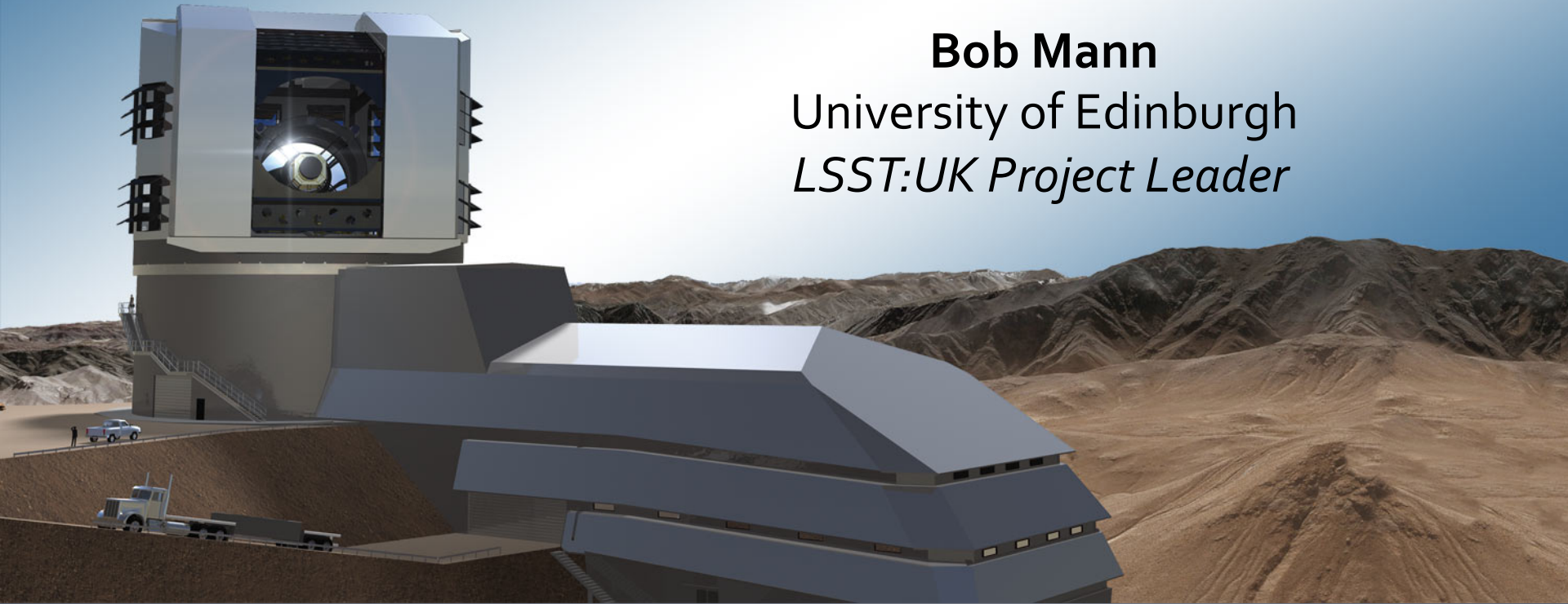


# UK Participation in LSST

**Bob Mann**

University of Edinburgh  
*LSST:UK Project Leader*



[www.lsst.ac.uk](http://www.lsst.ac.uk)

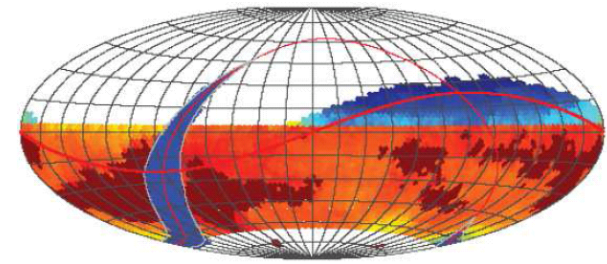
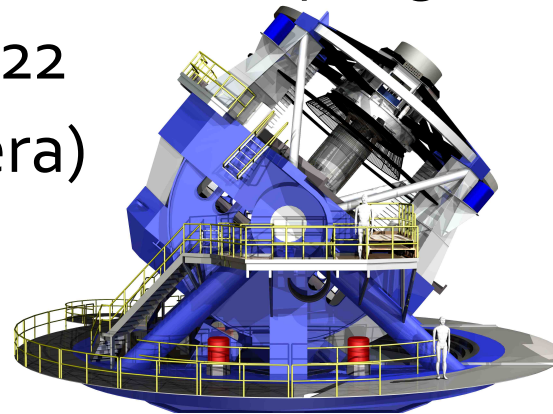


