Phase VII
Planning for Innovation
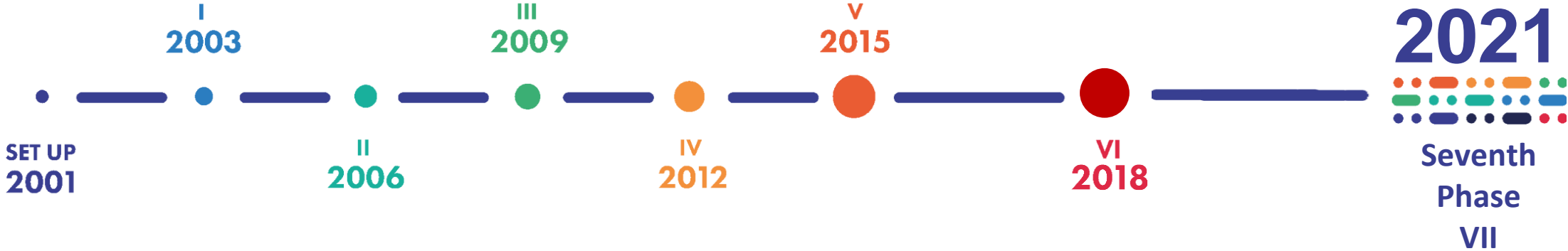
Alberto Di Meglio – CERN openlab Head

21/03/2022

Driving Innovation For 20 Years
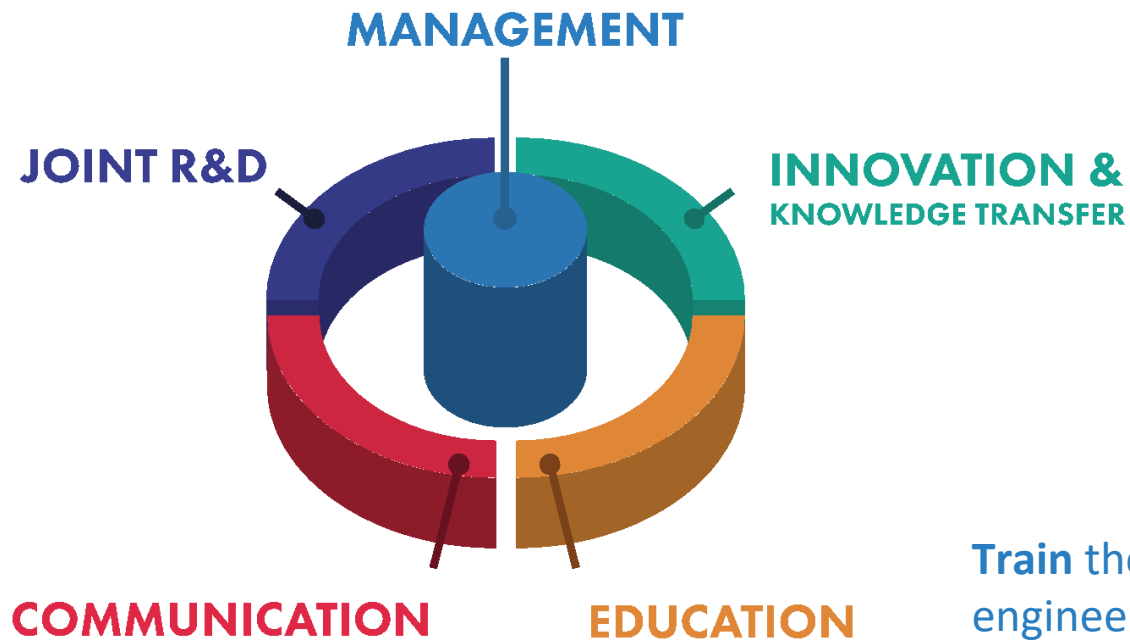

SET UP 2001 · I 2003 · II 2006 · III 2009 · IV 2012 · V 2015 · VI 2018 · 2021 Seventh Phase VII

CERN openlab's Mission

Our recipe for success

Evaluate and test state-of-the-art technologies in a challenging environment, improve them in collaboration with industry, take part in the co-development new solutions.

Collaborate and exchange ideas with other communities to generate impact.

Communicate results, demostrate impact, and reach new audiences.

Train the next generation of engineers/researchers, **promote** education and cultural exchanges.

MANAGEMENT

JOINT R&D

INNOVATION & KNOWLEDGE TRANSFER

COMMUNICATION

EDUCATION

Phase VII: New Challenges

Phase VII coincides with the LHC Run 3, it's an opportunity to consolidate the investigations started in Phase VI and look forward to HL-LHC

1. **Exascale Technologies** are receiving great attention (and funding). HPC, Clouds and interoperability/portability tools for large-scale heterogenous architectures will keep playing an increasing role in scientific infrastructures.
   How can the HEP community use them effectively?

