INFRADEV – Work package 2

Jo van den Brand, Nikhef and Maastricht University

ETPP meeting, Barcelona July 19, 2022; jo@nikhef.nl



WP2 Organization, Governance and Legal Aspects

This work package focuses on issues related to organization, governance and legal aspects. The activity tries to reconcile international, national and regional political and financial priorities

This includes

INFRADEV Proposal, page 145

- the framework related to the definition of ET as a legal entity
- and to facilitate the geographic enlargement of the ET consortium

WP2 will contribute to the political convergence across stakeholders on critical decisions affecting the main aspects of the research infrastructure like, for example,

- the final ET RI layout
- site selection
- total cost

In addition, WP2 has the mandate to define the formal connections with other GW observatories and scientific communities

Co-coordinators: J. O'Byrne (STFC UKRI), F. Ferroni (INFN) and J. van den Brand (Nikhef)

Job de Kleuver (BGR secretary) was added on March 29, 2022 as interface to BGR

WP2 Objective

WP2 has a relatively low amount of 24.8 person months allocated. A budget of k€ 55 is available to involve a professional organization in the preparation of the legal documents

Work package number	2	Lead beneficiary			NIKHEF		
Work package title	Organization, Governance and Legal Aspects						
Participant number	3	6	14				
Short name of participant	INFN	NIKHEF	UKRI				
Person months per participant:	10	10 +15 (EC)	4,8				
Start month	1			End month	48		

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Total 24.8 pm Relatively small number

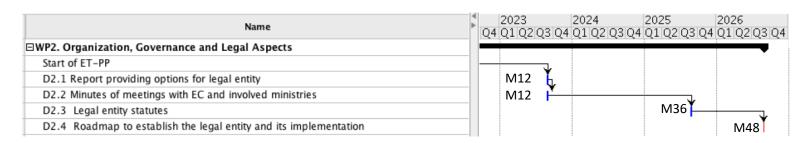
Participant Number/Short Name NIKHEF				
	Cost (€)	Description of tasks and justification		
Subcontracting	155000	Review of civil construction costs by professional organization (100k€)		
· ·		Preparation of ET legal documents by professional organization (55k€)		

WP2 Description of the work

The main goal of this work package is to provide all necessary input for the political processes related to site selection, legal entity and governance

The main deliverables

- Preparation of the required legal forms and these include the governance model documents
- Main principle will be that structure follows function and this requires close cooperation between scientific, technical, legal and financial experts in order to allow a stable and fruitful long term operation of the facility
- The activity includes the development of options on scientific and user related legal form requirements, development of options on scientific and user related governance model requirements
- The preparation of legal form and governance model documents
 - Based on consensus requirements
 - Align as temporal funding profiles in Europe
 - Perform financial engineering for the construction phase
- Finally a business plan will be set up for the operation phase



Note: WP2 has no milestones

ESFRI lifecycle approach

ESFRI requires additional deliverables for the Preparatory phase. In this phase the RI is developed as a fully-edged organization

ESFRI Preparatory Phase

- Business & construction plan
- Political and financial support secured
- Data policy & data management
- Cost book plan
- Legal entity identification

The PREPARATION — carried out at institutional, national, European or international level — is directed towards developing the RI as a fully-edged organisation. Completion of preparation for the RIs in the Roadmap is often carried out through a Preparatory Phase contract under FP resulting in a business plan, a legal entity, an agreed role for the RI also in the context of the landscape of existing RIs at European and global level, and secured funding safeguarding the financial sustainability for the Implementation Phase and extending also for the Operation Phase. Some projects face a gap of funding between the end of their Preparatory Phase contract and the final decisions for implementation — legal, funding and construction — which can lead to the establishment of *ad hoc* interim legal entities and governance to assure appropriate funding to complete the preparation and start construction.

