

# ENR ATEP kick-off meeting

administrative information

Ph. Lauber with input from D. Kalupin



On the 3<sup>rd</sup> of March, at its's meeting the General Assembly has endorsed funding for 16 EnR projects distributed over four areas:

Short Reference No	Principal Investigator	Title
--------------------	------------------------	-------

**Inertial Fusion (CfP-FSD-AWP21-ENR-01), project proposal(s):**

CEA-02	Dimitri Batani	Advancing shock ignition for direct-drive inertial fusion
--------	----------------	---

**Materials (CfP-FSD-AWP21-ENR-02), project proposal(s):**

FZJ-01	Daniel Dorow-Gerspach	Additive manufacturing as tool to produce and maintain plasma facing components
IAP-01	Flavian Stokker Cheregi	NanoDust in Metal Tokamak (DUST-FORM)
JSI-01	Sabina Markelj	Detection of defects and hydrogen by ion beam analysis in channelling mode for fusion
UT-01	Aleksandr Lushchik	Investigation of defects and disorder in non-irradiated and irradiated Doped Diamond and Related Materials for fusion diagnostic applications (DDRM) – Theoretical and Experimental analysis
VR-01	Marcos Moro	Electronic interactions of slow ions and their influence on defect formation & sputter yields for plasma facing components

**Congratulations !!!**  
Now the work can start.

Short Reference No	Principal Investigator	Title
--------------------	------------------------	-------

**Theory & Modelling (CfP-FSD-AWP21-ENR-03), project proposal(s):**

EPFL-02	Jonathan Graves	Operation limiting plasma instabilities in high performance tokamaks: fundamental understanding and solutions for critical problems
FZJ-03	Sven Wiesen	Development of machine learning methods and integration of surrogate model predictor schemes for plasma-exhaust and PWI in fusion
IST-02	Rogério Jorge	Energetic particle optimization of stellarator devices using near-axis magnetic fields
MPG-01	Philipp Lauber	Advanced energetic particle transport models (ATEP)

**Technology & Systems (CfP-FSD-AWP21-ENR-04), project proposal(s):**

DIFFER-01	Matthijs van Berkel	Multivariable feedback control of radiative loss-processes using multi-spectral imaging
IPPLM-01	Marek Scholz	Development of GEM detector as a compact neutron spectrometer for fusion plasmas
IST-01	Filipe Da Silva	Advances in real-time reflectometry plasma tracking for next generation machines: Application to DEMO
KIT-01	Ioannis Pagonakis	New generation of megawatt-class fusion gyrotron systems based on highly efficient operation at the second harmonic of the cyclotron frequency
MPG-01	Dmitry Moseev	Reconstruction of 4D and 5D fast-ion phase space distribution functions in tokamaks and stellarators
VTT-02	Antti Salmi	Silicon photonics steady-state magnetic field sensor

D. Kalupin | Introduction to EnR PIs | 18 March 2021





## Project start:

For **3 years** projects – **1 July 2021** as latest

For **2 years** projects – **1 January 2022** as latest

The end date will be adjusted accordingly, so the **total duration of the project is not affected**

## Task Agreement: *(contractual document specifying project resources)*

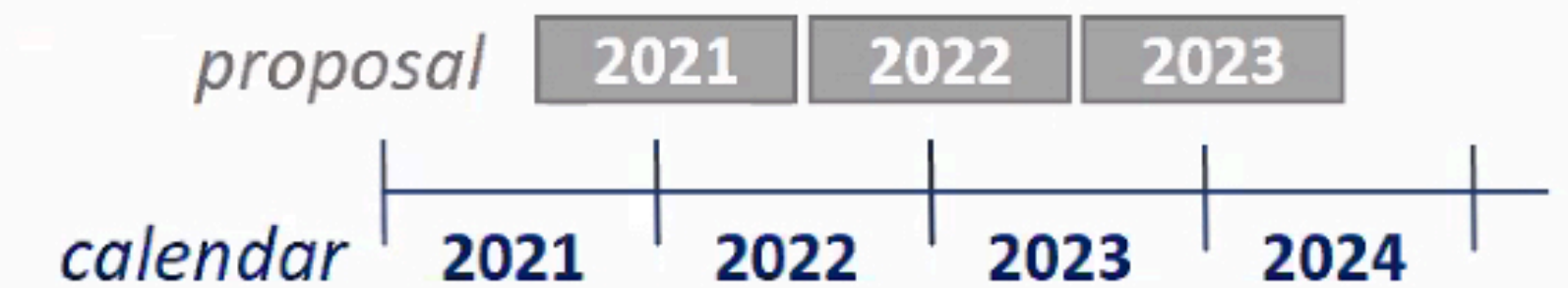
Provisionally will be ready in **May-June 2021**

