

Data Central and the Optical Data Centre

odc.org.au

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Astronomy Australia Ltd.



Australian National University



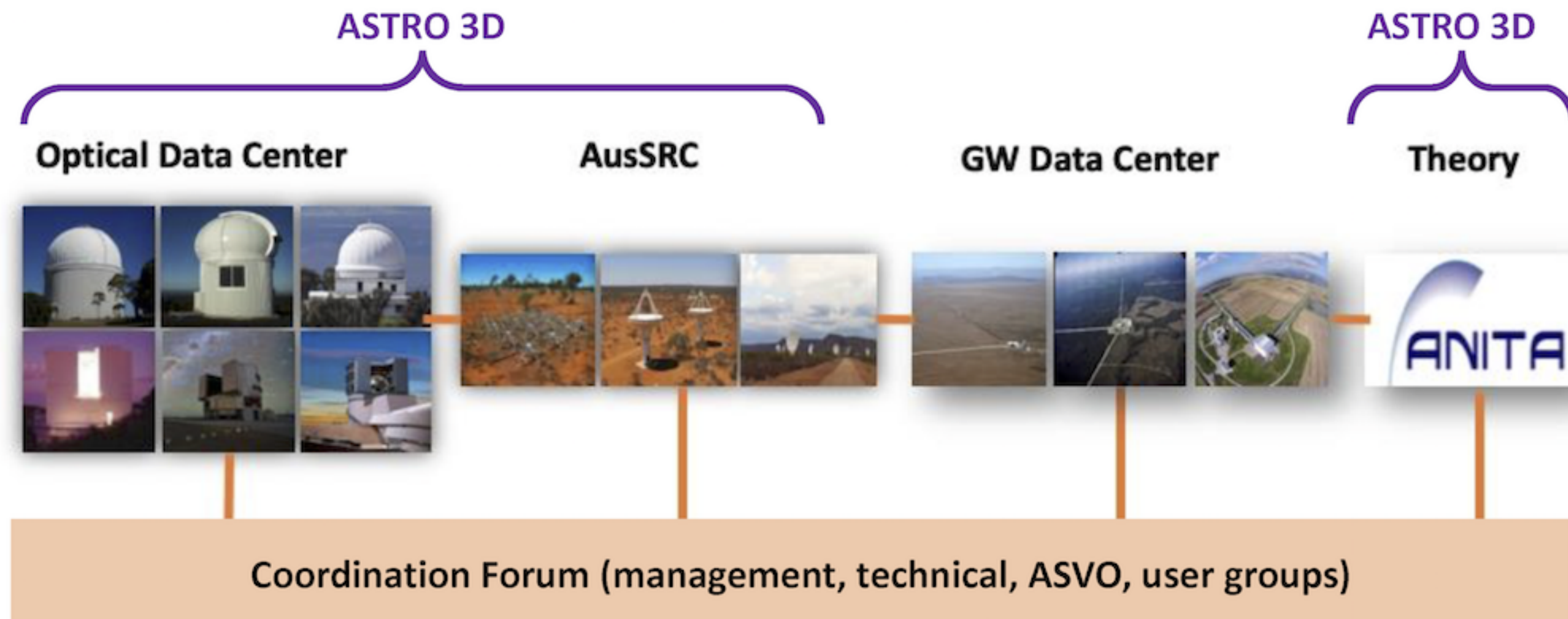
MACQUARIE
University
SYDNEY · AUSTRALIA



The SkyMapper Telescope at Siding Spring Observatory – ANU

The Optical Data Centre

A Collaboration between Data Central and SkyMapper



From <https://astro3d.org.au/data-intensive-astronomy/>

What is Data Central?

Data Central brings together an array of **heterogenous** astronomical data in one accessible, feature-rich data portal, maximising the scientific return on datasets of national significance.

We serve team-curated data products and documentation alongside federated data from remote data portals, providing access for novice astronomers, expert survey-team members, and members of the public alike.

Why Data Central?

