Nikhef

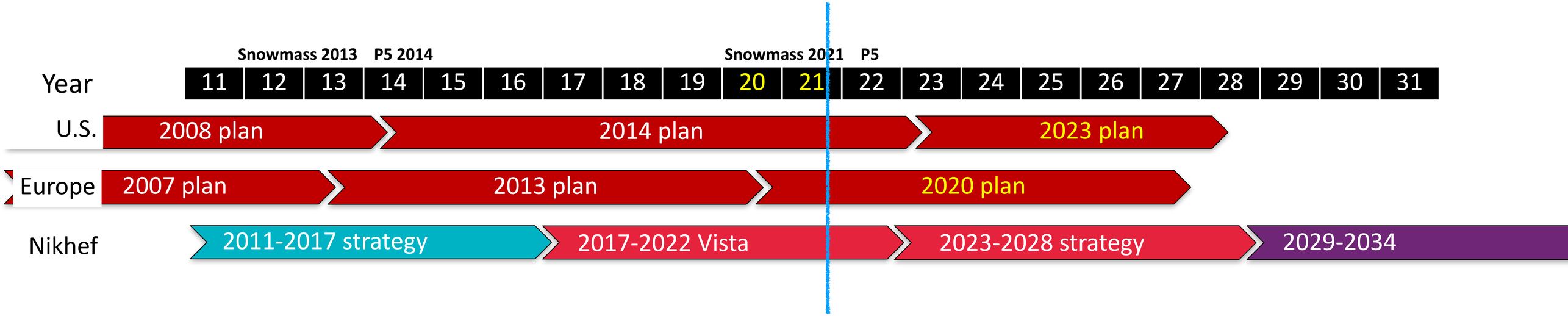
STAFF MEETING

Friday - October 15, 2021

NIKHEF STRATEGY CYCLE

Prepare for a full strategy update (2023-2028) next year

- This year priority is to crawl out of the pandemic ….



The WAR has produced an excellent document

- based on our earlier discussions

We prepare feedback on this document and send this to you

FUTURE OF HL-LHC > 2030

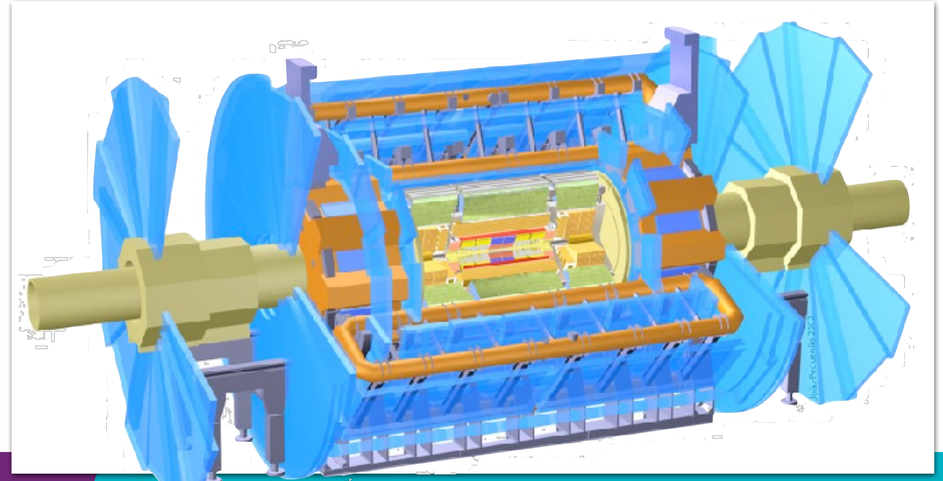
European Strategy:

