# Lead System Engineer (10154)

**Job Location**

UK with frequent international travel

**Area / Department**

Engineering and Project Management

**Contract Type**

Permanent

**Salary**

Competitive salary with generous pension, healthcare and leave benefits

**Closing Date**

08/12/2021

**Ref No**

10154

At the SKAO we are coordinating a global effort to deliver one of the largest science facilities on the planet. The SKAO telescopes will be next-generation instruments that will help to answer key questions in astrophysics, drive technological innovation and support human capital development.

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A unique opportunity for a highly qualified System Engineer with significant experience in science infrastructure projects to contribute to the construction of the largest science Observatory on the planet.

## The Role

The Lead System Engineer will work on the design, integration, verification and engineering commissioning of the SKAO radio telescopes, providing high-level specialist expertise and advice to drive SKAO in the achievement of its objectives and ensure that it works within legislation, regulation and best practice.

Under minimal supervision and reporting to the Senior System Engineer, the Lead System Engineer will maintain the Observatory technical definition and compliance. The responsibilities of the role will involve tactical-strategic interfaces with senior stakeholders, who will recognise the post holder as an expert in the system engineering field.

The Lead System Engineer will be part of a team of six system engineers and will work closely with other SKAO business functions, as well as SKAO partners.

In line with our Flexible Working Policy, flexibility around working hours may be accommodated in agreement with the Line Manager where operationally viable, ensuring telescope delivery is not impacted.

## Key Responsibilities, Accountabilities and Duties

* Provide high level specialist advice, consultancy and leadership in the system engineering area to guide strategic executive management decision-making, business planning, and to enable effective resolution of critical organisational issues.
* Oversee and lead complex design work conducted by internal/external engineering resources, ensuring that it meets SKAO needs and design intent. Responsible for preparation of specifications, conceptual designs, trade off studies and the development of highly complex components, sub-systems and systems as technical lead.
* Build and manage effective collaborative relationships across SKAO and with relevant external agencies and partners at a senior level, to understand their position and needs, to enable effective working relationships, and to proactively build lasting consensus and agreements. Builds a shared understanding of needs and goals.
* Seek out developments and new ways of working, to inform the planning and leading of change initiatives and business/efficiency activities to enable improvements and continued growth of SKAO and its objectives.
* Coach and mentor colleagues to share learning and experience, and contribute to the development of SKAO capability.
* Act as an official representative of SKAO, representing the Observatory at external events and to various partners.

## Mandatory Knowledge, Skills and Experience

* University degree in maths, physics, science or engineering, or equivalent experience.
* Membership of, or eligibility for, membership of recognised national or international system engineering institutes.
* Recognised technical authority regionally or internationally and experience with unique, authoritative knowledge in the field of systems engineering applied to large research infrastructure.
* Experience (typically at least ten years) in system engineering with proven technical knowledge gained in research infrastructure facilities and instrumentation for astronomy.
* Experience in system engineering lifecycle stages, processes, user requirements, system and product requirements, functional and non-functional requirements, functional architecture.
* Experience in defining tests to demonstrate design compliance, end-to-end traceability.
* An expert understanding and experience in using system and critical thinking techniques and methodology.
* Ability to ensure that a set of interrelated activities are controlled, co-ordinated and linked into overall system designs and plans.
* Deep knowledge of the industry and/or the relevant external environment (legislative, regulatory, best practice standards etc).
* Experience or understanding of working based on lean/agile principles.
* Ability to solve problems and make effective decisions within a project with design complexity and uncertainty.
* Excellent communication and influencing skills with distributed, highly specialised project teams and stakeholders, working in a multicultural environment and across international boundaries and time zones.
* A flexible and self-motivated team player who is adaptable to change.
* Ability and willingness to represent SKAO in international and other forums.
* Ability and willingness to travel to SKAO sites and member countries worldwide as necessary and when possible in the context of any international travel restrictions (typically for up to one week, 4-6 times per year).

## Desirable Knowledge, Skills and Experience

* Knowledge of NEC4 contracts.
* Knowledge of requirement and testing software suite like DOORS, Jama.

****Equality Diversity and Inclusion Statement****

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# Operations Scientist (10161)

**Job Location**

UK (Head Office)

**Area / Department**

Telescope Operations

**Contract Type**

Permanent

**Salary**

Competitive salary with generous pension, healthcare and leave benefits

**Closing Date**

26/11/2021

**Ref No**

10161

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An ideal role for a talented and motivated radio astronomer with Observatory experience who will contribute to the operational planning and commissioning of the world's largest radio telescope.

## The Role

The Operations Scientist will support the planning for the operations of the SKAO and will bring broad operational and scientific experience within the full range of activities required to run a successful radio observatory. This includes knowledge of the telescope systems, data processing and analysis, as well as experience serving a diverse and distributed user community.

The successful candidate will draw on their experience, expertise within their established networks and the broader astronomical community to inform the detailed SKAO operational plan and policies. They will also be required to support the planning and execution of scientific commissioning and verification for the SKA Observatory.