We have two key reasons to exist:

1. Save the data!
2. Help research teams!

We also support research centres such as ASTRO3D and Macquarie's Research Centre for Astronomy, Astrophysics, and Astrophotonics



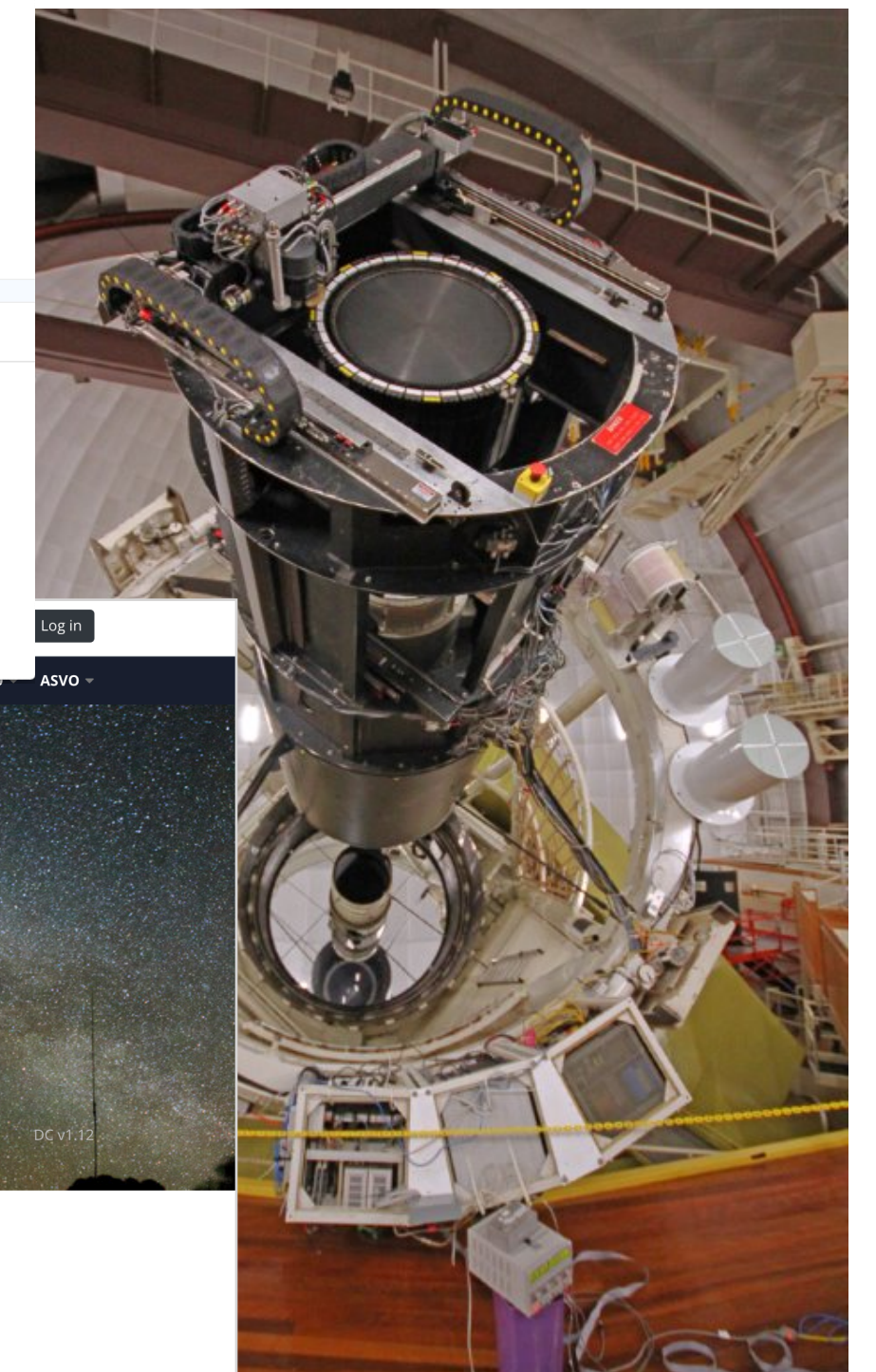
ASTRO3D



Data Central

- Hosted by AAO Macquarie
- Several Virtual Observatory protocols
- Launched 2017
- AAT legacy data archive, 40+ years
- Heterogeneous survey data (optical and other wavelengths)
- UI and API access