2. **Artificial Intelligence** (or some of its flavours) is rapidly taking first stage in all data processing applications, but it presents challenges in many directions from large-scale training, to interpretability, up to the ethics of science and technology.
   What is its role and impact in HEP research?

3. **Quantum Computing** has recently emerged as a potential future game changer.
   Is there a role for it in HEP? How do we build knowledge and expertise and prepare?

4. **Scientific Collaborations** are key enabling elements for innovation and economies of scale and information technologies, computer and data science are common tools of the trade and present common challenges across most scientific research disciplines.
   How do we work together to develop scalable common approaches and tools and create impact?

Four Main Areas of Activity

XT
eXascale Technologies

A comprehensive investigation of HPC and Cloud infrastructures, frameworks, tools to support key scientific workloads and applications

AI-S
Artificial Intelligence for Science

Analysis and development of algorithms, optimisation for new architectures, interpretability, synergies between Physics and other sciences

QTI-C
Quantum Technology Initiative - Computing

Assess the potential impact of quantum computing in HEP and other sciences, investigate quantum machine learning algorithms and areas of potential quantum advantage, set up a collaborative quantum computing (simulation) platform
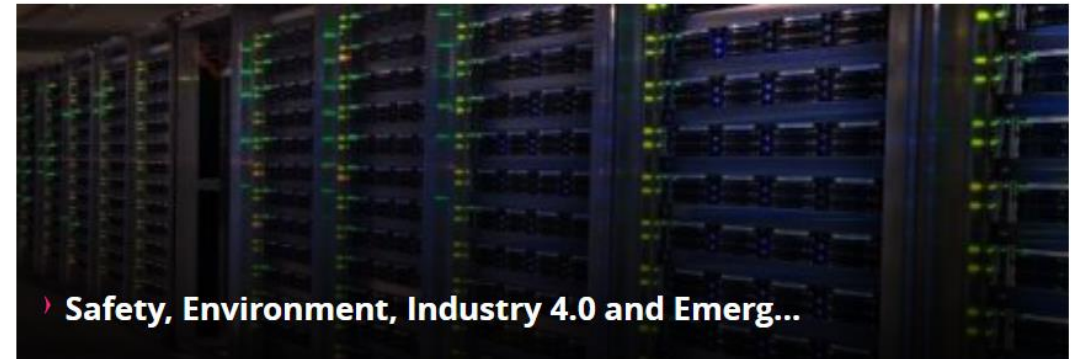
MSC
Multi-Science Collaborations

Share the expertise and knowledge generated across all activities with other sciences, work with CERN KT to explore novel applications of CERN computing systems and ideas, create collaborations and contribute to common solutions

Knowledge Sharing

FROM CERN TECHNOLOGY TO SOCIETY

Application fields of CERN technologies and know-how

› Aerospace Applications

› Medical & Biomedical Technologies

› Safety, Environment, Industry 4.0 and Emerg...

https://kt.cern/

2021 communication highlights

Over 50k visits to CERN openlab website.

19k followers across our social media channels.

Summer-student lectures open and promoted online: viewed 4682 times.

