

STRATEGIC CONCEPT NOTE

SOUTH AFRICA TRANSPORT SECTOR DIGITAL TRANSFORMATION

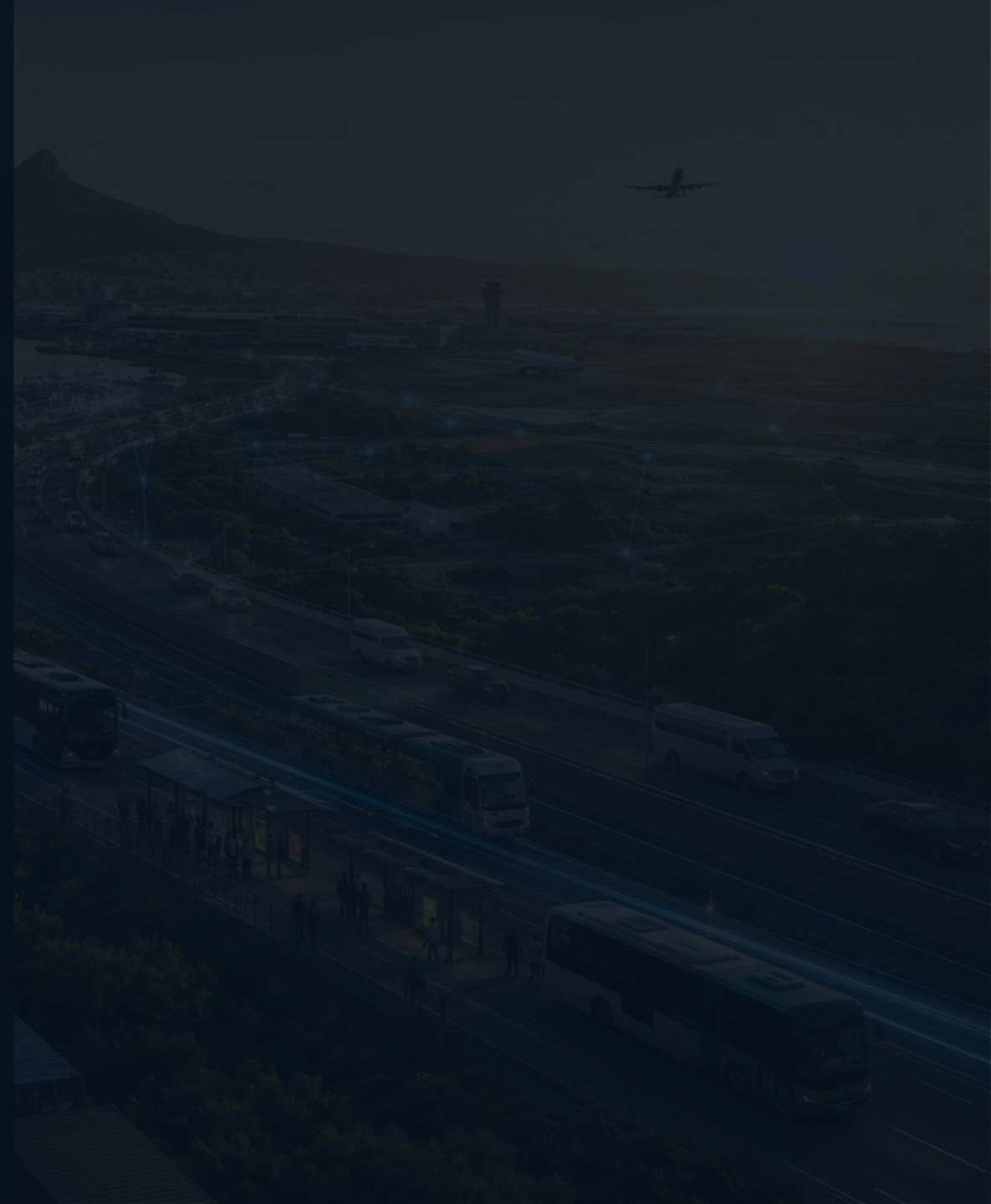
Building an integrated, intelligent and digitally enabled national transportation ecosystem

INITIAL STRATEGIC ENGAGEMENT

Prepared for the Department of Transport
Republic of South Africa

SPACHEE × ISIIVUNO

STN-SCN-001 | 2027-2035



One country. One transport ecosystem. One trusted digital operating environment.

A national digital architecture that connects — rather than replaces — South Africa's transport institutions, modes and existing systems.

01

CONNECT

People, operators, vehicles, infrastructure and freight

02

ORCHESTRATE

Road, rail, taxi, bus, ports, aviation and borders

03

INTELLIGENCE

Real-time visibility, predictive analytics and AI decision support

04

TRANSFORM

Safety, productivity, maintenance, mobility and logistics performance

The proposition is not a single IT project. It is a national transport transformation programme.

Digital infrastructure + data + AI + intelligent transport systems + automation + cybersecurity + interoperable platforms

South Africa is entering a structural transport reform window.

