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EASTERN CAPE
TRANSPORT

ENTERPRISE ARCHITECTURE FRAMEWORK BLUEPRINT

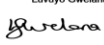




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TRANSPORT

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An efficient, safe, sustainable, affordable and accessible transport system

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1. Executive Summary

1.1 Introduction

To achieve its strategic objectives, the ECDOT must implement a comprehensive enterprise architecture (EA) that seamlessly aligns business processes, information systems, technology infrastructure, and change management, ensuring efficiency and agility across the department.

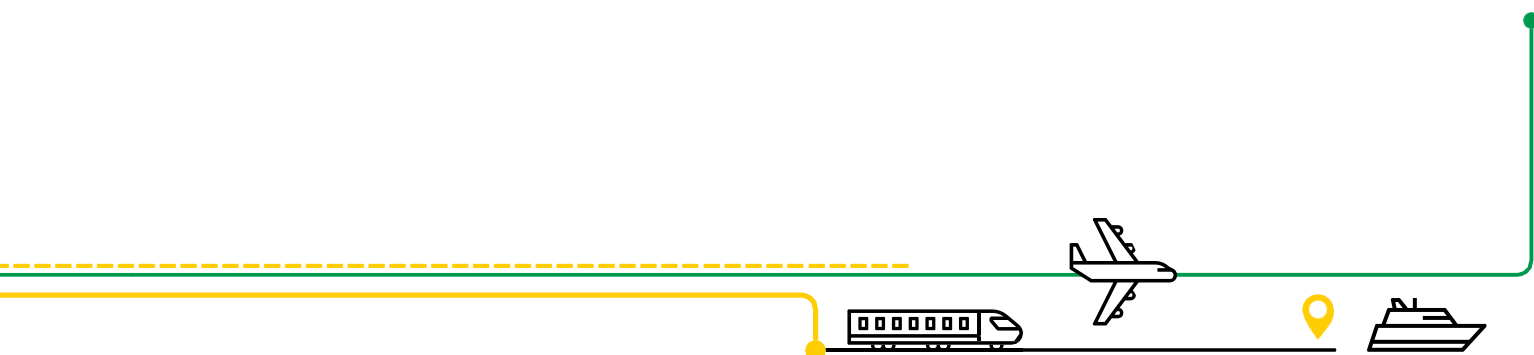
Enterprise Architecture is the discipline designed to bring clarity to complexity by connecting business goals with the structures, systems, and capabilities that support them. It's not just about designing IT systems. It involves shaping the Department and ensuring that the systems developed support and advance the organization's strategic objectives.

An enterprise architecture "blueprint" systematically defines an organisation's current (baseline) and desired (target) environment. EA includes sequencing or migration plans for transitioning from the baseline environment to the target environment. It assists in optimising an organisation's core business process automation within an efficient IT environment.

1.2 Background

The department wants to leverage on innovative technologies to enhance its operational efficiencies and optimize the delivery of public services. The capacity of the department to deliver on the mandate depends on IT Systems and technology Infrastructure. To remain responsive to evolving business objectives and to accelerate digital transformation, developing an ICT strategy that is aligned with the entire business direction is necessary.

In order to ensure that ICT is recognized as a strategic enabler for the departments by political and executive leadership, the Department of Public Service and Administration (DPSA) established the Corporate Governance of ICT (CGICT) Policy Framework which requires public institutions to implement and adhere to CGICT as an important part of their corporate governance strategy, therefore development of an ICT strategy ensures alignment with the CGICT Framework.



1.3 Scope

To define the Enterprise Architecture the current state of the department, needs to be understood and analysed to identify the baseline business, application, data and technology landscape.

The results of the baseline assessment seek to establish the current ICT capabilities that the organisation possess. This assessment provides the starting point for determining the gap between the current ICT environment and the target ICT environment. The current ICT assessment that was done assisted in developing an understanding of the current ICT landscape of Eastern Cape Department of Transport (ECDOT). Below is the GWEA delivery reference model that guides the delivery of the ICT Strategy:

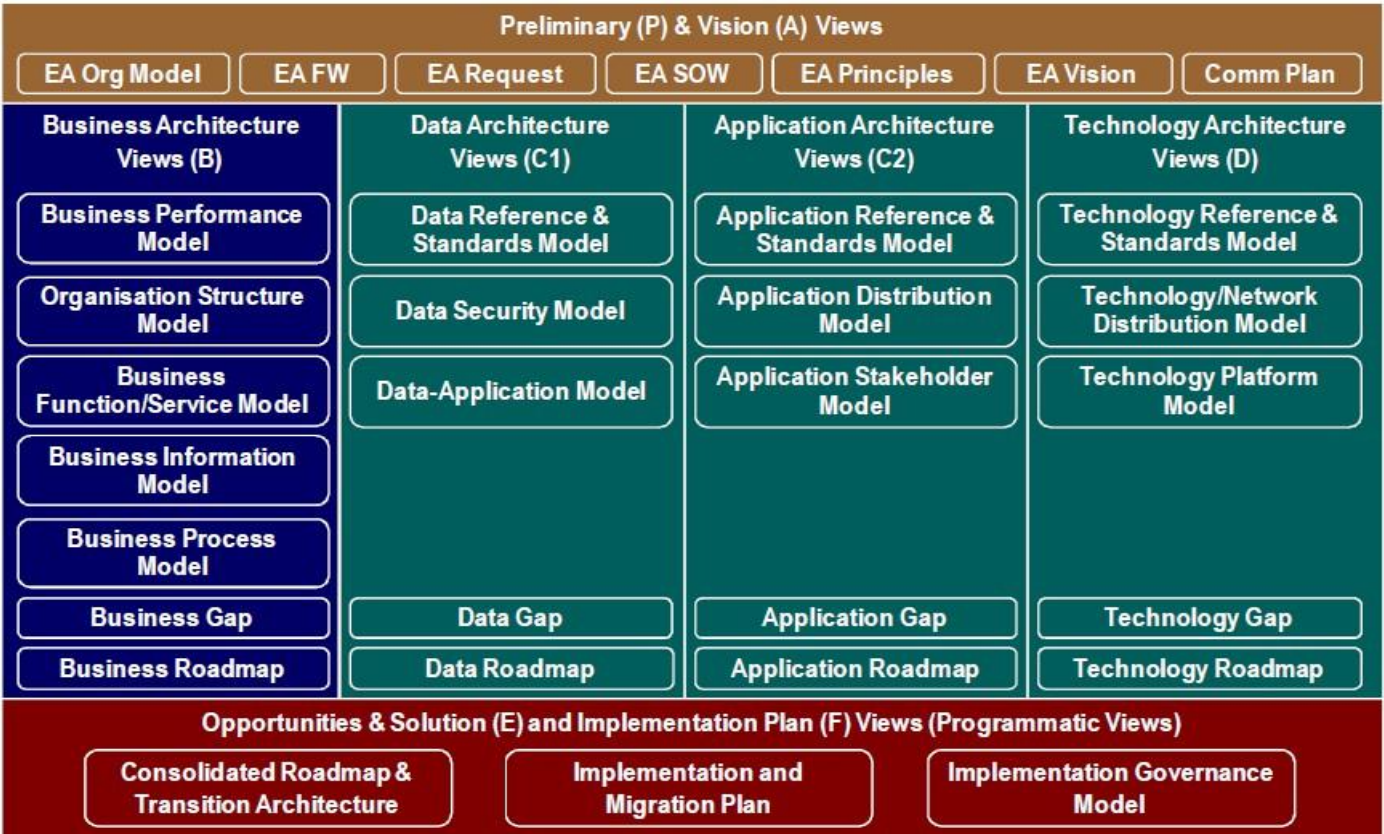


Figure 1- GWEA delivery reference model

2. Phase A: Architecture vision

2.1 Business drivers

The following key factors will influence ICT strategies, investments, and initiatives.

- a) Deliver exceptional internal ICT services that enable operational efficiency and support the Department's governance objectives,
- b) Enable successful delivery of strategic transport initiatives through robust ICT project support and governance.
- c) Create a modern digital workplace that enables collaboration, productivity and operational excellence.
- d) Enable data-driven decision-making through advanced analytics and insights generation.



- e) Ensure robust protection of critical transport infrastructure and systems through comprehensive cybersecurity measures.
- f) Deliver exceptional internal ICT services that enable operational efficiency and support the Department's governance objectives.

2.2 Stakeholders and concerns

2.2.1 Stakeholder analysis

During the EA vision, stakeholders play an important role as they assist in identifying current concerns affecting the department's productivity and provide the target state that will transcend the department. TOGAF defines a stakeholder as 'An individual, team or organisation with an interest in, or concerns relative to the outcome of the architecture.' Different stakeholders with different roles will have different concerns.

2.2.2 Stakeholder concerns

Stakeholders play an important role as they assist in identifying current concerns affecting the department's productivity and provide the target state that will transcend the department. The ECDOT stakeholders' interests and concerns identified have been derived from their outcomes as described in the figures below.

Figure 2,3 and 4 below lists selected concerns from different stakeholders within the department. The full detailed list will be visible on the architecture's deliverable.

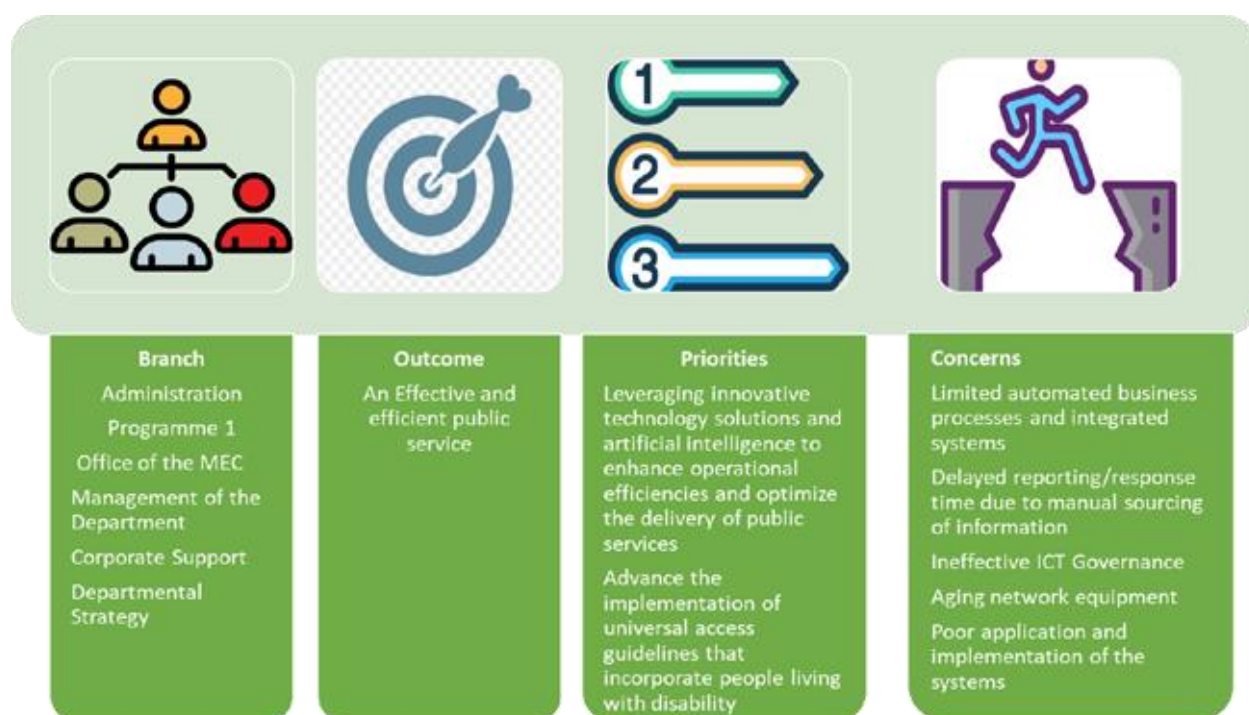


Figure 2 – Stakeholder concerns and interest for Administration



Figure 3 – Stakeholder concerns and interest for Branch 1

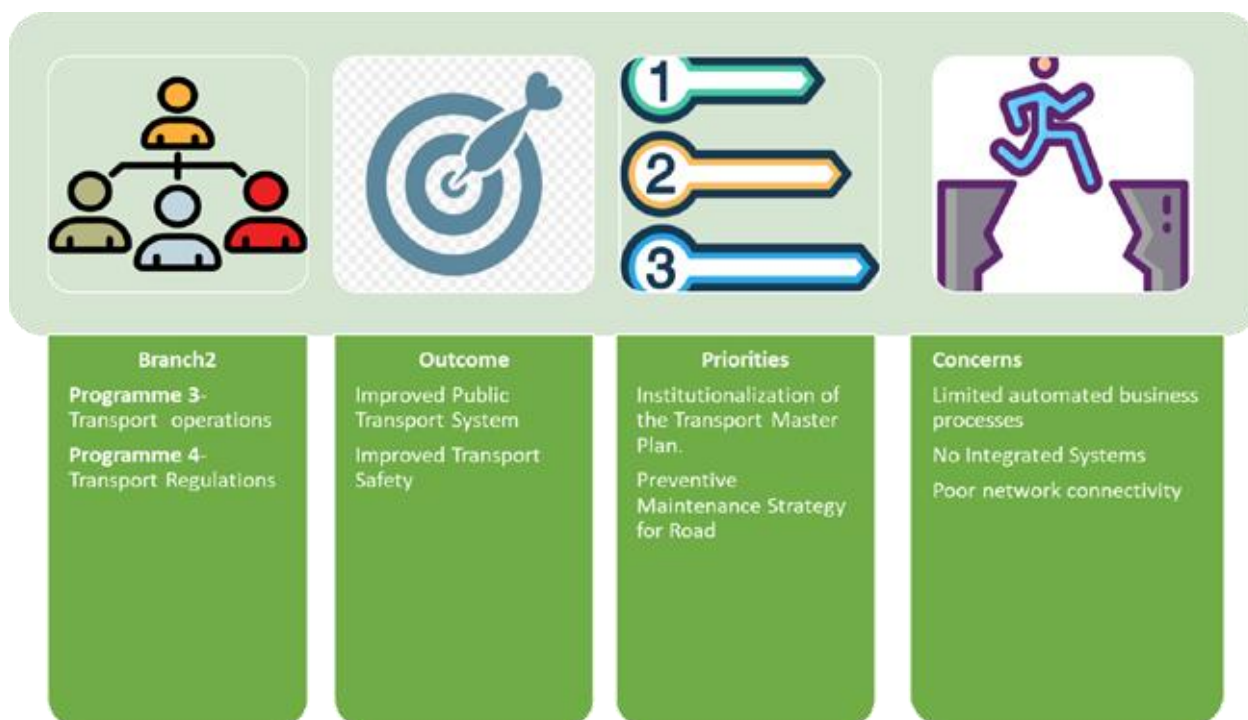
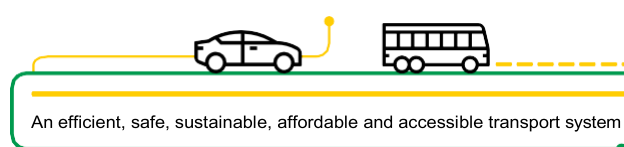


Figure 4 – Stakeholder concerns and interest for Branch 2

2.3 Architecture vision statement

The architecture vision is intended to support the Eastern Cape Department of Transport vision which is “An accessible, efficient, affordable, safe and sustainable transport system.” as specified in the 2025 – 2030 Strategic Plan.



