
Account
Based
Ticketing
(ABT)
transport
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Transport
REPUBLIC OF SOUTH AFRICA
#4388647

Presentation Overview

- Background on Automatic Fare Collection
- Account Based Ticketing
- NDOT/SANRAL ABT Solution
- Cost Considerations
- Conclusion

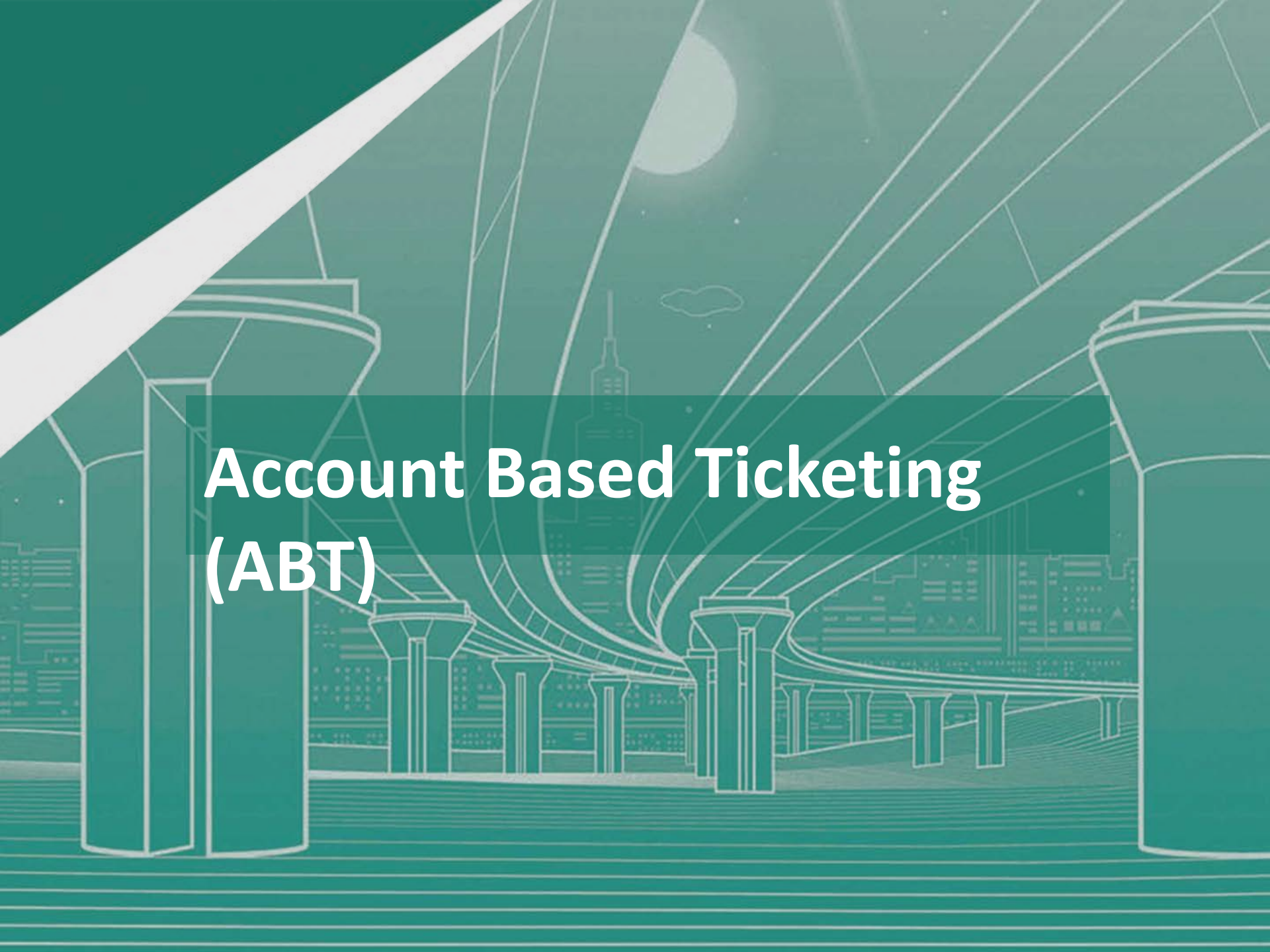
Background

Public Transport in South Africa

- Public transport plays a significant role in the social and economic development of SA.
- A direct influence on quality of life of many citizens.
- No. of commuters reliant on public transport is expanding, and significant investment has been earmarked by Government to improve and modernize public transport services.
- Government has embarked on a program to transform services into an integrated mass rapid transit network.
- Strategic initiatives by transport authorities are aimed at transforming *"from commuter-based modal transport to customer [user]-based public transport".*