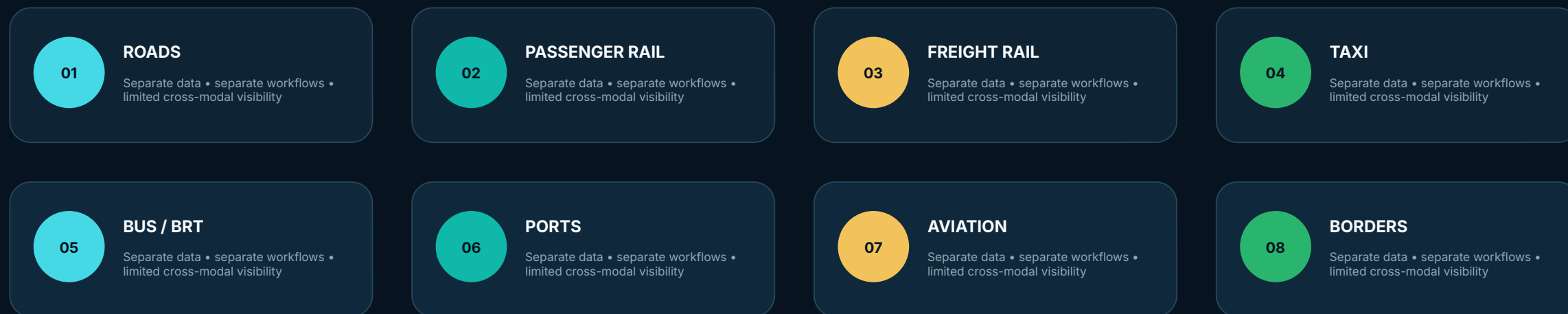
Rail recovery, open access, multimodal integration and logistics reform create a narrow opportunity to design the digital layer before the next infrastructure cycle hardens into new silos.



Digital transformation is the connective infrastructure that allows physical reform to operate as a system.

The core constraint is fragmentation — not absence of technology.

Digital systems have evolved by mode, operator, institution, sphere of government and technology generation.



Duplicated data → disconnected journeys → reactive operations → weak end-to-end visibility

THE OPPORTUNITY: build the interoperability layer between existing systems.

THE FUTURE STATE

FROM TRANSPORT INFRASTRUCTURE TO A NATIONAL TRANSPORT OPERATING SYSTEM

TransportOS South Africa™ becomes the common digital backbone that links people, vehicles, infrastructure, freight, energy, payments, data and AI.

MOBILITY

ROADS

RAIL

LOGISTICS

PORTS

AVIATION

SAFETY

ENERGY

DATA + AI

ONE NATIONAL ARCHITECTURE • FEDERATED OPERATIONS • OPEN INTEROPERABILITY

What changes when transport becomes digitally integrated?

The programme converts a large transport asset base into an observable, measurable, interoperable and increasingly predictive national system.

VISIBLE

Strategic passenger and freight movements become observable.

MEASURABLE

Common KPIs enable consistent national performance management.

INTEROPERABLE

Existing and future systems exchange trusted data through governed interfaces.

PREDICTIVE

Maintenance, congestion, safety and demand move from reactive to forecast-driven.

INTELLIGENT

AI supports optimisation, simulation and faster operational decisions.

INVESTABLE

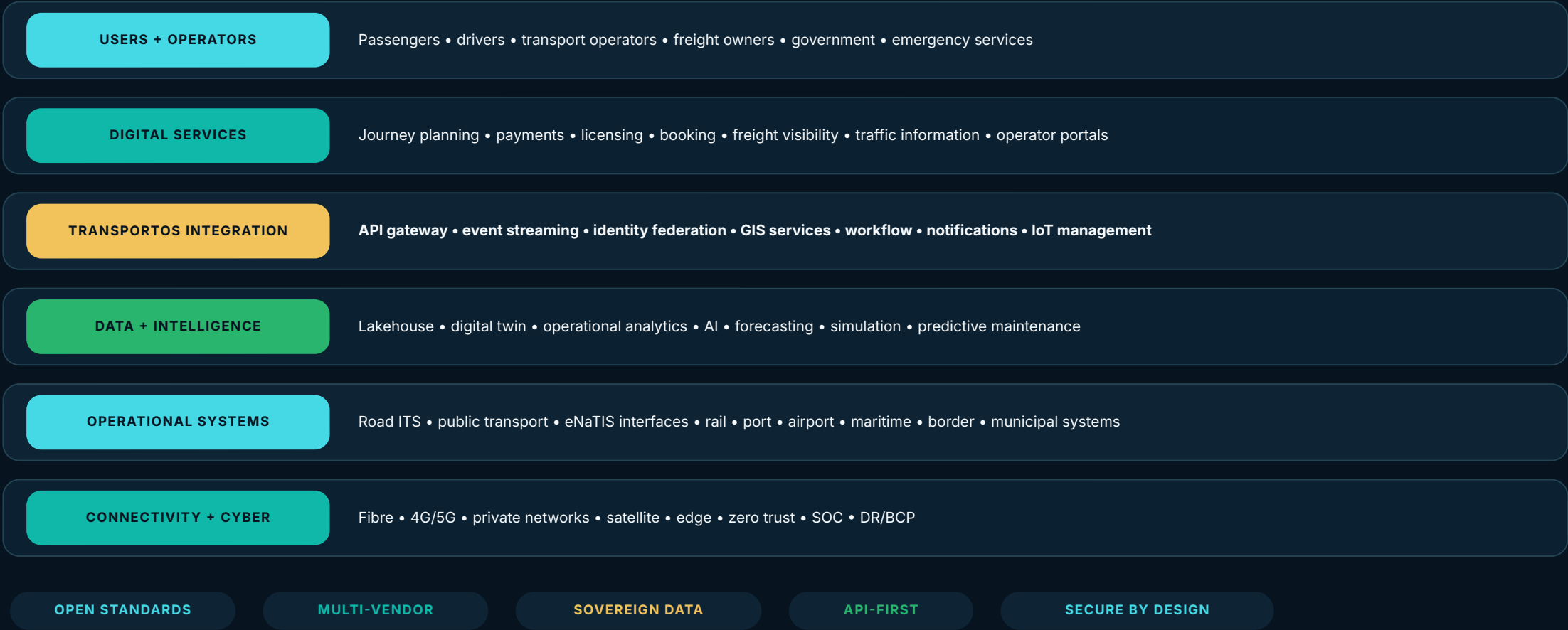
Digital visibility improves project selection, asset utilisation and financing confidence.