ESFRI Roadmap 2021 Public Guide

3. PREPARATION

Preparatory Phase, business & construction plan, political and financial support secured, data policy & data management, cost book plan, legal entity identification

2. DESIGN

design study, business case, political and financial support obtained, common access policy, top-level breakdown of costs, governance and HR policy



1. CUNCEPT DEVELOPMEN

concept screening, consortium formation, access policy and funding concept, scientific and project leadership

4 IMPLEMENTATION

site construction and deployment of organisation and legal entity, recruitment, IPR & innovation policies, operation and upgrade plan, secure funding for operation

OPERATION

frontier research results, services to scientific community, outreach, continuous upgrade of instrumentation and methods, political and financial support for long-term operation

6. TERMINATION

e.g. dissolution, dismantling of facilities and resurrection of site, reuse, merger of operation and organisation, or major upgrade

Timeline must be set



Organization

ETIC – Einstein Telescope Infrastructure Consortium

Next Generation EU investment proposed of 100 M€ focused on ET enabling technology and Sardinian site candidature support

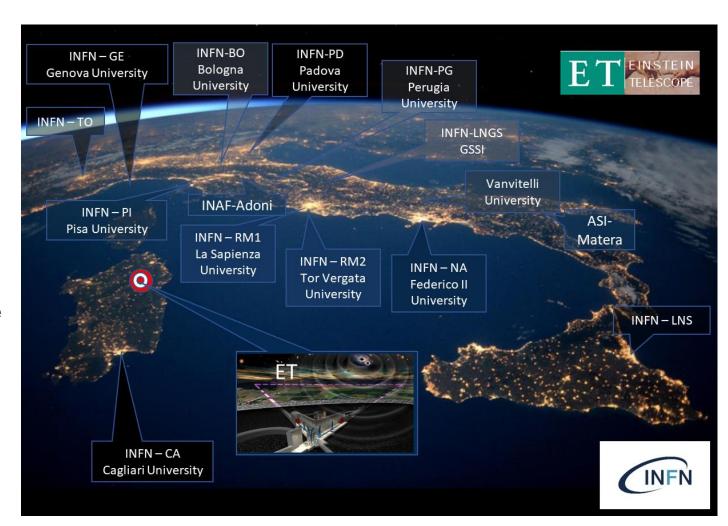
Support for

- 8% Human resources
- 30% Scientific apparatuses
- 12% Distributed infrastructures
- 28% ET design
- 12% Training

Additional 5 M€ funding on the same framework for the site characterization

Feedback expected soon

Discussion ongoing on an Italian share toward ET realization



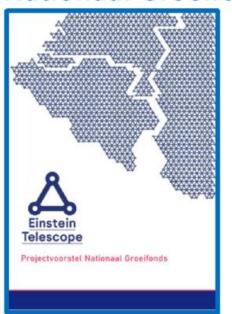
Einstein Telescope in Euregio Meuse-Rhine (EMR)

Einstein Telescope approved by Dutch National Growth Fund on April 14, 2022. Development funds of M€ 42 available to prepare bid book, while M€ 870 available in case EMR region hosts ET



Connected institutions in: Belgium, Germany & the Netherlands

Nationaal Groeifonds (the Netherlands)



Emphasis on potential socio-economic Impact

Submitted by OCW Ministry

(EZK Ministry support)

Supported by ~70 Dutch Industries/institutions

In October 2021 the Netherlands submitted large funding proposal within context of the 'Nationaal Groeifonds'. Decision in April 2022.

Includes 42 M€ for geology, R&D & organization as well as possible Dutch share towards ET realization

