# Position Details

## Research Scientist/Engineer- CSOF5

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| The following information is for applicants |
| Advertised Job Title | Supercomputing Application Specialist for Radio Astronomy |
| Job Reference | 74533 |
| Tenure | Specified Term of 3 years Full-time or part-time  |
| Salary Range | AU$100k - AU$108k pa (pro-rata for part-time) plus up to 15.4% superannuation |
| Location(s) | Perth, Western Australia |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | * Australian Citizens and Permanent Residents
* New Zealand Citizens
* Australian temporary residents who have the right to work for the expected duration of the term (at least to end of August 2024), with no requirement for sponsorship.
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| Position reports to the | Research Team Leader – ATNF Science Data Processing |
| Client Focus – Internal | 100% |
| Client Focus – External | 0% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Juan Guzman via email Juan.Guzman@csiro.au  |
| 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 or call 1300 984 220. |

### Role Overview

The Supercomputing Application Specialist undertakes research and development activities to optimise the software pipelines and leverage the latest High-Performance Computing (HPC) technology capabilities of the new Pawsey Supercomputing System, *Setonix*. Once fully operational, Setonix will deliver up to 50 Petaflops of raw compute power. Setonix, an HPE/Cray EX Supercomputer, is bringing new technology and architecture capable to scale up to Exascale (1000+ Petaflops) Computing systems. The Supercomputing Application Specialist will prepare the Australian SKA Pathfinder telescope (ASKAP) software pipelines for Exascale, making them run more efficiently and greatly benefitting the overall science output. The position is co-funded by the Space and Astronomy business unit (S&A) and Pawsey and will contribute to building capability to support the big data challenges of the Square Kilometre Array (SKA) in Australia. Commencing operations in 2019, ASKAP, CSIRO’s new-technology radio telescope is a precursor for the SKA. After completion of its Pilot Survey program, ASKAP is now preparing for the full survey operations.

### Duties and Key Result Areas:

* Liaise with project stakeholders, including ASKAP Scientists, Software Engineers, and Pawsey Technical staff, to determine their requirements and priorities.
* Under limited direction, assist in the design, implementation and testing of scientific software, and carry out research investigations, requiring originality, creativity and innovation.
* Contribute to the ASKAP and Pawsey software development teams in the areas of: HPC I/O optimisation, parallel programming techniques and use of accelerator technologies (GPU) for Radio Astronomy.
* Present results in a meaningful format, prepare reports for project stakeholders and/or write scientific papers for publication and presentation.
* Draw on professional expertise and knowledge of other disciplines to recognise opportunities for innovation and formulate software solutions by pursuing new ideas/approaches and networking with scientific and engineering colleagues across a range of disciplines.
* Work with the team to develop, refactor and optimise existing Radio Astronomy imaging algorithms running on the new Pawsey Supercomputing Systems to support the ongoing demands of ASKAP.
* Address problems promptly and in a constructive manner, selecting the most efficient approach and preparing detailed design proposals and experimental protocols.
* 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, regionally dispersed research team, to carry out tasks in support of CSIRO’s scientific objectives.
* Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Zero Harm goals.
* Other duties as directed.

## **Selection Criteria**

#### Essential

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. A PhD (or an equivalent combination of qualifications and research experience) in a relevant field such as Computer Science, Computer Engineering or equivalent.
2. Demonstrated ability to undertake original, creative and innovative scientific research, both independently and collaboratively as part of a team.
3. A publication history of authorship on scientific papers in peer reviewed journals and/or reports, grant applications or inventorship on patent applications.
4. Strong communication skills, including the ability to effectively convey information and ideas both in writing and orally.
5. Advanced programming experience in C++ and Python with focus on developing Scientific Computing application running on HPC platforms.
6. Experience in parallel programming (OpenMP, MPI) and in programming using accelerator (GPU) technologies (OpenACC, CUDA).

## **Desirable:**

1. Experience with scientific workflow systems such as Dask, Nextflow or CWL.
2. Experience with agile software development methodologies.
3. Knowledge and/or interest in Astronomy.

## **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:** Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.
* **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.

Special Requirements

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

## **About CSIRO:**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/) and [CSIRO Astronomy and Space Science](https://www.csiro.au/en/Research/Astronomy) for more information.

CSIRO is a values-based organisation.  In your application and at interview you will need to demonstrate behaviours aligned to our values of:

* People First
* Further Together
* Making it Real
* Trusted