Design principle: integrate before replacing.

Preserve statutory authority. Reuse functioning platforms. Standardise interfaces. Scale by outcomes.

TransportOS South Africa™ — target digital architecture

A federated stack: existing systems remain authoritative while common integration, data, intelligence and security layers create national interoperability.



One geospatial operating picture of the national transport system.

Roads • bridges • rail • stations • taxi ranks • terminals • ports • airports • borders • charging • passenger flows • freight flows • incidents • asset condition • capital projects

The digital twin is the spatial foundation for national transport planning, operations and investment decisions.

01

ASSET IDENTITY

ownership • condition • lifecycle

02

LIVE OPERATIONS

traffic • trains • cargo • disruptions

03

PREDICTIVE LAYER

risk • demand • failure • capacity

04

PLANNING LAYER

scenario modelling • investment prioritisation

From retrospective reporting to real-time national transport management.

The Control Tower federates entity-level control rooms; it does not duplicate them.

PASSENGERS

volumes • service disruptions • station congestion

ROADS

congestion • incidents • works • heavy vehicles

RAIL

capacity • train movements • delays • infrastructure

FREIGHT

cargo • ETA • terminals • borders

PORTS + AVIATION

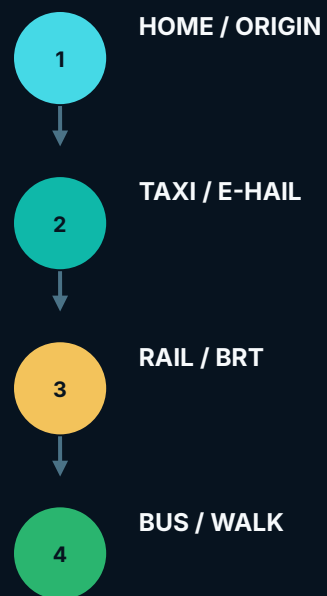
vessels • terminals • air cargo • access

SAFETY + ASSETS

crashes • risk • condition • maintenance

MobilityGrid™ — one passenger journey across multiple operators

Make rail, bus, BRT, minibus taxi, e-hailing and active mobility function as a coherent network from the passenger's perspective.



COMMON DIGITAL SERVICES

- Journey planning
- Real-time information
- Mobility account
- Interoperable payment
- Service alerts
- Passenger feedback



Minibus taxi digital transformation — strengthen the backbone, do not displace it.

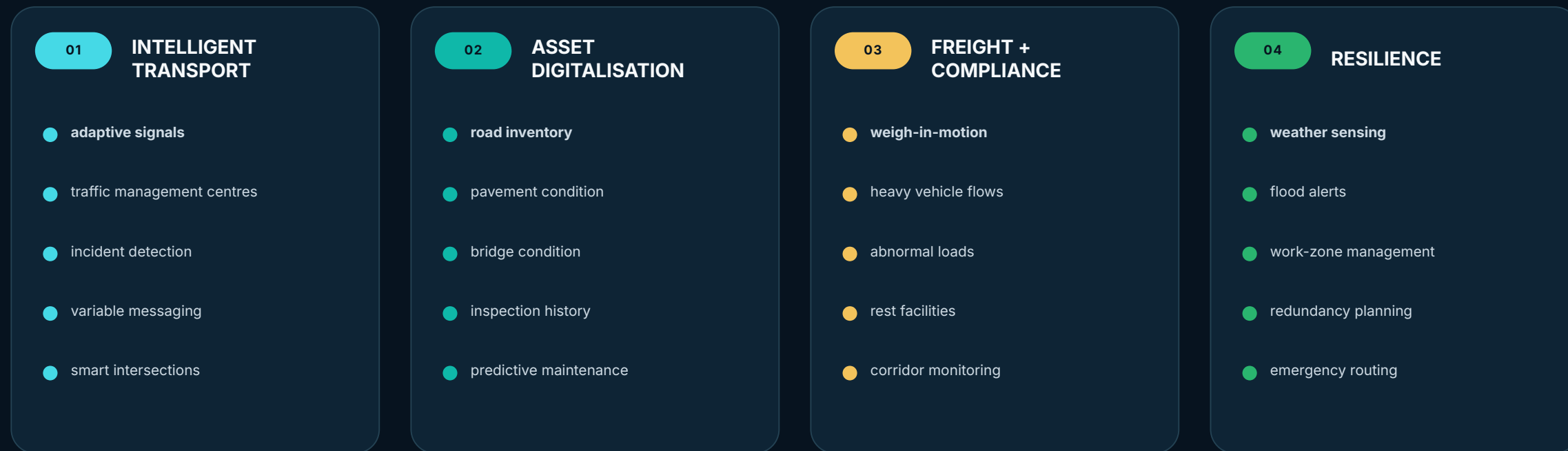
Digitise the operating environment around the sector while preserving its entrepreneurial model and commercial identity.



Strategic result: formal digital participation + safer operations + better service + new finance and EV pathways.

RoadGrid™ — turn passive road infrastructure into observable, intelligently managed assets.

Road digitalisation combines intelligent transport systems with lifecycle asset management and freight intelligence.



Road scale: ~750,000 km nationally — digital prioritisation is essential to lifecycle economics.

Source: South Africa Department of Transport, Roads Branch.

SafetyGrid™ — shift from reactive enforcement to predictive risk management.

A national Road Safety Intelligence Platform can combine crash, road, vehicle, driver, enforcement, weather and emergency information.



