

# End-of-year online meeting



CERN's Directorate, 15 December 2020



Sept 2015



13 Dec 2020

Introduction  
Accelerators and Technology  
Research and Computing  
Finance and Human Resources  
International Relations  
Conclusions

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Eckhard Elsen  
Martin Steinacher  
Charlotte Warakaulle  
Fabiola Gianotti



# 2016-2020 Highlights

## Successful Run 2:

L =  $2 \times 10^{34}$ , 160 fb<sup>-1</sup> at 13 TeV pp  
L =  $6 \times 10^{27}$ , 1.3 nb<sup>-1</sup> ALICE Pb-Pb

Great **physics** output from full scientific programme  
(> 1500 exp. publications in 5 years) including theory

## LS2:

- ❑ Work nearing completion: progressed safely and on schedule, but ~3 months lost due to Covid
- ❑ LIU completed → commissioning of injectors started
- ❑ Phase-1 upgrades of experiments well advanced

- ❑ **HIE-ISOLDE** upgrade completed
- ❑ **ELENA** at AD built and commissioned
- ❑ Great development of **Neutrino Platform** (2 proto-DUNEs built and tested)
- ❑ **AWAKE** demonstrated e- acceleration in p-driven plasma wakefield

## HL-LHC:

- ❑ Project approved by Council in 2016
- ❑ Underground civil engineering work completed
- ❑ Great progress with crab cavities, MgB<sub>2</sub> power links, Nb<sub>3</sub>Sn, etc.
- ❑ Most Phase-

New **Computing Centre** in Prévessin launched

**Congratulations and many thanks to EVERYBODY for these superb accomplishments**

- ❑ **CLIC** Project
- ❑ **FCC** Conc
- ❑ **Physics B**

**ly review** (new career structure) and actions

## European Strategy for Particle Physics updated

**Science Gateway:** from first idea to start of construction and 88% funds from donations

- ❑ CERN Environmental Protection Steering committee established
- ❑ Allocated 30 MCHF over 10 years to cover 11 domains
- ❑ First public report released

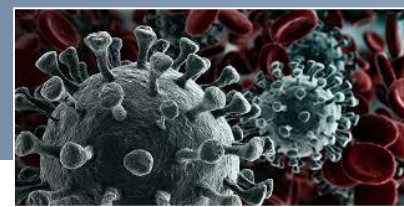
- ❑ **CERN Alumni** programme launched → now > 6500 members
- ❑ **Open Days** Sept 2019: 75000 visitors

**ATTRACT** Phase 1 and 2 funded by EC (total 53 M€)

- ❑ **New Member States:** Romania, Serbia
- ❑ **New Associate Member States:** Cyprus, Croatia, India, Lithuania, Slovenia, Ukraine



# 2020 Highlights ... despite



## Covid-19 pandemic

Effective health measures deployed and adapted. Excellent compliance by personnel.

All services worked hard to support personnel on site and teleworking. CERN against Covid-19 Task Force.

## Accelerator complex

LS2 activities proceeded safely and on schedule, but ~ 3 months lost due to Covid-19

LHC Injectors Upgrade completed → commissioning started

HL-LHC: underground CE work ~ completed; progress on many machine components

## Experiments

Many beautiful physics results from full scientific programme (LHC, fixed-target, etc.)

Good progress on Phase-1 upgrades of LHC experiments, with strong impact of Covid-19 in some cases.

Technical and financial (commitments by Funding Agencies) progress on Phase-2 upgrades of ATLAS, CMS.

## European Strategy for Particle Physics unanimously updated by Council in June 2020

→ foundation for a bright future for CERN and European particle physics

**Medium-Term Plan 2021-2025 approved by Council with strong support** → includes first implementation of updated Strategy and significant additional resources for site and building renovation

**99.5% of annual financial contributions from Member and Associate Member States received** despite the testing year → demonstration of great appreciation for CERN's accomplishments and personnel

**First public Environment Report released:** describes current status and sets ambitious goals for future.

**Directors and Department Heads for 2021-2025 appointed by the Council**



# News from December 2020 Council Week

The Council and its subordinate bodies congratulated CERN and its personnel for the excellent management of Covid-19. It also congratulated the accelerator teams and all people involved in the experiments, both at CERN and in the institutions, on the work accomplished in spite of the challenges posed by the pandemic.

End-of-year Jamboree:

ALICE	J. Mulligan
ATLAS	H. Russel
CMS	S. Leontsinis
LHCb	P. Hamilton
Theory	J. Baglio

Report of the first cost review of the Neutrino Platform

Amendments to Staff Rules and Regulations on internal taxation of subsistence from third-party accounts approved → CERN is working with the experiments to address their personnel needs in the local area and support the MPA living here.

