

Role Description

Senior Data Engineer



Transport
for NSW

Cluster	Transport
Agency	Transport for NSW
Division/Branch/Unit	Group IT / Greater Sydney IT – Data & Analytics
Role number	
Classification/Grade/Band	Transport Grade 9
ANZSCO Code	262111
PCAT Code	1229192
Date of Approval	October 2020
Agency Website	www.transport.nsw.gov.au

Agency overview

At Transport, we're passionate about making NSW a better place to live, work and visit. Our vision is to give everyone the freedom to choose how and when they get around, no matter where they live. Right now, we're delivering a \$57.5bn program – the largest Australia has ever seen – to keep people and goods moving, connect communities and shape the future of our cities, centres and regions. At Transport, we're also committed to creating a diverse, inclusive and flexible workforce, which reflects the community and the customers we serve.

Our organisation – Transport for NSW – is comprised of numerous integrated divisions that focus on achieving community outcomes for the greater good and on putting our customers at the centre and our people at the heart of everything we do.

Primary purpose of the role

The primary purpose of the role is the maintenance, improvement, cleaning, and manipulation of data from divisional and other databases.

Key accountabilities

- Create and maintain the implementation of an optimal data pipelines from a wide variety of internal and external sources into a large cloud environment.
- Work with genuinely large datasets and implement against reference designs to meet the functional requirements of the cluster, branch and consumers.
- Identify, design, and implement internal process improvements: automating manual processes, streamlining data delivery and re-designing infrastructure for greater scalability and elegance.
- Build and support the infrastructure as code required for the ETL / ELT (extract, load, transform), streaming of data into a data warehouse and data lake including SQL and a range of native 'big data' cloud technologies.
- Keep the virtualised separation of cloud environments and play a strong role in contributing to protecting the data inside a secured perimeter.

- Create of data pipeline, data tools and scripts for Analytics, Business Intelligence, Data Science and AI teams to assist in building highly optimised products ready for a production environment.
- Experience performing root cause analysis on internal and external data and processes to answer specific business questions and identify opportunities for improvement.
- Actively apply expertise in SQL and provide support in RDBMS design, data flow and analysis activities, and troubleshoot data issues and present / implement the solution.
- Build processes supporting data transformation, data structures, metadata, dependency and workload management.
- Ensure that Data Governance is embedded at each point of the data management lifecycle and is a key consideration of all parts of any implementation or data service.

Key challenges

- Constantly scanning the horizon for the evolving AWS / Azure and any other cloud technology landscape and adapting existing skillsets to new approaches.
- Working with a wide variety of data types and structures and leveraging analytical skills and existing experiences to solve complex problems.
- Experience coordinating with other teams for planning, design, governance, engineering and release management of processes and to ensure timely and accurate delivery of data and services.

Key relationships

Who	Why
Internal	
Manager	<ul style="list-style-type: none"> • Key relationship manager, report to, receive advice and guidance, clarify instructions and report on progress against work plans as required • Escalate discuss issues and propose solutions • Provide support to achieve operational priorities, exchange information and contribute to decision making
Division/Branch Leadership team	<ul style="list-style-type: none"> • Provide advice to respond and deliver against emerging business priorities and wider Agency initiatives
Work team	<ul style="list-style-type: none"> • Work cooperatively, exchange information and assist other team members to achieve team objectives and work outcomes
Branch business and system stakeholders	<ul style="list-style-type: none"> • Engage with, and provide guidance to stakeholders involved in UAT activities • Resolve issues and provide solutions to issues
External	
Other divisions of TfNSW, other operating agencies, Vendors and stakeholders	<ul style="list-style-type: none"> • Work cooperatively and proactively with Vendors and Operating Agencies • Ensure alignment of systems with requirements and solution design

Role dimensions

Decision making

The role operates with a high level of autonomy and is expected to determine key operational objectives within the limits of delegated authority. The role is accountable for the delivery of assigned work. The role is accountable for the quality, integrity and validity of the service provided.

The role defers to the Manager on issues that have a significant political impact or issues outside of financial delegation.

Reporting line

The role accounts and reports to the relevant reporting line manager.

Direct reports

Nil

Budget/Expenditure

Nil

Key Knowledge and Experience

- Extensive experience with the 'Big Data' suite of tools.
- Previous experience as a data engineer or similar role.
- Technical expertise with data modelling, data mining, data transformation and segmentation techniques.
- Knowledge of programming scripting languages (e.g. Java, C# or Python).
- Demonstrable expertise of SQL database design.

Essential requirements

- Appropriate tertiary qualifications or demonstrated, relevant, equivalent professional experience.

Capabilities for the role

The [NSW public sector capability framework](#) describes the capabilities (knowledge, skills and abilities) needed to perform a role. There are four main groups of capabilities: personal attributes, relationships, results and business enablers, with a fifth people management group of capabilities for roles with managerial responsibilities. These groups, combined with capabilities drawn from occupation-specific capability sets where relevant, work together to provide an understanding of the capabilities needed for the role.

The capabilities are separated into **focus capabilities** and **complementary capabilities**.

Focus capabilities

Focus capabilities are the capabilities considered the most important for effective performance of the role. These capabilities will be assessed at recruitment.

The focus capabilities for this role are shown below with a brief explanation of what each capability covers and the indicators describing the types of behaviours expected at each level.

