



TASK 5.4 MAGNET CONCEPTUAL DESIGN (PRELIMINARY) ORGANIZATION STRUCTURE

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Goals of Magnet conceptual design task (1/2)

- The goal of *Magnet conceptual design task* is the development of a **complete conceptual design of a 16 T Nb₃Sn accelerator dipole magnet.**
- It includes:
 - ▣ the 2D design of the coil and magnet cross section and the 3D design of the coil ends, optimized in terms of field quality, non-linear behavior and transient effects

Goals of Magnet conceptual design task (2/2)

- It includes (continued):
 - the 2D and 3D design of the mechanical structure, particularly caring the stress/strain resulting on the Nb_3Sn cable
 - the quench protection system (developed by task 5.6)
- The participant labs. are CEA, CIEMAT, INFN, UT
- Finally, a joint activity with *Task 5.7 – Magnet engineering design* is envisaged to get the **final engineering design**

Very preliminary time schedule

- The *Design options task* should be completed by half of next year (end June 2016)
- Most likely, a final review will validate the outcoming results
- Concurrently (beginning July 2016?), there will be the handover to the *Magnet conceptual design task*
- The available time slot to complete this task is around 2 years + 6 months of joint work with the Magnet engineering design task

Task 5.4 organization structure (1/2)

- The magnet design has to be performed on the basis of the best credible specification of a conductor available for delivery by 2019 (which is likely different from the conductor we decided to consider for the initial phase, the HL-LHC specification)

best configuration from task 5.2 (2D elmg. design & 2D mech. design)

new conductor spec.

Revised 2D elmg. design & 2D mech. design

3D elmg. design & 3D mech. design

quench protection system from task 5.6

conceptual magnet design

Task 5.4 organization structure (2/2)

- The goal of *task 5.2 - Design options* is to compare three different magnet design and to choose a baseline magnet conceptual design for further analysis. At this stage, it is not clear how many configurations (1 or 2) will be worth further investigation.
- There are 2 main potential scenarios:
 - the *Design options task* outcome consists in one single configuration to be further developed in Task 5.4
 - the *Design options task* outcome consists in two configurations to be further explored in Task 5.4

Conclusions

- There are several potential scenarios for the task 5.4 organization. The present status is too liquid to make such early choices.
- For the same reason, it's too premature to define how to coordinate the activities among the various labs. My idea is to take profit of the work done in task 5.2 by Fernando.
- The interaction with *Task 5.7 – Magnet engineering design* is crucial, in particular in terms of information exchange.