



LHCb at Tier-2 sites going into Run 3

Andrew McNab

University of Manchester
GridPP, LHCb



LHCb advice to Tier-2 sites ...

... short version



KEEP CALM
AND
CARRY ON
RUNNING
LOTS OF
MONTE CARLO JOBS.
REALLY: LOTS AND LOTS.
AND THEN SOME MORE.
AND STORING DATA AND
RUNNING ANALYSIS JOBS
IF YOU'RE A TIER-2D



LHCb and Tier-2 sites ...

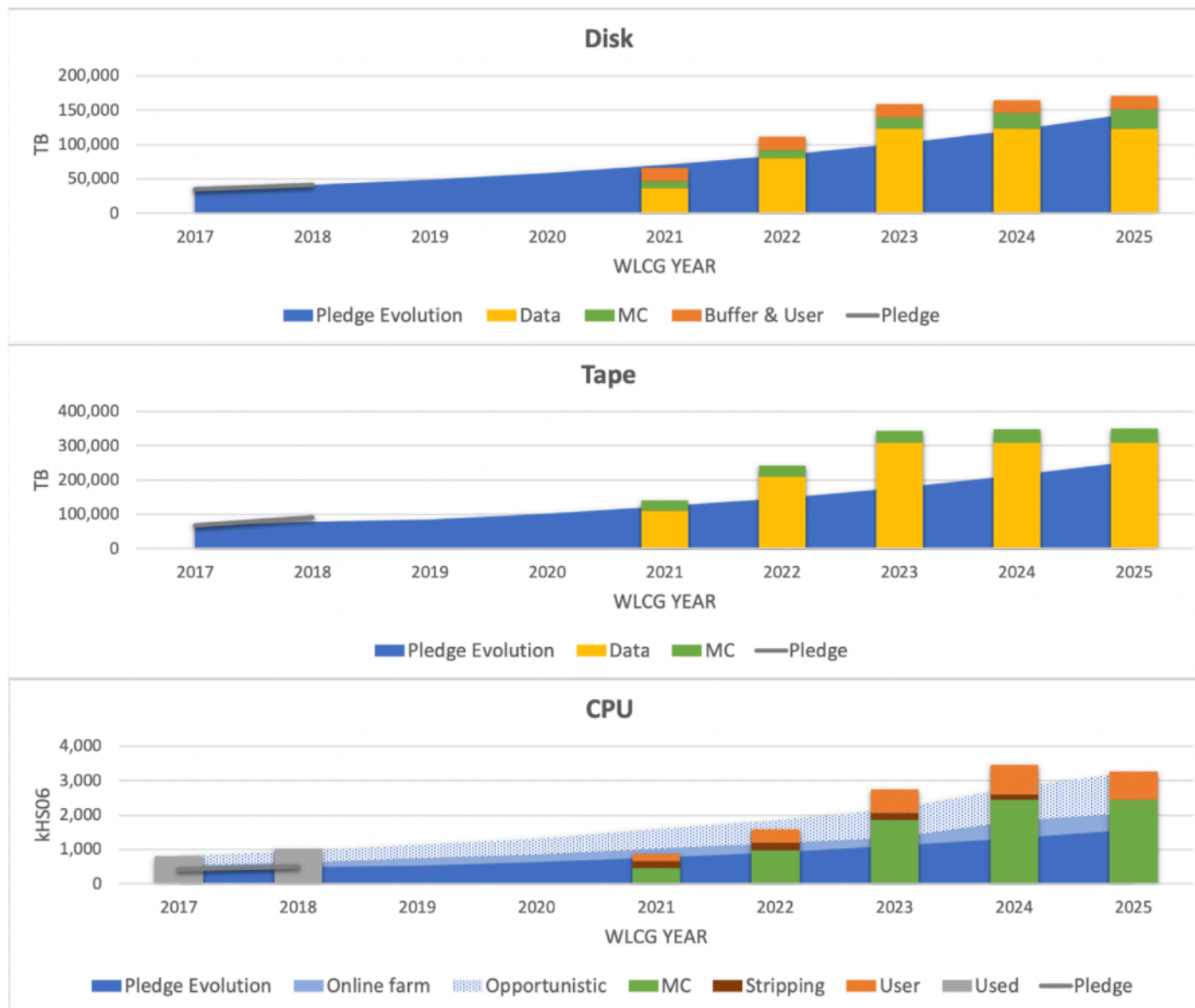
... long version

LHCb in Run 3

- During LS2 LHCb is having its major upgrade
- April 2019 C-RSG submission expected the event rate to the offline system to increase by a factor of ten
 - Event size also increases due to the appearance of pile up
- However a lot of work has been done to mitigate all this
 - In particular, 70% of events will now go to TURBO stream: fully reconstructed in the online farm and raw data discarded

Requirements evolution

- “Pledge evolution” assumes constant budget
- Online farm and Opportunistic CPU are not in WLCG pledges
- From C-RSG submission LHCb-PUB-2019-003



Implications for Tier-2

- MC dominates CPU requirements
 - Even at Tier-1s, most of the CPU is used for MC
- During LS1 / Run2 we did do some (re)processing at Tier-2s
 - But this year's stripping campaign is entirely at Tier-1s
- User analysis jobs increase significantly
 - And these do of course run at Tier-2D sites
 - Tier-2D disk requests will be proportionate to overall disk requests



New technologies

- LHCb aims to follow the grid/cloud technologies favoured by sites
 - So ARC/HTCondor-CE/OpenStack/Vac all ok
 - We are slowly adding HPC sites too
 - SRM-less operation already achieved at RAL Tier-1
- Some interest in GPUs on HLT but it's not something we're asking sites for
 - Although some LHCb analyses have used local GPUs
- LHCb DIRAC pilots detect CPU features (AVX etc) and match jobs accordingly: so can use old hardware



Summary

- Significant increase in CPU, disk and tape
 - Although much less than increase in underlying recorded event rate/sizes
- In Run 3 we will have a very similar picture to the current requests for Tier-2s
 - Lots of Monte Carlo
 - No special networking or hardware requirements
 - Tier-2Ds disk requests will increase in line with overall disk
- Numbers in this talk based on April 2019 C-RSG doc
 - August 2019 document is very similar for Tier-2s