



Research at light speed



## Time

[Time.intersect.org.au](https://time.intersect.org.au) puts you in control of the best computing for your needs from a range of compute zones. Time offers you access to the right environment for your analysis: from increasing the capacity of your existing pipeline, to transforming your research using massively parallel processing. Carve out your own slice of Time, assisted by experts who live and breathe big computing.

## Light Speed

[Time.intersect.org.au](https://time.intersect.org.au) offers big computing platforms for research. Researchers can choose between parallel processing for maximum performance, cloud computing for horizontal scale, or dedicated hosting for domain-specific applications.

Make your computing super with Intersect Australia's shared, high performance cluster, virtual and cloud environments.

Time is connected by optical fibre to Australia's Academic and Research Network (AARNet.edu.au) the not-for-profit company that operates the National Research and Education Network (NREN). This means Time travel is optimally fast to critical eResearch infrastructure such as high performance computing clusters orange.intersect.org.au and raijin.NCI.org.au, other AeRO.edu.au organisations, medical research and clinical facilities, and every Australian university campus. AARnet operates dedicated international fibre and interconnects as a peer of Internet2 in the USA, TEIN in Asia and GÉANT in Europe. Because AARNet also connects directly to commercial organisations and telecommunications companies, rapid transit is also possible between Time, Space and Google, Amazon, Microsoft, Telstra, Optus and more.

Many researchers use computers but desktop machines only go so far. If your overnight compute jobs run into the next day, if your research waits for a weekend to run, if your computer is limiting the progress of your research, then high performance computing (HPC) is the solution. High performance computing is used to solve real-world problems of significant scale or detail across a diverse

range of disciplines including physics, biology, chemistry, geosciences, climate sciences, engineering and many others.

## High performance computing

Intersect delivers over 32,000,000 hours of supercomputing to researchers every year in partnership with the National Computational Infrastructure, based at the Australian National University.

[raijin.NCI.org.au](http://raijin.NCI.org.au)

Intersect shares NCI's peak system 'Raijin, a hybrid Fujitsu Primergy and Lenovo NeXtScale high-performance, distributed-memory cluster comprising 84,656 cores (Intel Xeon Sandy Bridge 2.6 GHz, Broadwell 2.6 GHz) in 4416 compute nodes, approximately 300 TBytes of main memory, and approximately 10 PBytes of usable fast file system, [more details here](#).

## Cloud computing

### OwnTime and NectarCloud

- Over 4,500 local and 32,000 distributed computing cores running x86 OpenStack hypervisors tuned to the needs of research.
- Create multiple virtual machines with up to 64 virtual CPUs. Features Linux operating system flavours including: Centos, Ubuntu, Fedora and Scientific Linux. Researchers can directly access eight national network nodes for additional scale or data proximity, [more details here](#).

### Time Travel

There's no such thing as an 'average' researcher when it comes to intensity, appetite, flavour and volume of big computing, so no one Time zone fits all. A physicist may need a large cluster of independent nodes with high I/O, a computational linguist may need a large shared memory space, and an astronomer may need massively parallel compute array. Collaboration tools may be the mainstream driver for a social scientist, while an archaeologist needs geocoding. Intersect people are flexible and ready to help solve individual, team, and organisational compute challenges.

In most Time zones demand exceeds supply because subsidised merit schemes apply. Larger proposals for significant quantities of Time are requested through an annual merit-based formal process. However, new Time travellers are actively sought, especially researchers from smaller institutions, non-traditional HPC disciplines, and research students. Intersect routinely and frequently accepts small-scale "experimental" proposals at any time.

Intersect runs a merit based Resource Allocation Round every calendar year where researchers from member institutions apply for large allocations of Raijin HPC. These applications are reviewed for comparative research merit by the independent Resource Allocation Committee as well as Intersect HPC experts. However you can apply for small amounts of compute at any time. Learn how to book your Time [here](#).

## Attribution Policy

If you use merit-allocated resources on Raijin via the Intersect partner share we request that you acknowledge us. The proposed text is:

*Computational (and/or storage) resources used in this work were provided by Intersect Australia Ltd.*

The full attribution policy can be found [here](#).

## Time Zones

Joining the Intersect research community brings access to state of the art big computing resources locally, nationally and internationally. Researchers can choose between local cloud computing, State-based cluster computing, Australian national supercomputing, and Amazon's international compute cloud.

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## Making Time

Creating your Time depends on many factors including

- Application software constraints.
- Processing speed required per processing workload
- Node scale required for each workload.
- Memory demands per workload and the degree to which it must be shared between nodes.
- The degree to which your workload is specialised versus commoditised and proprietary versus open.

Don't panic – please get in touch and we'll work through it with you.

## Back to the Future

In the beginning Time was created by researchers for researchers to attract collaborative funding opportunities through LIEF and other Australian government schemes. Today it is brought to you by Intersect and its partners [our members](#).

## Get Started

Want to ask questions about Time or have us contact you?

Reach out by emailing [time@intersect.org.au](mailto:time@intersect.org.au) or visit [help.intersect.org.au](http://help.intersect.org.au)