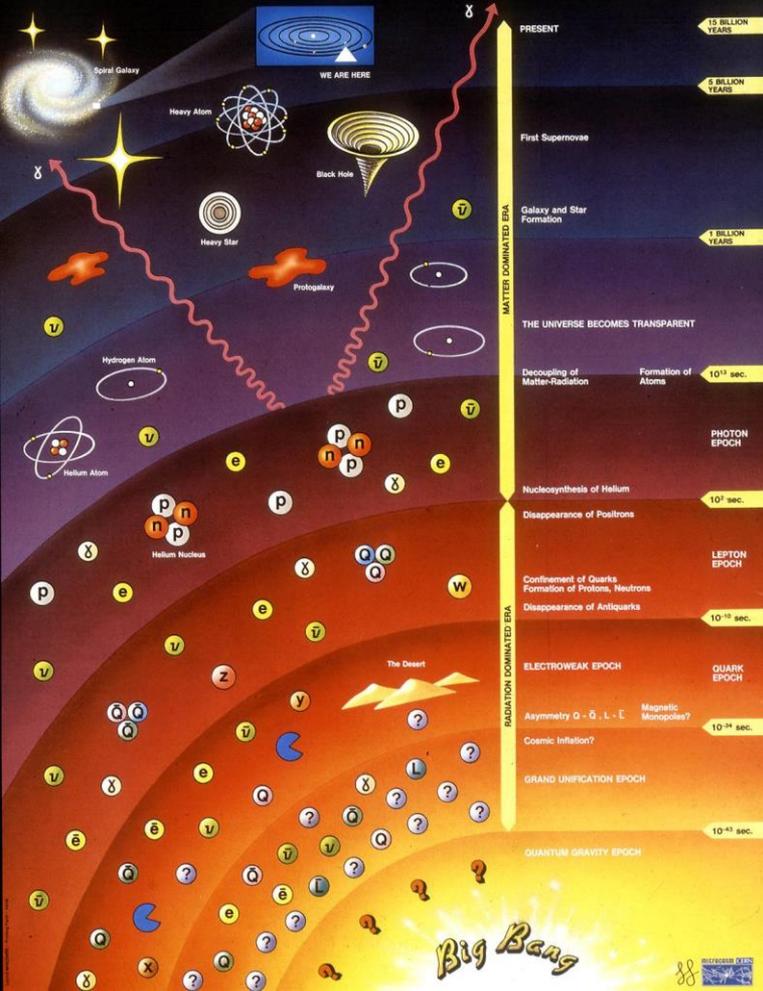


DETECTORS



COMPUTING

# History of the Universe



## In the LHC, we...

Use **9.593 Magnets**

at an **operating temperature of -271.3°C**

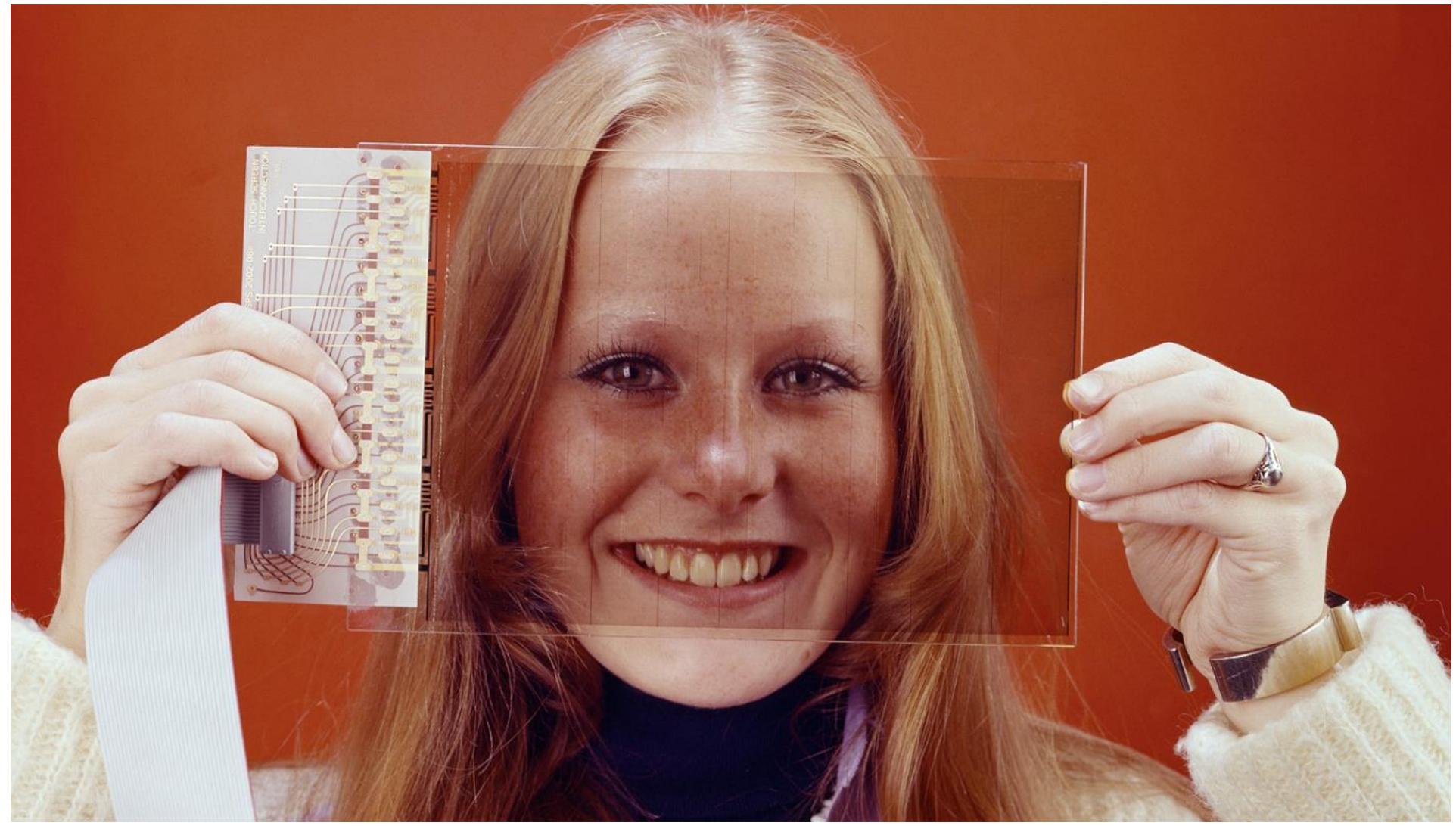
to accelerate **2.808 bunches of  $1.2 \cdot 10^{11}$  Protons** over **26 659 m**

**At 99,99999 % of the speed of light**  
**They make 1.245 turns per Second**  
**And collide at 4 Experiments every 25 nanoseconds**  
**(1.6 Billion times/second)**