2.4 Value proposition

- Modernization and optimization of the departmental ICT Infrastructure to enhance operational efficiency and improve system reliability.
- Automation of business processes to improve the efficiency and effectiveness of the departmental operations.
- Enhancement of the cyber security controls to strengthen the overall security posture and privacy of the departmental data. This will manage risks associated with digital transformation.
- Implementation of robust data management and analytics capabilities to extract valuable insights to inform decision making and improve efficiency.

The value proposition with the high-level stakeholder requirements forms the foundation of the business, data, application, and technology architectures.

2.4.1 Value chain

A value chain provides a clear representation of key activities within ECDOT, ensuring that IT investments and architectural changes directly support activities that enhance service delivery. When decomposed further, the value chain activities also serve as business capabilities which are to be directly traceable to core business functions and value creation, providing a roadmap for future change initiatives.

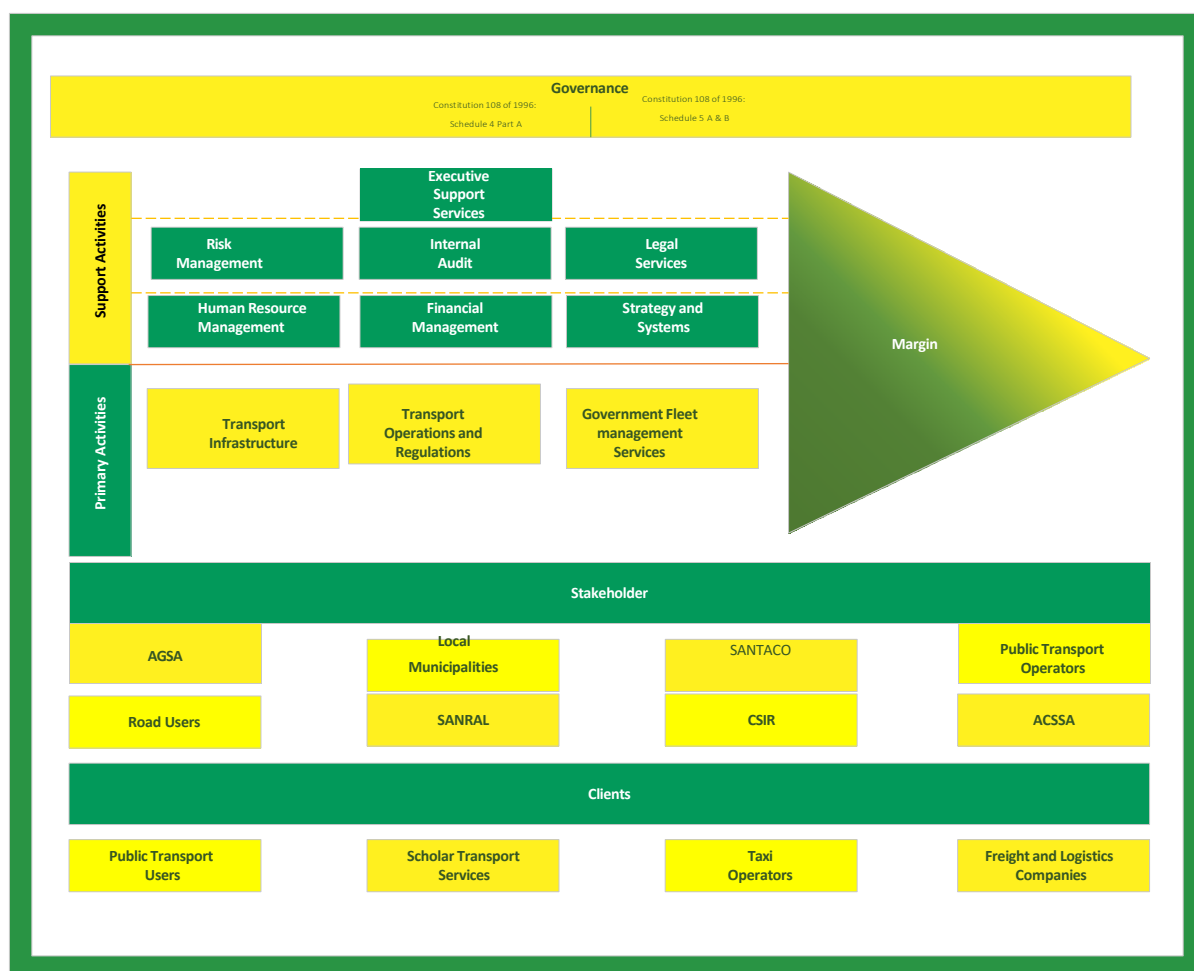
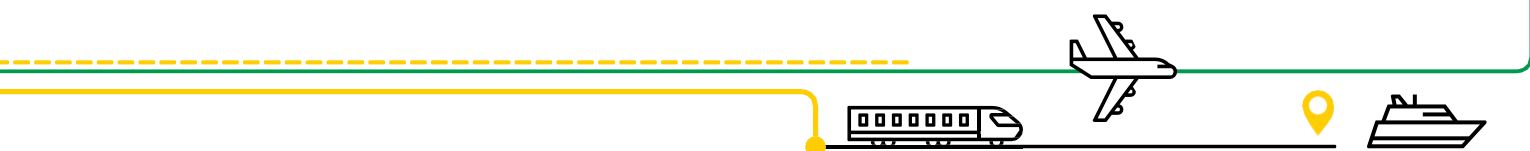


Figure 5- Value chain diagram



3. Phase B: Business architecture

The Baseline Business Architecture represents the current (“as-is”) state of the organisation’s business environment. It provides a comprehensive view of how the organisation currently operates, including its strategic drivers, business capabilities, organisational structure, core processes, services, stakeholders, information flows, and performance measures.

Its purpose is to establish an accurate and objective foundation from which gaps, inefficiencies, dependencies, and improvement opportunities can be identified. By documenting the existing operational landscape, the Baseline Business Architecture enables alignment between business needs and future-state architecture efforts, supports informed decision-making, and guides the development of transition roadmaps.

The Baseline Business Architecture serves as the reference point against which the Target Business Architecture will be compared, ensuring that transformation initiatives are grounded in an accurate understanding of the organisation’s current state.

3.1 Business goals and objectives

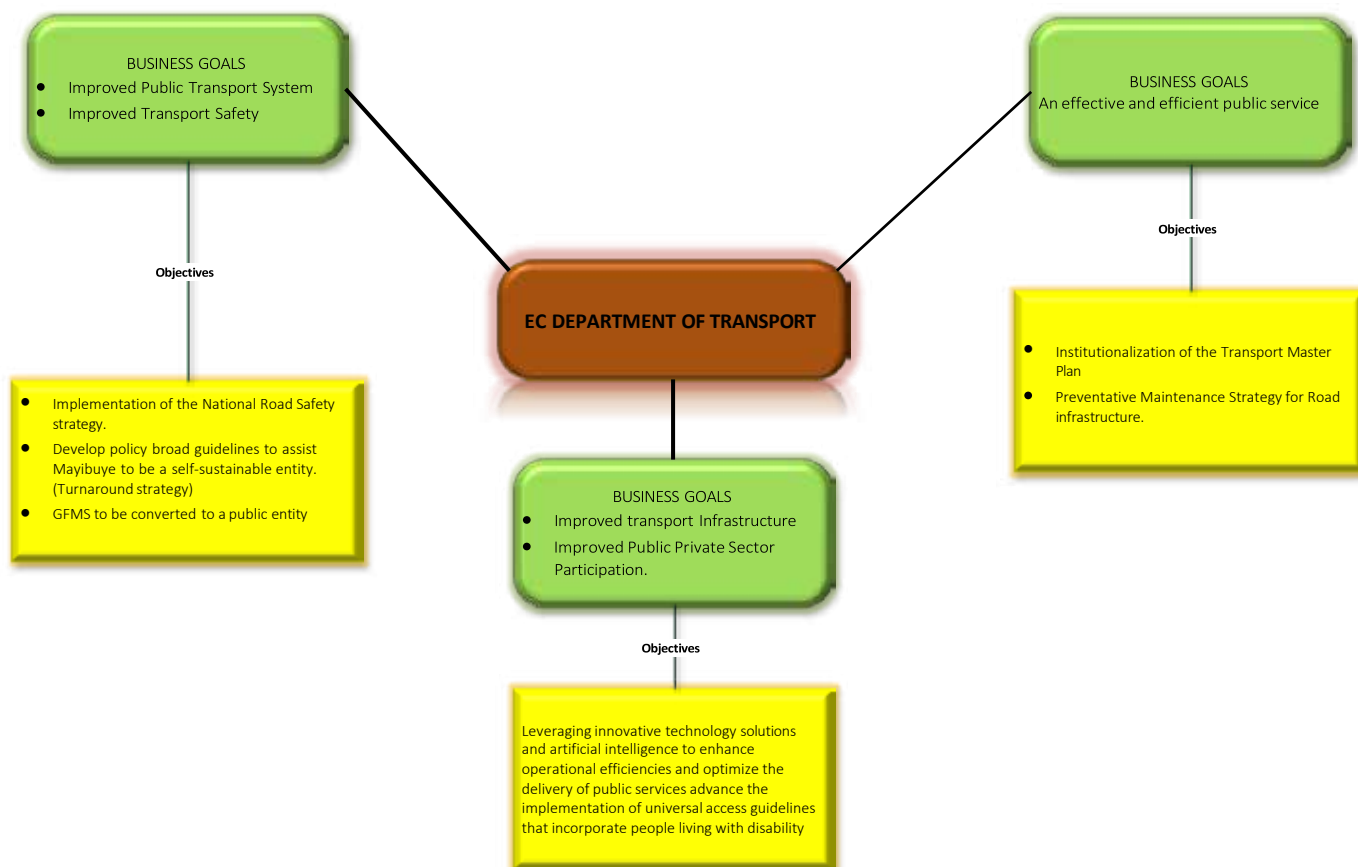


Figure 6- Business Goals and Objectives

3.2 Organization structure model

The Organisation Structure Model depicts the functions/services performed by each organisational unit, the geographical location where these organisational units reside, and the responsible authority (owner) of these organisational units. The current ECDOT organisational structure is as follows:



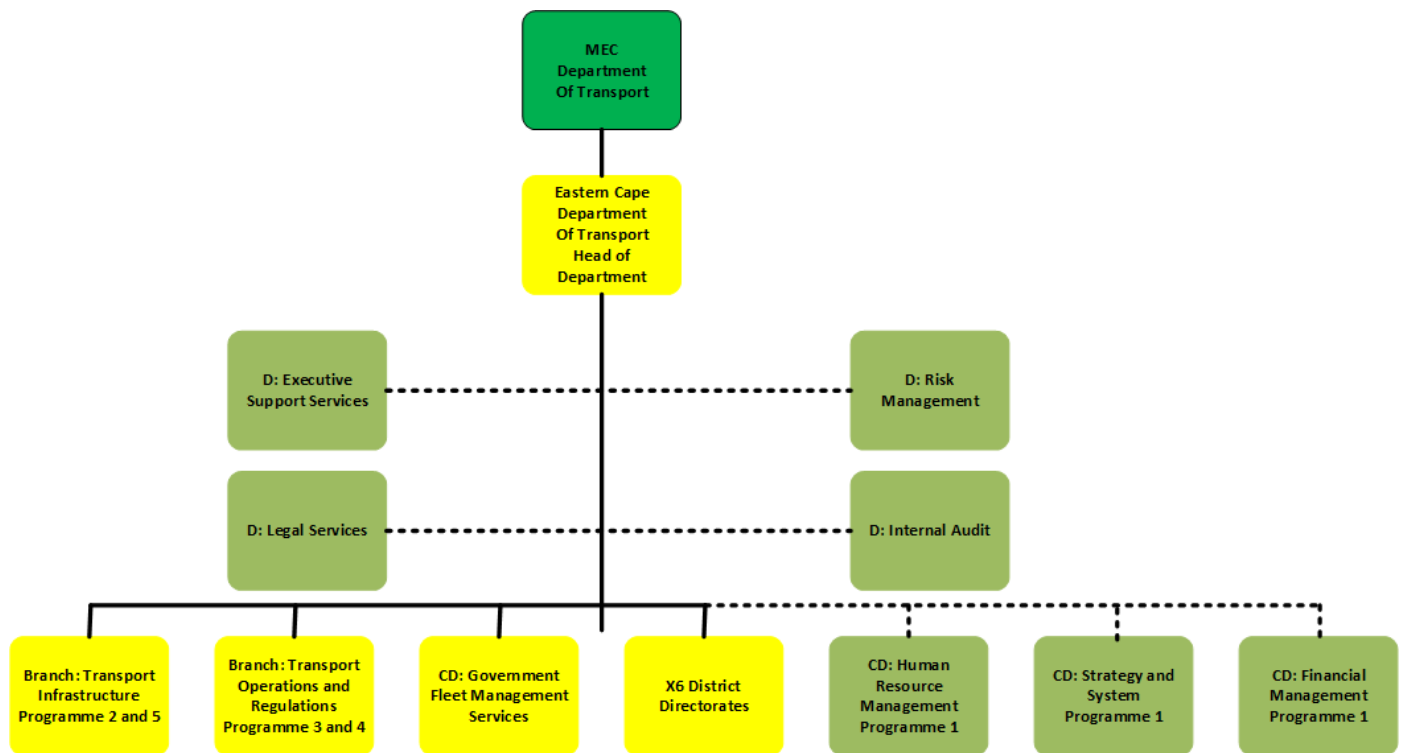


Figure 7- Organisation structure

3.3 Process models

A high-level business process model maps out ECDOT's workflows, focussing on the core end-to-end activities for the department rather than the low-level or granular tasks and processes. The aim of this model is to visually map and align these workflows with strategic goals to improve efficiency. Refer to Baseline Business Architecture document number: eDTEL-00341 A (High-level business process flow diagram)

3.4 Business functions and services

This section defines "what" ECDOT does (functions) and how those are delivered externally and internally (services). Refer to Baseline Business Architecture document number: eDTEL-00341. Below is the summary of the programmes, their applications and consumers of their services.