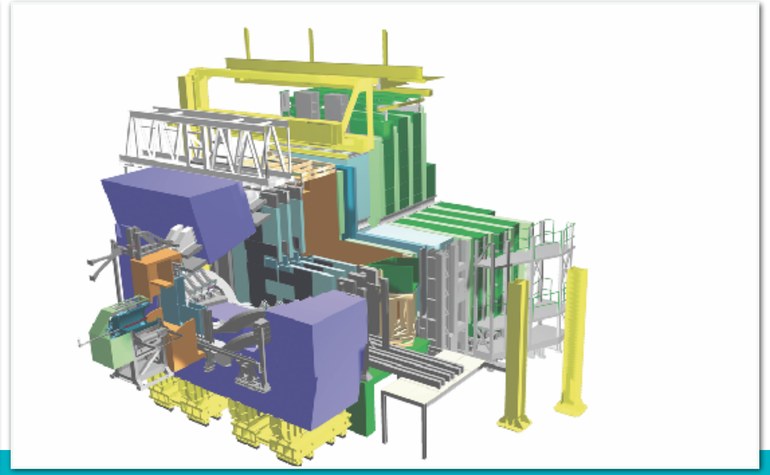
- *Full physics potential of LHC should be exploited, with all detectors running beyond 2030, after suitable upgrades*

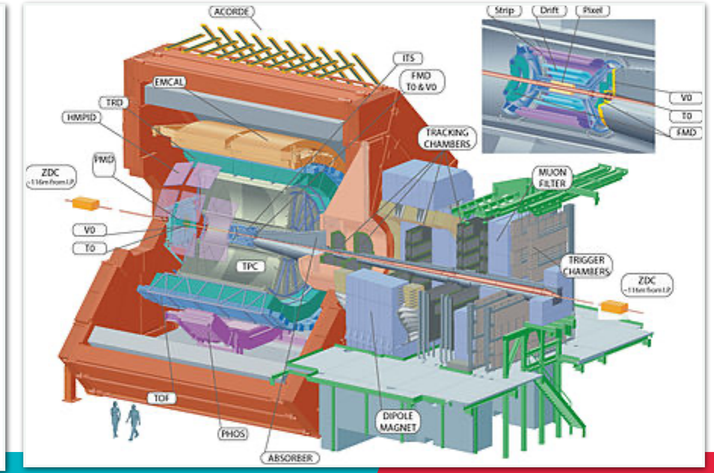
Discussed and approved by SAC meeting in July with warning on highly competitive research area R&D projects have started very recently

Nikhef

- Ambition to develop ultra-fast precision detector technology
- Applications in LHCb, ALICE and ATLAS around 2030







Effort lead by Martin van Beuzekom (R&D)
with involvement from ALICE (A. Grelli), LHCb (Kazu) and ATLAS (?)

