75th anniversary of CSIRAC
&
60th anniversary of Csironet

14 November 2024

Discovery Theatre

Black Mountain

Australia’s National Science Agency

Agenda

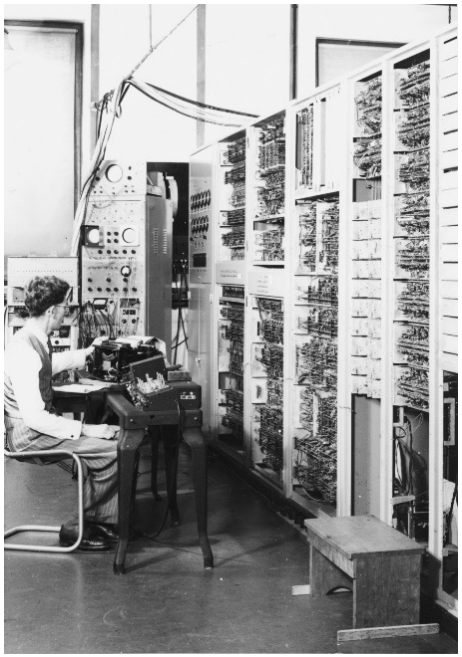
Welcome - CSIRO Executive Director Digital, National Facilities and Collection Professor Elanor Huntington.

The early development of CSIR Mk I in the CSIRO Division of Radiophysics **-** Honorary Fellow Prof Ron Ekers from Space and Astronomy.

What Trevor Did Next! The C.S.I.R.O. Computing Network - IMT Retirement Fellow Dr Robert Bell.

Scientific Computing today and wrap-up - CSIRO A/Chief Information Officer Angus Macoustra.

Close session and open discussions - Dr Robert Bell.



Welcome

Professor Elanor Huntington

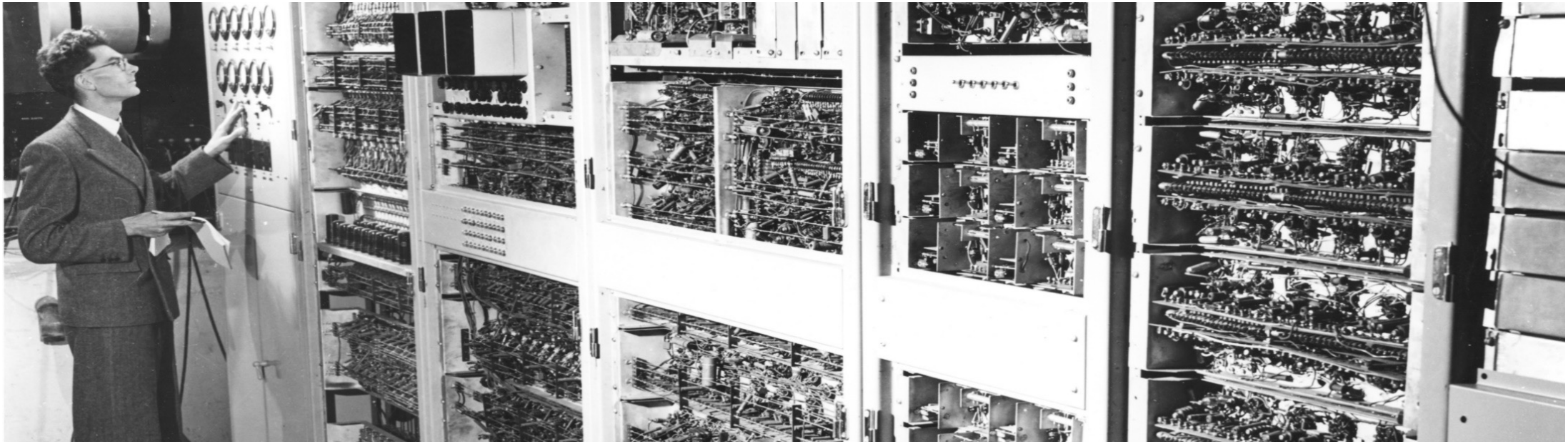
CSIRO Executive Director Digital, National Facilities and Collection Professor

I would like to begin by acknowledging the Ngunnawal People as the Traditional Owners of the land that we're meeting on today and pay my respect to their Elders past and present.

The early development of CSIR Mk 1 in the CSIRO Division of Radiophysics.