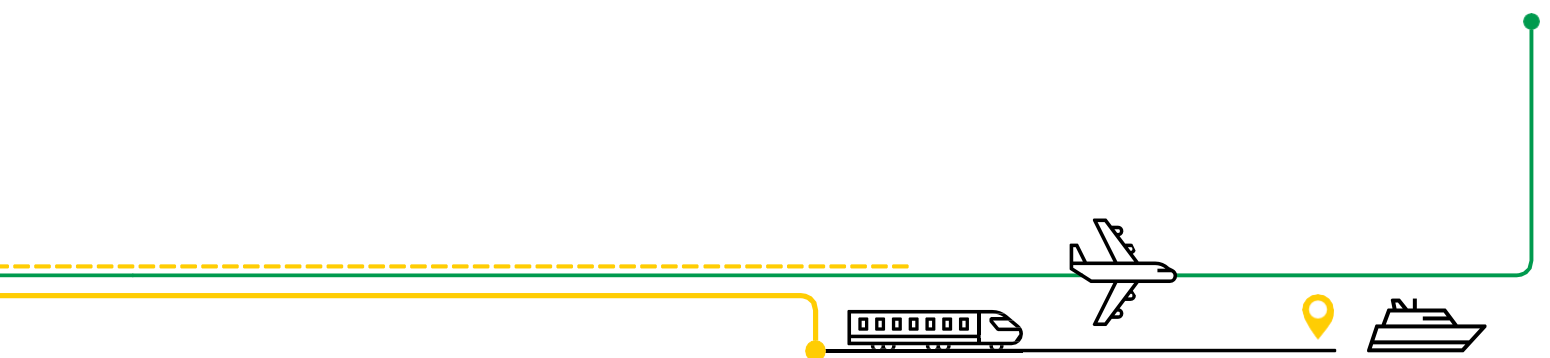




Figure 8- Programme 1



Figure 9- Programme 2,3,4 & 5



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3.5 Target Business Architecture

The purpose of this target business architecture is to outline and depict the future business status of the Eastern Cape Department of Transport (ECDOT). Business Architecture domain is one of the four domains that contribute to an ICT Strategy as required by Government Wide Enterprise Architecture (GWEA). EA includes sequencing or migration plans for transitioning from the Baseline environment to the Target environment. It assists in optimising an organisation's core business process automation within an efficient IT environment. Automation can be achieved by implementing applications within the department. Below are the recommended applications classes that have been identified for the support services and the core services within ECDOT:

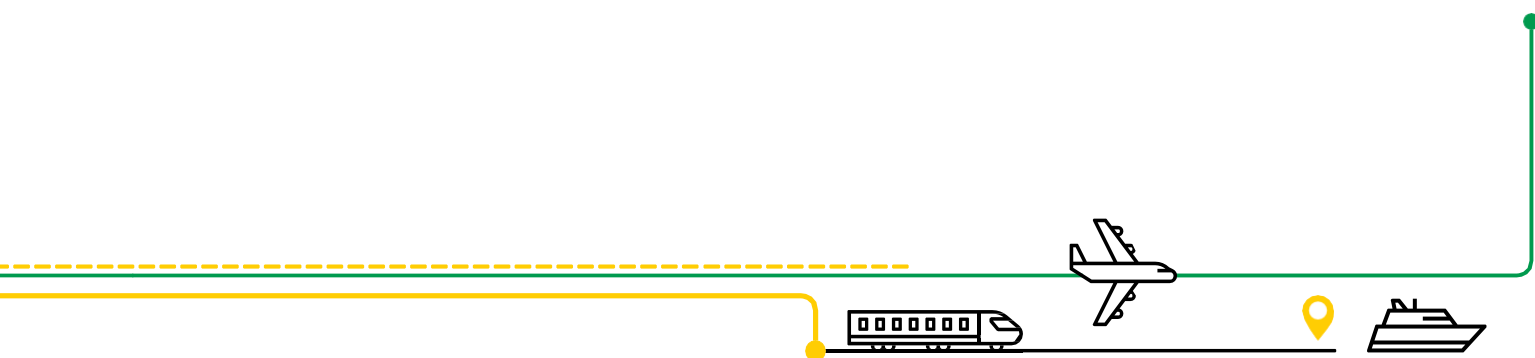




Figure 10- Recommended Application Classes for Support Services



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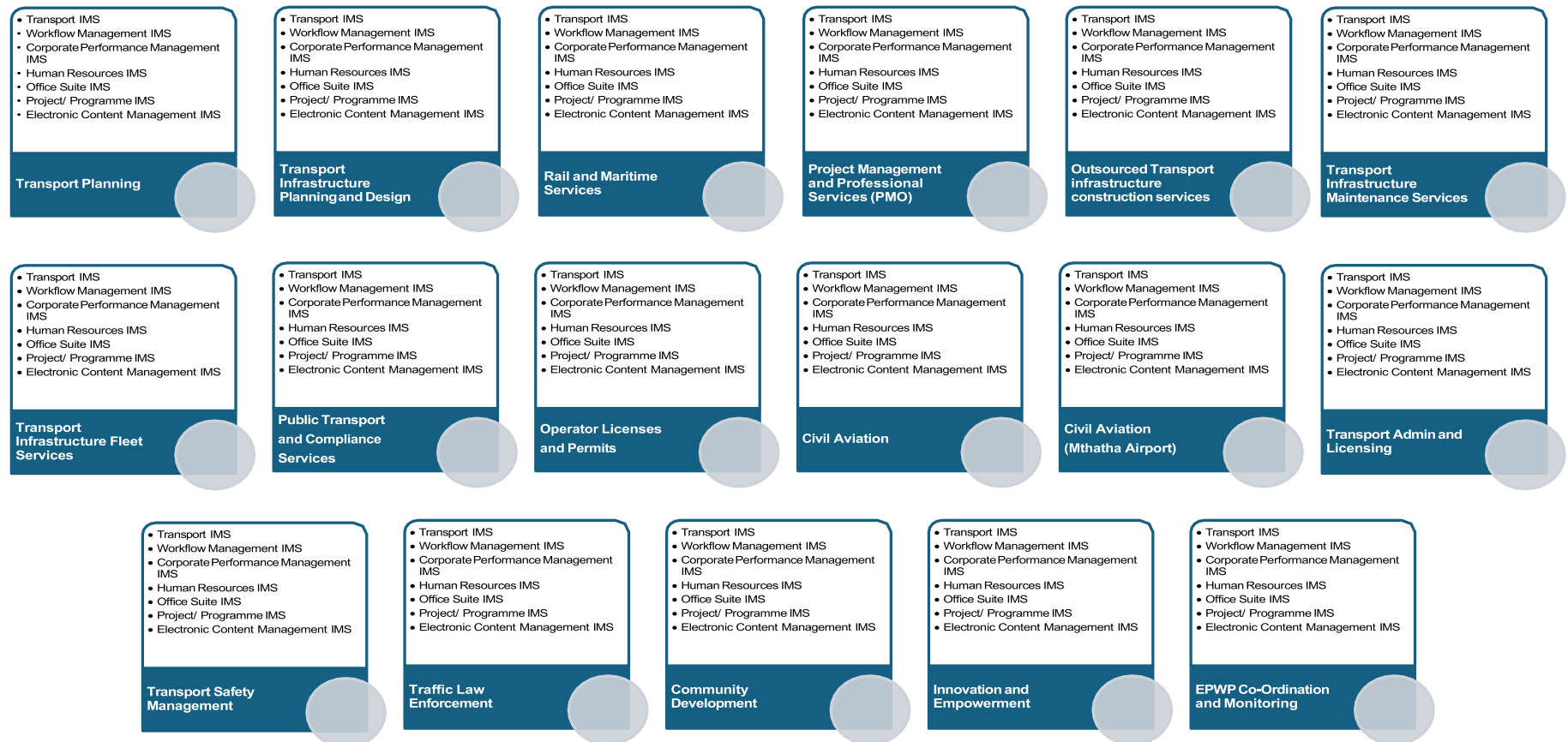


Figure 11- Recommended Application Classes for Core Services

4. Phase C: Information systems architecture

4.1 Phase C.1: Data architecture

The aim of the Target Data Architecture is to outline and define the different data classes (Business Units/Directorates) and data sources within ECDOT. The Data Architecture considers how ECDOT is organised to meet its vision, mission and objectives. Data Architecture is one of the four domains that contribute to Enterprise Architecture (EA) as required by Government Wide Enterprise Architecture (GWEA). This document is a holistic representation of ECDOT business per division and related business units.

4.1.1 Baseline data reference model

The data reference model (DRM) is a high-level representation for standardizing how ECDOT's data assets are described, categorized, and used across the organisation, to ensure consistency and interoperability. The Master data diagram outlines the fundamental master, reference, transactional data, and integration for ECDOT. Refer to the Figure below for ECDOT Master Reference data.



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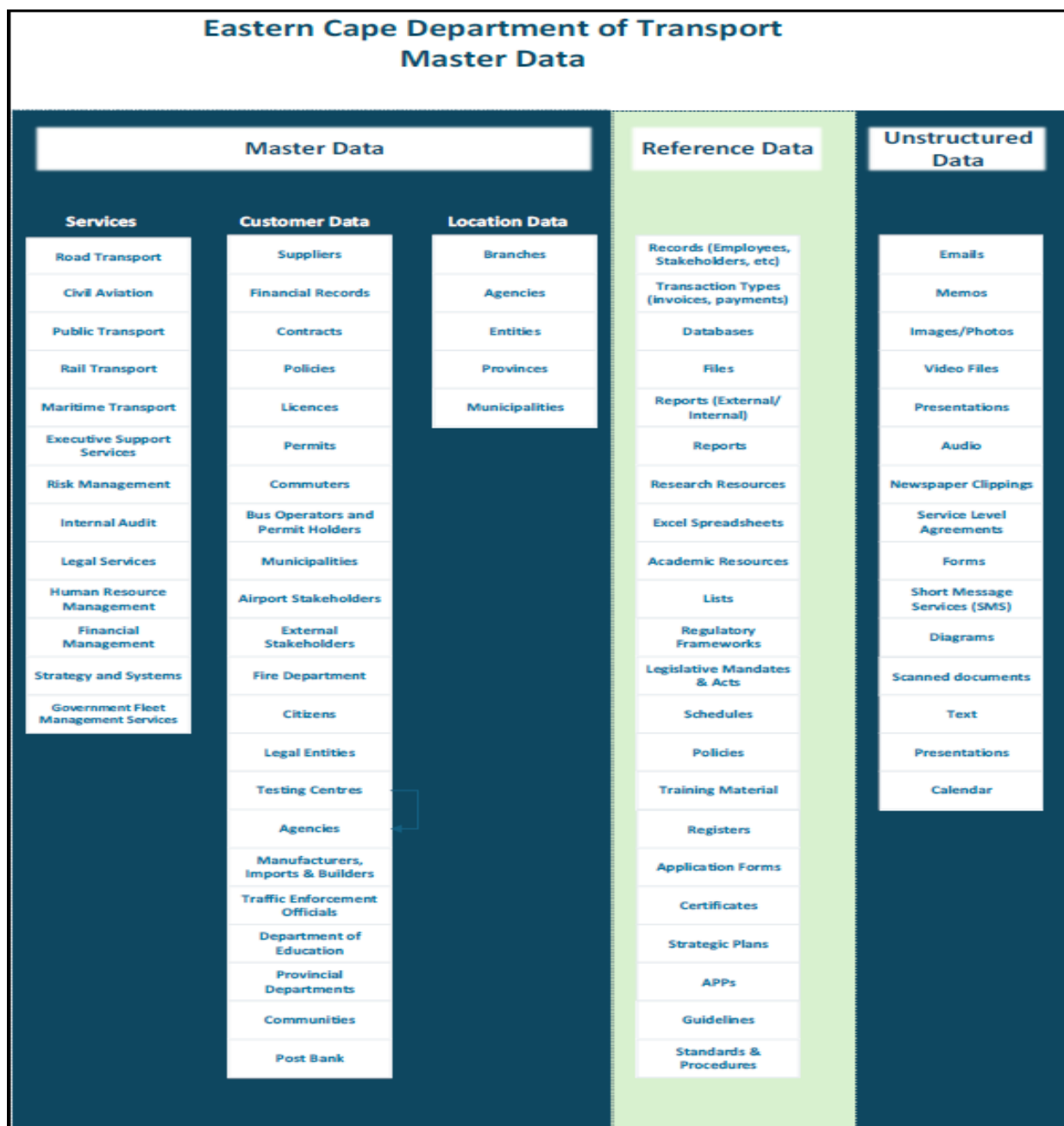
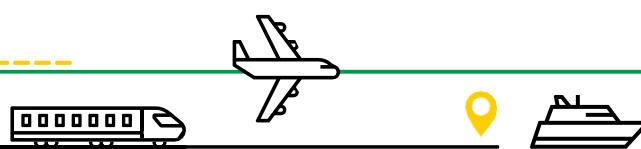


Figure 12 - Data Reference Model (Master Data)

4.1.2 Target data reference model

This unified model provides a structured approach to organising data into three main categories:

- Core Data, which supports the organisation's primary mandate;
- Administration Data, which is purely used for support services such as human resources, finance, and supply chain;
- Common Data, which is utilised across all business areas, and
- The model defines and structures how data is organised, classified, and governed. It identifies the responsible organisational unit, specifies the data class and its definition, outlines how the data is categorised, assigns an appropriate security classification, and indicates the accountable owner. Overall, it provides a clear framework for managing and controlling organisational data.