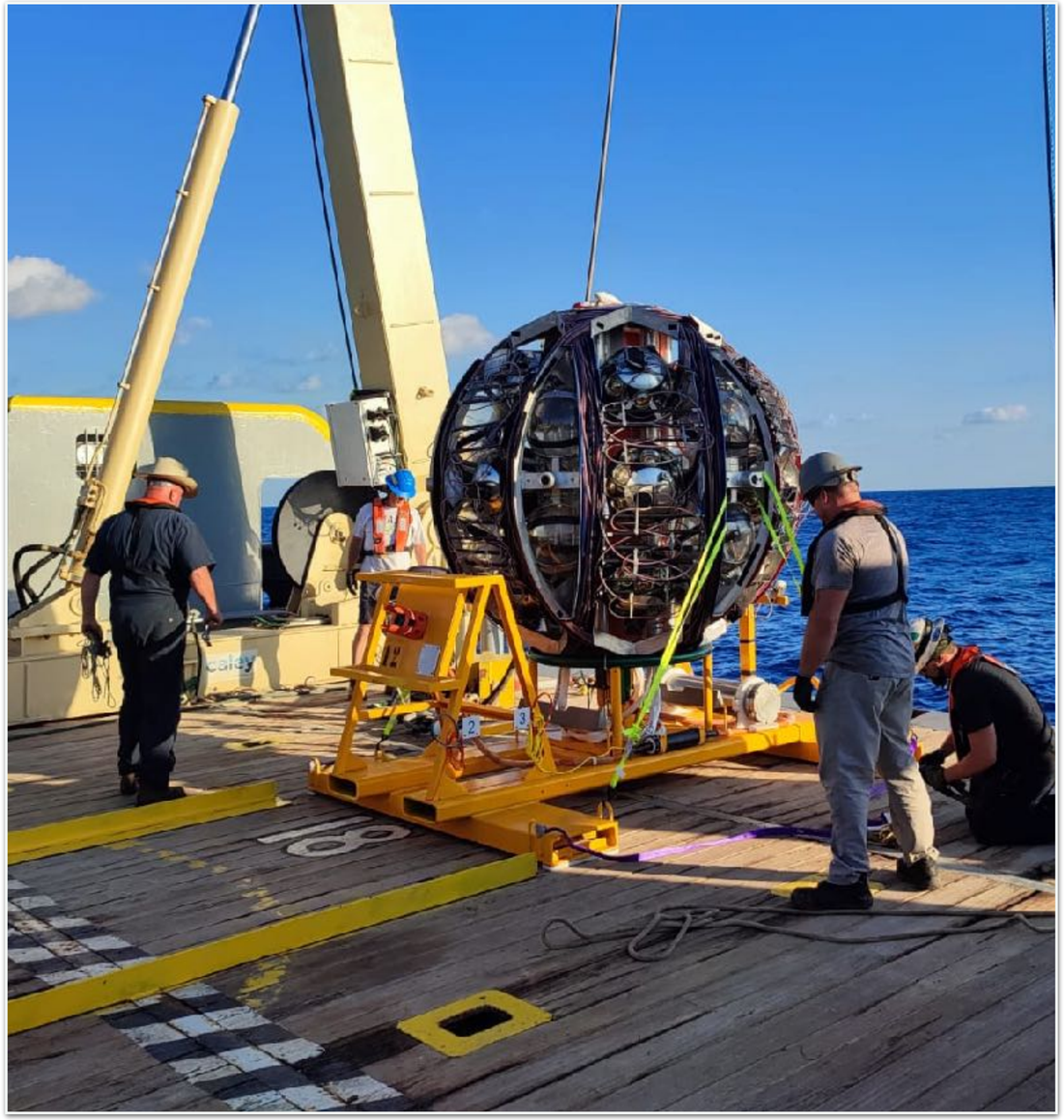
ORCA STAGED COMPLETION

Funds available for ~25 more DUs.

- Large French funding request 2020 did not pass, smaller request did.
- We assume that the detector will still grow, but slower than foreseen.
- Staged completion

Nikhef will continue with production for ORCA

- Deployment and seafloor network activities for ARCA



Discussed and approved by SAC meeting in July

EINSTEIN TELESCOPE IN EUROPE

ET is selected by the ESFRI roadmap

- Scientist from 40 institutes & 10 landen - growing
- Launch of the roadmap in Lubljiana, December 2021

Coördination by Italy and the Nederland

- Political support from IT, NL, Belgium, Poland, Spain
- Political interest from Germany, UK, Austria, (France?)
- Site selection (IT, NL) around Q3/2024

Timeline for ET

- Design phase (2008 - 2017, 5ME)
- Preparatory phase (2018 - 2027, 171ME)
- Implementation phase (2026 - 2035, 1736ME)
- Exploitation phase (2035 - 2080, 37ME / yr)

ESFRI ROADMAP COSTBOOK

Underground infrastructure

- 932ME tunneling, civil en infrastructuur
  - Substantial contribution by host-countries

Vacuum system

- 566ME in period 2026-2032
  - Substantial contribution by host-countries

Detector

- 288ME in period 2026-2035
  - (Inter) nationale funding, participating countries