data central



SkyMapper

- A dedicated survey telescope taking a giant survey of the entire southern sky
- Six carefully selected filters, based on Sloan, but with an extra filter across the Balmer decrement
- See Marc White's talk tomorrow for more details!



The Optical Data Centre

- Integrate Data Central and SkyMapper ASVO
- Funded by AAL (via NCRIS)
- Hosting raw and processed data from multiple telescopes, mainly optical/infrared, but not exclusively!
- Live ingestion of AAT data to NCI (in progress)
- Building and expanding Virtual Observatory tools
- Giving teams better collaboration tools

ODC at NCI

- ODC is working with NCI to provide high availability for raw telescope archives
- The AAT Archive is currently being adapted to the NCI environment
- We aim to deploy an automated version of the 2dFdr pipeline over the next 12 months

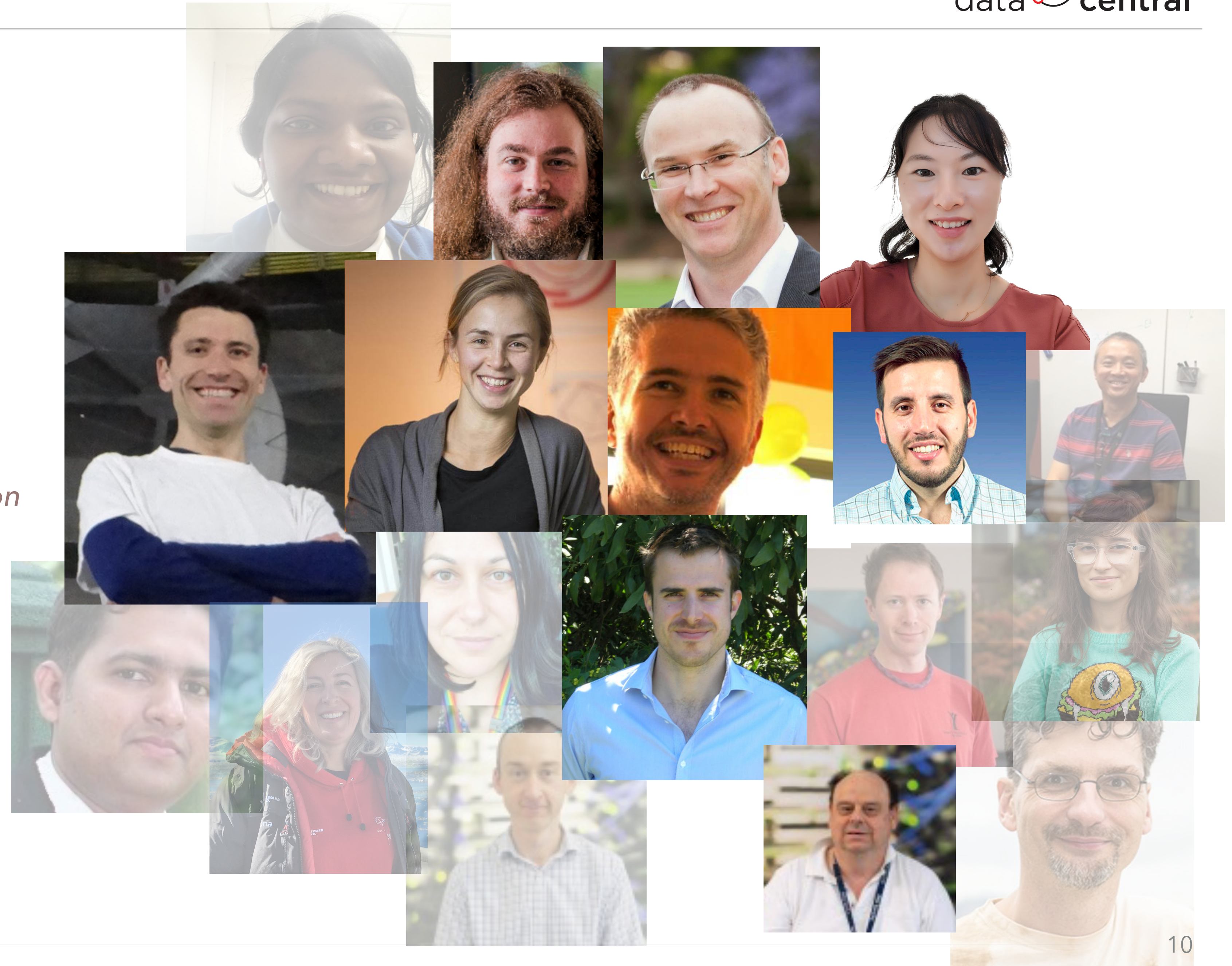
ODC and ADACS

- The ODC supports the ADACS Merit Allocation Program
- In particular we:
 - Support optical/infrared data pipelines
 - Provide assistance with ESO-related projects
 - Develop and host web applications to support researchers' needs

Team (2015+)

- Norrie Bennie
- **David Clarke**
- **Robert Cohen**
- Nuwanthika Fernando
- Andy Green
- Lloyd Harischandra
