



What is **SpaceLab**?

SpaceLab puts your research software right next to your data in a secure hosted cloud without any hardware, up-front cost, or lengthy delays. **SpaceLab** links Intersect Space storage and Time compute to provide a powerful and stable platform to run tailored applications in an environment that's just right for your unique research.

Who is it for?

Individual researchers or groups (for example faculties, facilities or institutions) needing to build and manage their own hosted virtual laboratory, using their own research software but without the complexities of buying, operating and maintaining hardware and operating systems.

Why use **SpaceLab**?

With **SpaceLab**, you can:

- Confidently establish an Internet home for your own hosted virtual laboratory running custom software applications that you manage.
- Get a massive head start by creating a virtual lab by reusing one of our ready-made and optimised eResearch platforms [Time.intersect.org.au/research-tools](https://time.intersect.org.au/research-tools).
- Scale computing capacity up or down without hardware changes or capital expenditure.
- Transfer data via the dedicated high-speed [AARNet.edu.au](https://aarnet.edu.au) optical fibre network with no ingress or egress charges between AARNet destinations.
- Effortlessly scale to petabytes of storage with optional direct fibre-connected Space storage for maximum performance.
- Maintain control and access to your data using your own research software applications according to your own decisions and policies.

How does it work?

SpaceLab combines compute and storage infrastructure to provide a ready-made, pre-configured computing environment where you can install your own research software.

Build

- Select from a range of virtual hardware 'flavours', from simple desktop equivalents to extreme hardware with massive memory and CPU, through to large clusters of networked virtual machines suitable for Hadoop or other distributed processing needs.
- Construct on our platform yet manage your system with your choice of research software. You can optionally add an Intersect Time hosting package if you'd prefer we do this for you. [Time.intersect.org.au/hosting](https://time.intersect.org.au/hosting)

Store

- Your applications and data are securely held in Tier 3 data locations in Sydney, with the highest levels of accredited security, availability and reliability.
- Data is kept safe in industrial-grade storage by writing multiple physical copies.
- Intersect is a Not-For-Profit Australian organisation operated by NSW and ACT Universities with all data stored on Australian soil under NSW jurisdiction to preserve data sovereignty.

Manage

- Administer your own software and data in a self-serve flexible environment.
- Control who has access to your data and create your own encryption and privacy models.
- Forget about the complexities of hardware and network management.

Share

- Share your software applications and data using custom URLs.
- Meet the exact needs of your research group by engineering a unique collaboration environment across organisational boundaries.

Access Requirements

To create and manage your **SpaceLab** you'll need:

- Mac OS X 10.7+, Windows 7+, Linux 64-bit
- Optional ssh command line implementation
- AAF account for sysadmin authentication. Sysadmin access for non-AAF members available available through your affiliated university/institution via the AAF Virtual Home, aaf.edu.au/technical/vho
- Network ports: tcp/22 (ssh/sFTP)
- Authentication: X.509 certificate, VPN tunnel: IPsec
- Storage interconnect: NFS, WebDAVs

Nominal Performance

- Interconnect speeds: AARNet: 10 Gigabits per second (Gb/s), Science DMZ: 10 Gb/s, Orange.intersect.org.au: 10 Gb/s, Institution: 1 Gb/s, 10 Gb/s and 40 Gb/s
- Storage capacity: up to 50 Petabytes
- Active disk data rate: up to 8 Gigabits/s throughput
- Intersect uses the AARNet Science DMZ interconnect model, a high performance, high bandwidth architecture optimising data transfers (10 Gb/s and up)
- Deploy from OwnTime.intersect.org.au, rc.NeCTAR.org.au or ec2.amazon.com. Flavours from 1 CPU 2 GB RAM to 64 CPU 1TB RAM
- Compatible with Time.intersect.org.au and Amazon Web Services DirectConnect. VM - Space interconnect: 10 Gb/s

Note: All figures are rated maximums. Actual performance will vary depending on local technical constraints.

How do I get started with **SpaceLab**?

- Locate your friendly local Intersect eResearch Analyst via Energy.intersect.org.au/era or email us at Space@intersect.org.au
- Pricing and subsidy information available at Space.intersect.org.au/rates
- Learn from the User Guide and use cases at Space.intersect.org.au/spacelab
- Information about our other **Space** products is available at Space.intersect.org.au