Public Transport in South Africa

- Cash is a problem for commuters and operators
- Administration and management of collection of cash fares, with the concomitant security issues makes fare collection onerous.
- For a cash replacement Automatic Fare Collection system the acceptance infrastructure must be ubiquitous in order to be as attractive as cash.
- Authorities and Operators are looking at ways to improve fare collection to meet a number of objectives, amongst others:
  - ✓ eliminate the use of cash
  - ✓ reduce operating costs
  - ✓ improve fare collection efficiency
  - ✓ introduce innovative and appropriate fare structures.
- The NDOT Account Based Ticketing solution (ABT) solves these questions



Account Based Ticketing (ABT)

What is Account Based Ticketing (ABT)?

- Most traditional transport ticketing systems are 'Card Centric'. Means travel information and right to travel stored on Fare Media. These are 'Closed-loop' systems

- Account Based systems are 'Open-loop' meaning Back Office centric Automatic Fare Collection Systems

- Provide a greater degree of convenience for passengers than 'Closed-loop' and cash-based ticketing systems, while saving transport providers money.

- In Account Based Ticketing (ABT) all transactions are validated and processed in the Back Office, meaning the right to travel is managed in Back Office and ticket or Fare Media is a token or identifier that is linked to the commuter's account

Transforming e-Toll Account to Mobility Account

- SANRAL has a sophisticated back office system to manage the collection of e-tolls.
- This system consists of **account hosting** and **transaction processing** functionality at the Transaction Clearing House (TCH) that has the capacity to process millions of transactions per day.
- The system functionality has been extended to include the implementation of an Account Based Ticketing (ABT) fare collection solution for public transport.
- NDOT requested SANRAL to initiate discussions with Public Transport Operators (PTOs) to utilise the ABT solution to implement Integrated Fare Management (IFM) that will enable interoperability between all participating PTOs across all modes and services.
- SANRAL will **only** provide the **ABT Back Office** as part of the solution (The TCH). The PTO remains responsible for the provisioning, management and updating of all other fare collection infrastructure/systems and integration (AFC).

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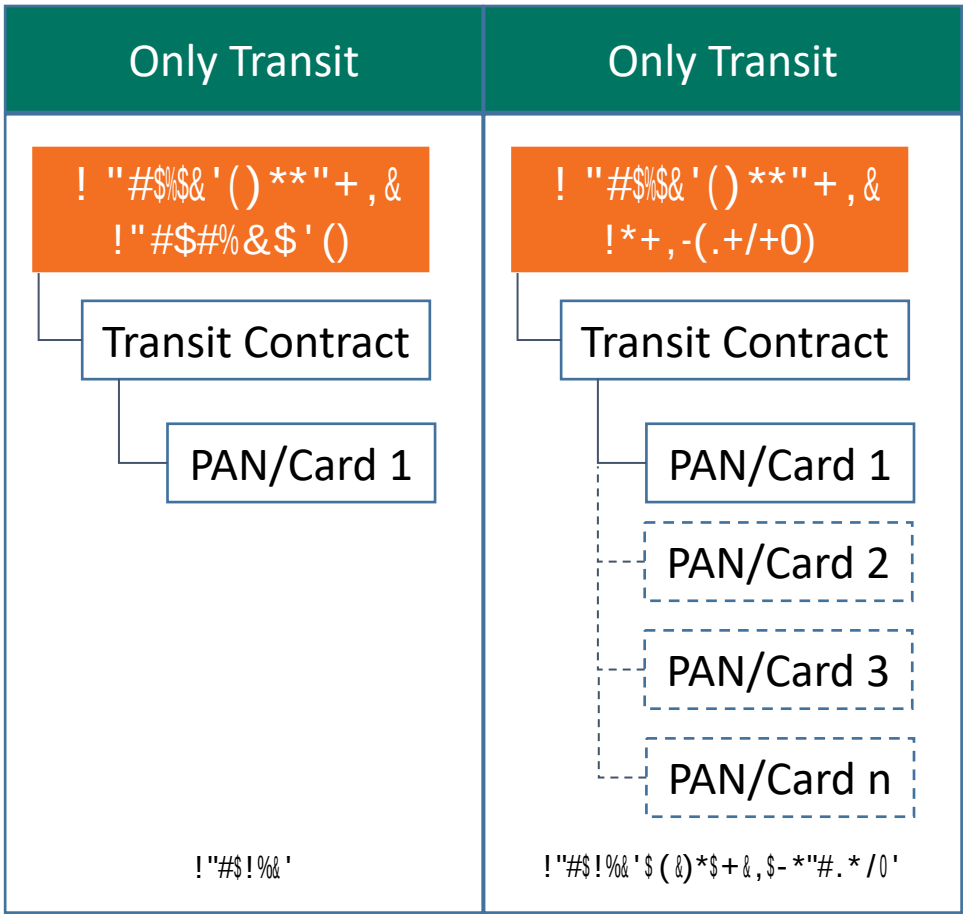
TCH Account Structure



