L2/L3 Algorithms, Hardware and Software

Urgent Items needed to be completed and tested before Baseline review:

❶ Develop L2 Algorithm needed to achieve trigger requirements (eff.+rej.)

❷ Write clean L2 code to have a good estimate of CPU time needed

❸ Develop plan for necessary data compression at L3 output (physics needs)

Develop plan for L3 rejection and "Global L3" physics

❹ Develop enough reconstruction Algorithms for L3/Offline for timing studies

❺ Get enough data on Large CPU systems to estimate maintenance issues

Test alternatives to using a farm of 2000 commerical PCs

Who is doing what?

❶ Develop L2 Algorithm needed to achieve trigger requirements (eff.+rej.)

Paul Lebrun

❷ Write clean L2 code to have a good estimate of CPU time needed

Paul Lebrun (could use a software engineer)

❸ Develop plan for necessary data compression at L3 output (physics needs)
Develop plan for L3 rejection and "Global L3" physics

Harry Cheung and Paul Lebrun

❹ Develop enough reconstruction Algorithms for L3/Offline for timing studies

Penny Kasper and Ryan Mitchell (K-short reconstruction)

Also ECAL, RICH reconstruction by Collaborators

Need Particle ID including muons Need improved tracking at L3

❺ Get enough data on Large CPU systems to estimate maintenance issues
Test alternatives to using a farm of 2000 commerical PCs

Harry Cheung

➡ Could use more physicists, also software engineer could write clean code in parallel with as well as once the algorithms are developed.

Problem Areas:

❶ Achieving the required rejection of minbias and charm events at L2

- Getting the needed rejection of bkgd and efficiency for signals
- Must take into account changes to L1 Trigger (moving target potentially)
- Must take into account changes to detectors (e.g. pixel 70%)
- Other backgrounds, how to get realistic data?

❷ Manpower to rewrite clean L2 code to get a good CPU time estimate

- Takes time and not enough FTEs
- Real background hit levels could be much higher than MC or estimates

❸ Achieving the required data compression at L3

- Need physics skims agreed to by the whole BTeV collaboration

❹ Develop enough reconstruction Algorithms for L3/Offline for timing studies

- Could get away with partially complete code - MAYBE

❺ Data on reliability and maintenance of large CPU systems

- Need huge amounts of manpower if as in ITR
- If alternative used need to build prototype and test, etc.

❻ Maintenance of general BTeV (analysis) software

Schedules and manpower and other resources needed to meet schedules:

❶ Can proceed with all projects in parallel using current L2 code

❷ Need more manpower - both physicists and software engineers

WBS Status for L2/L3

Completed the first draft of WBS but not the WBS dictionary

1.8.2 L2 and L3 Trigger Algorithms, Hardware and Software

1.8.2.1 Requirements Document
1.8.2.2 Specifications Document
1.8.2.3 L2 Trigger Algorithm Searches
1.8.2.4 L3 Trigger Algorithm Searches
1.8.2.5 L2 Reconstruction Software
1.8.2.6 L3 Reconstruction Software
1.8.2.7 Global L2 Software
1.8.2.8 Global L3 Software
1.8.2.9 L2 and L3 Alignment and Calibration Software
1.8.2.10 L2 and L3 Monitoring and Event Display Software
1.8.2.11 L2 and L3 Software framework, utilities and interface to database
1.8.2.12 L2 and L3 DAQ Interface
1.8.2.13 L4 filter software and fast charm and beauty monitor
1.8.2.14 L2 and L3 Hardware
1.8.2.15 L2 and L3 Trigger ES&H
1.8.2.16 L2 and L3 Trigger Task Management