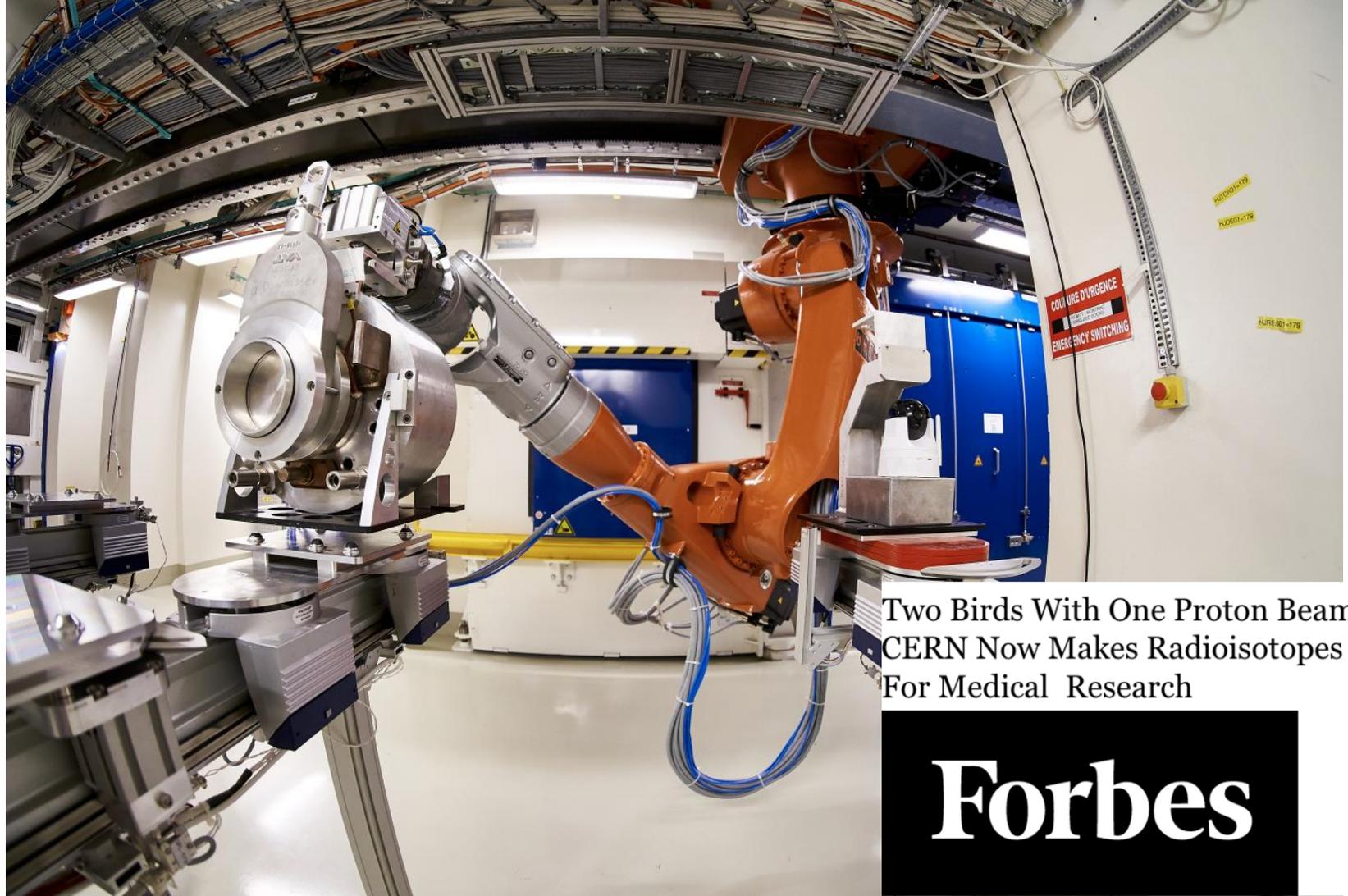


But who actually studied  
particle detector design?





