# Research Projects – CSOF5

Role summary for potential applicants

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| Advertised Job Title**:** | Spatial Internet Systems Software Engineer |
| Reference Number**:** | 57411 |
| Classification**:** | CSOF5 |
| Salary Range: | AU $95,369 to AU $103,205 plus up to 15.4% superannuation |
| Location**:** | Pullenvale, Brisbane QLD |
| Tenure: | Specified Term of 2 years |
| Relocation assistance**:** | Will be provided to the successful candidate if required. |
| Applications are open to: | * Australian/New Zealand Citizens and  Australian Permanent Residents Only * *For Specified Term positions, we will accept applications from Temporary Residents with working rights for the length of the term, who do not require sponsorship.* |
| Functional Area**:** | Research Projects |
| % Client Focus - Internal: | 30% |
| % Client Focus - External: | 70% |
| Reports to the: | Team Leader – 4D Internet Team Hard Rock Mining |
| Number of Direct Reports: | 0 |

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| **Role Overview:** |
| The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation.  CSIRO has recently commenced a joint venture which brings together the capabilities of CSIRO and CRC Mining to establish the world’s largest metalliferous mining Research and Development entity – Mining3.  The role of the Spatial Internet Systems Software Engineer in Mining3, is to work closely with software engineers, researchers and industry collaborators to build internetworked 3D spatial data management platforms for the mining and mineral processing industry.  The role is to produce innovative software for commercial, industrial and research customers. In this role, you will lead the technical design of the system in collaboration with the lead designer and lead researchers. You will apply database, machine learning and cloud technologies to create a distributed volumetric data management and analytics platform. The data involved includes exploration drill data, mine architecture, mine block models, assay data, material provenance, mine operations and mill process information. You will also aid in the development and implementation of mining and mineral processing value chain models as part of the system.  A strong, demonstrated understanding current technical best practice in developing complex, spatial data-intensive, distributed applications is essential for this role. |

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| **Duties and Key Result Areas:** |
| * Develop software and systems building on Mining3’s research in areas such as mine design, mineral analysis, optimisation and automation. * Lead software and system architectural design activities. * Follow and implement recognised software engineering best practices including documentation, test-driven development and automation for ensuring software quality, performance, accessibility, maintainability and reusability. * Work collaboratively with project team members and others across Mining3 and CSIRO to ensure that project goals and Mining3 goals are achieved. * Contribute to Mining3’s engineering discipline by improving the use of software development tools, practices and culture. * Maintain high ethical and performance standards. * Communicate effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation. * Set-up and/or maintain effective and efficient work teams, allocate and manage resources and contribute to staff performance management and career development. * Choose appropriate management strategies and communication styles to maintain high levels of motivation and productivity, give feedback for development purposes and provide support and direction for improvement, as required. * Adhere to the spirit and practice of CSIRO’s Values, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals. * Other duties as directed. |

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| **Selection Criteria:** |
| *Under CSIRO policy only those who meet all essential criteria can be appointed*  ***Pre-Requisites:***   * **Education/Qualifications:** ABachelor degree in a scientific or engineering discipline such as Computer Science or Software Engineering and at least 5 years of working experience in a relevant field. * **Communication:** Demonstrated high-level 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. Documentation of technical design and implementation is of core importance. * **Behaviours:** A history of professional and respectful behaviours and attitudes in a collaborative environment. * **Adaptability:** The ability to effectively manage a number of competing priorities simultaneously, to carry out non-routine tasks independently, and to have flexibility of roles and functions, with an emphasis upon pro-active problem solving.   ***Essential Criteria:***   1. Demonstrated expertise in cloud-based client-server software architecture, internet and repository design and implementation, delivering robust and maintainable code to solve business problems. 2. Demonstrated experience with varied programming languages and paradigms, such as procedural (e.g. C/C++/C#, Java, Python), object-oriented, functional, static/dynamic typing, declarative (e.g. Prolog, knowledge representation languages). 3. Demonstrated experience with contemporary software development tools and practises: version control, unit testing, automated testing, issue tracking. 4. Demonstrated ability to work effectively and adaptably as part of a multi-disciplinary, regionally dispersed team, and carry out tasks autonomously in support of scientific research. 5. Demonstrated work experience with postgresql, postgis, sfcgal, 3D models and large datasets such as terrain models, lidar and point clouds.   **Desirable Criteria:**   1. Ability and willingness to contribute novel ideas and approaches in support of scientific investigations. 2. Experience with agile project methodology and ability to be a scrum master. 3. Experience in or knowledge of geosciences, mining and mineral processing. 4. Experience with web application stack design and implementation (frontend/single-page apps, server-side rendering, RESTful APIs, backend services). 5. Experience with functional programming languages (e.g. Scala, Haskell) focussed on cloud computing. 6. SQL and NoSQL database design, administration, performance tuning, schema design and modelling, stored procedures, triggers, clustering, query design and evaluation.   **As Australia’s Innovation Catalyst, CSIRO has strategic actions underpinned by behaviours aligned to**:   * Excellent science * Inclusion, trust & respect * Health, safety & environment * Delivery on commitments.   **In your application and at interview you will need to demonstrate alignment with these behaviours.** |

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| **Other Information:** |
| **How to Apply**  Please apply for this position online at <https://jobs.csiro.au/> and enter requisition number **57411**. Internal applicants please apply via ‘Jobs Central’ in SAP (click ‘Recruitment’)  Please load your CV (Maximum 2MB). You may also be required to respond to some screening questions.  If you experience difficulties applying online call 1300 984 220 for assistance. Outside Australian business hours please email: [csiro-careers@csiro.au](mailto:csiro-careers@csiro.au).  **Referees**: Please provide contact details of two previous supervisor or academic/professional referees in your resume/CV. We will ask your permission before making contact.  **Contact:** If after reading the position details above you require more information please contact:  Dr Charlotte Sennerstenvia email: charlotte.sennersten@csiro.au or phone: +61 (0)499 240053  Please do not email your application directly to Dr Sennersten. Applications received via this method will not be considered.  **About CSIRO**  Australia is founding its future on science and innovation. Its national science agency, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation.  Find out more! [www.csiro.au](http://www.csiro.au).  We work flexibly at CSIRO, offering a range of options for how, when and where you work. Talk to us about how this role could be flexible for you.  Find out more! [CSIRO Balance](https://www.csiro.au/en/Careers/A-great-place-to-work/Work-life-balance)  **About Mining3**  Mining3 is the leading research organisation directed by the global mining industry to develop and deliver transformational technology to improve the productivity, sustainability, and safety of the mining industry.  Our world-class researchers develop solutions to industry identified challenges, benefiting our members and the global mining industry.  By bringing together industry and research expertise, we are able to identify critical challenges and accelerate the delivery of real-world solutions, ensuring they are available to the industry as rapidly and effectively as possible.  Find out more! [www.mining3.com](http://www.mining3.com) |