Operational Intelligence

...starting with Optimizing Computing Operations

WLCG/HSF workshop session

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What is this about?

- We want to:
  - Streamline operations
  - save manpower & improve resources utilization
  - Increase level of automation in computing operation tasks
- By:
  - leveraging common tools/infrastructure
  - Collaborate, share expertise, tools & approaches across LHC experiments (and possibly beyond)
  - Bottom-up approach

Why?

LHC computing working fine and delivering but can we do better?

- Operations still require a lot of human effort
  - For example >1k tickets/year/experiment (GGUS, JIRA, SNOW, you name it!)
- Lot of “recipes” around
  - Lack of analytical approach
  - Hard for non-experts to help

Why NOW?

- Computing systems mature and well-understood
- Clear request from funding agencies: push on commonalities
- ATLAS/CMS use common analytics/big data infrastructure/tools ES/HDFS/influxDB
- Easier to interest students/engineers (with background different from HEP) to work on topics using industry standard tools
- More experiments starting (or considering) using LHC-developed tools (for example Rucio, and FTS).
  - Share effort with wider community than LHC
- Success story: IML working group (Inter-Experiment ML)
- **We successfully started the x-experiments process to "discuss" about this topic**
  - For now CMS, ATLAS, HammerCloud, Rucio, MONIT

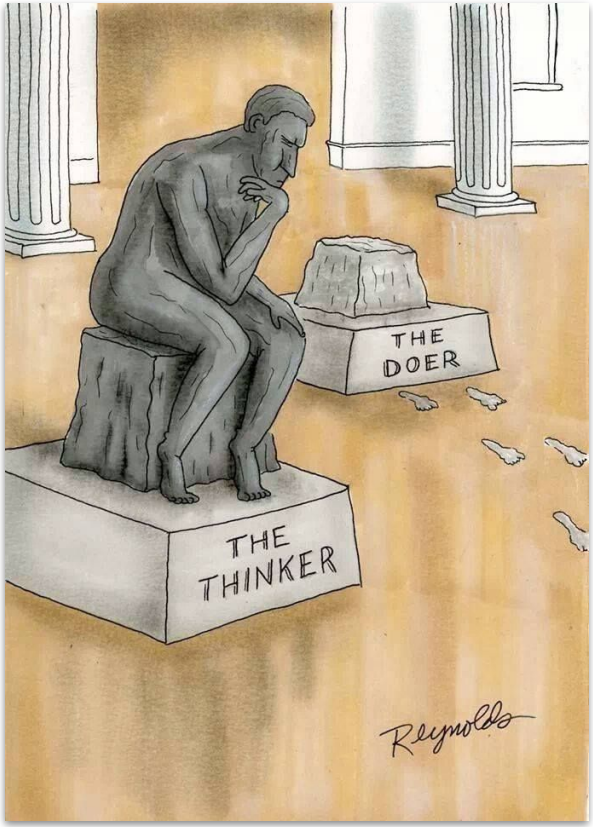
Today

- Review of which "intelligent" tools we already have in the experiments.
  - What is working well, what can be improved
  - What can be done better. What is not yet done
  - Which tools are we using
  - Many ‘smart’ tools promising in R&D never made it to production. Why?

- Gauge interest in this activity
  - Need Analytics & Monitoring experts to work together with operation experts

Tomorrow

- We propose to organize cross-experiment activities in this area by establishing a working group, with periodic meetings
  - To exchange ideas
  - Identify and propose common R&D projects
    - "look at data" challenges!
  - Foster R&D to reduce cost of operations
- Initial goals of the working group can be:
  - Identify common tools/needs/effort/use cases
  - Draft a whitepaper (an example is Machine Learning whitepaper) and a work plan (possibly with milestones/deliverable)
    - Draft (draft!) doc available here (without milestones!) comments/suggestions/etc welcome
  - Establish ways to collaborate
    - Common repository, documentation, regular meetings, hackathons...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