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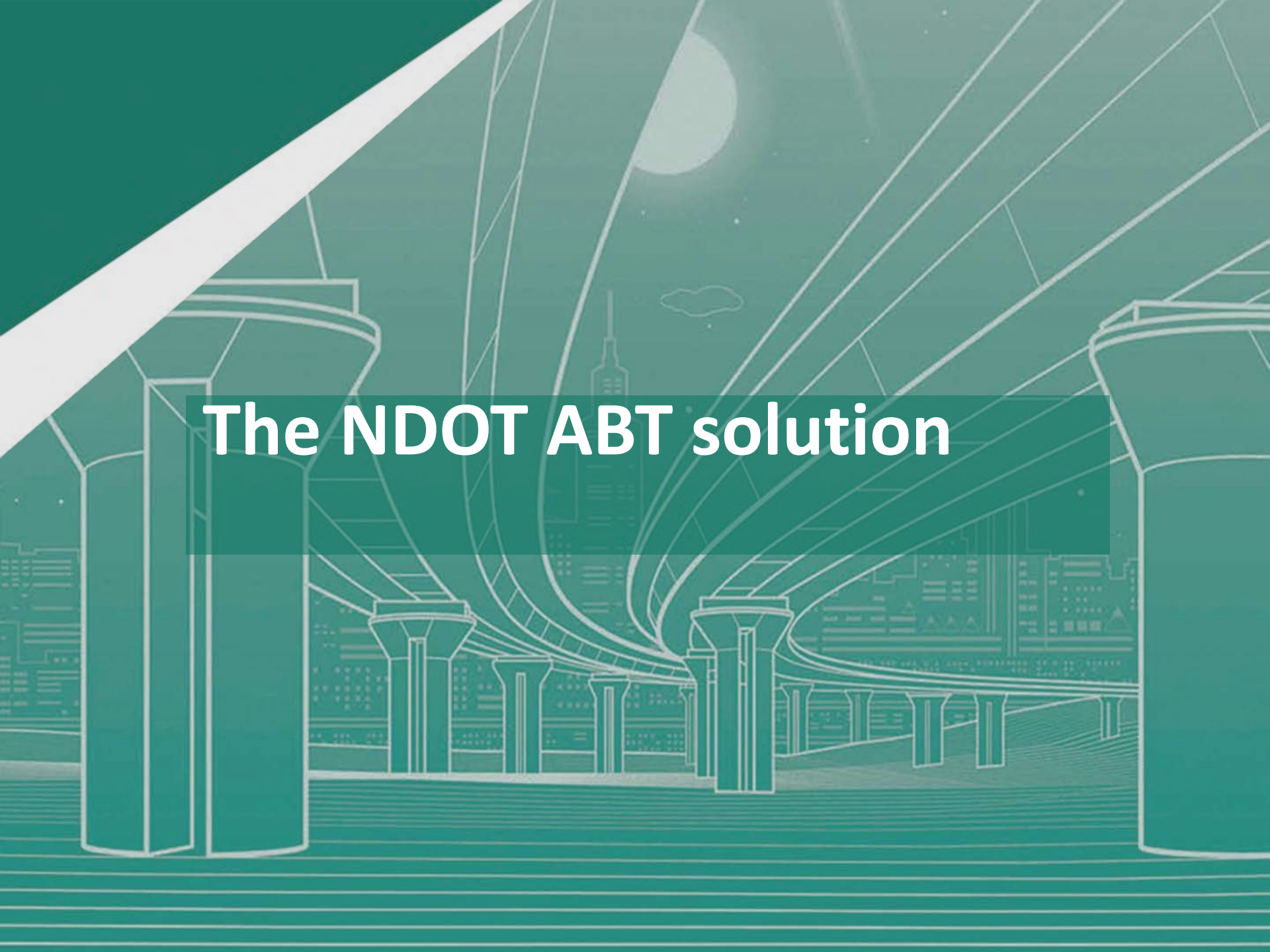
The NDOT ABT solution