**Table 1 – Data Reference Model for Office of the HOD**

Organisational Unit	Data Class	Data Definition	Data Categorisation	Security Classification	Owner
Executive Support and Inter-Governmental Relations Services	Executive Support and Inter-Governmental Relations Data	Provision of executive support and Inter-Governmental Relations Services	Administration/ Support	- Confidential - Restricted - Public - Secret	Director :Executive Support and Inter-Governmental Relations Services
Internal Audit Services	Internal audit data	Provision of Internal Audit Services	Administration/ Support	- Confidential - Restricted - Public - Secret	Chief Audit Executive
Legal Services	Legal services data	Management of Legal Services	Administration/ Support	- Confidential - Restricted - Public - Secret	Director: Legal Services

Table 2 – Data Reference Model for Strategy and Systems

Organisational Unit	Data Class	Data Definition	Data Categorisation	Security Classification	Owner
Strategic Management and Planning	- Policy coordination and policy management data - Strategy and planning services data - Reporting and evaluation data	Provide strategy, policy, planning, monitoring and research services	Administration/ Support	- Confidential - Restricted - Public - Secret	Director: Strategic Management and Planning
Organisational Development	- Coordinate organisational design services data - Change management data - Service delivery improvement service data - Customer relations data	Manage organisational design, change and customer relations	Administration/ Support	- Confidential - Restricted - Public - Secret	Director: Organisational Development

Organisational Unit	Data Class	Data Definition	Data Categorisation	Security Classification	Owner
Information Communication and Technology Systems	- Solutions and support services data - Infrastructure, solutions, support services, and ICT governance data - Governance services data - ICT Development and maintenance data - Information management services data	Provide ICT, infrastructure, solutions, support services, and ICT governance	Administration/ Support	- Confidential - Restricted - Public - Secret	Government Information Technology Officer
Communication Management Services	- Communication and media liaison support data - Events Management data - Communication services data - Publication and photo journalism data	Provide communication, media liaison, and website management services	Administration/ Support	- Confidential - Restricted - Public - Secret	Director: Communication Management Services
Security Services	- Investigations and Inspection for compliance data - Security Management data - Maintenance and Repairs data - Awareness Sessions data - Security Vetting and Pre-Employment Screening data	Conduct security investigations, vetting, installations, and repairs	Administration/ Support	- Confidential - Restricted - Public - Secret	Director: Security Services

**Table 3 – Data Reference Model for Human Resource Management Service**

Organisational Unit	Data Class	Data Definition	Data Categorisation	Security Classification	Owner
Employee Relations and Wellness Services	Employee Relations and Wellness Data	Provide employee wellness and labour relations services.	Administration/ Support	• Confidential • Restricted • Public • Secret	Deputy Director: Employee Relations and DD Employee Wellness
Human Resource Strategy, Planning and Administration	Human Resource Strategy, Planning and Administration Data	Provide Human Resource recruitment, planning and information services	Administration/ Support	• Confidential • Restricted • Public • Secret	Chief Director: Human Resource Management/ Director: Human Resource Management
Employee Utilisation and Capacity Building	Employee Utilisation and Capacity Building Data	Provisioning of Employee Utilisation and Capacity Building Services	Administration/ Support	• Confidential • Restricted • Public • Secret	Director: HRD

Table 4 – Data Reference Model for Financial Management Services

Organisational Unit	Data Class	Data Definition	Data Categorisation	Security Classification	Owner
Management Accounting	Budgeting, financial reporting and reporting data	Provisioning of budgeting, financial monitoring and reporting services	Administration/ Support	• Confidential • Restricted • Public • Secret	Director: Management Account
Revenue Management	Debt management and reporting data	Management of debt accounting and reporting services	Administration/ Support	• Confidential • Restricted • Public • Secret	Director: Revenue Management
Financial Accounting Services	Expenditure and accounting Services data	Management of expenditure and accounting services	Administration/ Support	• Confidential • Restricted • Public • Secret	Director: Financial Accounting Services

Table 5- Data Reference Model for GFMS

Organisational Unit	Data Class	Data Definition	Data Categorisation	Security Classification	Owner
Fleet Risk and Logistics	Fleet risk and logistics data	Management of vehicle registration, licensing, logistics and fleet risk	Core	• Confidential • Restricted • Public • Secret	Deputy Director
SME Fleet Maintenance	Maintenance and Repairs	Provision of Maintenance and Repair Service for Departmental Vehicles	Core	• Confidential • Restricted • Public • Secret	Director (SME development and fleet maintenance management)
Client Relations Management	Client relations data	Provision of Client Relations Services	Administration/Support	• Confidential • Restricted • Public • Secret	Deputy Director: CRM
Fleet Development and Provision	Fleet and provision data	Provision of Fleet Development Services	Core	• Confidential • Restricted • Public • Secret	Director: Fleet Development and Provisioning
Finance	Financial Data	Provision of Financial Services	Administration/Support	• Confidential • Restricted • Public • Secret	Director: Finance

**Table 6 Data Reference Model for Transport Planning, Traffic Engineering and Infrastructure Design, Rail and Maritime Services**

Organisational Unit	Data Class	Data Definition	Data Categorisation	Security Classification	Owner
Transport Planning and Municipal Support	Transport infrastructure plans data	The development and promotion of rail as a cost-effective mode of transport" and Promotion of provincial maritime services	Core	- Confidential - Restricted - Public - Secret	Delegated (by the HOD) to the: Deputy Director General: Transport Infrastructure
Project Management and Professional Services	Project management data	Provision of Project Management and Professional Services	Administration/Support	- Confidential - Restricted - Public - Secret	Chief construction project Manager
Transport Infrastructure, Planning and Design	Quality monitoring standards data	Provision of Transport Infrastructure, Planning and Design Services	Core	- Confidential - Restricted - Public - Secret	Chief Engineer (Design)
Rail and Maritime Services	Provincial maritime services data	Provision of Rail and Maritime Services	Core	- Confidential - Restricted - Public - Secret	Deputy Director: Rail and Maritime

Table 7 Data Reference Model for Transport Infrastructure Construction

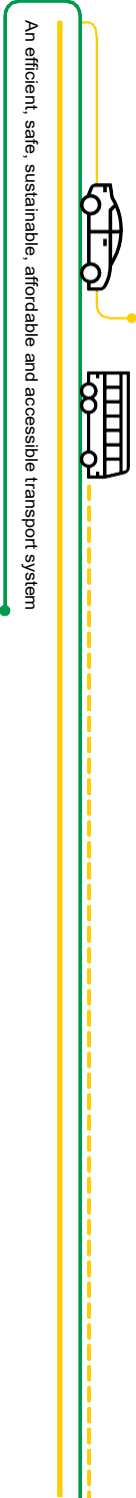
Organisational Unit	Data Class	Data Definition	Data Categorisation	Security Classification	Owner
Outsourced Transport infrastructure construction services	Outsourced Transport and infrastructure constructure data	Management of Outsourced Transport Infrastructure Construction Services	Core	- Confidential - Restricted - Public - Secret	Chief Engineer Director

Table 8 Data Reference Model for Transport Infrastructure Maintenance

Organisational Unit	Data Class	Data Definition	Data Categorisation	Security Classification	Owner
Transport Infrastructure Maintenance	Transport Infrastructure Maintenance data	Provision of Transport Infrastructure Maintenance Services	Core	- Confidential - Restricted - Public - Secret	Chief Director for Infrastructure
Transport Infrastructure Fleet Services	Transport Infrastructure Fleet Services data	Provision of Transport Infrastructure Fleet Services	Core	- Confidential - Restricted - Public - Secret	Chief Director for Infrastructure

Table 9 Data Reference Model for Transport Operations

Organisational Unit	Data Class	Data Definition	Data Categorisation	Security Classification	Owner
Public Transport and Compliance	Public Transport and Compliance data	Provision of Public Transport and Compliance Services	Core	• Confidential • Restricted • Public • Secret	Chief Director: Transport Operations
Operator Licence and Permit	Operator Licence and Permit data	Provision of Public Transport Operator License and Permit Services	Administration/Support	• Confidential • Restricted • Public • Secret	Director Operator Licences and Permits
Civil Aviation	Civil Aviation data	Provision of Civil Aviation Services	Core	• Confidential • Restricted • Public • Secret	Director Civil Aviation
Civil Aviation (Mthatha Airport)	Civil Aviation (Mthatha Airport) data	Provision of Civil Aviation (Mthatha) Services	Core	• Confidential • Restricted • Public • Secret	Deputy Director Civil Aviation
Transport Admin and Licensing	Transport Admin and Licensing data	Provision of Transport Administration and Licensing Services	Core	• Confidential • Restricted • Public • Secret	Chief Director: Transport Regulation
Transport Safety Management	Transport Safety Management data	Provision of Transport Safety Management Services	Core	• Confidential • Restricted • Public • Secret	Chief Director: Transport Regulation
Traffic Law Enforcement	Traffic Law Enforcement data	Management of Traffic Law Enforcement Services	Core	• Confidential • Restricted • Public • Secret	Chief Director: Transport Regulation
Community Development	Community Development data	Provision of Provision of Community Development Services	Administration/Support	• Confidential • Restricted • Public • Secret	Chief Director: Community Based Transport Programme



Organisational Unit	Data Class	Data Definition	Data Categorisation	Security Classification	Owner
Innovation and Empowerment	Innovation and Empowerment data	Provision of Strategic Innovation and Empowerment Services	Administration/Support	• Confidential • Restricted • Public • Secret	Chief Director: Community Based Transport Programme
EPWP Co-Ordination and Monitoring	EPWP Co-Ordination and Monitoring data	Provision of EPWP Co-ordination and Monitoring Service	Administration/Support	• Confidential • Restricted • Public • Secret	Chief Director: Community Based Transport Programme

4.1.3 High-level Information flow diagram

The diagram below illustrates the key data exchange for the ECDOT. It positions the department as the central process hub, showing how it consumes data from internal and external stakeholders (sources) to drive its operations and produces outputs to fulfil its service delivery.

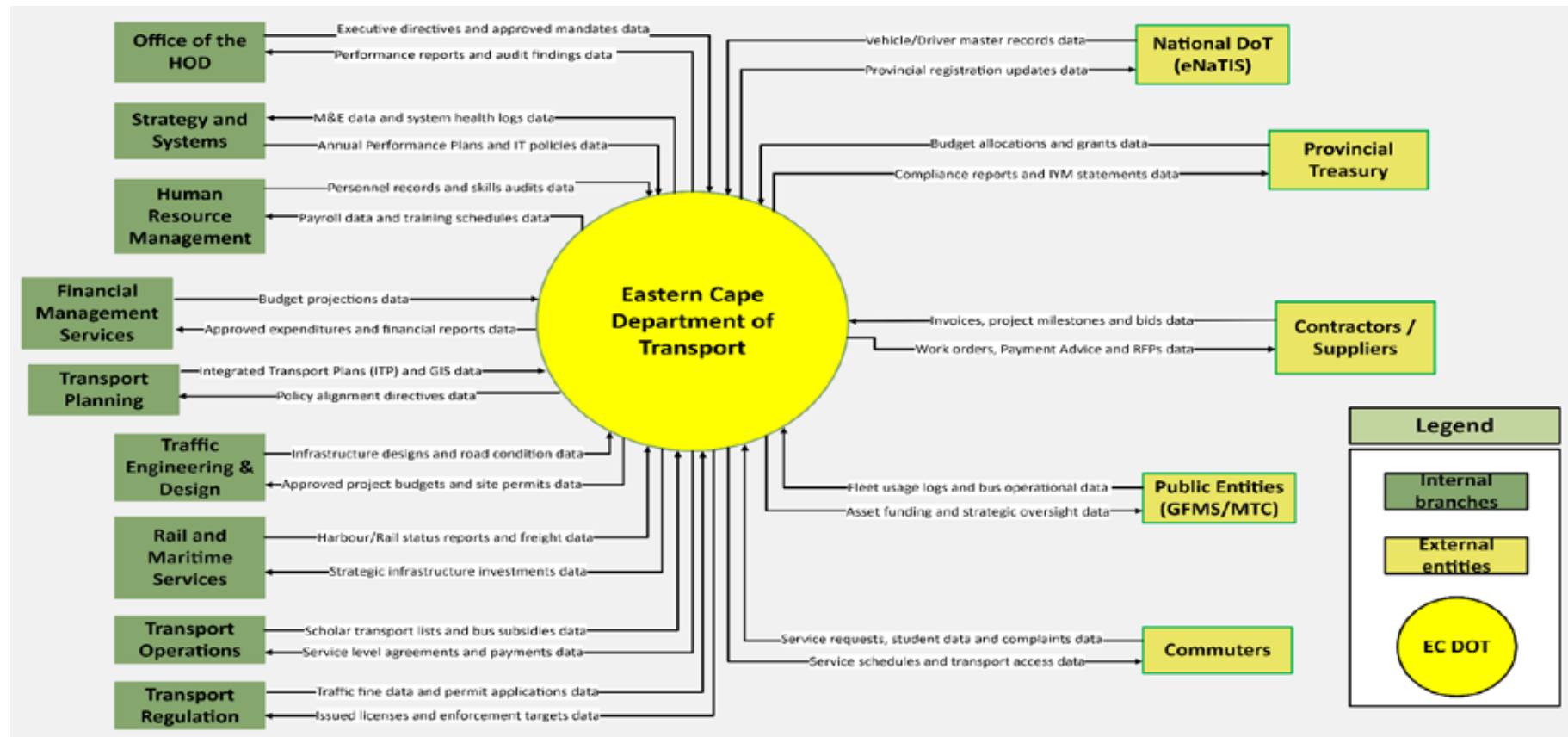


Figure 13 – High level Information flow diagram for ECDOT

The data architecture will be broken down into more detail in data architecture domain as part of the deliverable for this project.

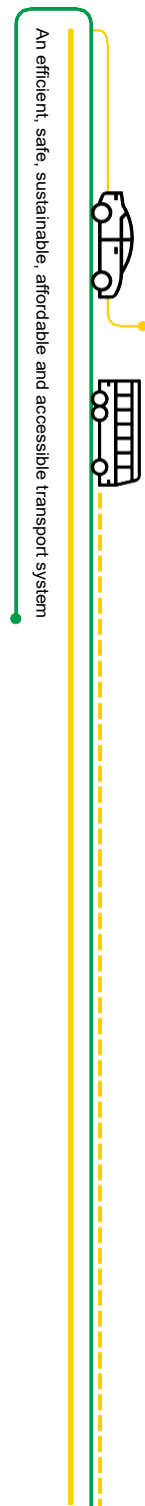


Table 10 illustrates the target data architecture which takes into consideration the data principles and the ECDOT Strategic Plan 2025 – 2030 data requirements.

