CERN Ideasquare

INTRODUCTION

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EUROPEAN RESEARCH INFRASTRUCTURE CHALLENGES

- The ERI´s, CERN included, deal with engineering and innovation challenges stemming from scientific progress
- Accumulated knowledge, capabilities and infrastructure aligned to drive advanced scientific field forward -> societal value and benefits are challenging to measure as the time from discovery to application is long
- How might we accelerate societal value creation (new technology, products, services, jobs, startups, etc) from basic research?

IDEASQUARE IN BRIEF

“Ideasquare is a pilot project that brings together physicists, engineers, industrial partners, early-stage researchers and cross-disciplinary teams of students to work together on detector upgrade R&D technologies. The purpose is to co-develop new technologies for research purposes, and at the same time, create a fruitful environment for socially and globally relevant new product ideas and innovation.”

IDEASQUARE IS

- Project with a dedicated building, hosting:
  - EU-funded detector upgrade R&D projects
  - Multidisciplinary master level student programs
  - Innovation events, workshops, hackathons
- ...to prototype, test and iterate new forms of collaboration and co-creation in the areas or Research, Education and Technology - RET

EXAMPLE: EU-FUNDED DETECTOR UPGRADE R&D PROJECT

EDUSAFE

- EDUSAFE is a 4-year Marie Curie ITN project
- Training for 10 Early Stage and 2 Experienced Researchers
- Focuses on research into the use of Virtual Reality (VR) and Augmented Reality (AR) during planned and emergency maintenance in extreme environments
- The result will be an integrated wearable VR/AR system (+control system) which can be implemented and tested as a prototype, using LHC at CERN as a test and demonstration platform

Challenge Based Innovation

EXAMPLE: MASTER-LEVEL STUDENT COURSE

- Challenge Based Innovation (CBI) is 4-6 month MSc-level specialization course for product and service development, run by participating universities from (currently) 8 countries around the world
- Three pilot runs completed, 12 proof-of-concept prototypes produced
- In the course, multidisciplinary student teams learn how to apply Design Thinking – process (PBL) for new product/service development; CERN researchers act as technological coaches in the process
- “Work extremely hard, learn and have fun!”
- “Fail fast and often to succeed sooner”

EXAMPLE: STUDENT PROJECT PROTOTYPE

EXAMPLE: OhmPower

www.ohmpower.org

EXAMPLE: EduMind

https://www.youtube.com/watch?v=w5S8vSHH_XA

EXAMPLE: HACKATHON

- Organised by THE Port Association, hosted by CERN Ideasquare and with partners from other non-governmental organisations, a three-day problem solving workshop hackathon with the theme “Science for Humanitarian Purposes”
- Example prototypes produced included: open-source cosmic ray detector, an assistive electronics suit to help mine detection dogs, an inflatable fridge for vaccines, a terrain-mapping tool for refugee camps, etc.

