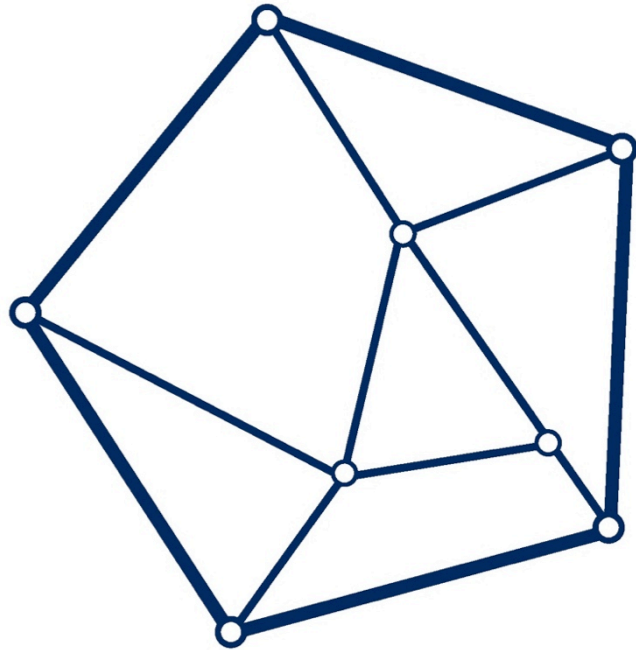




CAASTRO
ARC CENTRE OF EXCELLENCE
FOR ALL-SKY ASTROPHYSICS



THE UNIVERSITY OF
SYDNEY



ARC Centre of Excellence for All-Sky Astrophysics: A New Way of Looking at the Sky

Bryan Gaensler
CAASTRO Director
www.caastro.org





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FOR ALL-SKY ASTROPHYSICS

ARC Centres of Excellence

- › **Prestigious hubs** of expertise
- › Undertake highly **innovative** research
- › **Link** existing research strengths
- › Provide **high-quality training**
- › Opportunities to work on **large-scale problems** over long periods of time

- › ***Centre for All-sky Astrophysics***
 - seven years of funding (2011-2018), budget of ~\$4M/year
 - budget: 75% staff/students/travel, 4% equipment, 17% admin, 4% outreach
 - Director, Advisory Board, annual reports, KPIs ...



Australian Government

Australian Research Council



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The CAASTRO Vision



- › New wide-field optical & radio telescopes
- › Powerful supercomputers to analyse the data
- › To exploit this opportunity, we now need:
 - a network of skilled researchers
 - a coordinated approach to complex experiments
 - a platform for maintaining a competitive advantage



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ARC Centre for All-sky Astrophysics

123 people (82 scientists, 25 students)





› THE EVOLVING UNIVERSE

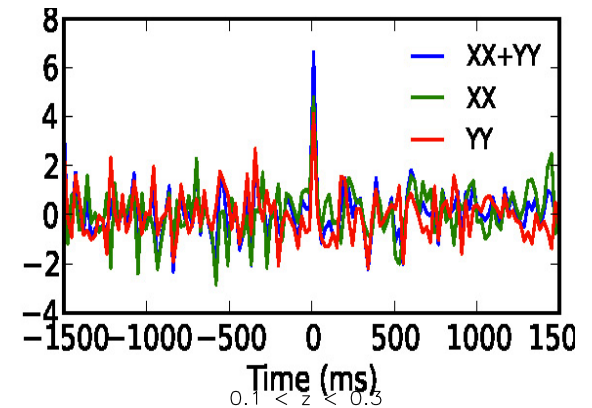
- When did the first galaxies form, and how have they then evolved?
- BIGHORNS: custom experiment to detect global reionisation signature (Sokolowski et al. 2012)



CAASTRO / Curtin

› THE DYNAMIC UNIVERSE

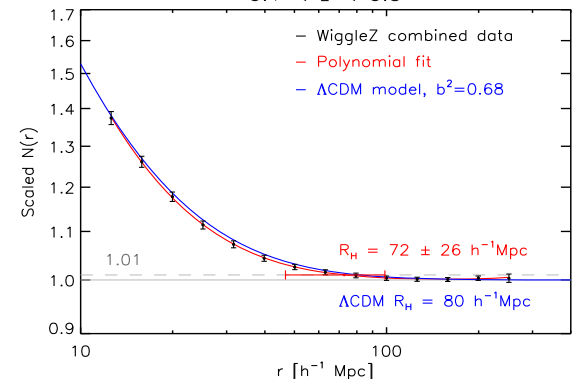
- What is the extreme physics that drives change in the Universe?
- prompt radio signals from GRBs (Bannister et al. 2012)



Bannister et al. (2012)

› THE DARK UNIVERSE

- What are the Dark Energy and Dark Matter that dominate the cosmos?
- largest ever study of cosmic homogeneity (Scrimgeour et al. 2012)



Scrimgeour et al. (2012)



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CAASTRO Programs & Initiatives

