

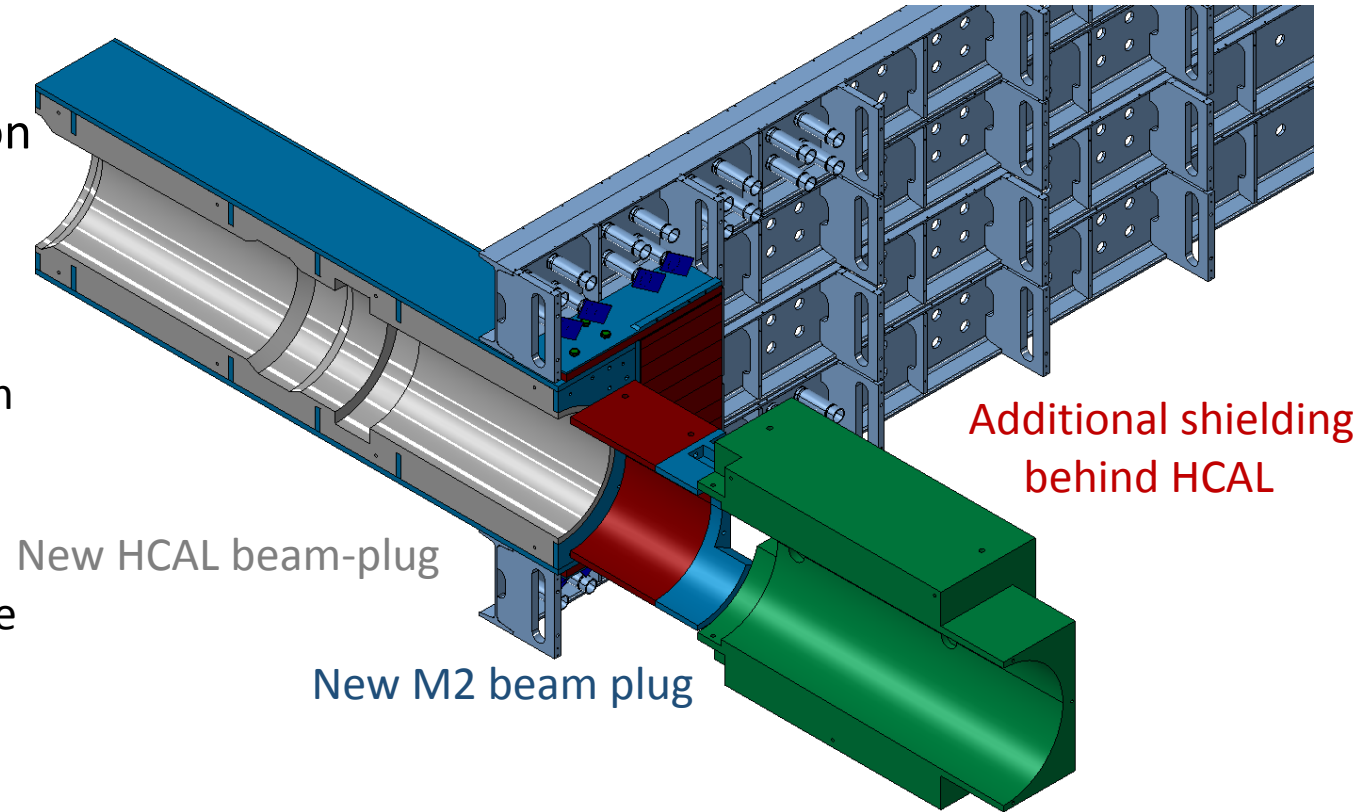
# **DT Contribution to the Muon System upgrade**

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# Improved shielding behind HCAL

- Goal: Improve the shielding in front of M2 to reduce the expected rate in the hottest M2 region by about 50%.
- This shielding consists of three parts:
  1. A new HCAL beam-plug made of lead in a steel carcass; this plug will have a similar design with respect to the present one, but with a smaller clearance (1cm) to the beam pipe in the part facing M2.
  2. An additional shielding made of tungsten in the position of the PMTs of the innermost HCAL cells .
  3. An improved M2 plug, of identical dimensions with respect to the present one, but partially made of lead



# Additional shielding: Next steps

1. The ECR for the HCAL beam-plug has been completed
2. The price enquiry for the all the additional shielding has been completed
3. The orders for the lead parts will be placed in November; the tungsten part in December.
4. Delivery expected 8 weeks after the order is placed.
5. Installation in LHCb is scheduled for early 2020 in the overall installation schedule.

➤ **Resources: 0.2 FTE (M. Galka and B. Schmidt in 2019)**  
**0.1 FTE in total during LS2**