SMARTHEP Network introduction

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The SMARTHEP network Website: www.smarthep.org

International network of physicists and companies for **real-time data analysis**

Main challenge tackled: **how to take decisions, fast and efficiently**

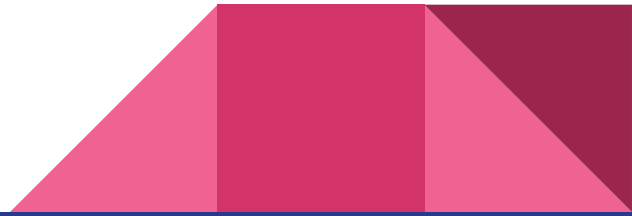
- Physicists need to decide what data to permanently record starting from 40 million collision events/second, *as soon as the collision event occurs*
- Companies need to take decisions fast based on large datasets in the context of e.g. traffic, self-driving cars, medical diagnosis, financial transactions

Tools:

- Hardware (FPGA, GPU) and software algorithms
- Machine learning to enable fast decisions

SMARTHEP network composition

- Physicists working at the Large Hadron Collider
  - 10 European universities (3 ERC grantees)
  - 2 North American universities
  - LHC experiments ALICE, ATLAS, CMS, and LHCb represented
- Companies from Sweden, Germany, France, Italy, Switzerland
  - Traffic control and self-driving cars
  - Medical diagnosis
  - Finance and investment
  - Instrumentation



How to collaborate with SMARTHEP

- First step for SMARTHEP network: Apply for an **European Training Network grant from the European Union**
  - Horizon2020 funding program within Marie Curie International Training Networks
  - Application is being written, due early January 2018
- Where academic organization/industries can participate:
  - **Training**: provide a course or a school related to the objectives of the network
    - Best fit: GPU and/or FPGA programming
    - Reimbursement is possible, in case grant is awarded
  - **Partner**: host a PhD student from one of the universities for up to 9 months
    - Needed: letter of committment (example will be provided)
    - Agreements on intellectual property for *background* and *results*
  - **Beneficiary**: host a graduate student (ESR) for 3 years, PhD awarded by institute in network
    - Key points: employment, intellectual property

Today’s meeting

- Round table to define ESR projects and secondments
  - Structure: ~5’ per participant, on the following points
    - What is the expertise of the participant (+ other useful details)
      - Also: how many projects can/will it host, and of which type (ESR/secondment)
    - What skills are needed for the ESR (in view of *recruitment*)
    - Description of the projects
    - What skills will the ESR get from the project (*training value*)
- Intellectual Property (IP) discussion
- A look at this year’s application
  - Deadline: January 17th
  - Plan: have a first draft by December 1st
    - Anything you’d like to help with/take responsibility for?
    - We will identify people and ask in the next week or so