Decoupling CERN Accelerators
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LHC Filling Sonata

Part I: 2-batch
SPS
PS
Booster

Part II: 3-batch
SPS
PS
Booster

Part III: 4-batch
SPS
PS
Booster

Nominal LHC Beam
The LHC beam consists of the SPS 2, 3 and 4 batch beams in the following order:
2, 3, 4, 3, 3, 4, 3, 3, 4, 3, 3, 4

Present CBCM
Central Beam and Cycle Manager
A sequencing model which works in terms of predefined static sequences, repeated many times without a change. This approach does not allow for some optimization available in DBN.

Future DBN
Dynamic Beam Negotiation
A sequencing model which works in terms of dynamically requested beams and run-time scheduling. This approach increases flexibility, responsiveness and machine time.

Inefficiency
Because of low responsiveness, beams are often greedily allocated. This leads to unnecessarily high running costs, quicker wear of equipment, and pre-emption of low-priority beams.

The Gain
Dynamic requests allow to play only the needed beams with the required characteristics. As a result, running costs and equipment wear is reduced, and more time is available to low-priority beams.

Timing System
Responsible for sequencing, i.e. scheduling of beams and cycles of the accelerator complex.
Responsible for generation and distribution of timing events which with high precision synchronize equipment of the accelerators.