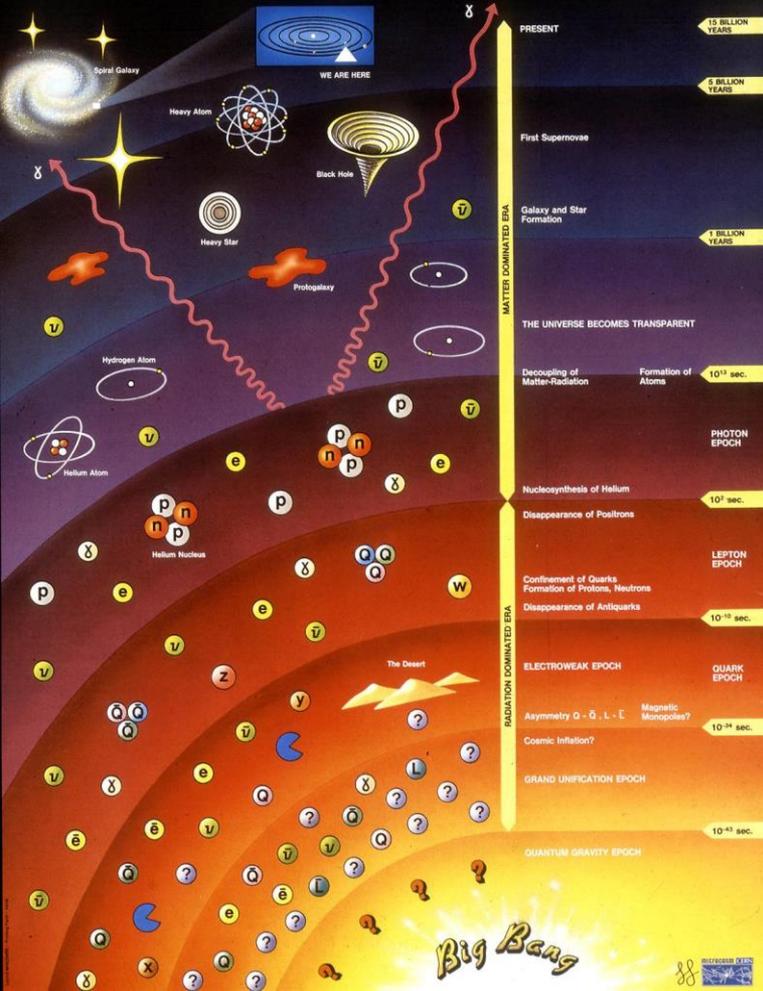
TOUCH SCREEN  
HYPERCONNECT



Two Birds With One Proton Beam:  
CERN Now Makes Radioisotopes  
For Medical Research

**Forbes**

# History of the Universe



... And we found the HIGGS!  
 Since the discovery of the Higgs, we  
 can measure "until"  $10^{-12}s$   
 (But that's not enough ☹)

## Standard Model of Elementary Particles

three generations of matter (fermions)			interactions / force carriers (bosons)	
	I	II	III	
mass	=2.2 MeV/c <sup>2</sup>	=1.28 GeV/c <sup>2</sup>	=173.1 GeV/c <sup>2</sup>	=124.97 GeV/c <sup>2</sup>
charge	2/3	2/3	2/3	0
spin	1/2	1/2	1/2	0
	<b>u</b> up	<b>c</b> charm	<b>t</b> top	<b>g</b> gluon
	<b>d</b> down	<b>s</b> strange	<b>b</b> bottom	<b>γ</b> photon
	<b>e</b> electron	<b>μ</b> muon	<b>τ</b> tau	<b>Z</b> Z boson
	<b>ν<sub>e</sub></b> electron neutrino	<b>ν<sub>μ</sub></b> muon neutrino	<b>ν<sub>τ</sub></b> tau neutrino	<b>W</b> W boson
				<b>H</b> higgs

QUARKS (left side of table)  
LEPTONS (left side of table)  
GAUGE BOSONS VECTOR BOSONS (right side of table)  
SCALAR BOSONS (right side of table)