Activity	Cost [M€]	Start	End	Note
Infrastructure costs	932			
Excavation	781	2027	2033	Excavation of the underground tunnels with TBMs and of the caverns. Cost based on the evaluation by two independent external companies.
Direction of the civil works	9	2026	2034	Evaluation based on the 1% of the underground and surface infrastructures realisation cost.
Civil works on the surface	98	2028	2033	Realisation of the technical and civil infrastructures on the surface. Cost evaluation based on the Conceptual Design study.
Services underground (ventilation ...)	44	2030	2033	Technical infrastructures serving the underground facilities and apparatuses.
Detector costs	804			
Vacuum system	566	2026	2032	Vacuum plant, pumps and pipes.
Optics and Laser Suspension system	125 48	2027 2027	2032 2032	Main mirrors, auxiliary optics and lasers. Filtering and suspension systems.
Cryogenics	45	2026	2032	Cryogenic plants.
ET installation	20	2032	2035	Contracts and activities for the installation of the ET components.
Total	1736			

tabel cost book ESFRI aanvraag

BSR
Board of Scientific Representatives

↔

Coordinators
A Zoccoli & S Bentvelsen

↔

Ministeries
Informal exchange

↕

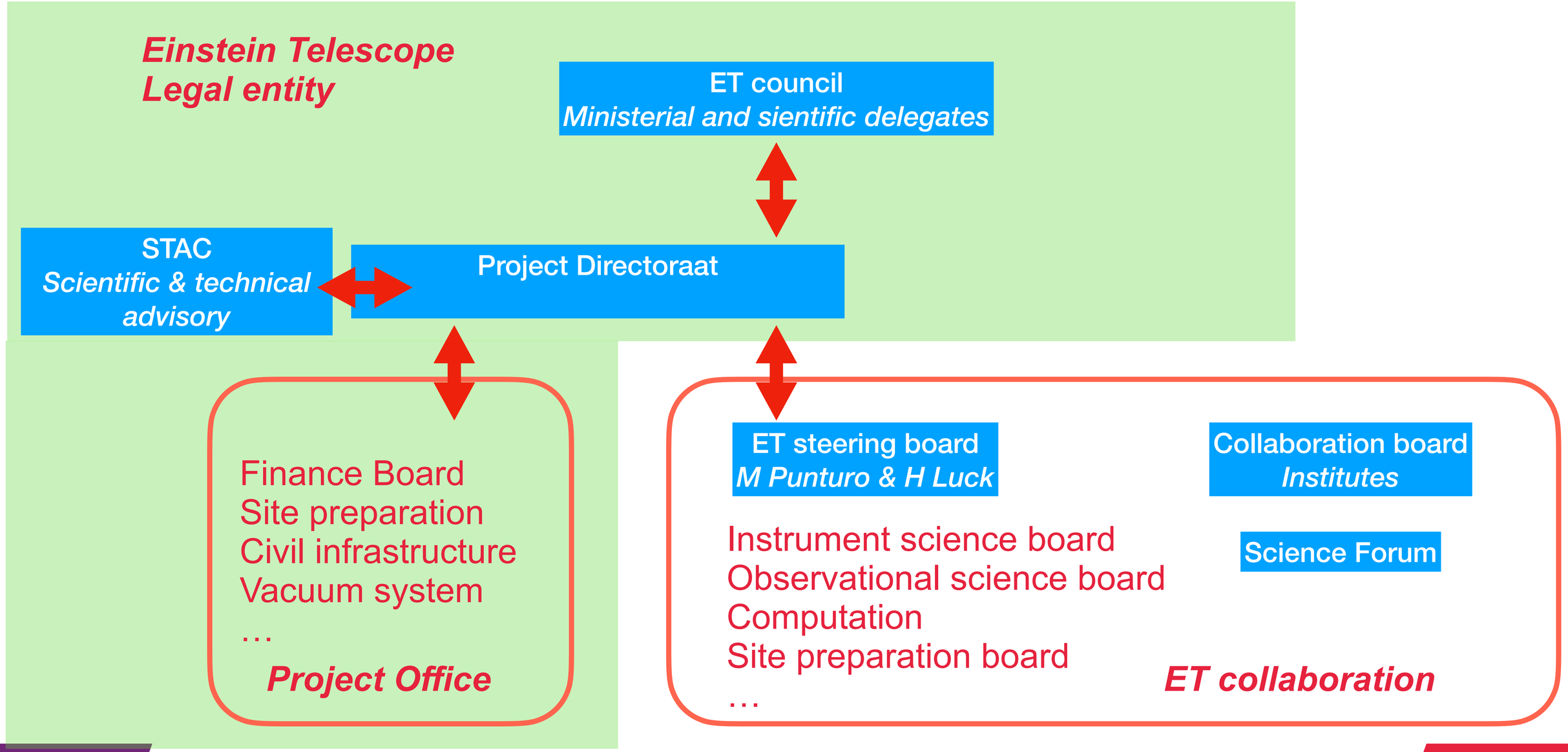
Project Directoraat
J van den Brand & F Ferroni

