i2Planet 2024

IdeaSquare
The innovation space at CERN

A Planetary Adventure

17th -22th November

Introduction

Congratulations!

You have successfully completed the first part of your adventure. However, we are not here only to create science fiction narratives, we also want to learn from them. How might we apply our cosmic learnings to a real-world situation right here on our planet keeping in mind sustainability aspects? Use the experience of the past couple days as a superpower to face the next challenge awaiting you.

Welcome back to Earth, our beloved and, for now, only home!

Part 2: Your Adventure Back on Earth

Back to Earth – Data Driven Extinction?

We humans in developed countries are used to having all information available anytime, anywhere. We stream music on our way to work or school, read the news online, share memes with our friends, collaborate on shared documents, and watch films on demand. It is convenient for us, but in many cases, it is also extremely important. We can educate ourselves, find important information, and connect with others for free (after having gained access to electricity, internet connection, and a device).

On the flipside, we easily forget that all that we do online has an environmental impact as well. It is not just our laptops and our electricity, it is also all of the data we consume, and even the bytes we are only storing. Every 1000 pictures that are automatically saved in a cloud from your phone use roughly the same in a year as burning a lightbulb for 14 days non-stop. On top of that, data centers use large amounts of water for cooling. If we do our best to save energy by turning off lights, why do we not do the same with our data?

Every search we do on Google has a footprint as well, and each AI query. ChatGPT's daily power usage is nearly the same as 180 000 U.S homes. According to Morgan Stanley, ''by 2027, generative AI could use as much energy as Spain needed to power itself in 2022''. According to IEA, the total electricity consumption from data centers, AI, and the cryptocurrency sector is expected to double by 2026. If you believe ChatGPT, currently data centers account for 0.5-1% of global carbon emissions.

Based on these estimations, your task is to arrive to a shared vision of what the issues and possible opportunities related to data centers are.

Each team should then make a poster for their target audience, including the key message, quantitative estimations of avoided emissions and water usage.

Team General Public: What would you want to communicate to your peers or your family, and how? How do you start changing a culture of data reliance, or is there even a need to?

Team Education: How should the sustainability of data centers be taught in educational institutions?

Team Policymakers: What do you think should be the key message towards the people who make decisions? Do you wish for some regulations or rules for data center providers and users?

Together, these posters should represent a comprehensive and uniform way to raise awareness of the challenges (and opportunities?) associated with data centers. In addition to the posters, please include a brief description of how you think the information could reach its intended end users.

Food for thought

Energy demand and CO2 emissions from data centres is a very complex puzzle in its own right, and is linked to the energy transition within other sectors as well. Below you can find resources to help you understand what different perspectives are at play.

The International Energy Agency (IEA) on the future of electricity (executive summary is excellent) https://iea.blob.core.windows.net/assets/6b2fd954-2017-408e-bf08-952fdd62118a/Electricity2024-Analysisandforecastto2026.pdf

How much energy will AI really need in the future? https://scsp222.substack.com/p/how-bad-will-the-ai-power-crunch

AI power demand as a driver for the green energy transition https://climate.benjames.io/ai-go-brrr/

Agenda

You will find an agenda for your week at IdeaSquare here:
https://indico.cern.ch/event/1459926/