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|-------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HR191 | POSITION DESCRIPTION |  <b>UNIVERSITY OF CAPE TOWN</b><br>IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD |
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NOTES

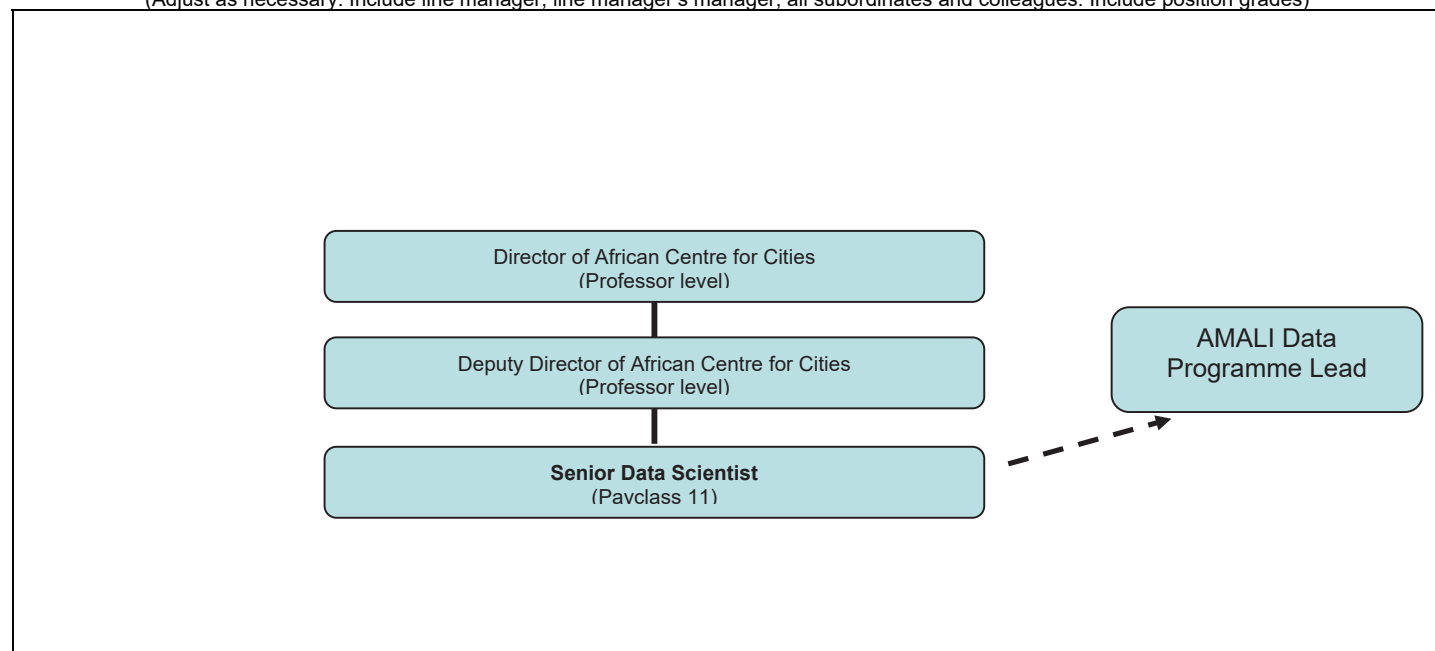
- Forms must be downloaded from the UCT website: <https://forms.uct.ac.za/forms.htm>
- This form serves as a template for the writing of position descriptions.
- A copy of this form is kept by the line manager and the position holder.

POSITION DETAILS

|                                            |                                                |                             |  |
|--------------------------------------------|------------------------------------------------|-----------------------------|--|
| Position title                             | Senior Data Scientist                          |                             |  |
| Job title (HR Business Partner to provide) | Senior Data Scientist                          |                             |  |
| Position grade (if known)                  | Payclass 11                                    | Date last graded (if known) |  |
| Academic faculty / PASS department         | Engineering and Built Environment              |                             |  |
| Academic department / PASS unit            | School of Architecture, Planning and Geomatics |                             |  |
| Division / section                         | African Centre for Cities                      |                             |  |
| Date of compilation                        | October 2025                                   |                             |  |

ORGANOGRAM

(Adjust as necessary. Include line manager, line manager's manager, all subordinates and colleagues. Include position grades)



PURPOSE

The AMALI Data Programme supports African Mayors and their executive teams to use data more effectively for governance, performance management, and delivery of legacy goals. Located within the African Centre for Cities (ACC), the Programme provides in-depth technical and skills support across a calendar year, combining city-level coaching with cutting-edge data systems development.

