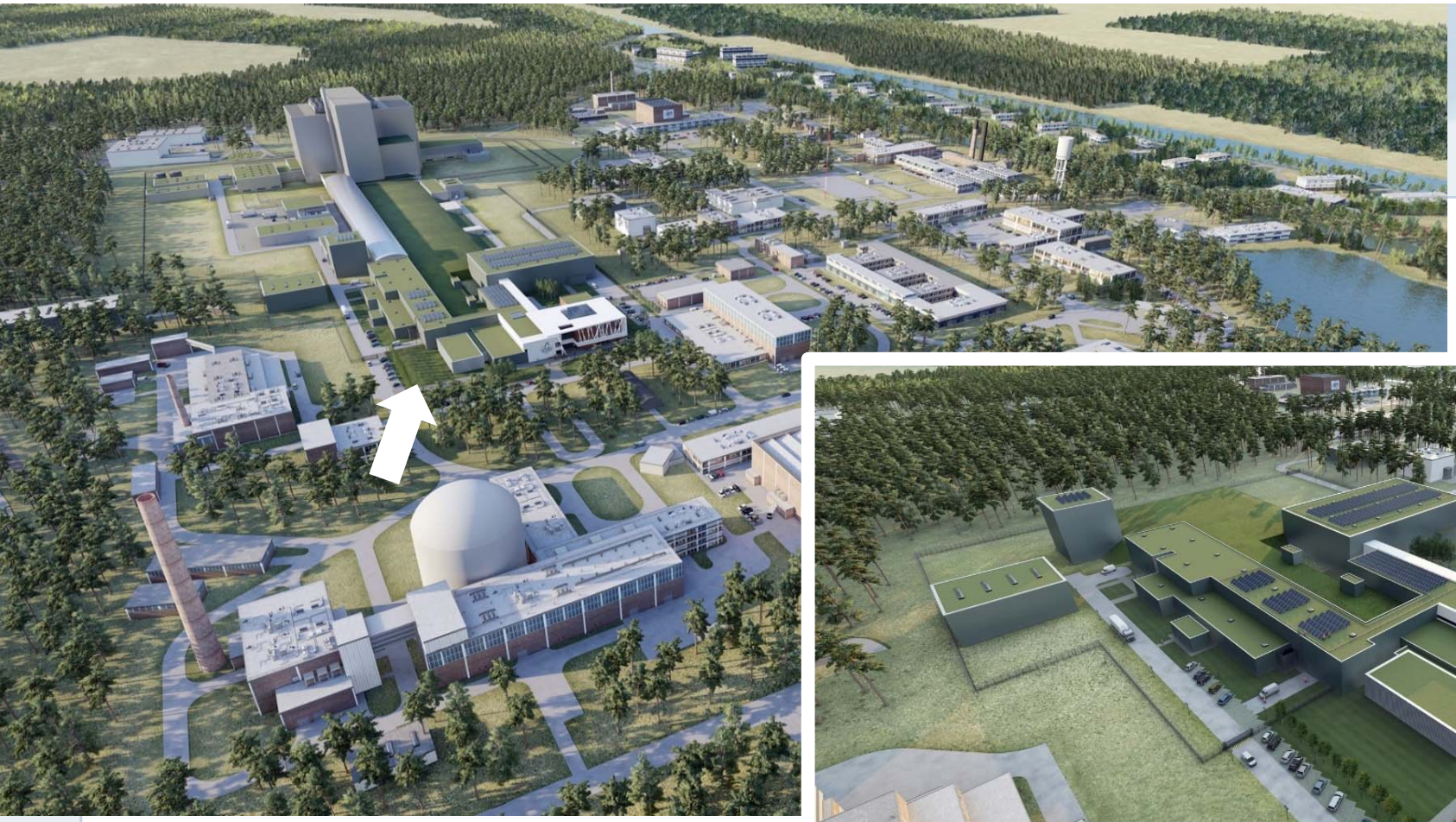
Collaboration MYRRHA-CERN
Preparation meeting

CERN, 27th February 2020

A. Fabich (SCK-CEN)



Towards **MYRRHA**

- **MYRRHA Phase 1 Implementation**
  - Also referred to as MINERVA

Source:

Contents

- MYRRHA programme
  - Phased approach
- MINERVA
  - Scope
  - Project
  - organization
- What we will achieve today!

