

## **Call for participation**

### **Infrastructure Support Activities: Core Programming Team**

**Deadline for responses: 30 October 2015**

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## **A. Scope and Objectives**

The EUROfusion Integrated Modelling (EU IM) platform integrates a growing number of physics components for plasma modelling in support of the European fusion programme. The EU IM platform maintenance, tools documentation and implementation of new functionalities should be ensured. Technical support to Users of the EU IM platform and training on the usage of the tools are also required. These missions have been carried out by the Core Programming Team (CPT) working within the Work Package Infrastructure Support Activities (WPISA) in 2014-2015 and providing the support mainly to the code developers working in the Work Package on Code Development for Integrated Modelling (WPCD).

Following the successful development of integrated modelling tools by WPCD team and their release to EUROfusion users in 2016 the scope of the CPT is naturally extending to include the support to users of the released EU IM workflows on physics and technical issues. In particular, first workflows planned to be released by WPCD to users are the core transport simulator and MHD stability analysis workflow. In addition, a strong interest to the EU IM tools and request to implement them into the ITER Analysis and Modelling Suite (IMAS) and perform further developments under IMAS using the ITER Data Structure (IDS) has been expressed by ITER-CT and supported by EUROfusion. The implementation of EU IM tools into IMAS also requires the CPT support. Moreover the CPT will support IMAS installation in EUROfusion experiments.

Taking into account the missions mentioned above the CPT main objectives for 2016-2018 can be summarised as follows:

- Continuation of training, user support, platform maintenance, development and release tasks on the Gateway as in the previous period (2014-2015);
- Deployment of the released EU IM workflows and support to users for their physics applications;
- Support to the strategic movement of the EUROfusion IPH activities towards ITER standard (IMAS)

## **B. Time schedule**

As stated in the first CPT Call 2013 the Core Programming Team is undertaking its tasks over the five year period from the beginning of 2014 throughout up to the end of 2018. The present Call aims to recruit the team for three years (2016-2018).

## **C. Resources**

Proposals may be made by a single Beneficiary or multiple Beneficiaries acting together. For combined proposals from two and more Beneficiaries, the leading Beneficiary shall consist

of at least two professionals. Full or part time work covering a substantial part of each person's time (at least 0.5 ppy per person) is preferred.

## D. Management

The work of the Core Programming Team will be coordinated by a team coordinator, selected among the proposed candidates. The Core Programming Team shall be managed by the Programme Management Unit (PMU). The Core Programming Team shall work in close collaboration with CD code developers as well as the professionals involved in the implementation of the Work Packages that use its tools, including the, JET MST1 and S1 Task Forces, PMI and S2 projects. An Advisory Board shall review requests, status of work, and advise on the prioritisation of CPT activities in light of the strategic priorities of the EUROfusion Work Programme.

The work carried out in CPT should be documented and reported to the Programme Management Unit annually.

## E. CPT activities

### 1. Infrastructure support

#### a. Support to WPCD code developers:

- i. maintenance of infrastructure and development of new tools and procedures;*
- ii. development of new features needed by users in existing infrastructure tools (e.g. FC2K/HPC2K/Kepler/ISE/Catalog\_QT/Profiler, exp2itm);*
- iii. management of infrastructure and workflow releases and documentation;*
- iv. migration of IM infrastructure to the new Gateway;*
- v. maintenance of WPCD web portal (Gforge);*
- vi. user support and training activities*

#### b. Support to users applying the EUROfusion IM workflows for physics studies within Missions 1, 2 and 8 on technical issues:

- i. infrastructure support/training to users;*
- ii. development of tools aiming at improving the user-friendliness of the IM infrastructure for non-developers*

#### c. Support to the strategic movement of the EUROfusion IPH activities towards ITER standard (IMAS) including in the near term:

- i. development of automated conversion tools from CPOs to IDS and vice versa ;*



- ii. *support to IMAS installation in EUROfusion experiments, including mapping of local database to the ITER physics data model;*
- iii. *development of a data browsing & visualisation tool generic to CPO and IDSs*

## 2. Physics workflow support: support to users of released EU IM workflows

- a. assistance to users in setting up workflows for physics studies and interpreting results (with possible interaction with WPCD ROs);
- b. analysis of failed runs with reports/suggestions to users and/or WPCD workflow and module ROs;
- c. collection and analysis of reports from users of the workflow(s) (including feature requests); dissemination of information about unsolved issues to WPCD ROs; conduit of information from WPCD to users;
- d. expected to play an important part to the provision of trainings on the released EU-IM workflows by WPCD;
- e. possible routine maintenance of the released EU IM workflows (upgrades to the data model) in collaboration with the rest of CPT and WPCD;
- f. first physics contact for the rest of CPT

## F. Structure of the proposal

The applicants must submit a document describing the technical skills of the team, the manpower and team availability following Annexes I and II. The names of the team members must be provided.