National Road Safety Strategy direction: materially reduce fatalities by 2030 — digital intelligence becomes part of the safety system.

RailGrid™ — digital coordination for a recovering passenger system and a multi-operator freight network.

Open access, new operators, restored corridors and ambitious 2030 targets increase the need for common digital coordination.

PASSENGER RAIL

100M+

annual journeys by end-March 2026

600M

annual ambition by 2030

- real-time passenger information
- automated fare collection
- station intelligence
- asset + rolling-stock monitoring
- security analytics
- multimodal station integration

FREIGHT RAIL

250M t

annual freight ambition by 2030

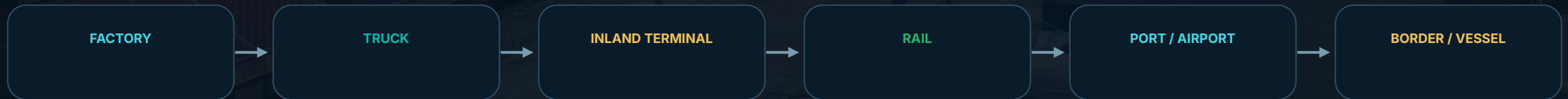
OPEN

multi-operator access environment

- capacity + path visibility
- train planning + network status
- operator + terminal interfaces
- maintenance windows
- performance analytics
- digital security

Manage the complete cargo journey — not individual modes.

A common freight digital reference follows authorised cargo information across origin, truck, rail, inland terminal, port, airport and border.



Cargo visibility • ETA prediction • truck appointments • rail capacity • digital documents • exception management • corridor analytics

Start with smart economic corridors — prove value, then scale nationally.

Corridor digital twins combine infrastructure, operators, freight flows, incident management and multimodal interfaces into one measurable operating environment.



01 GAUTENG ↔ DURBAN

Primary domestic logistics axis • road • rail • inland terminal • port

02 GAUTENG ↔ RICHARDS BAY

Bulk and industrial corridor • rail • road • port

03 GAUTENG ↔ MAPUTO / LEBOMBO

Regional trade corridor • road • rail • border

04 GAUTENG ↔ BEITBRIDGE

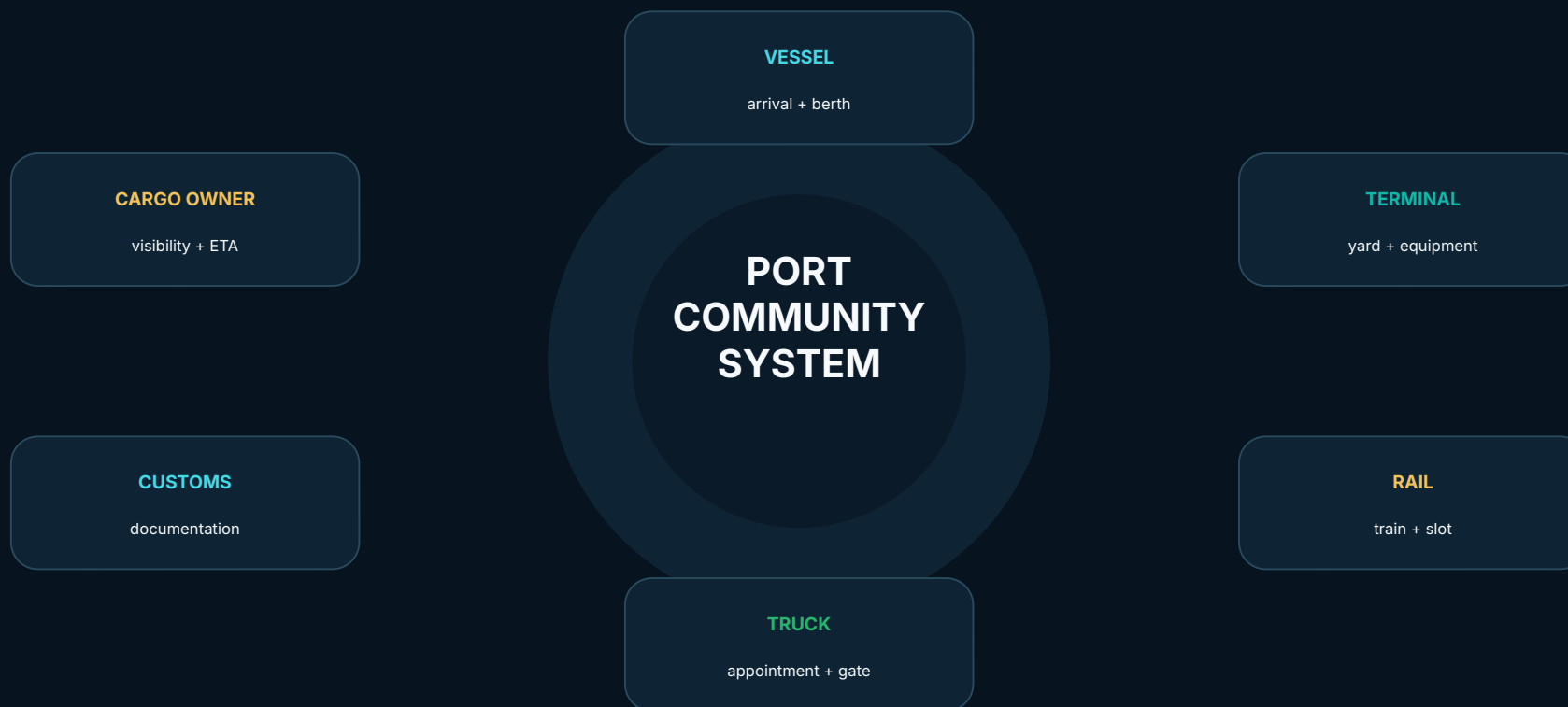
SADC road freight corridor • truck • border • customs

05 GAUTENG ↔ EASTERN CAPE

Automotive • container corridor • rail • road • manufacturing

PortGrid™ — connect ports to the national logistics system.