The Senior Data Scientist plays a central role in this work, providing senior technical leadership at the intersection of data engineering, product development, and applied urban governance. The postholder will design, develop, and maintain scalable data systems, dashboards, and analytical tools that enable the AMALI cities to make evidence-based decisions and track progress on their mayoral priorities.

Working closely with the AMALI Data Programme Lead, five City Data Advisors, municipal technical teams, and external partners, the role will set programme-wide standards for data systems design and integration, ensuring resilience, interoperability, and comparability

across diverse city contexts. The postholder will also provide specialist technical advisory support, mentoring, and capacity-building, strengthening local teams and embedding sustainable practices.

In addition, the Senior Data Scientist will contribute to knowledge generation and dissemination on African city-level data innovation, producing toolkits, case studies, and applied research outputs that showcase AMALI's lessons and strengthen UCT's institutional reputation as a leader in applied data systems and governance across the continent.

# CONTENT

| Key performance areas |                                             | % of time spent | Inputs<br>(Responsibilities / activities / processes/ methods used)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Outputs<br>(Expected results)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|---------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                     | City data systems and product development   | 50              | <ul style="list-style-type: none"> <li>Assess city-level and programme-level data infrastructure and recommend improvements tailored to context.</li> <li>Design and build interactive dashboards using Power BI, Tableau, and Google Looker Studio/Cloud for tracking legacy goals, KPIs, and milestones.</li> <li>Develop automated data pipelines (Python, R, SQL) for extracting, cleaning, and integrating datasets from multiple city and programme sources.</li> <li>Deploy solutions in cloud environments (AWS, Azure, Google Cloud) to improve scalability, security, and storage.</li> <li>Develop reusable templates, toolkits, and visualisation frameworks for standardised reporting across AMALI cities and the AMALI Data Programme.</li> <li>Create web-based and mobile-friendly tools for city-level data entry and monitoring.</li> <li>Apply AI and machine learning approaches for forecasting, anomaly detection, and advanced analytics where relevant.</li> <li>Ensure thorough testing, documentation, and version control of all systems and tools.</li> <li>Provide training and user support to ensure adoption and sustainability of solutions.</li> </ul> | <ul style="list-style-type: none"> <li>Functional dashboards and reporting tools co-created with cities, enabling tracking of mayoral legacy goals and KPIs.</li> <li>Standardised templates and digital tools improving data collection and input across city teams.</li> <li>Cloud-based, scalable systems supporting sustainability and resilience.</li> <li>Mobile/web applications that can be used by city staff for data collection / collation.</li> <li>Technical documentation and training materials produced, ensuring long-term system use and independence from individuals.</li> <li>Advanced analytics introduced selectively to improve decision-making.</li> </ul> |
| 2                     | Internal systems integration and management | 20              | <ul style="list-style-type: none"> <li>Map and streamline internal AMALI Data Programme reporting processes.</li> <li>Standardise and maintain internal workflows and templates across platforms.</li> <li>Ensure all internal systems and tools are aligned with AMALI's results framework and reporting requirements</li> <li>Manage the programme's online platforms and digital storage systems to ensure secure, organised, and accessible data.</li> <li>Monitor the programme's data infrastructure and recommend enhancements to ensure security, scalability, and long-term sustainability.</li> <li>Ensure version control and system backups are in place</li> <li>Provide clear documentation and user guidance to support consistent uptake and sustainability across the team.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>AMALI reporting processes streamlined and consistent across platforms.</li> <li>Standardised templates and workflows enabling coordinated programme reporting.</li> <li>Programme data securely stored, organised, and accessible through managed platforms.</li> <li>Documented workflows enabling sustainability and easy onboarding of new staff.</li> </ul>                                                                                                                                                                                                                                                                               |