17 contracts adjudicated (total 126 MCHF) including Prévessin Computing Centre

Reports included: LS2, accelerators, experiments and upgrades; governance structure of experiments; participation of non-Member States in CERN programmes.

**Manfred Krammer** re-appointed EP Department Head for 2021-2025



Re-appointments:

- Ursula Bassler as President of Council for third and last year
- Umberto Dosselli as Chair of Finance Committee for second year
- Lenny Rivkin as Chair of Scientific Policy Committee for second year





# News from December 2020 Council Week

## EPS study on “The Importance of Physics to the Economies of Europe”

Petra Rudolf (EPS President)

**€ 4.40 trillion**

Revenue of physics-based industries within Europe has exceeded € 4.40 trillion in every year of the period 2011-2016

**> 17 million high-skilled jobs**

In 2016 employment in physics-based industries in Europe reached 17.8 million, 1.1 million more than in 2011

**16 %**

The physics-based industries typically account for 16% of the total turnover of the EU28 business economy

**44 %**

The physics-based industries contribute 44% of the total exports of the EU28 business economy

European Physical Society

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Social cost-benefit analysis of LHC and HL-LHC (1993-2038)  
Massimo Florio et al.

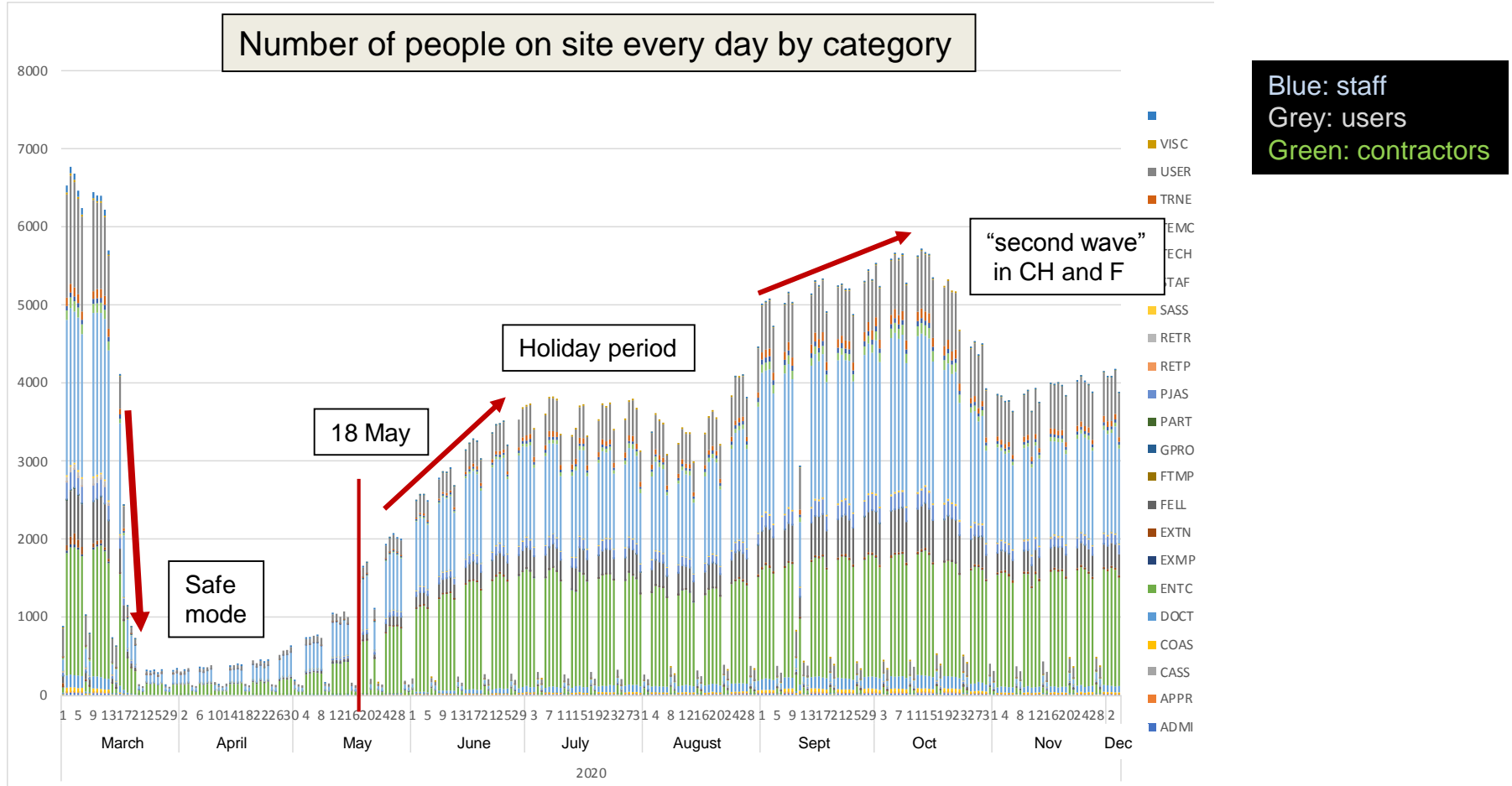
<b>Benefits baseline</b>	<b>25.7</b>
Scientific publications	0.6
Human capital	8.5
Technological spillovers	10.2
Cultural benefits	3.3
Public good value	3.1
<b>Costs baseline</b>	<b>22.3</b>
<b>Net Present Value</b>	<b>3.4</b>