Professor Ron Ekers

Honorary Fellow Space and Astronomy



What Trevor Did Next! The C.S.I.R.O. Computing Network

Dr Robert Bell

IMT Retirement Fellow Dr Robert Bell

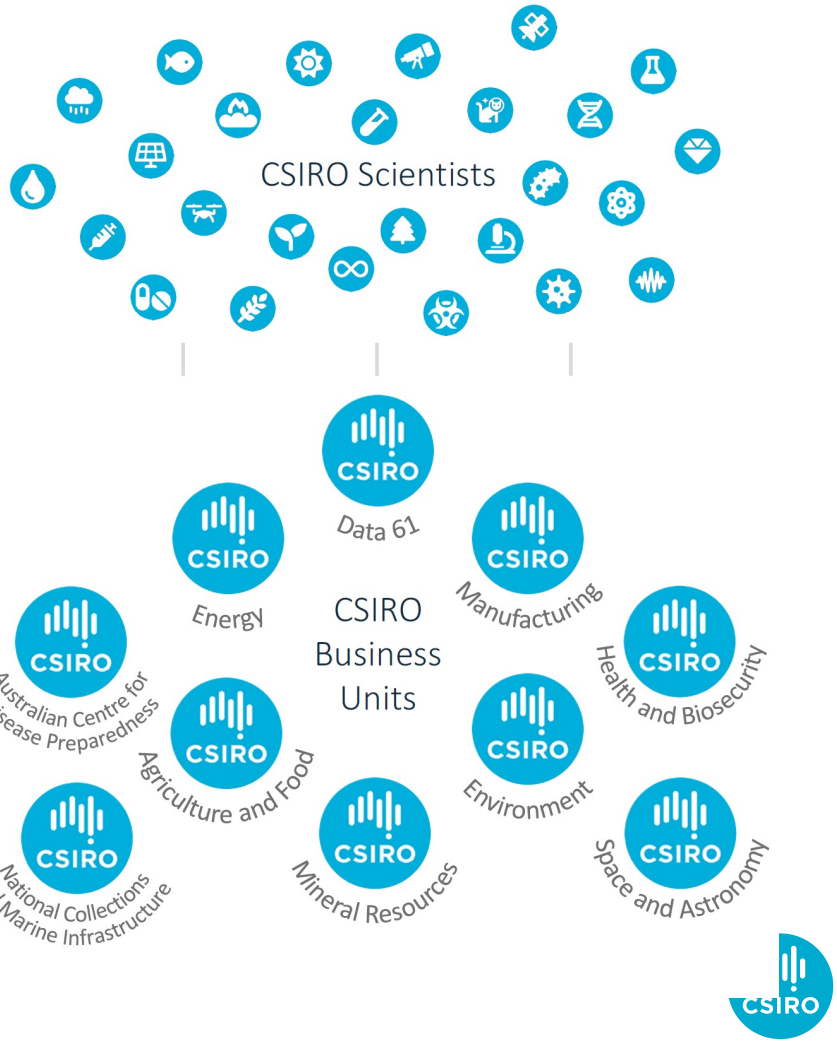
Scientific Computing today and wrap-up

Angus Macoustra

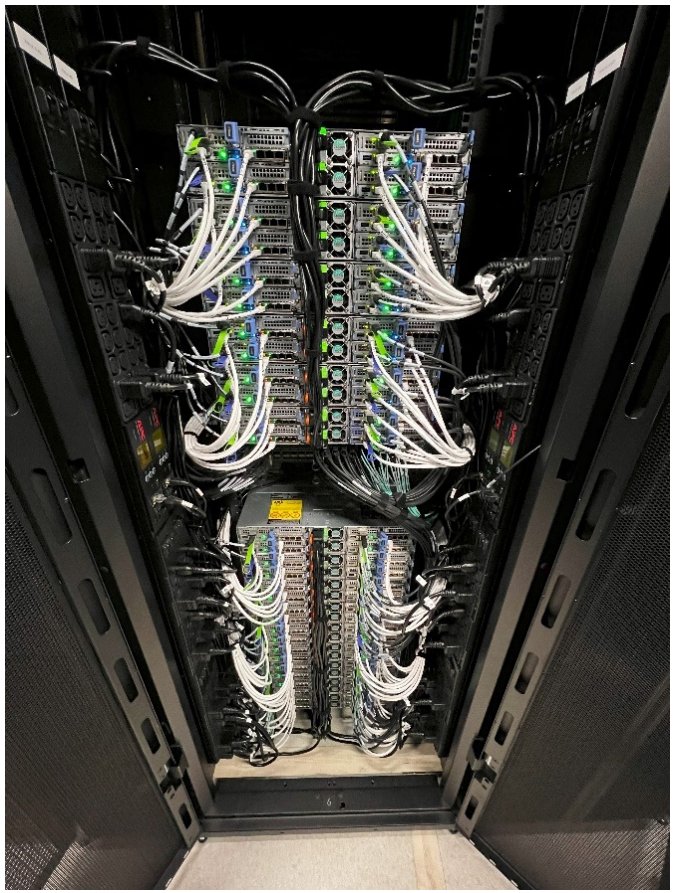
CSIRO A/Chief Information Officer

Our People

- Members of the team in every state and territory (except NT)
- Over 150 people – facilities management, infrastructure and platforms, research software engineering, data scientists, modelling and simulation, architects, cyber security paired with domain specialists – climate science, astrophysics, energy, physics, quantum ….
- Provide services that enable the work of every member of team CSIRO in some way - scientist, engineer, accountant, HR



The Machines - Petrichor



The Machines – Virga

The Machines – peak facilities

Some numbers