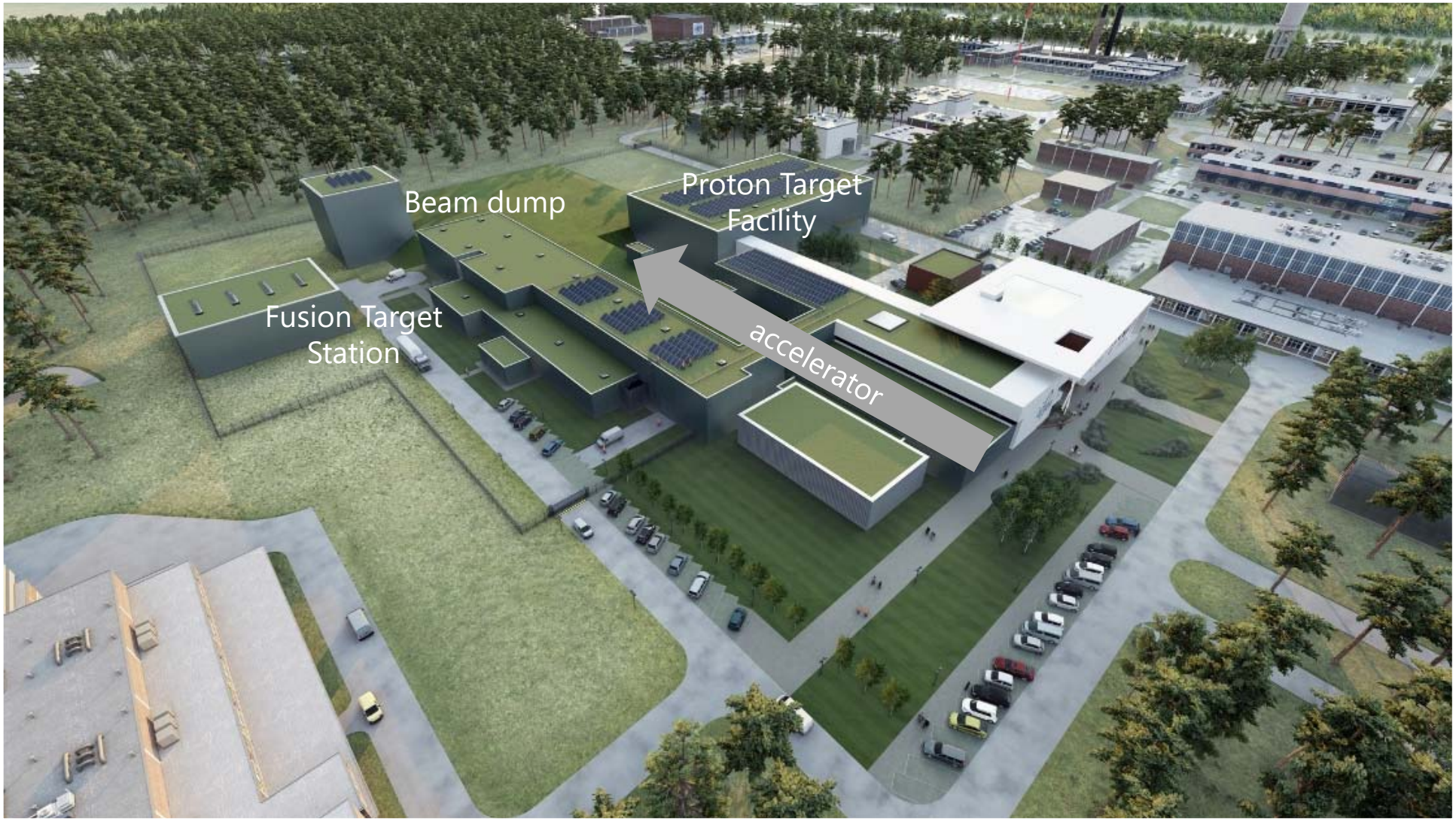
Source: [TBD]

MYRRHA programme

- research reactor - accelerator driven
  - First-of-its-kind
  - For various applications from spent-fuel burning to material irradiation testing
- Split in 3 phases (until 2034 = operation start)
  - Phase 3: installation of the reactor
  - Phase 2: extension of the accelerator to 600 MeV
  - **Phase 1 (approved)**
    - Implementation of a 100 MeV accelerator + PTF + FTS
    - R&D for 600 MeV linac
    - Design and pre-licensing of the reactor

Source:

MINERVA

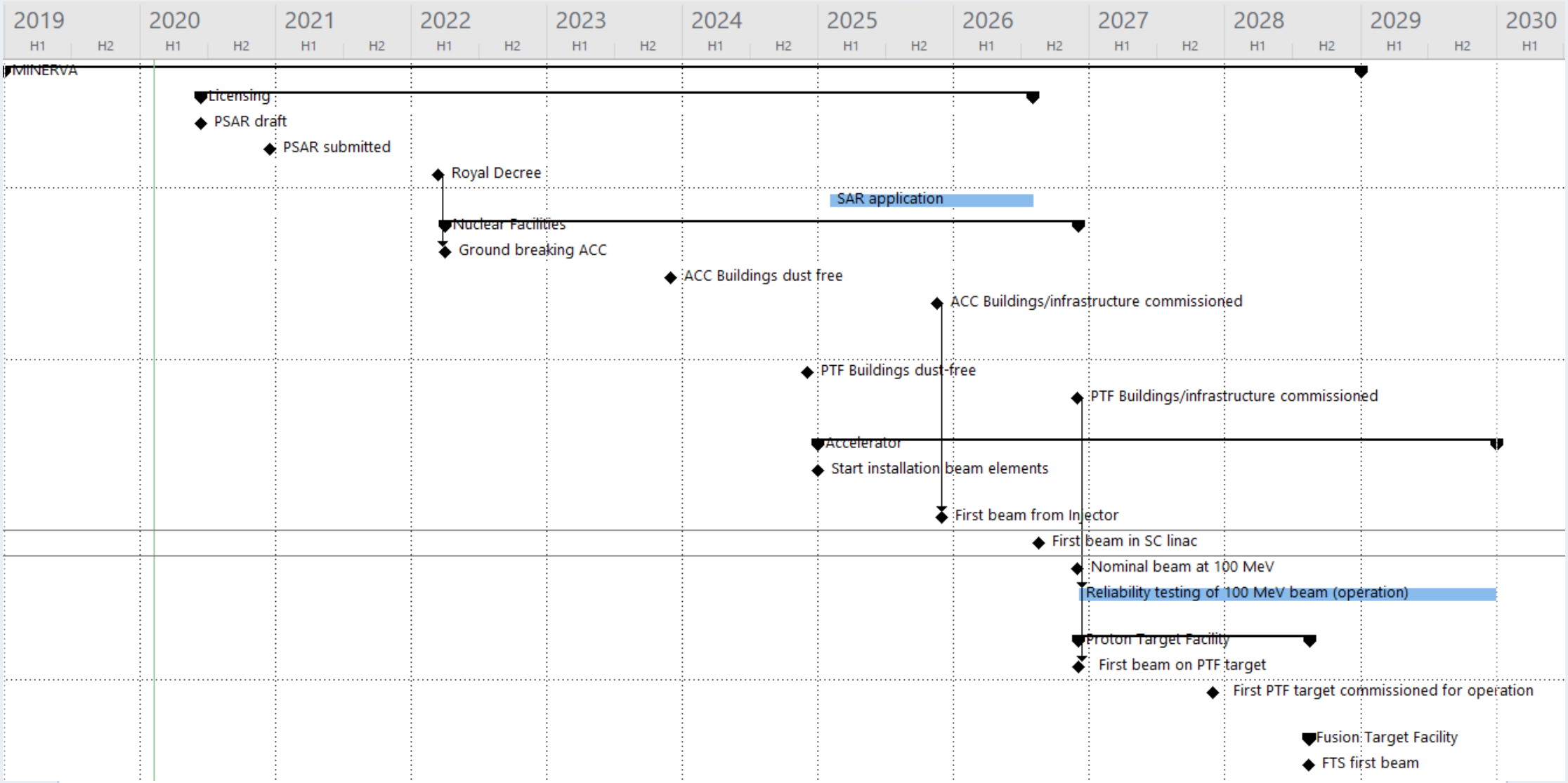


Source:

MINERVA programme - scope and timeline

- MINERVA programme = MYRRHA phase 1 – Implementation
  - 100 MeV SC-proton accelerator
    - **Linac with highest reliability, in view of MYRRHA**
  - Proton Target Facility – for radio-isotope production
    - Fundamental physics research, production of isotopes (for medical applications)
  - Fusion Target Station – material R&D
  - Funded solely by Belgium government – 287 MEuro
- Key milestones
  - **Q4 2020: PSAR submission (draft by early summer 2020)**
    - PSAR (preliminary safety assessment report) as document for the licensing application
  - Ground-breaking Q2 2022
  - Delivery of 100 MeV beam by 2026
    - staged commissioning towards PTF/FTS

