

Project Board Pre Meeting

# 2027 Perspectives and Priorities

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## Project Board Pre Meeting and FP 10 Brainstorming

- Thursday: 2027 Perspectives and Priorities and additional desired budget by WPs including attempt of prioritization
- Friday: FP10 outline of scientific priorities and activities in 26/27 towards FP10



# Highlights of Work Plan Objectives for 2026/2027

## **Support to the Euratom 2026-27 Work Programme & the new EU Fusion Action Plan**

- Lead the concept design of a fusion pilot plant ( $Q \leq 1$  plasma facility for qualification at neutron flux and fluence levels)

## **Scientific research & technology development maturation**

- Joint exploitation and operation of existing and future research infrastructures (e.g., WEST, ASDEX Upgrade, JT-60SA, TCV, MAST-U, ITER, IFMIF DONES, DTT, W7-X, COMPASS-U, etc) and the JET data centre
- Tech. R&D on priority systems for a pilot plant and longer term FOAK techs, e.g. the breeding blanket, tritium fuel cycle, remote maintenance and magnets
- Pre-concept definition of a first-of-a-kind fusion power plant (tokamak and stellarator)

## **EU skilled workforce readiness and training**

- Development of current and future talent pipeline

## **International collaboration**

- China - Joint development of an integrated commissioning plan for BEST based on released of joined research plan in Nov. 2025

## **Support ITER 2024 baseline to ensure success**

- Deliver critical defined support within the newly-formalised agreement to address urgent R&D and ITER exploitation prep.

## **Evaluate and support alternative fusion concepts such as Inertial Confinement Fusion**

Adapted from G.F. Federici



## Discussion on budget requirements for 2027

- GA of Dec 2025 requested a reserve list to be defined at the GA in April 2026 such that when budget becomes available in 2<sup>nd</sup> half of 2026 a prioritization exists
- The AWP for 2026/2027 has though not yet been submitted as the call has not been opened
- Presently budget from phase 1 (21-25) cannot be used for (26-27) → this limits dramatically the possibility to re-direct underspending to the 26/27 AWP when it materializes (original idea for defining a reserve list)
- Because of 2<sup>nd</sup> and 3<sup>rd</sup> bullet presently no PCR shall be brought forward at the PB (as formally no programme and budget are approved → bullet n2)
- Agreed with PM to inform the PMU on 2027 budget requirements and prioritizations from FSD
- → Identification of budget requirements for 2027 and discussion on relative prioritization (e.g. budget for JT-60SA scientific exploitation in 2027, desired additional operational time of facilities, requirements for WP TM, possible corrections of WP budgets, ...).



## JT-60SA mid- and long term EUROfusion scientific priorities

- A MoU between F4E and EUROfusion exists that includes among others a list of scientific priorities as (requires review and possible update or specification):
  1. Development and investigation of high-performance scenarios compatible with future W-PFCs,
  2. Avoidance and mitigation of disruptions and runaways,
  3. Fast ion physics,
  4. Development and validation of high-level real-time control strategies
- The implementation document will need to be updated as the existing document is outdated: A new draft will be prepared by F4E (M. Cavinato based on an initial input from C. Sozzi), it will need to include iteration with WP PWIE, WP SA, WP TE, WP TM and the PMU



## ITER MoU technical specifications to address physics gaps breakdown across WPs and associated resources

- Principal idea of the topics included in the technical specifications document between ITER and EUROfusion follows the principle that these should be activities that are already part of the AWP26/27 and that the document supports identifying specific outputs of these activities of high priority to ITER including respective timeline defined as D1 → D4 as June 26, Dec 26, June 27, Dec 27
- Reporting is meetings for mutual exchange of information: providing status of progress, mutual feedback and discussion on results and possible modification of activities based on progress and results
- A. Loarte circulated a consolidated document for review (distributed on evening of 4<sup>th</sup> of March to PLs/TFLs)



# Discussion of technical specifications document across WPs

Headline from technical specifications document	WPs	Lead WP for reporting
<b>1.1. R&amp;D related to W wall sources and transport</b> <i>- Experiments to characterize physics processes leading to W wall source, W SOL transport and W pedestal transport and its extrapolability to ITER.</i> <i>- GDC-Boronization optimization: Impact of GDC distribution on boronization effectiveness for oxygen removal and for limiter start-up</i> <i>- ELM control and no-ELM scenarios with W wall</i>	WP PWIE, WP TE	WP PWIE  WP TE  WP TE
<b>1.2. Fuel retention and removal from Boronized W PFCs</b>	WP PWIE, WP TE	WP PWIE
<b>1.3. ICH supported plasma start-up</b>	WP TE	WP TE
<b>1.4. Disruptions and disruption mitigation</b>	WP TE, WP PWIE, WP TM	WP TE
<b>1.5. Issues in the application of ECH to ITER scenarios</b>	WP TE	WP TE
<b>2.1. HFPS improvements</b>	WP TM, WP TE	WP TM (as focus is on model development, but also requires a lot of modelling that sits in WP TE)
<b>2.2 Use of MUSCLE3 for persistent actors</b>	WP TM, WP TE	WP TM
<b>2.3. Development of wall inventory model in SOLPS-ITER</b>	WP PWIE, WP TE	WP PWIE (?)
<b>2.4. Analysis workflows for experimental data</b>	WP TM, WP AC, WP TE	WP TM
<b>3.1. Use and validation of analysis workflows for experimental data</b>	WP TM, WP AC, WP TE	WP TE (?)
<b>3.2. Validation of SOLPS-ITER wide grid and ensuing W source/transport (ERO 2.0/WalIDYN)</b>	WP PWIE, WP TE, WP TM	WP TE (since far SOL transport focus)
<b>3.3. Validation of HFPS, DINA-HFPS plasma simulators</b>	WP AC, WP TE, WP TM	WP TE



## Joint PhD or Post Docs with ITER

- EUROfusion cannot supervise PhD or post-docs: ITER is aware
- EUROfusion could facilitate access to devices to PhD students or post docs with ITER, including visit and participation to ITER IO



## Reporting & SSRL evolution

- Should make a proposal on how to attempt to shorten the technical report for WP TE (presently ~12 pages instead of requested ~2 pages)
- Issue could be connected to progress being show-cased through SSRLs connected to scientific objectives inside each Research Topic through
- Possibility to define SRL similar as is being done for the stellarator physics gaps, which is defined through SRL of Headlines, rather than the SSRL of individual scientific objectives – would facilitate modifying the formulation of individual scientific objectives → risk is that progress of scientific objectives would be lost
- Option can also be to only report progress made by those objectives that made progress and the rest described as general activity ongoing w/o specification.