

# ECFA

European Committee for Future Accelerators



# ECFA addressing the European Strategy

*Jorgen D'Hondt ([Jorgen.DHondt@cern.ch](mailto:Jorgen.DHondt@cern.ch))*

*Muon Collider meeting, July 27<sup>th</sup>, 2020, remote*



## This presentation

1. Key elements of the updated European Strategy (very brief)
2. The role of ECFA in the context of the Strategy



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## Key elements of the updated European Strategy

Two key documents made public:

(main website <http://europeanstrategyupdate.web.cern.ch/welcome> )

1. a document including all recommendation:

<https://home.cern/sites/home.web.cern.ch/files/2020-06/2020%20Update%20European%20Strategy.pdf>

2. a deliberation document elaborating on the recommendations in a context:

<https://home.cern/sites/home.web.cern.ch/files/2020-06/2020%20Deliberation%20Document%20European%20Strategy.pdf>



## Key (research facility) aspects of the updated European Strategy

- The full exploitation of the (HL-)LHC potential
- Continuous support for the long-baseline neutrino projects in the US and Japan
- Support for research programmes beyond colliders where they have high impact
- Globally, a Higgs Factory is the highest priority collider beyond the HL-LHC
- Investigate the feasibility of a 100 TeV hadron collider at CERN
- Strengthen the R&D for accelerators, and develop roadmaps for both accelerator and detector R&D in Europe to achieve the above
- Adjust our organisation in order to achieve the above, including societal aspects



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1. Key elements of the updated European Strategy (very brief)
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## Higgs@FutureColliders report

- an assessment of the potential of future colliding beam facilities to perform Higgs boson studies
- the analysis builds on the submissions made by the proponents of future colliders to the European Strategy Update process, and takes as its point of departure the results expected at the completion of the HL-LHC program
- <https://arxiv.org/abs/1905.03764>

“Higgs Boson studies at future particle colliders”, JHEP01 (2020) 139

### Higgs Boson studies at future particle colliders

J. de Blas,<sup>a,b</sup> M. Cepeda,<sup>c</sup> J. D'Hondt,<sup>d</sup> R.K. Ellis,<sup>e</sup> C. Grojean,<sup>f,g</sup> B. Heinemann,<sup>f,h</sup> F. Maltoni,<sup>i,j</sup> A. Nisati,<sup>k</sup> E. Petit,<sup>l</sup> R. Rattazzi<sup>m</sup> and W. Verkerke<sup>n</sup>

<sup>a</sup> Dipartimento di Fisica e Astronomia Galileo Galilei, Università di Padova, Via Marzolo 8, I-35131 Padova, Italy

<sup>b</sup> INFN — Sezione di Padova, Via Marzolo 8, I-35131 Padova, Italy

<sup>c</sup> Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Avda. Complutense 40, 28040, Madrid, Spain

<sup>d</sup> Inter-University Institute for High Energies (IIHE), Vrije Universiteit Brussel, Brussels, 1050, Belgium

<sup>e</sup> IPPP, University of Durham, Durham DH1 3LE, U.K.

<sup>f</sup> Deutsches Elektronen-Synchrotron (DESY), Hamburg, 22607, Germany

<sup>g</sup> Institut für Physik, Humboldt-Universität, Berlin, 12489, Germany

<sup>h</sup> Albert-Ludwigs-Universität Freiburg, Freiburg, 79104, Germany

<sup>i</sup> Centre for Cosmology, Particle Physics and Phenomenology, Université catholique de Louvain, Louvain-la-Neuve, 1348, Belgium

<sup>j</sup> Dipartimento di Fisica e Astronomia, Università di Bologna and INFN — Sezione di Bologna, via Irnerio 46, 40126 Bologna, Italy

<sup>k</sup> INFN — Sezione di Roma, P.le A. Moro 2, I-00185 Roma, Italy

<sup>l</sup> Aix Marseille Univ, CNRS/IN2P3, CPPM, Marseille, France

<sup>m</sup> Theoretical Particle Physics Laboratory (LPTP), EPFL, Lausanne, Switzerland