### 1. Technical skills

The proposal should be prepared considering the requirements formulated in Annex I. In particular, it should include:

- An introduction of the proposed members
- The description of the professional background and justification of the competencies of the team members
- An indication of willingness to coordinate the Core Programming Team work.

### 2. Manpower & availability

The proposal should include:

- Each team member's availability as a fraction of a ppy (at least 0.5 ppy per person preferred)

- Overall availability of the team through the year for onsite (remote) and offsite (in person participation to meetings/working sessions) support
- Detailed budget proposal in Euros. The cost estimation should be based on well-established calculations.

## G. Selection process

### *Eligibility*

The application shall be submitted by the Head of Research Unit of the Beneficiary.

In the case of joint proposals the application shall be submitted by the Head of the leading Beneficiary and he/she will be responsible for obtaining the agreement from the respective Head of Research Unit regarding the joint content of the proposal.

The application shall be sent by e-mail to WPISA RO Irina Voitsekhovitch ([Irina.Voitsekhovitch@euro-fusion.org](mailto:Irina.Voitsekhovitch@euro-fusion.org)) with copy to the PMU Secretariat ([secretaries@euro-fusion.org](mailto:secretaries@euro-fusion.org)) through the Head of Research Unit no later than **30 October 2015**.

### *Procedure*

The evaluation procedure will be carried out by the CPT Proposal Evaluation Board which should include the Task Force Leaders and Project Leaders representing the code users and developers that will collaborate with the CPT as well as the WPISA PMU RO.

### *Evaluation criteria*

The evaluation will be based on the following selection criteria:

- matching of the proposed staff to the competencies required.
  - For physics workflow support, experience in core transport and MHD stability simulations is preferred.
- level of commitment (applicants offering larger time commitments shall be preferred)

Additional information/clarification could be required in view of finalising the assessment of the proposals.

## Annex I

### Manpower and expertise needed for the Core Programming Team

Given the continuing development and support needed, a team of qualified professionals (8 ppy every year) is expected. In order to ensure an adequate engagement with the needs, personnel with the following qualifications is sought:

#### Infrastructure support (7 ppy expected) (see E.1 for activities):

- Proven programming skills in Java, C and/or C++. Since most of the physics codes are written in Fortran, some knowledge of f90/f95 is an advantage. Proven programming skills in Python, also used in some of the tools, are an advantage.
- A good understanding of modern software engineering practices.
- Knowledge of XML, MySQL and High Performance Computing infrastructures (advantageous).
- Knowledge of IMAS and IDS would be an advantage.

#### Physics workflow support (total 1 ppy expected) (see E.2 for activities):

- General knowledge of equilibrium, transport, MHD, heating and current drive physics, SOL and divertor physics, atomic physics, with deep expertise in one of these areas.
- Experience of working with integrated modelling codes which combine the physics areas mentioned above.
- Knowledge of the EU IM framework and workflows would be an advantage
- Work experience in user's support team would be an advantage

#### General:

- A good ability to speak and write in English, which is essential to facilitate communication between members of the Core Programming team, the code developers and users
- Being already experienced with the IM platform tools is also an advantage since the Core Programming Team needs to become operational on a short time scale.

## **Annex II**

### **Layout for Proposal**

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Please use this document to summarize the proposed project participation of your Beneficiary (expected length 2-3 pages).

#### **Work Package: Infrastructure Support Activities: Core Programming Team**

**Beneficiary:**      **Name of your Beneficiary**

#### ***Participation in 2016 – 2018***

##### ***Personnel***

Please describe the proposed contribution of your Beneficiary to WPISA referring **directly to the deliverables specified in the Call and manpower qualification**.

Please provide names of the Team members and briefly describe the skills and experiences relevant for the fulfilment of the proposed work.

Please provide individual commitments and manpower allocation per person.  
If changes of the team members' availability in the future are already foreseen, please indicate them (leaving/entering members; changes of the manpower allocation).

For budgeting salary costs, please provide the salary level to be used for each team member in accordance with the 2016 declaration of salary rates by your Beneficiary.

Please provide relevant experience of the Beneficiary.

Briefly describe the additional support the Beneficiary or the candidate's research group can provide or other related activities that may strengthen the activity.

##### ***Hardware description***

If hardware support is requested, please describe the proposed hardware giving the breakdown of its necessity and of associated costs.

##### ***Additional comments and requirements***

Please add additional comments or describe requirements your Beneficiary might have in order to participate in this Work Package.