Our modern lifestyle could not continue without the transport systems that support it. The ability
to move people and goods rapidly from one place to another is taken for granted. To pay for the
infrastructure such as roads, tunnels and bridges and to ensure safety for people using these
facilities government needs to closely supervise their use, taxes have to be collected through the
issue of registrations and licences, statistics about hundreds of road related activities such as the
accident rates have to be collected stored and reported on. These huge amounts of information
involving millions of people each day require sophisticated computer systems.

**Who controls Transport**
Rivers, car licensing and car registration have traditionally been the responsibility of Government.
Local Government has built and maintained local roads and major Highways and arteries have
been provided by Federal Government. More recently the construction of some Motorways,
bridges and the Harbour Tunnels have been joint ventures between private industry and
Government.

**Who builds the Bridges**
The Roads and Traffic Authority is a statutory authority established by the New South Wales

**Major Functions**
The Roads and Traffic Authority is responsible for the management of the roads
and traffic system with particular emphasis on:

- Providing leadership on road and traffic safety issues.
- Managing the construction and maintenance of roads and traffic facilities.
- The Licensing of drivers and registration of vehicles using the road network.

The RTA has..
- 8400 employees as of 1993.
- An expenditure of $1.6 Billion.
- 39 000 Km of roads.
- 6200 bridges
- issued 3 900 000 driver licences and...
- 3 800 000 vehicle registrations.

**Role of Government**
Authorisation for road users and vehicles to use the road and traffic system continues to be an important issue for customers. Effective regulation of road users and vehicles plays a key role in accident prevention and this needs to continue as road usage increases.

Without registration there would be no way of detecting those owners who allow their vehicles to deteriorate to a dangerous level.
Driving licenses are an obvious way of attempting to prevent untrained or dangerous drivers from using the roads.
Registration and Drivers licenses also provide revenue for the construction and maintenance of the roads system.

Drivers licenses also provide an effective identification document for people who wish to prove their identity or for police when dealing with drivers who infringe the traffic rules.

The information crisis
The Roads and Traffic Authority needs to store and process a very large amount of information, much of it related to Licenses and Registration.
This information grows in volume very rapidly with increases in the population and the proportion of people owning and driving vehicles. May new services are added each year and each requires new types of data. Information systems could no longer function using paper documents for storage and processing information.
The system would collapse without computers to store and process all this information.

DRIVES

Drives is a new Registration and Licensing system developed to control the records of 3.6 million Licence holders and 3.8 Million registered vehicles in NSW.

This system handles 10 million transactions and 18 million enquiries a year from 136 + motor registry offices.
The system took 3 years and $39.5 Million to complete, 18 months longer than was first estimated.


Drives uses a UNIX operating system and is one of the largest in the world.

The system is estimated to save $20 million per year.

The system supports up to 1500 Users plus the Police.

In the busy period the system handles 34 Transaction Per Second.

The database is 65 Giga Bytes. (65 X 10 to the power of 9).

The WAN (Wide area network) which carries all the data between users and the mainframe computer handles about 1 Gbyte/day.

Many other states and countries have expressed interest in acquiring a similar system.

**Major benefits of DRIVES are that it will...**
1. enable information to be updated immediately. Once customers have proved their identity, their up to the minute records can be accessed from any motor registry in NSW.
2. provide greater flexibility for commercial vehicle fleet owners and motor dealers.
3. enable refunds to be automatically calculated, eliminating delays under the old manual system.
4. provide stringent security measures that limit access to particular information and greatly reduce the possibility for fraud and corruption.
5. improve the accuracy of information held on the registration and licensing system.
6. 25% reduction in staff.
7. net saving of $18 million from a saving of $20 Million in salaries with an increase of $2 million in maintenance costs.
8. currency of records (data is immediately entered on the database).
9. customer satisfaction.
10. improved ability to maintain the system through consistency in the software and better standards of development.
11. the ability to respond to changes in Government policy.

**What the users of the new system think about it**
- Independent researchers found that the average time spent by customers was significantly reduced (Down 12%).
- Up to 84% of customers thought that the service was as good as or better than other organisations such as Medicare, NRMA, Australia Post, Banks and Building societies.
- All new systems encounter difficulties during development and especially in the implementation stage when systems are used under real conditions for the first time. At implementation DRIVES experienced up to 170,000 errors with about 300 being reported each day. Currently the total known errors are zero and the daily error reports have dropped to 20. The response time has dropped to an average 2.1 seconds.

