# AVAILABILITY MODELLING TOOLS AND SYNERGIES FOR COLLABORATION

Introduction

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- Availability has always been discussed for accelerator operation, at CERN and elsewhere

- At CERN, got particular attention when discussing the complex LHC machine protection systems: worries to dump the beam frequently, e.g. if one out of 4000 BLMs has a fault

- Reliability and availability have been taken into account in the design of Machine Protection System

- Today, the studies are related to an increase of the LHC availability, required for successful completion of HL-LHC (recently approved by CERN Council, 1000 MCHF project)
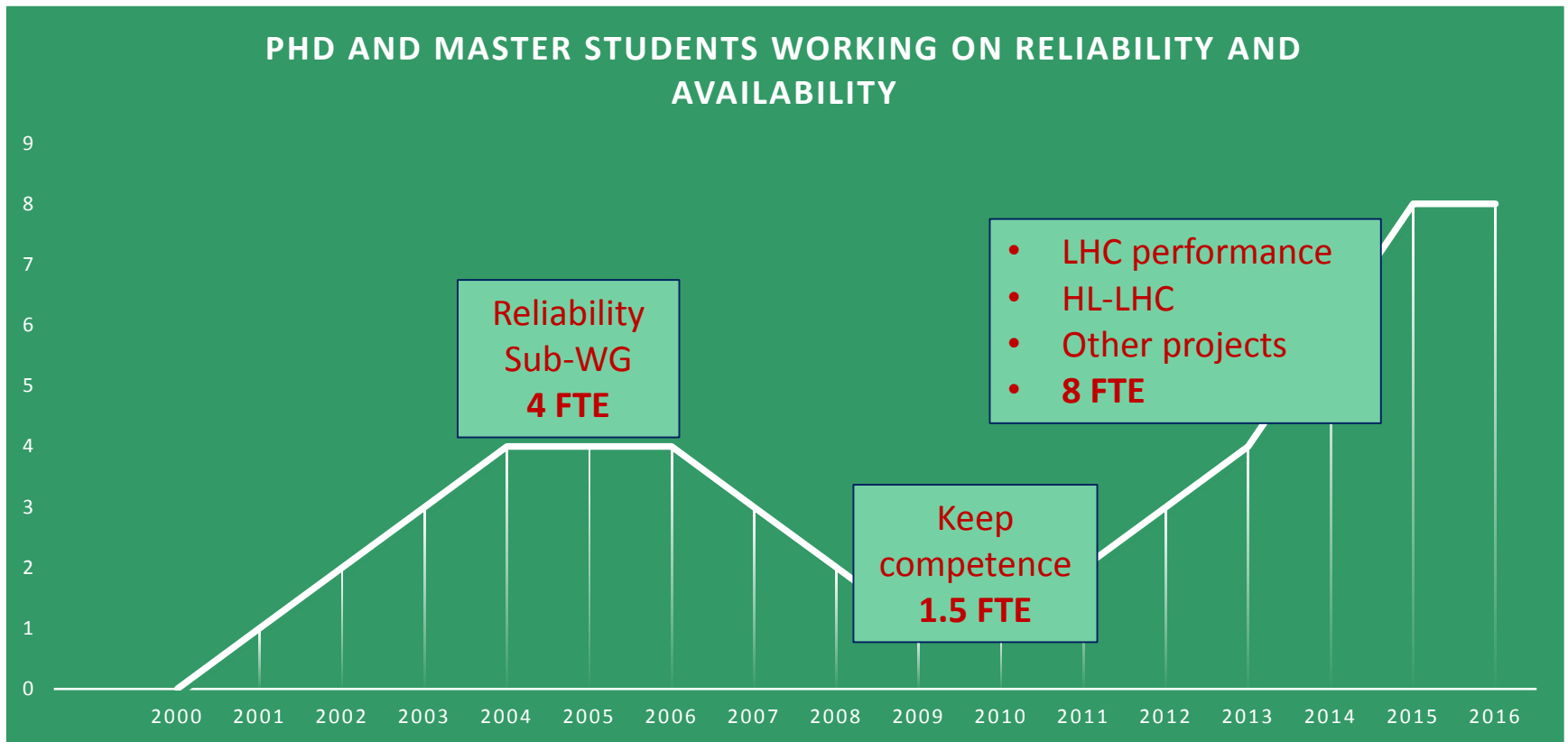
- The numbers in this figure are somewhat proportional to the effort invested into reliability and availability

- Reliability and availability are closely linked: same methods, same models

- Presenting the performed and on-going RAMI studies in the accelerator domain: Identify the needs that arise when performing such a study in different projects.

- Presenting the different simulation software packages: Understand the functionality of each software package, advantages and limitations related to the needs identified before.

- Discussing ideas for synergy in development: Discuss the possibility to develop a common input format for the different tools, possibly within a database or platform (including component data library for accelerators) with the objective that the same model could be used in different software packages

1. Availability studies for FCC, Arto Niemi (CERN)

2. PSB RF System dependability studies, Odei Rey Orozco (Universitaet Stuttgart (DE))

3. Reliability analysis of radiation protection models, Saskia Kristina Hurst (Universitaet Stuttgart (DE))

4. Availability studies for MYRRHA, Adrian Pitigoi (Empresarios Agrupados (EAI), SPAIN)

5. RAMI Studies for IFMIF, Enric Bargalló (European Spallation Source)

6. Isograph, Andrea Apollonio (CERN)

7. ELMAS, RAMENTOR, Jussi-Pekka Penttinen (Ramentor Oy)

8. AvailSim, Enric Bargalló (European Spallation Source)

9. REALIST IMA Modelling Tool, Mr. Thomas Herzig (University of Stuttgart)

Have an excellent workshop