Brainstorming Deliverables from ECHEP Workshop - Simulation Package

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Full Simulation

- Document for what has already been done with accelerators
  - What works, what doesn't (avoid wheel reinvention)
  - Identify promising areas for either immediate work or R&D
  - Coordination with Geant4 R&D and HSF Simulation - HSF Workshop delayed until September, but maybe a blessing for us
- Cross-platform coding
  - First look into SYCL feasibility
  - In context of EXCALIBUR, use of Intel OneAPI
- Can we define benchmark numbers to compare against and test physics models to give a scale?
  - Informed by first item?

Geant4

- Estimate influence of HEP FTE on product
  - Tasking Framework (Increased flexibility in tasking) - In progress, but could use additional FTE
  - VecGeom Navigation (Inclusion) - In progress, but could use additional FTE
- EXCALIBUR developments (e.g. Intel oneAPI/Ray tracing)
- Further explore in depth possible fast simulation connections
  - Categorically find which experiments are using which Geant4 fast sim tools (hooks, biasing etc)

Fast Simulation

- Create similar document to Full simulation work to list areas of progress and success/failures
  - Identify cross-experiment comparison case
    - Combine with Calorimeter simulation to touch as many use cases at the same time
- Define key measure, show tests on this experiment case
  - Overall time and Throughput
  - Fraction of Simulation per event in full versus fast