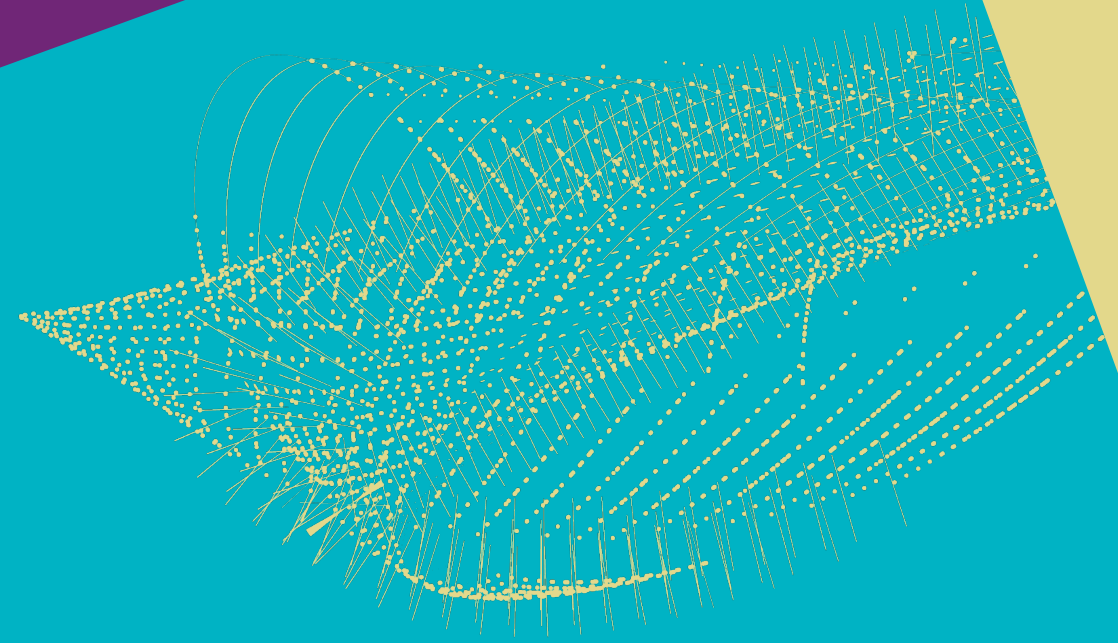


Nikhef



STAF MEETING

OKTOBER 17, 2019

TOPICS

Developments Nikhef partnership

WAR

Strategy: ESPPU & Nikhef

Positioning of the CAN

Developments on ET and ETpathfinder

SAC report

Gender

Renovation



DEVELOPMENTS AT NWO AND UNIVERSITIES

Sectorplans, retirement renewal and new initiatives provide boost in staff positions at universities

- Multiple positions advertised and filled at UvA, UU, UM, VU, RU, RUG

Nikhef partnership benefits from the new fundings

- Somewhat in contrast, the NWO institute does not benefit
 - Re-direction of 100ME from NWO to universities
 - Nikhef effectively shrinks in available resources
 - See presentation by Niek Lopes Cardozo on Friday

Funding opportunities are getting more difficult - open competition is fierce

- Last year we have been very successful in NWO-G and ENW programs

WAR

'Revival' of the WAR

- Chair: Charles Timmermans
 - Automatic member of OPL
- Solicited and non-solicited advice to OPL/director
 - Prepare advice on GRAND and PTOLEMY
- GRANT office
 - Scrutinize proposals
 - ENW-GROOT, NWO-G, Roadmap, ...
 - Grill sessions for interview preparation

Pamela Ferrari	ATLAS
Sasha Caron	ATLAS
Niels Tuning	LHCb
Gerco Onderwater	LHCb
Marco van Leeuwen	ALICE
Wouter Hulsbergen	LHCb
Auke Pieter Colijn	DM
Charles Timmermans	UHECR
Chris van den Broeck	GW
Dorothea Samtleben	Neutrino
Marieke Postma	Theory
Juan Rojo	Theory

FORMULATION WAR ADVICE

Reflection on the following themes:

- Does the initiative fit to the Nikhef Mission statement?
- Is the physics (goal) interesting for Nikhef/the field?
- What resources are needed to make an impact in the initiative?
- How does this evolve in time (programme vs project)?
- How does it fit in the current Nikhef portfolio?
- What are synergies with other Nikhef programs?
- Identify the possible source of the resources?

