



Fusion Science Department

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WP PWIE November 2020



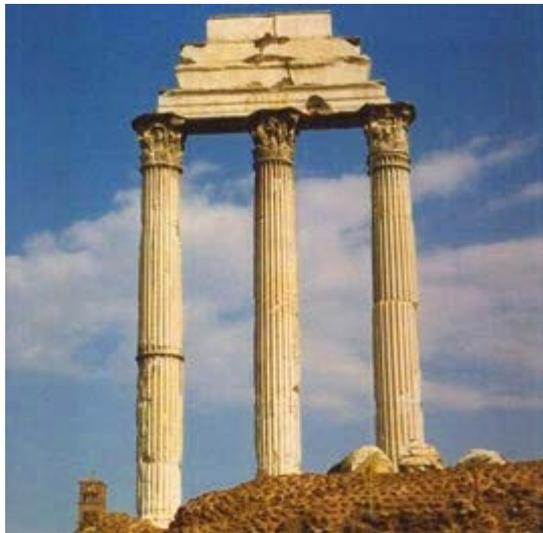
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A targeted, integrated and prioritised science programme that delivers results

- Preparation of ITER operation (WP PRIO)
- Target DEMO physics problems (DEMO physics lead)
 - Understand, explore and train



Eight Missions:

1. Plasma regimes of operation
2. Heat-exhaust systems
3. Neutron resistant materials
4. Tritium self-sufficiency
5. Implementation of the intrinsic safety features of fusion
6. Integrated DEMO design and system development
7. Competitive cost of electricity
8. Stellarator

Challenges to be addressed in Horizon Europe



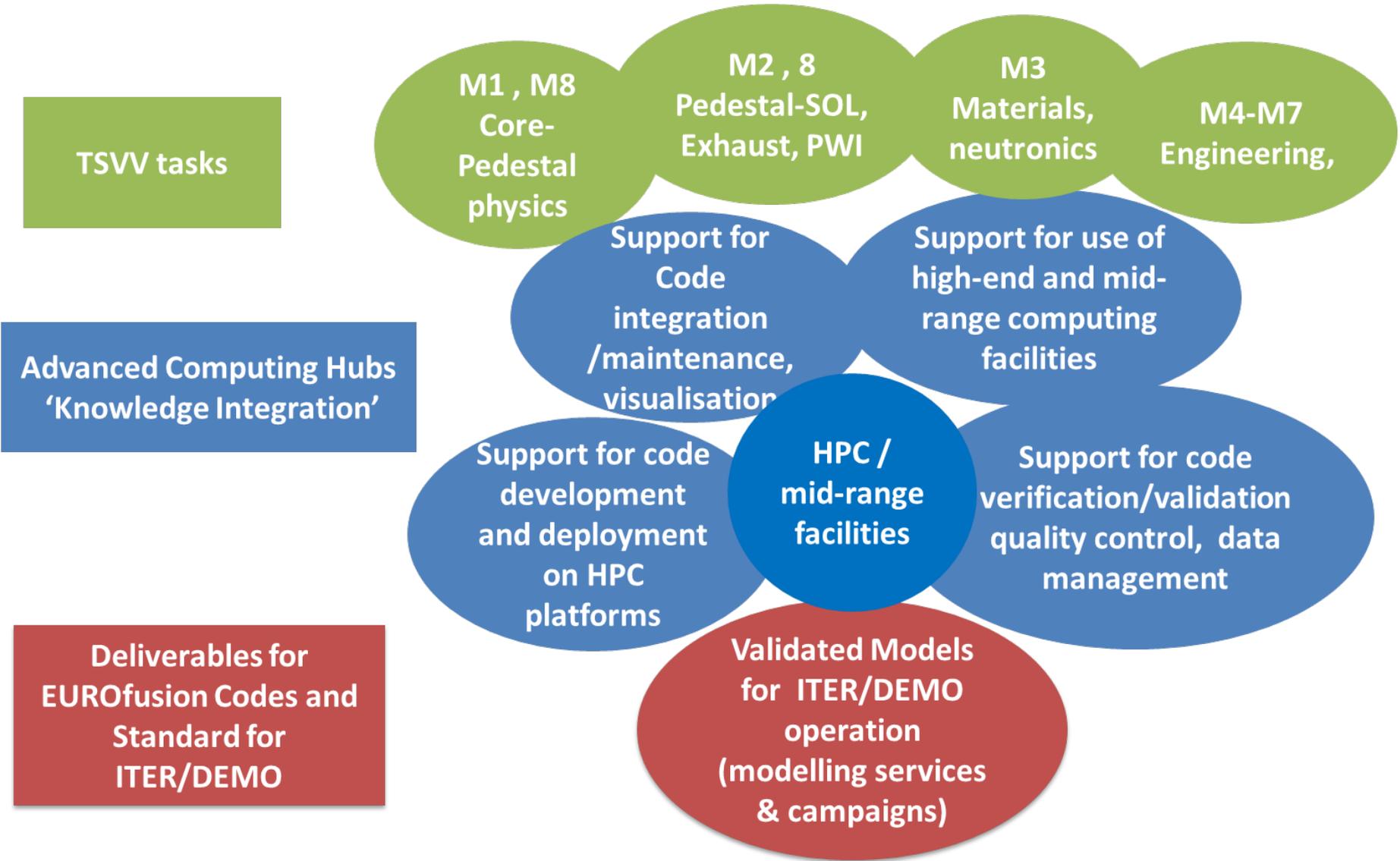
- **Validated predictive capability of the L-H transition and pedestal physics in ITER & DEMO** (including ELMs, control and avoidance)
- **Validated predictive capability for heat exhaust in ITER & DEMO** (conventional/alternative divertor configurations)
- **Integrated scientific work on plasma-wall interactions in ITER & DEMO** (incl. HELIAS)
- **Integrated scientific work on disruptions in ITER & DEMO** (incl. their prediction, mitigation, and avoidance)
- **Integrated scientific work on burning plasmas in ITER & DEMO** (incl. HELIAS)