FOCUS CAPABILITIES

Capability group/sets	Capability name	Behavioural indicators	Level
 Personal Attributes	Act with Integrity Be ethical and professional, and uphold and promote the public sector values	<ul style="list-style-type: none"> • Represent the organisation in an honest, ethical and professional way and encourage others to do so • Act professionally and support a culture of integrity • Identify and explain ethical issues and set an example for others to follow • Ensure that others are aware of and understand the legislation and policy framework within which they operate • Act to prevent and report misconduct and illegal and inappropriate behaviour 	Adept
 Relationships	Communicate Effectively Communicate clearly, actively listen to others, and respond with understanding and respect	<ul style="list-style-type: none"> • Clearly explain complex concepts and arguments to individuals and groups • Create opportunities for others to be heard, listen attentively and encourage them to express their views • Share information across teams and units to enable informed decision making • Write fluently in plain English and in a range of styles and formats • Use contemporary communication channels to share information, engage and interact with diverse audiences 	Adept
	Commit to Customer Service Provide customer-focused services in line with public sector and organisational objectives	<ul style="list-style-type: none"> • Take responsibility for delivering high quality customer-focused services • Design processes and policies based on the customer's point of view and needs • Use data and information to monitor and improve customer service delivery • Find opportunities to co-operate with internal and external stakeholders to improve outcomes for customers • Maintain relationships with key customers in area of expertise • Connect and collaborate with relevant stakeholders within the community 	Adept
	Work Collaboratively Collaborate with others and value their contribution	<ul style="list-style-type: none"> • Encourage a culture of recognising the value of collaboration • Build co-operation and overcome barriers to information sharing and communication across teams and units • Share lessons learned across teams and units • Identify opportunities to leverage the strengths of others to solve issues and develop better processes and approaches to work 	Adept

		<ul style="list-style-type: none"> Actively use collaboration tools, including digital technologies, to engage diverse audiences in solving problems and improving services 	
 <p>Results</p>	<p>Deliver Results Achieve results through the efficient use of resources and a commitment to quality outcomes</p>	<ul style="list-style-type: none"> Seek and apply specialist advice when required Complete work tasks within set budgets, timeframes and standards Take the initiative to progress and deliver own work and that of the team or unit Contribute to allocating responsibilities and resources to ensure the team or unit achieves goals Identify any barriers to achieving results and resolve these where possible Proactively change or adjust plans when needed 	Intermediate
	<p>Think and Solve Problems Think, analyse and consider the broader context to develop practical solutions</p>	<ul style="list-style-type: none"> Research and apply critical-thinking techniques in analysing information, identify interrelationships and make recommendations based on relevant evidence Anticipate, identify and address issues and potential problems that may have an impact on organisational objectives and the user experience Apply creative-thinking techniques to generate new ideas and options to address issues and improve the user experience Seek contributions and ideas from people with diverse backgrounds and experience Participate in and contribute to team or unit initiatives to resolve common issues or barriers to effectiveness Identify and share business process improvements to enhance effectiveness 	Adept
	<p>Demonstrate Accountability Be proactive and responsible for own actions, and adhere to legislation, policy and guidelines</p>	<ul style="list-style-type: none"> Assess work outcomes and identify and share learnings to inform future actions Ensure that own actions and those of others are focused on achieving organisational outcomes Exercise delegations responsibly Understand and apply high standards of financial probity with public monies and other resources Identify and implement safe work practices, taking a systematic risk management approach to ensure own and others' health and safety Conduct and report on quality control audits Identify risks to successfully achieving goals, and take appropriate steps to mitigate those risks 	Adept
 <p>Business Enablers</p>	<p>Project Management Understand and apply effective planning, coordination and control methods</p>	<ul style="list-style-type: none"> Perform basic research and analysis to inform and support the achievement of project deliverables 	Adept

- Contribute to developing project documentation and resource estimates
- Contribute to reviews of progress, outcomes and future improvements
- Identify and escalate possible variances from project plans

Complementary capabilities

Complementary capabilities are also identified from the Capability Framework and relevant occupation-specific capability sets. They are important to identifying performance required for the role and development opportunities.

Note: capabilities listed as 'not essential' for this role are not relevant for recruitment purposes however may be relevant for future career development.

COMPLEMENTARY CAPABILITIES			
Capability group/sets	Capability name	Description	Level
 Personal Attributes	Display Resilience and Courage	Be open and honest, prepared to express your views, and willing to accept and commit to change	Adept
	Manage Self	Show drive and motivation, an ability to self-reflect and a commitment to learning	Adept
	Value Diversity and Inclusion	Demonstrate inclusive behaviour and show respect for diverse backgrounds, experiences and perspectives	Intermediate
 Relationships	Influence and Negotiate	Gain consensus and commitment from others, and resolve issues and conflicts	Intermediate
 Results	Plan and Prioritise	Plan to achieve priority outcomes and respond flexibly to changing circumstances	Intermediate
 Business Enablers	Finance	Understand and apply financial processes to achieve value for money and minimise financial risk	Intermediate
	Technology	Understand and use available technologies to maximise efficiencies and effectiveness	Adept
	Procurement and Contract Management	Understand and apply procurement processes to ensure effective purchasing and contract performance	Intermediate