The mission of the National Institute for Subatomic Physics Nikhef is to study the interactions and structure of all elementary particles and fields at the smallest distance scale and the highest attainable energy.

Two complementary approaches are followed:

- Accelerator-based particle physics – Studying interactions in particle collision processes at particle accelerators, in particular at CERN;
- Astroparticle physics – Studying interactions of particles and radiation emanating from the Universe.

Nikhef coordinates and leads the Dutch experimental activities in these fields. The research at Nikhef relies on the development of innovative technologies. The knowledge and technology transfer to third parties, i.e., industry, civil society and general public, is an integral part of Nikhef's mission.

ESPPU

Collect input from our community

- Tuesday October 22nd,
 - 15:00-17:00 hrs, H331
 - Collect pro's & cons for the 5 scenario's for large infra
- Wednesday November 27th
 - 13:00 - 15:00 hrs, H331
 - Second round - emphasis on remaining items

Vista update: Nikhef strategy discussion ~June 2020

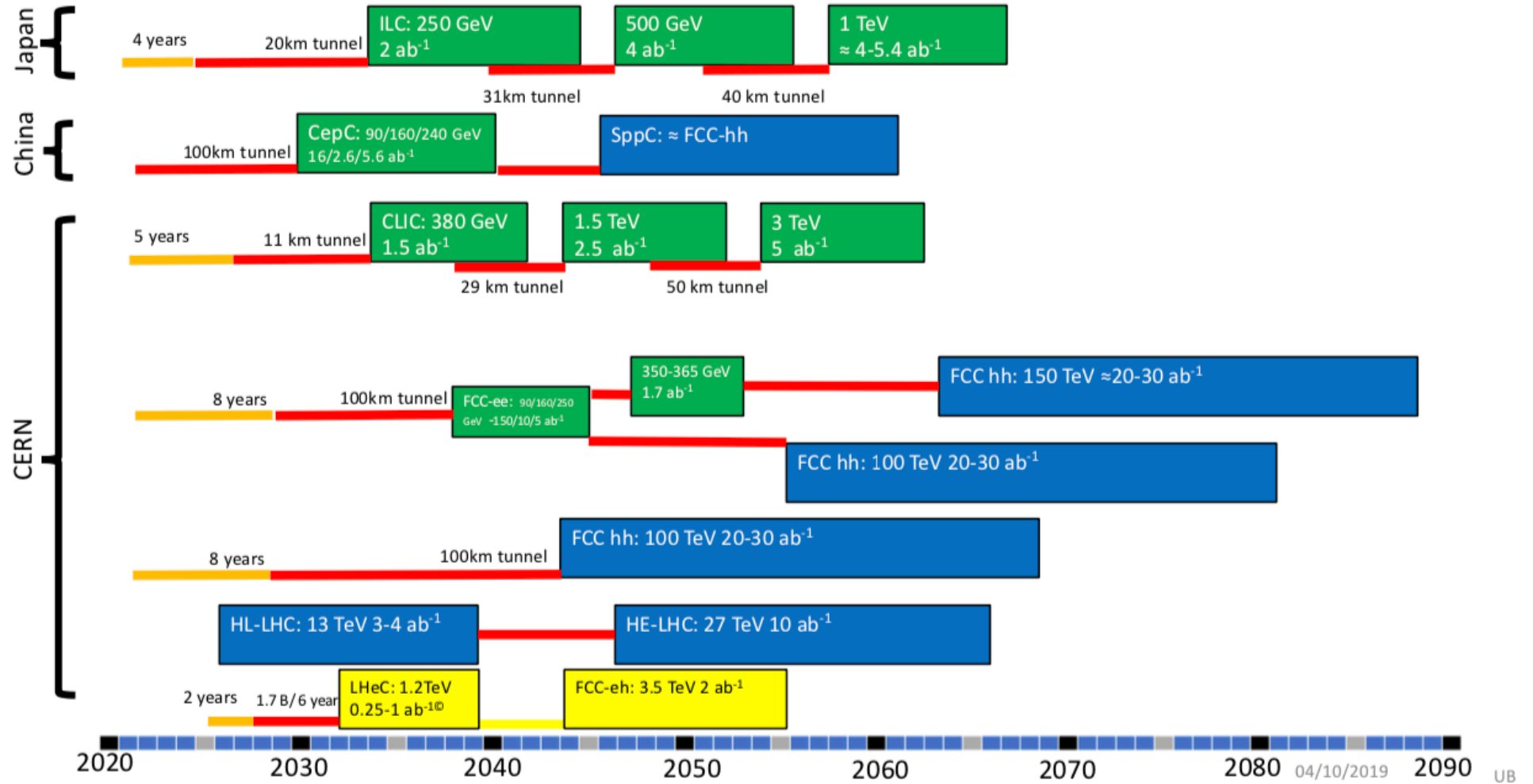
- Mid-term update of Nikhef strategy
 - Consequences after the ESPPU has been finalised, in May 2020
 - Role for WAR

