Award of contract RT1194KA

- Tender issued Nov 2000, closed Feb 2001
- Awarded to Masiye Phambili (Tasima) in Jul 2001
- Contract RT1194KA signed on 3 December 2001 with Tasima (Pty) Ltd
- Decision to award to Tasima was challenged in High Court in Feb 2002 after temporary interdict was given in Dec 2001
- High court dismissed application with costs
- Effective date re-scheduled to 1 June 2002 after interdict application
Risks remaining on NaTIS

- Source code compromised
- Ageing technology cannot be maintained
- Decline in specialised resources
- Non-industry standard configuration
- NaTIS contract open ended with no expiry date, Treasury requested new tender be issued
- Continuing with the eNaTIS would have been against direct instructions from treasury
Reasons for eNaTIS

- The old NaTIS was 14 years old
- Based on distributed network of servers
- Old technology mostly end-of-life already
- High cost of maintenance and development of new features
- Due to technical limitations the Department of Transport embarked on a technology upgrade project to allow for integrated systems approach
- On insistence of Treasury/State Tender Board the Department of Transport had to issue new tender
Reasons for eNaTIS

Advantages of Centralised Database

- Improved data integrity
- No synchronisation problems between distributed databases
- Easy data extraction
- Better security on centralised configuration
- Lower cost of maintenance and new features
- Easier to interface with other systems
- Rapid deployment of new software
Advantages of new software

• Lower cost of ownership (technical skills more available due to open standards)
• Easy to update introduce new software
• Modern Windows-based front-end
• Standard technology, no proprietary lock-in (Source code protected by independent third party, DoT can rebuild system with source code and documentations placed in safe keeping at third party)
• Platform independent system can be migrated between various platforms (i.e. Windows, Unix, Linux,)
• Wide use of open source
Reasons for eNaTIS

Enhancements included

- Central driving and learner licence booking system
- User friendly user interface
- Multiple method of payments
- Improved auditing and control
- Blank certificate control (face value forms)
Reasons for eNaTIS

Future enhancements

• Internet/ATM service delivery
• Administrative Adjudication of Road Traffic Offences (AARTO)
• Biometrics, smart card technology and radio frequency tags
• Business process management with workflow
• New interfaces with financial institutions
• Handheld devices for law enforcement
Contract deliverables

- Custom developed application based on NaTIS release 76
- 2000 work stations at 684 sites (incl one year on-site support)
- Data centre and Disaster recovery centre for 2001 specifications and expected growth
- Data migration from old NaTIS
- National Call Desk
- 9 Provincial help desks
- Project Office, Business Office
Scope expansion

• The custom developed application required 9 additional releases of old NaTIS
• New functionalities required for eDate was identified
• 50% more user stations (from 2000 to 3000)
• Almost 90% growth in sites (from 684 to 1270)
• Vehicle population grew by 53%
• Database storage requirements more than doubled
Contract governance

• National Steering Committee governs project:
  – Department of Transport
  – 9 Provinces
  – RTMC

• Formal change control mechanism

• Formal project management in terms of international best practice
Contract period & Value

• Contract period: 5 years
• Effective Date: 1 June 2002
• Contract Value: R354 million including VAT plus:
  – Imported items linked to foreign exchange fluctuations
  – Resources linked to CPI
• Current adjusted contract value is R408 million
Technical complexity

- 4.6 billion data records
- 1270 sites
- 3000 PC workstations
- Total rewrite of 303 transactions
- Re-alignment of specifications and old NaTIS source code
- Confirmation of business processes
NaTIS Network Architecture
eNaTIS Architecture

eNaTIS NETWORK OVERVIEW

- NATIONAL CALL CENTRE
- DATA CENTRE/DISASTER RECOVERY SITE
- EXTERNAL INTERFACES
  - External Institution Server
- eNaTIS Network
- PROVINCIAL CALL CENTRES & LAW ADMINISTRATION SITES
  - Print/File Server
  - Workstations
- REGISTERING AND LOCAL AUTHORITIES, TESTING STATIONS AND TESTING CENTRES
  - Print/File Server
  - Workstations

Print/File Server
Server Workstations
Changeover Concept

Old NaTIS

1 National Index
9 Provincial Databases
14 Regional Databases

Centralised Data Centre

Dedicated lines

Old Dumb Terminals

External Systems

Telkom VPN Supreme

New User Interface

Telkom VPN Supreme
Changeover to eNaTIS

- Data migration of total database
- New hardware platforms (replacement)
- New database technology
- New application software
- New user interface
- New external interface software
- New network (with temporary re-use of portions of old network)
Changeover preparation

Old NaTIS – 14 regional servers

- Release 76

Specifications
Release 76

eNaTIS – centralised server

- 684 sites with 2000 users

Tender baseline – June 2002

- 9 new releases
- Development of Release 76 functionality
- 9 new releases
- New functionality
- Migrate 4.6 billion records and 600 tables
- Migrate 12 data load tests (apply data migration scripts)
- Dry runs 1 Provincial 2 National
- Serve public

- Data centre upgrade
- Performance testing
- Procure hardware and establish data centre
- Deploy PCs on sites
- Deploy an additional 1000 PCs on 586 new sites
- Deploy Telkom VPN Supreme networks
- Hardware upgrade + additional database server
- Deploy 3G network

Datacentre upgrade
Hardware upgrade + additional database server
Changeover

Old NaTIS – 14 regional servers

Close transactions – queries only

Shutdown old system

Final data migration

eNaTIS – centralised server

eNaTIS Ready – 4 April 2007

Heavy load database constraints

Replace application servers

Interventions

Add new database server

eNaTIS Live – 12 April 2007

eNaTIS Fully Operational – 8 May 2007
Initial challenges

• Total system (all users) are dependant on sufficient database server capacity
• Overload of single node occurred when spikes were experienced
• As result other two nodes started waiting for overloaded server to respond
• Effect: ALL users experienced slow response times – bottleneck of total database access
Interventions

• Installed fourth database server
• Analysed all aspects of Oracle database layers for optimisation
• Optimised and adjusted various settings and physical disk storage parameters
Current status

- Old NaTIS performed average of 287,000 transactions per day (Mar 07)
- Between 13 April and 7 May eNaTIS performed average 326,000 transactions per day (13.4% more) with 93% uptime
- After interventions (since 8 May 07) eNaTIS performed average 619,000 transactions per day (115% more) with 100% uptime
Project management

- Project governance model was deployed by internationally recognised company
- Model is based on PMI (Project Management Institute) PMBOK (Project Management Body of Knowledge)
- National Steering Committee governs the project with formal change control
- Full-time project office to perform administration, scheduling and control
- Project health check performed
Methodologies

- Project Management: PMBOK
- Software Development: Full implementation of Rational Unified Process (RUP) from IBM
- In final stages of ISO9001 accreditation
Project Challenges

- Initial contract award July 2001
- Mission critical system operating in ever changing environment
- Due to system complexity long development cycle
- Since release of original tender specification, 100% growth on all aspects (equipment, sites, software requirements)
- 9 provinces with unique requirements
- At no stage could business continuity be compromised
Effects of challenges

- Increase in price for new sites, new hardware and new software
- **NOT FOR** difficulties in completing original baseline
- Additional requirements on request of provinces and financed by provinces
- Rescheduling of milestones without exceeding initial contract period
- Upgrading of originally proposed hardware
Conclusion

- Project was delayed from onset with court challenges
- Massive scope expansions in software requirements, users and sites necessitated rescheduling of milestones
- Capacity constraints were eliminated
- ENaTIS is now stable and performs in accordance with requirements