Table 10 : ECDOT target data architecture

Data Architecture Principles		Core	Common	Support
Data is managed and shared securely	• Fleet risk and logistics data • Transport infrastructure plans data • Rail and Marine data • Traffic Law Enforcement data • Provincial maritime services data • Public transport and compliance data • Outsourced transport and infrastructure constructive data • Transport infrastructure maintenance data • Civil aviation data • Transport admin and licensing data • Transport safety management data	• Departmental website data • Policy and legislative documentation	• Security data • Legal services data • Communications data • Strategic Management and Planning • Stakeholder data • Human records data • Financial data • Risk management data • Information Management data • Debt management and reporting data • Client Relations data • Project management data • Operator license and permit data • Community development data • Innovation and Empowerment data • EPWP Co-Ordination and Monitoring data	
Protect confidentiality, integrity, and availability\				
Standards-based data management				
Single steward, clearly accessible data				
Sensitive information is secure				
Data is shared and duplication is reduced				
Data is accessible				
Data definitions are consistent and meaningful				
Data will be analysable				
Strategic Data				

The following criteria must be satisfied to achieve the target data architecture:

- Access control to information and data sources within the data architecture will be applied;
- Relevant data can be securely shared; and
- Consistent data definitions are used within all the Departments

4.2 Phase C.2: Application architecture

The baseline application architecture model outlines the portfolio of applications used by ECDOT, the services/functions they provide, and how they support departmental operations. It shows the applications currently in use, their core functionalities, where they are located, and how they interface or integrate with each other and the environment. It also indicates the types of users who interact with these applications, providing insight into the user base, networking (bandwidth) needs, and hosting requirements

4.2.1 Application portfolio

Inventory of current applications. Insert table or figure.

Administration	Core	Common
• Khawulez'ubhatale • Basic Accounting System (BAS) • Vulindlela • SAGE • eLeave • PERSAL System • E-Recruitment • LOGIS System • PME (Performance Monitoring and Evaluation) • EPDMS • Teammate • eDisclosure System • CASEWARE • XCALLY • Infrastructure Reporting Model (IRM) • HIK Vision Biometric Access Control System	• WinNuWei • Operating License Administration System (OLAS) • Registration Administration System (RAS) • Abnormal Loads Vehicle System • Permit Machine • AMD System • Hold Baggage Screening (HBS) System • Electronic National Traffic Information System (eNATIS) • Learner Transport Management System • SmartTracker • CBP System (Community based system) • EPWP reporting system	• Microsoft Office Suite • Signflow • SharePoint • EDMS • MS Teams

Figure 14 – Application portfolio for ECDOT

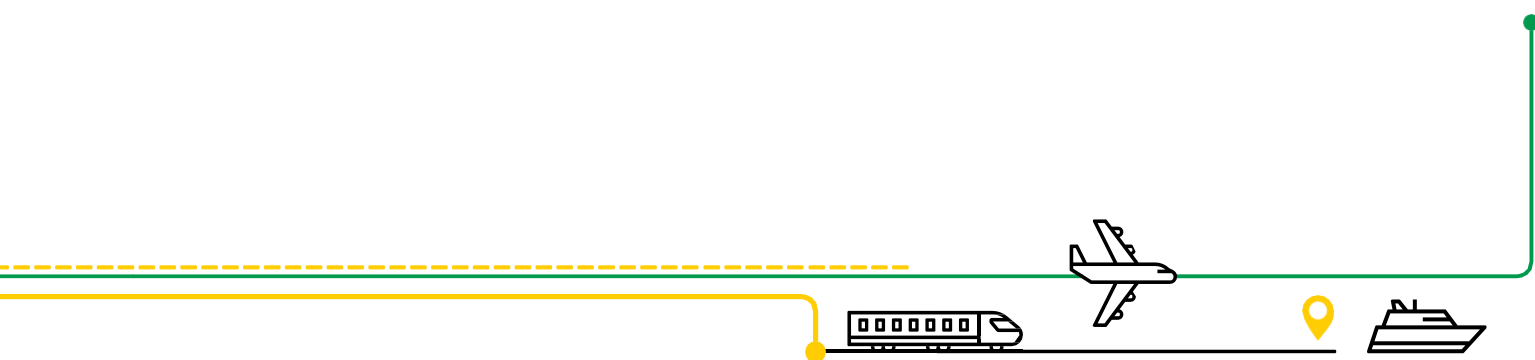




Table 11- Application portfolio

Group	Class	Unit	What application is currently in use?	Application Hosted	Definition	
					Description of the currently used application	Modules/functionalities currently in used
Administration Applications	Finance IMS	Finance	Khawulez'ubhatale	Azure App Service	To track the location of invoices captured, its location and the time of each. The purpose is to identify bottlenecks and delays of making payments.	• Registry • Stores • Pre-audit • Payments • End user • Reporting
		Finance	Basic Accounting System (BAS)	SITA	Basic Accounting System	• General Ledger • Accounts Payable • Accounts Receivable • Financial Reporting
		Financial Account Services	Vulindlela	Treasury	A South African government platform developed by the National Treasury to enhance financial management, human resources, and supply chain operations across public sector institutions.	• Financial Management • Human Resources Management • Supply Chain Management
		GFMS (Finance)	SAGE	On-Cloud	Sage Accounting is software for managing your business's accounting. It allows you to quickly and easily create and track invoices, track cash flow, accept payments, record transactions, automate admin, capture expenses, and much more.	• General Ledger • Accounts Payable • Accounts Receivable • Cash Management • Order Management
	Human Resources IMS	Human Resource Management	eLeave	On-Premises	a) Capture leave b) S&T management c) PMDS Monitoring	• User administration • Leave management • S&T management • PMDS management • Audit trail
		Human Resource System	PERSAL System	SITA	Used as a payroll system as well as leave management	• Employee records • Payroll processing • Leave management • Reporting
		Human Resource Strategy, Administration	E-Recruitment	Office of The Premier	a) E-recruitment is the use of online technology platform that enables potential candidates to register profile and upload supporting documents to apply online. b) Enables department to manage recruitment process from advertising vacant positions, drawing master list and shortlisting (functionality available but inactive) to archival of candidates' packs.	• Job Requisition and Posting • Management • Candidate Application • Reporting

Group	Class	Unit	What application is currently in use?	Application Hosted	Definition	
					Description of the currently used application	Modules/functionalities currently in used
	Supply Chain IMS	Supply Chain	LOGIS System	SITA	Management of supply chain and assets	• Procurement Management • Asset management
	Corporate Performance Management IMS	Strategy and Systems	PME (Performance Monitoring and Evaluation)	Power Platform	Automation and centralization of ECDOTs performance management and reporting processes. This system enables the collection, analysis and reporting of performance information.	• Planning • Capturing • Master Data
		EPMDS System	Employee performance management and development.	N/A	To track and evaluate employee performance.	• EPMDS System
	Audit and Risk IMS	Internal Audit Services	Teammate	On premises	Used for audit, risk, and compliance management	• Audit Planning & Scheduling • Risk Assessment & Prioritization • Audit Execution & Fieldwork • Issue & Finding Tracking • Reporting & Dashboards • Internal Controls Management • Analytics & Continuous Monitoring • Integration & APIs
		Risk, Anti-corruption and integrity Management services	eDisclosure System (DPSA System)	DPSA	An eDisclosure system is an electronic system used by designated public servants to disclose their financial interests, such as properties, businesses, and other assets.	• Conflict of interest detection • Electronic declaration
	Business Intelligence/ Reporting IMS	Internal Audit Services	CASEWARE	N/A	CaseWare is an integrated software system used primarily by accounting, auditing, and financial professionals to manage, automate, and streamline audit and financial reporting processes. It provides tools for planning, executing, and documenting audits, preparing financial statements, and ensuring compliance with regulatory standards.	• Trial Balance and Journal Entries • Document Management
	Communication IMS	Organisational Development	XCALLY	N/A	XCALLY is an omnichannel contact centre software that enables businesses to manage customer interactions across various channels, such as voice, chat, email, SMS, and social media, from a single unified platform	• Dashboard • Reporting

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Group	Class	Unit	What application is currently in use?	Application Hosted	Definition	
					Description of the currently used application	Modules/functionalities currently in used
Core Applications	e-Government IMS	Project Management and Professional Services (PMO)	Infrastructure Reporting Model (IRM)	N/A	Used to monitor and report on the progress of infrastructure projects. It allows for the real-time tracking of both the physical and financial progress of projects, including details on project status, location, budgets, and spending	- Project tracking - Data Management
	Security IMS	Security Services	HIK Vision Biometric Access Control System	N/A	A Hikvision Biometric Access Control System is a security solution that uses a person's unique biological traits, such as fingerprints or face, to grant or deny access to a controlled area	- Access controller - Biometric reading terminals
	ECDOT IMS	Transport Operations and Regulations	WinNuWei	N/A	Weigh loading vehicles Prosecute overloaded vehicles Reporting and analysis	- Normal Weigh - Abnormal Weigh - Detail Weigh - Re-weigh - Prosecution module - Management module
		Transport Operations	Operating license Administration System (OLAS)	National Department of Transport	Managing public transport operating licenses	- Information license hold - Process Flow of Operating Licenses
		Transport Operations	Registration Administration System (RAS)	National Department of Transport	Manages registration and administration of transport operators.	- Details of Vehicle - Details of the Operator - Details of the Association
		Transport Operations	Abnormal Loads Vehicle System	N/A	Manage the process of registering, approving, and monitoring abnormal load transport across provincial roads.	- Permit application and approval - Route planning and validation - Load compliance verification - Reporting and auditing
		Transport Operations	Permit Machine	N/A	Issue transport permits	Issue transport permits
		Transport Operations	AMD System	N/A	Tracks and manages transport infrastructure assets.	- Registration, de-registration and verification of vehicle ownership - Record and manage driving and learner licenses - Track vehicle fitness and roadworthiness - Record keeping of vehicles, driver contraventions and accidents

Group	Class	Unit	What application is currently in use?	Application Hosted	Definition	
					Description of the currently used application	Modules/functionalities currently in used
		Transport Operations	Hold Baggage Screening (HBS) System	N/A	Provides automated screening of checked baggage.	Automated screening and threat detection
		Transport Operations and Regulations	Electronic National Traffic Information System (eNATIS)	Road Traffic Management Corporation	Record and manage all vehicles, driving license and traffic offenses.	- Record and manage all vehicle, driving license and traffic offenses. - Vehicle verification services - Reporting and analytics
		Transport Operations and Regulations	Learner Transport Management System	Dynamics 365 and Power Platform	Management of Scholar transport Programme to: Eliminate over and under payment of operators. Improve information accessibility. Reduce associated risks Timeous delivery of service Uniformity of services and tariff structure	- Operator Management - Contract Management - School/learner Management - Allocation Management - Reporting
		Community Based Infrastructure Programme	SmartTracker	Power Platform	Manage projects under EPWP program Align attendance with payment (download registers)	Attendance register
		Community Based Infrastructure Programme	CBP System (Community based system)	SITA	Manage payment processing and cash book transactions	Capture, authorise and process payment
		Community Based Infrastructure Programme	EPWP reporting system	N/A	Capture, monitor, and report on EPWP projects and performance indicators	Track job creation

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Group	Class	Unit	What application is currently in use?	Application Hosted	Definition	
					Description of the currently used application	Modules/functionalities currently in used
Common Applications	Office Suite	ECDOT business units	Microsoft Office Suite	Microsoft Azure	Ms Word, Excel, PowerPoint, Visio, OneNote, Access.	Ms Word, Excel, PowerPoint, Visio, OneNote, Access. Microsoft Teams
	Workflow Management IMS	ECDOT business units	Signflow	Microsoft Azure	Is a software platform for secure, compliant digital document signing and workflow automation	- eSignature - Workflow Automation
	Electronic Content Management	ECDOT business units	SharePoint	On-Premises	Managing and sharing content such as documents and information, enabling collaboration and creating internal websites (intranets)	- Sites - Document Libraries - Lists - Pages & Web Parts - Search - Permissions & Security - Workflow / Automation - Records Management
		Information, Communication and Technology	EDMS	SharePoint and Azure	Document and records management solution that enables ECDOT to quickly and efficiently adopt a modern, optimized document processes	- Document and file collaboration - Document storage - Approval and signing of documents
	Email and Collaboration IMS	ECDOT business units	MS Teams	Azure	Manage communication and collaboration (Online meetings and documents sharing)	- Chat / Instant Messaging - Channels - Team Creation & Management - Video & Audio Meetings - File Sharing & Storage (OneDrive/SharePoint integration) - Calendar & Scheduling - Tasks & Planner Integration

4.2.2 Application interactions

The figure below depicts the baseline application interactions within ECDOT.

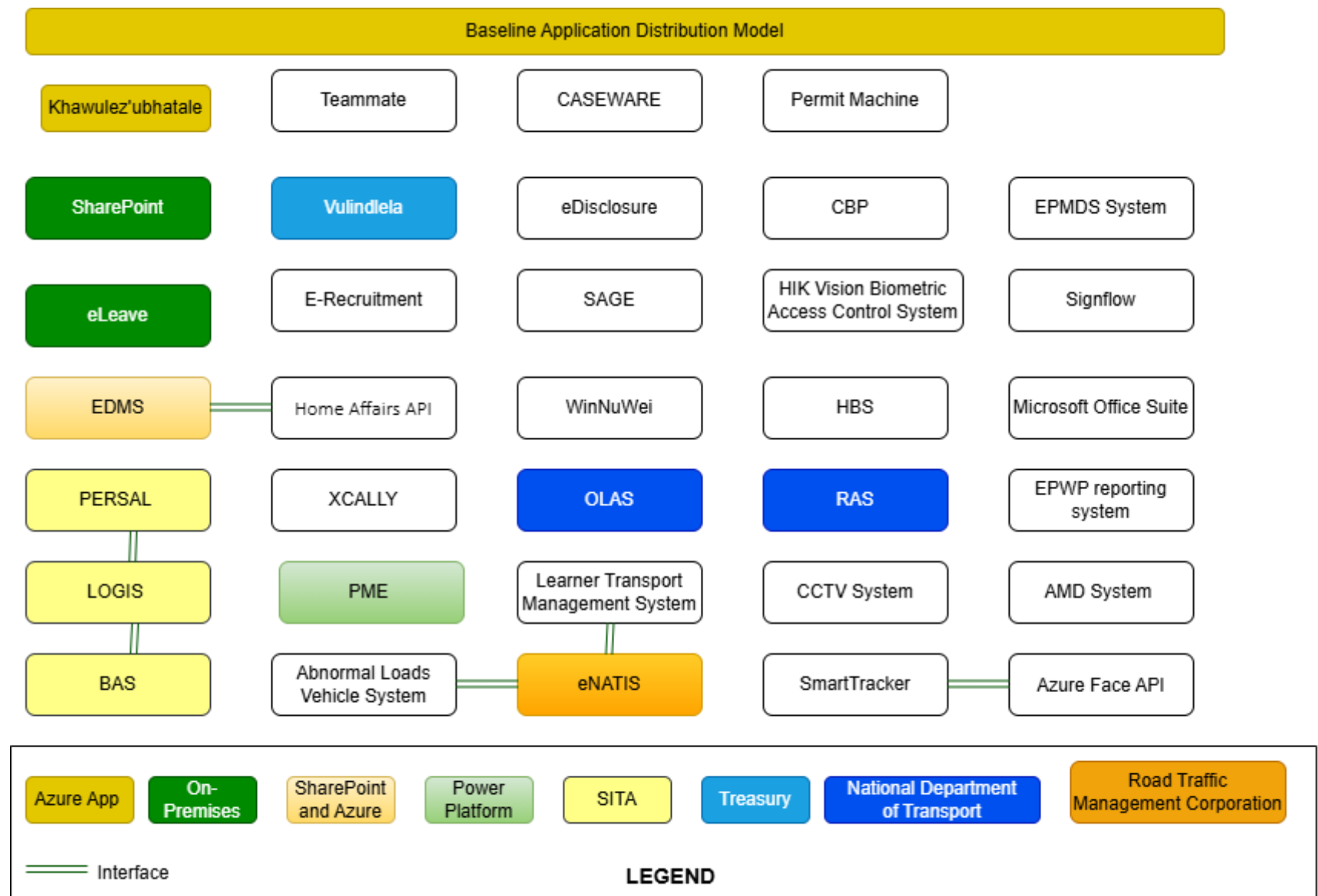
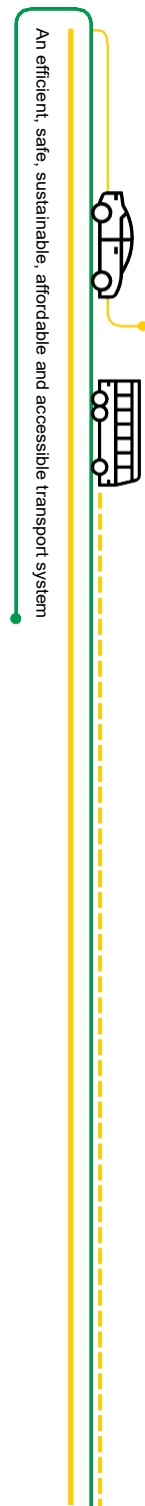


Figure 15 –Application interactions for ECDOT



4.2.3 Target application landscape

The figure below indicates the target application landscape, identifying actions required for each.