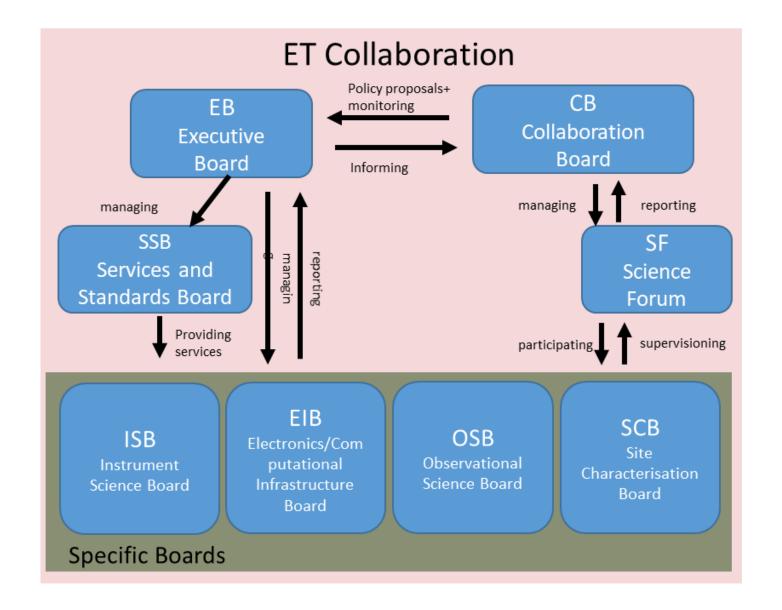
Formal birth of the Einstein Telescope Collaboration

XII Einstein Telescope Symposium, Budapest June 7-8, 2022

See https://indico.ego-gw.it/event/411/



Einstein Telescope Collaboration



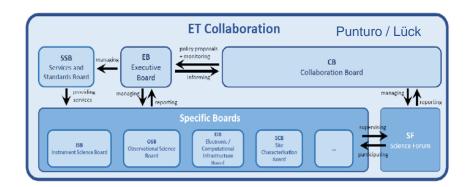
Entities enclosed in solid boxes have been instantiated. Dashed boxes represent work in progress Large part of activities is now covered by ET Collaboration. Focus on build-up of ET Observatory

What services do we want the ET Observatory to be responsible for?

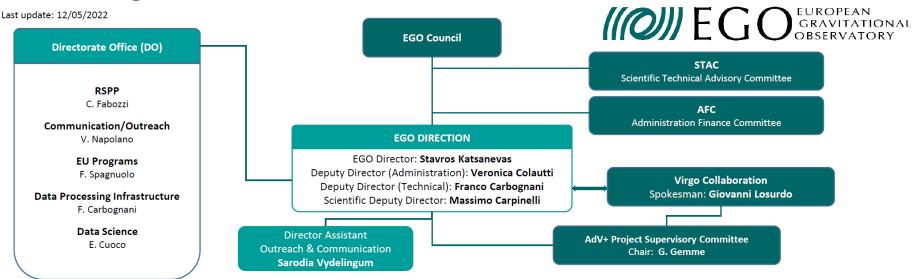
- ET Project activities, procurement, legal office, ...
- Design office and Engineering Department
- Communications
- •



Let's compare to EGO/Virgo and LIGO/LSC



EGO organization chart



Interferometer Technology Vincenzo Dattilo

Noise & Controls

I.Fiori, N.Arnaud, M.Mantovani, J,Casanueva, G.Ballardin, P.Ruggi, M. Tringali, M.Pinto, W. Diaz-Merced

Optics

A.Chiummo, A.Magazzu, C.Derossi, P.Spinicelli, S.Melo, M.Gosselin

ITF Services

F.Berni, M.Ciardelli, F.Gherardini, N.Menzione

Electronics

F.Nocera, G. Sposito, B.Montanari, R.Cavalieri

ELEC+HVAC

F. Nenci, M. D'Andrea, D. Soldani

AdV+

H. Heintmann

Vacuum & Mechanics Antonio Pasqualetti

Vacuum Operation

L.Francescon R.Macchia D.Sentenac J. Gargiulo

Mechanics

A.Buggiani T.Zelenova M.Bazzi

General Infrastructure Andrea Paoli

Infrastructure Services

N.Baldocchi R.Romboli F.Rossi

Technical office & Survey Engineering

C. Fabozzi L. Paoli

Information Technology Antonella Bozzi

Computing Facilities & Data Storage

S.Cortese G.Di Biase L.Salconi

IT Facilities & Network

G.Hemming A.Matteini F.Margarita

Data Analysis support

R.Poulton

Administration Veronica Colautti

Human Ressources & General Affairs

L.Coltelli S.Ciampalini

Finance & Procurement

E.Mercatali E.Catalano F. Tasselli A. Mannocci

EU programs

M.Budroni

Virgo organization chart

Virgo roles and responsablities

Date: 5/12/2022

Source: https://docs.google.com/spreadsheets/d/1skVL7hsmc13axxrSfez0N9ureCJiQhDZkQxvvozAUI0/edit?usp=sharing

