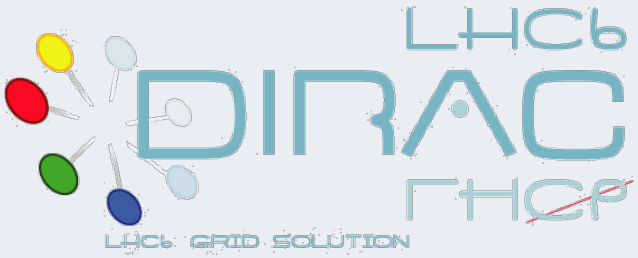
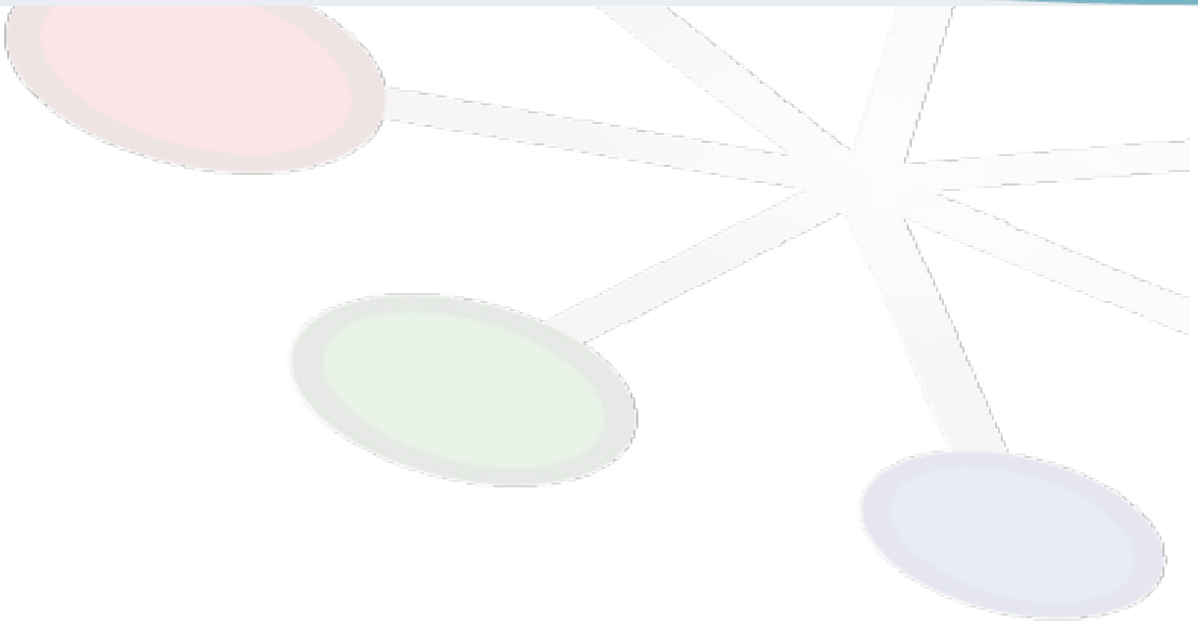
International Symposium on Grids and Clouds 2016
13-18 March 2016, Academia Sinica, Taipei, Taiwan

