# Position Details

## CSIRO Early Research Career (CERC) Postdoctoral Fellowship– CSOF4

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| The following information is for applicants |
| Advertised Job Title | CSIRO Postdoctoral Fellowship in Software Architecture for Trustworthy Data |
| Job Reference | 75465 |
| Tenure | Specified Term of 3 years Full-time  |
| Salary Range | AU$88,163 to AU$96,573 pa (pro-rata for part-time) + up to 15.4% superannuation |
| Location(s) | Eveleigh, New South Wales |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | Australian/New Zealand Citizens, Australian Permanent Residents and Australian temporary residents currently residing in Australia (visa sponsorship may be provided to eligible onshore candidates) |
| Position reports to the | Sherry Xu |
| Client Focus – Internal | 80% |
| Client Focus – External | 20% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Sherry (Xiwei) Xu via email at xiwei.xu@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

**CSIRO Early Research Career (CERC) Postdoctoral Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years relevant postdoctoral work experience. These fellowships aim to develop the next generation of future leaders of the innovation system through:

* A differentiated career development program to deliver capability excellence and breadth across all facets of the national innovation system.
* Research training via strategic research and development projects with a clear focus that will deliver real impact through science and engineering excellence;
* An innovative culture supporting the development and demonstration of original thinking and expertise leading to peer-recognition; and
* Opportunities to develop skills and experience in collaborative research teams to effectively work within national and global multi/transdisciplinary and multi-stakeholder environments.

CERC Postdoctoral Fellows **are appointed for three years or part time equivalent.**

The Postdoctoral Fellow will tackle research challenges at the core of designing software for trustworthy traceability systems. They will lead research project activities, and plan and revise these activities based on the progress. The Postdoctoral Fellow will collaborate with colleagues in CSIRO Business Units and with external key stakeholders to understand needs and constraints in application domains.

The Postdoctoral Fellow plays a significant role in the innovation, and takes full responsibility in delivering the project, and will lead most of the project activities, plan and revise these activities based on the progress. They will take the initiative to execute the plans, organise regular team meetings, and lead discussions in these meetings. More specifically, the Postdoctoral Fellow will consult with colleagues from other CSIRO Business Units and external key stakeholders in the food supply chain to understand their needs. The Postdoctoral Fellow will be the mediator for knowledge exchange between the team members.

The Postdoctoral Fellow will explore the existing solutions for traceability data and identify the gap, then lead the design and evaluation of the customizable traceability component. They will also take the lead to publish the project results primarily in the software engineering research area and develop a research prototype of the traceability component.

### Duties and Key Result Areas:

Under the direction of senior research scientists and engineers, the CERC Postdoctoral Fellow will:

* + Understand the domain/context: Work with domain experts from two different supply chains (for example, agriculture supply chain and hydrogen supply chain) to understand domain need and client-specific requirements and technical constraints from different stakeholders. (Can use existing initiatives ongoing at CSIRO for domain understanding and challenges.)
	+ Design customizable traceability component: Design a model driven approach to enable highly customisable, auto-generation of client-specific traceability data collection, deployment, and processing.
	+ Propose an analysis method: Propose a method to show the relation between the trustworthiness of the traceability data and the software quality of the collaborative infrastructure and other systems used to supply the traceability data. This analysis method also shows how each of the components affects the overall trustworthiness of the traceability data. The quality of the data infrastructure can be analysed using ISO 25010 Software Product Quality Model. The quality of traceability data can be analysed according to ISO 25012 Data Quality Model.
	+ Propose design guidance: Provide design guidance in terms of design tactics / design patterns on improving the trustworthiness of the overall design from both data and software aspects.
	+ Build research prototype: Build a research prototype that instantiates the design of the traceability component using blockchain and smart contracts.
	+ Evaluation: Work with domain experts and use existing initiatives to analyse the research prototype implemented in step 6 against requirements elicited in step 2.
	+ Carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
	+ Recognise and exploit opportunities for innovation and the generation of new theoretical perspectives, and progress opportunities for the further development or creation of new lines of research
	+ Utilise design thinking methodology to plan and prepare research proposals, and apply impact methodology to research projects
	+ Carry out research investigations requiring originality, creativity, and innovation
	+ Record, manage, and analyse data using relevant domain data science techniques
	+ Proactively undertake development to grow effective researcher capabilities to support career goals
	+ Adhere to the spirit and practice of CSIRO’s Values; Code of Conduct; Health, Safety, and Environment procedures and policy; Diversity initiatives; and Making Safety Personal goals
* Follow other duties as directed

