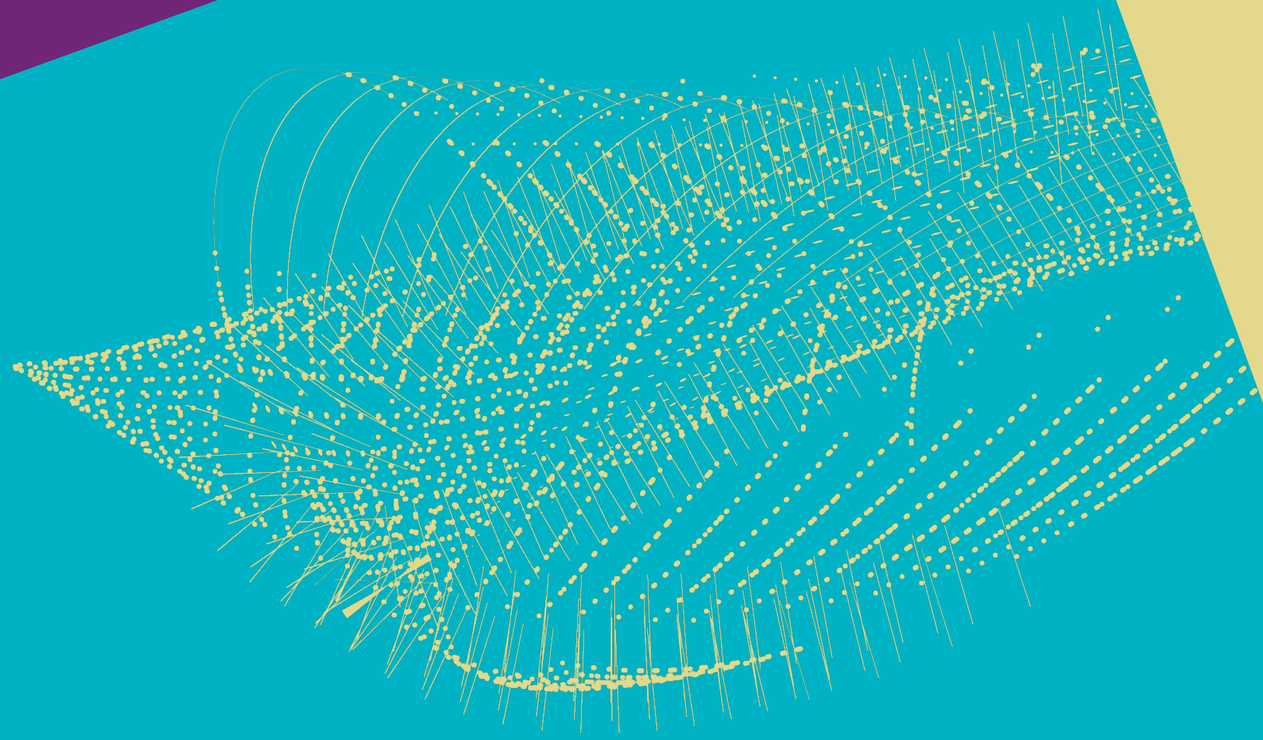
Nikhef



2 OCTOBER 2025

INTRODUCTION

Nikhef ESPP
strategy meeting

TODAY

Previous strategy meeting - 16 September 2025
The goal was to prepare everyone for the second strategy meeting and to provide the information that is necessary to write the final input. We discussed various future collider scenarios.

Today's strategy meeting
The goal of today is to arrive at a preferred future collider scenario and an alternative scenario, and if this turns out not to be possible to collect as many opinions and ideas as possible to derive from this the preferred and alternative scenario.
Also, discuss which key statements/elements should be enhanced in our extended input.

OUTLINE 2ND STRATEGY MEETING

- 13:00-13:20 Introduction and scope of the meeting – Rosemarie
- 13:20-14:10 Presentation and discussion of statements to come back in extended input – Wouter
- 14:10-14:30 Break
- 14:30-15:00 Presentation: summary of scenarios, preferred scenario, definition key elements, presentation of matrix – Jorgen
- 15:00-15:40 Discussion of the matrix – Jorgen
- 15:40-16:00 Break
- 16:00-17:00 Discussion of our alternative future collider scenario – Clara
- 17:00-18:00 Drinks

DUTCH INPUT DOCUMENTS TO THE ESPP

Our initial input (9 pages): focuses on the elements that we consider important for deciding on the next collider, as well as on scientific diversity.
We have not yet stated our preferred future collider and alternative preference.

