EWE-3
status, plans, and future prospects

EUROfusion

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EWE-3 Milestones and Deliverables

[Grant Delivera**Major Milestones**
ble 1 and 2 of Work Plan][Key Milestone 1 and 4 of Work plan]

- **2019**   **Enable the use of ETS workflow for interpretative transport analysis in JET**

- **2020**   **Enable the use of ETS workflow for interpretative transport analysis in MST1 and PFC**

Deliverables

- **D1**   Run and document test cases of interpretative and predictive transport analysis of MST/JET and WEST plasmas from same platform and report on verification results (2019)

- **D2**   Provide training and support to MST/JET and WEST users of the ETS workflow (2019 / 2020)

- **D3**   Provide user documentation (2019)

Status of EWE-3

- 2019 milestone achieved

  ETS v5 (in CPOs) is installed at the Gateway and JET/EUROfusion cluster, ready to be used for interpretative and predictive transport analysis of JET pulses.

- Supporting tools were developed for data preparation and visualization (with EWE-1)

  Several devices are supported – JET, AUG, TCV, WEST, etc.

- Translation tools convert data between CPOs <-> IDS, linking both worlds

  IDS2CPO convert data provided by the
  EWE importers from the IDS format
  into CPOs, and it is ready for production.

  CPO2IDS can already translate profiles,
  equilibria and sources into IDSs.
  This will accelerate the development
  and transition to ETS/IMAS v.6

Status of EWE-3

- Training and support to MST1 and JET users

  enabling the use of ETS for JET

  - May 14th and 18th in Culham

  enabling the use of ETS for MST1

  October 21st and 25th, in Garching

EWE-3 deliverables

D1   Run and document test cases of interpretative and predictive transport analysis of MST/JET and WEST plasmas from same platform and report on verification results (2019)

Within the ETS4JET group several JET pulses have been modelled, interpretatively and predictively.

Verification and preliminary validation results were also obtained in 2019.

Reporting and documentation should be improved in 2020, since it is admittedly not satisfactory.

EWE-3 deliverables

D2   Provide training and support to MST/JET and WEST users

of the ETS workflow (2019 / 2020)

Two training sessions were organized by the Chalmers/VR group.

More to come in 2020.

Should we organize training sessions in CEA, TCV or DIFFER ?

EWE-3 deliverables

D3   Provide user documentation (2019)

This has been provided by developers (eg. H&CD group) and
by the CPT (Dimitriy). Old documentation was ported to a new platform
(github.io) by EWE-5.

But to increase the user engagement we need to improve
documentation! There is no question that good documentation is
essential, regardless of how good our tools are.

But there is no human resources in place to accomplished this.
Is it lack of motivation, or incentives, to undertake this kind of work?

2020 Plans

Exploitation of ETS in support of JET and MST1

JET

Coordination with ETS4JET and JET Task Force leaders.

- they define the modelling needs

- we support the ETS modellers and the ETS TRANSPORT RO

- main goals: DT predictive modelling and impurity transport

MST1

Coordination with the MST1 Task Force leaders

- Probably we should create the ETS4AUG group, which could be coordinated by Irina Voitsekhovitch or David Coster

- we will continue to support the AUG data mapping efforts and support the modelling needs

- main goal: a full predictive AUG flat-top with NBI, ICRH and ECRH

2020 Plans

Development needs

There are a few gaps in the input data

Input data in IDS format is still not complete.

- Machine data for H&CD systems need to be refined.

- measured impurity content is very basic (just Zeff is imported)

- core_sources from simple local codes are useful for

some use cases and should be imported.

Improve the robustness of our tools and make them more user friendly.

2020 Plans

Development needs

Bugs in ETS can block users

There are still a few bugs in ETS that from time to time block users completely. These have been fixed by developers and CPT, but do we have enough human resources to continue to support ETS v5 (CPOs)

