

# Reconstruction and trigger

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SwiftHEP/Excalibur workshop  
15 January 2021



Science and  
Technology  
Facilities Council

# Excalibur/ECHEP work

- ▶ Had very interesting community contributions, particularly to our [April ECHEP meeting](#)
- ▶ Excalibur [FPGAs](#) (Alex Tapper, Claire Shepherd-Themistocleus)
- ▶ ECHEP [Vectorisation, fast neural network evaluation](#) (Manuel Schiller)

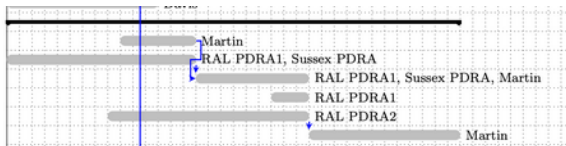


XKCD [1521](#) (from 2015...)

- ▶ **WP4.1** Deployment and benchmarking of tracking and vertexing algorithms on FPGA accelerators
- ▶ **WP4.2** Prototype of tracking and vertexing algorithms on heterogeneous compute platforms

## WP4: Reco Trigger

- D4.1: Report on benchm
- D4.2: FPGA prot deploy
- D4.3: FPGA prot benchm
- D4.4: OneAPI report
- D4.5: FasTras in OneAPI
- D4.6: FasTras benchm



# SwiftHEP WP4

- ▶ **D4.1** A report on benchmarking tools and practice to be used to evaluate the performance of the algorithms developed in WP4.1 and WP4.2
- ▶ **D4.2** Deployment and performance comparison of tracking and vertexing algorithms in FPGA accelerators for real-time and offline reconstruction
- ▶ **D4.3** Benchmarking of the prototypes developed on CPU and accelerators
- ▶ **D4.4** Report on the use and performance comparison of generic interfaces (e.g. oneAPI) to interface the algorithms to the hardware.
- ▶ **D4.5** Open source tracking algorithm (FasTrack) implemented through OneAPI and benchmarked to the native implementation.
- ▶ **D4.6** Performance comparison of FasTrack on CPU, GPU and FPGA technologies

# Thoughts

- ▶ Reconstruction/trigger is one of the largest work areas in the UK
- ▶ Specialised algorithms and experiment frameworks have tended to keep things within one experiment
  - ▶ HL-LHC is changing that
- ▶ ECHEP was a good opportunity to forge links between different experiments and communities
- ▶ Need to strengthen those links for SwiftHEP and the future