The successful candidate will have good organisational, communication and collaborative skills.

In line with our Flexible Working Policy, flexibility around working hours may be accommodated in agreement with the Line Manager where operationally viable, ensuring telescope delivery is not impacted.

## Key Responsibilities, Accountabilities and Duties

Under the direction of the SKAO Head of Science Operations, the successful candidate will support the future science operations of the SKA Observatory by:

* Supporting the development and continual refinement of the science operational model for the SKA telescopes;
* Ensuring consistency between the SKA System Level requirements with those needed for the successful future operation of the SKA telescopes;
* Contributing to commissioning and science verification, including the development of plans, requirements for early array releases and test procedures;
* Supporting the development of software needed to operate the SKA telescopes or necessary for the SKAO user community;
* Effectively collaborating with SKAO staff across the three sites (with possible occasional travel to the SKA telescope sites in Australia and/or South Africa);
* Optionally undertaking a programme of personal research up to 25% of employed hours;
* Undertaking other duties as directed by the Head of Science Operations.

## Mandatory Knowledge, Skills and Experience

The post holder will have:

* A university PhD degree in Astronomy, Physics, Engineering, another closely related and relevant field, or equivalent experience.
* Experience in radio astronomy techniques including in the acquisition, reduction and analysis of astronomical data, especially from low-frequency arrays.
* Experience with the operation of radio observatories.
* Experience working with a diverse and globally distributed telescope user community and providing appropriate user support.
* Effective oral and written communication skills in English.
* Be a flexible team player who is adaptable to change.

## Desirable Knowledge, Skills and Experience

* Experience in commissioning radio astronomy instrumentation (or similar).
* Experience in time domain astronomy.
* Experience working in large collaborative projects.
* Experience in understanding and articulating the needs of a user (e.g. radio astronomer) to inform the development of requirements (e.g. through a series of use cases) and/or operational policies.
* Ability to work effectively with engineers and scientists from a variety of cultures and influence people in widely differing parts of a complex organisation.
* Awareness of equitable practices, including accessibility, to facilitate the broadest possible access to the Observatory from the scientific user community.

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# Project Manager SKA-Mid Digital (10172)

**Job Location**

UK (Head Office)

**Area / Department**

Engineering and Project Management

**Contract Type**

Permanent

**Salary**

Competitive salary with generous pension, healthcare and leave benefits

**Closing Date**

22/11/2021

**Ref No**

10172

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A unique opportunity for a talented technical leader who can inspire and coordinate teams working on different continents in order to deliver one of the biggest scientific facilities on the planet.

## The Role

The Project Manager SKA-Mid Digital will manage the delivery of the Mid Digitiser/Single Pixel Feed receivers, the Mid Central Signal Processor and Correlator Beamformer, and the Mid Synchronisation and Timing for the SKA-Mid Telescope. These work packages are technically challenging and will be delivered via international collaboration, meaning the successful candidate will need a sound technical background and ability to effectively manage geographically dispersed teams.

The Project Manager SKA-Mid Digital will report to the SKA-Mid Senior Project Manager and will contribute to the activities of the Telescope Delivery Team which is responsible for the overall delivery of the SKA-Mid Telescope. The Project Manager SKA-Mid Digital will lead the Mid Digital Product Delivery Team, which includes specialist engineers related to the various digital products for the SKAO, via a matrix structure.

The Project Manager SKA-Mid Digital will be responsible for managing the creation of procurement packs for the Mid Digital contracts, and will assist in the assessment of bids and contract negotiation. They will then manage these contracts through to successful completion.

In line with our Flexible Working Policy, flexibility around working hours may be accommodated in agreement with the Line Manager where operationally viable, ensuring telescope delivery is not impacted.

## Key Responsibilities, Accountabilities and Duties

* Lead, manage and develop the Mid Digital Product Delivery Team within the matrix organisation at SKAO HQ
* Manage communications with the contractors and other stakeholders
* Contribute to the procurement preparation activities for Mid Digital
* Manage costs, schedule, issues and risks
* Deliver the Mid Digital contracts and successfully handover to operations
* Occasionally travel nationally and internationally, as required, to fulfil these duties (typically for one week, 3-4 times per year)
* Undertake any other reasonable duties as directed by the SKA-Mid Senior Project Manager or a member of the SKAO Senior Leadership Team

## Mandatory Knowledge, Skills and Experience

* Recognised university degree-level education/training in engineering or physical sciences, or equivalent experience
* Knowledge of electronic engineering and signal processing
* Experience in managing high value engineering contracts
* Experience leading geographically dispersed teams
* Understanding of project management and controls - costs, schedule, issues and risks
* Excellent English verbal and written communication skills including experience of presenting work verbally at meetings and other fora
* A flexible and self-motivated team player who is adaptable to change
* Ability and willingness to travel nationally and internationally as required and when possible in the context of any international travel restrictions (typically for one week, 3-4 times per year)

