

HLT1 on GPUs

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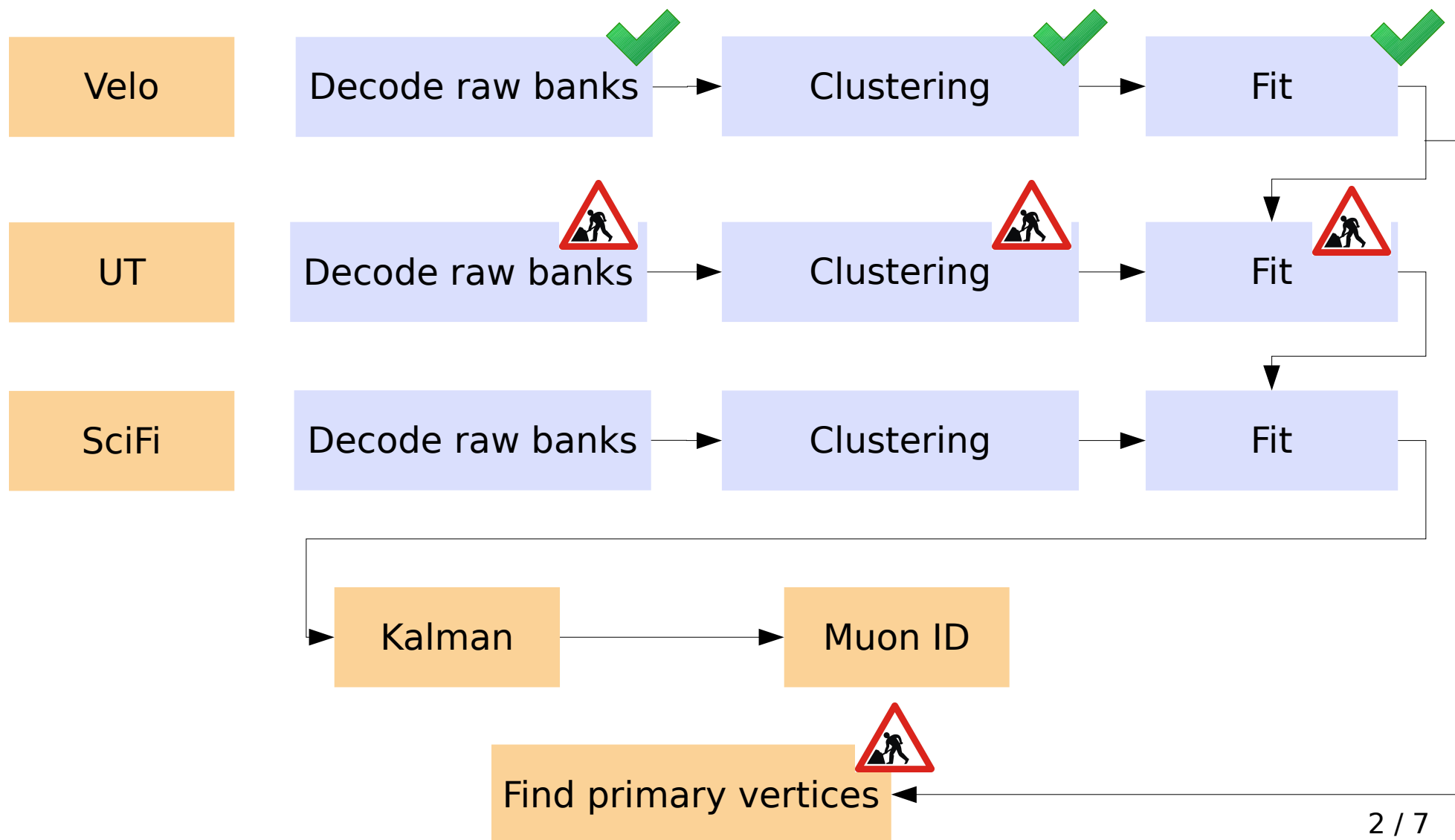
Krakow Hackathon, June 25th 2018



