CNRS in GreenDIGIT

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GreenDIGIT meeting with EGI sites and VOs
28th March 2024

CNRS participants

- CNRS
  - French state research organization
  - Largest fundamental science agency in Europe (~ 33k employees)
  - Operates on the basis of research units

- CPPM
  - Experimental fundamental physics laboratory based in Marseille
  - Involved in multiple large High Energy Physics (LHC) and Astrophysics experiments
  - Coordinates the DIRAC Consortium activities
  - Operates the EGI Workload Manager service

- IPHC
  - Multidisciplinary research institute based in Strasbourg
  - Involved in several H2020 projects (i.e.: EGI-ACE - WP7.2)

Contribution to GreenDigit

- Contribute to the continuation of the EGI-ACE Green Computing Task Force
- WP3, WP4: Policy and technical recommendations, metric reporting
- WP6, WP7: Implementing algorithms to lower the environmental impact of HTC (DIRAC)
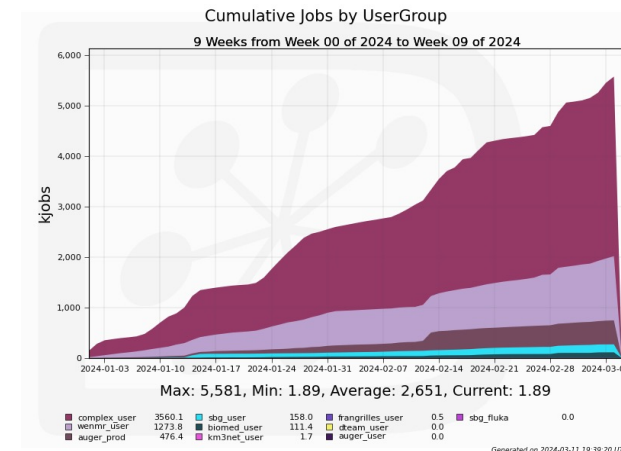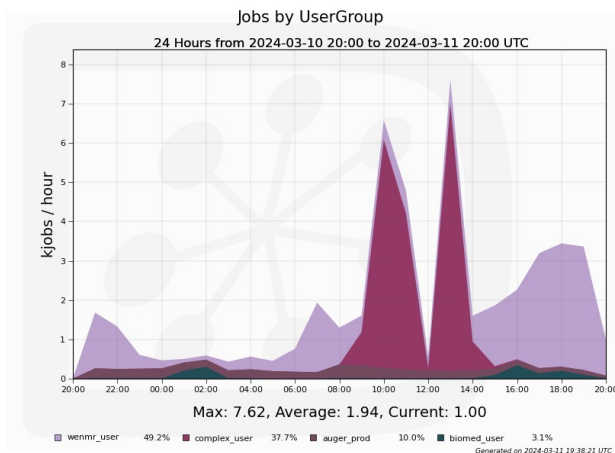- WP10: Dissemination of recommendations

EGI Workload Manager

➢ One of the services in the EOCS Marketplace Catalogue

https://marketplace.eosc-portal.eu/services/egi-workload-manager

  ➢ Development team in CPPM/CNRS

   ➢ Member of the DIRAC Consortium

  ➢ Managing user jobs running on the EGI computing resources (grid, cloud, HPC)

  ➢ Hosted by the IN2P3 computing centre, Lyon

Jobs by UserGroup
24 Hours from 2024-03-10 20:00 to 2024-03-11 20:00 UTC

Max: 7.62, Average: 1.94, Current: 1.00

wenmr_user	49.2%	complex_user	37.7%	auger_prod	10.0%	biomed_user	3.1%

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Cumulative Jobs by UserGroup
9 Weeks from Week 00 of 2024 to Week 09 of 2024

Max: 5,581, Min: 1.89, Average: 2,651, Current: 1.89

complex_user	3560.1	sbg_user	158.0	frangrilles_user	0.5	sbg_fluka	0.0
wenmr_user	1273.8	biomed_user	111.4	dteam_user	0.0		
auger_prod	476.4	km3net_user	1.7	auger_user	0.0		

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Job scheduling

- Pilot jobs are submitted to computing resources by specialized Pilot Directors

- Pilots retrieve user jobs from the central Task Queue and steer their execution on the worker nodes including final data uploading

- Pilot based WMS advantages:
  - Increases efficiency of the user job execution
  - Allows to integrate heterogeneous computing resources
  - Allows to apply efficiently community policies at the Task Queue level
  - Allows to prioritize computing resources usage
    - E.g. according to GreenDIGIT policies
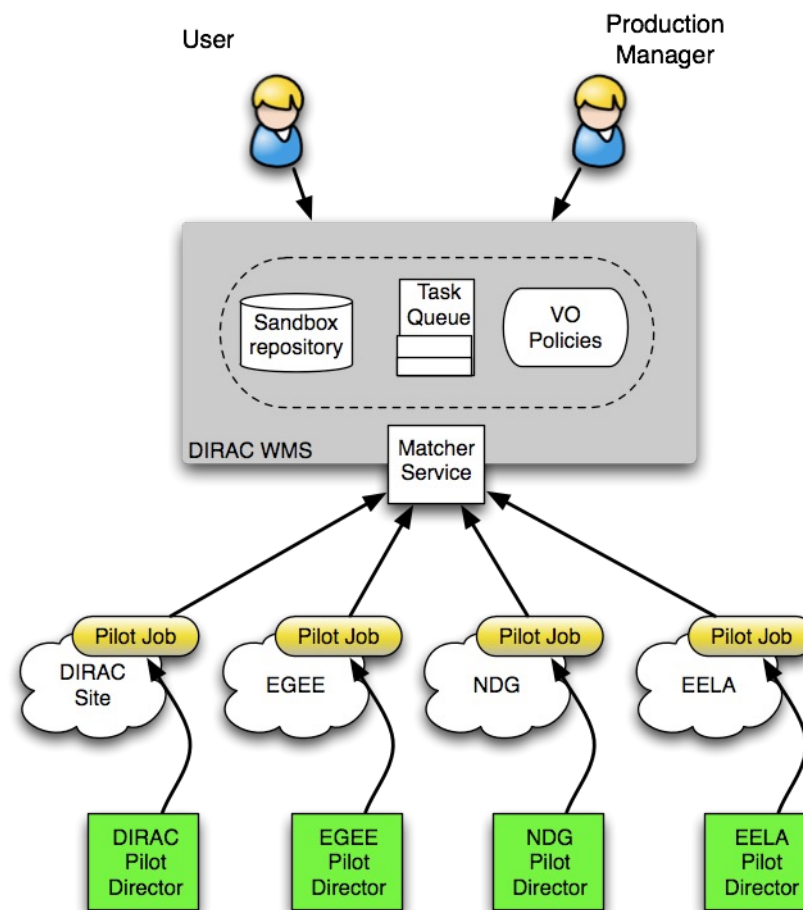
DIRAC for the GreenDIGIT Project

- Testing platform for GreenDIGIT policies
- Pilots can be used as probes for the site's "eco-properties" before selecting user payloads for execution
  - Assuming sites provide information on their "eco-metrics"
- Pilots can be instrumented to measure the exact consumption of CPU, I/O, etc by the user payload
  - Measuring correlation between payloads and « eco-impact » per site
- Central Task Queue optimization
  - Site preferential usage based on payload measured "eco-properties"