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Analysis requirements for the SC magnet systems

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Effective commissioning of the LHC hardware demands a well-designed set of high level software tools, which is required for the equipment performance analysis and validation. The challenge includes a large amount of equipment integrating heterogeneous systems like powering, energy extraction, distributed magnet protection systems, cryogenics and vacuum with their distributed instrumentation as well as the technical services. Various operational conditions must be dealt with like the superconducting magnet quench phenomenon and quench effects, including their constraints on the next powering cycle while respecting the destructive power stored in the magnet system. The level of the commissioning of the main ring superconducting magnet system will depend not only on the time allocated to the commissioning, but also on the availability of the high level software analysis tools.
The required tools for various phases of the LHC start-up will be elucidated and discussed. The role of newly created Main Ring Magnet System Performance Panel (MPP), in view of the definition of the high level software tools for the equipment commissioning and performance analysis will also be briefly addressed.

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