Computing, Simulation and Software

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FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

ERLANGEN CENTRE
FOR ASTROPARTICLE
PHYSICS

Physics Laboratory
School of Science and Technology
Hellenic Open University

Management and Working Groups

- Spokesperson
- Deputy Spokesperson
- Technical Project Manager
  - …
- Physics and Software Manager
  - neutrino astronomy
  - ORCA studies
  - simulation
  - software and computing

Simulations Working Group

- Simulations
  - maintenance/development/availability of simulation code
  - testing/cross-comparing the different simulation software modules
  - define/implement simulation input parameters and study their impact on detector performance
  - benchmarking of the MC code
  - simulation processing (production)
  - documentation of the simulation environment and data

- testing/cross-comparing the different simulation software modules
- Pseudo-experiments to check different simulation MC codes for light propagation and production from:
  - muons
  - all secondary particles from neutrino interaction (relevant for low energy neutrino studies – ORCA)
    - All neutrino flavors
    - GENIE input
- define/implement simulation input parameters and study their impact on detector performance
  - optical water properties
  - depth
  - detector layout

Software and Computing Working Group

- Offline software (reconstruction and analysis)
  - maintenance and development of reconstruction code
  - software framework
  - data processing/strategy
- Data handling
  - data formats
  - data base
  - data archive
- Computing Strategy and Hardware
  - data centre/computing hardware, networks
  - new strategies: GRID/cloud computing, parallelization
- IT Services
  - central services: webpage, wiki, elog, internal portal, ICT infrastructures
  - software development: versioning system, bug tracker
  - web data portal

Software

- simulation and offline software:
  (complete) overview in this session
  see talks by Annarita, Thomas, Apostolos, Agata, Dorothea
- tasks:
  - maintenance and development of reconstruction code
    - e.g. shower reconstruction is open
  - define standard software framework/packages
  - benchmarks, comparisons
  - documentation
  - data processing strategy (stages, delay times) …

Computing

- data handling:
  - data base: see talks by Arnauld and Christiano
  - data format: see talk by Tommaso
  - data archive: open
- computing strategy and hardware
  - LHC computing model proposed (Maarten, DS WP4)
  - CC Lyon as central computing centre (ESFRI questionnaire)
  - to start need numbers (event size, processing time, scaling, …)

    → open, computing strategy needed
- IT Services
  - what do we want/need, where to host?
  - open

Main Computing Centre

CC-Lyon interested in becoming KM3NeT main CC

current situation:

	ANTARES	KM3NeT
quota (HS06.h/a)	20 000 000	12 000 000
% of total resources	1.7%	1.0%
used in 2012 (HS06.h/a)	25 000 000	1 400 000
% of total resources	2.1%	0.12%

completed by:

- computing centres at partner institutes, e.g. at HOU (~1800 cores, 150TB disk space, available in ~ 3 months)
- cloud, grid … ?

Next Steps

- gain overview
  (work done, work to do, interests)
- set up communication
  (mailing list, phone calls/video conferences, …)
- set up task list and work plan
  (with responsible persons)
- get going

- if you are interested: please contact me

Main Computing Centre: Questions

simple strategy (JB): move quota from ANTARES to KM3NeT as ANTARES needs less resources

- but: is that true?
- but: we will need at least one order of magnitude more resources (quantify)
  → development plans of the CC?
- new concepts/strategies needed
  (at least for phase 2)
- can it host all central services
  (or head quarters)?