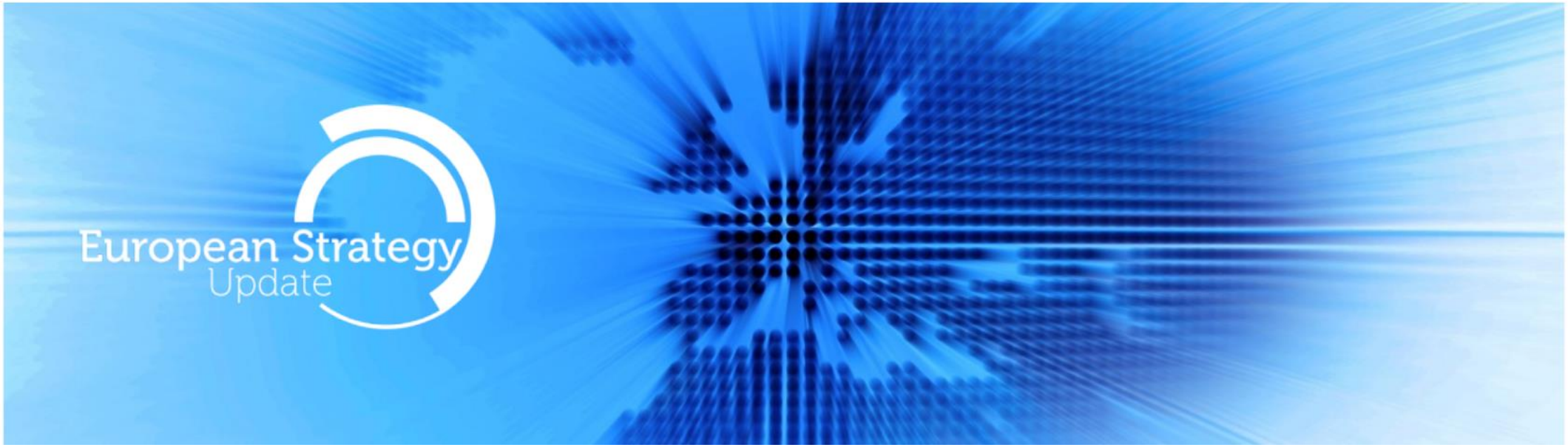
European Strategy for Particle Physics: 2026 Update