Source: Bastianin, Florio (2018)

Billion CHF 2016



# News from December 2020 Council Week



- Activities on site (LS2, upgrades, site and building renovation, etc.) continued at sustained pace since 18 May, supported by robust Covid-19-related health measures → impact on schedule minimised (see talks by F. Bordry and E. Elsen)
- Current tework scheme (100% for people who can tework and are not needed on site) extended until end of Jan → will be revised beginning of new year



# Covid-19 cases at CERN since the beginning of the pandemic

Number of cases	CERN's personnel	Contractors
Tested-positive	240	76
Tested-negative	299	84
Still with symptoms	7	10 (1 in hospital)

## Note:

- ❑ These are the cases CERN's Medical Service was informed about  
→ likely more MPA (users, etc.) affected in their home countries without CERN knowing
- ❑ CERN personnel's positive cases: 64% MPE and 36% MPA; 98% live in local area
- ❑ Close contacts of positive or suspected cases quickly identified and quarantined  
→ today 40 people in medical quarantine
- ❑ Medical Service followed up individually **all** positive/suspected people and **all** close contacts  
→ some 2300 people followed up since beginning of the pandemic

## As of today

No spread of infection on site

Only 1 out of 316 positive cases due to infection contracted on site: 2 contractors repairing a lift without wearing masks

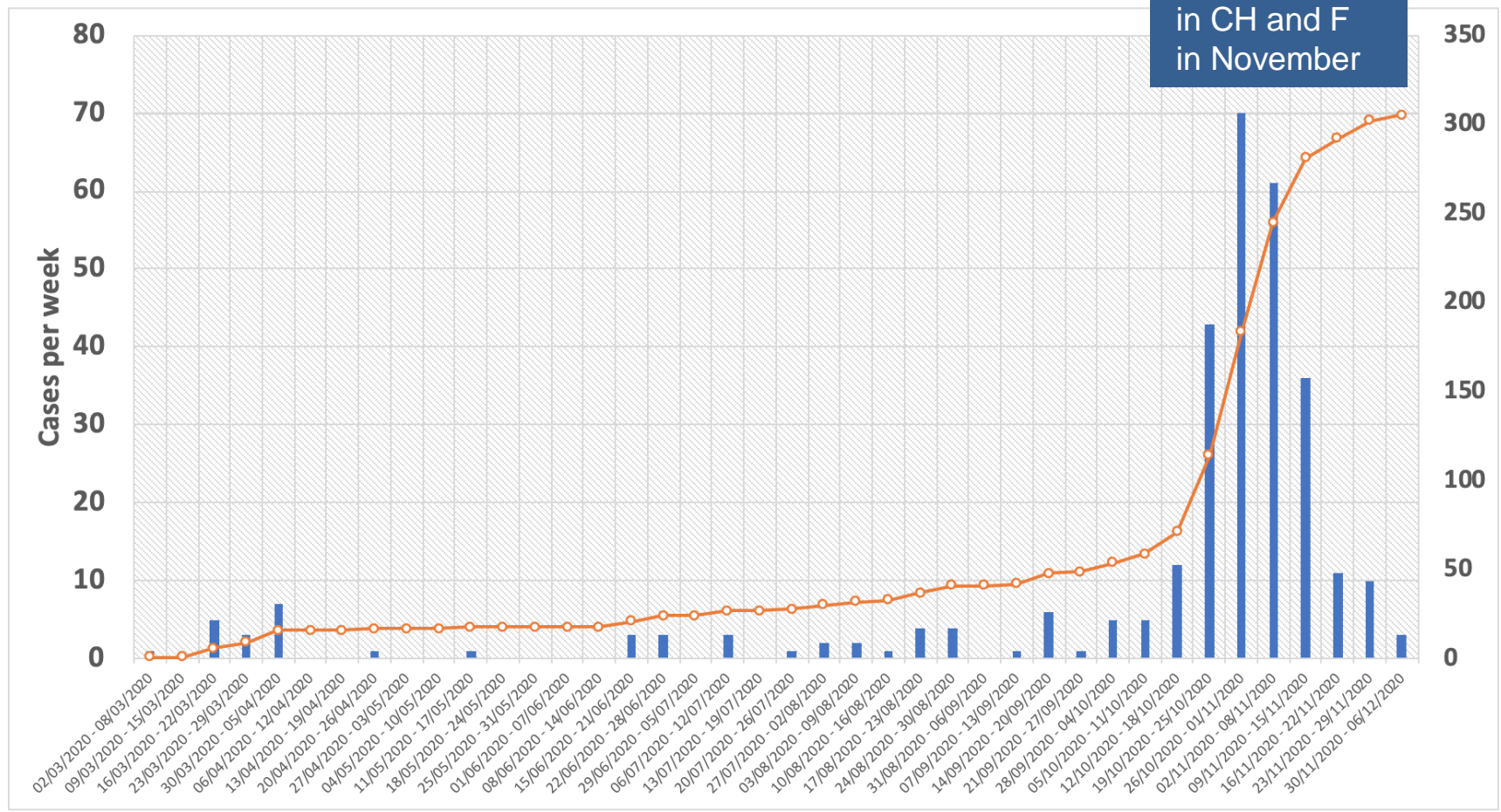
→ health measures (PPE, distancing, etc.) and personnel's compliance pay off