- **Focus further on research towards ITER operation and DEMO design (including activities for stellarator line, HELIAS)**
- **Make quantifiable progress where possible**
Specific, Measurable, Ambitious, Relevant, Timed
- **Professionalise software (TSVV, ACH)**
- **Further strengthen the integration of the programme**
Technology and Physics
Stellarator and Tokamak
Edge and Core

Theory-Simulation-Verification-Validation Tasks





New elements in this framework programme

- TSVVs embedded in the WPs, selection under review
- WP project leaders shall/need actively ensure that TSVV codes address user demands, involve the TSVV PI in WP (efficiency of the interactions will need a check up)
- TSVVs are not “analysis” resources!
- ACH shall contribute to professionalise our software
- Shall start in 2021, number and size to be determined
- develop a portfolio of (usable/used) EUROfusion standard software



PMU FP9

Sara Moradi
Vacancy

CO Tokamak & Stellarator Exploitation
CO Tokamak & Stellarator Exploitation

David Douai
To be announced

CO Exhaust and Divertor Physics
CO Exhaust and Divertor Physics

João Figueiredo
Denis Kalupin

CO Enhancements
CO Theory & Simulation

Lorne Horton
Sébastien Hacquin
Feng Liu
David Rowlands

JET Programme Leader (until end 2021)
CO JET1 (October 2021)

The people



TE TFLS

Emmanuel Joffrin
Marco Wischmeier
Benoit Labit
Emmanuelle Tsitrone
Nicola Vianello
Antti Hakola

WP JT60SA

Carlo Sozzi

WP W7X

Andreas Dinklage
Arturo Alonso
Ivan Calvo

WP PWIE

Sebastijan Brezinsek
Deputy call out

WP PRIO

Xavier Litaudon

JET (FP8 TFLs stay until autumn)

Joelle Mailloux
Elena de la Luna
Alexander Huber
Costanza Maggi
Jon Hillesheim
Henri Weisen
David Douai
Jeronimo Garcia



Collegium of TFLs to
ensure coordination
between TE, JET, W7X,
JT60SA

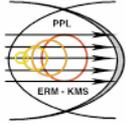


- **Significant cut, compared to expectations**
- **Demand by commission to strengthen DEMO activities**
- **Partly balanced by JET stopping in Oct. 2021**
- **JET after 2021 demands additional funding through EU**
- **JET still run under FP8 rules and resources**
- **Status as of now:**
 - Still funding reductions have to be defined
 - Funding reductions defined are not everywhere accepted

E pluribus unum



Austrian Academy of Sciences
AUSTRIA



Ecole Royale Militaire
Laboratory for Plasma Physics
BELGIUM



Bulgarian Academy of Sciences
BULGARIA



Ruđer Bošković Institute
CROATIA



University of Cyprus
CYPRUS



Institute of Plasma Physics
Academy of Sciences of the
Czech Republic
CZECH REPUBLIC

DTU



Technical University of
Denmark
DENMARK



University of Tartu
ESTONIA



Technical Research Centre of
Finland
FINLAND



atomique et aux énergies
alternatives
FRANCE



GERMANY



GERMANY



Max-Planck-Institut für
Plasmaphysik
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National Center for Scientific
Research "Demokritos"
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Physics
HUNGARY



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Agenzia nazionale per le nuove
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economico sostenibile
ITALY



LATVIA



Lithuanian Energy Institute
LITHUANIA



Institute of Plasma Physics
and Laser Microfusion
POLAND



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Research on Matter
THE NETHERLANDS



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