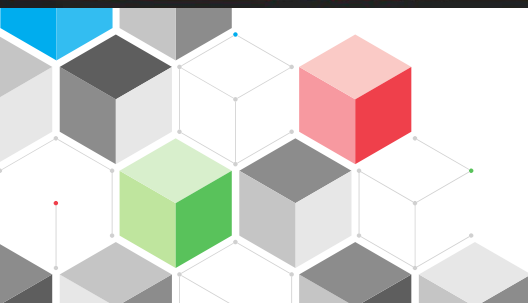Harri Toivonen
CERN, November 26th, 2018

CERN Ideasquare

INTRODUCTION

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

Research

Education   Technology

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

EXAMPLE: MASTER-LEVEL STUDENT COURSE

Challenge Based Innovation

- Challenge Based Innovation (CBI) is 4-6 month MSc-level specialization course for product and service development, run by participating universities from (currently) 12 countries around the world

- In the course, multidisciplinary student teams learn how to apply Design Thinking – process (PBL) for new product/service development; CERN researchers and engineers can give technical input in the process

- "Work extremely hard, learn and have fun!"

- "Fail fast and often to succeed sooner"

EXAMPLE: STUDENT PROJECT PROTOTYPE

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.

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS

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

some things to
consider
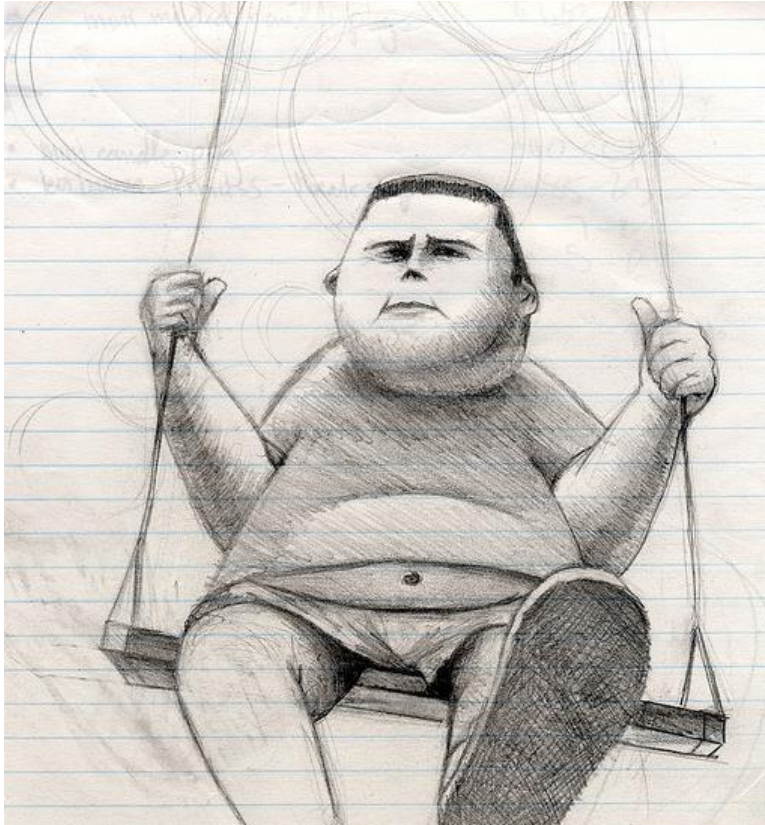
On sharing your ideas…

Quick Challenge

- Please draw a picture of a device that collects balls.
- Time: 60 sec.

Quick Challenge

- Now, please draw a picture of the person sitting next to you.
- Time: 30 sec.

Quick Challenge

**Please make a paper airplane of your drawing paper.
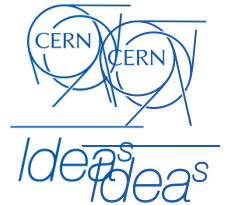Time: 30 sec.**

Idea^s

Where the magic happens

Your comfort zone

- Challenge your assumptions.
- There are no stupid questions. Fire away!
- [#ideas, #prototyping] Don't worry, be crappy.
- Our motto: Work hard, learn & have fun!

Using Ideasquare spaces for Workshops and Hackathons:

Safety

Safety is first priority.

BUILDING SAFETY B3179

- In all inside areas of Building 3179 smoking is strictly forbidden.
- In Point 1 areas (at and nearby Ideasquare) alcoholic beverages are strictly forbidden.
- Working is possible 24/7 with CERN access card, sleeping is prohibited in all CERN buildings.
- Eating, drinking, coffee breaks are encouraged in the kitchen area.
- Cameras, photos, posting in social media are highly encouraged :)

EVACUATION

A l'audition du signal
When the alarm rings

Fermez portes et fenêtres
Close doors and windows

Suivez le balisage
Follow the signs

N'utilisez pas l'ascenseur
Do not use the lift

Se rendre au point de rassemblement
Report to the assembly point

CONSIGNE d'URGENCE / EMERGENCY PROCEDURE

BATIMENT 3179- Etage R / BUILDING 3179 - Floor R

Emergency assembly point is located next to the Point1 access gate.