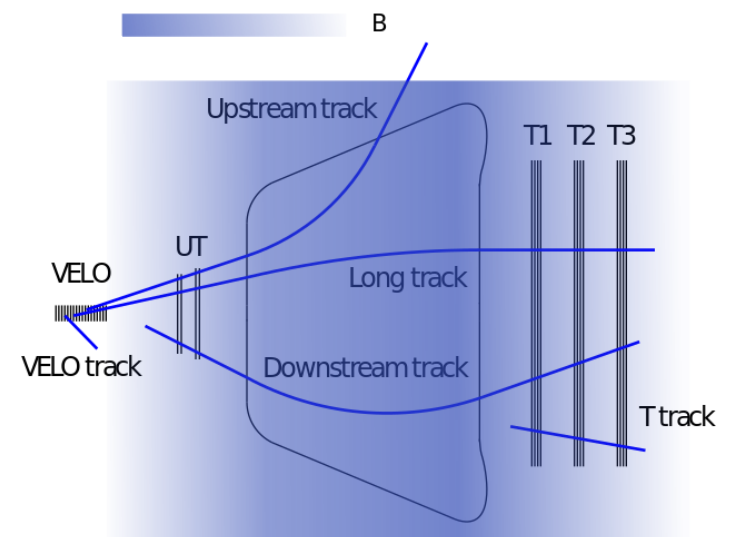
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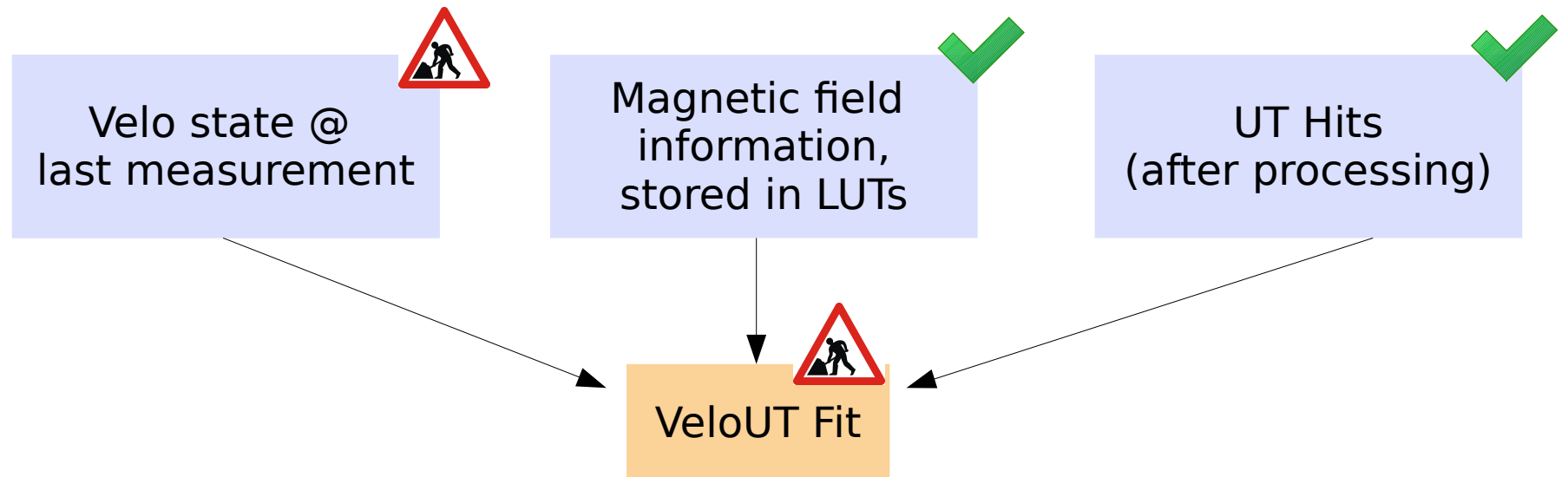
HLT1 sequence on GPU



VeloUT



- Extrapolate Velo track to UT
- Use magnetic field information for deflection
- Find hits in UT within window
- Select best matches based on chi2 of simple fit



VeloUT work in progress

- State at end of Velo: disagreement between PrPixelTracking and Search by Triplet → resolve this!
- Standalone VeloUT implementation: tested within Gaudi → resolve efficiency differences
- Understand iterator method to select hits within UT near extrapolated Velo track position → are there experts at the hackathon?
- Work on parameterization of deflection in magnetic field, use this rather than LUTs



... VeloUT work in progress

- Test VeloUT code within `cuda_hlt1` framework
(running on the CPU)
- Port it to the GPU

- UT clustering: get UT Hits from raw banks
 - Work on this for CPU version?
 - Expert suggestions?



Search by Triplet WIP

- Create performance mode
 - Optimize memory layout
 - No need to save information needed for track reconstruction efficiency calculation
- Kill ghost tracks by applying χ^2 cut





People involved

- Daniel Cámpora
- Plácido Fernández
- Alberto Ottimo
- Florian Reiss
- Dorothea vom Bruch

More people are welcome :-)