- › Workshops & conferences
 - GPU programming (Oct 2012)
 - global reionisation signatures (Nov 2012)
 - simulations of galaxy formation (Mar 2013)
 - “High Redshifts in the Red Centre” (Jul 2013)
- › Video conferencing and busy weeks
- › Visitor program
- › NCI flagship allocation: 8 million core hrs / year
- › Training, education & outreach
 - formal mentoring & professional development
 - “CAASTRO in the Classroom”
 - Tafelmusik national tour
 - animation & YouTube content
 - games & television documentaries



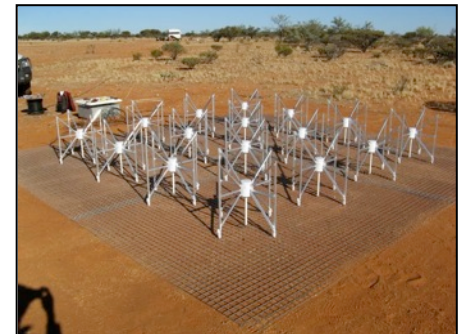


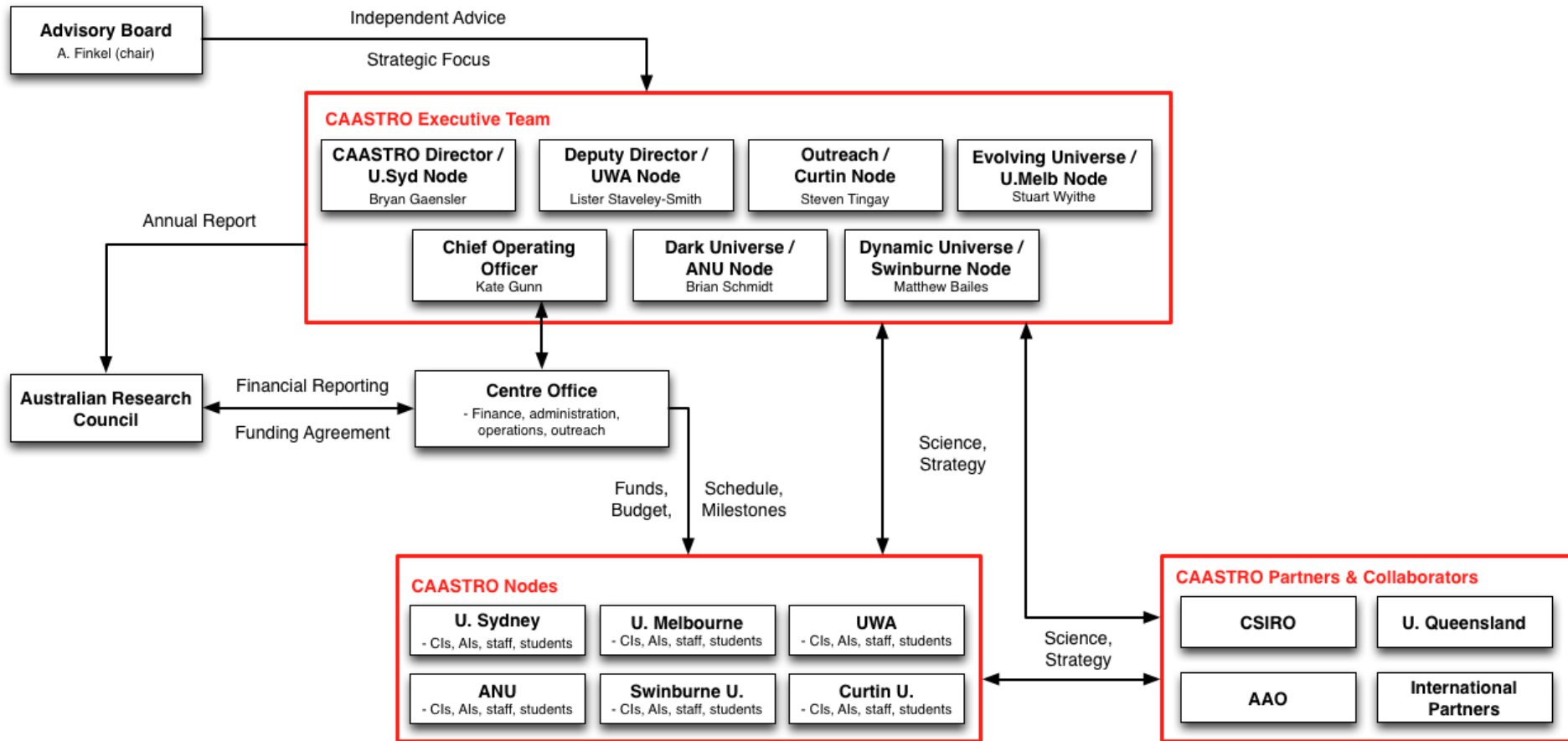
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The Centre for All-sky Astrophysics

The CAASTRO Vision: To be the international leader in wide-field astronomy, positioning Australia to address fundamental unsolved questions about the Universe with the dramatic capabilities of next-generation telescopes and advanced instrumentation.