INCENDIE/FIRE

☎ 112 ou 7 44 44

Donnez l'alarme
Set off the alarm

Prévenez les autres personnes
Inform others

Fermez portes et fenêtres
Close doors and windows

N'utilisez pas l'ascenseur
Do not use the lift

Combattez le feu
Start fighting the fire

Legend

- **Extincteur / Fire Extinguisher**
- **Alarme d'évacuation / Evacuation alarm**
- **Voie d'évacuation / Escape route**
- **Sortie de secours / Emergency exit**

R-A05 · R-102 · R-103 · R-401 · R-101 · R-201
R-A01 · R-B03 · R-B08 · R-B09
R-E06
R-202

CERN

Idea^s

EDMS:1454499

In case of an emergency

- If needed, press Fire Alarm (see map on next slide)
- If electric danger present, press Emergency Stop switch - located in each workshop area right next to the door
- Contact Fire Brigade, tel. 74444
- Go to the assembly point next to the Point 1 car gate, stay there until Fire Brigade gives you permission to leave.
- Notify immediately:
  - TSO Johann Poirot, johann.poirot@cern.ch, tel. 168883
  - Markus Nordberg, markus.nordberg@cern.ch, tel. 164452

EVACUATION

A l'audition du signal
When the alarm rings

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Close doors and windows

Suivez le balisage
Follow the signs

N'utilisez pas l'ascenseur
Do not use the lift

Se rendre au point de rassemblement
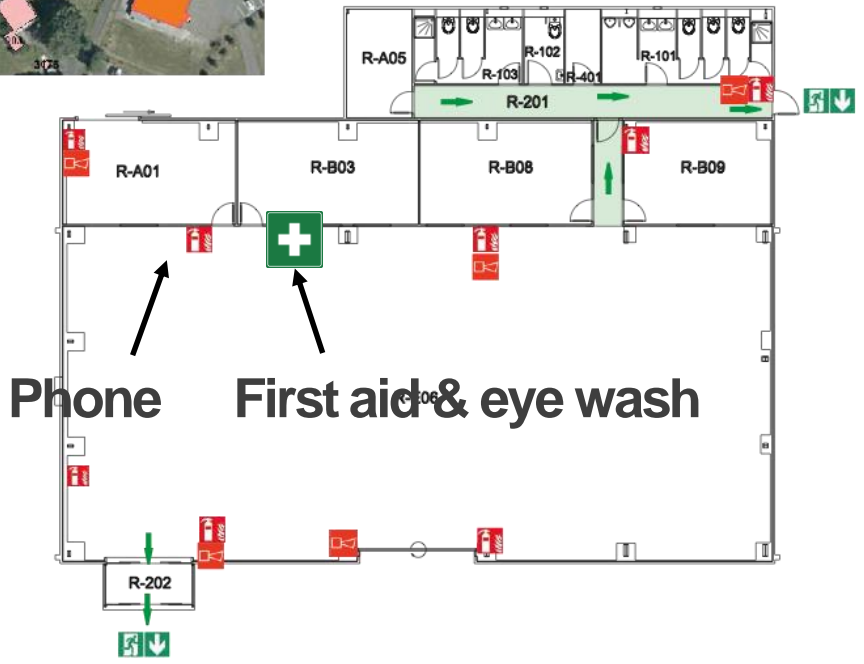Report to the assembly point

CONSIGNE d'URGENCE / EMERGENCY PROCEDURE

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Extincteur / Fire Extinguisher