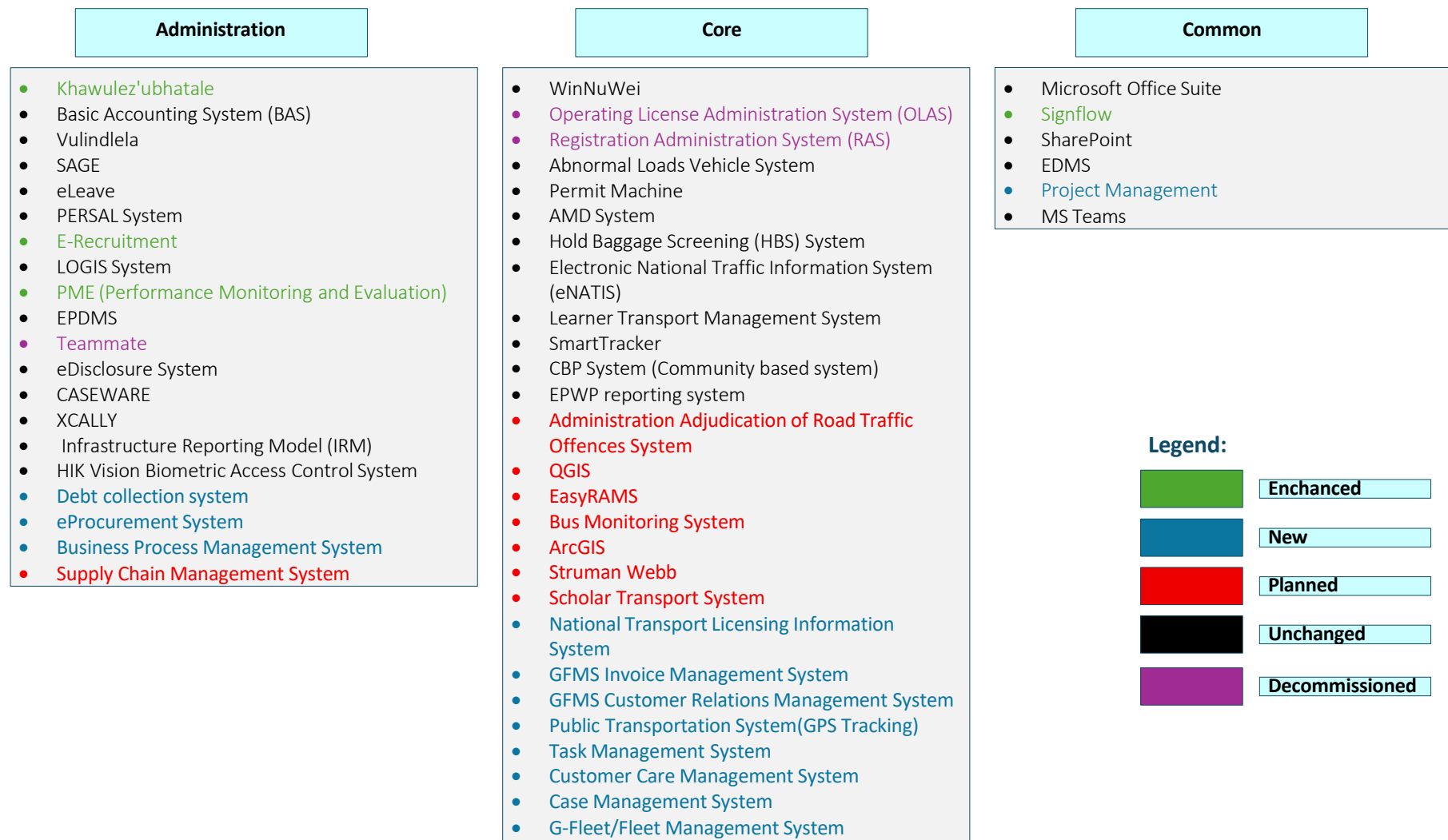


Figure 16 – Target application landscape for ECDOT

5. Phase D: Technology Architecture

Technology Architecture is the domain within Enterprise Architecture that defines the hardware, software, networks, and technical infrastructure needed to run systems and applications.

5.1.1 Baseline technology architecture

5.1.1.1 Technology reference model

The technology reference model (TRM) defines the major classes of technology components/services and the interoperability standards associated therewith.

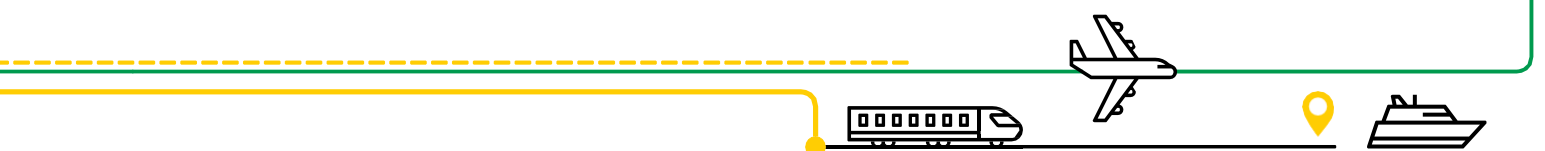
The purpose of the TRM is to inform ECDOT stakeholders of the major kinds of technologies and standards required as common infrastructure to enable the integration, execution, distribution and management of information management systems (data and application) of the department.

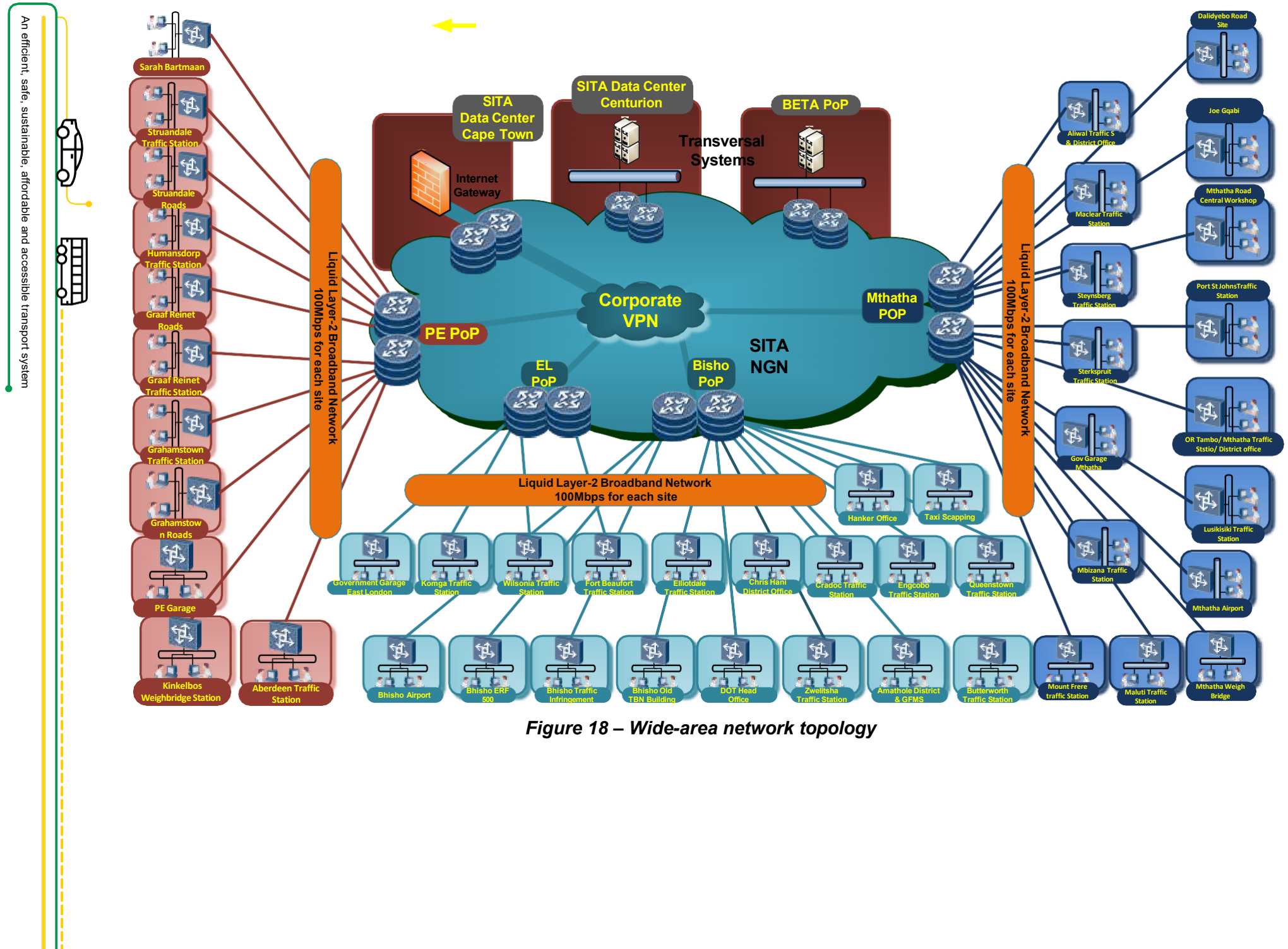
System Security Infrastructure Safeguarding/Integrity:Active Directory,Biometric, MFA Anti Virus: Microsoft Win Defender Firewall: Azure Firewall, Microsoft Purview, and Microsoft Sentinel	Application Delivery Infrastructure Web Server:ASP.Net Core MVC, Entity Framework Core, C#, HTML, CSS, JavaScript, Razor Application Server:ASP. 3.5 & 4.5, User Interface :Chrome, Firefox , Microsoft Edge	System management infrastructure Software licensing:None Identity/Fault Management Technology : Helpdesk Systems Backup and recovery:Veeam Back and Replication 11
	Middleware Infrastructure Network Directory Service: Microsoft Active directory 2019 Server Virtualisation: Hyper-V 2019,2022	
	Database Management Infrastructure Transactional DBMS: SQL Server 2014, 2019, 2022,Azure SQL & Dataverse	
	Computing Platforms, Peripherals & Sensors Operating Systems: Windows 10 & 11 Servers/Hosts:Windows Server :Windows Server 2016,2019, 2022 Peripherals:,Konica Minolta End-user computingLaptops(HP, ACER, ASUS, LENOVO & Dell) &Desktops (Mecer)	
	Transmission/Carrier:Cisco Router 2801, 2921,Huawei CloudEngine S5735-S24P4X Data Switching: Cisco Aruba 6200 F , Aruba 2930F EMAIL: Exchange Server Online Intranet:Share Point Server Online Voice and Video Conferencing Technology:Ms Teams & Logitec Video conferencing	
System Engineering Infrastructure None		

Figure 17 - Current technology platform model for ECDOT

5.1.1.2 Technology distribution model

A network diagram is a model that depicts the geographical dispersion and reach of the network that serves to provide communication capabilities for the department. The figure below depicts a network diagram that shows the locations, communication links and their capacities for the department and its tenants, as well as service provider points of presence for all the provincial service points.





5.1.1.3 Baseline Technology Platform model

The as-is technology platform model describes the current front, middle and back-end tiers for each of the known applications in the department.