5 SCENARIO'S TO CONSIDER

	2020-2040	2040-2060	2060-2080
		1st gen technology	2nd gen technology
CLIC-all	HL-LHC	CLIC380-1500	CLIC3000 / other tech
CLIC-FCC	HL-LHC	CLIC380	FCC-h/e/A (Adv HF magnets) / other tech
FCC-all	HL-LHC	FCC-ee (90-365)	FCC-h/e/A (Adv HF magnets) / other tech
LE-to-HE-FCC-h/e/A	HL-LHC	LE-FCC-h/e/A (low-field magnets)	FCC-h/e/A (Adv HF magnets) / other tech
LHeC-FCC-h/e/A	HL-LHC + LHeC	LHeC	FCC-h/e/A (Adv HF magnets) / other tech

Possible scenarios of future colliders

- Proton collider
- Electron collider
- Electron-Proton collider
- Construction/Transformation: heights of box construction cost/year
- Preparation



QUESTIONS TO REFLECT - NEXT WEEK

- 1) In the absence of clear indications for new physics, is a broad exploration an adequate approach for our global field? Do we want to move forward in the largest variety of directions?
- 2) Would it be appropriate/sufficient to move the scientific diversity program at CERN or at the National Institutes to among the highest priorities for Europe? Should the strategy engage in ranking proposals according to priority? Which are the key proposals?
- 3) Do we remain open towards strong participation in future collider programs outside Europe? Should such a statement remain among the highest priorities? Should we extend the scope to include a variety of options like ILC@Japan, EIC@US, CEPC@China, ... ?

QUESTIONS TO DISCUSS

4) Anno 2013: *“Detector R&D programmes should be supported strongly at CERN, national institutes, laboratories and universities. Infrastructure and engineering capabilities for the R&D programme and construction of large detectors, as well as infrastructures for data analysis, data preservation and distributed data-intensive computing should be maintained and further developed.”* Should we strengthen this statement? Should we provide guidance how to achieve this? For example, related to new R&D cluster programs at CERN and in Europe, and related to the balance between blue sky R&D versus focused R&D.

5) Should we make concrete the technology collaboration with the gravitational wave community?