formal approval of the EUROfusion budget – GA on 6-7 of April 2021

**recently approved (end May)**

adjustment of proposals and IMS implementation – April 2021 – depending on the feedback from Pis:

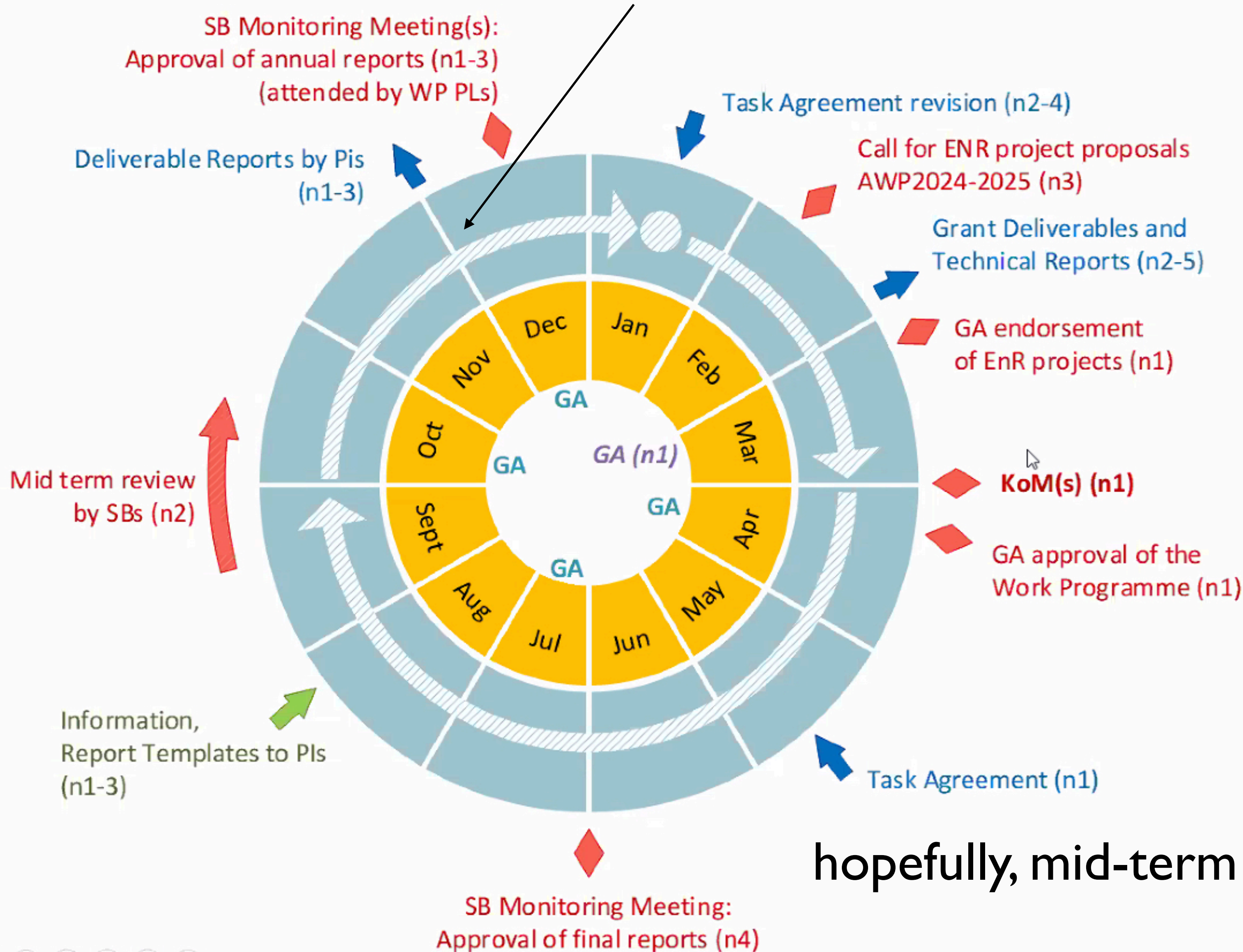
- **revision of task specifications and deliverables according to calendar year (not the project year);**
- **correction of resources (within the project budget);**
- **updates to the team (e.g. filled open positions);**
- for some projects clarifications on UKAEA staff involvement







