Training Opportunity for Portuguese Trainees

Reference	Title	Duty Station
PT-2014-TEC-SWG(1)	**Software Engineer System Modeling and Simulation**	**ESTEC**

Overview of the Division missions:

The domain of Software Systems covers most aspects of the software in the service of ESA space missions. In particular it covers:
- software engineering methods and tools;
- software technology for onboard and ground systems
- software architectures and building blocks;
- system-software co-engineering techniques in which computer code is specified in a concurrent way together with the system;
- real-time software embedded in spacecraft systems and payloads;
- ground facilities software, including electrical ground support equipment, test benches, databases and simulation and modelling tools;
- verification and validation techniques for checking mission-critical software
- software standards

Overview of the field of activity proposed:

The proposed opportunity consists in performing research and development activities in the System Modelling and Simulation domain. Such an activity can include internal developments, where the methods, tools or prototypes have to be developed or integrated within ESTEC. Other activities may consist in monitoring industry in developments specified by ESTEC in Statement Of Works.

Specifically support is required for activities related to development of a System Simulation Facilities to support several projects such as Earth Observation (MTG), Science (e.g. BepiColombo) and Navigation (e.g. Galileo) missions.
The tasks could consists of:
- Designing, implementing and testing Environment (e.g. Gravitational Field) and Spacecraft Equipment (actuators, sensor etc.) models in Matlab/Simulink,
- Developing Simulator Infrastructure functionalities (database interface, plotting, test scripting)
- Evaluating simulator/software infrastructure tooling related to interoperability and integration
- Exploring test and procedure definition modeling methods and languages

The opportunity is to get familiarized with modeling, simulation and software environments and its use in the support of design and verification of space systems. Hands-on experience can be acquired with state-of-the-art modeling and simulation tools.
The possibility exist to see the application in several ongoing ESA projects.

Technical keywords are (real-time) simulators, System Simulation Facilities, Software Validation Facilities, LEON/ERC emulators, MIL1553 bus, real-time system, onboard software, operating systems (RTEMS), modeling languages and Simulation Models. Tools used are Mathwork Matlab/Simulink, EuroSim, SimTG, SImulus, MOSAIC and SimVis. Used Standards are ECSS-E40, ECSS TM 10-21, SMP/ECSS E40-07.

Required Education:

Applicants should have just completed, or be in their final year of a University course at Masters level in software engineering. A strong interest in research topics related to modelling and simulation methods, techniques and tools is preferred.

Candidates must be fluent in English or French, the official languages of the Agency.

Candidates should have good interpersonal and communication skills and should be able to work in a multi-cultural environment, both independently and as part of a team