HR191	**POSITION DESCRIPTION**	UNIVERSITY OF CAPE TOWN IYUNIVESITHI YASEKAPA · UNIVERSITEIT VAN KAAPSTAD

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	Software Engineer	
Job title (HR Business Partner to provide)		
Position grade (if known)	10	Date last graded (if known)	
Academic faculty / PASS department	Health Sciences	
Academic department / PASS unit	Integrative Biomedical Sciences	
Division / section	Computational Biology	
Date of compilation	25th November 2025	

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

Darren Martin (Head of IBMS Department)

Prof Nicola Mulder (HoDiv, Project PI)

Programme Manager — Software Engineer — Software Engineer

TRE Software Engineer
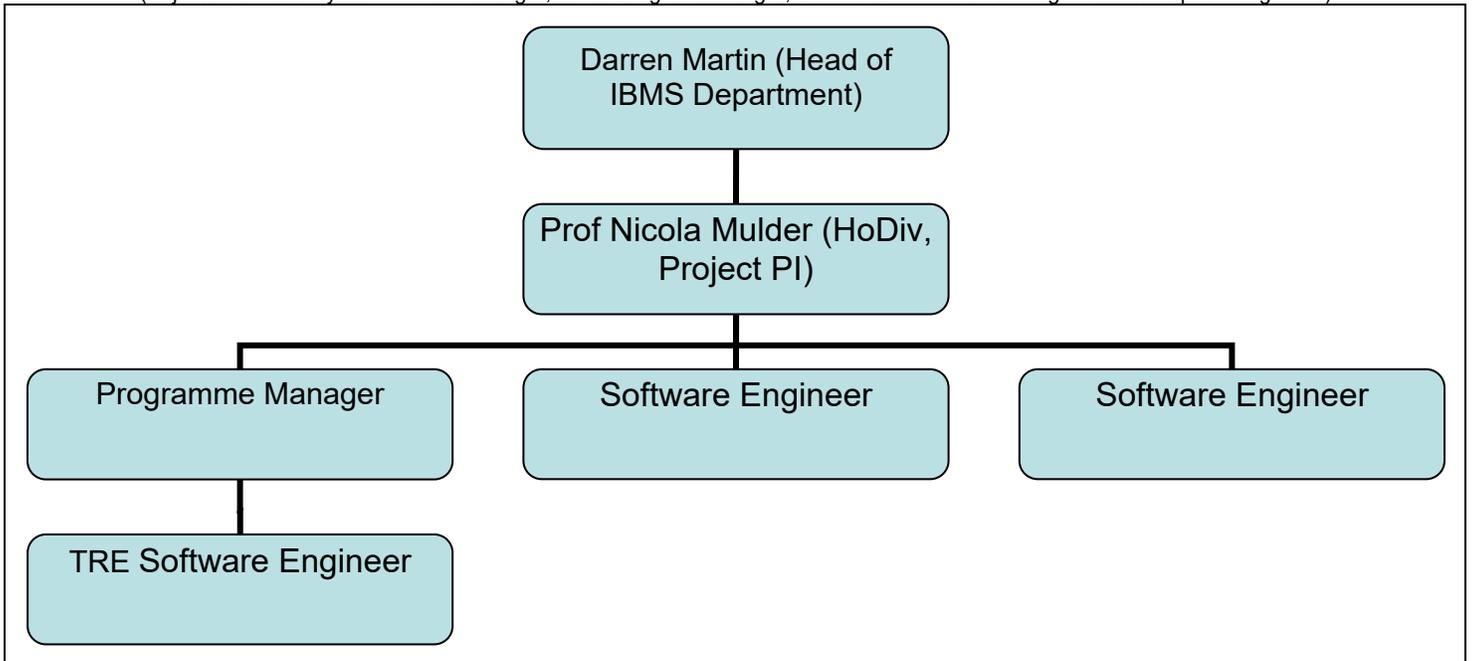
PURPOSE

The main purpose of this position is to develop software and processes for the implementation of Trusted Research Environments (TREs) and federated TREs using international data sharing and analysis standards and application programming interfaces such as GA4GH. The Software Engineer will be responsible for development and support of TREs for various projects which will include data registries, a tools registry, workflows and execution of workflows on a variety of computing environments. He/she will work with data experts on the development of TREs and roll out of federated TREs and will contribute to development and implementation of GA4GH standards and APIs for federated analysis. He/she will work with the eLwazi team at UCT, the ABI network and collaborating partner sites in Africa, the USA and the UK.