EGO Katsanevas, S

Project Supervisory Board

Advanced Virgo + Flaminio, R

Technical management

Heitmann, H

System engineering

Carbognani, F

Commissioning

Tacca, M

Interferometer ITF

Heitmann, H

Suspension & Mirrors SUM

Vocca, H

Electronics, Software & Controls ES

Was, M

Zendri, J

Environment ENV

Passaquieti, R

Quantum Noise Reduction QNR

Gemme, G

Detector operations

Run Planning Committee

Rocchi, A

Calibration WG

Rolland, L

Detector Characterization WG

Arnaud, N

Low Latency WG

Roberto, D

Open Data WG

Trovato, A

Virgo steering committee

Losurdo, G

Spokesperson

Losurdo, G

Core Program Committee

Marion, F Fidecaro, F

Data analysis

Cella, G

Burst WG

Robinet, F

Compact Binaries WG

Del Pozzo, W

Continuous Waves WG

Bejger, M

Stochastic WG

van Remortel, N

Ombudsperson

Fidecaro, F

LIGO-Virgo-KAGRA Committees

Internal ressources

Collaboration authorship

Danilishin, S

Diversity, Equity & Inclusion Committee

Regimbau, T

Early Career Scientists

Mastrogiovanni, S Miravet-Tenés, M

Ombudsperson

Fidecaro, F