6) Given the important recent particle physics discoveries in astroparticle physics experiments and observatories and their promising future potential for more key discoveries in particle physics, should we come to concrete co-operation with astroparticle physics for the mutual benefit of particle physics and astroparticle physics?

summary of national priorities and interests for large future HEP projects :

country	item #	e+e- e-w,H,.. (ILC, ...)	e+e- incl. ttbar (FCC-ee)	e+e- incl. HH (ILC+,CLIC)	hh beyond LHC	hh he-LHC	hh FCC	eh	accel. R&D	R&D magnets FCC,he-LHC	R&D novel PWA, $\mu+\mu-$	non- accelerator (DM,ndbd)	neutrino physics	intensity frontier	nuclear (FAIR,EIC...)	astro- particle
A	108	1			3				2			√			√	√
B	122	1														
CH	142	1	1		3		3		2	2	3		√	√	√	√
CZ	88	3		3	2	2	2		1	1	1		√		4	
D	33	1		1	3	3	3		2	2	2	4	√	√	√	√
DK	61	3	3		3		3		2	2	2	1	√	√	√	√
E	31	1	3	1	3	3	3		2	2	4		√		√	√
F	15,116,155	1	√	√	3		3	√	2	2	√	√	√	√	√	√
FIN	55	1		1									√		√	√
I	26,138	1	1		3		3		2	2	2	√	√	√		√
IL	34	√			√							√	√	√		
N	43	1		1					3		3	√			√	√
NL	166	1	3	2	3		3		2	2	3	√	√	√		√
PL	125	1	√	√					2							
RO	73												√	√		
S	127	1		1					2	2	√	√	√	3		√
SLO	78															
UK	134,144	1		1	2		2	2	3	3	√	√	√		√	
total score:		13,67	3	6,83	3,67	1,17	3,33	0,5	6,67	5,33	3,75					

1...4: priority 1 to priority 4;
 √: mentioned without (clear) assignment of priority
 total score: = $\sum(1/\text{priority})$ where given; √ not counted

Notes: – table reflects status of inputs submitted by Dec. 2018
 – intended for overview of physics or projects priorities
 – see disclaimers on previous and following pages!

summary of NMS inputs:

country	item #	e+e- e-w,H,.. (ILC, ...)	e+e- incl. ttbar (FCC-ee)	e+e- incl. HH (ILC+,CLIC)	hh beyond LHC	hh he-LHC	hh FCC	eh	accel. R&D	R&D magnets FCC,he-LHC	R&D novel PWA, $\mu+\mu-$	non- accelerator (DM,nbdb)	neutrino physics	intensity frontier	nuclear (FAIR,EIC,...)	astro- particle
CDN	157	✓	✓	✓	✓	✓	✓					✓	✓			
J	63	1							4			3	2			
RUS	40								✓			✓	✓	✓	✓	✓
USA	149;150	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓
total score:																

- 18 MS and 4 NMS submitted national inputs on HEP
- 3 MS and 3 NMS provided no explicit prioritisation
- → “total scoring” based on 15 MS
- total score defined as $\Sigma(1/\text{priority})$

further future projects

- neutrino physics (long baseline; ndbd; cosmic)
- physics beyond colliders
- dark matter searches
- intensity frontier
- nuclear physics
- gravitational waves
- astro-particle projects

NIKHEF STRATEGY

Strategy in 3 pillars

- Need to guarantee the balance between portfolio activities
- *Upgrades and exploitation of LHC physics remain to have highest priority*
- APP, notably ET, draws a lot of attention

Should we worry about segregation between our communities?

Pillar I Proven approaches

- Construct the upgrades and exploit the physics of the LHC experiments ATLAS, LHCb and ALICE
- Build KM3NeT phase 2.0 and exploit neutrino (astro)physics
- Exploit the astroparticle experiments Advanced Virgo, XENON1T/nT and the Pierre Auger Observatory
- Fully utilise the theory, detector R&D and computing activities at Nikhef

Pillar II New opportunities

- Determine the electron electric dipole moment with world-class precision
- Prepare for a new era of high-energy accelerators
- Strengthen and exploit the thematic connections between individual scientific programmes
- Prepare a bid to host the Einstein Telescope in the Netherlands

Pillar III Beyond scientific goals

- Establish further links with industry and other third parties in terms of transfer of knowledge generated at Nikhef
- Attract and train a new generation of scientists and engineers
- Modernise the Nikhef branding and building
- Inspire and nurture scientifically aware general audiences