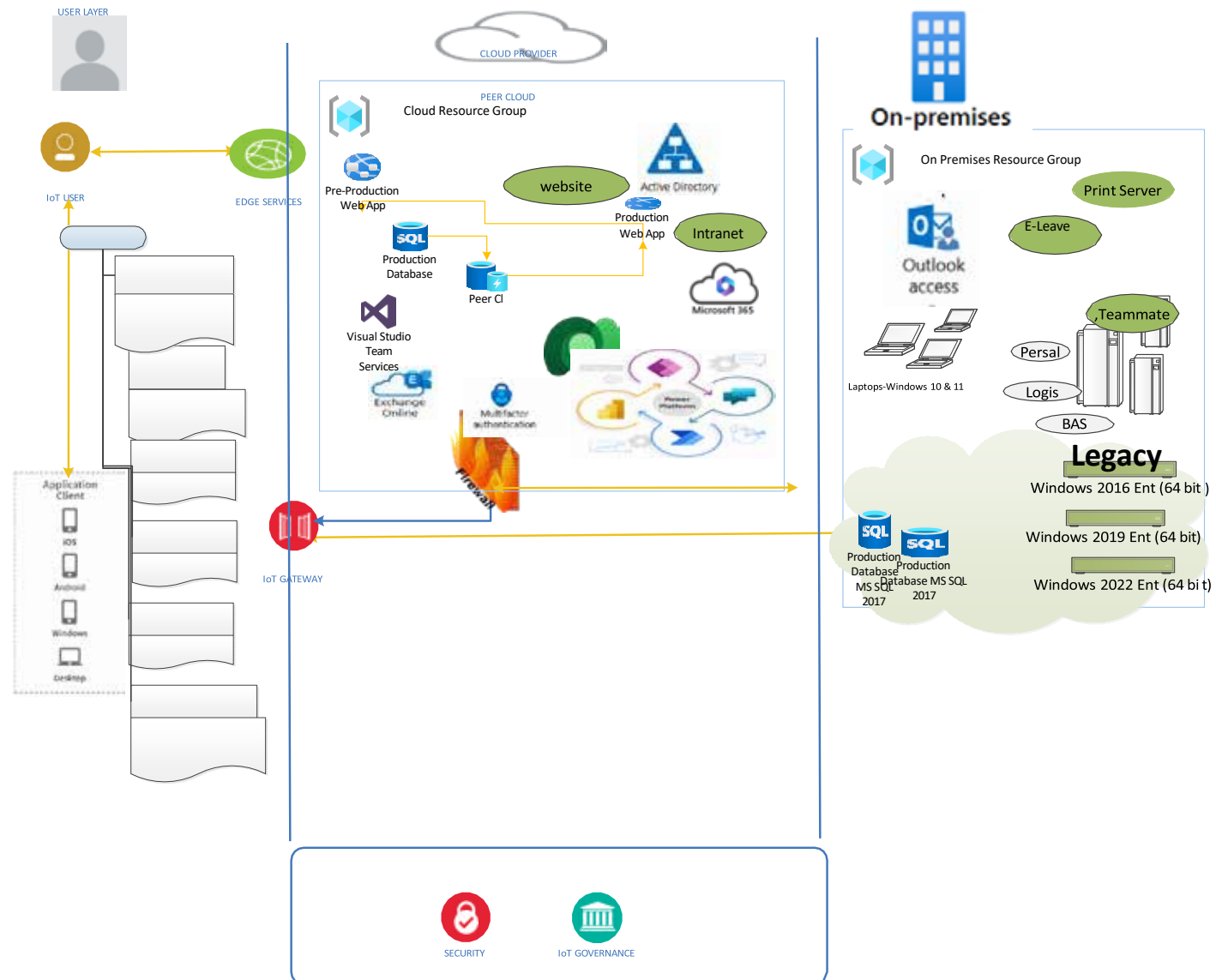


Figure 19 – Technology platform

5.1.2 Target technology Architecture

5.1.2.1 To-be technology reference model

Target Technology Architecture is the future state of a company's IT infrastructure; it describes the technology environment the organization wants to have after improvements and digital transformation are completed.

Table 12 – Detailed description of to-be TRM for ECDOT

Technology Domain	Current situation	Technology Class	Definition
			How is the technology envisaged to be used in the To-Be TRM?
Application Delivery Infrastructure	Microsoft Edge, Firefox and Chrome	Web Browsers	Standardise on the two-web browser most publicly used and mobile end-device platforms
Middleware Infrastructure	None	Unified Integration Platforms (iPaaS)	iPaaS tools are cloud-based platforms that act as a central hub to connect various applications using APIs and pre-built connectors
Database Management Infrastructure	There is a variety of database systems that emanate from the development of point solutions	Transactional DBMS	Establishment of a data warehouse to support business intelligence and reporting requirements of ECDOT.
	None	Data warehouse	
	None	Master data management (MDM)	a) Master data are the critical nouns of a business and fall generally into four groupings: people, things, places, and concepts. b) Master Data Management (MDM) is the technology, tools, and processes required to create and maintain consistent and accurate lists of master data. c) MDM must be applied in ECDOT in order to develop consistent and standard data definitions, which in turn enhances data quality and reliability of reporting. This in turn becomes critical to support optimal business decisions. MDM will also facilitate seamless integration between applications.
	None	Metadata management	a) Metadata is data about data and usually describes the key attributes about a data entity. b) Metadata management must be applied in ECDOT to ensure accuracy and reliability of data and facilitate data sharing between applications. c) In the public sector, metadata management is critical for electronic records and document management and is governed by the NARS Act and regulations.

Technology Domain	Current situation	Technology Class	Definition How is the technology envisaged to be used in the To-Be TRM?
Computing platforms, peripheral and sensors	a) There is combination of SAN server and Cloud Services. b) Manage these servers will be cost effective to the department	Storage	Need for a move towards complete cloud or hybrid cloud environment
	a) Laptops (HP, ACER, ASUS, LENOVO & Dell) & Desktops (Mecer) b) There is a wide range of laptops with different configurations at various life stages. c) There is no standard specification for end-user computing. d) Out-of-warranty machines expensive to maintain	End-user computing	a) The goal must be a transition towards standardised equipment within the department which supports the ECDOT business needs. b) Standardisation of PCs and desktops, development and implementation of policy on equipment lifecycle management
Communication Infrastructure	a) Poor internet bandwidth b) Other sites not connected on the SITA network (WAN) due to delays in broadband roll-out c) The Office of the Premier (OTP) is tasked with coordinating the provincial implementation of the Phase 2 broadband strategy	Transmission/carrier	a) The Office of the Premier (OTP) must audit all provincial department sites, including public schools and health facilities, to determine current connection speeds and infrastructure and upgrade all departments sites to Broadband. b) The internet speed will also improve with the segregation of different VPNs with increased internet bandwidth.
	Several ECDOT sites do not have access to a reliable telephony service. This may affect real-time voice communication with employees at these sites. (not all sites have telephony service)	Voice and video conferencing technology	a) The department needs to assess and continue with the implementation of the telephone management system for all departmental sites b) The department needs to transition to data-driven platforms that ensure accountability and cost control across multiple sites.

Technology Domain	Current situation	Technology Class	Definition
			How is the technology envisaged to be used in the To-Be TRM?
System Security Infrastructure	A lack of an on-premises firewall (critical security vulnerability that leaves the department network and data exposed to significant risks	Security Audit Technology	Implement on-premises firewall to ensure that security policies are implemented and adhered to and proactively identify and address potential security concerns.
	a) Lack of software license management solution b) Lack of configuration for system center service manager, including SLA performance management c) Lack of automated management tasks using graphical and scripting tools	Software licensing	a) Implement a software licensing management, including tracking of licensing costs, and automated reminders for license renewals. b) Investigate option of consolidating licensing.
	a) System Center Service Manager (SCSM) b) SharePoint Call/Fault Management System	Identity/fault management technology	a) Implement a comprehensive service desk solution aligned to best practice such as ITIL; b) Implement SLAs to ensure that business support requirements are addressed, and track SLA performance through the service desk solution. c) Investigate the necessity to optimization service desk solution aligned to best practice such as ITIL
	Need to add provision of solutions to enable the development of EC-DOT applications		
System Management Infrastructure	a) Requirements Management Tools: b) Configuration Management & Version Control: c) Testing & Verification Tools d) Project Management (PM) and Collaboration Tools	System Engineering Infrastructure is the collection of technologies (software) that are used to plan, design, analyse, model, construct, integrate, configure, test and maintain Information Systems in accordance with the quality requirements as determined by the System Development Life Cycle (SDLC) standard.	Application Development Framework investigation

5.1.2.2 To-Be Technology distribution model

The technology distribution model defines the technologies in different locations and/or environments. The purpose is to define the distribution of technology components for a distributed operating environment that will reduce duplication and optimise the re-use of shared infrastructure whilst providing optimal access channels to intensive information services to the intended users. The diagram below gives a high-level overview proposal of how the entire province will connect to the SITA network via the new Broadband network.

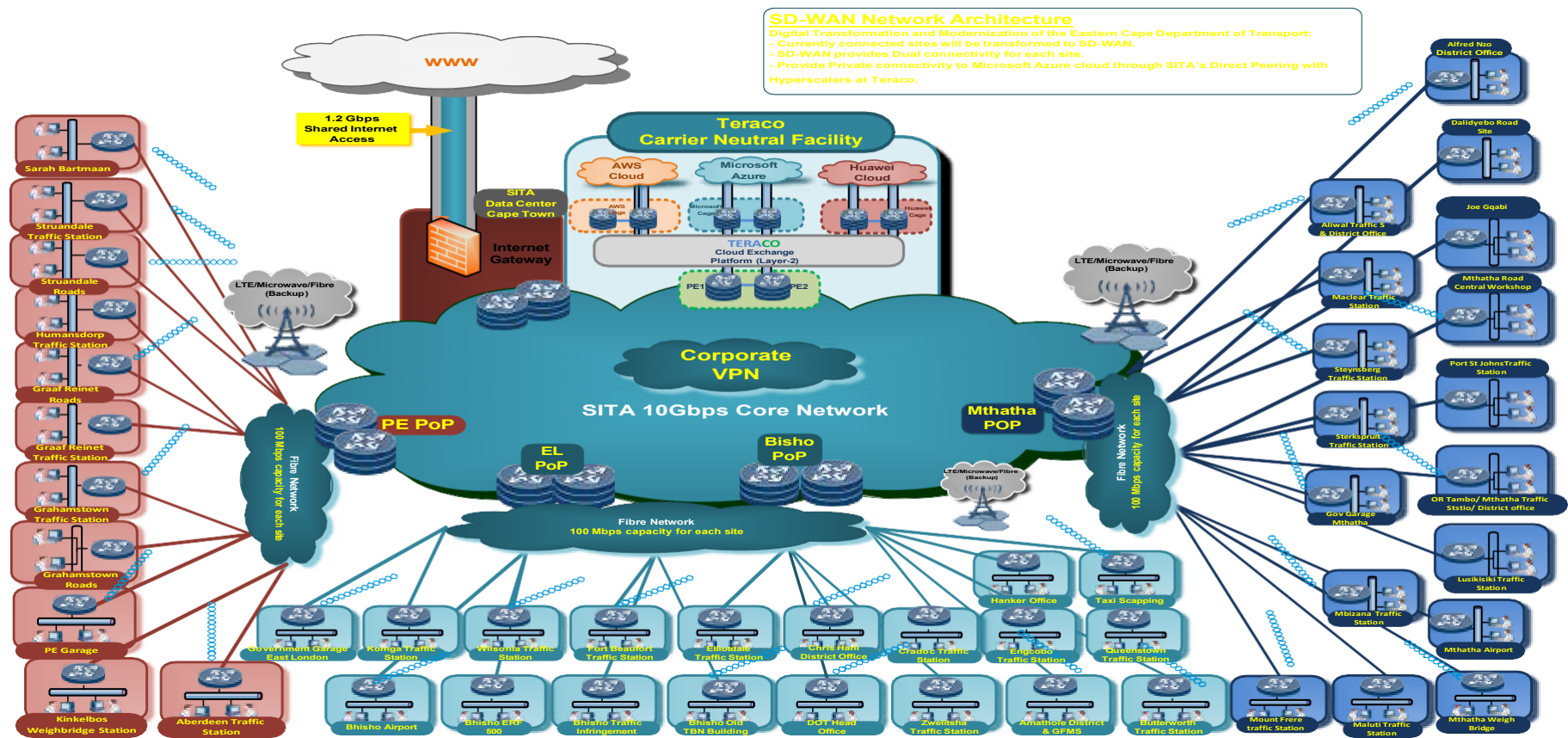


Figure 20 – Wide-area network topology

5.1.2.3 Proposed new Layer-2 topology

The attached diagram give a high-level overview new Layer-2 of how the entire province will connect to the SITA network.

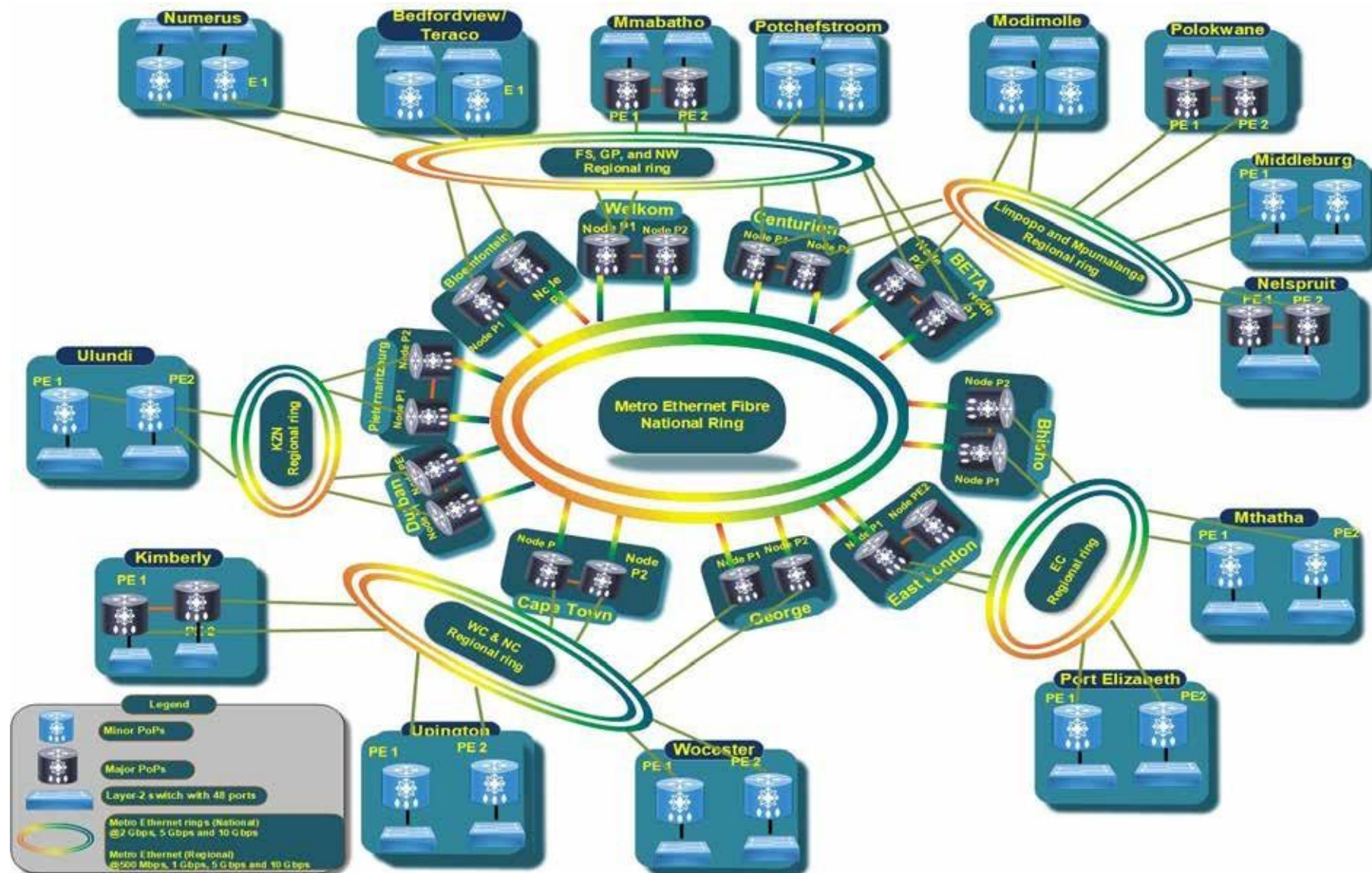


Figure 21 – Wide-area network new Layer-2 topology

Improvements from the Proposed new Layer-2 topology:

- a) Introduction of National and Regional rings (DWDM/Metro-Ethernet)
- b) Scalable
- c) Complete elimination of Single Points of Failure.

