



Common tools:

building blocks for scientific progress

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Aspects of this have been discussed for the European and regional Strategies on PP; so lots of good thinking is taking place on this

Examples of common technology from talks this week

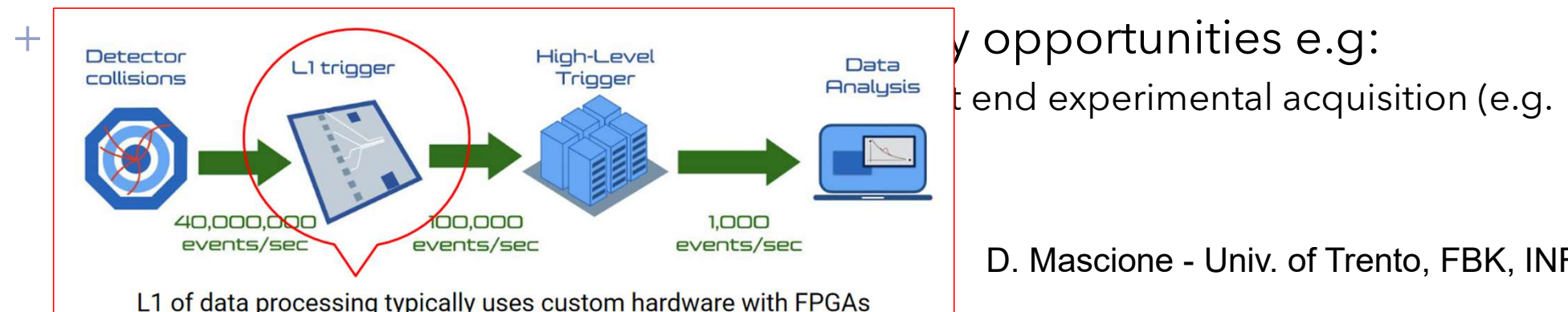
- + Established technologies include ROOT/RooFit etc. embedded in many talks;
- + More recent developments include modern OS/Industry-led DS frameworks and packages from languages like Python
- + Key4help - cross project simulation tool for collider projects
- + ACTS - tracking software suite from ATLAS was also mentioned

Synergistic Opportunities

- + What are the common problem areas that science could benefit from developing tools for?
 - + Experiment design
 - + Workflows
 - + Analysis of data (statistical methods, AI, wrangling, explainability of abstract and obfuscated methods)
 - + Combinations for phenomenological analysis
 - + Training to disseminate best practice/new tools
- + Abstractly reflect on problems to identify opportunities e.g:
 - + AI for theory, data analysis, data pipeline and front end experimental acquisition (e.g. Keras etc. through HLS4ML like tech)

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Synergistic Opportunities

- + What are common data sets that can be curated to provide a training ground or benchmark for further development
e.g. CERN Open Data / NASA Open Data projects etc.

<https://www.turing.ac.uk/events/nature-reviews-physics-and-ai-science-series>