CERN connections to UN & Sustainable Development Goals

IPU

ITU

UN

UNITAR

UNOG

UNOSAT

WHO

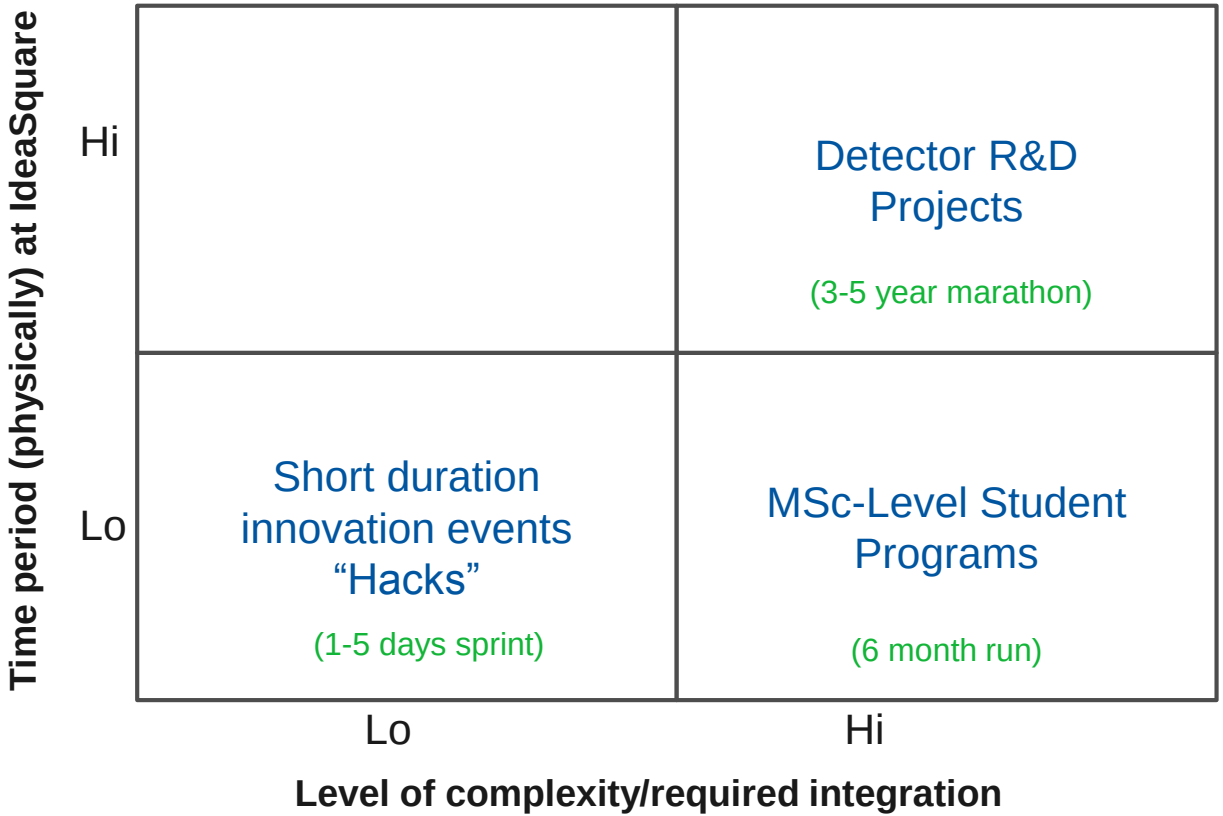
WIPO

WMO

Sustainable Development Goals

CERN contributes de facto to some of the Sustainable Development Goals, the UN roadmap for development for the years 2015-2030. These goals are of particular relevance in CERN action and impact on society.

HOW DO THESE PROJECTS DIFFER?

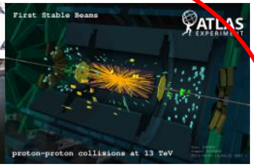


WHAT IS THE MOST INTERESTING LINK FOR NEW INNOVATION?

Technology

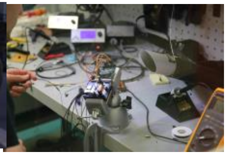
Defined/closed

Detector R&D Projects



Initially undefined/open

MSc-Level Student Programs



Product

Process

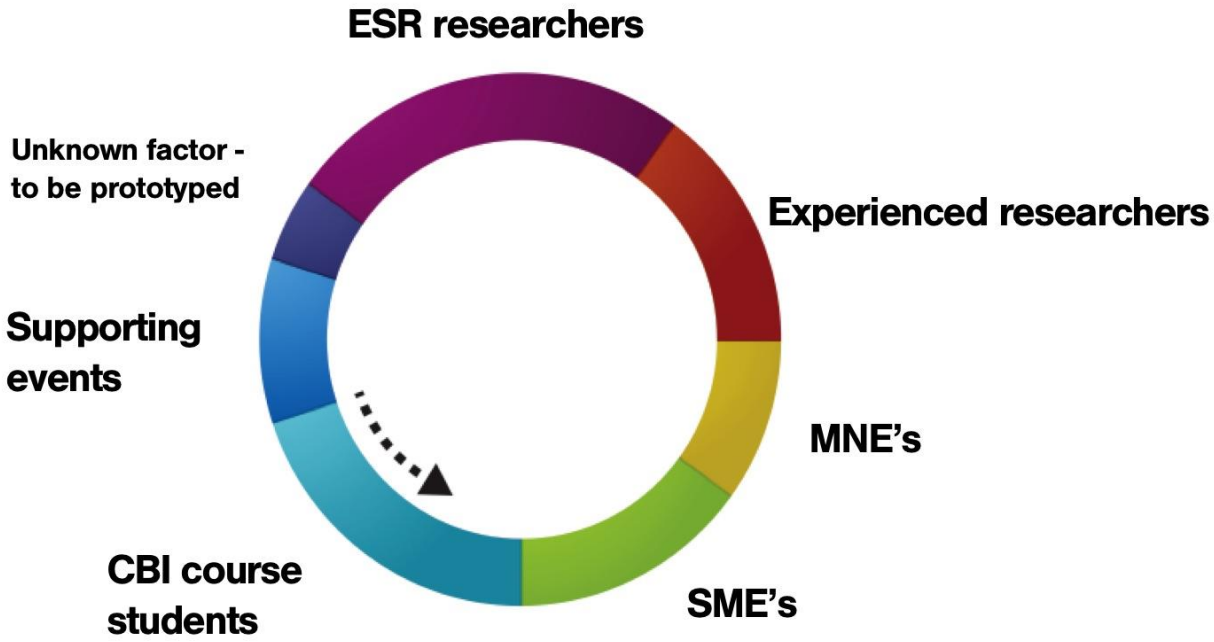
Focus

HOW DOES IDEASQUARE WORK?