# Covid-19 cases at CERN since the beginning of the pandemic

Positive cases vs time (CERN personnel + contractors)



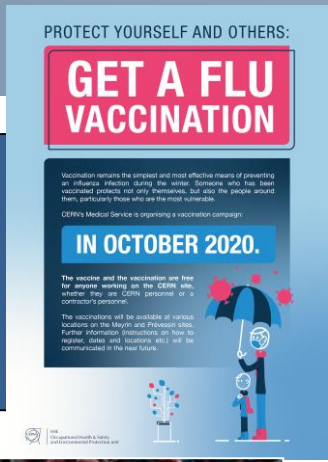
Geneva area was worst in Europe for infection case normalised to population during several weeks of the second wave



# Vaccination, testing and other news

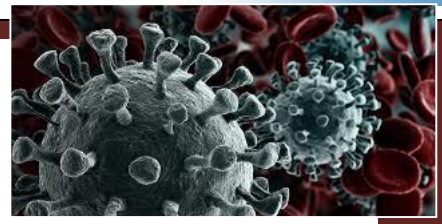
## Flu vaccination:

- ❑ On-site flu vaccination campaign successful → ~ 2700 members of personnel vaccinated and ~700 family members and retirees
- ❑ Free for full CERN community (personnel and contractors)



## Covid-19 testing:

- ❑ Plan is to start on-site testing in Jan
- ❑ Will use 2 methods:
  - antigen test: fast (result in 15'), cheap, 80% sensitivity
  - RT-PCR: slower (result in 24 hours), more expensive, 90% sensitivity
 and the following strategy:
  - periods with low infection rates: RT-PCR
  - periods with high infection rates: antigen test first → RT-PCR if result negative
- ❑ Expect to test on site ~120 people/week (vulnerable people, people leaving on long duty trip or coming back from high-risk zones, random tests of critical teams such as medical service, fire brigade, operators, etc.); people with symptoms will be tested in nearby lab



## Covid-19 helpline during end-of-year closure:

People with symptoms or tested positive or close contacts of positive case should fill a self-declaration at <https://cern.ch/TRAMED> (available from 19<sup>th</sup> Dec)

Medical helpline (+41-22-7667777, [Covid19.Helpline@cern.ch](mailto:Covid19.Helpline@cern.ch)) available in case of problems



**Science Gateway** since September 2020 Council:

- Final building permit received from Canton de Genève
- Contract with construction company signed → construction started
- Received **additional donation of 10 MCHF** from a private foundation in Geneva  
→ **77 MCHF raised** so far for a **total project cost of 87 MCHF**

