Future Circular Collider (FCC) Study

Why

- Push the energy frontier beyond LHC
- High Priority item within the European Strategy for Particle Physics
- Timely
  - lead times for R&D very long
  - LHC physics program for ~20 years
- Need for a project plan when LHC results indicate direction to go

What

- Technical/Conceptual Design Reports for linear e^+e^- Colliders exist: ILC/CLIC
  Japan interested in housing ILC
  Europe and CERN: participation in both endeavours will be continued
- Need to go beyond present energy frontier → circular high energy collider

How

- Exploitation of **all options** for such a project (hh – ee – ep) **within one study**

- Global Collaboration for the **Study of Future Circular Colliders**
  (similar to the CLIC collaboration)
- Hosted by CERN

Scope

A conceptual design study of options for a future high-energy frontier circular collider at CERN for the post-LHC era shall be carried out, implementing the request in the 2013 update of the European Strategy for Particle Physics.

Many results of the study will be site independent.

The design study shall be organised on a world-wide international collaboration basis under the auspices of the European Committee for Future Accelerators (ECFA) and shall be available in time for the next update of the European Strategy for Particle Physics, foreseen by 2018.

Scope

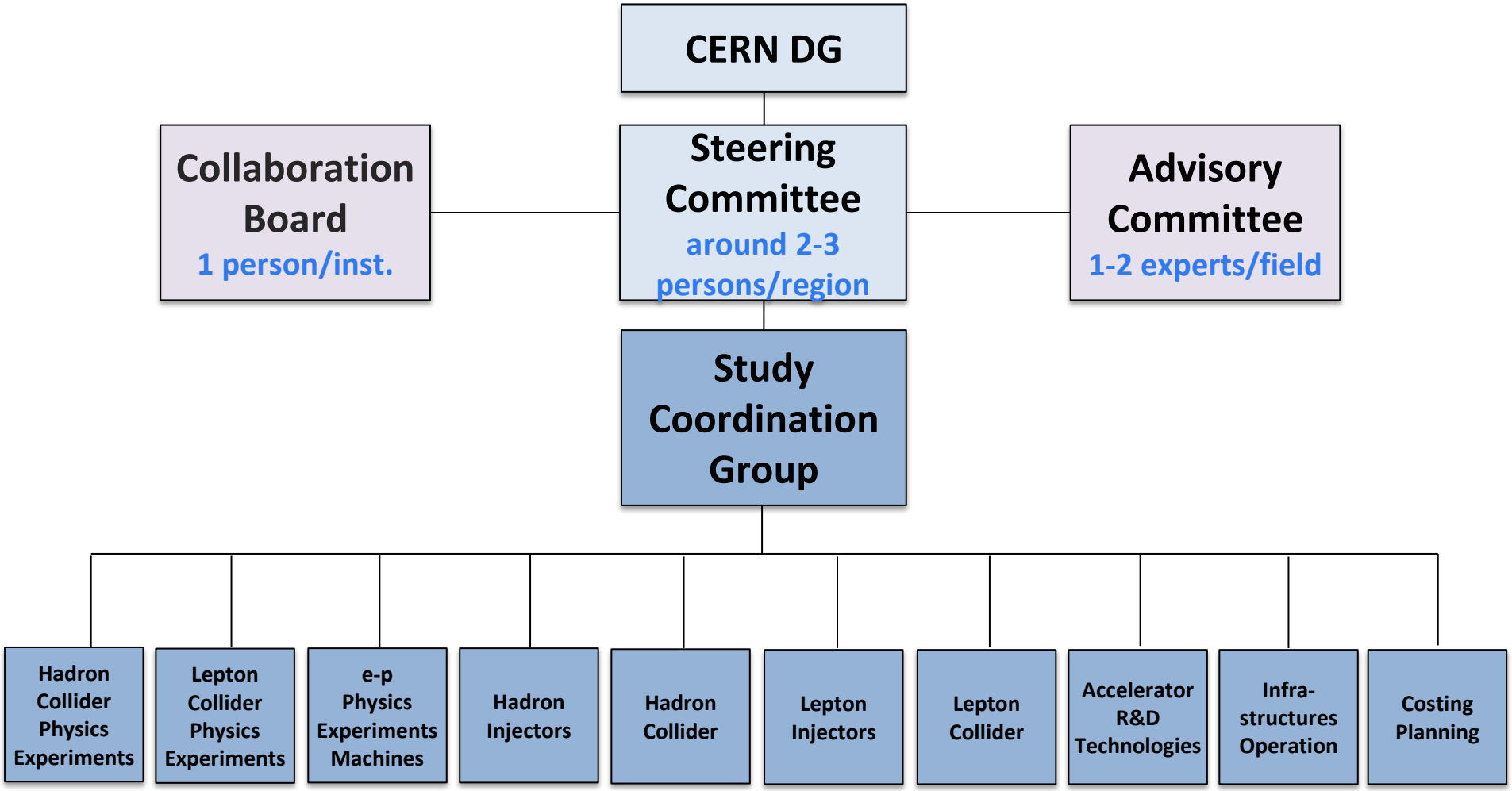
The main emphasis of the conceptual design study shall be the long-term goal of a hadron collider with a centre-of-mass energy of the order of 100 TeV in a new tunnel of 80-100 km circumference for the purposes of studying physics at the highest energies.

The conceptual design study shall also include a lepton collider and its detectors, as a potential intermediate step towards realization of the hadron facility. Potential synergies with linear collider detector designs should be considered.

Options for e-p scenarios and their impact on the infrastructure shall be examined at conceptual level.

The study shall include cost and energy optimisation, industrialisation aspects and provide implementation scenarios, including schedule and cost profiles.

Proposed international organization structure



Workshop Goals

- Discussion of all FCC aspects
- Refine scope of the study
- Define schedule, WBS, milestones of the study
- Establish the path towards international collaboration: Expressions of Interest, formation of collaboration, accepting new partners throughout the duration of the study
- Open process

Summary

- In line with the **European Strategy**, CERN is launching a **5-year international design study** for Future Circular Colliders (FCC); unique road up to 100 TeV energy scale
- **Worldwide collaboration in all areas** - physics, experiments and accelerators – **is essential** to bring this study to fruition (and to arrive at a CDR by 2018)
- Need to present (additional) **benefits to society** from the very beginning of the study (examples: sc technologies)
- Need to have **excellent communication and outreach** accompanying the study
- Make **efficient use of existing efforts/investments** and interconnect with other projects/studies