# Scientific engagement with LSST

- Introduction to LSST & LSST:UK – *Bob Mann*
- LSST Science Collaborations – *Sarah Bridle*
  - Dark Energy – *Sarah Bridle*
  - Transients – *Ken Smith*
  - Solar System – *Wes Fraser*
  - Galaxies – *Sugata Kaviraj*
  - Informatics & Statistics – *Jason McEwen*
  - Milky Way – *Wyn Evans*
  - Active Galactic Nuclei – *Carole Mundell*

# LSST Basics

- Large optical survey telescope to be located in Chile
  - annular primary 6.5m effective; 9.6 sq. deg FOV
- Ten year survey from ~2022
- US-led: NSF + DoE (camera) plus foreign partners
- Four science themes
  - Probing dark energy and dark matter
  - Mapping the Milky Way
  - Exploring the transient optical sky
  - Taking an inventory of the solar system

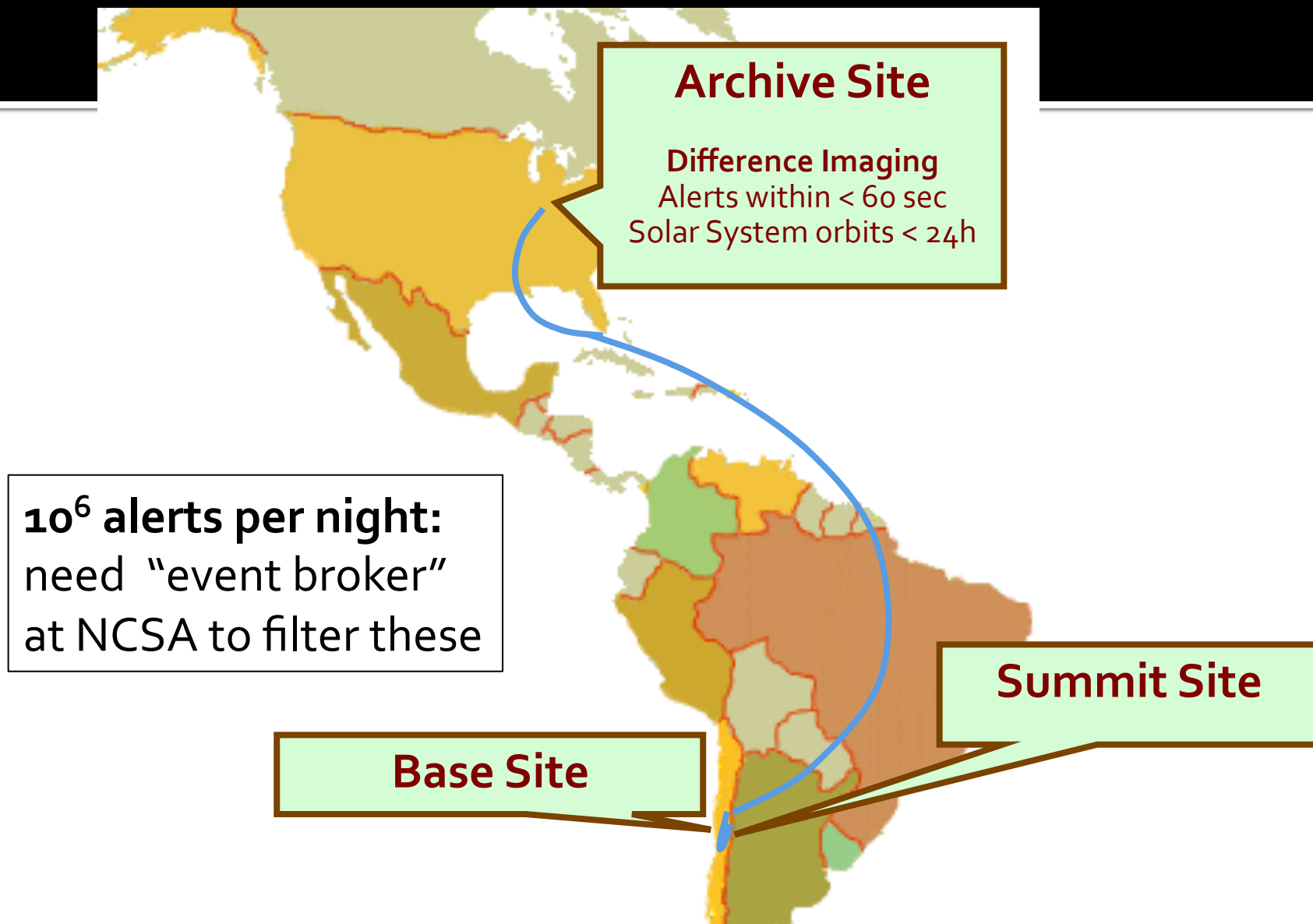