(sub-programme) Schedule



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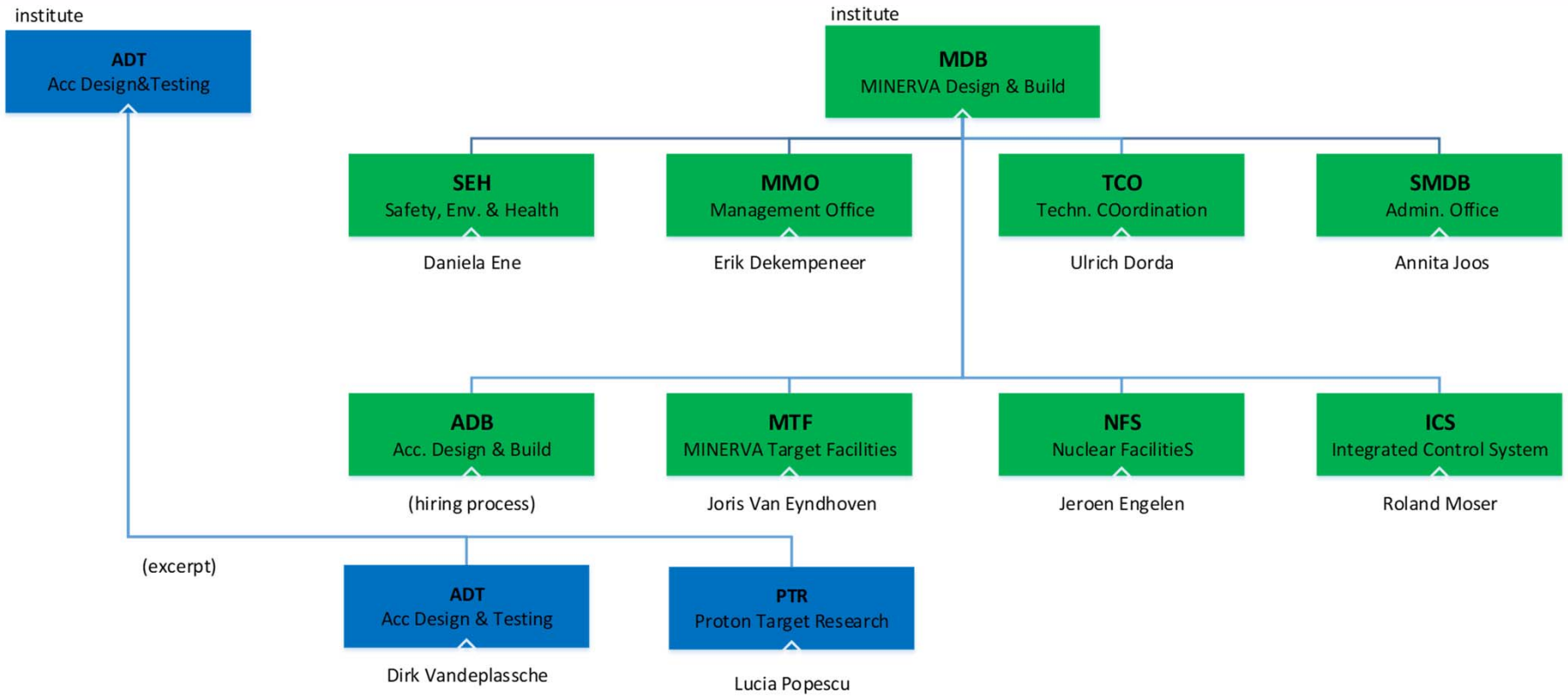
Source:

MDB institute – MINERVA programme dedicated



Closely working together with SCK-CEN institutes

- ANS: ISOL system, accelerator, MC simulations
- NMS: target materials, target laboratory
- EHS: environmental aspects, waste management
- CSA: HR, procurement, supply chain, legal
- IDPBW: safety, licensing

