LHCb

Online

- LHCb Online provides the control, monitoring and readout for the experiment. It also manages all the owned hardware resources and is responsible for all data-handling until the data reach EOS
- Development of software and evolution of hardware resources follow the development of the experiment --> major changes usually targeting a LS
- R&D activities for Run4 now slowly starting: 400+ Gbit/s networking (RoCE) for DAQ, compute acceleration using FPGAs, energy efficient computing (heat re-use): collaboration on all of these most welcome
- Continuing collaboration with IT-FA (*data-centre & procurement!*), IT-SD, IT-CS, IT-DA (data-bases), CNIC (also for security), software licenses (RHEL)

SW infrastructure / distributed computing

- The current LHCb production system for both software and distributed computing infrastructures is based on many developments done through several years; a coherent view and strategic development is needed to modernize and make them sustainable in the long term. Critical items are:
  - Infrastructure for software development
    - Nightly Builds system (scripts, tools, dashboards, monitoring), software Deployment Tools, application configuration system, Testing Infrastructure, Software Productivity Tools, Software Release Manager Interfaces, Software Performance Measurement Infrastructure, Software Development Infrastructure, Compilers
  - Heterogeneity, e.g. architectural changes and compilation
    - Port LHCb software to non-x86 architectures (ARM, PowerPC), integrate with software development infrastructure
  - Modernization of distributed computing system
    - Use MONIT as common tool to improve and expand monitoring capabilities for admins, users and shifters, and to implement advanced monitoring of LHCbDIRAC agents and services
    - Implement modern ways of DIRAC service deployment, support of distributed computing operations in view of more automation and scalability
  - Exploitation of opportunistic resources (HPC, clouds)

Critical services

- We assume that critical services will continue to be supported / maintained / reviewed / developed / …
- Current situation taken from https://twiki.cern.ch/twiki/bin/view/LCG/WLCGCritSvc
  - Some updates needed (e.g. Monit)

Service	SNow FE/SE	urg	imp	crit
		LHCb		
Px-CC network	Datacenter-Network	10	10	100
LHC-OPN / LHC-ONE / GPN	Datacenter-Network	7	10	70
Oracle online	oracle-database	10	10	100
Oracle offline (inc. streaming)	oracle-database	10	10	100
DB-on-Demand	db-on-demand	10	10	100
CTA	CTA-service	4	7	28
EOS	eos-service	7	7	49
FTS	FTS	4	10	40
Ceph	Ceph-Service	10	10	100
CVMFS Stratum-0	cvmfs	4	10	40
CVMFS Stratum-1	cvmfs	7	10	70
Batch service	LXBATCH	4	7	28
CE	LXBATCH	4	7	28
IAM	WLCG-IAM	7	10	70
VOMS	VOMS	7	10	70
CRIC	cric	1	4	4
WAU / WSSA	WLCG-WAU WLCG-WSSA	1	4	4
BDII	BDII	1	4	4
Monit	monitoring	4	4	16
SiteMon	WLCG-Experiment-Probe-Submission	4	4	16
AI cloud services	cloud-infrastructure Configuration-Management dns-load-balancing	10	10	100
Lxplus	LXPLUS	10	7	70
GitLab	version-control	7	7	49
JIRA	JIRA-ITS	4	7	28
Twiki	twiki	4	4	16
Indico	indico	7	7	49
Video conf	zoom	7	7	49