Since the discovery of the Higgs, we  
 can measure "until"  $10^{-12}s$

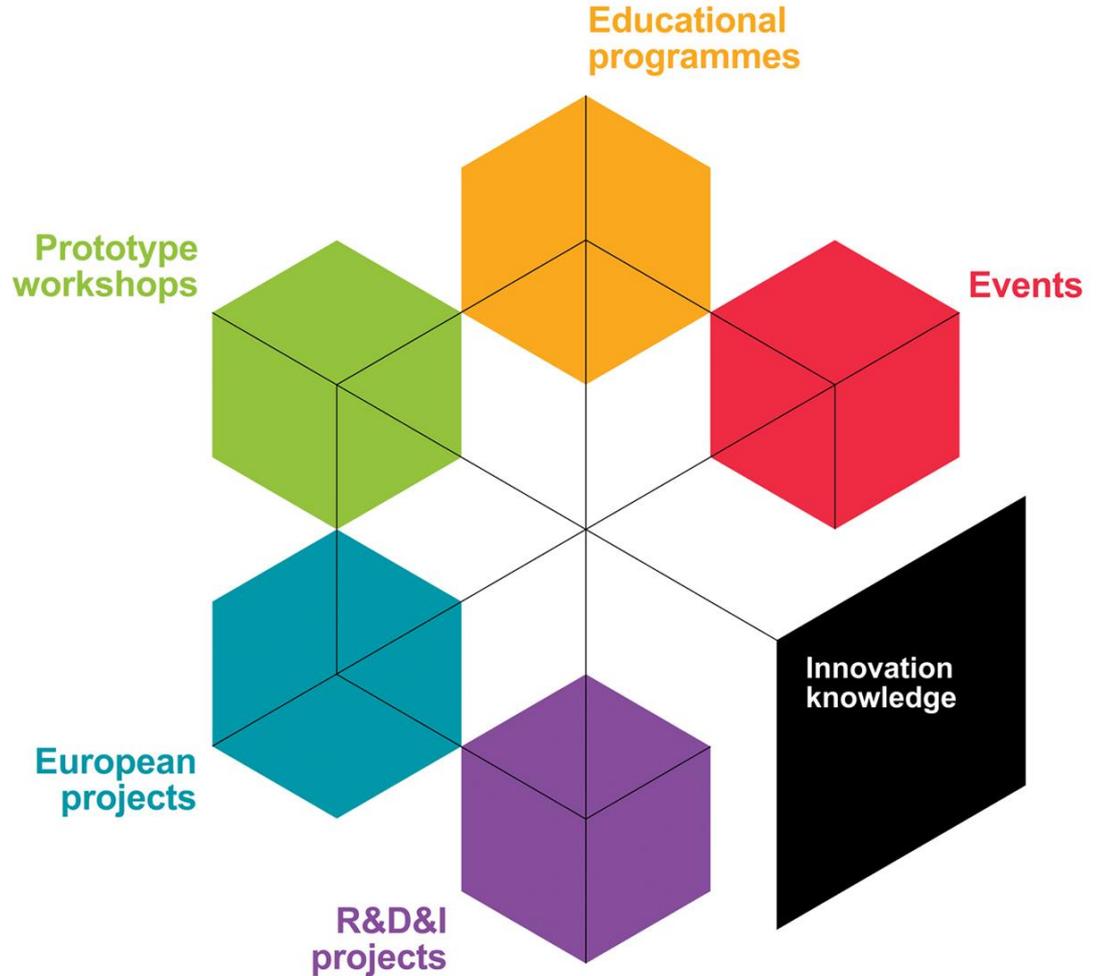


# IdeaSquare

## The Innovation Space at CERN

- Collaborative methodologies;
- Access to CERN expertise;
- Cross-connectivity to ideate solutions for the future of humankind.