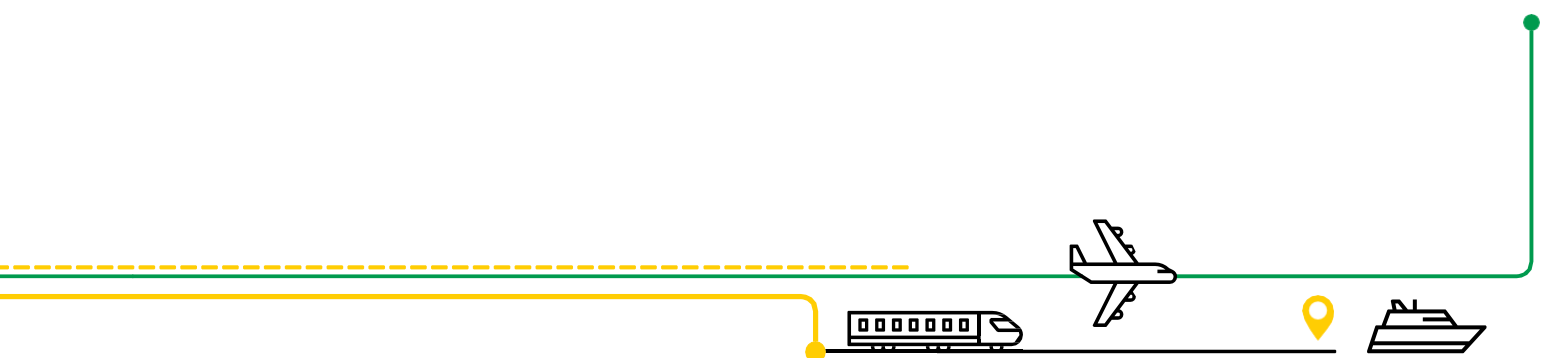
5.1.2.4 To-Be technology platform model.

This model is based on the technology platform model as provided in the GWEA implementation guide; however, the technology classes have been aligned to the ECDOT To-Be TRM.

The To-Be technology platform model is a generic model which can be applied to any of the applications in the Application/Service Reference Model as defined in the application architecture. Note, however, that decisions on the technology platform for a specific application will depend on which application is selected by ECDOT, as some applications may have pre-requisites or dependencies for components which are required in the technology platform.

It is envisaged that ECDOT will standardise on the technology products that will be used for each of the components making up the technology platform (or technology stack). Standardisation on any product within the stack will be done in line with applicable legislation and guidelines. Any application which the ECDOT then implements or procures will be implemented on the standard technology platform. Where applications are procured, compliance to the standard platform will be stipulated as a mandatory criterion.

Each of the technology domains/classes in the To-Be technology platform model is discussed in Table 8, providing a description of the role it will play in the context of the To-Be technology platform model. This provides the justification of why specific technology domains/classes are required in the technology platform.



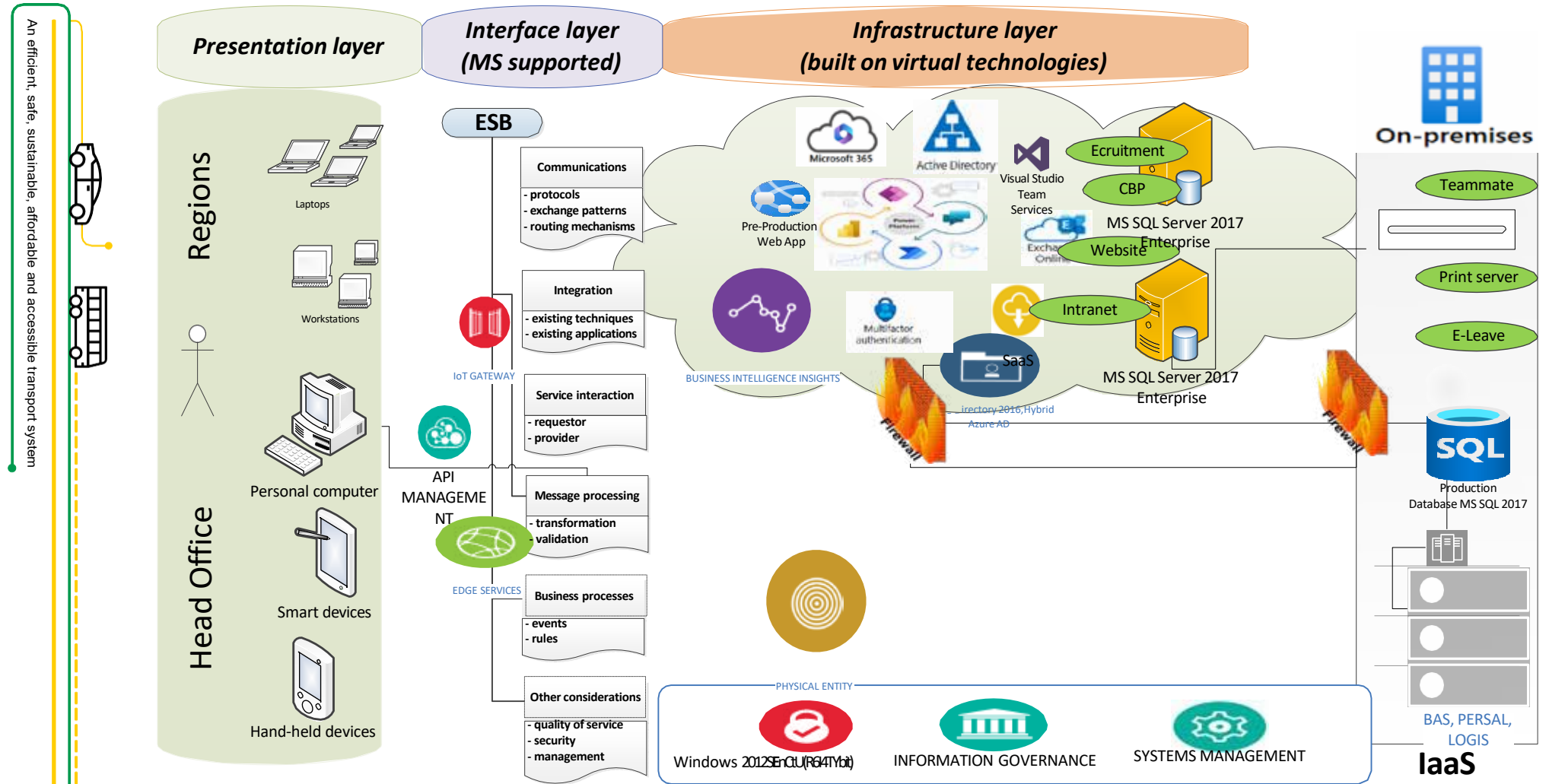


Figure 22 - To-Be technology platform model

5.2 Gap Analysis

Enterprise Architecture Gap Analysis is the structured comparison between the baseline architecture and the target architecture to identify missing capabilities, changes, and actions required to move from the current state to the desired future state.

5.2.1 Aim

The primary aim of this Gap Analysis is to assess and document the differences between the current (baseline) organisational architecture and the desired (target) architecture for the Eastern Cape Department of Transport (ECDOT), in alignment with the Government-Wide Enterprise Architecture (GWEA) Framework.

This report analyses gaps between the existing architecture gap environment and the envisaged future state, highlighting areas of misalignment, duplication, capability shortfalls, and improvement opportunities required to transition from the baseline to the target application architecture.

5.2.2 Objectives of architecture gap

The objectives of this Gap Analysis are to:

- a) Analyse and compare the baseline and target application architectures to identify gaps.

The Architecture Gap Report aims to identify, analyse, and document the differences between the Current (Baseline) Architecture and the Desired (Target) Architecture to enable the organisation to transition effectively toward improved service delivery, operational efficiency, and strategic alignment.

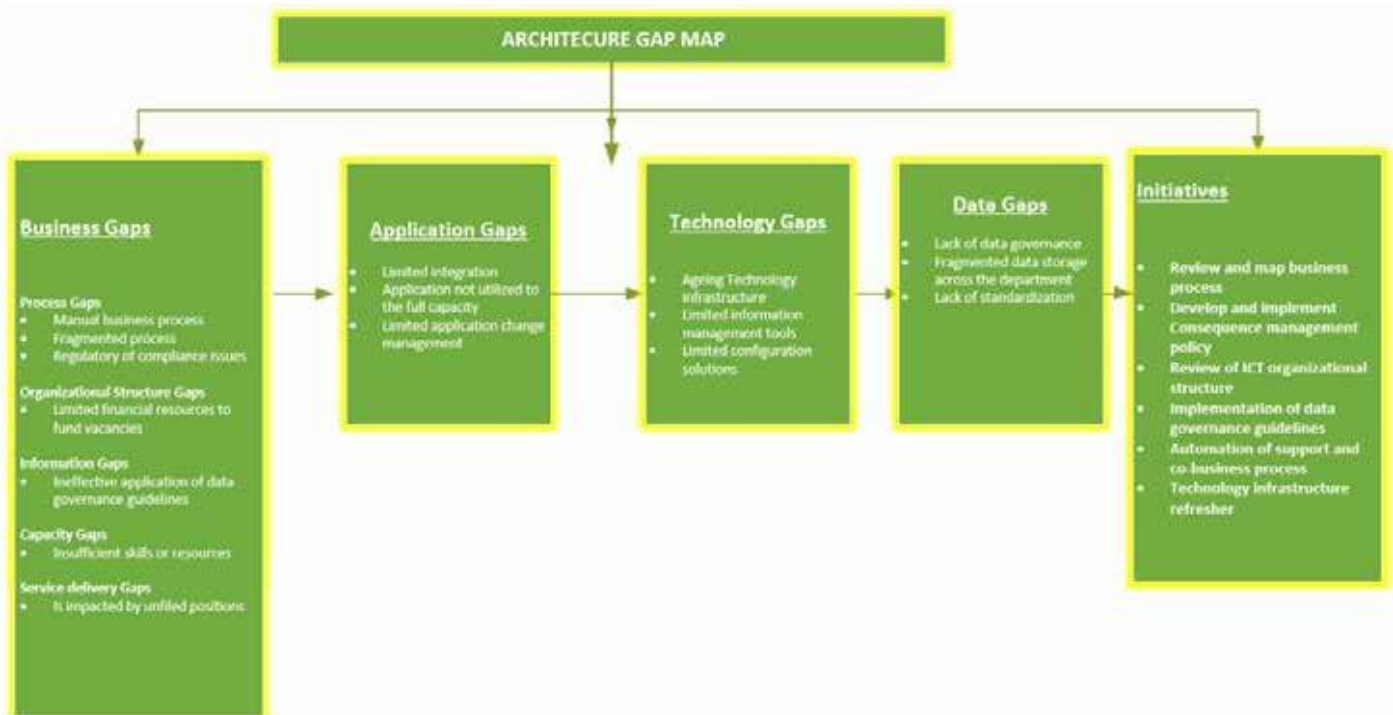
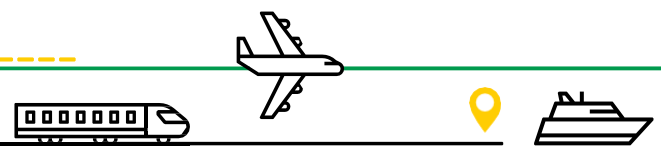


Figure 23 – Architecture Gap Map



6. Implementation and migration

6.1 Strategic implementation direction

An overall implementation and migration plan is required to guide the implementation of the target architecture. TOGAF 9 identifies three strategic approaches to implementing solutions

- a) Greenfield: a completely new implementation;
- b) Revolutionary: a radical change (i.e. switch on, switch off); and
- c) Evolutionary: a strategy of convergence, such as parallel running or a phased

Greenfield and revolutionary approaches are not ideally suited for the ECDOT, since there are existing systems in place which could be leveraged to achieve the target architecture. An evolutionary approach will ensure that real business value is delivered as soon as possible whilst gradually phasing in changes. A Greenfield approach would be adopted only in scenarios where the system is new within the department.



Abbreviations, terms and definitions

A.1: Abbreviations

Abbreviation	Description	Abbreviation	Description
APP	Annual Performance Plan	IIS	Internet Information Services
BAS	Basic Accounting System	IP	Internet Protocol
CRM	Customer Relation Management	JVM	Java Virtual Machine
DB	Database	LAN	Local Area Network
DBMS	Database Management System	LOGIS	Logistical Information System
DD	Deputy Director	MANCO	Management Committee
DOT	Department of Transport	MIOS	Minimum Inter-Operability Standards
DRM	Data Reference Model	MIS	Management Information System
EA	Enterprise Architecture	MISS	Minimum Information Security Standard
EC	Eastern Cape	NaTIS	National Traffic Information System
ECDOT	Eastern Cape Department of Transport	NTP	Network Time Protocol
EDMS	Electronic Document Management System	OLAS	Operating Licensing Administration System
eNatis	Electronic National Information System	PDP	Personal Development Plan
EPWP	Expanded Public Works Programme	PERSAL	Personnel and Salary System
ESB	Enterprise Service Bus	RAS	Registering Authorities System
EXCO	Executive Committee	SCCM	System Center Configuration Manager
FRS	Functional Requirements Specification	SCOM	System Center Operations Manager
GFMS	Government Fleet Management Services	SITA	State Information Technology Agency
GWEA	Government wide enterprise architecture	SME	Small and Medium Enterprise
HoD	Head of Department	SQL	Structured Query Language
HBS System	Hold Baggage Screening System	SSA	State Security Agency
HR	Human Resource	TDM	Technology Distribution Model
HRD	Human Resource Development	TOGAF	The Open Group Architecture Framework
HRM&A	Human Resource Management & Administration	TPM	Technology Platform Model
ICT	Information and Communication Technology	TRM	Technology Reference Model
IDE	Integrated Development Environment	WAN	Wide Area Network





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