## Desirable Knowledge, Skills and Experience

* Post-graduate qualification in management, engineering or physical sciences
* Understanding of correlators and the signal chain of a radio interferometer
* Experience in large scale science infrastructure projects
* Experience in FPGA development, or Agile software development
* Experience of projects using system engineering
* Experience in NEC contracting
* Experience in managing delivery in multi-disciplinary, multinational projects
* Industry experience, and/or a track record in successful collaborative links with industry

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# Network Engineer (10173)

**Job Location**

UK (Head Office)

**Area / Department**

Engineering and Project Management

**Contract Type**

Permanent

**Salary**

Competitive salary with generous pension and leave benefits

**Closing Date**

30/11/2021

**Ref No**

10173

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This role will lead the provision of the NetTerrain service within SKAO and will ultimately displace the current incumbent, at November 2021, engaged on a temporary basis. It will be based at GHQ Jodrell Bank and will report to the Computing Infrastructure Lead. It would suit an ambitious network specialist with a background in real world design, deployment and support of enterprise sized networks.

## The Role

The SKAO is well advanced along the process of moving away from the use of paper-based network designs to using the NetTerrain graphical software design tool. The tool is the designated master source for SKAO observatory network designs, ie physical & logical networks, technical specifications, hardware model reference codes, connectivity diagrams and rack equipment rack layouts etc. The NetTerrain tool greatly aids: control over network design information quality; availability of information to assist in the visualisation and analysis of networks and any other SKAO systems portrayed in it, eg power systems; managing configuration versions; and the recording of asset identification details.

This role will lead the provision of NetTerrain services within the SKAO and will work closely with and operate in support of the SKAO Network Architect, Computing Infrastructure Lead, Domain Specialists, Project Managers, System Engineers, host country Network Engineers and other stakeholders as required. It is anticipated that the role may also participate in some activities focused on the delivery of network designs for the SKAO telescopes.

Overall responsibilities include: supporting the SKA Network Architect and other stakeholders by managing the evolving SKA network (and other) design knowledge flow into and out of the NetTerrain knowledge repository; maintaining the SKA’s compute and network designs in NetTerrain; administering the NetTerrain software system service and its licensing; providing assistance to colleagues on the use of the NetTerrain tool; and taking the lead on matters that maintain the quality of content held in and output from NetTerrain.

## Key Responsibilities, Accountabilities and Duties

* Ensuring the appropriate elements of the NetTerrain content for the SKAO designs, as far as possible, are clear, well structured, usable and up to date, ie accurately reflect the latest agreed SKAO design, by:
  + Inputting to NetTerrain, as required and or directed, the network designs. Sources include legacy paper based network designs, technical diagrams and other instructions and media.
  + Inputting to NetTerrain, as required and or directed, design changes.
  + Providing network design and software tool support to NetTerrain users, ie the associated design authorities of each system / sub-system of the SKA.
* Monitor the network design content held within NetTerrain and highlight quality issues such as omissions, conflicts, errors. Where directed, lead or participate in the resolution of quality issues.
* Planning and administering NetTerrain software updates in coordination with the project teams(users), SKAO IT department and the NetTerrain vendor.
* Deliver NetTerrain user training and ad-hoc support.
* Helping define correct procedure for use of the tool and ensure adherence by users.
* Maintaining the SKAO NetTerrain user guide documentation.
* Supporting design authorities involved in processing engineering change proposals (ECPs) by providing design change impact analysis.
* Be an active and integral part of the SKAO global network team.

## Mandatory Knowledge, Skills and Experience

* Experience of the design of large enterprise network systems.
* Experience of supporting the day to day operation of enterprise networks.
* Good understanding of fully physical and logical network concepts, connectivity and associated IT infrastructure.
* Able to produce high quality, clear, unambiguous documentation.
* Experience of engineering change management processes.
* Strong written and oral communication skills.
* Able to self-organise, requiring a minimum level of supervision.
* Able to proactively engage with multiple, multi-skilled science, engineering and management teams to obtain network designs detail, eg clarification.
* Ability to work with ambiguity, eg where designs are changing & evolving, conflicting or not fully detailed.
* Ability to work efficiently in an international, multi-time zone, multi-cultural project environment.
* Hold a relevant higher qualification(s) at least a Bachelor’s degree in science or engineering and/or professional qualification e.g. Cisco Certified Network Associate (CCNA).
* Have excellent communication and influencing skills with distributed, highly specialised project teams and stakeholders, across international boundaries and time zones, involving a wide range of cultures and backgrounds.
* Be able and willing to work out of normal working hours on occasion to meet service needs.
* Be a flexible team player who is adaptable to change.

## Desirable Knowledge, Skills and Experience

* Prior experience with NetTerrain or similar network design software tool.
* Ability to write SQL based database queries/scripts, and/or REST based APIs.
* Experience of collaboration and work flow management tools such as Atlassian Confluence and Jira.
* Experience of data centre design, deployment, and operations.
* Asset and configuration management software.
* An interest in astronomy.
* Working within lean/agile development environments.

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