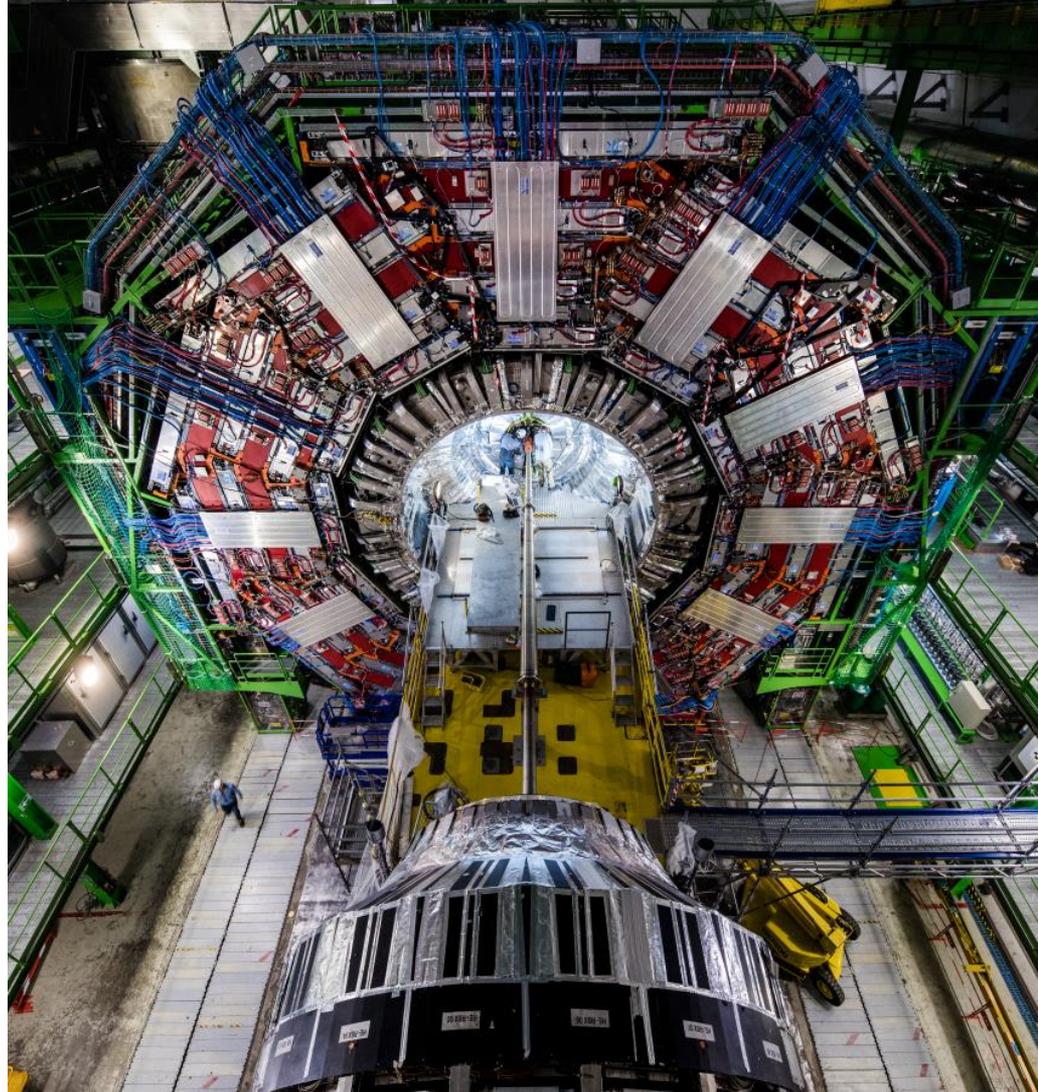
A place where people have the licence to dream.



**Business as usual  
is not in our DNA,  
but we also don't  
want any "magic"...**

Ideas should be disruptive, without:

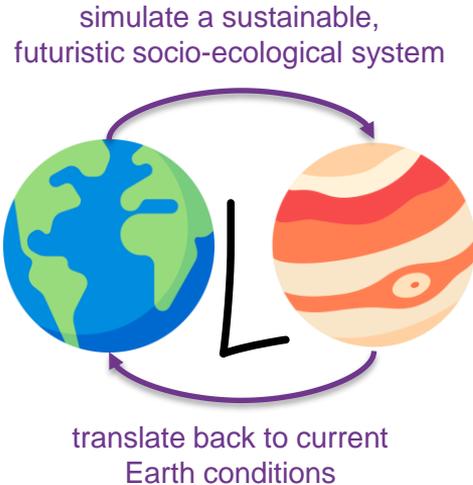
- Breaking the laws of physics;
- Causing more harm than good.



