



**Design
The Future
IdeaSquare
CERN
Workshop
18th -22nd
November 2019**

Introduction

“Thinking outside the box” or maybe “thinking without a box”? In any case, easy to say, difficult to implement. Even more when thinking about the future.

As Niels Bohr once said: *Prediction is very difficult, especially if it's about the future.* That is why this workshop, as usual, is not about predicting the future but designing your own one. For that, we would like to offer you different thinking tools. But not the usual ones. We would like to share with you how we think disruptively at CERN.



The general objective of this workshop is that, while having fun, you learn:

1. What CERN is by interacting directly with CERN researchers.
2. How to think disruptively.

Don't be mistaken though. We will squeeze every single neuron of your brain for you to think in ways you never imagine before. This, we can predict!



Satisfaction of one's curiosity is one of the greatest sources of happiness in life.
(Linus Pauling, scientist).

Agenda

Day one

Time	Activity	Who	Observations
9.00 h	Welcome to IdeaSquare and housekeeping rules	Pablo & Santeri	
9.30 h	Student team formation	Students	The students arrange themselves in interdisciplinary teams and prepare a short team presentation pitch
10.00 h	Team presentations	Students	
10.30 h	"Get to know CERN"	Students	Practical exercise where the students' teams discover CERN on the go.
12.30 h	Lunch		
15.00 h	"Get to know CERN" team presentations	Students	The students' teams present their experiences
16.30 h	End of day one		

Day two

Time	Activity	Who	Observations
9.00 h	"Why are we here?"	Markus Nordberg	Introduction to disruptive thinking in physics and at CERN with an accompanying exercise
12.30 h	Lunch		
13.30 h	"Innovate and dance"	Romain Muller	How to innovate with the space around you
16.30 h	"Breaking Assumptions"	Pablo Garcia Tello	A first approach to think disruptively with a practical exercise
18.00 h	End of day two		

Day three

Time	Activity	Who	Observations
9.00 h	"Idea generation"	Ezri Tarazi	Introduction to idea generation and accompanying exercise
12.30 h	Lunch		
13.30 h	Ideation for mind expansion "Making it up"	Tuuli Utrainen	Introduction to idea generation and accompanying exercise
16.30 h	"Prototyping"	Hans Hagenes Boe & Santeri Palomaki	An introduction to prototyping and accompanying exercise
18.30 h	End of day three		

Day four

Time	Activity	Who	Observations
9.00 h	"Multiverse Thinking"	Pablo Garcia Tello	Introduction to think disruptively about the future society
12.30 h	Lunch		
13.30 h	Introduction to student's final project; the students' teams start working on it.		
16.30 h			
18.30 h			

Day five

Time	Activity	Who	Observations
9.00 h	Students work on final project		
12.30 h	Lunch		
13.30 h	Presentation of student's team projects		
16.00 h	End of workshop		



Every bit of time spent in and researching around CERN encourages me to reconsider the intangible peripheries of micro and macro.

(Mariele Neudecker, artist).

Some comment about the activities

Activity	Comment
"Get to know CERN"	Ready for a self-discovery tour through CERN? Let's see if you can dig into the CERN insides.
"Why are we here?"	There two fundamental questions. The first one is why we are here. The second one is why we are here. Weird? Not at all! Be prepared.
"Innovate and dance"	I guess to take space for granted. Well...don't do it in this exercise, because space is what you make out of it.
"Breaking Assumptions"	Have you ever broken a toy as a child to see what is inside? The same thing is possible with what we take for granted every day.
"Idea Generation" (Ezri)	No Box, Plasmatic State, the 5 intelligences generator and other ways to get to a judgment free zone.
Ideation for mind expansion "Making it up"	In this session, we approach ideas as stepping stones towards the far out realms of imagination. We exercise our ability to think uncensored, engage in abductive thinking and utilize strategies to make logical jumps further in the space of possibilities.
"Prototyping"	What is a prototype? Are you sure we talk about the same thing? Check it out at IdeaSquare!
"Multiverse Thinking"	The future is multifold! Dare to design it!
"Final Project"	Now, it's time for you to shine!

Inspirational material

The table below is a selection of educational videos about many of the concepts that will help you to understand the physics done at CERN.