Then – CSIRAC

- Used 2000 vacuum tubes
- Mercury delay line store
- Held about 2kbytes of program/or data
- Weighed at about 2 tonnes
- Used about 30KW of power
- Performed ~ 1000 operations /sec (ie 0.001 MHz)

Now - Virga

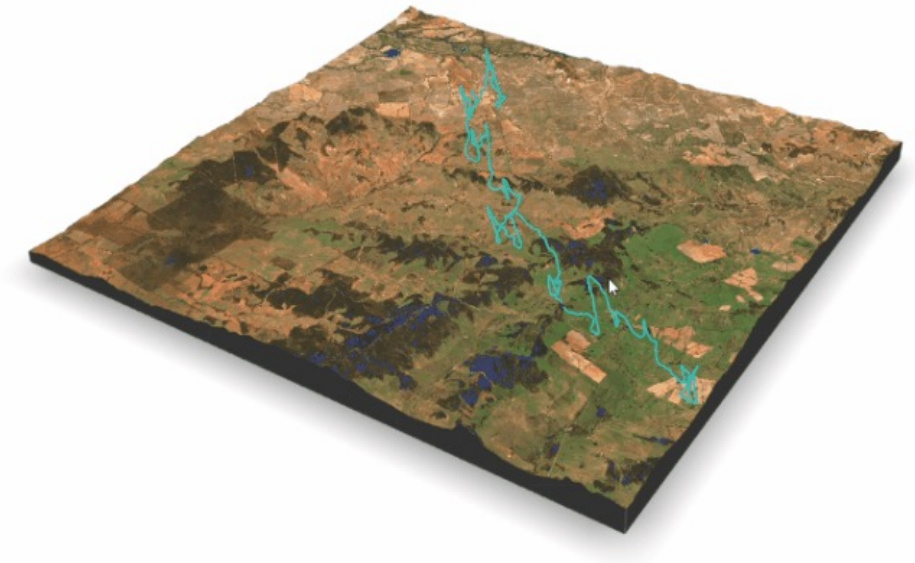
- 108 nodes x 4 GPUS x 80 billion transistors on each GPU
- 108 nodes x 512GB of RAM each
- 2 Petabyte scratch file system
- ~10 tonnes (wild guess)
- 300kW each
  (data hall max capacity 1.2 mW)
- 14.94 PFlop / sec

Helped AU Olympic gold

"CSIRO's CCAM model was our go-to for high-resolution wind modelling over Sagami Bay for the Tokyo Olympic Games. The CSIRO team worked closely with us in the lead up to the Games to deliver a custom solution providing the data we needed, when we needed it, in the format we needed. Without a doubt, partnering with CSIRO gave the AST meteorology team and our Australian sailors the edge!"