Outreach

Conti, L

Meetings Committee

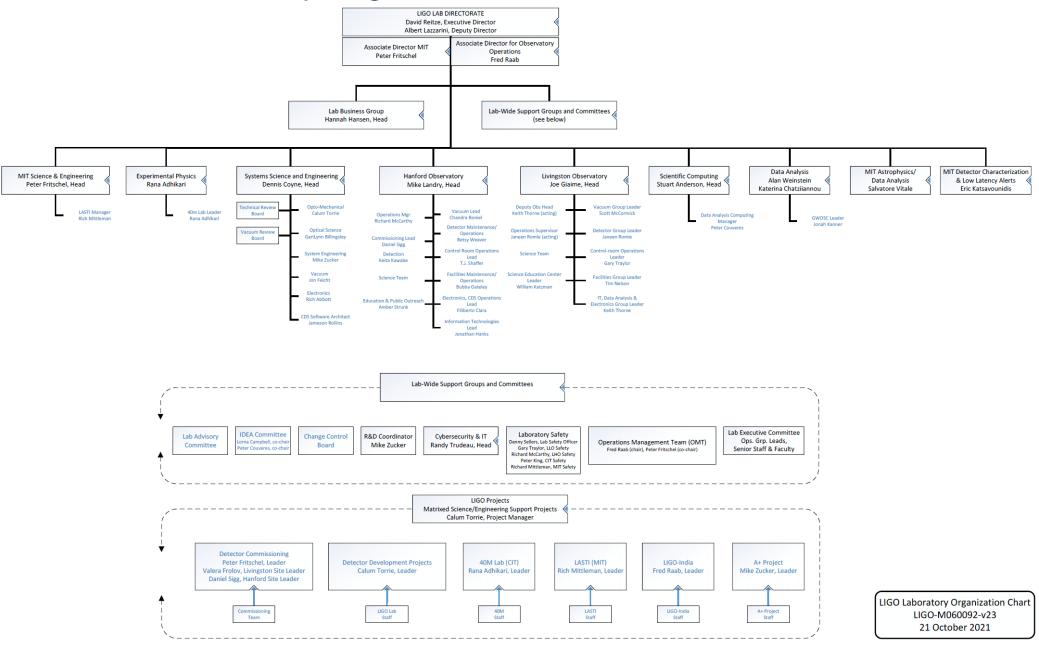
Steinleichner, J

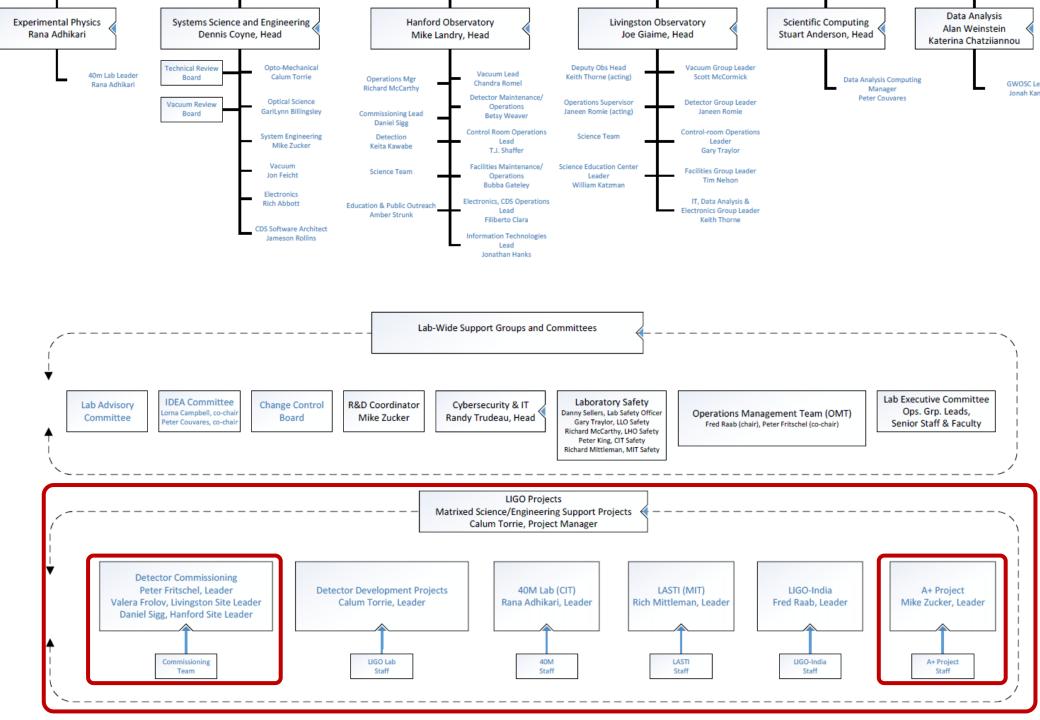
Editorial Board

Fafone, V Passaquieti, R

Internal & external communication

LIGO Laboratory organization chart





LIGO Scientific Collaboration organization chart



Council

Penn, S [MT]

Ombudsperson

Tanner, D

Spokesperson

Brady, P [MT]

Management Team

Brady, P [MT]

Program Committee

Ballmer, S [MT]

Mandic, V

LIGO-Virgo-KAGRA Committees

Observational Science Division

Sutton, P [MT]

Burst WG

Cavaglia, M [MT] Powell, J

Compact Binaries WG

Ashton, G [MT] Sachdev, S

Continuous Waves WG

Pitkin, M [MT] Whelan, J

Stochastic WG

Kandhasamv, S Mandic . V [MT] **Instrument Science Division**

Fritschel, P [MT]

Quantum Noise WG

McCuller, L

Lasers & Auxilliary Optics WG

Quetschke, V

Optics WG

Reid, S Steinlechner, J

Seismic Isolation & Suspensions WG

Hammond, G

Adv. Interferometer Configurations WG

Brown, D

Control Systems WG

Vajente, G

Operations Division

Sun. L

O'Reilly, B [MT]