Thematic Area	TOPIC	Video link
The Universe and the Big Bang	What is the Universe	https://www.youtube.com/watch?v=nrTsvn9usVQ&index=1&list=PLoaVOjvkzQtx7B9LGLMDPtcT3msNVgceJ
	How Big is the Universe?	https://www.youtube.com/watch?v=5NU2t5zlxQQ&index=2&list=PLoaVOjvkzQtx7B9LGLMDPtcT3msNVgceJ
	Where Was The Big Bang?	https://www.youtube.com/watch?v=W4c-gX9MT1Q&index=4&list=PLoaVOjvkzQtx7B9LGLMDPtcT3msNVgceJ
	Do We Expand With The Universe?	https://www.youtube.com/watch?v=th_9ZR210_w&index=5&list=PLoaVOjvkzQtx7B9LGLMDPtcT3msNVgceJ
The Standard Model of Particle Physics	The Standard Model of Particle Physics	https://www.youtube.com/watch?v=edgsmtUH954
	What are Quarks?	https://www.youtube.com/watch?v=nlv06ISAC7c
The Higgs Boson	The basics of the Higgs Boson	https://www.youtube.com/watch?v=IEIHqJG5Fe4
	The Higgs Boson: What is Mass?	https://www.youtube.com/watch?v=ASRpIym_jFM&list=PLoaVOjvkzQtyKaeLbEOiA5Qf1W9BdZEJL&index=2
	The Higgs Field, explained	https://www.youtube.com/watch?v=joTKd5j3mzk
	Higgs Boson: How to Discover a Particle	https://www.youtube.com/watch?v=6guXMfg88Z8&index=3&list=PLoaVOjvkzQtyKaeLbEOiA5Qf1W9BdZEJL
Antimatter	Antimatter Explained	https://www.youtube.com/watch?v=Lo8NmoDL9T8&index=5&list=PLoaVOjvkzQtwltNydLdcTwBauZVpwdFwz

If you want to know more about advanced concepts in Fundamental Physics still explained in a simple way, the videos below will help you.

Thematic Area	TOPIC	Video link
Supersymmetry	What is Supersymmetry?	https://www.youtube.com/watch?v=lqhTvDqW6ZM
String Theory	String Theory: Tiny Vibrating Strings	https://www.youtube.com/watch?v=4DobGp-d4ll
Dark Energy	What is Dark Matter?	https://www.youtube.com/watch?v=Af0_vWdfJwQ&list=PL908547EAA7E4AE74&index=2

And if you want reading material to really initiate yourself, these three books are a good start:

- The First Three Minutes, Steven Weinberg, Bantam Books, 1977.
- Thirty Years That Shook Physics: The Story of Quantum Theory, George Gamow, Dover Publications, 1966.
- One, two, three...infinity: facts and speculations in science, George Gamow, Dover Publications, 1988.

Interested about how different authors imagine the future? Take a look!

Link	Title	Comments
https://www.youtube.com/watch?v=IK_cdkpazjl&list=PL4YUC39vAjXuRPKyZjbMqTdQRIfcHG6_C&index=5	Sight	A world in which Google Glass-inspired apps are everywhere.
https://www.youtube.com/watch?v=YJg02ivYzSs&list=PL4YUC39vAjXuRPKyZjbMqTdQRIfcHG6_C&index=1	Hyper-Reality	A provocative and kaleidoscopic new vision of the future, where physical and virtual realities have merged
https://www.youtube.com/watch?v=R5kV6fyp7I4&list=PL1dNyhqoSubu9MYIStaOqdgTIO-_lhHVG&index=2	Breaker	In tomorrow's Tokyo, the technologically-enhanced body of a young mercenary hacker is overrun by a sentient data weapon
https://www.youtube.com/watch?v=bzOgC8fD6xA&list=PL1dNyhqoSibu9MYIStaOqdgTIO-_lhHVG&index=6	Mech: Human Trials	After a serious accident, a man is introduced to a designer street drug promising to restore his ravaged body.
https://www.youtube.com/watch?v=dYTZSdt2wll&list=PL1dNyhqoSubu9MYIStaOqdgTIO-_lhHVG&index=8	Hemera	Overpopulation has become a serious problem and a highly funded organisation launches a project to move people to an earth-like planet
https://www.youtube.com/watch?v=bwAiclKg4Kg&list=PL1dNyhqoSibu9MYIStaOqdgTIO-_lhHVG&index=10	Telescope	The year is 2183. Earth is dead. With all evidence of organic life lost, a cosmic archaeologist travels faster than light into deep space to capture images of the once vibrant planet.
https://www.youtube.com/watch?v=oQiRG7CiYWo&list=PL1dNyhqoSibu9MYIStaOqdgTIO-_lhHVG&index=11	Sweet Water	When Earth's water is rendered undrinkable by an interstellar gas cloud, a mission is sent to begin extracting liquid water from the moon Enceladus
https://www.youtube.com/watch?v=yxnhiaf7HTY&index=16&list=PL1dNyhqoSubu9MYIStaOqdgTIO-_lhHVG	Synesthesia	A musician tries to bring his dead wife back to life using the power of sound waves.
https://www.youtube.com/watch?v=nVCNh6_Ypl8&list=PL1dNyhqoSibu9MYIStaOqdgTIO-_lhHVG&index=17	Beautiful Dreamer	Time travel tale set in a striking near future world of drones, robots, holograms and transport pods.
https://www.youtube.com/watch?v=TaWUwrgL-Q&list=PL1dNyhqoSubu9MYIStaOqdgTIO-_lhHVG&index=22	Gadget	The story of Neem, a man jaded by the "alienating" technology obsessed world he lives in. What he really needs is something real - human intimacy.
https://www.youtube.com/watch?v=ws3m51gc9qo&index=23&list=PL1dNyhqoSubu9MYIStaOqdgTIO-_lhHVG	The Visible Void	Our world is an illusion - a mind trick. "The Visible Void" challenges our certainties about eyesight, vision and Man's ability to make sense of a complex world.