Our addendum (2 pages):

- Short description of the Dutch process;
- Explain our choice to discuss scenarios / integrated programmes rather than ‘options’
- Preferred scenario including its opportunities, risks and mitigation possibilities
- Alternative scenario(s) including its opportunities and risks
- 2-3 enhanced statements on important elements
- Conclusion

UPDATE FROM ESPP SECRETARIAT (I)

Three important ingredients will be taken into account in concluding on the final recommendations for the proposed post-LHC flagship accelerator project at CERN:

i. Physics potential

- Physics briefing book: assessment of the European particle physics, comparison physics potential of the various flagship proposals in the different physics areas;
- A more global comparison, across physics areas, will be made by a dedicated working group of the European Strategy Group (ESG).

ii. Assessment of the proposed flagship projects

- An ESG working group (including accelerator experts) carries out a comparison of the proposed projects;
- Focus: technical readiness, the time and cost estimates, R&D needs, performance parameters.

iii. Input from the national HEP communities

- final inputs on the preferred option and alternatives for the flagship accelerator project at CERN.
- With the Physics Briefing Book and the findings of the Project Assessment Group the national communities will have the full information available.

UPDATE FROM ESPP SECRETARIAT (II)

“For this national input, in light of the findings in the Physics Briefing Book and in the project assessment, we ask to focus on three key questions:
1. What is the preferred large-scale post-LHC accelerator for CERN?
2. What is the preferred alternative, if the preferred option is not feasible?
3. What is the preferred alternative, if the preferred option would not be competitive?”

- Feasible; can be in terms of e.g. financial resources, technology, geology
- Competitive; if a flagship is build elsewhere (i.e. CEPC/SPPC in China, ILC in Japan, Muon collider in the USA)

→ Our approach of discussing possible *scenarios* rather than options addresses all three questions.

PHYSICS BRIEFING BOOK

319 pages, 129 authors (4 from Nikhef)

- Particle Physics: open questions and opportunities
- Electroweak Physics
- Strong InteractionPhysics
- Flavour Physics
- Neutrinos
- Cosmic Messengers
- Beyond the Standard Model Physics
- Dark Matter and Dark Sector
- Accelerator Science and Technology
- Detector Instrumentation
- Computing

FURTHER DUTCH PROCESS

Next steps:

- The editorial team will draft statements to be included in the addendum;
- The editorial team will check the Physics Briefing Book and the project comparison published by the ESG on 17 October to see how these are to be incorporated into our Dutch strategy process;
- The statements are presented, discussed and finetuned during the final Strategy meeting on Friday 31 October 2025;
  Important points from the project comparison and the Physics Briefing Book will also be discussed;
- The editorial team will draft the final input, which will be circulated for feedback;
- The final Dutch input is submitted to the ESPP before 14 November.

ESPP PROCESS TIMELINE

BACK-UP SLIDES

EMAIL ESPP SECRETARIAT

Dear colleagues,

we would like to inform you again about the opportunity to give final national input and on the next steps in the ESPP process, towards the final Drafting Session, which will take place from 1 - 5 December at Monte Verità / Ascona (CH).

As already mentioned at the Open Symposium in Venice and in an email sent at the end of July, three important ingredients will be taken into account in concluding on the final recommendations for the proposed post-LHC flagship accelerator project at CERN:

(i) Physics potential

The Physics Preparatory Group (PPG) will release the Physics Briefing Book on 30 September. In addition to presenting an assessment of the European particle physics, it will also compare the physics potential of the various flagship proposals in the different physics areas. A more global comparison, across physics areas, will be made by a dedicated working group of the European Strategy Group (ESG).

(ii) Assessment of the proposed flagship projects

The ESG has also set up a working group to carry out a comparison of the proposed projects. In addition to ESG members, external accelerator experts have been accepted to contribute to the review process, namely F. Bordry, R. Brinkmann, N. Holtkamp and L. Rivkin.

The evaluation will focus on the technical readiness, the time and cost estimates, R&D needs, as well as on the performance parameters. The work of this group has started and the major findings will be released on 17 October.

(iii) Input from the national HEP communities

As communicated earlier, we offer the possibility for the national HEP communities to give their **final input** on the preferred option and alternatives for the flagship accelerator project at CERN. With the Physics Briefing Book and the findings of the Project Assessment Group the national communities will have the full information available.

For this national input, in light of the findings in the Physics Briefing Book and in the project assessment, we ask to focus on three key questions:

1. What is the preferred large-scale post-LHC accelerator for CERN?
2. What is the preferred alternative, if the preferred option is not feasible?
3. What is the preferred alternative, if the preferred option would not be competitive?

We very much hope and encourage the national communities to profit from this opportunity and to send final input for consideration in the drafting session in early December.