|   |                                             |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---|---------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | Technical advisory and capacity development | 20 | <ul style="list-style-type: none"> <li>• Provide senior-level technical advice to the AMALI City Data Advisors, consultants, and city technical teams on system/platform choices.</li> <li>• Deliver hands-on troubleshooting support for city teams in data capture, integration, and reporting.</li> <li>• Mentor staff and colleagues on systems design, coding, and advanced analytics.</li> <li>• Facilitate training sessions tailored to city and programme needs.</li> <li>• Develop technical learning materials, including manuals, slide decks, and tutorials.</li> <li>• Advise on emerging data tools and technologies that could strengthen AMALI Data Programme delivery.</li> <li>• Provide continuous technical coaching to embed sustainable practices.</li> </ul>                                                                                                                  | <ul style="list-style-type: none"> <li>• The AMALI City Data Advisors and city partners receive actionable, context-appropriate system advice.</li> <li>• Actionable recommendations provided to cities on system choices and data practices.</li> <li>• Capacity-building workshops delivered, resulting in improved city ability to collect, analyse, and apply data.</li> <li>• Staff mentored and equipped with technical competencies.</li> <li>• Workshops and training delivered, embedding long-term skills across programme and city partners.</li> </ul>             |
| 4 | Knowledge generation and research           | 10 | <ul style="list-style-type: none"> <li>• Contribute to research and knowledge generation on African city-level data systems and innovation.</li> <li>• Co-author policy briefs, toolkits, case studies, templates and academic publications that document lessons from AMALI's work with cities.</li> <li>• Present findings at international, regional, and local conferences and workshops, showcasing innovations in data-driven governance.</li> <li>• Contribute to the African Centre for Cities' broader knowledge base on urban data governance and performance management.</li> <li>• Collaborate to document lessons from AMALI's data systems and processes.</li> <li>• Curate AMALI Data Programme repositories of technical lessons, templates, and guides for long-term reference.</li> <li>• Support knowledge-sharing across city networks, donors, and academic partners.</li> </ul> | <ul style="list-style-type: none"> <li>• Policy briefs, toolkits, case studies, guides published documenting lessons from AMALI's work.</li> <li>• Contributions made to academic publications and applied research outputs.</li> <li>• Knowledge products disseminated at conferences, workshops, and peer networks to showcase African city innovations.</li> <li>• Practical case studies and outputs contributing to the African Centre for Cities' knowledge base.</li> <li>• AMALI Data Programme lessons integrated into ACC's institutional knowledge base.</li> </ul> |

## MINIMUM REQUIREMENTS

|                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |                                      |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------|-------|
| Minimum qualifications                                                                                                                                | NQF Level 7 (e.g. Bachelor's Degree or Advanced Diploma) in Computer Science, Information Systems, Data Science, process engineering or a related field.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |                                      |       |
| Minimum experience (type and years)                                                                                                                   | At least 5 years' professional experience in systems engineering, data product development, or similar role                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |       |                                      |       |
| Skills                                                                                                                                                | <ul style="list-style-type: none"> <li>• Ability to design, develop, and maintain interactive dashboards (e.g., Power BI, Tableau, Google Looker Studio, open-source platforms) for diverse user groups.</li> <li>• Strong software engineering and programming skills, with the ability to develop automated pipelines and scalable solutions.</li> <li>• Ability to integrate multiple systems, standardise reporting processes, and implement quality assurance mechanisms.</li> <li>• Ability to support and advise public sector officials, the AMALI City Data Advisors, and municipal teams on data system choices and implementation.</li> <li>• Strong problem-solving skills, with the ability to apply AI/ML techniques for data cleaning, transformation, and visualisation.</li> <li>• Proven ability to work collaboratively in a team and across multi-stakeholder environments, building trust and fostering collegial work cultures.</li> <li>• Strong written and verbal communication skills, including the ability to prepare technical documentation, user guides, and academic outputs</li> <li>• Excellent time management and organisational skills, with the ability to work independently in a pressurised and results-oriented environment..</li> <li>• Capacity to design, test, and maintain web-based applications or data input tools that are user-friendly and mobile-accessible.</li> <li>• Data governance and ethical handling of sensitive data</li> </ul> |       |                                      |       |
| Knowledge                                                                                                                                             | <ul style="list-style-type: none"> <li>• Extensive knowledge of data system design, dashboard development, and digital product management in government or development contexts.</li> <li>• Strong understanding of African urban governance challenges and the role of data in performance management and decision-making.</li> <li>• Familiarity with city-level data sources (e.g., municipal records, census data, administrative systems) and methods for integrating disparate datasets.</li> <li>• Knowledge of cloud-based platforms (AWS, Azure, Google Cloud) and version control systems for building scalable and sustainable data solutions.</li> <li>• Understanding of data governance, data quality assurance, and ethical considerations in the use of urban data.</li> <li>• Knowledge of research methods (quantitative and qualitative) and ability to contribute to knowledge generation through toolkits, case studies, and academic writing.</li> <li>• Familiarity with data visualisation tools and programming languages (e.g., Python, R, SQL).</li> <li>• Experience in web development (e.g. HTML, CSS, JavaScript frameworks).</li> <li>• Proficiency with collaboration and productivity platforms (Microsoft Office, Google Suite, Airtable, Asana, project management software).</li> </ul>                                                                                                                                                                    |       |                                      |       |
| Professional registration or license requirements                                                                                                     | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |                                      |       |
| Other requirements (If the position requires the handling of cash or finances, other requirements must include 'Ability to handle cash or finances'.) | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |                                      |       |
| Competencies (Refer to <a href="#">UCT Competency Framework</a> )                                                                                     | Competence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level | Competence                           | Level |
|                                                                                                                                                       | Professional knowledge and skill                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3     | Information management               | 3     |
|                                                                                                                                                       | Analytical thinking/problem solving                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3     | Building interpersonal relationships | 2     |
|                                                                                                                                                       | Communication                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2     | Coaching / Developing Others         | 2     |
|                                                                                                                                                       | Teamwork / collaboration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2     |                                      |       |