Physical port reform should be matched by digital integration across vessel, terminal, rail, road, customs and cargo stakeholders.



Strategic metric: end-to-end cargo journey time — not just crane productivity.

AviationGrid™ — connect airports, air cargo and surface mobility.

Digitalisation can make airports integrated national passenger and freight nodes rather than isolated aviation assets.

42M
passengers through ACSA network policy target

1.2M t
air-freight policy target

01 PASSENGER FLOW

airport access • terminal analytics • disruption information

02 AIR CARGO

cargo community systems • truck scheduling • visibility

03 AIRPORT DIGITAL TWIN

assets • energy • capacity • maintenance

04 SURFACE INTEGRATION

rail • bus • taxi • e-hailing • parking

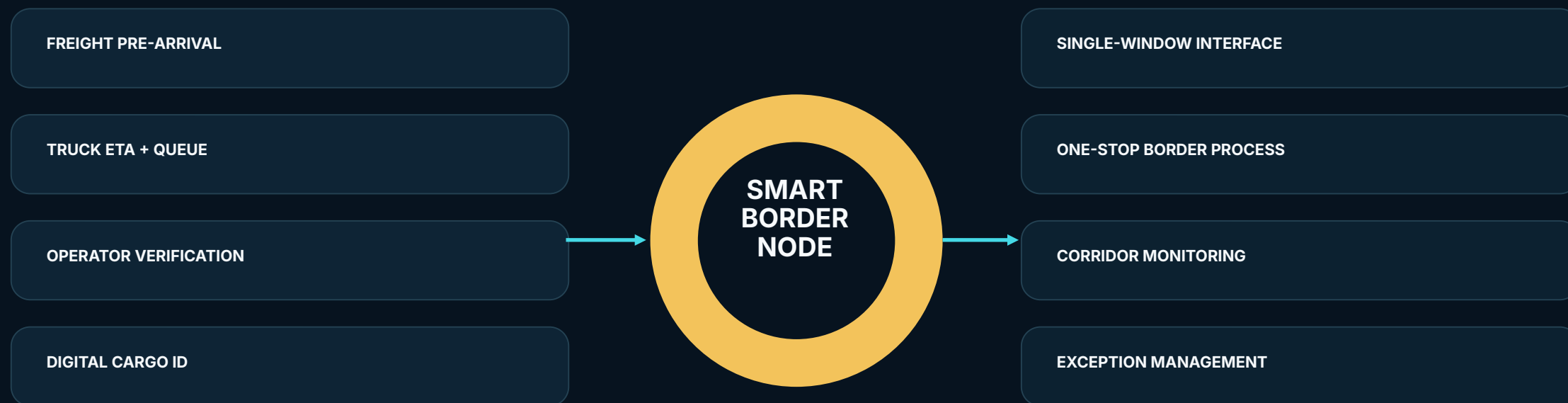
05 SECURITY + RESILIENCE

operational continuity • cyber • incident coordination

Source: Department of Transport Budget Vote 2025/26 — policy-term aviation targets.

Smart borders — extend the transport system into SADC and AfCFTA trade corridors.

A truck should arrive at a border digitally prepared, with physical processing focused on identity, security and exceptions.



South Africa's future freight architecture is regional by default.

EnergyGrid™ — transport digitalisation must anticipate electric mobility.

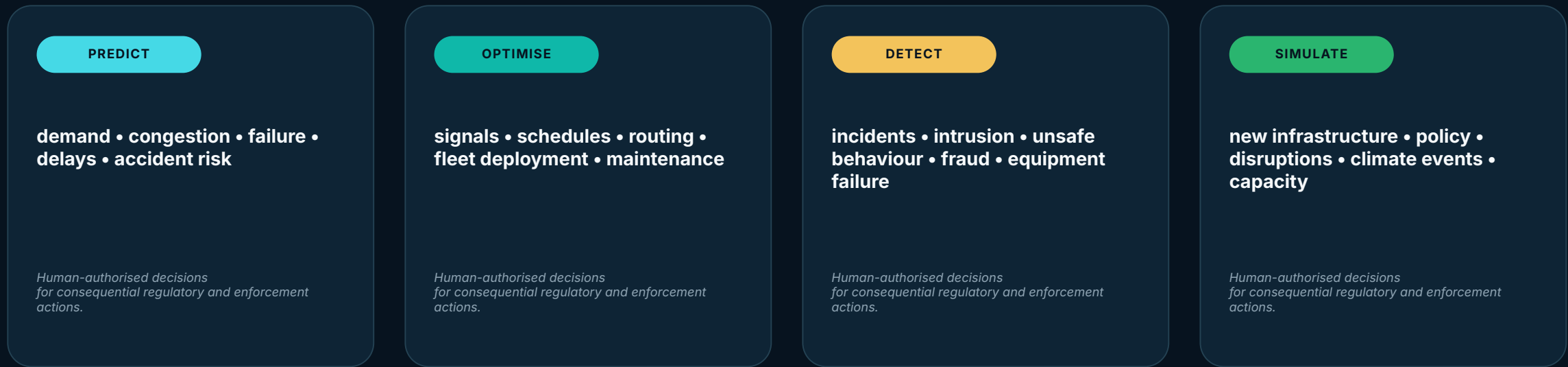
Charging, fleet operations and electricity planning increasingly become one system, particularly for high-utilisation public and commercial fleets.