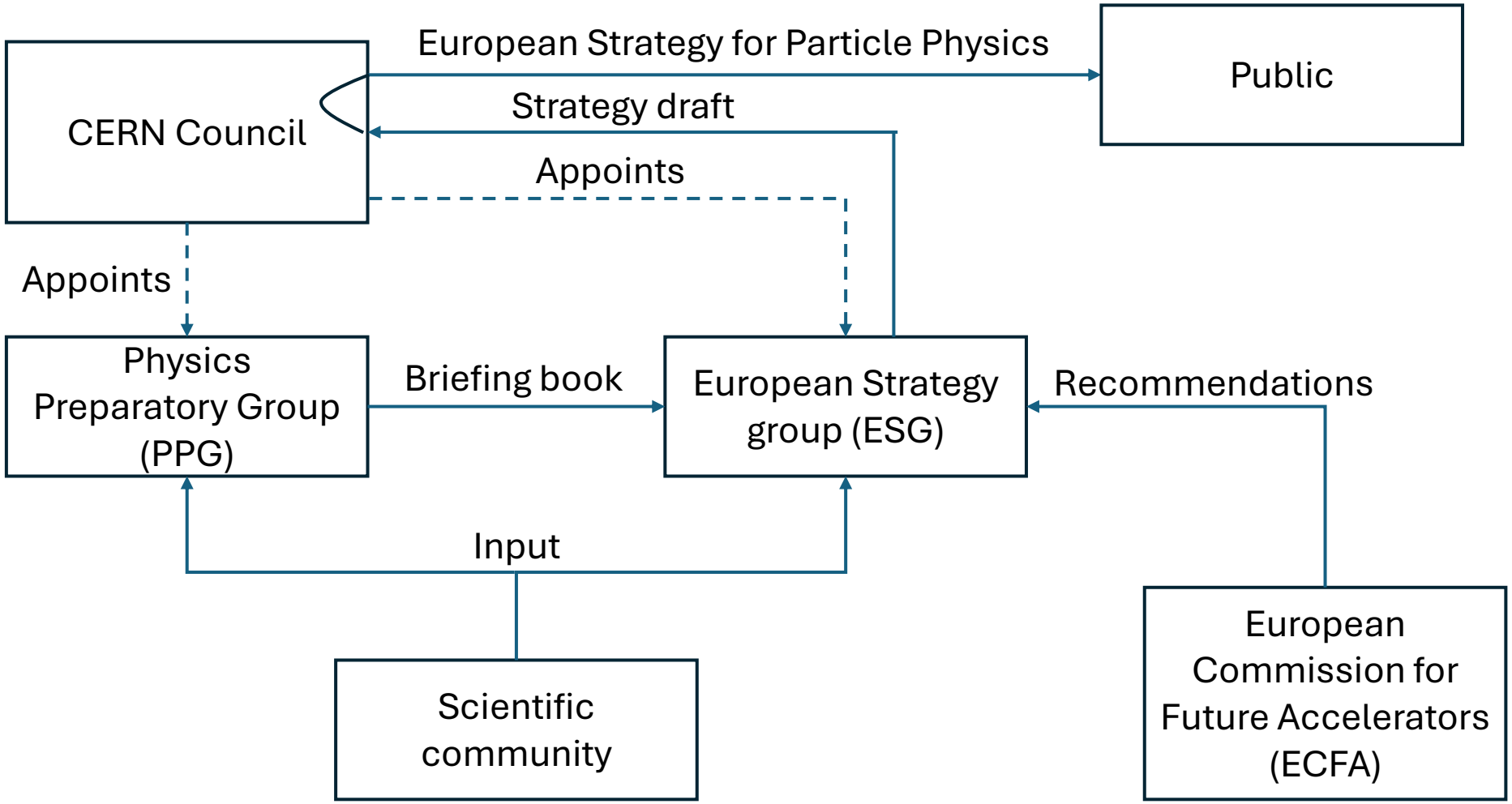


https://europeanstrategyupdate.web.cern.ch/welcome

Budimir Kliček
Representative of Croatia in the European Strategy Group

CROHEP meeting
18 February 2025

Workflow towards European Strategy for Particle Physics (ESPP)



European Strategy Group (ESG)

- In June 2024, the CERN Council established and approved the remit of the European Strategy Group
  - ”*The aim of the Strategy update should be to develop a visionary and concrete plan that greatly advances human knowledge in fundamental physics through the realisation of the next flagship project at CERN. This plan should attract and value international collaboration and should allow Europe to continue to play a leading role in the field.*”

European Strategy Group (ESG)

- The ESG should take into consideration:
  - The input of the particle physics community;
  - The status of implementation of the 2020 Strategy update;
  - The accomplishments over recent years, including the results from the LHC and other experiments and facilities worldwide, the progress in the construction of the High-Luminosity LHC, the outcome of the Future Circular Collider Feasibility Study, and recent technological developments in accelerator, detector and computing;
  - The international landscape of the field

- *The Strategy update should include the preferred option for the next collider at CERN and prioritised alternative options to be pursued if the chosen preferred plan turns out not to be feasible or competitive.*

Remit of the European Strategy Group (ESG)

- The Strategy update should also indicate areas of priority for exploration complementary to colliders and for other experiments to be considered at CERN and at other laboratories in Europe, as well as for participation in projects outside Europe.

- The ESG should review and update the Strategy and add other items identified as relevant to the field, including:
  - accelerator, detector and computing R&D
  - the theory frontier
  - actions to minimise the environmental impact and to improve the sustainability of accelerator-based particle physics
  - the strategy and initiatives to attract, train and retain the young generations
  - public engagement and outreach.

Composition of the ESG

- Strategy Secretariat (organising and running the ESPP process):
  - Karl Jakobs (Strategy Secretary, Chair)
  - Hugh Montgomery (SPC Chair)
  - Dave Newbold (LDG Chair)
  - Paris Spicas (ECFA Chair)

- European Strategy Group (ESG)
  - The Strategy Secretary (acting as Chair)
  - One representative appointed by each CERN Member State
  - One representative appointed by each of the laboratories represented in the Large Particle Physics Laboratory Directors Group (LDG), including its Chair
  - The CERN Director-General
  - The CERN Director-General elect
  - The SPC Chair
  - The ECFA Chair
  - **Invitees:** President of CERN Council, one representative from each of the Associate Member and Observer States, one representative from the European Commission, the Chairs of APPEC, NuPECC and ESFRI, the members of the Physics Preparatory Group.