Karina Tarbath, Meteorologist for the Olympic Sailing Team

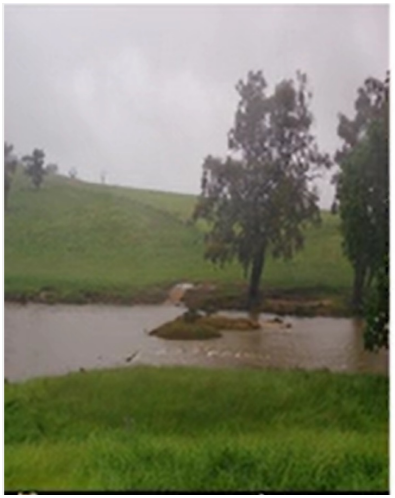
Data Analysis and visualisation

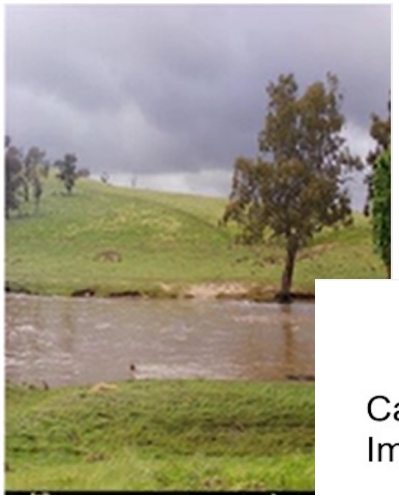


Satellite imagery tracking waterbirds

Pathogen	Amikacin	Ampicillin	Augmentin	Cefaclor	Cefazolin	Cefepime	Cefotaxime	Ceftazidime	Ceftriaxone	Cephalothin	Chlo
Achromobacter xylosoxidans	100			0		100	0	100			
Acinetobacter baumannii	65	97	45	82		75	70	80	96	85	
Acinetobacter hemolyticus	0						0	0			
Acinetobacter lwoffii	30	88	100	0		50	16	34	82	39	
Aerococcus viridians			0								
Aeromonas caviae	0	75	100	100	100		33	100	100	50	
Aeromonas hydrophila	8	89	100	0	100		25	50	75	39	
Aeromonas sobria		100							50	0	
Brevundimonas diminuta								0			
Bukholderia cepacia	86			100	100	100	0	75		67	
Candida species	0	100					100	100	75	50	
Chryseobacterium gleum	100						100	100			
Chryseobacterium indologenes	100						100	100			
Citrobacter freundii	10	98				0	100	59	69	16	
Citrobacter koseri	11	98	100			0	0	35	33	12	