Priority principle: integrate energy planning first where vehicles have predictable duty cycles — depots, taxi ranks, bus fleets and freight hubs.

DataGrid™ + AI — intelligence should be horizontal across every mode.

AI is not a standalone programme. It is the analytical layer that helps the transport system predict, optimise, detect and simulate.



AI becomes valuable only when trusted, interoperable transport data exists.

Digital sovereignty and cybersecurity are transport safety requirements.

Connected transport increases both capability and attack surface. Security therefore begins at architecture stage.

01

SOVEREIGN GOVERNANCE

South African law • institutional custodianship • data classification

02

ZERO TRUST

identity • least privilege • segmentation • encryption

03

SECURITY OPERATIONS

SOC • SIEM • threat intelligence • incident response

04

OT + IT RESILIENCE

road control • signalling • port • airport • continuity

05

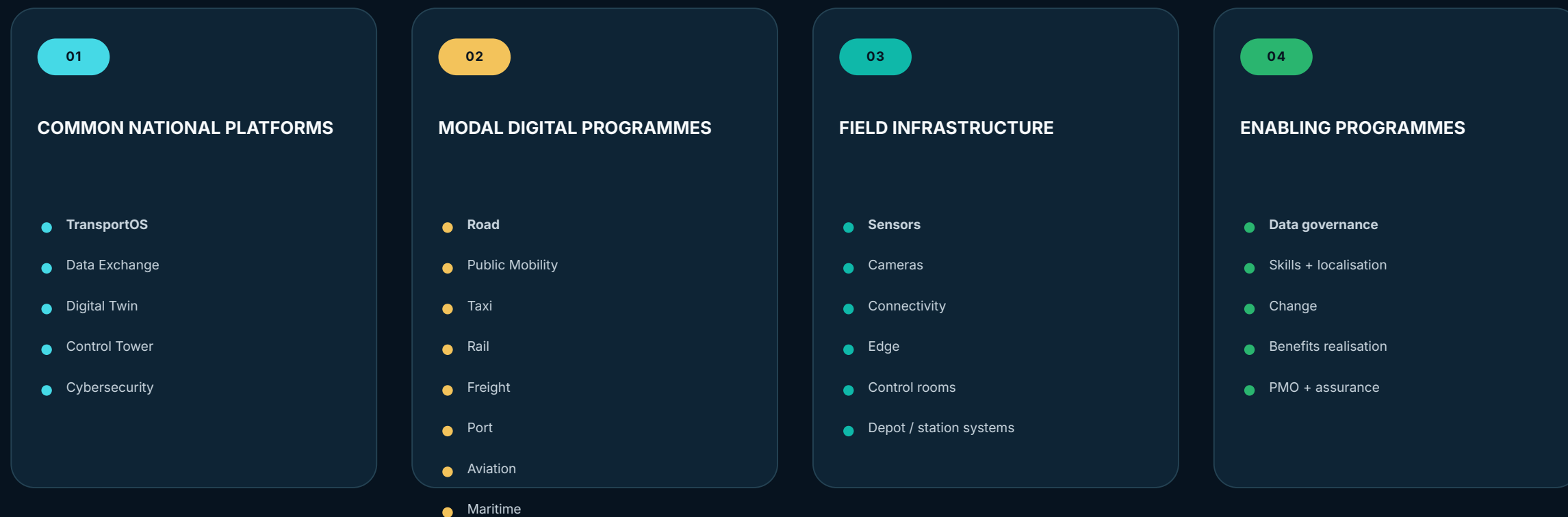
AUDIT + AI GOVERNANCE

traceability • human oversight • model governance

The objective is secure, controlled interoperability — not uncontrolled data centralisation.

A national programme delivered as modular workstreams under one controlled architecture.

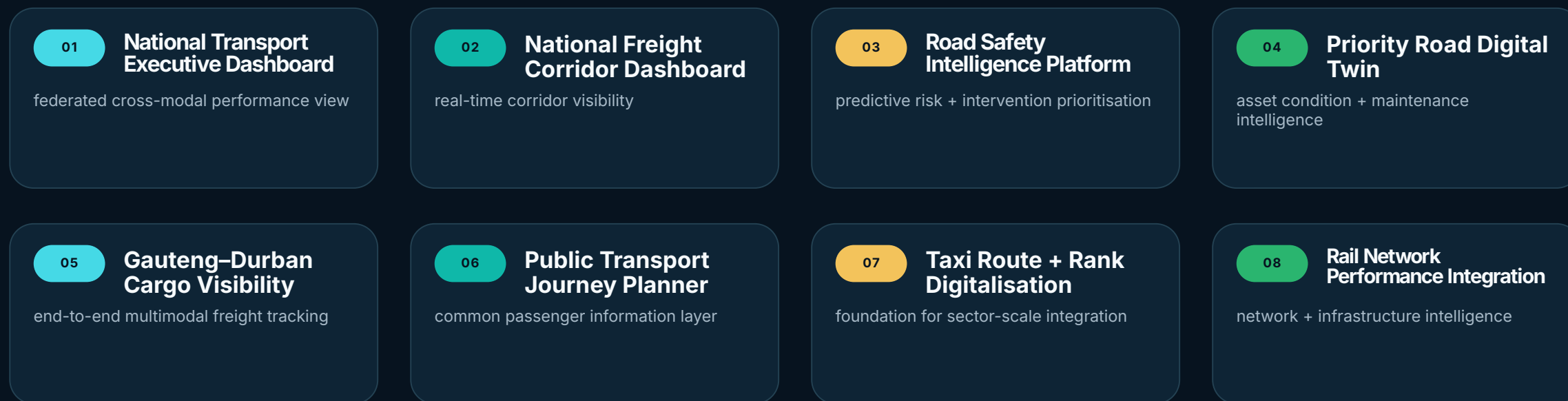
Shared platforms are centralised; modal and field packages remain modular. This controls complexity and procurement risk.