- Full member list at: https://europeanstrategyupdate.web.cern.ch/european-strategy-group-esg

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ESG INVITEES

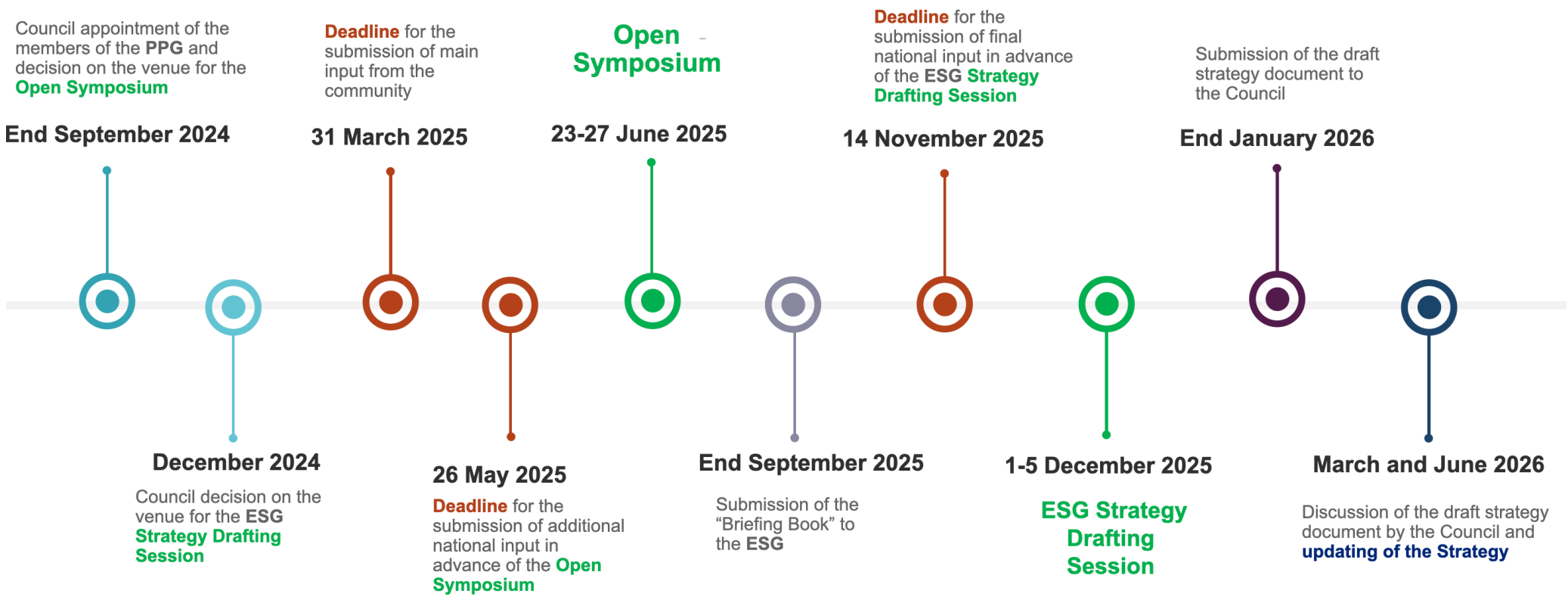
President of the CERN Council	Prof. Costas Fountas
Associate Member States in the pre-stage to Membership	
Cyprus	Prof. Panos Razis
Slovenia	Prof. Borut Paul Kerševan
Associate Member States	
Brazil	Prof. Leandro Salazar de Paula
Croatia	Dr Budimir Kliček
India	tbc
Latvia	Ms Antra Gaile
Lithuania	Dr Andrius Juodagalvis
Pakistan	Dr Masood Iqbal/Dr Zafar Yasin
Türkiye	Dr Bahadır Saygı
Ukraine	Prof. Borys Grynyov

- Full member list at: https://europeanstrategyupdate.web.cern.ch/european-strategy-group-esg

Physics preparatory group (PPG)

- Set up by the CERN council with the remit to:
  - prepare the scientific contribution to the work of the ESG
  - prepare the Physics Briefing Book based on input gathered from the community
    - Physics Briefing Book will be used by the ESG to draft the strategy
- Workgroups:
  - Electroweak physics (including Higgs physics)
  - Strong interaction
  - Flavour physics
  - Beyond the Standard Model physics
  - Neutrino physics and cosmic messengers
  - Dark matter and dark sector
  - Accelerator science and technology
  - Detector instrumentation
  - Computing
- More details at:
  - https://europeanstrategyupdate.web.cern.ch/physics-preparatory-group-ppg

Timeline for the update of the European Strategy for Particle Physics



Input to ESPP 2026 update

https://indico.cern.ch/event/1439855/abstracts/#submit-abstract

Tracks *

Physics streams, matched to the PPG physics groups

- [ ] Electroweak physics incl. Higgs
- [ ] Strong Interactions
- [ ] Flavour physics
- [ ] BSM physics
- [ ] Neutrinos and cosmic messengers
- [ ] Dark matter and dark sector