NDOT ABT

- Account based prepaid fare collection product for AFC
  - ✓ Card holder has a prepaid Mobility Account at the TCH.
  - ✓ Fare collection transaction is a claim on the prepaid deposit held at the TCH.
  - ✓ The card holder is anonymous but can elect to register a personalised account.
  - ✓ A fully auditable system.

- An industry solution and not a Public Transport Operator solution.
  - ✓ Based on non-proprietary open standards to avoid closed loop non interoperable solutions and vendor lock-in.

- Go as fast as the fastest Operator.
  - ✓ Window of opportunity for early movers.
  - ✓ Based on open standards and late movers can “plug-in” when ready.

- The SANRAL TCH provides account hosting and transaction processing services to the public transport industry.

What is the NDOT ABT solution?

- *"True"* ABT is:
  - A Ticketless way to travel, by tapping or scanning a secure token
  - The token linked to an account in the back office,
  - Any value or information on the account is stored in the back office only (Back Office centric solution)
  - The fare is charged to the commuter post the journey
  - The traditional transport travel card does not have any value stored on the card chip but acts as identification of the traveller only
  - Validators do not write any data on fare media
  - Validations lists
  - System constantly up to date

- NDOT ABT:
  - Is a Hybrid ABT system
  - Is a Ticketless way to travel
  - The token is linked to an account in the back office
  - Stores information in the back office and also keep some information on the card (to overcome potential offline scenarios)
  - Utilises NDOT Central back office (hosted by SANRAL) – immediate interoperability
  - Transport Operator keep its own AFC back office
  - Based on CIPURSE open standards as published by the (OSPT) Alliance