With best regards,

Karl Jakobs, Hugh Montgomery, Mike Seidel and Paris Sphicas
(Strategy Secretariat)

ECFA GUIDELINES FOR COLLECTING THE INPUT (I)

1) Organization of national and/or regional meetings

a) It is suggested that two national ("town-hall" or similar) meetings be organised (clearly, each country/region remains at liberty to decide on the number):
One meeting between the end of March 2025 and the Open Symposium at the end of June, with a deadline for comments by 26 May, and
a second one after the release of the Briefing Book around the end of September 2025, with a deadline of 14 November 2025.

b) The meeting(s) could/should be co-organised by the Restricted ECFA delegate and the country's representative on the ESG (for some countries this is the same person).

c) The meeting(s) should be guided by a set of "standard questions" to be considered.

d) Potentially, and if deemed useful, the November 2024 Plenary ECFA meeting could be used to further guide and assist with this process.

2) The ESG's remit explicitly states that "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".
It is imperative that the European HEP community should provide explicit feedback on both the preferred and alternative options for this "next collider at CERN", which will be the Laboratory's next flagship project, and an explanation of any specific prioritisation.

ECFA GUIDELINES FOR COLLECTING THE INPUT (II)

3) Questions to be considered by countries/regions when forming and submitting their "national input" to the ESPP:

a) Which is the preferred next major/flagship collider project for CERN?

b) What are the most important elements in the response to 3a)?

i) Physics potential

ii) Long-term perspective

iii) Financial and human resources: requirements and effect on other projects

iv) Timing

v) Careers and training

vi) Sustainability

c) Should CERN/Europe proceed with the preferred option set out in 3a) or should alternative options be considered:

i) if Japan proceeds with the ILC in a timely way?

ii) if China proceeds with the CEPC on the announced timescale?

iii) if the US proceeds with a muon collider?

iv) if there are major new (unexpected) results from the HL-LHC or other HEP experiments?

d) Beyond the preferred option in 3a), what other accelerator R&D topics (e.g. highfield magnets, RF technology, alternative accelerators/colliders) should be pursued in parallel?

e) What is the prioritised list of alternative options if the preferred option set out in 3a) is not feasible (due to cost, timing, international developments, or for other reasons)?

f) What are the most important elements in the response to 3e)? (The set of considerations in 3b should be used).

ECFA GUIDELINES FOR COLLECTING THE INPUT (III)

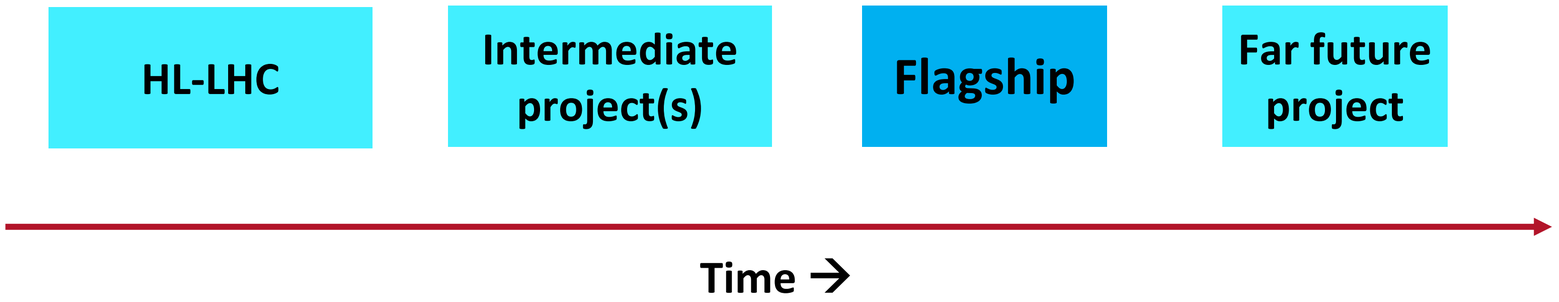
4) The remit given to the ESG also specifies that "The Strategy update should also indicate areas of priority for exploration complementary to colliders and for other experiments to be considered at CERN and at other laboratories in Europe, as well as for participation in projects outside Europe." It would thus be most useful if the national inputs explicitly included the preferred prioritisation for non-collider projects. Specific questions to address:

a) What other areas of physics should be pursued, and with what relative priority?
b) What are the most important elements in the response to 4a)? (The set of considerations in 3b should be used).
c) To what extent should CERN participate in nuclear physics, astroparticle physics or other areas of science, while keeping in mind and adhering to the CERN Convention? Please use the current level and form of activity as the baseline for comparisons.

PREFERRED COLLIDER VS PREFERRED SCENARIO

Flagship

PREFERRED COLLIDER VS PREFERRED SCENARIO



EXTENDED INPUT

We will not replace our initial input, but rather write an addendum to it.

This addendum will state the following:

- Our preferred scenario and our preferred alternative scenario;
- Information on what we would advise in the event that a major collider (e.g. CEPC) is built elsewhere;
- Enhancement of the most important key elements/statements.