- Andrew Hopkins
- **Felipe Jiménez-Ibarra**
- Natalia Lowson

- **Elizabeth Mannering**
- **Brent Miszalski**
- Aina Musaeva
- **Simon O'Toole**
- *Andrew Robinson*
- Katrina Sealey
- **Kate Sheng**
- **James Tocknell**
- Minh Vuong
- **Marc White**
- *Christian Wolf*



















The Virtual Observatory

- The Virtual Observatory aims to make data more accessible and discoverable
- Data Central and SkyMapper currently make up separate nodes of the VO
- The ODC aims to bring the two nodes together
- More on the Virtual Observatory soon!

Goal: Save the data!

- Tens of millions of galaxies
- Billions of stars
- All-sky coverage in multiple bands
- Thousands of cubes
- Millions of spectra
- Many small (lost) datasets!
- Private data access → useful for refereeing papers!

| | | | |
|--|--|---|--|
|  SAMI |  OzDES |  GLEAM-X |  GALAH |
|  RAVE |  GAMA |  MAGPI |  Hector |
|  Hi-KIDS |  Huntsman |  6dFGS |  Veloce |
|  2dFGRS |  SkyMapper |  DEVILS |  Your Data |

All the data!

- GAMA DR 2 and 4 (soon!)
- SAMI DR 1, 2, 3
- GALAH DR 1, 2, 3
- OzDES DR 1, 2
- DEVILS DR 0, 1 (soon!)
- RAVE DR 5
- WiggleZ Final DR
- 2dFGRS Final DR
- 6dFGS Final DR
- S7 DR 2
- GLEAM-X DR 1 (soon!)
- LoBES DR 1 (MWA - soon!)
- S5 DR 1 (soon!)
- DWF DR 1 (soon!)