Over half a million social media impressions for posts promoting 2022 CERN openlab Summer Student Programme.
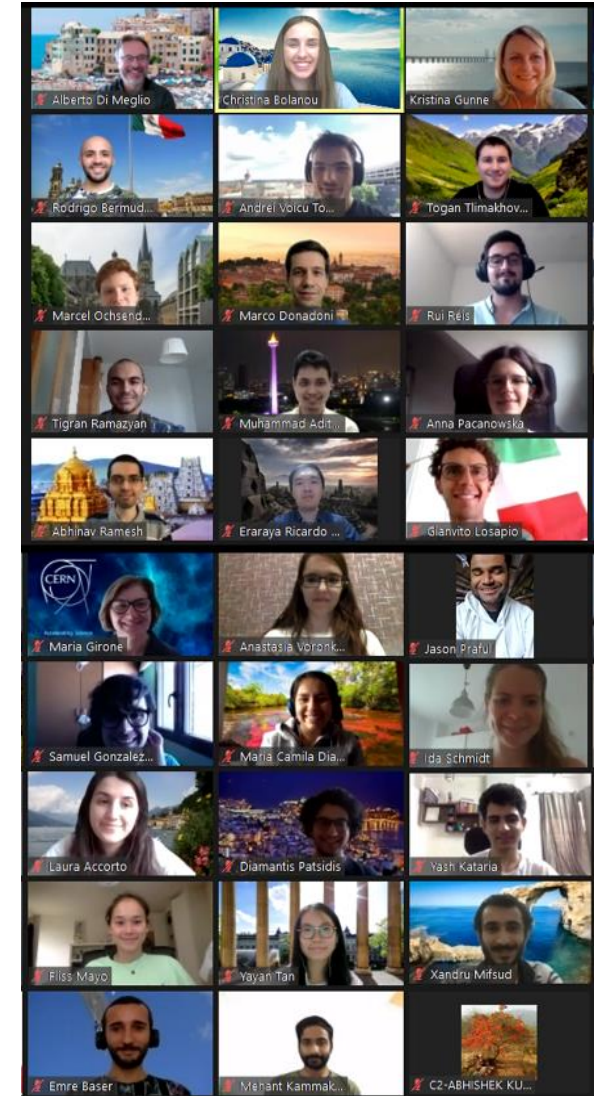
Applications to the programme returned to pre-pandemic levels: 1800 applications this year.
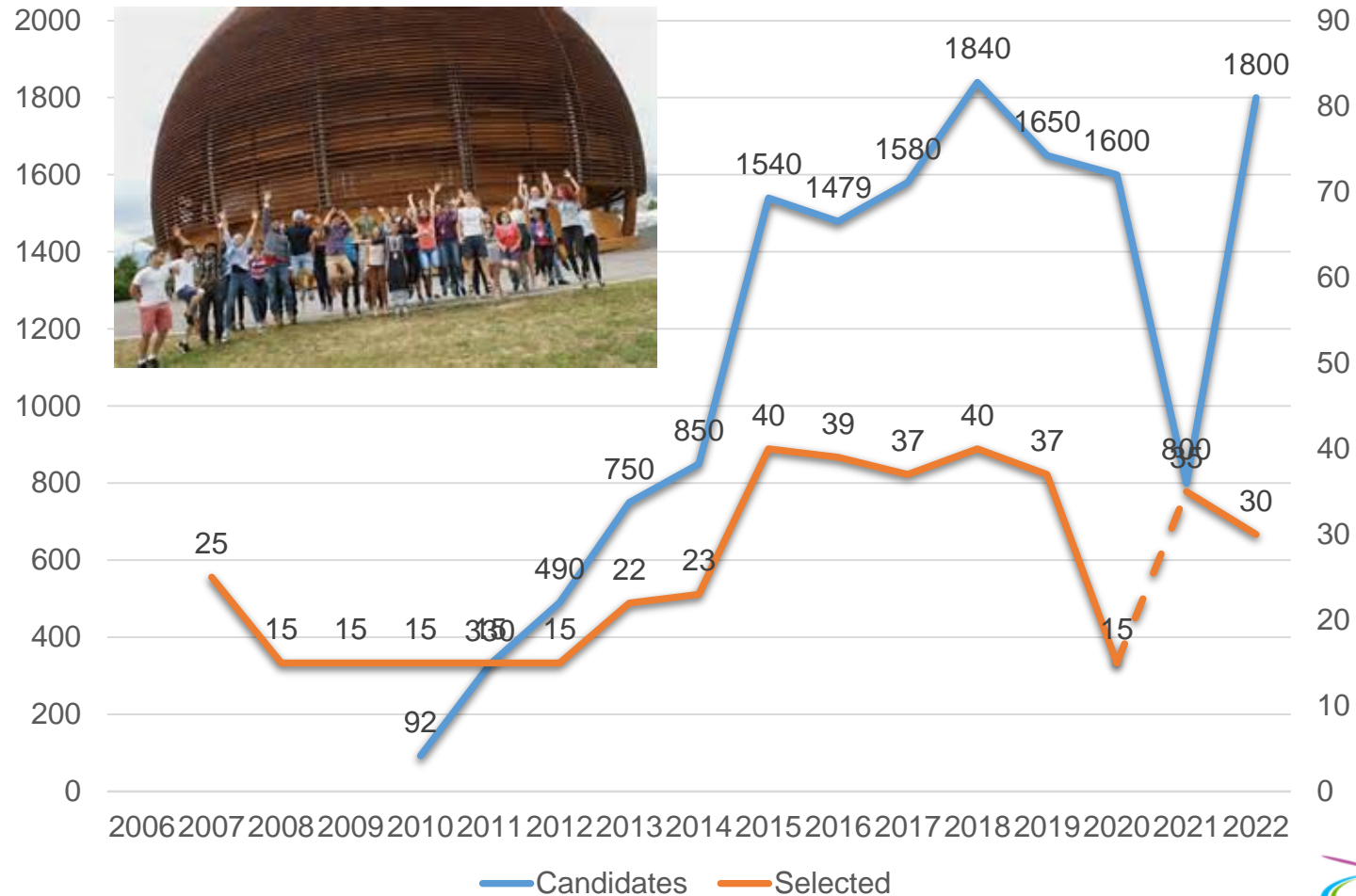
34 press articles about CERN openlab's work.

CERN Webfest held online and focused on key SDGs: 300 people signed up from 63 countries.

CERN openlab

Summer Student Programme

In 2020
- 1650 applicants
- 15 selected students
- Fully online
- Largest Webfest ever (>400 registered participants)

In 2021
- 800 applicants
- Grants for 35 selected students
- Fully online
- Webfest on SDGs

In 2022
- More than 1600 applicants
- ~30 selected students
- Webfest + Challenge

Thanks!

Enjoy the Workshop