LSST:UK introduction

- Introductions

- UK participation in LSST: model & schedule

- UK DAC: current work & short-term plans

- Some questions for today

Introductions - Backgrounds

- **Bob Mann**
  - LSST: UK Project Leader
- **Andy Lawrence**
  - Co-I for DAC work

- (Survey) astronomers

- Wide-Field Astronomy Unit
  - Sky survey data management
  - Virtual Observatory
  - ESA data processing (Gaia, Euclid)

- **George Beckett**
  - LSST:UK Project Manager
  - Maths and HPC
  - PM for projects with significant computation

- **Pete Clarke**
  - Particle physics
  - Networking
  - UK computing infrastructure

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UK participation in LSST
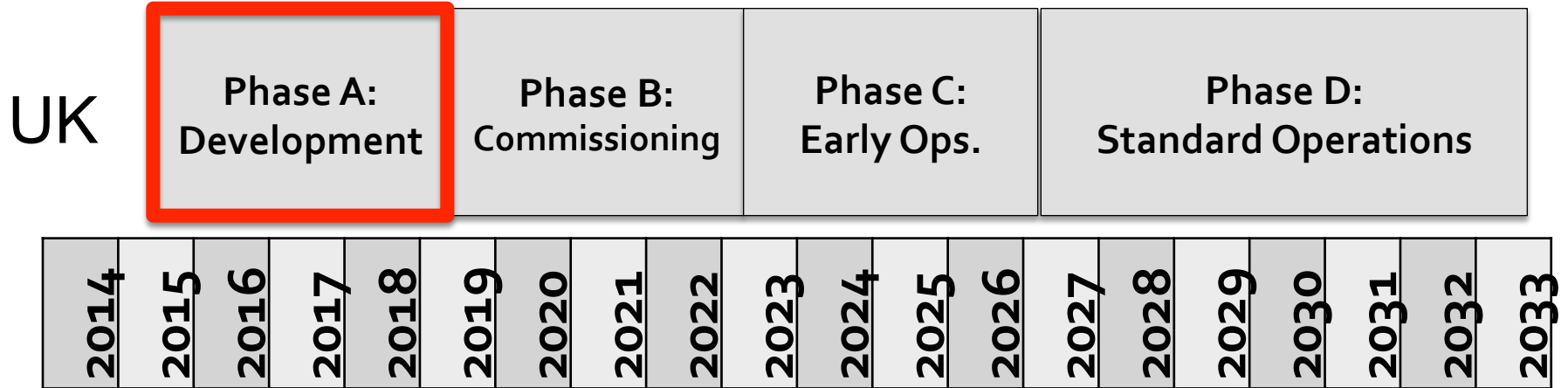

LSST:UK Consortium
(All UK astro groups)

Defines the programme of work for...

Works on behalf of...

LSST:UK Science Centre (LUSC)
(Funded effort in 7 universities)

Timeline for LSST:UK programme

UK	Phase A: Development	Phase B: Commissioning	Phase C: Early Ops.	Phase D: Standard Operations

2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033

- Phase A funding awarded in 2015
  - Outlined full programme in Phase A proposal

- Will submit Phase B proposal in Jan 2018

Four-part LUSC Programme

- **LUSC-DAC**: UK Data Access Centre

- **LUSC-DEV**: Software development towards Level 3 data analysis software

- **LUSC-EPO**: coordinated with US; from Phase B

- **LUSC-TRN**: training; from Phase B
  - Seek funding from EU?....not sure post-Brexit

Initial funding commitment

- Contribution to LSST operations to match MoA: funding for 100 Affiliate PIs

- Effort for Phase A (July 2015 – March 2019)
  - 6 staff-years for LUSC-DAC (Edinburgh) + testbed h/w

  - 16 staff-years for LUSC-DEV (6 universities): weak lensing, transients, solar system, Galactic structure, plus sensor characterisation

Phase A objectives

LUSC-DEV

- Get active in Science Collaborations and WGs

- Prepare for Level 3 analysis
  - Understand L1 and L2 products
  - Develop s/w where needed

- Prepare to engage in analysis of commissioning data

LUSC-DAC

- Prepare for DAC operations
  - Understand UK requirements
  - Understand project DM system
  - Develop s/w if needed
  - Develop funded ops model

- Support LUSC-DEV

- Prepare DAC for handling commissioning data

UK DAC assumptions

- UK community wants to operate its own DAC
  - Likely to run (mostly) on shared infrastructure

- DACs are likely to end up coordinating efforts
  - Understand that current official position is different

- Keen to start technical interactions with you now
  - Don't want to distract you; can we help you?
    - Mario: keep in contact; share technology experience & plans

Current DAC-related work

1. qserv testbed
2. Supporting transient science
3. Running analysis jobs on GridPP
4. Deploying LSST software for users
5. Developing DAC implementation plan

1. qserv testbed

- Implement an existing WFAU archive in qserv
- Test performance with queries from logs

- Chosen UKIDSS DR8 (wsa.roe.ac.uk)
- 2-3 TB in SQLServer; thousands of queries in log

- Converted schema to MySQL and loaded data
- Tested ingesting into qserv
  - Installing testbed servers before completing ingest

- *Try running a Pan-STARRS1 service in qserv?*

2. Supporting transient science

- Major scientific focus for UK community
  - Want full transient stream to reach UK; willing to republish as quid pro quo for getting that

- Want to set up test broker (COMET)
  - Fire simulated events (alertSim?) & test filtering

- *Fire LSST-speed PS1 event stream at broker connected to qserv database*

3. Running analysis jobs on GridPP

- GridPP: UK part of Worldwide LHC Computing Grid
- Testbed for future national computing infrastructure to cover particle, nuclear, astro

- Joe Zuntz ran Dark Energy Survey galaxy shape measurement code on GridPP – all file-based

- *SN lightcurve simulation jobs – adds database*
- *Have offered GridPP cycles to DESC for DoE proposal*

4. Deploying LSST s/w for users

- How to support Level 3 analysis in DAC?
- Support user-focused workshop in late April

- Effective way to keep up to date with L1/L2 s/w
- Enable users to build L3 s/w on top of that
  - Same environment for development & deployment

- Euclid: experience with VM images
- *Playing with interacting Docker containers*

5. Developing DAC implementation plan

- Jan 2018 Phase B proposal needs costed ops plan
- Expect to rely on national infrastructure
  - Don't know details yet – OpenStack?

- Need to understand how we will receive data
  - L1 transient alerts and L2 annual data releases

- Need to understand how international Science Collaborations will work across DACs

Some questions for today

- Interactions
  - How can we engage without burdening you?
  - Higher-level planning and detailed questions

- L1 alert stream
  - Your plans and likely constraints on what we can do

- Data release distribution
  - e.g. steady trickle or one-off dump

- *Are their mutually beneficial tests we can start doing now to get our technical staff interacting?*