ONE architecture • MANY implementation packages • COMMON standards • MEASURABLE benefits

12–24 month early-win portfolio

Prioritise use cases that create visible operating value while establishing the national digital foundation.



Selection test: national relevance × measurable benefit × data readiness × implementation speed × scalability

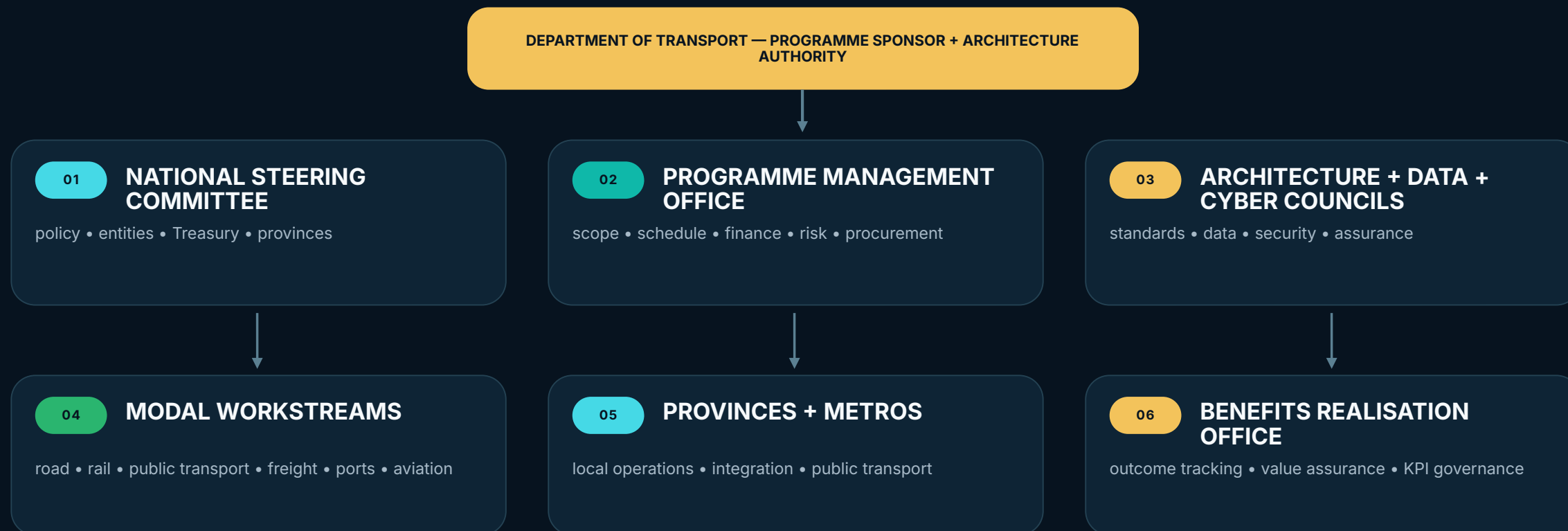
A phased development path — prove, scale, then automate.

The programme should be gated so the Department can validate value, architecture and institutional readiness before committing to national scale.



Government-led architecture. Federated operations. Clear accountability.

The Department remains policy authority, programme sponsor, standards authority, benefits owner and national architecture custodian.



Spachee x Isiivuno — proposed programme development and transformation partners.

The initial role is to help the Department convert the strategic opportunity into a validated national programme — without predetermining procurement outcomes.

SPACHEE

- Strategic programme development
- Digital + enterprise architecture
- Data / AI / cybersecurity architecture
- Technology strategy + systems integration
- Feasibility + commercial structuring
- Programme management architecture

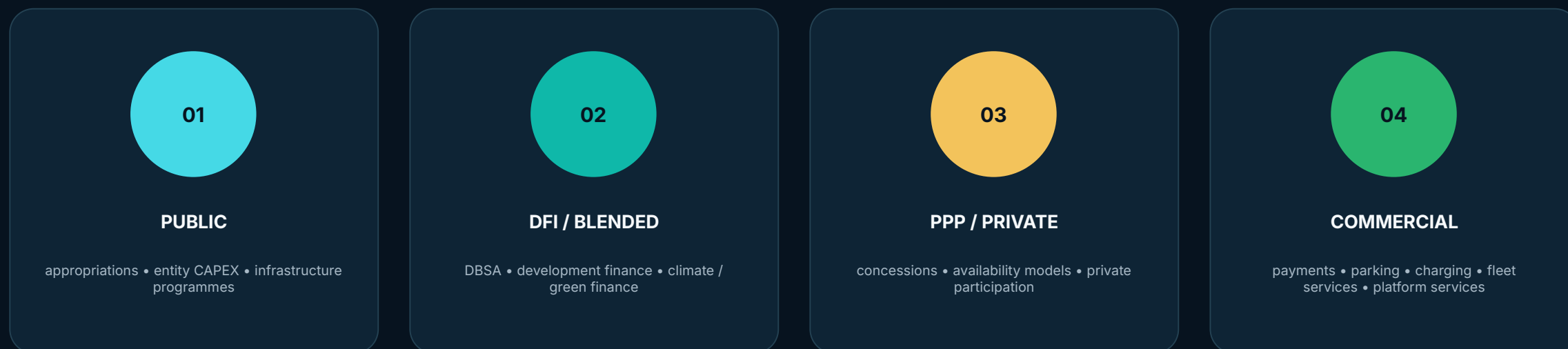
ISIIVUNO

- Institutional transformation
- South African localisation
- Stakeholder mobilisation
- Workforce + change management
- Benefits realisation
- Local supplier + skills development

Open standards • Department-led requirements • multi-vendor technology ecosystem

Funding architecture — mobilise private capital around public strategic control.

