Work-package structure

G. Global Issues supergroup

G1. Global optimization and coordination

WG leaders: R. D'Arcy, B. Foster, C. Lindstrøm

- Improve accuracy of cost modelling.
- Understanding the carbon footprint in more detail.
- Make improved HALHF 3.0 parameters.

G2. Global self-consistent start-to-end simulation

WG leaders: E. Adli, C. Lindstrøm, B. Chen
Interested: V. Maslov, I. Demydenko, R. Ovsiannikov

Perform simulation in ABEL
=> Depends on the PWFA linac WG
=> Depends on the BDS WG
=> Depends on the Positron linac WG
=> Depends on the Asymmetric detector WG
=> Depends on the Positron source WG
=> Depends on the Electron source WG

P. PWFA supergroup

P1. PWFA linac

WG leaders: E. Adli, C. Lindstrøm, K. Põder
Interested: V. Maslov, I. Demydenko, R. Ovsiannikov, P. Drobniak, R. D'Arcy

- Perform self-consistent simulation of the PWFA linac.
- Ion motion: which gas to use
  => (Will affect the plasma-heating/cooling WG).
- Include spin polarization in PWFAs and interstages.
  - Transverse tolerances.

P2. Plasma heating and cooling

WG leaders: R. D'Arcy, J. Wood
Interested: T. Sloan, J. Cowley, I. Najmudin,

- Understand limits on beam parameters, plasma cell geometry and plasma parameters that enables reproducibility in the plasma-acceleration process.
  - Come up with cell design (diameter, confinement solutions etc.) and cooling requirements/solution.

P3. PWFA driver distribution and delays

WG leaders: D. Kalvik, C. Lindstrøm

- Identify technical solution
- Produce and include a lattice/simulation into the ABEL framework.

P5. Driver dumping and radiation safety

WG leaders: S. Boogert

- Perform FLUKA/similar simulation looking at the radiation enviroment.
  => (Will be affected by the PWFA linac WG).

C. Other Accelerator Systems supergroup

C1. RF driver linac and combiner rings

WG leaders: K. Sjobak

- Produce and include a lattice/simulation into the ABEL framework, building on work from JAI student project
- Optimize the RF cell structure of the driver RF accelerator (in order to give a "final" efficiency number)

C2. BDS and collimation

WG leaders: R.T. Garcia, A. Seryi
Interested: R. D'Arcy, S. Boogert, V. Cilento, S. Gessner, New CERN Fellow

- Figure out how to deal the larger emittance (or advice how to change the beam parameters).
  => (Will affect the PWFA linac WG).
- Produce and include a lattice/simulation into the ABEL framework.
- Investigate further the possibility of collimating between stages.
  => (Will affect the PWFA linac WG).
- Finalize 2-BDS setup.

C3. Damping rings

WG leaders: Dou Wang
Interested: J. Gao, G. Moortgat-Pick

- Understand requirements and limits of using higher-charge positron bunches.
- Produce and include a lattice/simulation into the ABEL framework.

C4. Polarized positron source

WG leaders: G. Moortgat-Pick
Interested: Malte Trautwein, Manuel Formela, Niclas Hamann

- Produce a simulation/concept capable of delivering required e+ flux – or feedback to other parts of project if requirement cannot be reached

C5. Polarized electron source and injector (no damping ring)

WG leaders:

- Produce a simulation/concept.

C6. Positron RF linac

WG leaders: E. Nanni
Interested: G. Moortgat-Pick

- Understand in detail what cool-copper accelerator parameters are required (RF power profile, etc.)
- Produce and include a lattice/simulation into the ABEL framework.

C7. Structure acceleration & alternatives to klystrons

WG leaders: X. Lu

- Explore applications to the HALHF linacs

C8. Civil engineering and sustainability

WG leaders: E. Mactavish, J. Osborne
Interested: B. Foster

- CERN site study
- More detailed understanding of the tunnel diameter (5.6 m possible etc?)
- Is it possible and cost-effective to use steam turbines instead of/in addition to ventilation

D. Physics and detector supergroup

D1. Physics, asymmetric detector and IP beam dynamics

WG leaders: J. List
Interested: M. Berggren, B. Foster. G. Moortgat-Pick, , J. Reuter,

- Produce a simulation for the new baseline.
- Forward boost (physics implications & detector choice)
- Perform simulation of interaction point beam dynamics