# If you could do it all from scratch, what would you do differently?

2) Returning to a **real-world problem** on Planet Earth:

- Applying a **systemic approach**.
- Showcasing scientific methods can be used to **address complex societal challenges**.
- Anticipating **future developments** of current trends and **assess the impact of potential interventions**



1) **Tackle a Mission on Planet Y**, like establishing a **first sustainable settlement** on this exoplanet.

Involving:

- **Understanding the exoplanet** you're travelling to.
- Considering concepts of **fairness and equality in a new society**.
- Considering **who and what** you will be bringing with you.
- Surviving the travel;

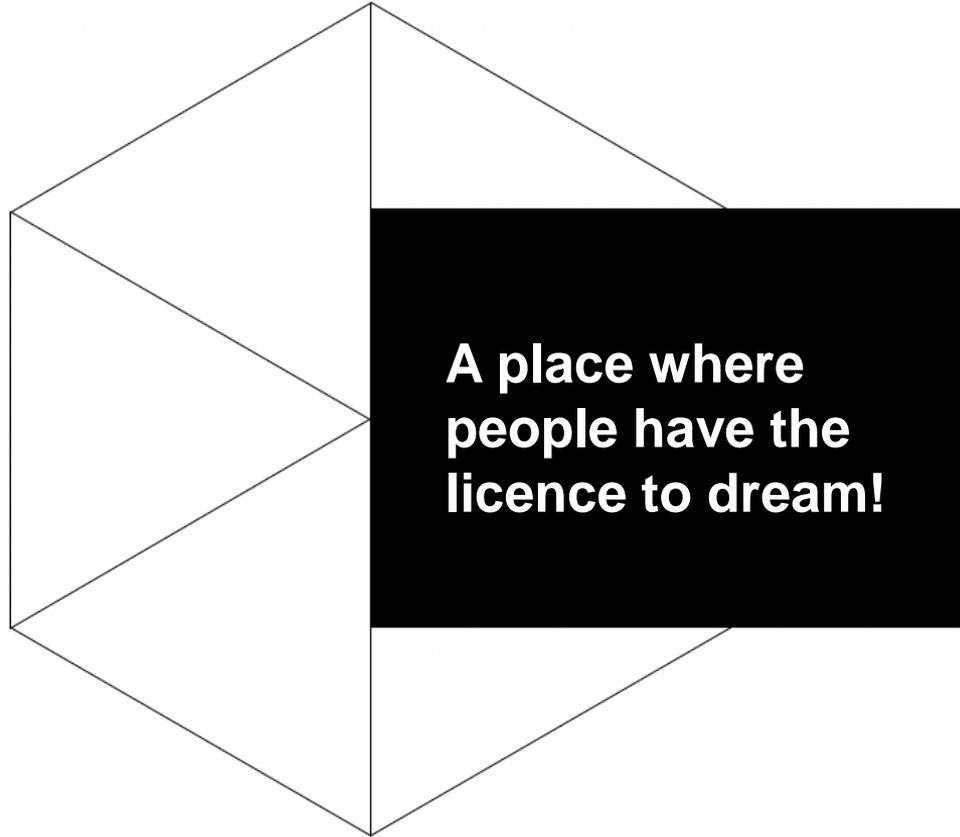
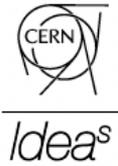


# Why IdeaSquare?



We believe that for **fundamental change** to be made, we need **more than traditional** innovation **methods and mindsets.**

We enable students and innovators to **imagine a future** worth fighting for, and we give them the **tools and confidence** to start building that future.



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