**system design: Ivezić et al (arXiv:0805.2366)**

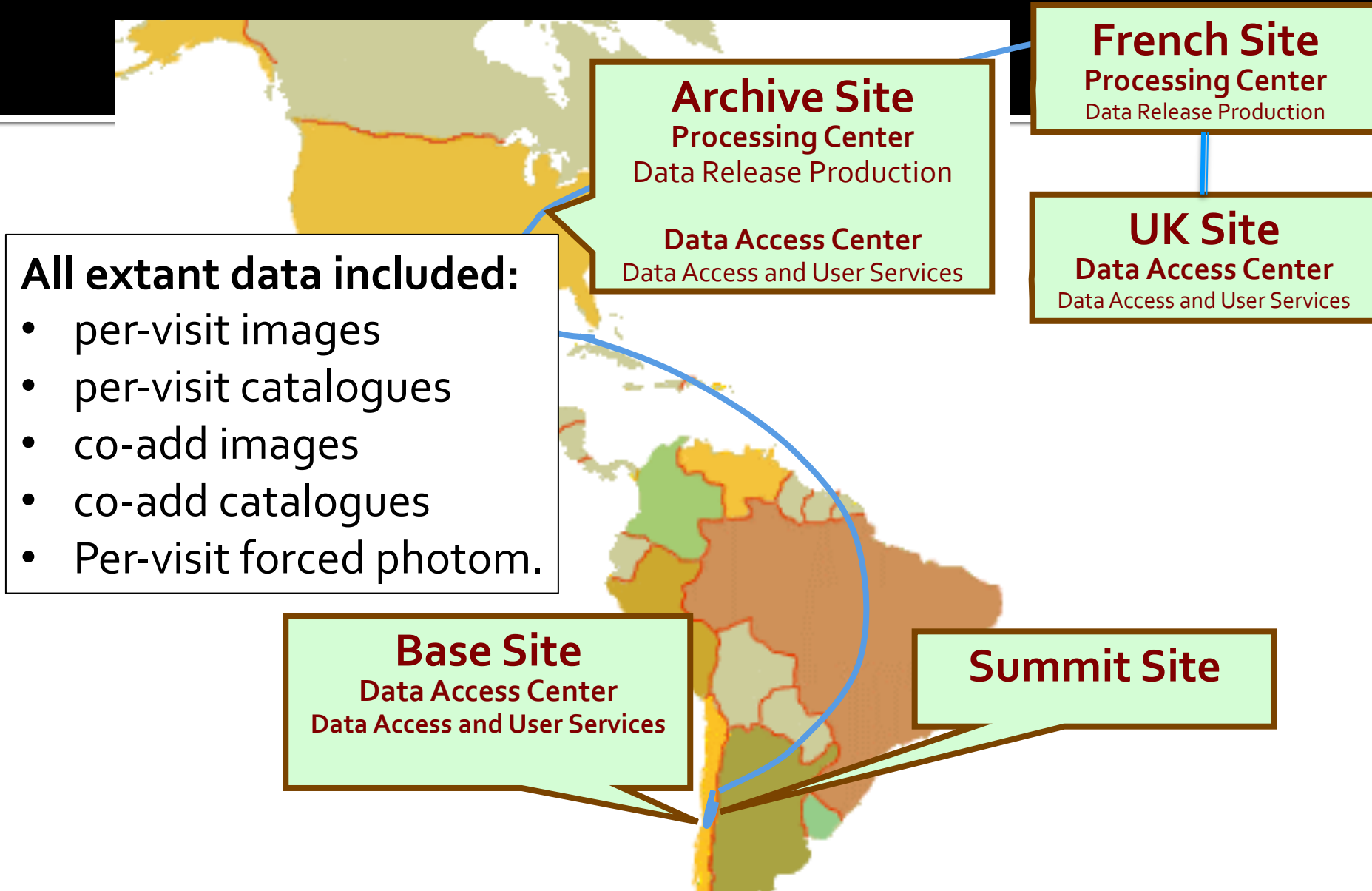
# High-level survey requirements

Survey Property	Performance
Main Survey Area	18000 sq. deg.
Total visits per sky patch	825
Filter set	6 filters (Ugrizy) from 320 to 1050nm
Single visit	2 x 15 second exposures
Single Visit Limiting Magnitude (5 $\sigma$ point source, AB)	u = 23.9; g = 25.0; r = 24.7; i = 24.0; z = 23.3; y = 22.1
Integrated limiting mag (5 $\sigma$ ps, AB)	u = 26.3; g = 27.5; r = 27.7; i = 27.0; z = 26.2; y = 24.9
Photometric calibration	< 2% absolute, < 0.5% repeatability & colors
Median delivered image quality	~ 0.7 arcsec. FWHM
Transient processing latency	< 60 sec after last visit exposure
Data release	Full reprocessing of survey data annually