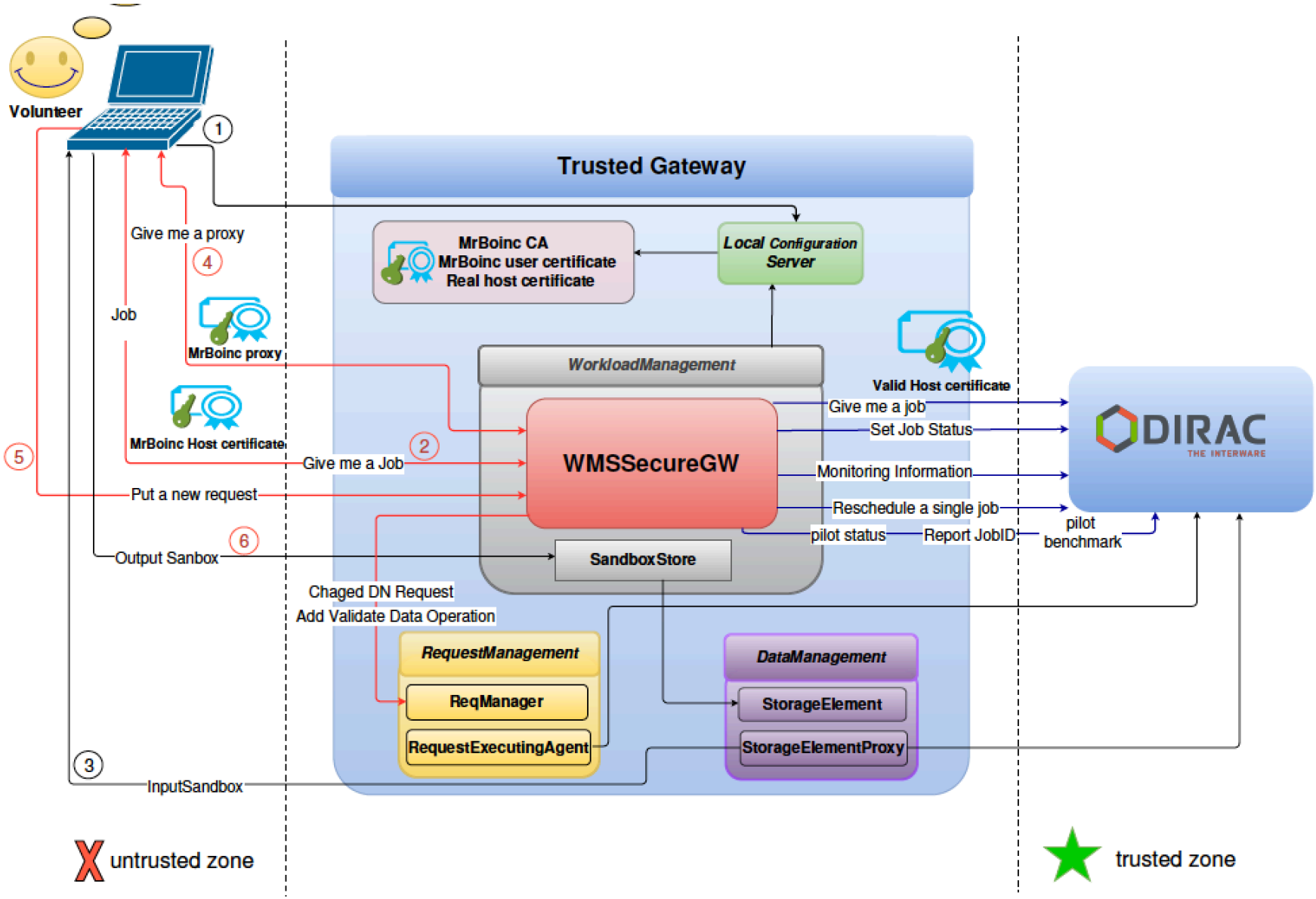


Secure gateway for Beauty@LHC



- BOINC project for volunteer computing running LHCb simulation jobs
- The problem:
  - Pilot jobs need to contact central LHCbDirac services
    - Job matching
    - Job status update
  - Jobs need to perform Data Management operations
    - Output file upload
  - We don't want to deploy real credentials (proxy or server certificate) on untrusted machines
  - We need to check that the files to upload are clean
    - The machine owner might inject malicious data
- The solution
  - Split the world in two:
    - Untrusted world (the volunteer's machine)
    - Trusted world (handled by LHCbDirac)
  - Introduce a gateway between the two worlds

The two worlds and the gateway



More details

- In the untrusted world:
  - Use fake credentials, using a fake CA (MrBoinc CA)
  - Credentials are associated to the BOINC Id of the user
    - Their only role is to communicate between the VM and the gateway
- In the trusted world:
  - The GW uses server certificate to obtain jobs
  - The GW uses the real credentials of the payload owner for DM operations
    - Obtained from the LHCbDirac proxy repository
- The gateway (running on a CERN VOBox)
  - Ensures the transition between the two worlds
  - Queues Data Management request
    - Using the standard DIRAC Request Management System
    - Adding a special operation:
      - Validate output files (log files + output data)
      - Output data must be ROOT files
      - Logfiles must contain specific informations

Conclusion

- Beauty@LHC is now ready for secure running
- The secure gateway is operational and jobs are being run using internal volunteers
- Next step: open to the general public
  - Before summer 2016