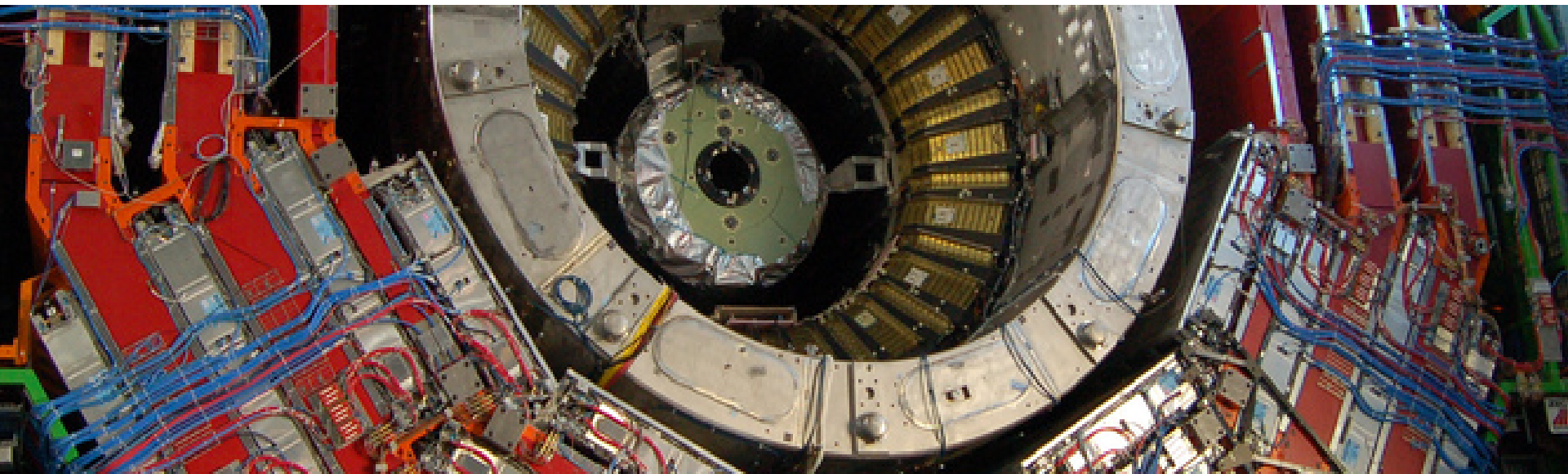# HTCondor-CE: Outlook

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HTCondor-CE: Deploy

- There are currently about 10-15 HTCondor-CEs deployed:

  - CMS, ATLAS,...

- WLCG sites are still waiting on SAMv3 improvements for to turn off GRAM.

- We hope to default all new installs to HTCondor-CE in the next OSG release.

- The CE is already integrated with the accounting system, monitoring system, etc - although encountered a few bugs along the rollout.

HTCondor-CE: Where are we going?

- **Sandbox management** - HTCondor has rudimentary support to limit the volume of file transferred per job. We're looking into how HTCondor might aggregate sandbox limits.

- **Alternate security mechanisms** - The CEDAR protocol allows the client/server to negotiate the security protocol; this gives sites the freedom to use different mechanisms (kerberos, shared password, etc).

- **Cloud/VM provisioning** - As the CE can route to any HTCondor backend, we believe this will be one mechanism to wrap some "grid-like" mechanisms (auth, queueing) in front of EC2-like resources.

- **Complex policies** - The sky is the limit! We are curious to see how sites will chain together routes, multiple CEs, implement complex routing policies.

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  - Example: "overflow pilots to another cluster if the local cluster has been under-pledged for 24 hours".
  - Example: the Fermigrid load-balancing across several internal clusters.

- Monitoring - We're looking to find reasonable "out of the box" monitoring that is not specific to the CE - just HTCondor

HTCondor-CE: Lessons learned (I)

- After a decade of Globus GRAM, we significantly underestimated how poor the OSG's GRAM documentation was.

    - Basically, sysadmins had memorized all the pieces and steps.

    - This caused major trouble when we replaced GRAM with HTCondor-CE but didn't do major improvements to the docs.

    - Even OSG's support staff didn't know what documentation they needed — they had basically memorized all the GRAM failure modes.

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- LESSON: Documentation is key and the development team often doesn't know what is missing.

HTCondor-CE: Lessons learned (II)

- JobRouter: Many sysadmins struggled with this component.

    - while we firmly believe it's a better model, changing from perl (imperative) to ClassAds (declarative) for transforms is a huge mental change for the admins.

    - debugging is tricky - you need to pull information from several log files, logging lines may be missing.

    - we gave this feedback to the HTCondor team and they have been working hard to remove sharp lessons.

    - several of the changes help prevent silly configuration errors.

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- LESSON: Almost none of these issues were predicted by the developers; get the product in the hands of friendly testers ASAP. You need friends who are willing to eat the dog food, BrianB says ;).

HTCondor-CE: Questions?