

**APSR Colloquium**  
**"National Perspectives on Sustainable Repositories"**  
**10 June 2005**

**APAC:**  
**A National Research Infrastructure Program**

**John O'Callaghan**  
**Executive Director**  
**Australian Partnership for Advanced Computing**

# Australian Partnership for Advanced Computing

*“providing advanced computing and grid infrastructure for e-Research”*

## Partners:

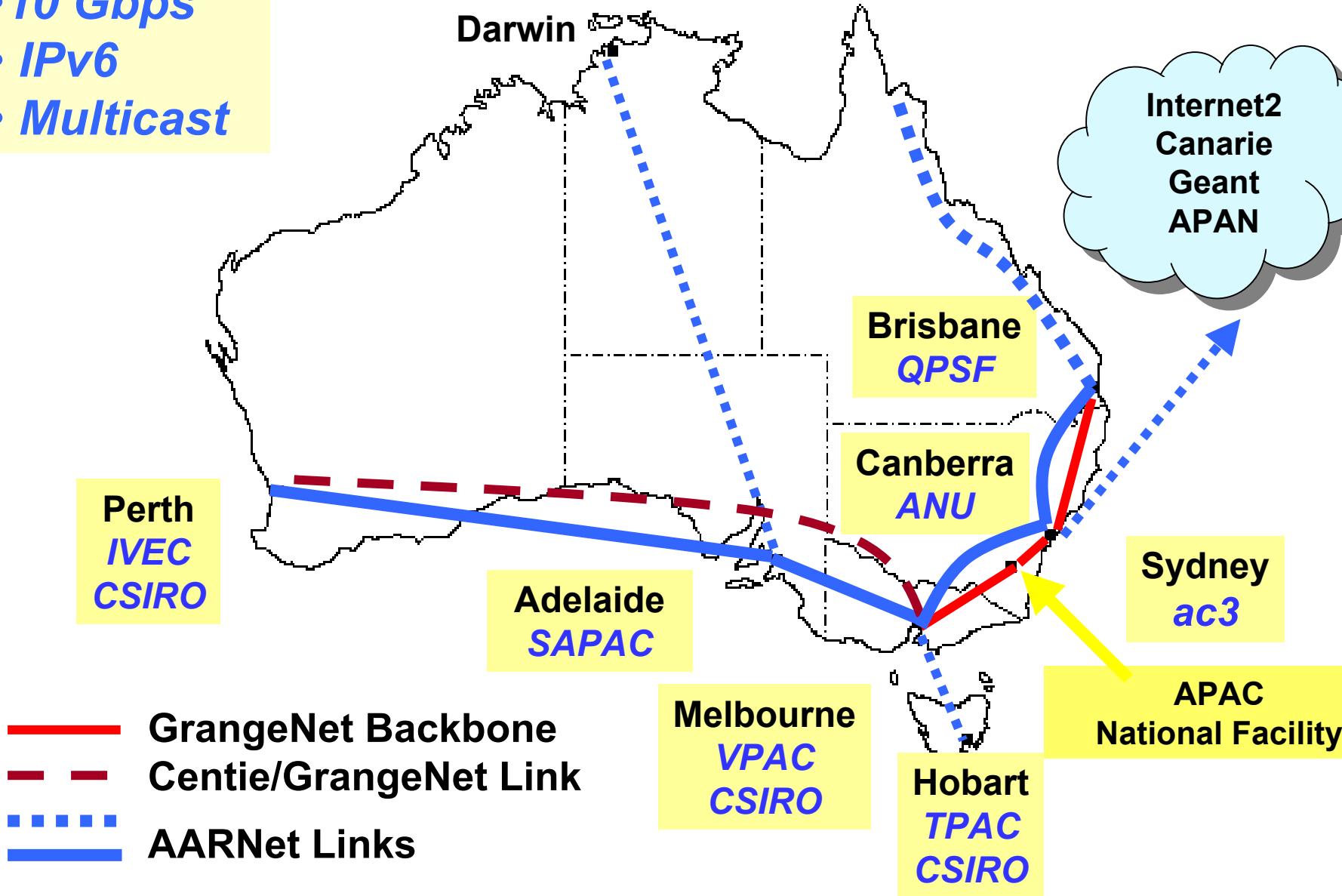
- Australian Centre for Advanced Computing and Communications (ac3) in **NSW**
- **CSIRO**
- **Queensland** Parallel Supercomputing Foundation (QPSF)
- Interactive Virtual Environments Centre (IVEC) in **WA**
- **South Australian** Partnership for Advanced Computing (SAPAC)
- The Australian National University (ANU)
- The University of **Tasmania** (TPAC)
- **Victorian** Partnership for Advanced Computing (VPAC)

