# Position Details

## Technical Services- CSOF5

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| The following information is for applicants | |
| Advertised Job Title | Senior Research Software Engineer |
| Job Reference | 79142 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$102,724 to AU$111,165 pa (pro-rata for part-time) + up to 15.4% superannuation |
| Location(s) | Clayton VIC, Eveleigh NSW, Canberra ACT, Adelaide SA, Brisbane QLD, Perth WA |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | Australian Citizens Only |
| Position reports to the | Scientific Computing Services Team Lead (one of three) |
| Client Focus – Internal | 100% |
| Client Focus – External | 0% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Justin Baker via email at justin.baker@csiro.au or phone +61 3 9545 2012 |
| How to apply | Apply online at <https://jobs.csiro.au/>  Internal applicants please apply via **Jobs Central**  If you experience difficulties when applying, please email [careers.online@csiro.au](mailto:careers.online@csiro.au) or call 1300 984 220. |

### Role Overview

The role of Technical Staff in CSIRO is to provide support for scientific research in a diverse range of laboratory and field situations across a range of different research projects. This support consists of the application of accepted technical practices and the development of new practices. The work is usually carried out as a member of a centralised service.

The Scientific Computing (SC) group within the Information Management & Technology function provides end-to-end infrastructure ranging from generic corporate IT systems through to leading-edge High-Performance data processing tools and platforms. The teams manage over 30PB of data at a compounded annual growth rate of ~75%, and a proportionate computational and network fabric including several Top500 supercomputers, HPC Cloud and a highly versatile and robust corporate hosting platform. Additional services include advanced visualisation, data processing, application support, software delivery, and research software engineering. The capability is highly customer focussed and operates closely in partnership with all areas of CSIRO research.

The Scientific Computing Services group is offering an exciting opportunity for early career professionals to gain valuable practical experience within CSIRO and become part of teams solving and addressing real-world problems. The successful candidate will work on projects within teams of researchers, scientists and fellow technical experts, and mature their software engineering practice. Specific projects will depend on researcher demand being matched to available expertise. A variety of specialist skills are sought, and it is expected that successful candidates will cover a subset of desired skills.

Research Software Engineer and Senior Research Software Engineer roles are to be filled and the starting level offered will be based on qualifications and experience. For this senior position a high level of expertise and independence is required. In general, we are seeking a range of relevant experience, good aptitude and demonstrated desire and ability to learn.

This is an opportunity to work in a professional and technically challenging environment, supporting a diverse range of applications, to further the use of computation in science discovery.

Work may be required at other CSIRO sites within Australia.

### Duties and Key Result Areas:

1. Under the guidance of senior leaders, the main duties will include contributing to SCS activities with a focus on two or more of the following:
   1. Software engineering support
   2. Development or enhancement of Web tools
   3. High performance computing
   4. Workflow orchestration
   5. Numerical and data modelling
   6. Data manipulation, analysis and interpretation (including geospatial data)
   7. Software choice and provision
   8. Resource and service orchestration.

* Liaise with clients to determine their needs and take personal responsibility for their satisfaction, correcting problems promptly and in a constructive manner
* Under limited direction design or develop experimental equipment, techniques, systems or processes requiring high levels of initiative, ingenuity and skill, and appropriate communication of research or service results.
* Working with unique or unusual features and complexity which require original design and techniques, some of which may be outside a single discipline.
* Take on management responsibilities for the operation of a facility, central service, group of technicians, or an area of interaction with industry and make significant contributions to decisions about the nature of the service provided.
* Communicate openly, effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Work collaboratively as part of a multi-disciplinary, often regionally dispersed research team, and business unit to carry out tasks in support of CSIRO scientific objectives.
* Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Making Safety Personal goals.
* Work responsibly and appropriately with personal, sensitive, and commercial-in-confidence information.
* Other duties as directed.

## **Required Competencies:**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others reactions.
* **Resource Management/Leadership:** Sets up and maintains effective and efficient work teams and manages performance and resources, to achieve objectives. Chooses appropriate management strategies and communication styles to maintain high levels of motivation and productivity. Gives feedback for development purposes and provides support and direction for improvement.
* **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate response by adapting/creating and testing alternative solutions.
* **Independence:** Plans, sets and works to meet challenging standards and goals for self and/or others. Recognises where endeavours will make the most impact or difference, decides on desired outcome and sets realistic goals to reach this target.
* **Adaptability:**Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of changes.

## **Selection Criteria**

#### Prerequisite

1. Education/Qualifications: Tertiary degree in science, engineering, computer science, information technology or relevant field.
2. Communication: Excellent communication skills, both written and oral, including the ability to anticipate the interests and knowledge level of an audience and present information and feedback accordingly.
3. Problem Solving: The ability to quickly identify and characterize problems and to investigate, develop, recommend, and test potential solutions.
4. Adaptability: The ability to effectively manage competing priorities simultaneously, plan, track and handle non-routine tasks under limited direction from Senior Technical/Research staff, and to adapt well to changing requirements.

#### Essential

1. Expertise in developing and supporting software for two or more of the following
   1. Data Analytics and Visualisation - complex scientific visualisations, data analytics, machine learning and artificial intelligence
   2. Workflows and Pipelines - dependency-based methods, streaming (data ingest, robust pipelines), workflow tools and frameworks, and batch job management on our HPC clusters
   3. High Performance Scientific Applications - algorithm and program optimisation, parallelisation, power optimisation for large scale computations and pipeline optimisations
   4. Simulation and Modelling - Computational Fluid Dynamics, Finite Element Analysis and Complex Systems
   5. Research Software Engineering - user requirements gathering, agile software development, software and system testing and validation
   6. Domain Specific Algorithms and Software – astronomy, bioinformatics, remote sensing and image and signal processing
   7. Quantum Computing - quantum algorithms representative for computational science, quantum communication and error correction, running on real quantum computers or using simulators on local computers
   8. Science Data Management – provenance, lifecycle management and data formats and interchange
   9. Solution Design – cloud and HPC based solutions, storage, governance frameworks and reporting
   10. Specialised web development for science and data analytics
2. Demonstrated expertise in more than one of the programming languages, frameworks and libraries used by CSIRO’s scientific computing community. Languages include Python, R, JavaScript, MATLAB, Fortran, C, and C++. Frameworks and libraries used include those for numerical modelling and analytics, parallelism, geospatial and visualisation.

## **Desirable:**

1. Expertise in the use and design of data centric workflows. This may include including scripting, use of HPC batch systems, cloud/container computing, web-based interfaces/portals and visualisation, use/provision of web services, databases, ‘big data’ technologies and workflow tools. Web presentation of data (including geospatial data) is of particular interest, coupled with good data preparation and management.
2. Demonstrated experience in a science domain relevant to CSIRO.
3. Demonstrated expertise applying modern software engineering practices and tools, such as version control systems, build systems, testing, Agile development, profiling/debugging tools, and technical documentation.
4. Demonstrated expertise with containerisation, including container design/definition, container orchestration, container networking and security, and Continuous Integration and Delivery workflow.

Special Requirements

Appointment to this role may be subject to conditions including provision of a national police check as well as other security/medical/character clearance requirements.

1. The successful candidate will be asked to obtain and provide evidence of a National Police Check or equivalent. Please note that people with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.

The successful candidate will be required to obtain and maintain a security clearance at the baseline level and may be required to obtain clearance at Negative Vetting Level 1. (this effectively requires Australian Citizenship).

## **About CSIRO:**

We solve the greatest challenges through innovative science and technology. To find out more visit us [online](http://www.csiro.au/)!