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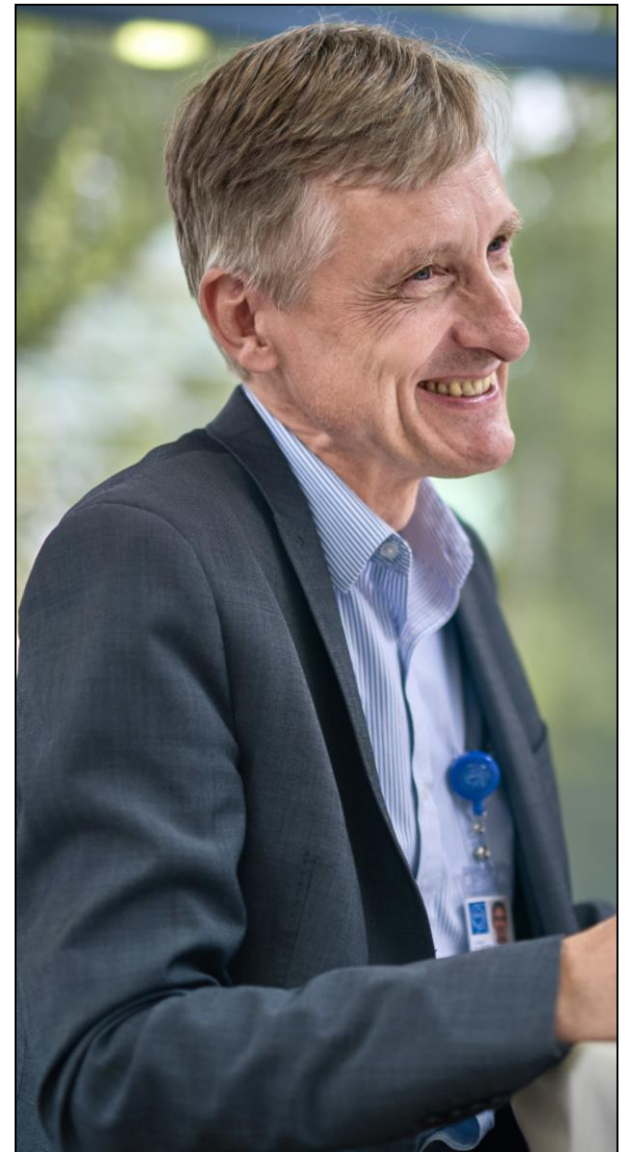


Thank you!





# To Eckhard, Freddy and Martin







# To Eckhard, Freddy and Martin





# Doris, Eva, John, Lluís, Paul, Roberto



Doris Forkel-Wirth  
Head of HSE unit



Paul Collier  
Head of Beams Department



John Steel  
Head of Internal Audit Service



Lluís Miralles  
Head of SMB Department



Eva Groniger-Voss  
Legal Counsel  
Head of Legal Service



Roberto Losito  
Head of Engineering Department



# EXTRAs



Last round of H2020 calls under the Large Research Infrastructures programme very successful

→ 5 projects led by CERN and 2 with CERN participation selected for funding (100% success!)

Project	Coordinator	Departments involved	Full cost of project	EC funding for project	EC funding for CERN
<b>AIDA</b> <u>innova</u> : Advancement and Innovation for Detectors at Accelerators	CERN	EP, IPT	22.2 M€	10 M€	2.7 M€
<b>ATTRACT 2</b> : Breakthrough Innovation programme for a pan-European Detection and Imaging Ecosystem – Phase 2	CERN	IPT, EP, IT	35 M€	35 M€	28.6 M€
<b>FCC IS</b> : Future Circular Collider Innovation Study	CERN	ATS, BE, EN, TE, IR, HSE, EP, TH, SMB, IPT	7.4 M€	3 M€	0 M€
<b>I.FAST</b> : Innovation Fostering in Accelerator Science and Technology	CERN	ATS, BE, EN, IPT, TE	18.7 M€	10 M€	2.9 M€
<b>PRISMAP</b> : European medical isotope programme: production of high purity isotopes by mass separation	CERN	EN, HSE, IPT	5 M€	5 M€	1 M€
<b>RADNEXT</b> : Radiation facility network for the exploration of effects for industry and research	CERN		9 M€	5 M€	0.8 M€
<b>HITRI</b> <u>plus</u> : Heavy Ion Therapy Research Integration	CNAO	ATS, BE, EN, IPT, TE	5 M€	5 M€	0.3 M€
<b>BiCIKL</b> : Biodiversity Community Integrated Knowledge Library. Open science in full chain from data to publication	Pensoft	IT	5 M€	5 M€	0.15 M€

All projects with strong participation of CERN's Member States