Surveillance dashboard of antimicrobial resistance



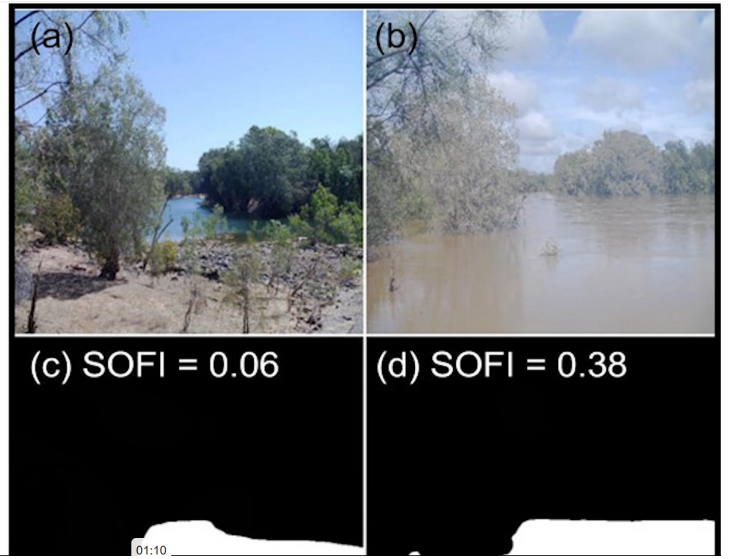


Original Image

Segmented Image

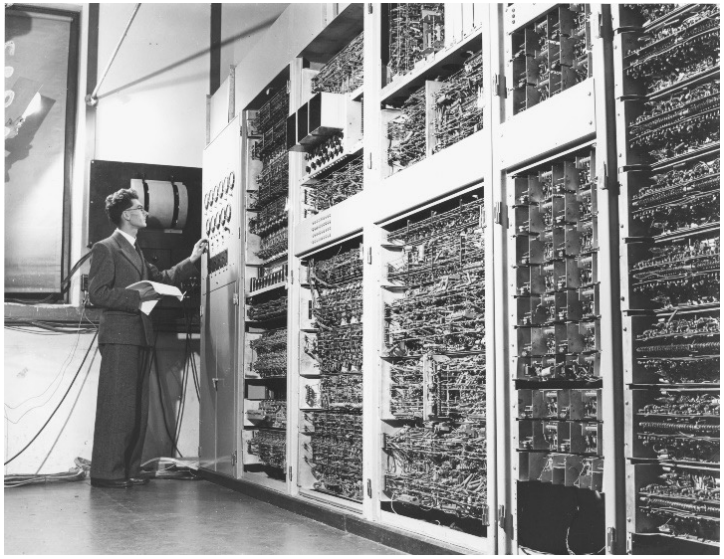
Camera Image

Segmentation Mask



Thanks for letting us host you today, and for your contributions to a significant legacy for Australian technology

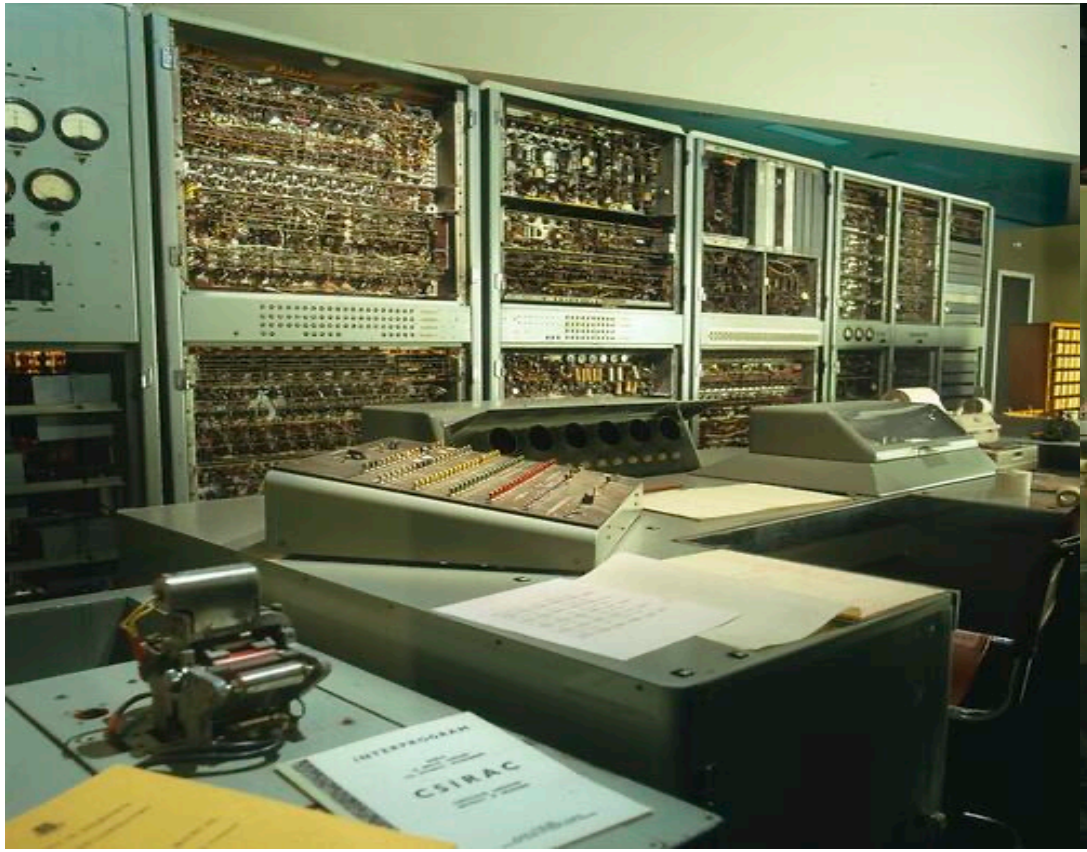
Discussions/Questions



Other activities today **offsite**:

1pm: Pioneers lunch at Sammys @the Foreshore

2:30pm: Tour of Peter Hewston's computing artefacts



Thank you

Australia’s National Science Agency