National Interoperability through Standards and Specifications

THE SOUTH AFRICAN NATIONAL
ROADS AGENCY LTD

Creating wealth through infrastructure

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Ian Liebenberg, *Toll Technology Manager*
South African National Roads Agency LTD

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Agenda

- **Who is SANRAL ?**

- **Interoperability in South Africa**
  - Interoperability Roadmap
  - Central Clearing as Interoperability Model in SA
  - Entity Interface Diagram to identify Interface Standards
  - The Selection of Standards for National Interoperability

- **Using Existing Standards**
  - Financial Payment Product

- **Migrating of Standards**

South African National Roads Agency Ltd

- **Agency of the Ministry of Transport**
- **Manages national road network**
  - 10 000 miles
  - 81% non-toll roads
  - 19% toll
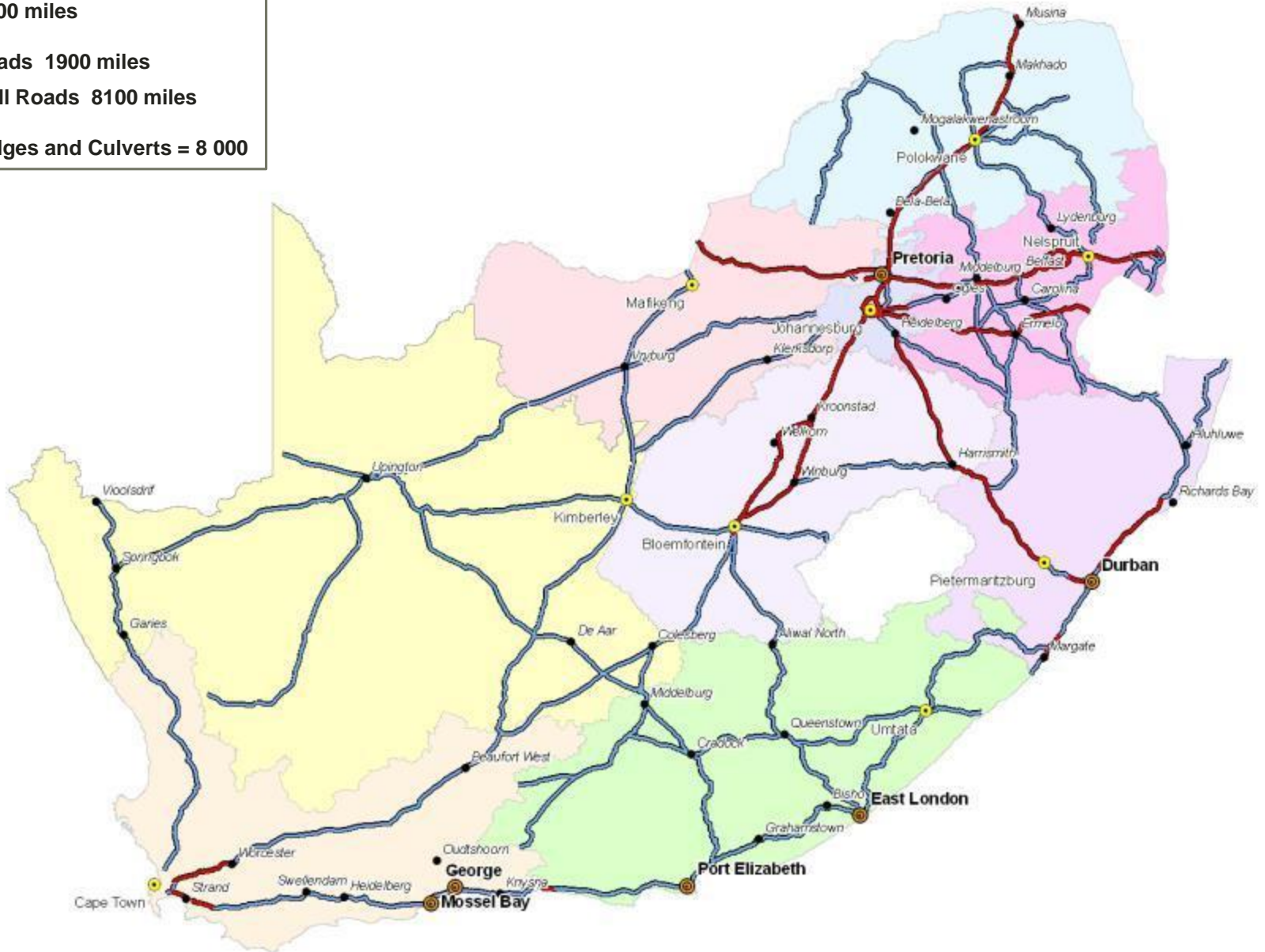- **32 Mainline Toll Plazas**
- **39 Ramp Toll Plazas**
- **1 Open Road Toll Project (42 Toll Gantries)**