first report needs to be ready by early December



Individual project KoM(s) are to be organized by **PIs** in Mar.-Apr. 2021

The monitoring meetings with **ENR PIs** and the **SB** will be organised once a year (prov. in Dec.). Before the meeting, PIs must provide the annual report that will be assessed by the **SB** and the **PMU**.

At the end of the second year the mid-term review of projects will be done by **SBs**

hopefully, mid-term and 2022 report can be aligned



EnR projects areas of **Theory and Modelling** and **Inertial Fusion** are belong to the **Theory Project Board** PB (meeting 29th of June)

The PBs: are supervisory and steering bodies; have overall accountability for the projects implementation; promote and maintain focus to deliver the outputs from the project; approve the PMPs and contributions to the AWPs proposed by the PLs; ensure that the expected project outputs and related activities of the project are consistent with the CWP and AWPs; monitor high-level project risks, and provide oversight to ensure that adequate risk management is in place; review and recommend the (multi-) annual project budgets;

In practice, the PBs: approve any decision affecting the overall objectives within the financial boundaries of the projects; resolve resource allocation issues; request to the PM to launch a new call for PL/LB nominations in case a PL fails in his/her responsibilities, and the associated LB cannot propose a suitable new candidate; prepare any important (impacting grant deliverables or budget boundaries) decision concerning the projects.”

#### 2021

Frédéric Imbeaux (CEA)  
 Michal Poradzinski (IPPLM)  
 Carlos Silva (IST)  
 Jonathan Graves (EPFL)  
 Eric Sonnendrücker (MPG)  
 M.J. Pueschel (02-TU/e)  
 Edilberto Sánchez (CIEMAT)  
 Eva Macusova (IPP.CR)  
 Dmitriy Yadkin (03-Chalmers)

#### 2022

Eero Hirvijoki (01-Aalto University)  
 Frédéric Imbeaux (CEA)  
 Michal Poradzinski (IPPLM)  
 Carlos Silva (IST)  
 Jonathan Graves (EPFL)  
 Eric Sonnendrücker (MPG)  
 M.J. Pueschel (02-TU/e)  
 Edilberto Sánchez (CIEMAT)  
 Eva Macusova (IPP.CR)

#### 2023

Colin Roach (UKAEA)  
 Eero Hirvijoki (01-Aalto University)  
 Frédéric Imbeaux (CEA)  
 Carlos Silva (IST)  
 Yannis Kominis (02-NTUA)  
 Jonathan Graves (EPFL)  
 Dirk Van Eester (LPP-ERM-KMS)  
 Eric Sonnendrücker (MPG)  
 Dmitriy Yadkin (03-Chalmers)

#### 2024

Colin Roach (UKAEA)  
 Dirk Reiser (FZJ)  
 Frédéric Imbeaux (CEA)  
 Yannis Kominis (02-NTUA)  
 Jonathan Graves (EPFL)  
 Dirk Van Eester (LPP-ERM-KMS)  
 Eric Sonnendrücker (MPG)  
 Gregorio Vlad (ENEA)  
 Leon Kos (01-UNILJ)