https://www.youtube.com/watch?v=A_1YHHhry0w	Future Boyfriend	A woman's date takes a strange turn when the man she's been seeing reveals his strange backstory.
https://www.youtube.com/watch?v=P5_Msrdg3Hk	Future Shorts	A sleep-deprived office worker accidentally discovers a black hole - and then greed gets the better of him...
https://www.youtube.com/watch?v=FEUao7ysgDc	Abiogenesis	A strange mechanical device lands on a desolate world and uses the planet to undergo a startling transformation that has profound implications for an entire galaxy.
https://www.youtube.com/watch?v=mMZbig5t8Ug	Einstein-Rosen	Summer of 1982. Teo claims he has found a wormhole. His brother Óscar does not believe him... at least not for now.
https://www.youtube.com/watch?v=RGlgAC6_tOM	The Gift	Disturbing story of a mysterious box.
https://www.youtube.com/watch?v=qlfxHjAus2o	CXL	A 140 year old woman, sustained by a mobile life support chair, must come to terms with the reality of death.
https://www.youtube.com/watch?v=dwpZdPwaSpo	The Alpha Invention	After applying an ingenious method to create artificial intelligence on his home computer, a reclusive programmer is contacted one rainy evening by a suspicious dealer looking to buy the technology from him.
https://www.youtube.com/watch?v=EXxsfQDyAQ	Life Begins at Rewirement	A man struggles with the health care system and his own feelings of guilt when he checks his 100-year-old, estranged mother into Gateway TransCare -- a memory care facility that uploads elderly minds into computer data banks.
https://www.youtube.com/watch?v=TpZunxfrpls	The New Politics	It is the year 2056, and the two major political superpowers are on the brink of war with one another.
https://www.youtube.com/watch?v=-3fu2273-DQ	PETS	The future is "clean and easy", with the intelligent spheres guiding you through.
https://www.youtube.com/watch?v=C5-LbsTyteU	I'm You	A time travel paradox.
https://www.youtube.com/watch?v=6RCzOtX0Tc	Time and Space	Emotional side of time travel
https://www.youtube.com/watch?v=24kRv1c0PiU	A.I. Revolt	Hypothetical future in which Artificial Intelligence has become the dominant form of intelligence on earth and it's hunting for human beings.
https://www.youtube.com/watch?v=tE_G3wOyGmo&list=PL1dNyhqoS_u9MYIStaOqdgTIO-_lhHVG&index=30	Among Circuits	Tells the story of the journey of a cute anti-virus as it searches out an enemy bug inside the computer!
https://www.youtube.com/watch?v=6L7b5UZHOpY&list=PL1dNyhqoS_u9MYIStaOqdgTIO-_lhHVG&index=85	ARI	David's life, ambitious young trader takes a new turn when he moves into an apartment self-regulated by an artificial intelligence named ARI.
https://www.youtube.com/watch?v=QMgZOVs8xVE&index=91&list=PL1dNyhqoSubu9MYIStaOqdgTIO-_lhHVG	Retrofit	Death is just a new beginning for those who can afford it. Dylan, driven by his need for reconciliation, brings his father back from the dead, and houses him in a shabby utility robot 'acquired' from the black market.
https://www.youtube.com/watch?v=LVMl2ain-Rs&index=102&list=PL1dNyhqoSubu9MYIStaOqdgTIO-_lhHVG	Story of R32	A lonely robot who just tries to attract attention to himself.
https://www.youtube.com/watch?v=z24rqrXlNPY&index=107&list=PL1dNyhqoSubu9MYIStaOqdgTIO-_lhHVG	From The Future With Love	A world where people obtain police protection solely through subscription.
https://www.youtube.com/watch?v=tjgM6ckoz88	Tears of Steel	When Thom broke up with his girlfriend Celia to follow his dreams and become an astronaut, he didn't realize it would lead her to use her robotics

		skill against all of humanity. Now he must try to heal her broken heart and save the world.
https://www.youtube.com/watch?v=an6DRN4fIZM	Dr. Easy	Michael is a broken man with a gun, surrounded by armed police. A robot with a medical degree is dispatched –but can it save him?
https://www.youtube.com/watch?v=0ISM5Flxjhs	Augmented	Augmented reality has become so ubiquitous that the line between the real and virtual worlds are blurred.



We are ready for November 18th to 22nd...are you?



Idea^s