3

SANRAL Roads
Total 10 000 miles

— **Toll Roads 1900 miles**
— **Non Toll Roads 8100 miles**

Major Bridges and Culverts = 8 000

Interoperability Roadmap

2001	ETC Standard in SA	Vol 2 Book 5 – Electronic Toll Collection
	1st Electronic Toll Collection	BAKWENA (40 000 Tags)
2005	Interoperability Study	Transportation Innovation Inc
2006	Interoperability Framework (Model, Policies)	Transportation Innovation Inc
2008	Design of Transaction Clearing House *part of Gauteng Open Road Tolling Project*	SANRAL, Tolplan, Toll Infrastructure Services, Transportation Innovation Inc
2009	Award Contract to ETC JV	
2011	Implementation of Transaction Clearing House	

Interoperability Design

HOW TO !
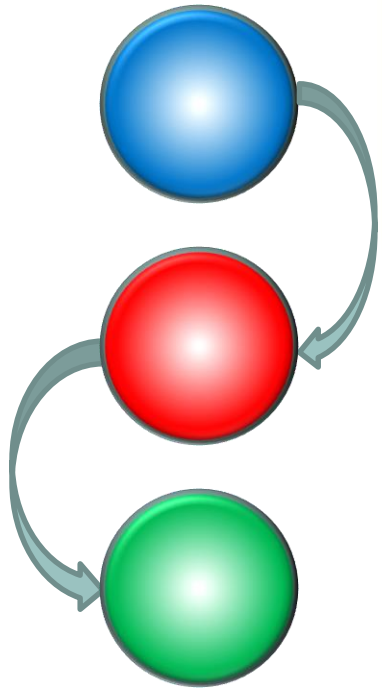
Select Interoperability Model
-
Roaming vs Central

Identify Entities & Interfaces
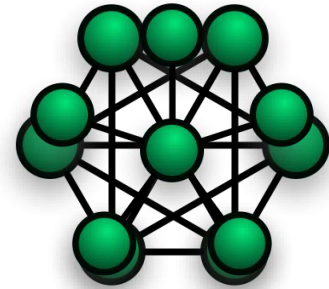
Select Standards

Interoperability Models

Separate Account

- 1 Tag, Many Account/Invoices
- Only Tag Standard
- TA Own Customer

Roaming Model

- 1 Tag, 1 Account, Many Inter-Agency Agreements
- Tag Standard, Inter-Agency interface Specification (Many)
- TA Own Customer

Central Model

- 1 Tag, 1 Account, Single TA-TCH Agreement
- Tag Standard, TA-TCH Interface Standard
- TCH Own Customer
- Additional Interoperable Applications

Identify Entities (Central Model)

Road User

- Uses Tag or other identifier at Toll Plaza

Toll Authority (TA)