Technology streams, matched to the PPG groups

- [ ] Accelerator technologies
- [ ] Detector instrumentation
- [ ] Computing

Additional streams mapped to ESG working groups

- [ ] Input from the National HEP communities and National Laboratories
- [ ] Projects and large experiments
- [ ] Communication, Education, Outreach, Knowledge and Technology transfer, Career issues
- [ ] Sustainability
- [ ] Others (e.g. personal contributions)

This is what we should discuss in CROHEP

Input guidelines

Cover page (1 page)

Each document submitted should carry a single cover page containing no more than the title, the contact person(s) and an abstract.

Comprehensive summary (maximum 10 pages)

The submitted document must be no more than 10 pages long (excluding the cover page) and must provide a comprehensive and self-contained summary of the input. It should address:

- scientific context,
- objectives,
- methodology,
- readiness and expected challenges,
- timeline,
- construction and operational costs (if applicable).

Back-up document

Additional information and details can be submitted in a separate back-up document, which can be consulted by the Physics Preparatory Group (PPG) if clarification on any aspects is required. But the back-up document is not a mandatory component of the submission.

Timeline for the Croatian contribution

- Discuss at this meeting
  - Dedicated open session
- Prepare the draft and share with the community **latest by 14th March**
  - Overleaf document will be created by Dinko and me
  - Will be shared with CROHEP once mature enough
  - List of authors to be defined, proposal is the entire CROHEP community
- Feedback from the community **by 21st March**

- **Submit the Croatian input by 31st March**
  - If there are modifications due to unforeseen circumstances, prepare the addendum and resubmit by 26 May

- Optionally, revise the input after *Briefing Book* has been submitted/published
  - Deadline 15 November, but let's try not to

Open Symposium

- 23-27 June 2025, Venice, Italy
- Public discussion on the European Strategy for Particle Physics
- Registrations open: https://agenda.infn.it/event/44943/overview

	Monday	Tuesday	Wednesday	Thursday	Friday
09:00	**Opening Session**	**Large-scale accelerator projects at CERN, part I**	**Electroweak Physics** Talks (i), (ii) Discussion	**BSM** Talks (i), (ii) Discussion	**Overarching topics** (by ESG Working groups) e.g. National input and others
	Coffee break	Coffee break	Coffee break	Coffee break	Coffee break
11:15	**Parallel session I - IV**	**Large-scale accelerator projects at CERN, part II**	**Strong Interactions** Talks (i), (ii) Discussion	**Dark Matter / dark sector** Talks (i), (ii) Discussion	**Overarching topics (cont.)** (by ESG Working groups)
					Closeout Session Closeout talk, final discussion
13:00	Lunch Break	Lunch break	Lunch break	Lunch break	
14:00	**Parallel session I - IV**				
15:00		**Status in China, Japan, US**	**Flavour** Talks (i), (ii) Discussion	**Detector Technologies** status of DRDs, R&D needs, timeline, required resources	**ESG Meeting**
16:00	**Parallel sessions V - IX**	Coffee break	Coffee break	Coffee break	
	Coffee break	**Accelerator Technologies** Status of critical item, R&D needs timeline, required resources	**Neutrinos and Cosmic Messengers** Talks (i), (ii) Discussion	**Computing** Status of critical item, R&D needs timeline, required resources	
	Parallel sessions V - IX				
19:15					

9:00 - 10:45 Opening Session

Parallel Sessions I - IV
11:15 - 13:00 Parallel I - IV, part I
Lunch Break: 13:00 - 14:00

14:00 - 15:30 Parallel I - IV, part II
Very short break; 15:30 - 15:40 to change rooms
15:40 - 17:00 Parallel V - IX, part I
17:00 - 17:20 Coffee break
17:20 - 19:15 Parallel V-IX, part II

16:45 - 19:15 Accelerator Tech.

For each **Physics Block**:
(i) Status, open questions
(ii) How can they be addressed by the various projects
(iii) Discussion

11:15 - 12:30 ESG Session II
12:30 - 13:30 Closeout session

14:30 - 16:30 ESG Meeting

Parallel sessions are the only talks by the “public”.

ESG drafting session and process end

- 1-5 December 2025, Ascona, Switzerland (closed session)
- A non-public draft of the ESPP2026 update will be produced and sent to the CERN Council for deliberation
  - we were told that we can not come back down from the mountain until the draft is ready :)

- **Final strategy will be published by the CERN Council in June 2026**