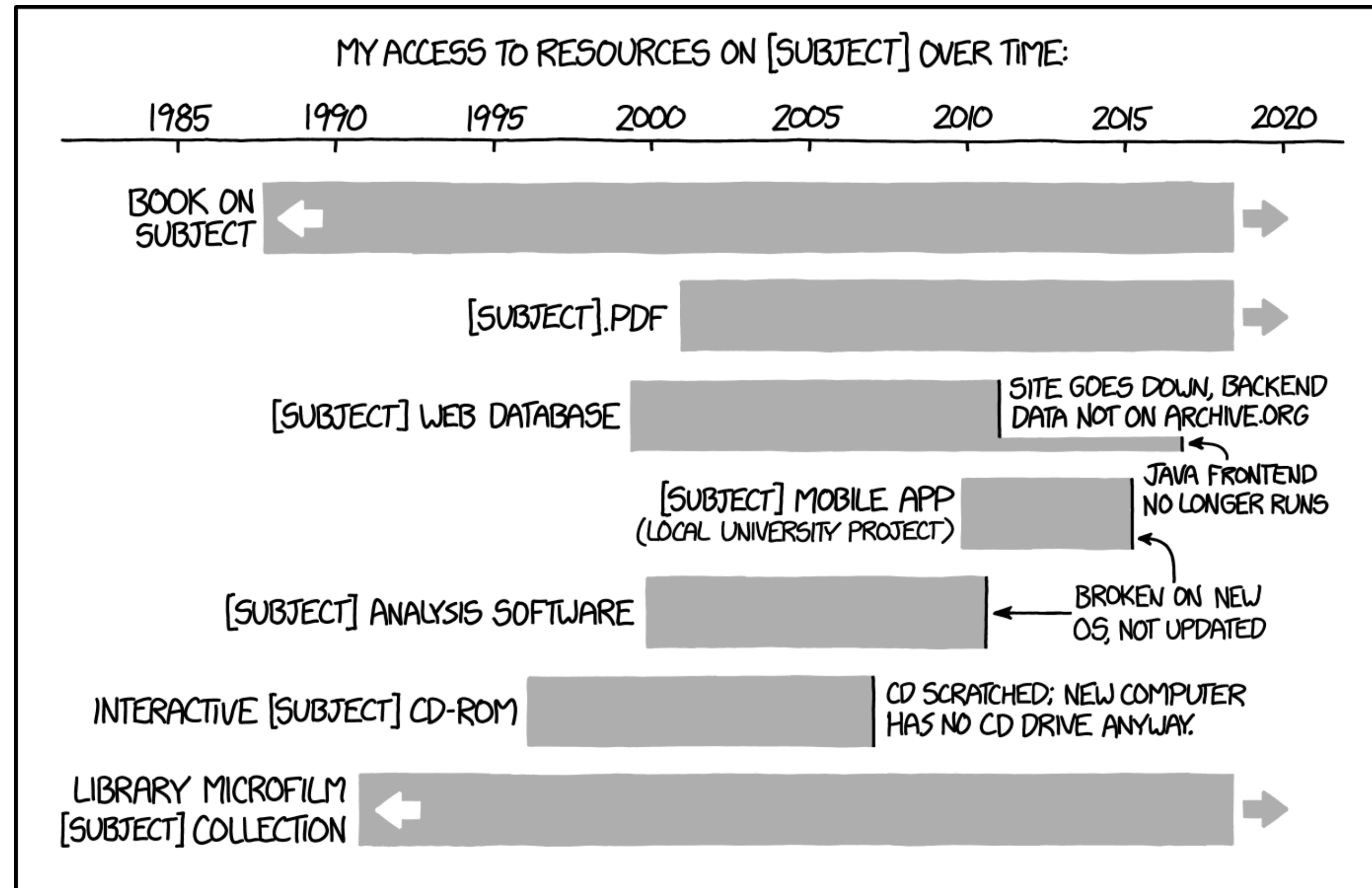
Goal: Help teams!

- Provide systems and services that help teams do research:
 - Cloud
 - Document Central
 - Compute
 - Wikis
 - Zulip Instant messaging
 - Data Aggregation Service
 - Target list helpers
 - ADACS Merit Allocation Program support

Full Data Life Cycle Management

- A key goal of Data Central and the Optical Data Centre
- This includes tools to run your survey:
 - Data acquisition and archiving
 - Data reduction/processing
 - Documentation
 - Team management
 - Data analysis
 - Data publication and access

Questions?



IT'S UNSETTLING TO REALIZE HOW QUICKLY DIGITAL RESOURCES CAN DISAPPEAR WITHOUT ONGOING WORK TO MAINTAIN THEM.