EDMS NO.	REV.	VALIDITY
1771856	**1.0**	**VALID**

REFERENCE : NOT REQUIRED

HL-LHC Resources request

Date: 2017-03-21	***Title Position/Task:*** HL-LHC circuit modelling and simulation
Project/Activity: WP7	

Description Project:

To extend its discovery potential, the LHC will require a major upgrade to increase its luminosity (rate of collisions) by a factor of 10 beyond its design value. The HL-LHC is the project that will develop the new technologies and be in charge of the design, production, installation and commissioning of the equipment required to reach this objective. New, stronger superconducting magnets based on Nb_3Sn will be required to achieve the final focusing required by the two high-luminosity experiments. The modelling and simulation of the operational behaviour as well as the transients during failure scenarios and the definition of the resulting protection requirements is one of the tasks of WP7.

Task:

In the framework of WP7 (Machine Protection and Availability) you will join the Performance evaluation section of the MPE group to

- perform and/or compile a coherent set of simulations for all the new HL-LHC magnet circuits
- These simulations will be done using the STEAM framework, and should include the quench detection system as well as different quench protection systems (Quench heaters, CLIQ, Energy Extraction)
- Simulations should be done for the different operation modes (ramp, Fast Power Abort, quench) and failure scenario's (non-conform protection, short-to-ground)
- Results of the simulations should be included in the future documentation of each circuit.

Profile: Physicist, electrical, electro-mechanical engineer or computing engineer

Experience:

Experience with electromagnetism and/or electrodynamics and superconductivity. IT competencies, primarily in Java and the use of FEM software (especially Comsol and/or Ansys) are an asset.

Specific details:

Requester: TE-MPE		

Starting date: July 2017