Calibration WG

Rollins, J

Detector Characterization WG

Davis, D Hughey, B [MT]

Low-latency WG

Ghosh, S

Run Planning Committee

Shoemaker, D

Computing & Software WG

Couvares, P MacLeod, D [MT]

Support of Observatories Committee

Effler, A Savage, R

Open Data WG

Kanner, J

Communications Division

Hendry, M [MT]

Formal Education Committee

Cominsky, L Strunk, A

Informal Education & Outreach Committee

Stuver, A

Web Committee

Favata, M

LIGO Magazine

Green, A [Deputy] Middleton, H

Standards & Services Division

Cadonati, L [MT]

Diversity, Equity & Inclusion Committee

Frey, R

Meetings Committee

Heng, I

Elections & Membership Committee

Hammond, G Whelan, J

Academic Advisory Committee

Fulda, P Ohme, F

Speakers & Awards Committee

Gonzalez, G

Editorial Board

O'Shaughnessy, R Riles, K [MT]

Standards & Conduct Committee

Bailes, M

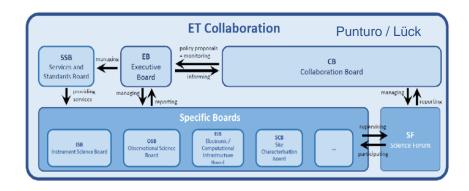
Entities enclosed in solid boxes have been instantiated. Dashed boxes represent work in progress Large part of activities is now covered by ET Collaboration. Focus on build-up of ET Observatory

Intergovernmental Organization (IGO), European Research Infrastructure Consortium (ERIC), International non-profit member company

Note that all three governance models contain a strong central management

The final selection must be made by the Ministries, project leaders and funding agencies

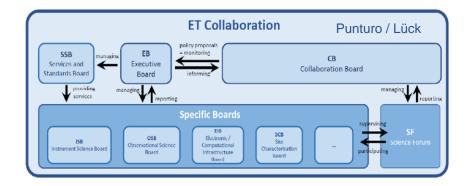
The path to the governance structure is similar no matter which of these three is chosen



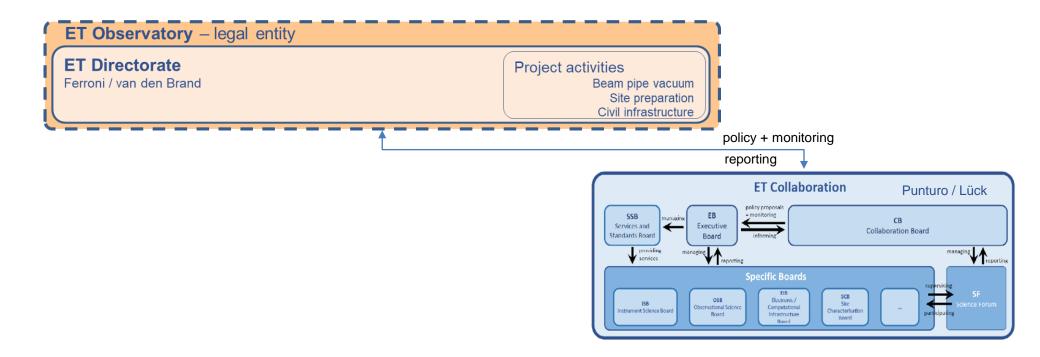
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The boxes are not to scale with respect to the number of persons involved ...