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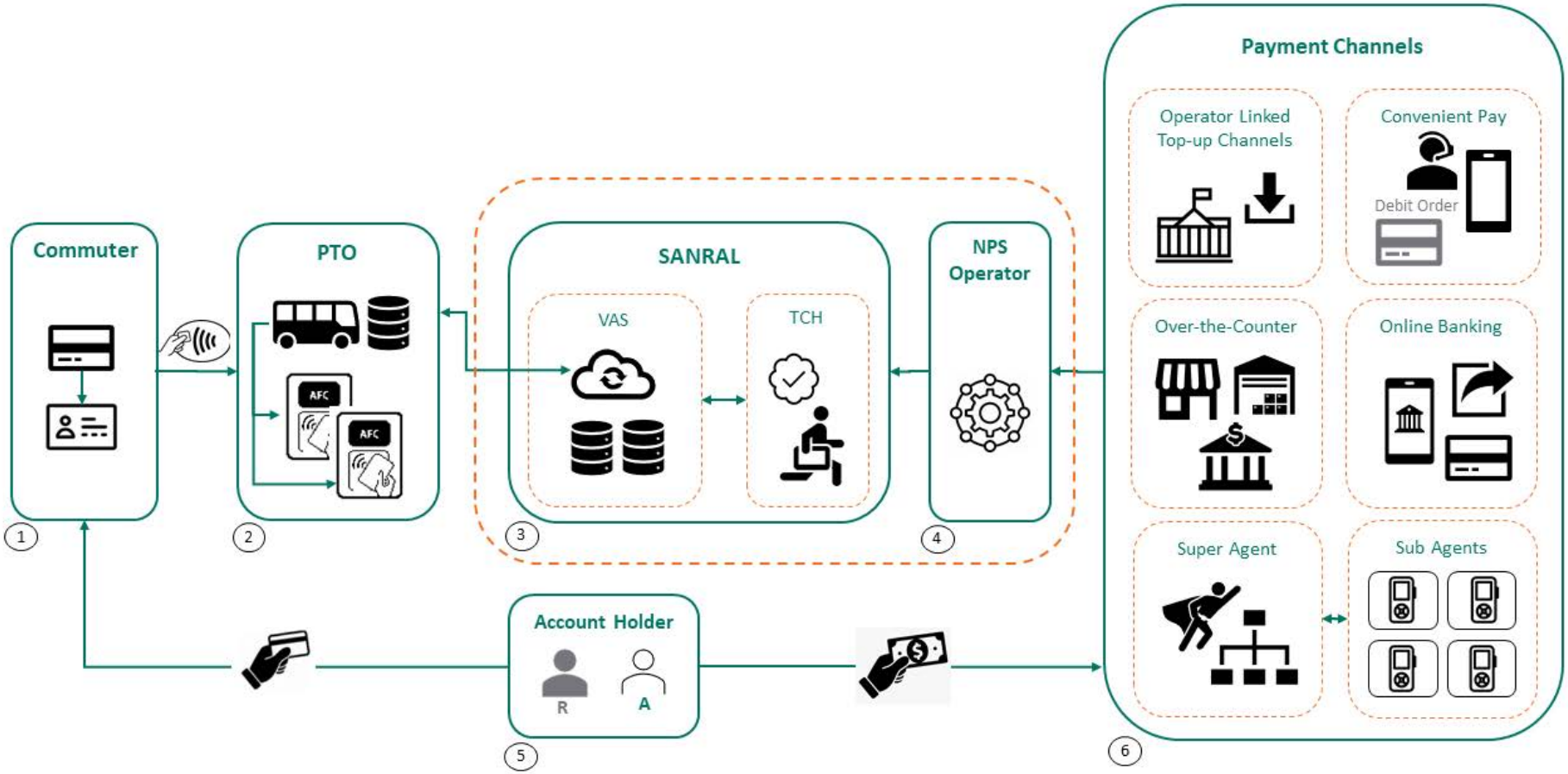
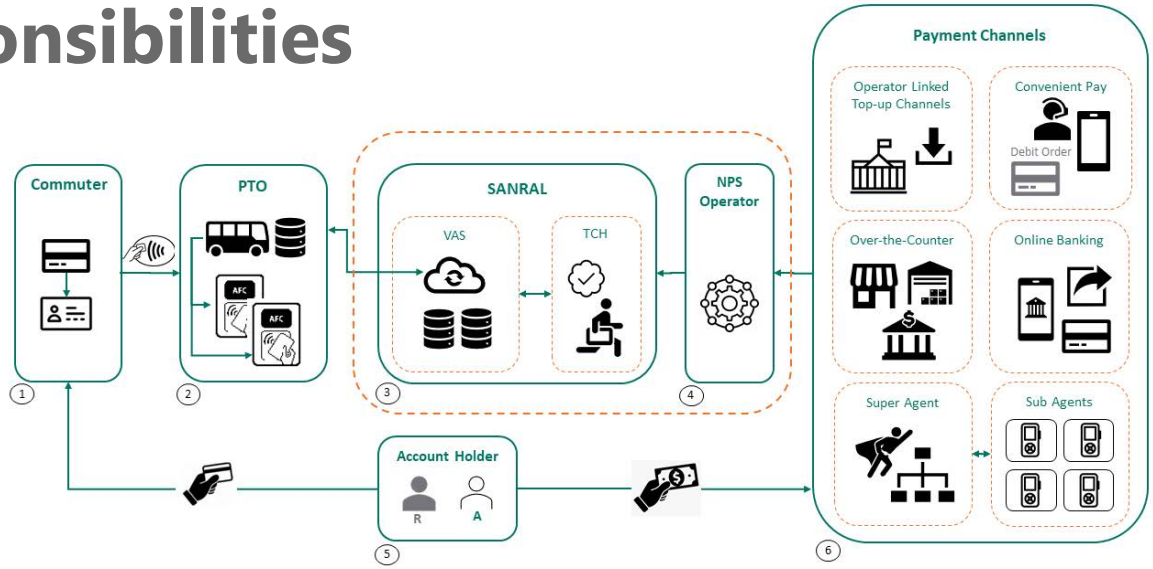
NDOT Transit Data Structure