# National Role of APAC

- **Computing Infrastructure**
  - peak computing facilities
  
- **Information Infrastructure**
  - support community-based data collections
    - cf. institutional, reference collections
  
- **Grid Infrastructure**
  - seamless access to the computing and information infrastructure
  - new collaborative services for research groups
    - collaborative visualisation
    - computational steering
    - tele-presence
    - virtual organisation support
  - support for participation in international research programs
    - eg., astronomy, high-energy physics, earth systems, geosciences

# Australian Backbones

- 10 Gbps
- IPv6
- Multicast

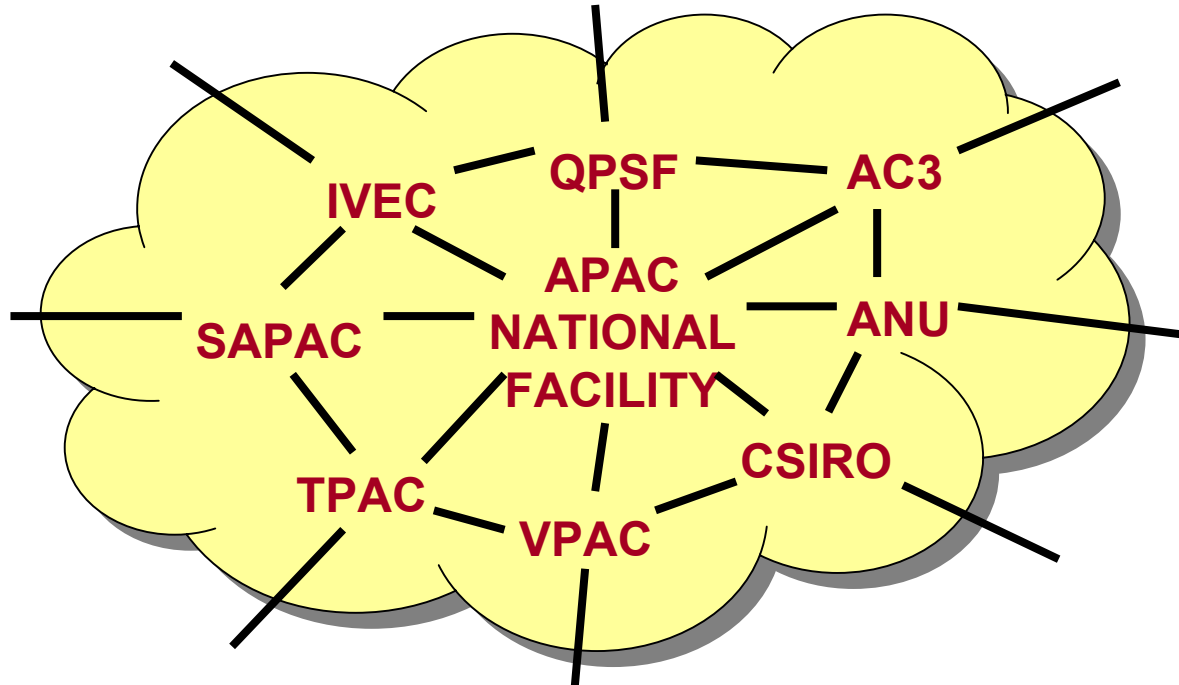


# APAC National Facility

- **Usage**
  - mainly biology, chemistry, physics
  - currently 247 projects and 722 users (27 universities)
- **Computing Systems**
  - SGI Altix 3700 Bx2 system (mid-2005)
    - 1680 processors
  - HP AlphaServer SC ES45
    - 508 processors
  - Dell Linux cluster
    - 150 processors
- **Mass Data Storage System (MDSS)**
  - Hierarchical Storage Management
  - Storagetek (robotic silo) tape library
    - Capable of a petabyte ( $10^{15}$  bytes) of storage
- **Visualisation Systems**
  - Virtual reality systems
  - Access Grid rooms
- **Staff (15.5 efts)**
  - User support
  - Systems support
  - Computational tools and techniques
  - Large-scale data collection management



# APAC National Grid



- **Basic Services**

- *single 'sign-on' to the facilities*
- *portals to the computing and data systems*
- *access to software on the most appropriate system*
- *resource discovery and monitoring*