Two main working groups were set up to develop the system.
The Procedures team, and the Change Management team.

Some significant Project units or activities include...

From the Procedures team -
- Workflow analysis.
- Redesign of work practices.
- Change over Procedures.
- Impact analysis.
- Training manuals.
- Operational manuals.

From the Change Management team -
- Dedicated manager
- Refit and refurbishment of 138 Registry offices throughout the state.
- Installation of cabling and computer equipment.
• 5 Regional coordinators
• 35 Trainers.
• Training of 1500 users, managers and supervisors.

The capacity of DRIVES
The three main functions of DRIVES are -
1. Licence customers.
2. Registration customers.
3. Miscellaneous customers.

On a daily basis the DRIVES system handles the following types of transactions.

Licence customers -
• issues 5500 licences
• records 7500 licence test results.
• 1500 other licence related enquiries.

Registration customers -
• Establishes 2000 registration.
• renews 16000 registrations
• transfers 4500 registrations
• cancels 500 registrations
• issues 1500 number plates
• 2400 other registration related enquiries.

• Miscellaneous customers.
• Police enquiries 40 000
• Firearms licences 400
• Customer detail changes 60 000
• fine default 700
• others 3000.

This involves interacting with 91 500 customers and collecting $5.5 Million.

The objectives of the new system
The objectives of the new system from the 1987 Review.
• Replace existing fragmented systems with integrated approach
• Concept of a single terminal.
• Reduce the number of different hardware/ software products used.
• Establish and communicate standards ( charisma - Ratbytes).
• Ensure portability - vendor independence
- Decentralisation where reasonable.
- Support end user computing.
- Ensure High productivity.
- Ensure high quality.
- Co exist with the existing system.

The types of data
DRIVES handles information which is described in the IEF (Case tool) by more than 450 entity descriptions. An entity is a distinct collection of information which the business needs to keep and manipulate. Examples of entities from the drives database are:
- Bank deposit slip which contains information such as date, time, amount, reconciliation id, year, bank name.
- Bulk renewal schedule detail which contains data like plate number, plate ID type, processing status, axle configuration, TARE weight, etc.

The entities may have as many as 20 or more attribute such as "DATE" as components, making thousands of items of data.

DRIVES Milestones.

Software components of Drives

![Pie chart showing software components of DRIVES](image)

DRIVES milestones. A milestone is a recognisable stage or step in the development of a system which marks a transition or level of achievement. They are used as markers in the management of the development process.

Some important milestones in the development of DRIVES.
DEC 1987 DMR adopts OPEN SYSTEMS strategy.
SEPT 1988. DMR chooses UTS UNIX Fujitsu mainframes and ORACLE software.
JAN 1989 Dept of Main Roads, Dept of Motor Transport and Traffic Authority amalgamate to form RTA.
AUGUST 1989. RTA decides to develop DRIVES itself under UTS and ORACLE.
SEPT 1989 TEXAS INSTRUMENTS IEF (Information Engineering Facility) chosen as the development platform.
OCT 1989. DRIVES development project begins.
SEPT 1990. Data conversion problems forces rescheduling of DRIVES project.
SEPT 1991. DRIVES LICENSING component goes live (implemented).

JUNE 1992. DRIVES registration component goes live (implemented).


The registry office is the part of the system that is most visible to the public. Customers (users) of the system come to the registry office to perform a large variety of tasks, such as renewing their car registration papers, getting, surrendering or renewing a licence, cancelling registration plates etc. With the previous system customers had to stand and wait in several queues, one to make a transaction and another cashiers queue to make a payment. With drives every workstation can handle all of the transactions and the payments necessary. In big, busy registry offices customers take a numbered ticket and are called to the counter. Delays have been greatly minimised.

Customers wishing to obtain their first licence can do practise tests on a dedicated computer. When they are ready to take the real test they must register and the results are automatically saved to disk and to the DRIVES system. A check is performed to see that customers are not doing the test in several registry offices.

Personal identification must be supplied when applying for a licence.

CASE tools

What are CASE tools and why were they chosen for developing the DRIVES system?

CASE tools. Computer Aided Software Engineering tools. These are integrated collections of utility software which are designed to help in the development process by automating the production and storage of documentation such as Dataflow Diagrams and Data Dictionaries and in some cases produce source code for applications.