- To achieve this a Data Structure was formulated.
  - ✓ Data structure is carried on all fare media to be used for public transport.
  - ✓ All Transport Authorities, Operators and technology providers need to ensure that data is written to, and read from the card, in a specified format and manner.
- ABT card has NDOT data structure equivalent functionality
- ABT card has sufficient capacity to accommodate **additional** Operator specific requirements

NDOT ABT Conceptual Overview



NDOT ABT Stakeholder Functions and Responsibilities



1. Fare Media Issuers

PTOs
- By choice
- Dependent on fare media in circulation issued by other issuers

Third party issuers
- Retailers
- Large business
- Government
- Clubs and Associations
- Reward and Loyalty programs

2. Public Transport Operator

Complete AFC System
- Readers/Validators
  - Station gates
  - Busses
- AFC back office
  - Application software
  - Fare structures & rules
  - Validation list download & distribution
  - Transaction collection and transfer to the TCH
  - Settlement reconciliation
  - Data communication systems

3. Transaction Clearing House

Account Hosting
- Mobility Accounts

Transaction Processing
- Receive transactions from PTOs
- Receive transactions from top up agents
- Process all transactions against Mobility Accounts
- Settle PTOs for transactions submitted
- Receive settlement for top ups from Agents

6. Payment Channels

Appointed Agents
- Accept payments and transfer to TCH for credit to Mobility Accounts
  - PTOs
  - Retailers
  - Spaza shops
  - Informal traders
  - Fare media issuers
- Settlement of transactions submitted to TCH

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Role Players

1. | 2. Fare Media Issuers

- ✓ Issuing of Fare Media.
  - Commuters will be able to obtain a prepaid stored value card from 3rd party card issuers.
  - Public Transport Operators will issue their own branded ABT cards.
    - Operator will issue/sell cards by choice as opposed to obligation.

3. The TCH (SANRAL part)

- ✓ Host Mobility Accounts.
- ✓ Process transactions submitted by Operators
- ✓ Settlement of submitted transactions

Role Players

4. NPS System Operators.

- ✓ Provide transaction switching services.

6. Retailers and Other Appointed Agents.

- ✓ Prepaid payment top up & loading PoPs.
- ✓ Card distribution and sales.

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Role Players

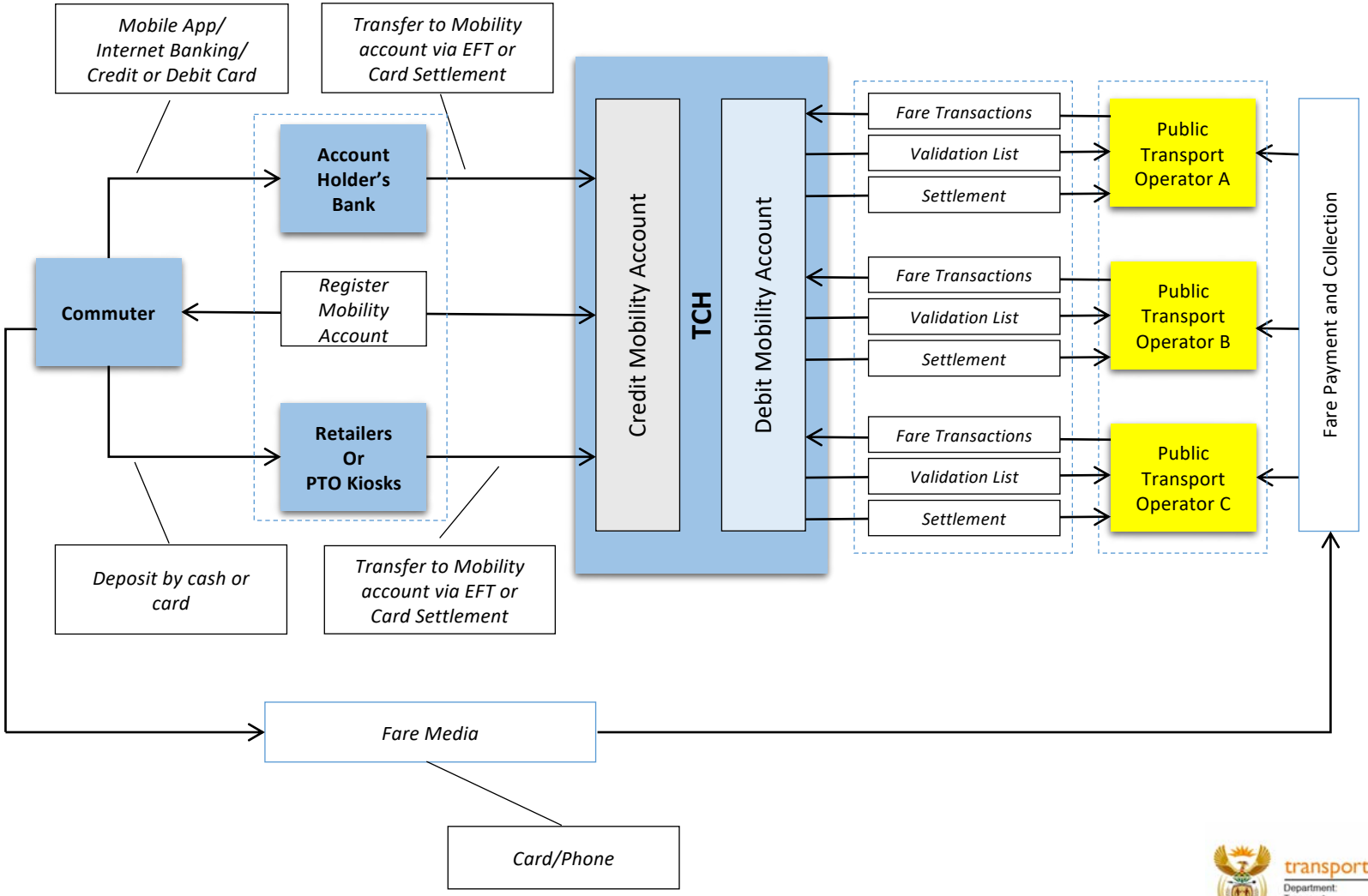
1 | 2. Technology Suppliers.