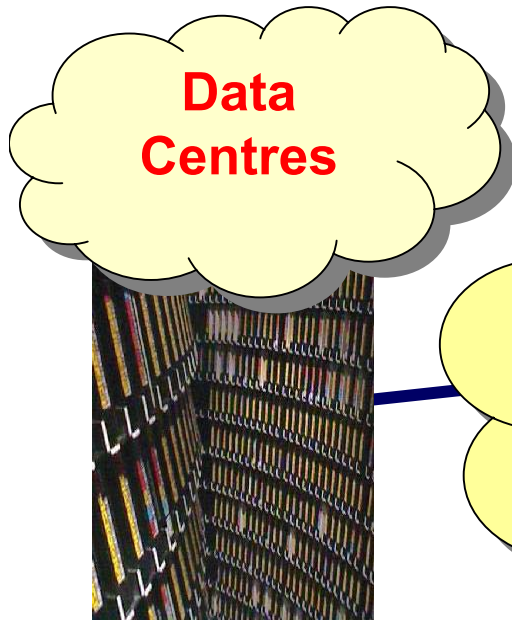
# APAC Grid Services



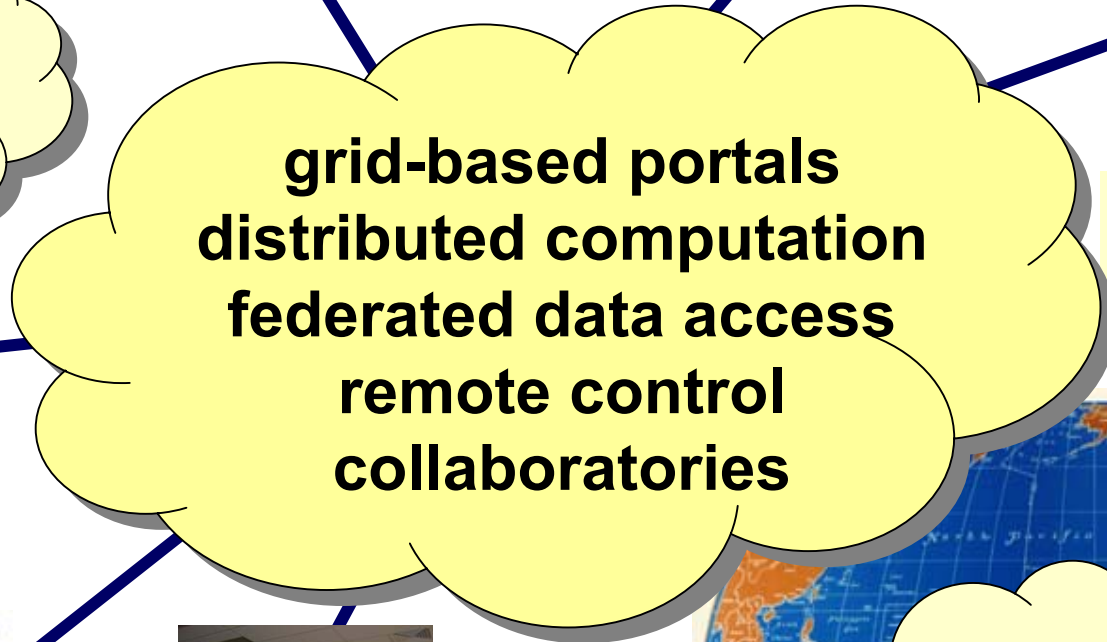
**Research Teams**



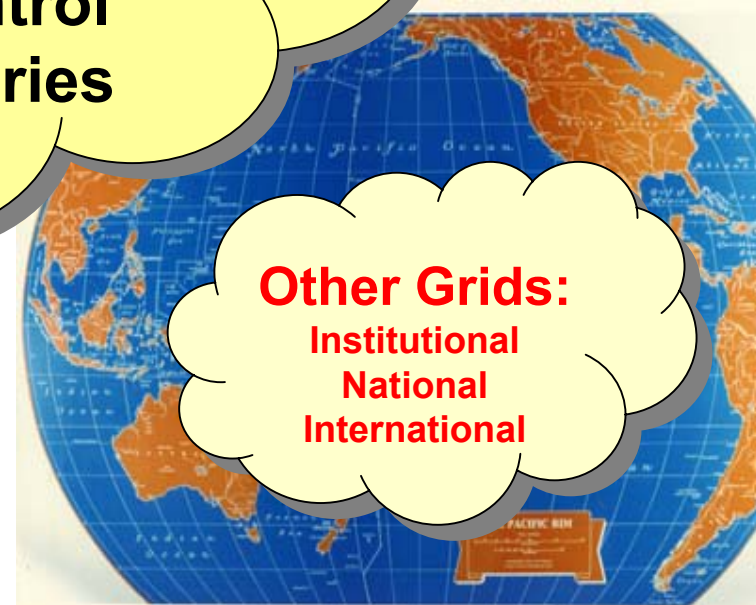
**Sensor Networks**



**Data Centres**

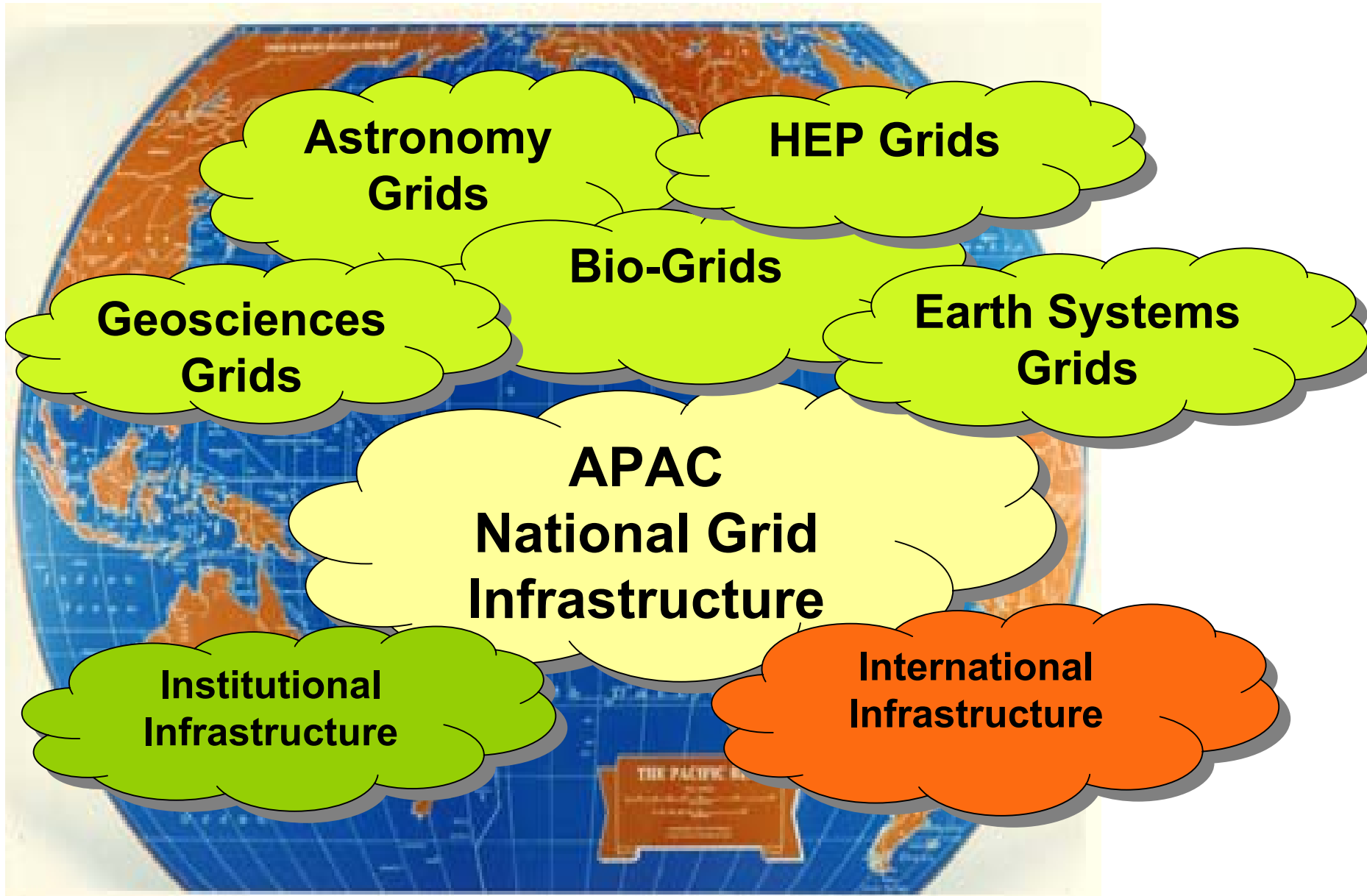


**Instruments**



**Other Grids:  
Institutional  
National  
International**

# Context of APAC Grid



# APAC Grid Projects

- **APAC Grid Applications Support**
  - **Astronomy**
  - **High-Energy Physics**
  - **Bioinformatics**
  - **Computational Chemistry**
  - **Geosciences**
  - **Earth Systems**
  
- **APAC Grid Infrastructure**
  - **Computing Infrastructure**
    - **Globus-based middleware (VDT)**
    - **certificate authority**
    - **system monitoring and management (grid operation centre)**
  - **Information Infrastructure**
    - **resource broker (SRB)**