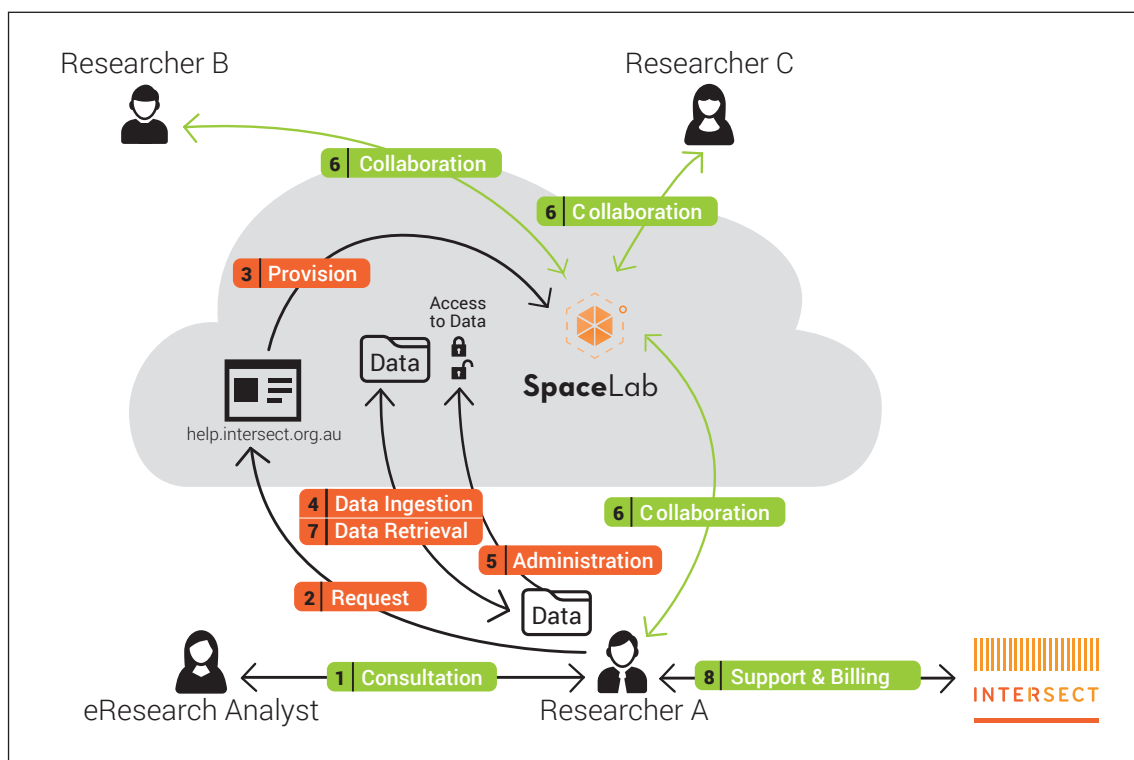
Disclaimer: This description is a high level overview for informational purposes. You should review actual policies and terms before executing an agreement with Intersect Australia. Current information is available at Space.intersect.org.au/terms.

Collaborative research using shared data and software: powered by **SpaceLab**

Scenario

- Researcher A collaborates with Researchers B & C, who are based at two other organisations.
- Researcher A needs to store data he has generated and share it with Researchers B & C.
- Researcher A currently uses a desktop analysis software program for this data, but wants to allow his collaborators B & C cloud access to both the software and data.

Solution



- 1 Consultation** Researcher A discusses his research collaboration requirements with an Intersect eResearch Analyst.
- 2 Request** Researcher A orders a Space Plan from help.intersect.org.au and adds **SpaceLab** to their plan.
- 3 Provision** Intersect provisions a **SpaceLab** - a cloud-based collaborative environment comprising storage, compute and Researcher A's analysis software.
- 4 Data Ingestion** Researcher A uploads data to **SpaceLab**.
- 5 Administration** Researcher A assigns sharing permissions (security) to nominated researchers or enables open access.
- 6 Collaboration** Researchers A, B & C access/analyse the research data using application(s) provisioned.
- 7 Data Retrieval** Researcher A retrieves all or some of his data on demand, as needed.
- 8 Support & Billing** Researcher A obtains ongoing support from help.intersect.org.au and pays for monthly consumption of **SpaceLab**, or arrange payment through their organisational Space Plan.

Case Study



paradisec.org.au

PARADISEC (Pacific and Regional Archive for Digital Sources in Endangered Cultures)

The Conservatorium of Music, University of Sydney

PARADISEC is an archive of over 80,000 items of data - including audio, video, image, and text - from around 850 endangered languages and cultures in the Asia-Pacific region, collected by researchers as part of their fieldwork over the past 60 years. Many of the recordings are unique, unrepeatabe and represent the only known documentation of particular communities from the Asia-Pacific region. In addition to being stored for posterity in digital form, the data is important for linguistic typology, comparative linguistics, anthropology, musicology and ethnomusicology.

Researchers use NABU, PARADISEC's online catalogue, to describe their research data, to cite their data in publications, and to facilitate access to the materials for other researchers, community members, or anyone who has an interest in endangered cultures.

Intersect's **SpaceLab** provides secure infrastructure for the 20TB of data and an Internet home for the NABU catalogue software to enable data discovery and encourage re-use from researchers around the world.

Space Travel

Which **Space** product do I need?



SpaceShuttle



SpaceLab





DeepSpace

	SpaceShuttle	SpaceLab	DeepSpace
Media	Disk + tape	Disk + tape	Tape
Number of copies	2 copies	2 copies	3 synced copies on different media at different locations
Frequency use of data	Frequently written and read data within an active research project. BYO compute and application.	Frequently written and read data within an active research project that comes with cloud computing. BYO application.	Datasets requiring highest integrity retention, publication citation or digital object referencing, or massive scale for infrequent access/download.
Access mechanisms	Aspera Shares 1.9.2, Aspera Faspex, Aspera CLI, sFTP, GridFTP, WebDAVs.	VM NFS mount from: Time.intersect.org.au or other compute cloud.	Aspera Shares 1.9.2, Aspera Faspex, Aspera CLI, sFTP, GridFTP, WebDAVs.
Designed for active HPC or cloud application I/O	yes	yes	no

Help.intersect.org.au

To make your research life easier we offer a simple one-stop researcher experience called Help.intersect.org.au. By visiting or emailing our helpdesk, you can let us know about a problem, ask for help, order Space storage or Time compute, or find information. You can get started by signing in with your own credentials through the Australian Access Federation (for participating organisations).

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Intersect is a pivotal part of NSW research infrastructure. We provide robust, innovative and collaborative technology to support the world-class research at members institutions and research organisations. Intersect delivers storage and analysis platforms, customer engineering, expert consultation and training programs to thousands of researchers every year.

