



# Status WP2

Pere Mato, CERN, Frank Gaede, DESY  
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# Outline

- overview and goals of WP2
- main tasks of WP2
  - geometry toolkit
  - generic reconstruction tools
- interested partners
- open issues

# goal of WP2 – 'Common Software'

- develop core software tools that are useful for the HEP community at large and in particular for the next big planned projects: sLHC and Linear Collider (ILC/CLIC)
- make efficient use of the available funding by keeping the number of partners and tasks at reasonable level
- focus on two major tasks:
  - develop generic HEP – geometry toolkit
  - develop – detector independent – reconstruction tools

# TASK1: geometry toolkit for HEP

- develop geometry toolkit with the following features:
  - description of complex shapes, materials and sensitive detectors
  - interfaces to
    - full simulation programs (geant4, fluka?) - fast sim ?
    - reconstruction algorithms
      - high level interface a la GEAR
      - (questions that need to be answered during reconstruction (tracking and clustering/PFA)
      - also to JAVA (org.lcsim)
    - visualization tools (OpenGL, ROOT, VRML,...)

# TASK1: geometry toolkit cont'd

- ... features:
  - allow for misalignment of detector components (request from sLHC !?)
  - interface to conditions database (alignment, calibration)
  - efficient tracking in geometry hierarchy and field
  - ...
- as discussed at the LC Software Meeting in May at CERN

# TASK2: reconstruction toolkit

- detector independent reconstruction toolkit:
  - tracking and vertexing toolkit with state of the art algorithms
    - Kalman Fitters, Gaussian Sum Filters, ...
  - generic particle flow algorithm
    - based on a modularized version of PandoraPFA
  - alignment tools (sLHC/LHCb !?)
- this task is closely related to TASK1, in particular the 'high level' interface will have to be well designed, such that one can write these algorithms in a truly detector independent way

# WP2 - interested partners

- CERN
    - geometry
    - g4/valsim
  - DESY
    - tracking
    - geometry
  - IFH, Vienna
    - tracking
  - LLR, Paris
    - geometry
  - RAL
    - geometry (java, org.lcsim)
  - University of Cambridge
    - reconstruction PFA
- preliminary list -  
still need partner(s) from sLHC community...

# open issues

- request from CERN to continue VALSIM (geant4 hadron shower validation)
  - -> how to fit w/ current tasks ?
- requests (S.Stapnes and others) to include more sLHC partners !
  - so far rather little interest from (s)LHC side
  - possibly no real need for 'common software' development but rather exp. specific improvements...
  - might have to add 'task3: parallelization, GPUs and multiciores'
  - -> P.Mato will contact LHC software coordinators to ask for possible sLHC contributions
- will have to make links to other WPs ...