DEVELOPMENTS ET & ET-PATHFINDER

GRAVITATIONAL WAVES GOALS 2017-2022:

- Commission Advanced Virgo, run jointly with LIGO, and participate in the mid-term upgrade
- Study gravitational waves from binary black-hole mergers and test black hole physics
- Discover gravitational waves from neutron star coalescences and measure the neutron star equation of state
- Investigate the possibility of hosting the Einstein Telescope in the Netherlands

ET-pathfinder

- Excellent R&D focus
- 'No regret' option for ET
- Funded outside NWO



UNIVERSITY OF MAASTRICHT - GW GROUP

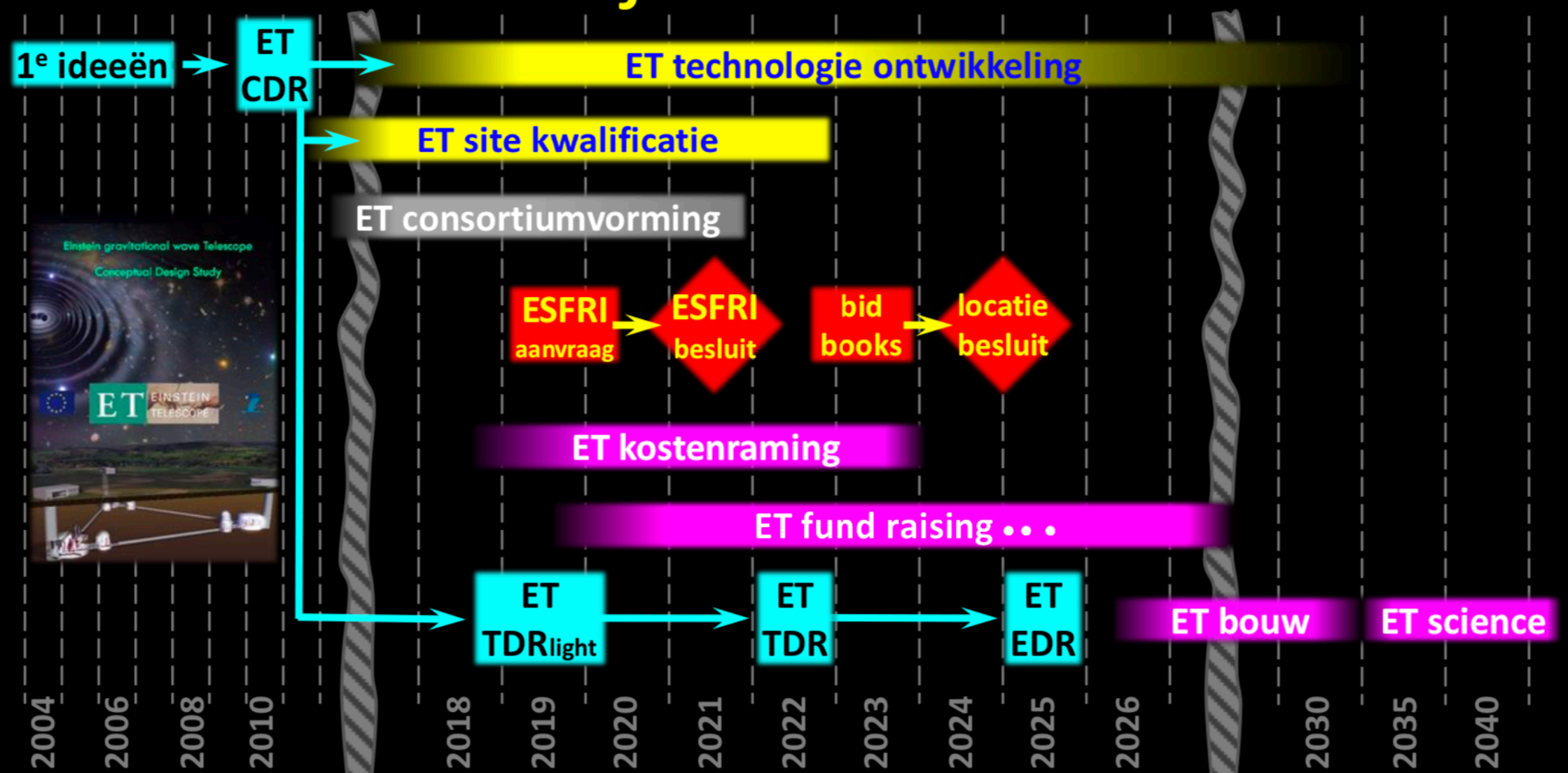
Gravitational Wave group installed in Maastricht