<sup>n</sup> Nikhef and University of Amsterdam, Science Park 105, 1098XG Amsterdam, the Netherlands

E-mail: [Jorge.DeBlasMateo@pd.infn.it](mailto:Jorge.DeBlasMateo@pd.infn.it), [maria.cepada@cern.ch](mailto:maria.cepada@cern.ch), [Jorgen.DHondt@vub.be](mailto:Jorgen.DHondt@vub.be), [keith.ellis@durham.ac.uk](mailto:keith.ellis@durham.ac.uk), [christophe.grojean@desy.de](mailto:christophe.grojean@desy.de), [beate.heinemann@desy.de](mailto:beate.heinemann@desy.de), [fabio.maltoni@uclouvain.be](mailto:fabio.maltoni@uclouvain.be), [nisati@cern.ch](mailto:nisati@cern.ch), [Elisabeth.Petit@cern.ch](mailto:Elisabeth.Petit@cern.ch), [riccardo.rattazzi@epfl.ch](mailto:riccardo.rattazzi@epfl.ch), [verkerke@nikhef.nl](mailto:verkerke@nikhef.nl)

**ABSTRACT:** This document aims to provide an assessment of the potential of future colliding beam facilities to perform Higgs boson studies. The analysis builds on the submissions made by the proponents of future colliders to the European Strategy Update process, and takes as its point of departure the results expected at the completion of the HL-LHC program. This report presents quantitative results on many aspects of Higgs physics for future collider projects of sufficient maturity using uniform methodologies.

**KEYWORDS:** e+e- Experiments, Electroweak interaction, Higgs physics

ARXIV EPRINT: [1905.03764](https://arxiv.org/abs/1905.03764)



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# Physics, Experiment & Detector studies towards a Higgs Factory

## Support for and Acknowledgement of a series of PED@HF workshops

*PED@HF – Physics, Experiments and Detector studies at Higgs Factories*

ECFA acknowledges the need for the experimental and theoretical communities involved in Physics studies, Experiment designs and Detector technologies at future Higgs Factories to gather. ECFA supports a series of workshops with the aim to share challenges and expertise, to explore synergies in their efforts and to respond coherently to this priority in the European strategy for particle physics.

Such *Aix-les-Bains-type* workshops would focus on PED studies for a Higgs Factory which would match a previous ECFA initiative mapping the potential of Higgs studies at future colliders. Setting up an International Advisory Committee (IAC) would be the next step, involving some RECFAs and European leaders of the most relevant colliders (e.g. CLIC, FCC, ILC, CEPC, LHeC, muon collider) with a mandate to setup a Program Committee (PC) that would develop an agenda in consultation with the IAC, and embracing the global nature of these projects.



2

## Organize the development of a Detector R&D Roadmap

***To guide the Detector R&D process in Europe, defining an inclusive Detector R&D Roadmap would be a major step and a strong ambition for the community at large, both considering focused and transformational R&D and considering emerging technologies also in adjacent fields***