    - **metadata management support**
    - **resource discovery**
  - **User Interfaces and Visualisation Infrastructure**
    - **portals to application software**
    - **workflow engines**
    - **visualisation tools**

## Data Intensive Projects

- **assist management of ‘community-based data collections’**
- **support for projects which are fundamentally data intensive**
  - **require little if any computational resources**
  - **data sets of ‘national significance’**
  - **allow easier distributed access to large-scale data sets**
  - **appropriate to be managed on the APAC National Facility**
- **support is in the form of:**
  - **a grant of storage capacity on the MDSS**
  - **advice on the access and management of the data**
  - **limited computational resource on systems in NF**
- **complements institutional repositories (APSR)**

[http://nf.apac.edu.au/policies/massdata\\_data\\_intensive.php](http://nf.apac.edu.au/policies/massdata_data_intensive.php)

# Data Intensive Projects

- **Projects currently supported**
  - **Research Community projects**
    - **Paradisec, Reciprocal**
  - **APAC Grid projects**
    - **astronomy, earth systems, high-energy physics**
- **Resources**
  - **APAC National Facility: Mass Data Storage System**
  - **Specialist support**
    - **Stuart Hungerford (ANU)**
  - **APAC Grid Information Infrastructure team**
    - **Markus Buchhorn(ANU)**
- **Future**
  - **other data services: streaming media, images, animations**
  - **consistent access policies for information infrastructure**
  - **long-term support for collections and preservation environments**
  - **planning workshop on requirements and possible support**
    - **Oct 2005**