- Entity Collecting Toll

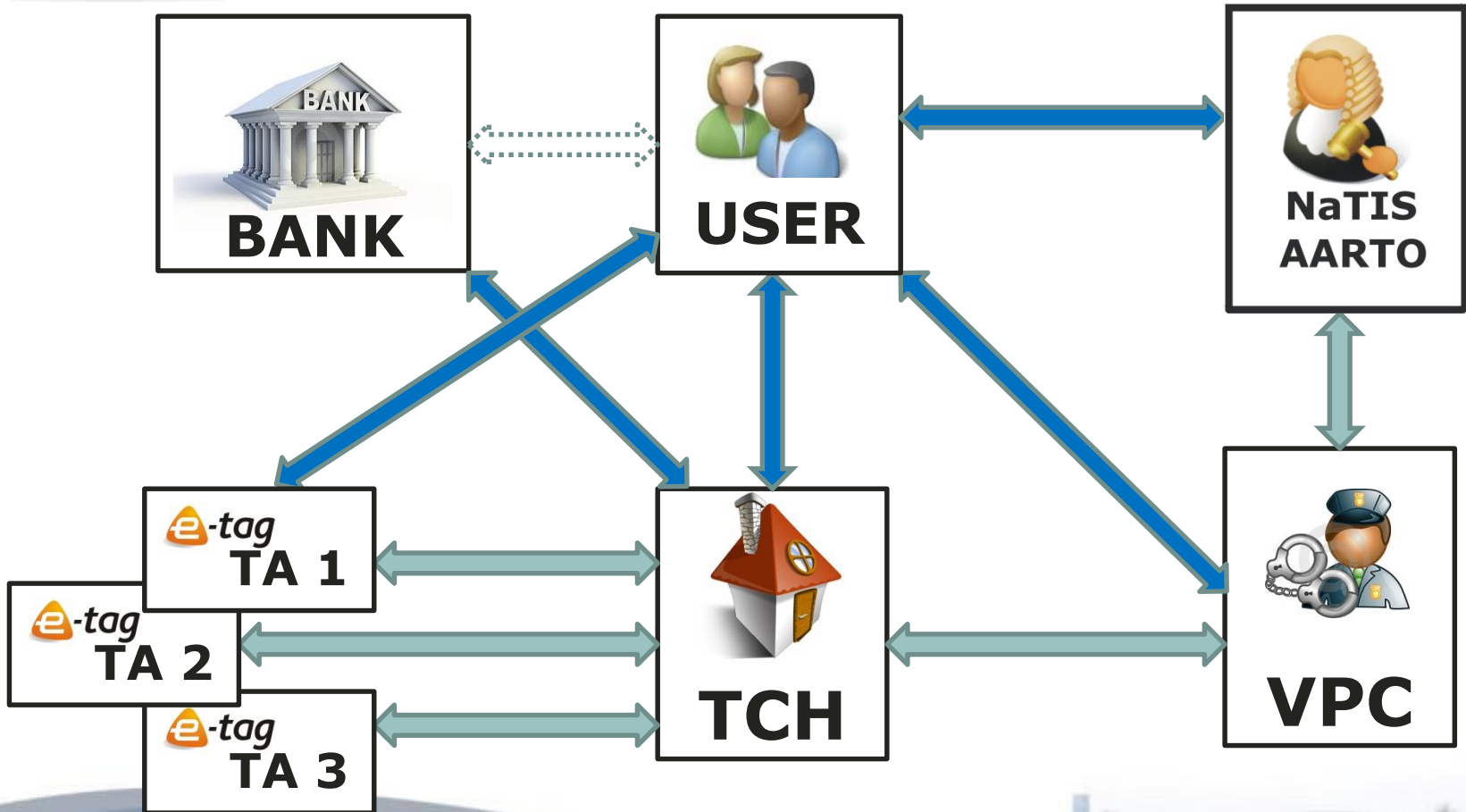## Transaction Clearing House (TCH)

- Entity hosting User Account

Bank

- Representing National Payment System

Entity Interface Diagram

Selecting Standards

Why Standards
- Tried and Tested
- Known Outcomes
- Existing Testing Methods

Dangers
- Over Specify – Increase cost with small benefit
- Barriers to entry
- Commercial Driven
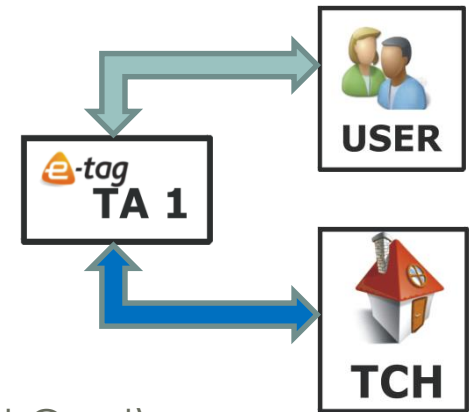
Start with Entity Interface Diagram

Standards (Toll Authority)

ⓔ TA – Road User

- Existing Standards
- Payment Method (Related to TCH)
  - ◆ TAG - *EN15509*
  - ◆ Vehicle Licence Number – SANS Standard
  - ◆ Customer ID Card – EFC Standard (Same as Credit Card)
- Vehicle Class – SANRAL Regulated
  - ◆ Axle Based – Conventional Toll
 - ◆ Volumetric Based – Open Road Tolling