↕

ET steering board
M Punturo & H Luck

Instrument science board
Observational science board
Computation
Site preparation board
…

ET collaboration


Einstein Telescope
Legal entity
ET council
Ministerial and sientific delegates
STAC
Scientific & technical advisory
Project Directoraat
Finance Board
Site preparation
Civil infrastructure
Vacuum system
…
Project Office
ET steering board
M Punturo & H Luck
Collaboration board
Institutes
Instrument science board
Observational science board
Computation
Site preparation board
…
Science Forum
ET collaboration

ET-NL ACTIVITIES

Very active committee

- Chaired by Frank Linde

De bouw van de Einstein Telescoop vergt een zeer grote financiële investering (huidige schatting is meer dan € 1 miljard), waarvoor op grond van een aantal criteria een gedegen afweging gemaakt zal moeten worden. In de eerste plaats is dat de wetenschappelijke relevantie van deze onderzoeksfaciliteit. Ten tweede is dat de fysieke geschiktheid van de bodem in Zuid-Limburg. Ten derde moet er een goede business case worden gemaakt samen met onze buurlanden, België en Duitsland, waarin ook de impact op de (regionale) economie wordt meegenomen. Tot slot dienen we dit ook af te wegen tegen de kosten en baten van een alternatieve locatie en de toegang van Nederlandse wetenschappers hiertoe.

Letter of or minister to the Parlement

Given framework to investigate possibility for ET-NL

- Framework by minister OCW, 18 December 2018
  - scientific relevance;
  - suitability of the soil in South Limburg;
  - business case with impact on economy;
  - cost/benefit location Sardinia and access for Dutch researchers.
  - strengthening cooperation in the Meuse-Rhine Euregion

EUREGIO MEUSE-RHINE

Central area

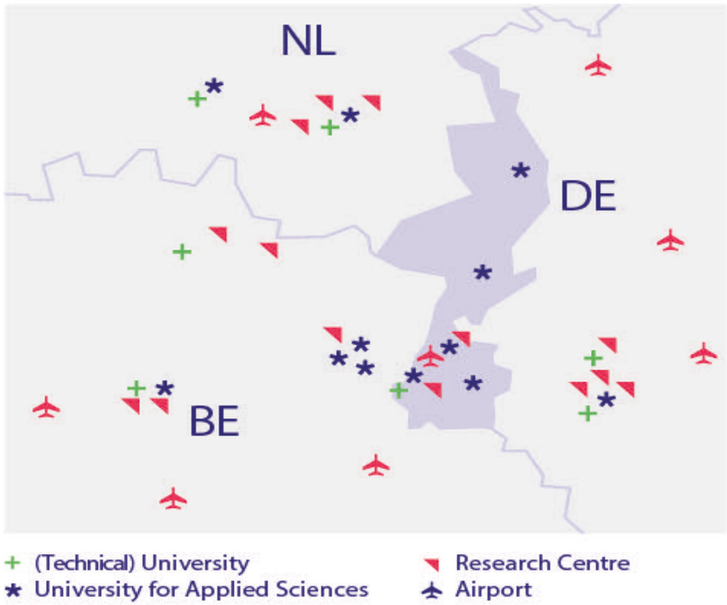
- Hightech-region Aachen, Eindhoven and Leuven.
- More than 50 partner institutions in NL-B-D
  - Intense collaboration with industry