- ✓ Fare Collection Validators.
  - Develop readers with CIPURSE specification contactless functionality.
  - Develop applications to read/write to the card.
  - Provide the AFC back office to the Operator and relevant interfaces for top ups and transaction processing.

2. Transit Authorities and Operators.

- ✓ Plan and implement public transport services in support of Government's ideal of user driven fully integrated public transport services.

Context of the NDOT ABT Solution



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ABT Fare Media alternatives

- Proposed NDOT approach accommodates the continued use of:
  - EMV Based transactions on current operator systems
  - Existing Business and Fare Rules
  - NDOT AFC Regulations will be updated to reflect this

- ABT solution and fare specifications is based on **Open Standards** from the OSPT Alliance, endorsed/adopted by NDOT

- Fare media compliant with OSPT Alliance standards, supporting the ABT solution can be issued (and branded) by:
  - Public Transport Operators linked in with the ABT solution
  - Third Party issuers, for example Retailers providing top up functionality (Shoprite Checkers)
  - SANRAL/DoT

Benefits of the NDOT ABT Solution

- **Lower Operational Costs** with savings in cash handling and ticket issuing.
- **Cost effective** in terms of capital expenditure as well as operational cost.
- Improved **commuter experience**.
- Commuters only pay for services utilised with **no expiry of tickets**.
- **Interoperability** - The ability to use one fare media for multiple public transport modes and services.
- **Simplified sales infrastructure** for operators.
- **Loss of fare media** is not a loss of a ticket or value.
- ABT can **co-exist** with other fare collection systems.
- Extensive **top-up point-of-presence**.
- Mobility Accounts can be topped up via **internet banking or Mobile App**.
- Easy access to **travel history** for commuters.
- There is no need to establish a **clearing house infrastructure** and **settlement function** and **operation** for the redemption and settlement of obligations between Public Transport Operators.

Cost Considerations

ABT Cost Considerations

- Implementing ABT
  - AFC Back Office – Transport Authority
  - Validators – Transport Authority
- Fare Media
  - Estimated at c. € 1 ABT vs € 3.5 EMV
- Commercial Agreement DOT/SANRAL/Transport Operator
  - Transaction Cost
  - Load/Topup Fee
  - No Cash Handling

Conclusion

Next Steps

- Approve Commercial Model
  - Transaction Processing fee
  - Commission to top up agents
- Expand top up network

Conclusion

- DOT ready to start planning and implementation immediately
- Looking to identify Transport Operators and routes that are ready for Pilot
- Assist PTOs with framework for tender document for ABT compliant AFC system
- Discuss next steps and team cooperation