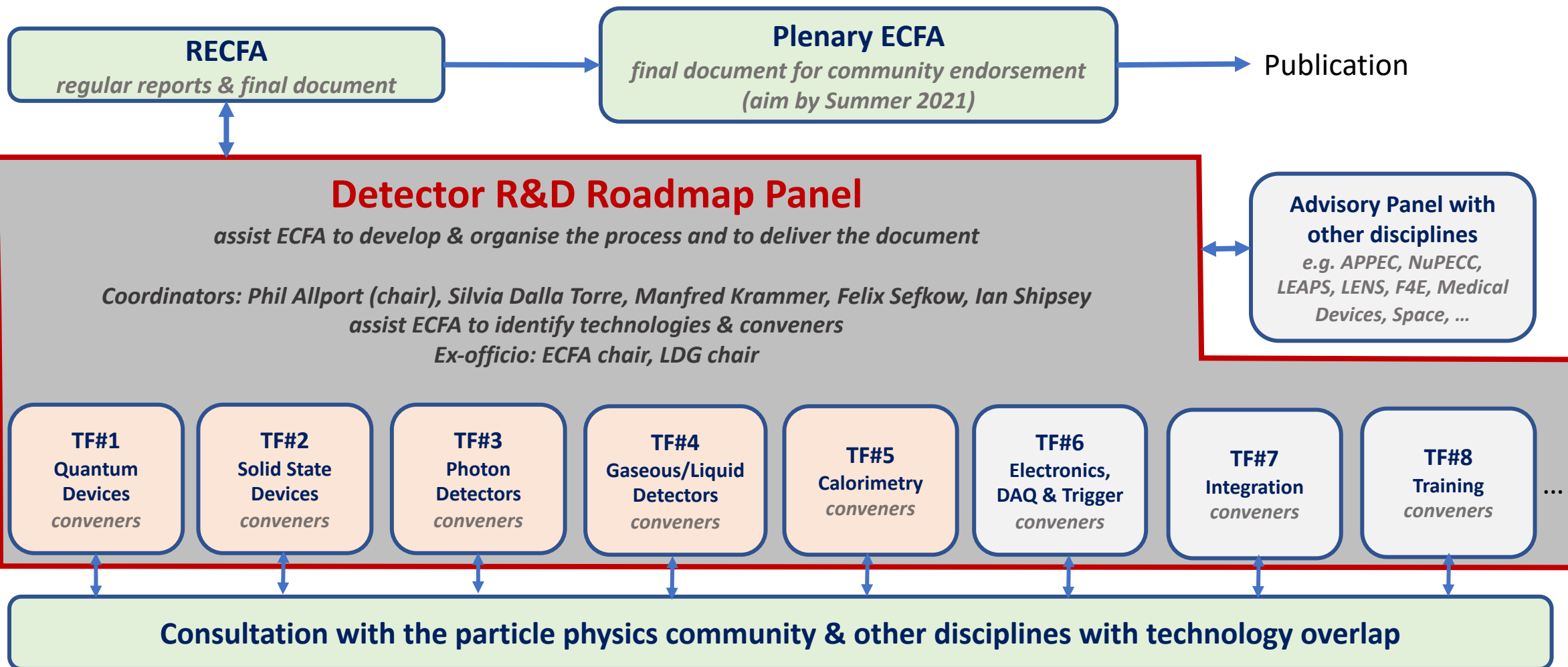
The updated European Strategy for Particle Physics calls upon ECFA to organize the development of a Detector R&D Roadmap

## Organize the development of a Detector R&D Roadmap

*“Coordination of R&D activities is critical to maximise the scientific outcomes of these activities and to make the most efficient use of resources; as such, there is a clear need to strengthen existing R&D collaborative structures, and to create new ones, to address future experimental challenges of the field beyond the HL-LHC. **Organised by ECFA, a roadmap should be developed by the community to balance the detector R&D efforts in Europe**, taking into account progress with emerging technologies in adjacent fields. The roadmap should identify and describe a **diversified detector R&D portfolio that has the largest potential to enhance the performance of the particle physics programme in the near and long term**. This community roadmap could, for example, identify the grand challenges that will guide the R&D process on the medium- and long-term timescales, and define technology nodes broad enough to be used as the basis for creating R&D platforms. **This will allow concerted and efficient actions on the international scale addressing the technological challenges of future experiments while fostering an environment that stimulates innovation and collaboration with industry.**”*

Extract from the 2020 Strategy update

## Organization to structure the consultation with the community



example Task Forces at this stage

## The role of ECFA in the context of the Strategy

- **Detector, Experiment and Physics studies towards a Higgs Factory**  
(endorsement to initiate the process towards a series of workshops)
- **Organize the development of a Detector R&D Roadmap**  
(endorsement to get organized with a view to launch the process later this year)
- **Synergy efforts with astroparticle and nuclear physics**  
(take note of the call for venues for the next JENAS event in 2021)
- **Societal efforts on recognition, diversity and career aspects**  
(endorsement to create an ECFA Early-Career Researcher panel)

## The role of ECFA in the context of the Strategy

Thank you for your attention!

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