# Data Products: Level 1 – nightly processing

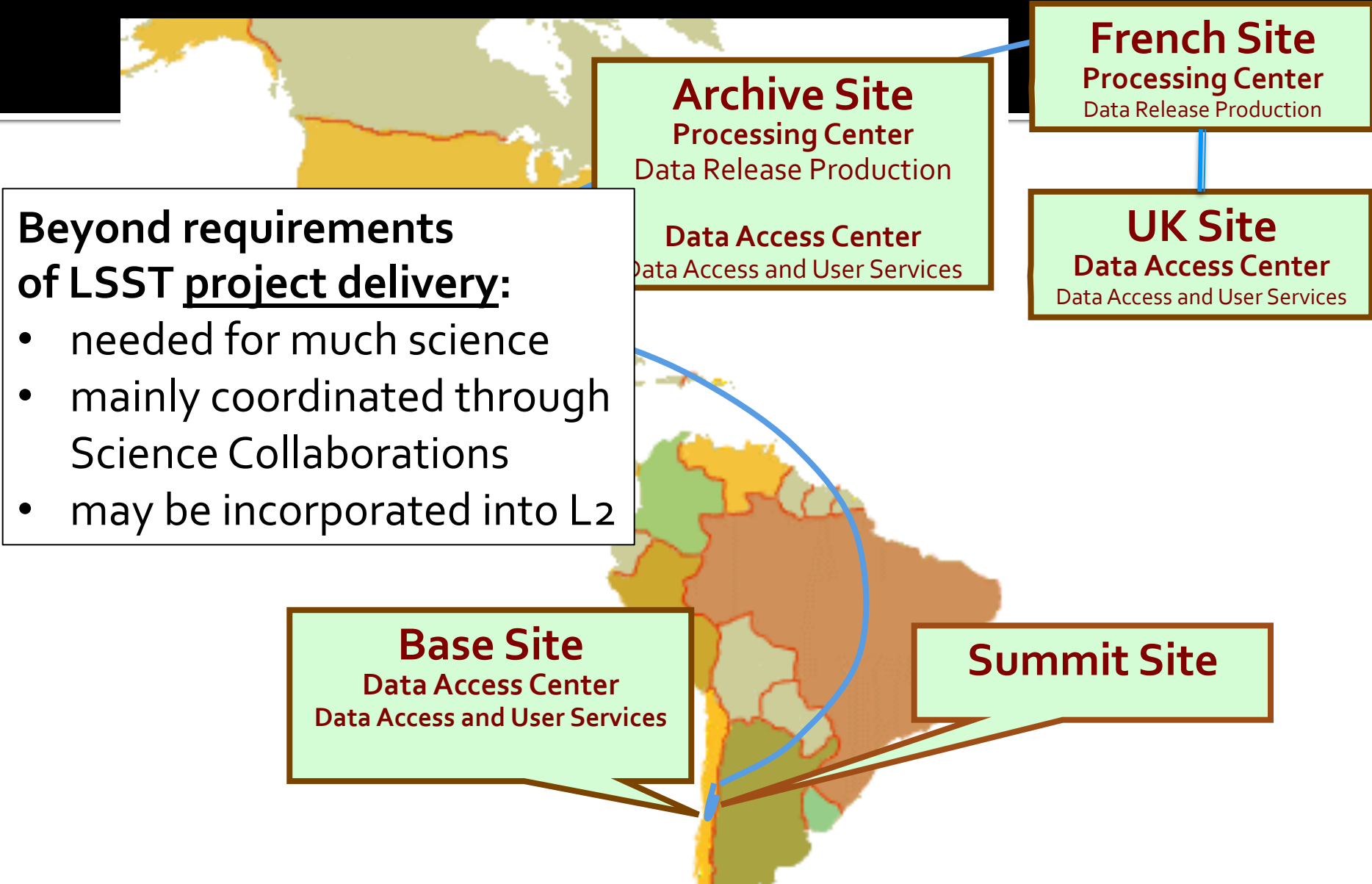


# Data Products: Level 2 – annual data release\*



\* Twice in Year 1

# Data Products: Level 3 – user-created products



# UK participation in LSST

LSST:UK  
Consortium



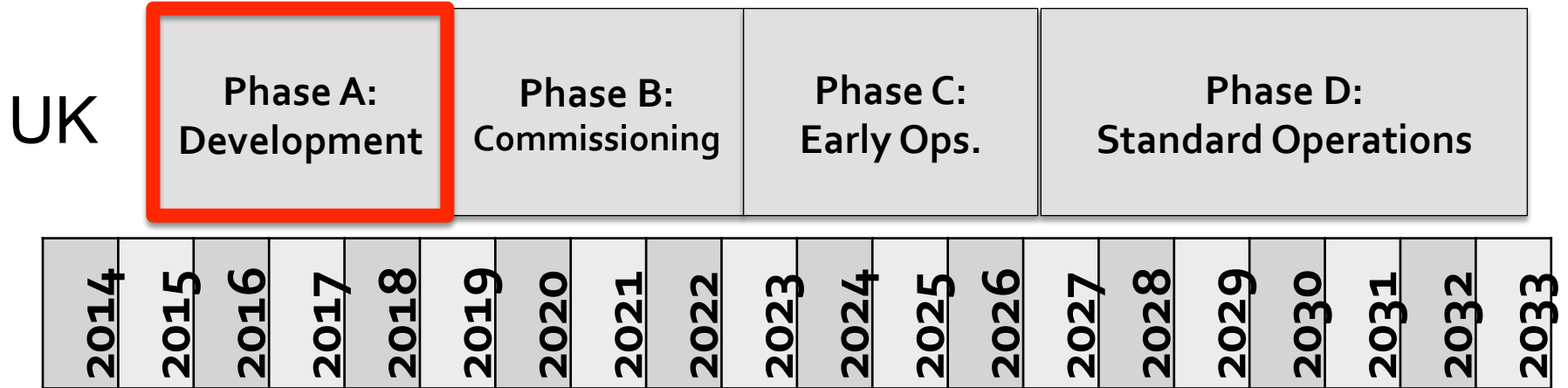
Defines the  
programme  
of work for...

Works on  
behalf of...

LSST:UK Science Centre (LUSC)



# Timeline for LSST



- 1 August 2014: start of construction project
- October 2019: telescope First Light
- October 2022: start of main survey operations
- September 2032: end of main survey

# LUSC Phase A Funding: £17.7M

- Phase A runs from 1 July 2015 to 31 March 2019
- £15M contribution to operations (“subscription”)
  - 100 Affiliate PIs – faculty
  - 400 Junior Associates – postdocs and students
- £2.7M preparatory work
  - 16 s.y. prototyping Level 3 software
  - 6 s.y. preparing for UK Data Access Centre

# Summary

- LSST is fast becoming a reality



- Now is the time to start engaging scientifically
  - Later talks will tell you how and on what
- Growing quantity of info on the website ([www.lsst.ac.uk](http://www.lsst.ac.uk)) and wiki (linked from it)
  - Email me ([rgm@roe.ac.uk](mailto:rgm@roe.ac.uk)) with any questions