The feasibility phase should separate public-good national digital infrastructure from commercially financeable services and field investments.

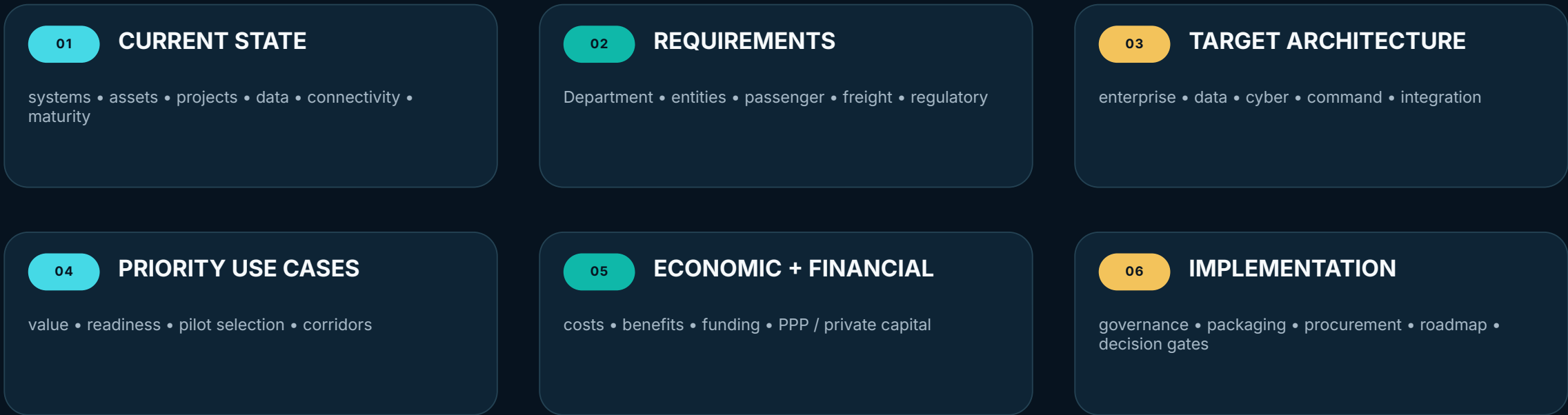


Immediate engagement does not seek capital approval, contract award, exclusivity or government guarantee.

It seeks permission to develop a bankable, phased and institutionally aligned programme.

The immediate next step is programme development — not implementation.

A controlled feasibility and architecture phase establishes evidence, priorities, technical design, institutional ownership and financing before any major procurement decision.



OUTPUT: Departmental decision package for progression, redesign or stop.

What Spachee x Isiivuno are requesting from the Department

A low-risk first decision: strategic alignment and authority to develop the proposition properly.

01

STRATEGIC PRESENTATION

Engage Department leadership on the national digital transformation opportunity.

02

DEPARTMENTAL GUIDANCE

Align the concept to existing programmes, policy priorities and institutional realities.

03

FOCAL POINTS

Identify appropriate branches and officials for structured programme development.

04

DISCOVERY ACCESS

Enable controlled engagements with designated entities and stakeholders.

05

FEASIBILITY IN PRINCIPLE

Agree a pathway to formal feasibility, architecture and implementation planning.

The initial engagement is deliberately non-procurement.

This framing protects the Department, the programme and future competition while enabling serious programme development.

✕ Technology contract

✕ Commitment to a specific vendor

✕ Unsolicited award

✕ Immediate capital approval

✕ Exclusivity

✕ Government guarantee

✕ Displacement of existing programmes

✕ Bypassing Treasury / procurement requirements

The purpose is to establish whether sufficient strategic merit exists to develop the programme jointly and formally.

THE NORTH STAR

TRANSPORTOS SOUTH AFRICA™

The digital operating environment for the national transport economy.

INTEGRATED TRANSPORT

DIGITAL INFRASTRUCTURE

NATIONAL INTELLIGENCE

ECONOMIC COMPETITIVENESS

SPACHEE × ISIIVUNO

Initial strategic engagement with the Department of Transport
Republic of South Africa

INTEGRATED. INTELLIGENT. SAFE. COMPETITIVE.

Source base and strategic references

Selected public-sector sources used to anchor the strategic context and policy targets in this presentation.

01	Department of Transport	Strategic Plan 2025–2030	Integrated transport mandate, innovation, multimodal planning and sector outcomes.
02	Department of Transport	Annual Performance Plan 2026/27	Current programme priorities and implementation context.
03	Minister of Transport	Budget Vote 2025/26	Rail, port and aviation policy-term targets.
04	Department of Transport / Cabinet	Draft National Rail Master Plan, 2026	Long-term passenger and freight rail modernisation framework.
05	Minister of Transport	Africa Rail Convention, 8 July 2026	100M+ passenger journeys, 600M ambition, freight rail reform and 250Mt ambition.
06	Department of Transport	Roads Branch	Approx. 750,000 km national road-network scale.
07	Department of Transport / RTMC	National Road Safety Strategy 2016–2030	National road-safety direction and 2030 fatality-reduction objective.

Presentation prepared as a strategic concept proposition. Detailed technical, legal, financial and procurement design remains subject to Department-led feasibility and applicable approvals.