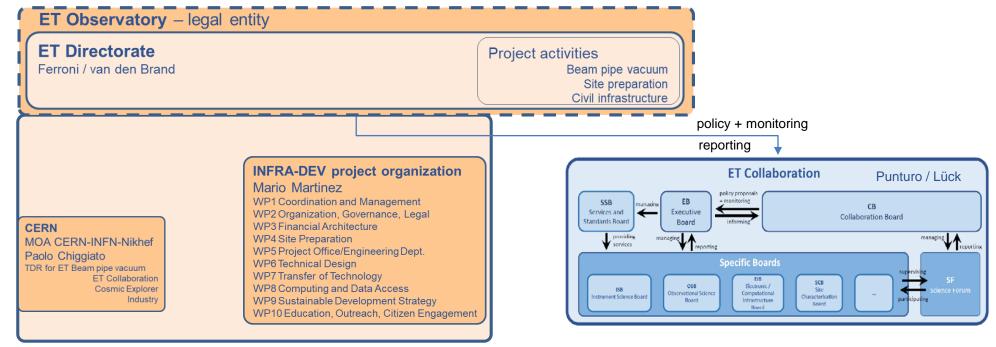




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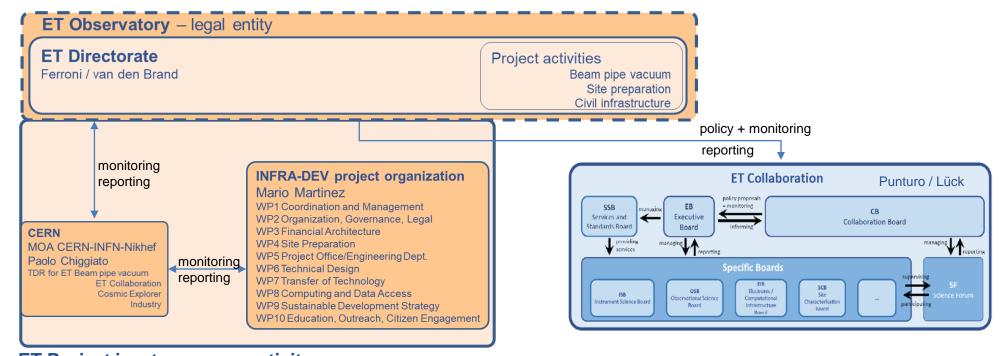


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ET Project is a temporary activity INFRA-DEV is a tool to implement organization

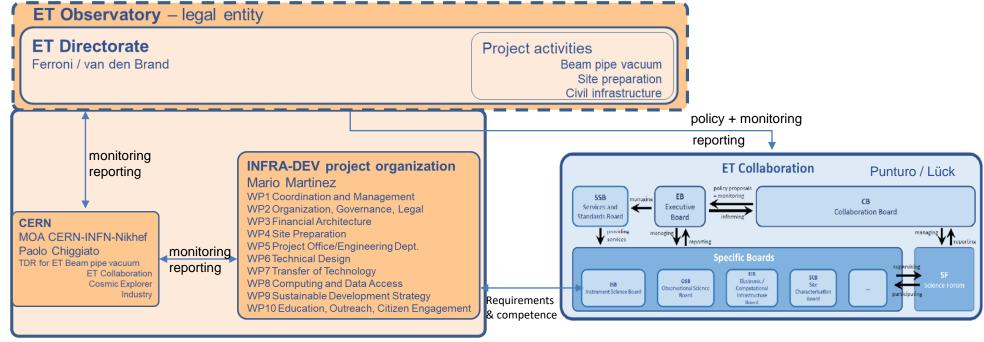
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ET Project is a temporary activity