- Construction of the ET pathfinder and preparations for ET
 - Still active in LIGO as well



- Jo van den Brand to UM

tijdschema



CAN STRUCTURE

Improve positioning of the CAN within Nikhef and RvdA

- Nikhef and RvdA take joint responsibility for strategic planning & monitoring APP
 - Each remains responsible for their own strategy
- Coordinating body will be established: App Strategic Committee (AppSC)
 - CAN vz, RvdA, Nikhef, NWO
- CAN will be the advisory board of AppSC

CAN: nominations by universities and institutions

- Nikhef (1), Astron (1), Sron (1), UM (1), UvA (2), VU (1), Lei (2) , UU (1), RUG (1), RU(2), NWO (1)
- Chair proposed by the CAN

SAC REPORT

July 24th, 2019

Report from the Nikhef Scientific Advisory Committee Meeting

8 – 9 July, 2019

H. Abramowicz, G. Anton, J. d'Hondt, J. Mnich, B.S. Sathyaprakash

Apologies: B. Erazmus, N. Glover

Well received, few comments:

- *KM3NeT*: The SAC recommends that the Nikhef management pays special attention to the project, monitors closely the developments and keeps the flexibility to optimize the project balancing ORCA and ARCA as well as the overall Dutch impact.
- *ET*: Nikhef has an important role to play in the Pathfinder, both in the engineering part of the construction but also in helping with the development of the science case. The latter is particularly important to strengthen Nikhef's leadership in this frontier science project.
- *eEDM*: The SAC takes note of the report of the Nikhef Review Panel for the NL-eEDM experiment. It would like to re-iterate the need for the definition of clear milestones as stated in the report.
- *R&D*: The in-house activities of the group revolve around all key aspects of precision and fast timing, e.g. development of fast chips, fast readout and fast sensors. The SAC encourages Nikhef to sustain these R&D efforts to maintain the opportunity to engage in future projects

- *PDP*: The SAC underlines the importance of Nikhef's PDP Programme and commends the group for the reliable provision of computing infrastructure and the progress in advanced computing technology.
- *LHC*: The LHC activities at Nikhef are well on track, however worries about future funding need to be addressed to make sure that this persistent problem does not impair the successful completion of Nikhef's commitments.
- *Theory*: The SAC is pleased to see a vibrant and large theory community at Nikhef, and in the Netherlands in general.
- *Auger*: The SAC congratulates Nikhef for its strong and highly visible contributions to the upgrade of Auger, especially with its involvement in the AERA radio array.
- *XENONnT*: The Nikhef involvement is relatively small but with high visibility of the people involved. The SAC recommends the continuation of the Nikhef participation in XENONnT.

GENDER

It is urgent to improve the gender balance at Nikhef

SAC:

- The SAC notes that female staff is under-represented in leading positions at the laboratory. It therefore encourages the Nikhef management to take timely actions in order to improve the gender balance.

RENOVATION

Constructive discussions on the 'stain-plan'

- Look & feel of the ankerplaatsen in separate meeting
 - Early november - more info follows

Selection of construction team is ongoing

- Start to detail the 'internal moving plan' later this year
 - Eventually it will have large impact for your working space!

Ongoing discussions:

- Sustainability ambition building - climate in H-building
 - Boiler house to WKO - consequences for heat and cold installations
- Mechanical Technology refurbishment
 - Well thought out plan - we would like to honor it
- Emergency facilities expansion data center
 - C-feed with additional generator - requires extra building outside of Nikhef facade