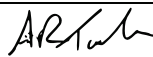
## SCOPE OF RESPONSIBILITY

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Functions responsible for                | <ul style="list-style-type: none"> <li>Provides senior specialist and strategic technical recommendations with programme-wide impact ( approval rests with the AMALI Data Programme Lead).</li> <li>Leads data systems design, development, implementation, and long-term maintenance for the AMALI Data Programme</li> <li>Dashboard and reporting tool development for the AMALI Data Programme and ACC.</li> <li>Guides systems integration, standardisation, and automation processes to strengthen city-level and programme-wide performance management</li> <li>Provides technical oversight, quality assurance, and guidance to consultants, vendors, and city technical teams, ensuring alignment with programme standards.</li> <li>Provides advisory and training support for the AMALI City Data Advisors, city governments, and programme partners.</li> <li>Contributes to knowledge generation and dissemination on African city-level data systems and innovation, positioning UCT and the ACC as leaders in applied data governance.</li> </ul> |
| Amount and kind of supervision received  | <ul style="list-style-type: none"> <li>Line Manager is the Deputy Director of the ACC, operational manager (for day-to-day supervision) will be the AMALI Data Programme Lead.</li> <li>Expected to work independently, exercising significant judgement and autonomy in the design and delivery of technical systems and solutions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Amount and kind of supervision exercised | <ul style="list-style-type: none"> <li>Provides strategic technical oversight and guidance to consultants and external service providers as required</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Decisions which can be made              | <ul style="list-style-type: none"> <li>Recommendations on appropriate platforms and tools for use by AMALI City Data Advisors and AMALI Data Programme cities</li> <li>Prioritises and sequences technical tasks and system development timelines to meet programme and city engagement requirements.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Decisions which must be referred         | <ul style="list-style-type: none"> <li>Strategic decisions with implications for programme direction, resource allocation, or institutional policy.</li> <li>Decisions with impact beyond the AMALI Data Programme or affecting ACC/UCT as a whole.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

#### CONTACTS AND RELATIONSHIPS

|                 |                                                                     |
|-----------------|---------------------------------------------------------------------|
| Internal to UCT | ACC academic and support staff                                      |
| External to UCT | Bloomberg Philanthropies; Mayors and city teams from across Africa; |

#### AGREED BY

|                                | PRINT NAME         | SIGNATURE                                                                            | CONTACT NO. | DATE       |
|--------------------------------|--------------------|--------------------------------------------------------------------------------------|-------------|------------|
| Position Holder                |                    |                                                                                      |             |            |
| Direct Line Manager/Supervisor | Prof Andrew Tucker |  | 2881        | 31.10.25   |
| Area Line Manager              |                    |                                                                                      |             |            |
| HOD                            | A/Prof A Steenkamp |   |             | 30.10.2025 |
| Dean / ED                      |                    |                                                                                      |             |            |
| HR Business Partner            |                    |                                                                                      |             |            |