Suggestion: expand CERN MOA with additional ET member countries

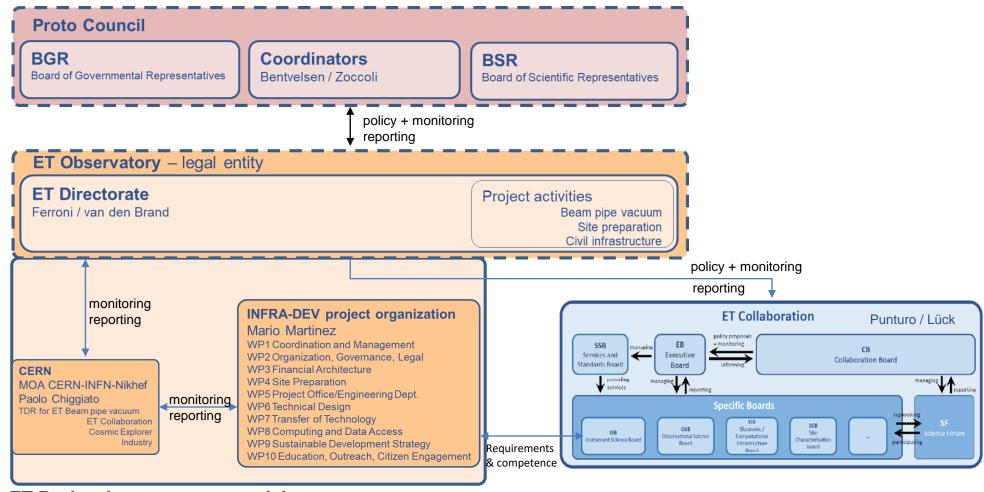
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ET Project is a temporary activity

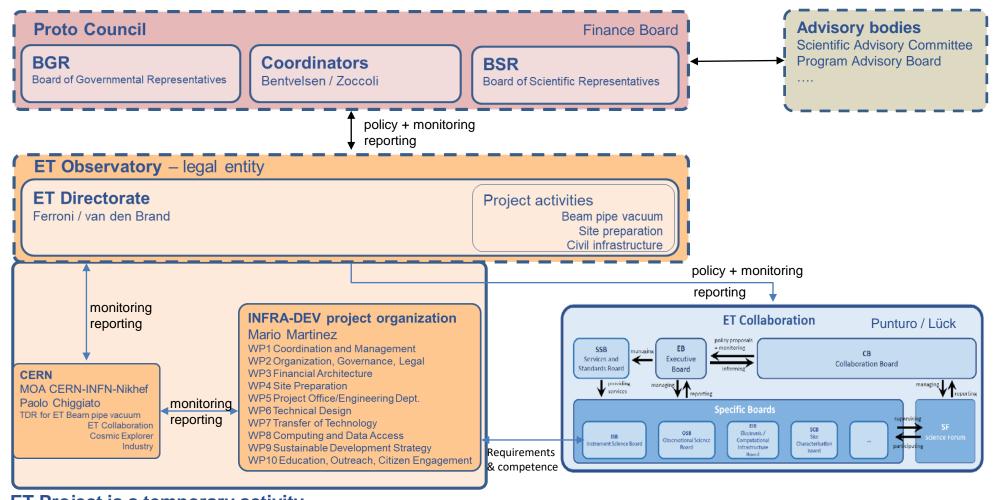
Suggestion: absorb INFRA-DEV coordinator in ET Observatory

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ET Project is a temporary activity

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ET Project is a temporary activity

Summary

How to proceed

Conclusions and next steps

- Define a WP2 preparatory working committee that consists of a relatively small group of people with adequate expertise on science policy
- Proposed composition: Miriam Roelofs (successor of Jo van den Brand), Nando Ferroni and Justin O'Byrne
- This committee should have effective interaction with the BGR in order to determine what
 is important for countries to have arranged. The liaison is Job de Kleuver
- This committee should propose what activities are most important to have worked out.
 Also it should define what activities we want to have directly managed by the legal entity.
 Then the governance model should follow from these considerations
- At a later stage a working group of legal experts will be involved for writing statutes
- The structure of the legal entity will mirror (part of) the CERN organization
- For the coordination of the INFRADEV project it should be considered to have Mario Martinez interact closely with the ET Project Directorate. Obviously such a decision should be taken by the Coordinators in consultation with BGR

Miriam Roelofs

Netherlands Science Organisation

Background

Senor legal counsel/senior policy advisor

Experience

2008 – 2015 SKA governance development: pre-construction

(Itd liability company) and long-term (IGO)

2015 JIVE ERIC

2017 – 2021 KM3NeT INFRADEV, work package leader

2020 – 2021 LOFAR in transition to ERIC

Current policy portfolio

- Knowledge, safety/security
- Open science, data management
- Knowledge transfer
- Public private partnerships

