1 Introduction

We can either decide to go for fully integrated studies everywhere or stay with descriptions of sub-systems which are glued together by additional section on the integration. I think the latter is better because it is easier to understand and it is not guaranteed that we can reach the required level of integratino for the first approach.

2 Perfect Lattice

A short description of the perfect lattices. In principle we can discuss energy bandwidth etc here.

3 Beam-Based Alignment and Tuning

An overview should be given, since some of the systems need to be defined around a boundary, e.g. the dispersion bumps. The description of the methods will follow the chain of sub-systems since this is how the methods have been developed.

3.1 Ring to Main Linac

3.2 Main Linac

Everybody finds that the curved linac is not a problem. BPM scale errors play a role but we find that their effect can be mitigated by use of dispersion bumps. The correction of the first short bit needs to be done with the bunch compressor.

3.3 Beam Delivery System

3.4 Integrated Performance Simulations

Here we should give the performance if all the systems have been tuned. In principle we should address not only the transverse correction but also the longitudinal component, i.e. the determination of the lattice.

4 Dynamic Effects

4.1 Feedback Strategy

We should give an overview of the feedback strategy and layout. This includes intra-pulse feedback such as

- Feed-forward at turn-around.
- Feedback after main linac.

- Beam-beam and IP angle feedback.
- Intra-pulse luminosity optimisation

In addition pulse-to-pulse feedback needs to be covered such as orbit feedback in the different sub-systems. An important topic will also be the other slow feedbacks such as energy feedback.

We should also specify which system are assumed to be always used and which are additional safety nets.

4.2 Bunch-to-Bunch Variations

These variations cannot be dealt with by any feedback. The only tool is the feed forward after the extraction.

- Kicker jitter. This is mainly a problem of the extraction kicker.
- Bunch-to-bunch jitter. Main point is to give the tolerance for bunch-to-bunch charge variations etc.
- RF variations. We need to comment on RF variations during the pulse

4.3 Jitter Tolerances

Tools to correct jitters are the intra-pulse feedback systems

- RF variations
- Quadrupole vibrations
- Power supply ripples
- Ground motion

4.4 Drift Tolerances

Here we can use pulse-to-pulse feedback.

- RF variations
- Quadrupole vibrations
- Power supply ripples
- Ground motion

5 Fully Integrated Study

This should include the whole low emittance trasnport section and the interplay between dynamic and static effects. It is possible that we may not manage to complete this before Valencia but at least a number of important effects need to be studied.