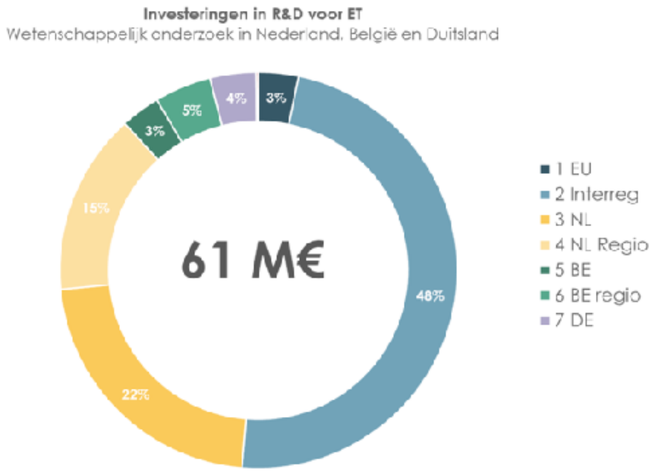
Support by Province and the region

- Pilot studies, impact, drilling, UM group, …
- Geology, R&D

Preparatory phase

- Already ~61ME committed





NATIONALE GROEIFONDS

ET selected by our ministry OCW to prepare a full proposal

- LYSIAS consultancy writes the document
- Deadline is October 31st

Yesterday: full support by all directorates

- OCW, EZK, Limburg, Nikhef
- Minister decides next week if proposal will be send to NGF


Einstein Telescope

De Einstein Telescope:
een unieke kans voor Nederland

Mei 2021 - Groeiplan

De Einstein Telescope biedt Nederland de unieke kans een wereld-wijde leiderschapspositie te nemen in een nieuw baanbrekend weten-schapsgebied. Zuid-Limburg heeft de kwaliteiten om de Einstein Telescope te huisvesten en zal daarmee enorm profiteren van de grote wetenschappelijke, economische en maatschappelijke impact die dit met zich meebrengt.

Position the Netherlands for the ET bidbook in 2024

NWO ROADMAP

Roadmap activities

- LHC upgrades (2014)
- KM3NeT (2018): NIOZ, TNO
- FuSE (2020): ASTRON, SURF
  - Started operation - steering group in place

New roadmap: plan for next decade

- Formation of domains (clusters)
  - Sciences and engineering (45%)
    - Astronomy and Particle Physics
    - Materials
    - Technology
    - Geosciences
  - Life sciences & medical (45%), Social sciences (10%)

NWO ROADMAP

Next decade: call every 2 years

- Call for 2021 has just opened, deadline February 17, 2022
- Decadal plan agreed jointly with astronomy
  - 2021
    - LISA proposal (astronomy): SRON and Nikhef (ET/ETpathfinder component)
  - 2023
    - Upgrades for LHC
    - Neutrino+Dark Matter
  - 2025
    - Einstein Telescope
  - 2027
    - Upgrade UHECR program (?)