- Where is the magic? Bringing different people together. Empowering them. Putting people first.
  1. Information doesn't radiate (communication deprived at 4m distance, goes to nearly zero at 20m) (TJ Allen, 1976)
  2. Single disciplinary teams do not radiate (single mindset leads thus far, but not beyond the rainbow)
- People from different backgrounds are amazed by each others skills... but only when they see them! **Diversity is key factor!**
- Innovation is 1% about ideas, 99% execution & iteration: finding ways in which people can collaborate and co-create efficiently

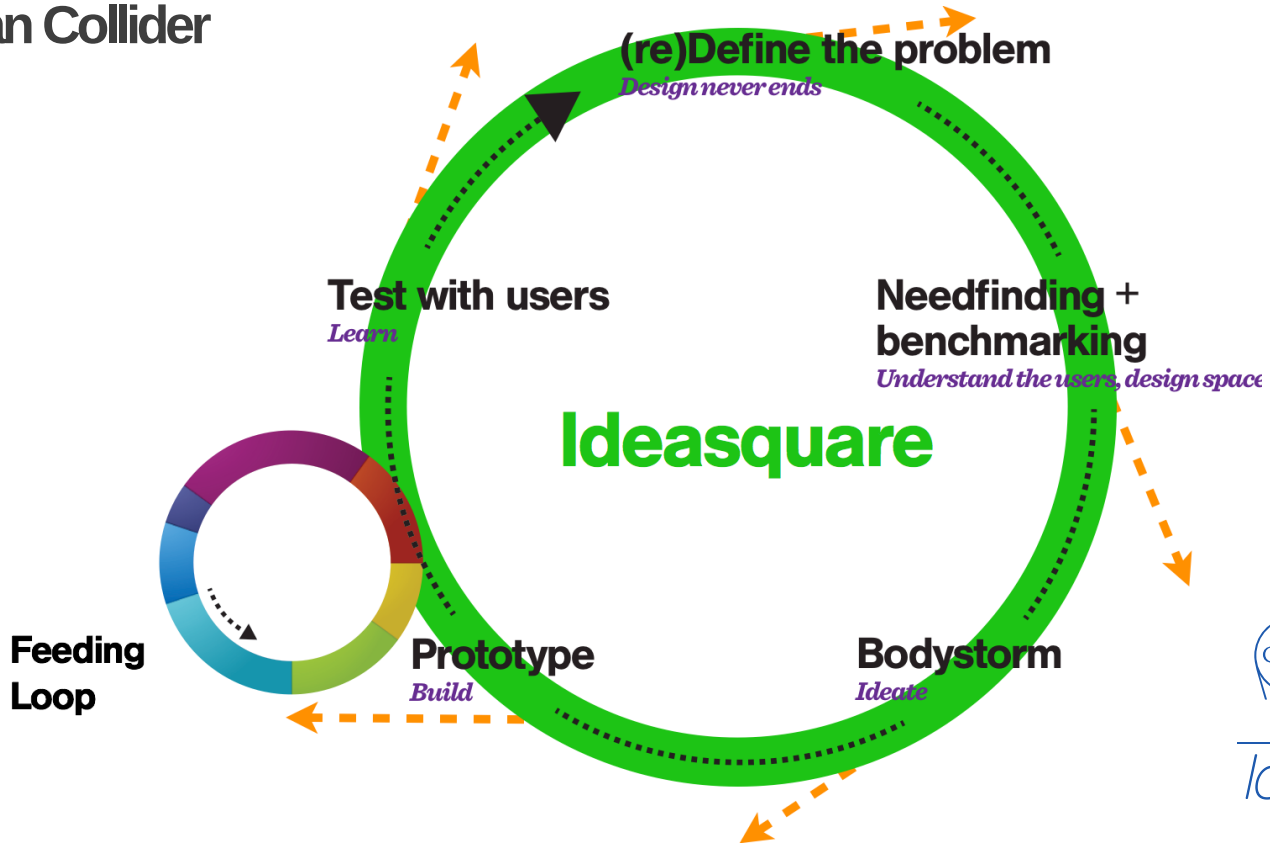
FEEDING LOOP

Ingredients for Creative Collaboration



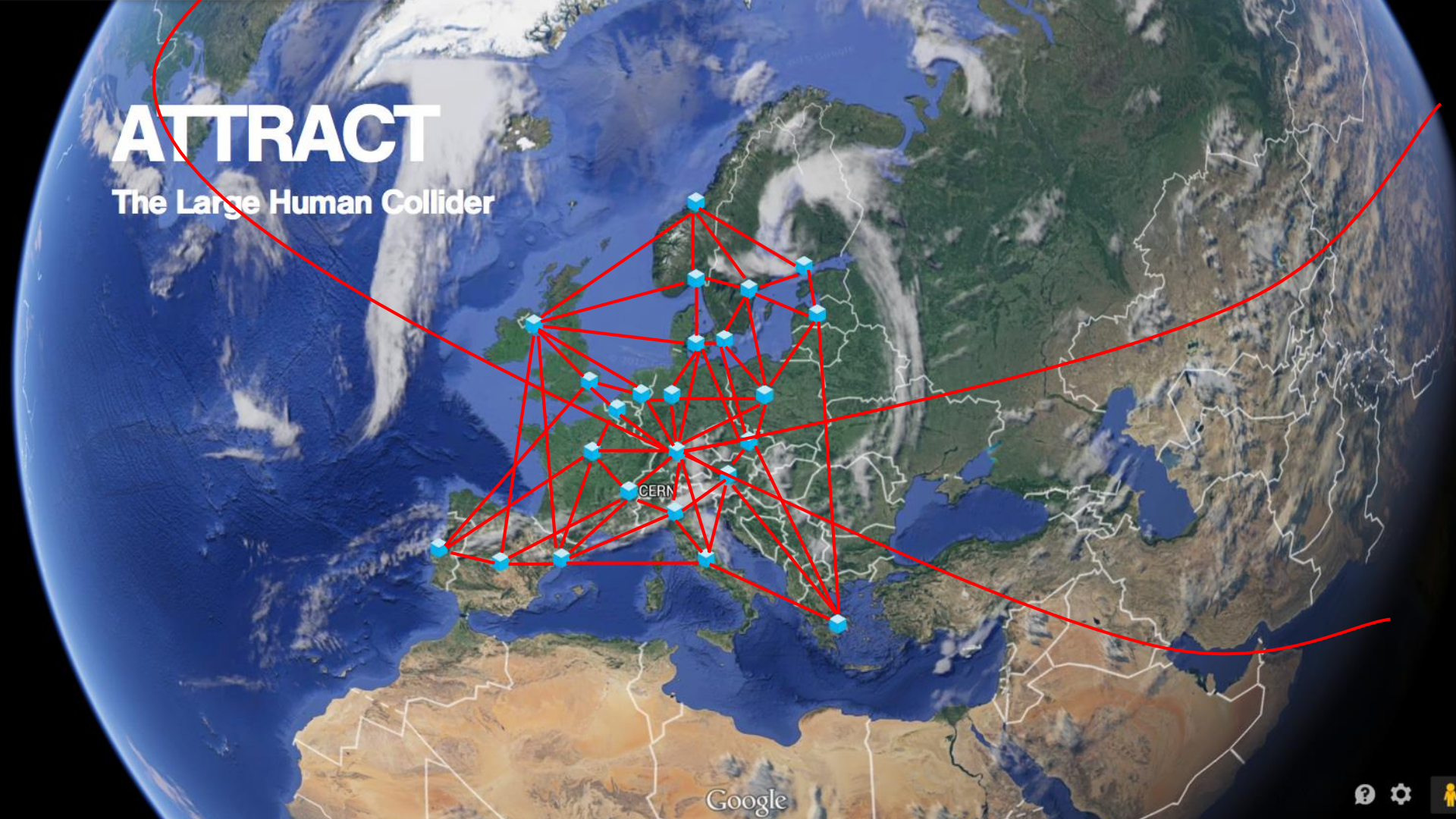
IDEASQUARE

The Small Human Collider



IDEASQUARE (EXPECTED) OUTPUT

- Pilot project = outcomes and measures for them are in development with in-situ research
- Communication, sharing ideas, spaces and resources improved in and between advanced technology development projects
- The counter-intuitive, controlled addition of variation, diversity, connections, ideas that are realised as prototypes to accelerate technology development
- Time span from discovery to application compacted
- Societal value of basic research more visible and tangible
- Education of future talent capable of working in basic research, commercial product & service development, or both
- Demonstrator for ATTRACT


ATTRACT
The Large Human Collider
CERN
Google

Questions? Comments?

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Let's have a cup of coffee and make interesting projects happen!

CERN Ideas