Standards (Toll Authority)

TA – TCH (Transaction Clearing House)

- Interoperability Framework
  - Commitment to Interoperability
  - Central Clearing Principles
- Transaction Interface to TCH
  - TCH Specification – Base on EFC, using PAN
  - Possibility to process other EFC Transactions
    - Credit Card , Customer ID, Any PAN base transaction
- Business Rules
  - Payment Agreements between TA and TCH
  - Based on Banking Merchant Agreement
   - Timeliness
    - Payment Guarantees
    - Hot-listing of TAGs
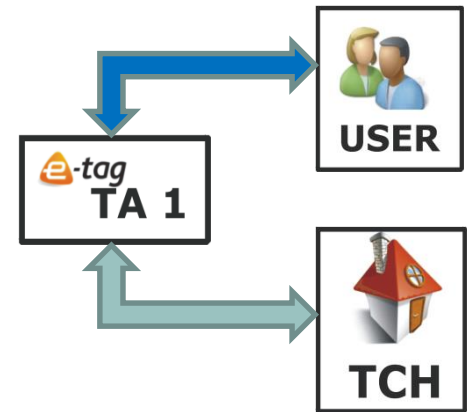
Standards (Transaction Clearing House)

TCH – Road User

- User Account (Pre-paid / Post-Paid)
- Call Centre
  - Off-the-Shelf Product
  - Out-Source / In-Source
- Online user interface
  - Web-Based interface (Browser Independent)
- Point-Of-Presence
  - Kiosks / Customer Service Centres / Satellite Centres
  - Mobile Service Centres
  - Mobile Payment Stations
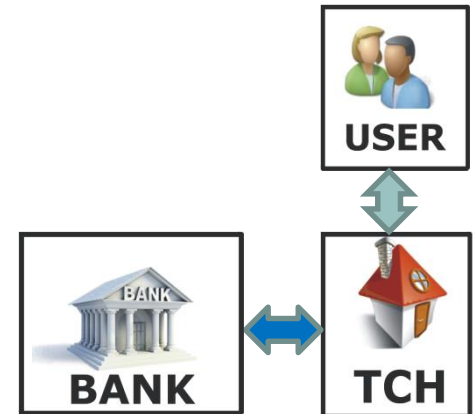 - Retail Stores (Web Interface / Bank Interface)
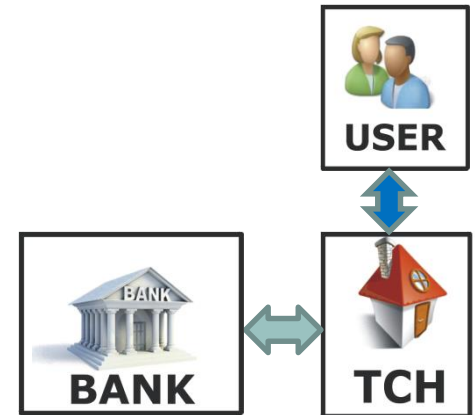
Standards (Transaction Clearing House)

TCH – BANK (National Payment System)

- Gov Regulated
- Interface Defined by Banking Industry in SA
- TCH Financial Settlement
  - ◆ CASH
  - ◆ EFT (Electronic Funds Transfer) – Banking Standards
  - ◆ Credit Card Clearing
  - ◆ Debit Orders
- User pay account
  - ◆ Point-of-Presence
  - ◆ National Payment System

Existing Standards

Payment Products

- Cash (Point-of-Presence)
- EFT (Online Banking)
- Debit Order
- Credit Card (Master-Visa)
- Mobile / Cell phone Banking
- ATM Payment (Automatic Teller Machine)

Standard Migration

Updating of Standards

- From CEN278 to EN15509
- New EN15509
  - ◆ Multiple Suppliers
  - ◆ Move from Standard to Standard
  - ◆ Limited Risk (40 000 vs 2 000 000)
  - ◆ Additional Applications (Parking, Access Control, ITS)
- USER-TA interface
  - ◆ TA must read both CEN and EN TAGS
  - ◆ Phasing out of old TAGS
- Testing
  - ◆ 2 RSS interfaces

Thank You

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Ian Liebenberg
www.sanral.co.za