List of Questions for the CTP Upgrade Review

Below is a list of question/issues that need to be addressed during the CTP upgrade review. The list is categorized by sub-system or activity.

L1Topo

1. How many trigger bits will be sent from L1Topo to the CTP?
2. What is the definition/information content of these trigger bits? In particular are they independent single-bit flags (e.g. per algorithm and threshold) or are they groups of several bits (e.g. multiplicities)?
3. How many of these bits will be used at the same time in a given trigger menu?
4. Will the electrical outputs to the CTP be operated at 40 MHz or will they be overclocked by default? If yes, what is the maximum speed, 80 MHz of 160 MHz?
5. How many optical links will need to be connected from L1Topo to the CTP (if any)?
6. If optical transmission is used, is the proposed line rate of 6.4 GBaud (with 8B10B) acceptable?
7. How many bits per BC will each optical link carry (assuming some idle characters also need to be sent)?

L1Calo

1. How many additional trigger bits are expected to be sent from the CMX modules to the CTP after LS1? Is anything known yet about the information content of the additional bits?
2. The proposed CTP upgrade assumes that the input cables will carry 31 bits at 40 MHz as before. Additional trigger inputs can be fed to the CTP through unused bits on the existing cables as well as through additional cables. How many additional cables are expected to be connected from the CMX to the CTP?
3. Are there plans to connect any of the optical outputs from the CTX modules to the CTP? If yes, how many links and how many bits are foreseen?
4. What are the plans to connect the new digital L1Calo trigger to the CTP after the Phase-I upgrade? Will the connections be optical or electrical? How many optical or electrical cables will be needed? How many trigger bits will be sent over these cables? Will the information content still follow the existing model of multiplicities per threshold plus flags?

Trigger menu

1. How many trigger items are foreseen in the trigger menu after LS1 and after the Phase-I upgrade?
2. Is the number of 16 bunch group masks (now 8) considered sufficient? If not, what additional bunch groups will be required?
3. Assuming the topological trigger inputs are simple flags, will they be directly mapped to trigger items (with bunch group masking and pre-scaling per item) or will they need to be combined (logical OR/AND) with other trigger inputs in the menu?

4. The trigger menu for commissioning and calibration running will have to be shared between the four trigger partitions. However since the number of trigger items will be doubled, this is assumed to be acceptable.