NIKHEF - ANNOUNCEMENT AND PDP

Few announcements

- Sascha Caron and Niels Tuning are new members of ECFA from 2022
  - replacing Nicolo de Groot and Marcel Merk
  - Other members: Marco van Leeuwen, Eric Laenen and SB (RECFA)
  - Lydia Brenner is representative of the early career scientists in RECFA
- Tristan du Pree as our country coordinator for the FCC

PDP group

- David Groep will replace Jeff Templon as program leader -

GW group

- Andreas Freise will be new deputy-programleader

NEW TENURE TRACK POSITIONS FILLED

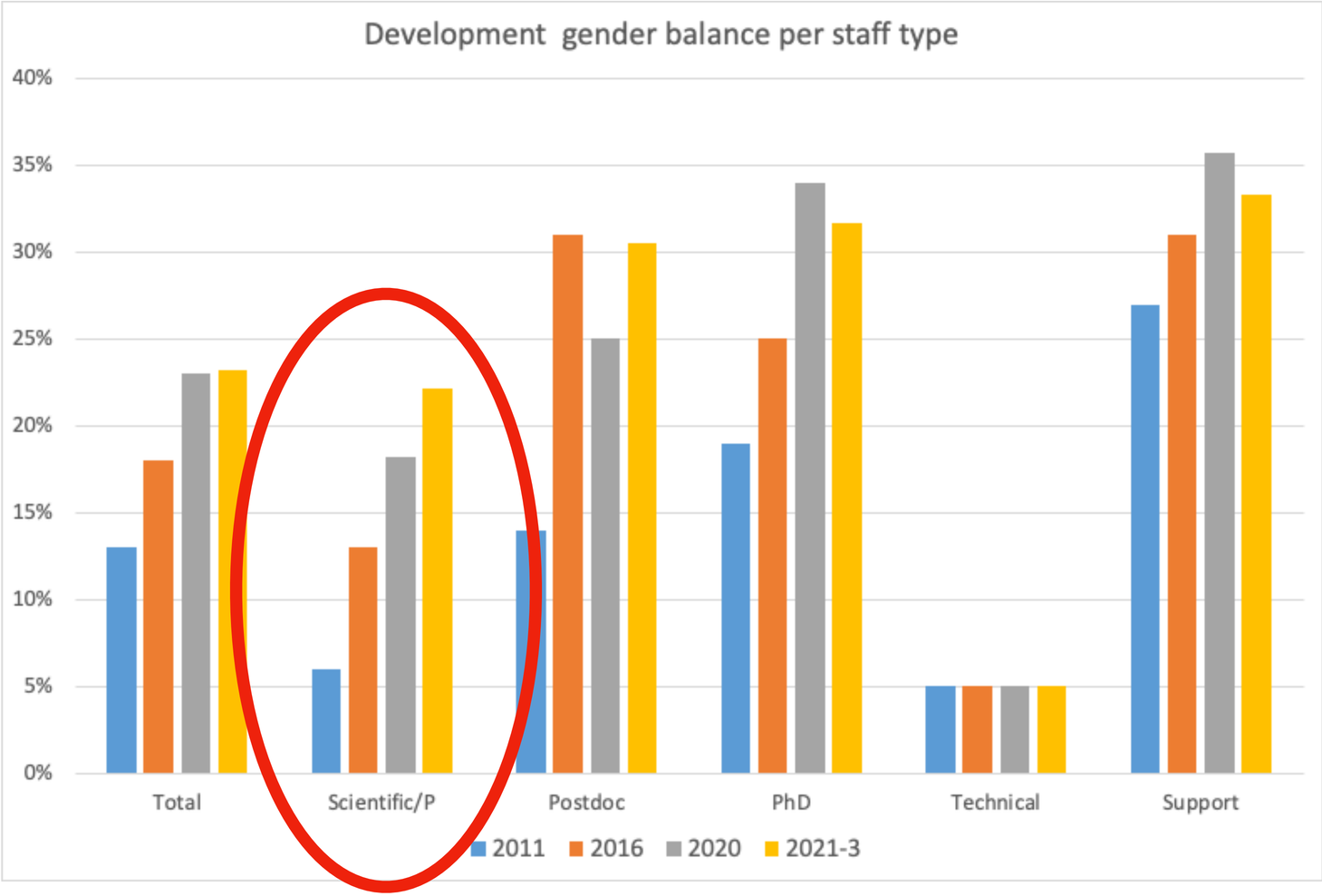
New NWO hires 2021 as (tenure track) staff scientists:

- Lydia Brenner (NWO, ATLAS)
  - Start in 2022
- Melissa Beekveld (NWO, theory)
  - Position accepted, start somewhat later
- Maria Haney (NWO, GW)
  - Position accepted, start next year

GENDER DIVERSITY

Nikhef personnel

- WP/V:
  More balanced gender diversity (>20% female)



INTRODUCTION TO NEW PHD

Please register all AIOs at Nikhef!
Contact is Pieter van Braam van Vloten

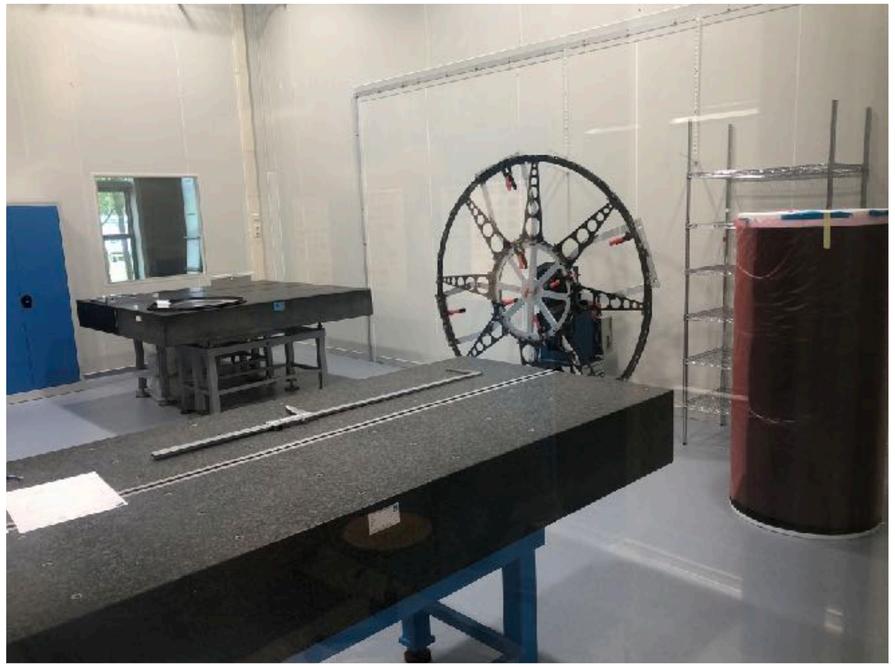
Organise 3x/year: next time is October 22!

- Introduction day to new PhD candidates
  - June 29, October 22, …
- Program setup with OWC and PhD council
  - Organization by Maureen Voestermans
- Agenda
  - Intro to Nikhef (Stan)
  - OSAF (Raimond)
  - How to deal with issues during your PhD (Pieter)
  - Expectations as a PhD (Pieter Gaemers & Mick Mulder)
  - Practical issues like colloquia, teaching, Open Days, etc (Stan)

WORKSHOPS: MT, ET AND CT

Workshops are rather busy at the moment

- LHC upgrades
- KM3NeT
- Gravitational Waves
- R&D
- New initiatives



Refurbished clean room with complete air control

Renovation of Nikhef

- Workshops were closed during this summer (re-opening this week)

Agile work method - focus on work pleasure and efficiency

- Responsibility lower at expert teams, shorter cycle result driven

Milestone planning (aka project plan) is sometimes lacking!

FUTURE OF HISPARC AND MUONLAB

MuonLab taken over by Jory Sonneveld; involvement Frank & others

- Jan Oldenziel is really getting to old…

Continuation of HISPARC is difficult

- Next month Bob van Eijk will retire
  - Driving force behind the HISPARC activities
- RU: no replacement for Scholte?
- UU: Grelly busy with other things
- LIO network no longer supported by NWO

HISPARC is a nice project, but if we want to continue we need your help!

- Volunteers for coordination - in order to see if we can continue?