Institutes report to the DG

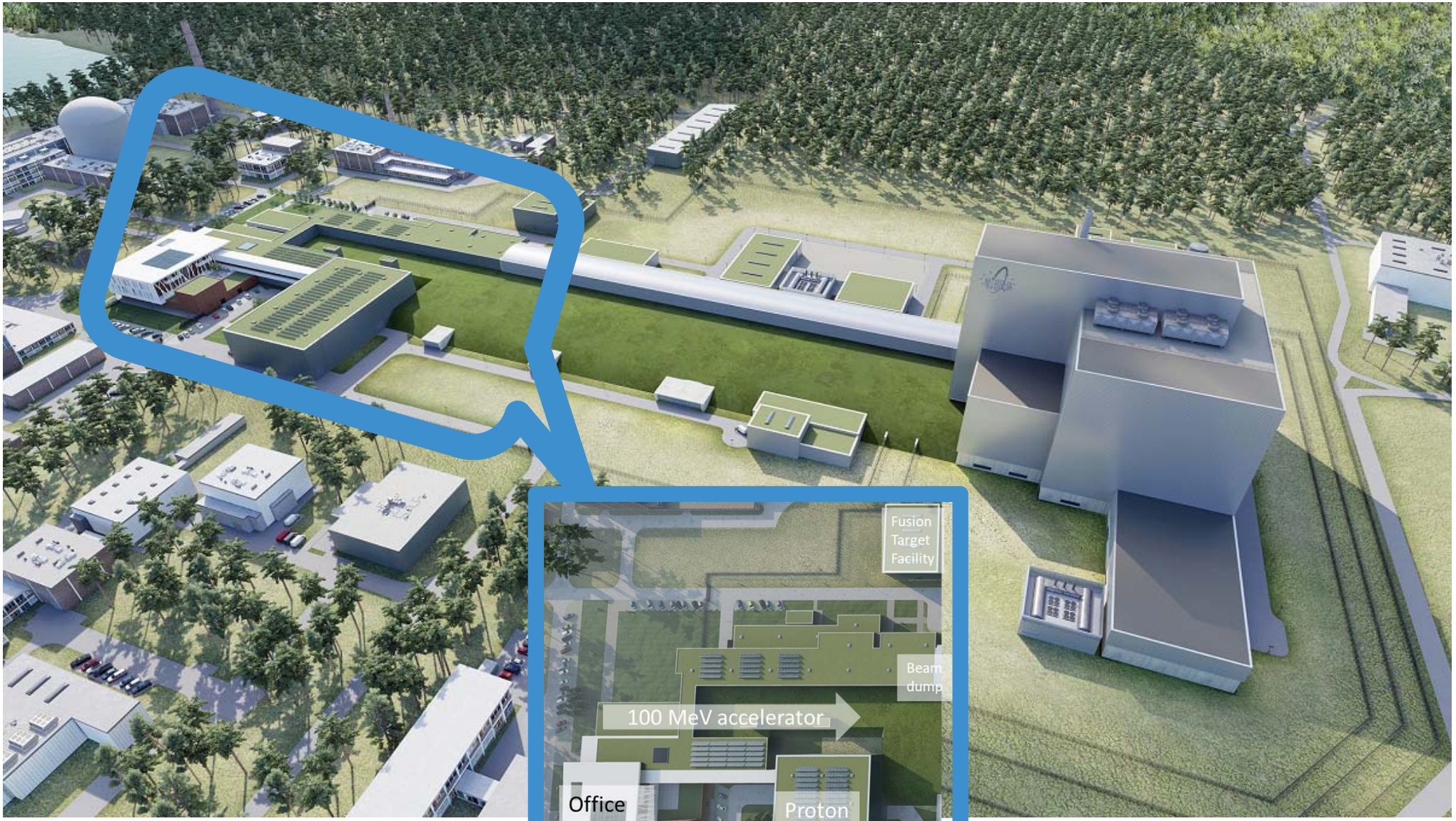
ALX/36220768

Technical collaborations (excerpt)

- **TRIUMF**
  - Canada's particle accelerator centre
  - established radio-isotope production facility
  - Collaboration agreement signed and started, related to PTF/ISOL/RIB
  - Access to designs and expertise, mission of personnel for training
  - Possible extension to safety aspects
- **CERN**
  - Existing framework contract CO-90-11-2876-00-E
  - (Re-)establishing technical projects
  - Safety, cryogenics, beam dumps, RF technology, reliability, beam diagnostics
- **CEA**
  - within framework contract
  - Providing technical project on assembly of cryomodules, cryoplant design …
- **Envisaged**
  - Uppsala/FREIA
  - ESS

Source:

Looking forward to a fruitful collaboration!



Source:

Goal of today

- Defining work packages (WP)
  - Including alternative strategies
  - See ppt template
  - Future adaptations possible – 80% view should be achieved today
- Define to a detail, which allows
  - Concluding on the technical contributions to the MINERVA
  - Assessing the benefit for CERN and SCK-CEN
  - Estimating the workload for CERN/SCK-CEN
- Dedicated WPs will be summarized and put forward
  - Agreeing on (financial) compensatory measures
  - Agreement/approval by CERN and SCK-CEN management

Source:

sck cen

Exploring
a better tomorrow

SCK•CEN
Studiecentrum voor Kernenergie
Centre d'Etude de l'Energie Nucléaire
Belgian Nuclear Research Centre

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