[**The CERC Postdoctoral Fellow learning and development program**](http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships)is developed between the CERC Postdoctoral Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellows’ capabilities to the level expected of an independent researcher and will include on-the-job and course-based development encompassing:

* Discipline-specific techniques and protocols
* Professional growth and networking
* Project management
* Communication and influencing skills
* Working and collaborating with others

## **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:** Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).
* **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**

#### Essential

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

1. A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as software architecture, enterprise systems or security.

Please note: To be eligible for this role you must have **no more than 3 years** (or part-time equivalent) of postdoctoral research experience.

1. Research experience on distributed ledgers and traceability systems, including system design, consensus protocols, smart contract engineering, governance or security analysis.
2. Demonstrated expertise in software engineering, data systems integration, or data analytics, specifically related to data ingestion, manipulation and visualization.
3. High level computational and programming skills (e.g. Python, R, or C++) to build prototype diagnostic systems and conduct analyses.
4. High-level written and oral communication skills with the ability to represent the research team effectively internally and externally, including the presentation of research outcomes at national and international conferences.
5. A sound history of publication in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
6. A record of science innovation and creativity, including the ability and willingness to incorporate novel ideas and approaches into scientific investigations.

## **Desirable:**

1. Supply or value chain analysis research experience in the agriculture, food or mineral sectors
2. Programming experience with at least one distributed ledger platform.
3. Remain productive, positive, and resilient in complex, ambiguous, and/or uncertain environments.
4. The ability to work effectively as part of a multi-disciplinary, potentially regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.

To be appointed to this CERC Postdoctoral Fellowship role within CSIRO, candidates will be expected to commence employment by December 2021/January 2022. To be appointed as a CERC Postdoctoral Fellow within CSIRO, candidates are required to have **submitted** their PhD at the time of commencement, as a minimum requirement, if PhD conferment has not been obtained. If a candidate has submitted, but their PhD has not yet been formally attained, the starting salary will be CSOF4-1 ($85,361). Upon CSIRO receiving written confirmation that the PhD has been awarded (within a six month period from commencement date), the salary will be increased to the negotiated level and the difference will be back-paid to the Officer’s start date.

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.

* 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 may be required to undertake a pre-employment medical examination prior to commencement.
* If the successful candidate is not an Australian Citizen or Permanent Resident, they may be required to undergo additional security clearances, which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test).- https://ielts.com.au/

**Our Value Proposition**

We want CERC Postdoc Fellows to join our world class science, engineering, and digital teams to solve big, complex problems that make a real difference to the future of Australia and the world.

You'll get to work with some of the most talented minds in their fields, not just in Australia, but in the world. At CSIRO, we spark off each other, learn from each other, trust each other and collaborate closely to achieve more than we could individually.

CSIRO Early Research Career (CERC) Postdoctoral Fellow Experience Employee Value Proposition (EVP). Find out more [here](https://www.csiro.au/en/careers/postdoctoral-fellowships)!

## **About CSIRO:**

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

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

* 1. People First
	2. Further Together
	3. Making it Real
	4. Trusted

Find out more about CSIRO [Data61](https://data61.csiro.au)

Find out more about the CSIRO [Australian Animal Health Laboratory](https://www.csiro.au/en/Research/Facilities/AAHL)

Find out more about CSIRO [Agriculture and Food](https://www.csiro.au/en/Research/AF)

Find out more about CSIRO [Health and Biosecurity](https://www.csiro.au/en/Research/BF)

Find out more about CSIRO [Energy](https://www.csiro.au/en/Research/EF)

Find out more about CSIRO [Land and Water](https://www.csiro.au/en/Research/LWF)

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