- **DISCOVER:** Ground-breaking advances in understanding the Universe
- **INNOVATE:** New ways of processing & visualising complex data sets
- **PERFORM:** High-impact discoveries using SKA pathfinders
- **UNITE:** A new network of talented researchers
- **EDUCATE:** Exciting opportunities for students and young researchers

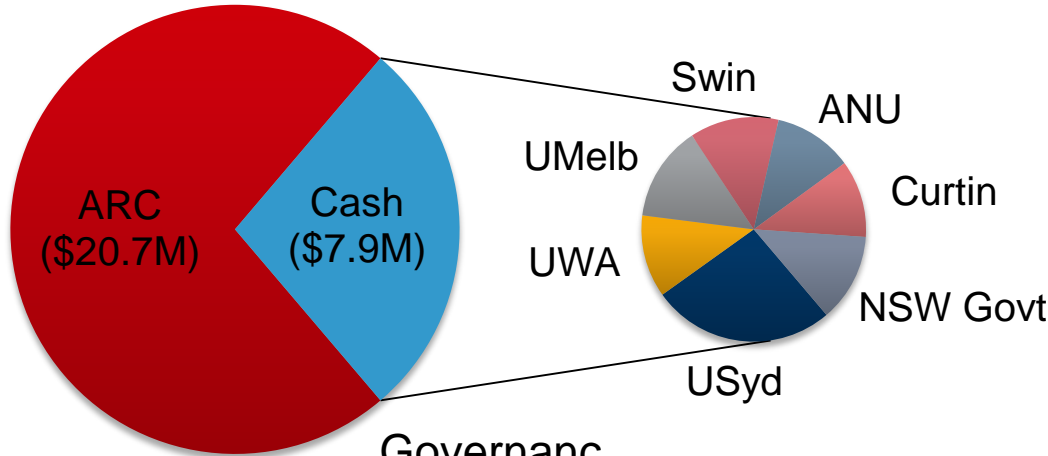




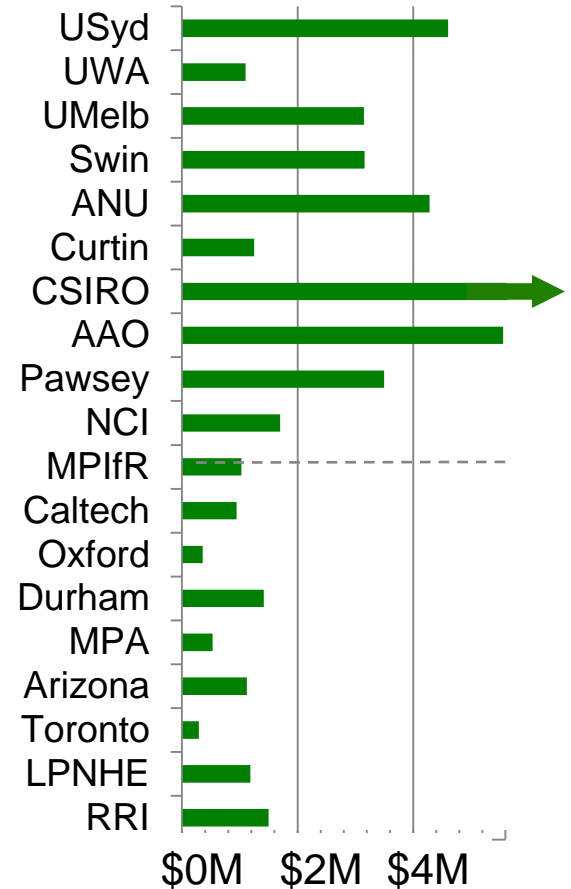


Budget & Partner Contributions

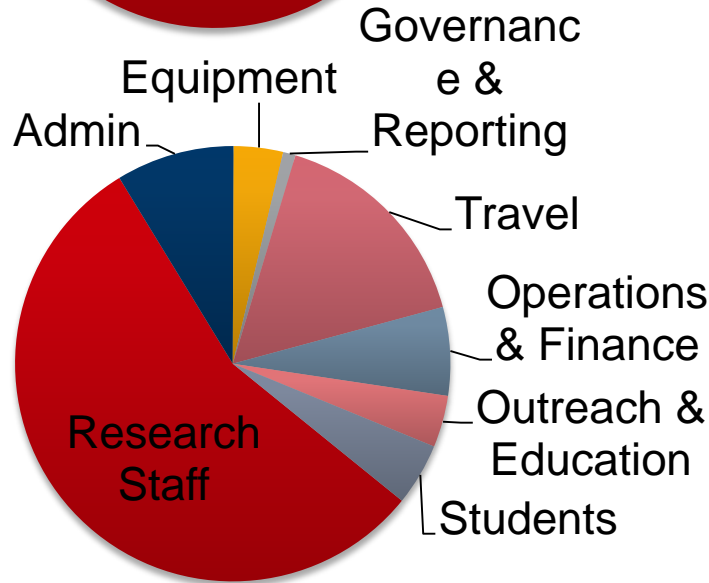
Income : \$28.6M (2011-2018)



Total In-Kind: \$58.0M



Partner Contributions



Expenditure: \$27.8M (2011-2018)