

**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

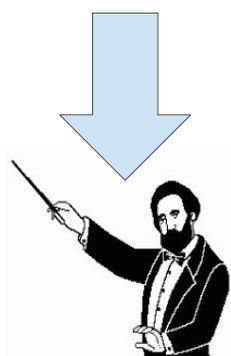
Central Beam and Cycle Manager

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

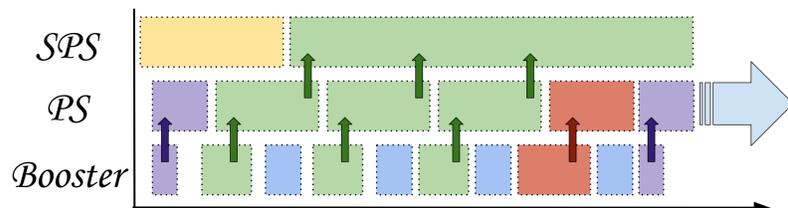
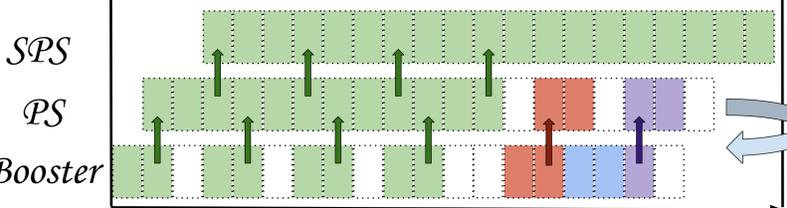
A sequencing model which works in terms of dynamically requested beams and run-time scheduling. This approach increases flexibility, responsiveness and machine time.



## 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.



## 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.