#### 2025

Colin Roach (UKAEA)  
 Dirk Reiser (FZJ)  
 Frédéric Imbeaux (CEA)  
 Yannis Kominis (02-NTUA)  
 Jonathan Graves (EPFL)  
 Eric Sonnendrücker (MPG)  
 Gregorio Vlad (ENEA)  
 Dmitriy Yadkin (03-Chalmers)  
 Gergo Pokol (EK-CER)

## **End 2021**

### **Technical specification:**

- **Consolidate theoretical framework of advanced reduced transport models**
- **start implementation by advancing various building blocks**
  
- **WP1-D1: Complete transport theory of Phase Space Zonal Structures and Zonal State separating its microscale structures from macro-/meso- scale components**
- **WP2.1-D1: DAEPS in general tokamak geometry**





**Missions of ENR project team members within the project** will be supported through the dedicated ENR **mission budget** (must be allocated to the project in IMS).

IMS mission application is required – **approval by the PI**

The screenshot displays the 'EUROfusion Horizon Europe' web application. At the top, there is a navigation bar with 'Home', 'View', 'Actions', 'Overview Data', 'Edit', 'Help', and 'EU R&I Programme' (highlighted in red). Below the navigation bar, a user profile for 'Denis Kalupin' is visible with a 'Logout' button. A dropdown menu is open under 'Actions', showing options: 'Apply for Mission', 'Generate Call', 'Generate Campaign Call', and 'Generate Task Agreement'. The main content area shows the 'Create mission wizard' interface, which is currently in the '1. General Information' step. The wizard has four steps: '1. General Information', '2. Place & Purpose of Mission', '3. Attachments & Comments', and '4. Check & save for official submission'. The 'Person on mission' field is set to 'Denis Kalupin', 'Work Packages' is set to 'ENR - Enabling Research', and 'Area/Project (only for some WPs)' is set to 'ENR-IFE.01.CEA-test'. There are 'Cancel' and 'Next' buttons at the bottom right of the wizard.

Mission rules in FP9 have changed:

- **no Unit Costs**, all missions will be done on **actual costs**;
- **tickets are eligible**;
- support level **70%** (indirect costs are eligible)

- Main objective: advanced reduced EP transport models
- capture the long-time scale (transport) evolution of phase space structures; go beyond simple models (CG, kick-model: TSVV#10)
- statistical analysis of the different models, test particle transport analysis (super/sub-diffusive, convective) : (non-)locality of the underlying transport processes.
- stability/linear information given by local and global GK codes (DAEPS, LIGKA, 3D local code)
- hierarchical levels of implementation, balancing speed vs. accuracy, will be tested and documented.
- verification will be carried out via comparison in the appropriate limits (HYMAGYC, (X)HMGC, MEGA, ORB5, HAGIS/LIGKA ,STRUPHY).
- Fast EP transport model in RABBIT; interfaces to other codes
- Various time-dependent scenarios from present-day and future experiments: AUG, JT-60SA, DTT, ITER, JET validation and UQ. The
- IMAS compatibility for most/all models
- Final deliverable: provide community (non-expert modellers) with validated tools



- 9.00 -9.10: Introduction and administrative aspects
- 9.10-9.30: Matteo Falessi WP 1
- 9.30-9.50 Fulvio Zonca WP 1, 2.1
- 9.50-10.10: Philipp Lauber, WP 2.2/3.3
- 10.10-10.30: Axel Koenies, WP 2.3
- 10.30-10.50 Coffee
- 10.50-11.10: Nakiya Carlevaro 3.1
- 11.10-11.30: Alexander Milovanov 3.2
- 11:30-11.50 Xin Wang WP 3.5
- 11.50-12.00 Alessandro Biancalani WP 3.6
- 12.00-12.20 Discussion WP 4.0, action items, closing