	Key performance areas	% of time spent	Inputs (Responsibilities / activities / processes/ methods used)	Outputs (Expected results)
1	Develop Trusted Research Environments (TREs) infrastructure	30%	- Assessing existing Trusted Research Environment implementations, e.g. DataShield - Identify use cases and specifications - Development/deployment of agreed TRE solution(s) -liaising with ICTS/eResearch - Liaise with project partners on technical and process implementation	Trusted Research Environments (TREs) specifications and infrastructure in place
2	Create and populate TREs with data and accessibility tools	20%	- Work with collaborators on building standard data analysis interfaces, models and workflows for specific use cases - TRE testing - coordinate data egress and security processes/people	Data models and analysis interfaces provided for TRE users developed and secured
3	Implement GA4GH standards and APIs for data, tools and workflows for TREs	15%	Use GA4GH standards and APIs to create data, tools and workflow registries, implement Authentication and Authorization tools for secure access for TREs	GA4GH standards and APIs for TREs implemented
4	Implemented federated TRE infrastructure with central hub	15%	- Connect TREs through a federated network through a central hub - Maintenance of federated TRE network	Federated TREs implemented and maintained
5	Infrastructure documentation and user support	20%	- Create technical and user documentation for the TREs - supporting TRE admins - Support users of the platform - Interacting with international TRE networks/projects	- Technical specifications of the platform documented - User documentation for the platform is created - Code is submitted and kept up to date in a project GitHub repo - Users supported

Minimum qualifications	Honours degree in a discipline such as Computer Science, Engineering or Information Systems with 4-5 years' experience in software engineering Masters degree (or equivalent) in computer science, information technology or engineering with 3 years' experience in software engineering.
Minimum experience (type and years)	• Expertise in Python, with experience in the Django Framework • Proficiency in at least one other programming language such as C#, NodeJS, Java or PHP • Experience in developing RESTful APIs • Experience in CI/CD • Proficiency in working with common structured data formats, including JSON and XML • Experience in writing unit tests with good code coverage • Experience with Linux shell and working within a Unix environment • Experience with configuration management (e.g. Ansible, chef) • Proficient understanding of code versioning with Git • Excellent English written and oral communication skills • Evidence of organizational skills **Advantageous:** • Experience in/knowledge of biological data and tools • Experienced with writing reusable workflows in Nextflow, Snakemake, Workflow Description Language (WDL), or Common Workflow Language (CWL) • Experience in deploying virtual environments and applications on public cloud providers, such as OpenStack, AWS, Azure, or Google Cloud • Knowledge of Kubernetes and building/deploying containerized applications • An understanding of the Secure Software Development Lifecycle (SSDLC) • Able to work well with individuals from diverse fields and backgrounds • Federated analysis
Skills	Software development, programming, platform support, containerization, communication
Knowledge	Programming and software development tools, APIs, biomedical data applications, Cloud computing
Professional registration or license requirements	None
Other requirements (If the position requires the handling of cash or finances, other requirements must include 'Ability to handle cash or finances'.)	None

Competencies (Refer to UCT Competency Framework)	Competence	Level	Competence	Level
	Analytical thinking	2	Communication	2
	Problem solving	2	Planning and organizing / work management	2
	Building interpersonal relationships	2	Professional knowledge and skill	2
	Client/student service and support	2	Individual Leadership	2

SCOPE OF RESPONSIBILITY

Functions responsible for	Software engineering and development
Amount and kind of supervision received	Input from line manager in terms of guidance where needed
Amount and kind of supervision exercised	N/A
Decisions which can be made	Detailed technical decisions can be made
Decisions which must be referred	High level technical decisions and decisions that might affect timelines or impact of project need to be referred to line manager

CONTACTS AND RELATIONSHIPS

Internal to UCT	Professor Nicola Mulder (Head of Division)
External to UCT	Open Data Science Platform collaborators, ABI network