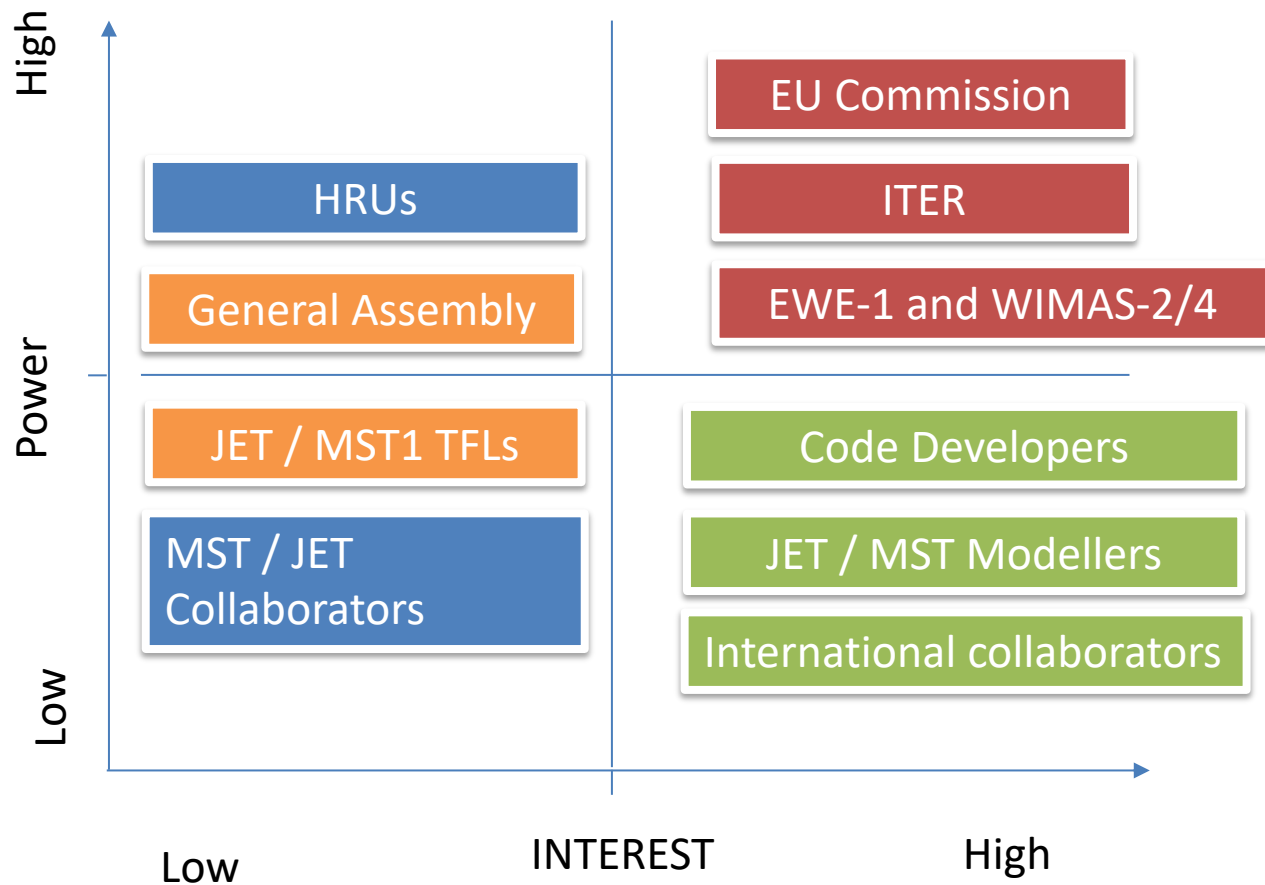### Lack of essential actors can diminish the exploitation of ETS

Advanced actors for pedestal and edge-core physics are still missing or not used/verified. Should we develop/improve these actors for ETS v5? I recall that developments in CPOs was frozen by the General Assembly. Wait for ETS-6?

Plans for 2020

Stakeholders Map

Power (Low → High) vs Interest (Low → High) quadrant chart:

- **High Power, Low Interest:** HRUs, General Assembly
- **High Power, High Interest:** EU Commission, ITER, EWE-1 and WIMAS-2/4
- **Low Power, Low Interest:** JET / MST1 TFLs, MST / JET Collaborators
- **Low Power, High Interest:** Code Developers, JET / MST Modellers, International collaborators

Plans for 2020

EU Commission and ITER

- Tools for tokamak modelling
- Clear reporting of results
- Clear documentation

EWE1 and WIMAS - 2/4

- Verification and validation of JET/MST imported data, and ETS modelling
- Provide a set of relevant scenarios for all EUROfusion devices for V&V and benchmark of ETS-6

Code Developers

- Clear development strategy (needs)
- A functional gateway
- Support from Core Programming Team (CPT) for tools and IMAS suite

MST / JET Modellers and International collaborators

- A good set of run examples
- Clear documentation
- Training sessions
- Quick response from WPCD &CPT to trouble tickets (issues found)

Timeline for 2020

	January	February	March	April	May	June
Jorge Ferreira, Rui Coelho	...	...	...	...	...	...
Giovanni Tardini, David Coster	...	...	...	...	...	...
Olivier Sauter, Antoine Merle, Mengdi Kong (Frida Eriksson)	...	...	...	...	...	...
Stuart Henderson, (Michele Romanelli, Nathan Cummings)	...	...	...	...	...	...
Philippe Huynh, Ludovic Fleury	...	...	...	...	...	...
Silvana Nowak	...	...	...	...	...	...
Irena Ivanova Stanik, Michal Poradzinski	...	...	...	...	...	...
Par Strand, Emil Fransson, Thomas Johnson, (Dimitriy Yadykin)	...	...	..;	...	...	...

Timeline for 2020

	July	August	Sep	Oct	Nov	Dec
Jorge Ferreira, Rui Coelho	Support JET/MST1/WEST needs and ETS Core-Edge integration					
Giovanni Tardini, David Coster	Support AUG / MST1 modelling needs - data and ETS					
Olivier Sauter, Antoine Merle, Mengdi Kong (Frida Eriksson)	Support TCV / MST1 modelling needs - data and ETS					
Stuart Henderson, (Michele Romanelli, (Nathan Cummings)	Support JET & MAST modelling needs, data and ETS					
Philippe Huynh, Ludovic Fleury	JET DT predictive modelling and WEST scenarios with ICRH					
Silvana Nowak	Effects of isotopes (D, T, H) on NTMs in JET					
Irena Ivanova Stanik, Michal Poradzinski	Modelling of JET scenarios with relevant impurity transport					
Par Strand, Emil Fransson, Thomas Johnson, (Dimitriy Yadykin)	ETS training, support and development					

And that's all.

Thank You