Alarme d'évacuation
Evacuation alarm

Voie d'évacuation / Escape route

Sortie de secours
Emergency exit

R-A05

R-102

R-103   R-401

R-101

R-201

R-A01

R-B03

R-B08

R-B09

Phone

First aid & eye wash

R-202

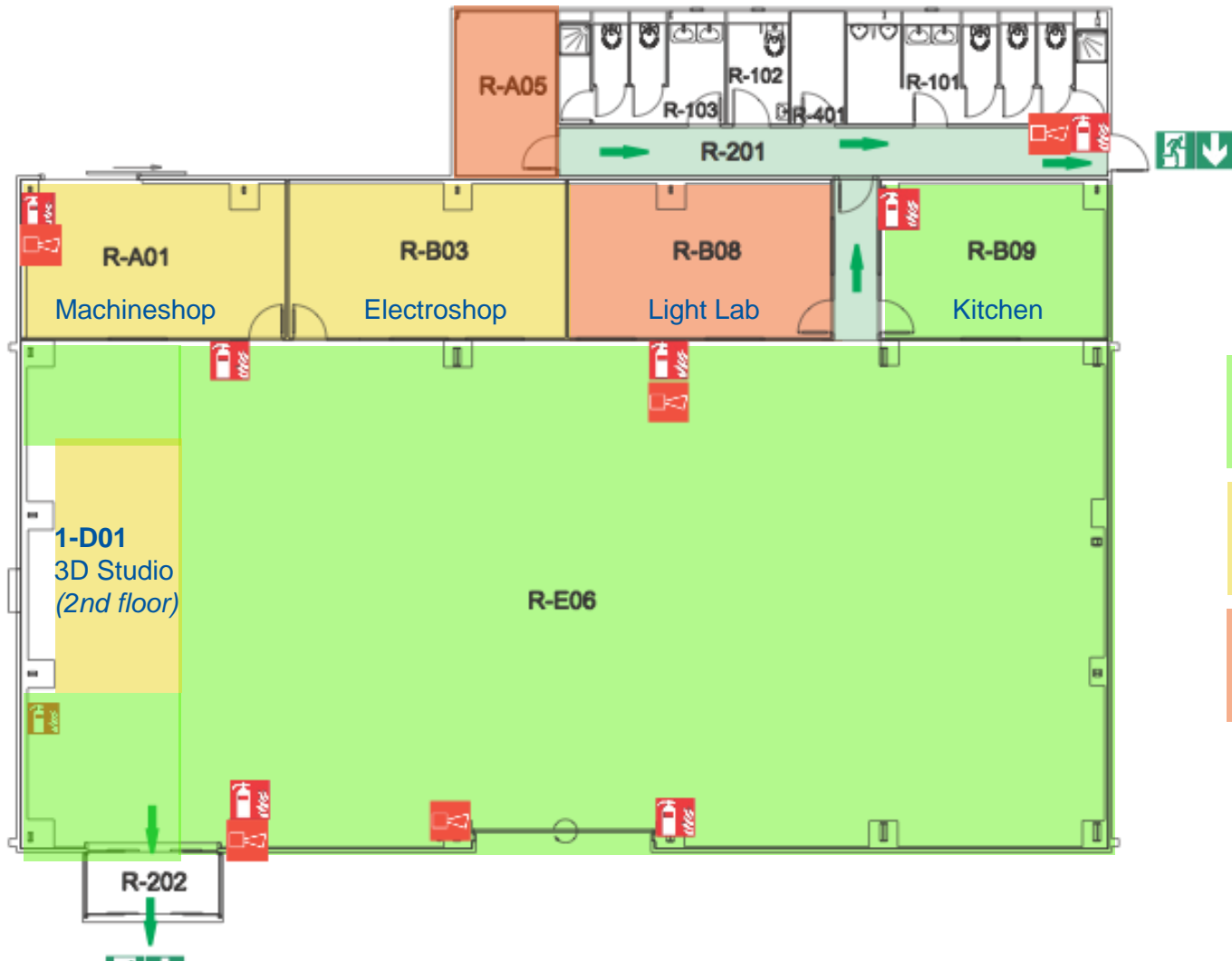Date:11.12.2014

CERN

Ideas

EDMS:1454499

WORKING AREA POLICY B3179

- Safety is first priority!
- In laboratory areas:
  - Machineshop 3179-R-A01
  - Electroshop 3179-R-B03 and
  - 3D Studio 3179-1-D01
  eating and drinking are strictly forbidden.
- For grey room (Light Lab 3179-R-B08) and dark room (3179-R-A06) areas access is restricted to authorised personnel only.

WORKSHOP SAFETY B3179

- Safety is first priority!
- in Machineshop 3179-R-A01, Electroshop 3179-R-B03, 3D Studio 3179-1-D01 working is conducted "under supervision".
  - i.e. When you want to use the workshops:
- Come talk to us (Harri & Jani) what would you like to do and we'll figure it out together what is the easiest and fastest way to do it safely.

Keeping places tidy

- This is a work environment, please respect our common workspace.

- For CERN ways of working, see CERN Code of Conduct.

- **Please, please**:
    - Bring all coffee cups, plates, dishes to kitchen, put them in the machine.
    - Help collaboratively to clean up the space at the end of the day.
    - Thank you!!

All you need is
..Love
..Design
..Business
..and Engineering.

✈ PHYSICS

Questions? Comments?

Contact information:
Email: harri.toivonen@cern.ch
Skype: olavi-dude

Take care of the space, each other and your ideas! Remember to have fun!

CERN

Ideas