# Status Report from ILCDirac

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On behalf of the CLIC Detector and Physics Collaboration
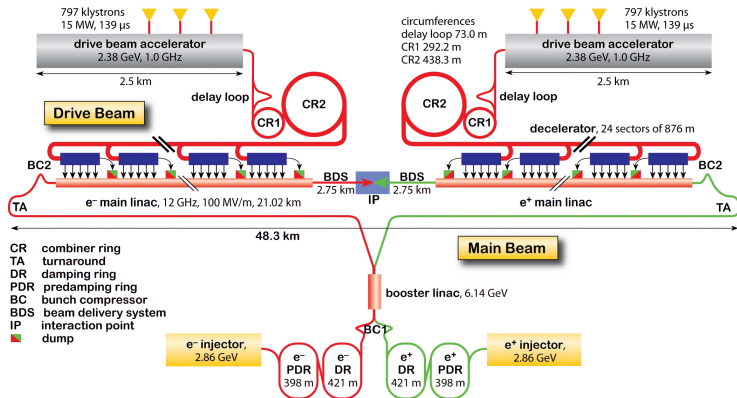
DIRAC User Workshop
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# Compact Linear Collider



- Most mature option for Multi-TeV lepton collider
- Enables precision studies of the Higgs and (Beyond) Standard Model physics complementary to the LHC

# CLIC Detector and Physics studies

- Evaluating the physics reach of the CLIC machine and detector optimisation:
  - Doing realistic full simulation and reconstruction studies including beam induced backgrounds at CLIC

From this $\times 10^7$

To this
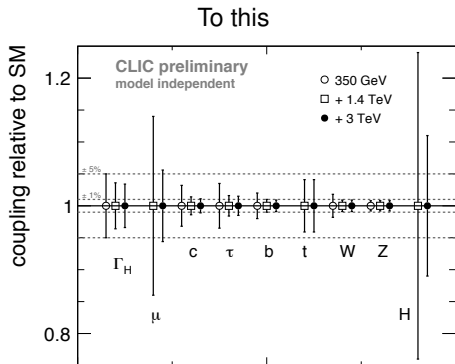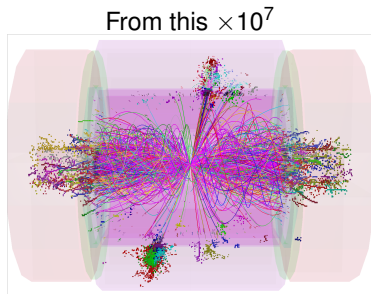
# ILCDirac

# What is ILCDirac?

- ILC VO: Virtual organisation for international Linear Colliders (CLIC and ILC)
- ILCDirac is an extension of the DIRAC system for the ILC VO
  - See S. Poss' presentation at last DIRAC User Workshop
  - J. Phys.: Conf. Ser. ILCDirac, a DIRAC extension for the Linear Collider community. Proceedings of CHEP2013. 513 In Press, CLICdp-Conf-2013-003
- Developed mostly by *Stéphane Poss*
- Used for **centralised production**, **user analyses**, and analyses of **test beam data** (Calice)
  - Was then also picked up by **SiD** and **ILD** detector concepts for the ILC
- Maintenance and administration now done by me (**and I am still learning!**)

# Parts of (ILC)Dirac in use
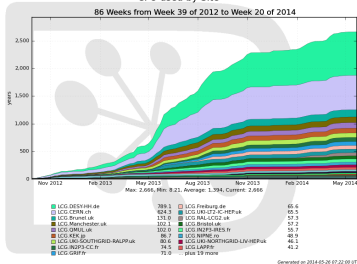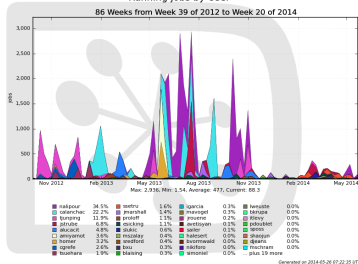
ILCDirac:

- User friendly wrapper around all applications used for linear collider studies: MC Generators, Geant4 simulations, reconstruction and analysis frameworks, ROOT
  - ► Application software is provided via ILCDirac
  - ► Coupling between the applications: Output file from one is input for the other, almost arbitrary chaining possible
  - ► Handling of overlay of beam-induced backgrounds without making SEs too angry
  - ► Production chains for CLICdp, SiD, ILD

DIRAC:

- Framework, Transformation System, Data Management (including *Dirac File Catalog*), Workload Management, Accounting, (Old) Webportal, *Request Management*, Storage Management

# Selected Experiences and Issues with DIRAC

# Overall

We couldn't handle the full simulation studies without the efficient use of the grid resources provided via ILCDirac

- High efficiency
- Bookkeeping of millions of files and their relationship and metadata
- Easy definition and extension of productions

# Dirac File Catalog

- Happy with the DFC: tab completion in CLI, performance, meta data used for transformation system
- We enabled ACLs a couple months ago
    - Because of our inconsistent use of proxies directory owner groups are totally mixed up
    - Some agents seem not to use proper credentials but identify as a host, which does not have any rights in the DFC
    - Did not have 'root' user (fixed now)
- Can we get an `execfile` command?
  Right now I paste list of commands into CLI

# Documentation

- Documentation of the DIRAC systems is somewhat incomplete
- I would prefer more clear instructions for installation and configuration
  - E.g.: Which agents/services/executors belong together
  - Some configuration parameters are not explained:
    For example WMS, JobCleaningAgent:
    "Variable: ProductionTypes      [Description] Production types"
    (these are production types which are *not* cleaned up)
- More descriptions of the *what* the different systems are doing

# Updating our System

# Moving to Up-to-Date DIRAC Version

- We did not update our DIRAC version for far too long
- Still running v6r8p28 in parts (not really clear as we did a roll-back before Christmas, web portal says one thing client says another)
- Now having v6r9p33 in testing (again):
  - ▸ Adapting to new `transferAndRegisterFile` signature
  - ▸ Including new Request Management System
- Then moving to v6r10, v6r11, . . .

# Moving Installation to new Machines

- Have to move services to new machines
  - Current machines (total 50 cores) running our DIRAC instance are running out of warranty
  - The Quattor configuration system will be shut-down soon
- Have to move to the new puppet configuration management system
  - Thanks to Joel Closier for the puppet manifests
  - I have first test machines up and running
- Now have to figure out how to distribute the services across my machines and try to move things with minimal downtime
- Move or create new LogfileSE, DiracSE and SandboxStore

Move DBs to different machines

- Have to change MySQL engines for FileCatalogDB (do I have to put the system in downtime for that?)
- AccountingDB is about 600GB

# Future Plans

- No more major developments of ILCDirac
  - Except: Integration of CVMFS for software deployment (mostly done, needs more testing)
  - Include new LC software packages into the WorkFlow
- Maintenance of the system
  - Maybe include Resource Status System

# Thanks

- (ILC)DIRAC used very successfully for CLIC detector and physics studies and the linear collider community in general
- Many thanks for the past and ongoing support