RASCAL NEWSLETTER

Issue #1/2006

Introduction

This issue, being the first for the new year covers some of the latest happenings with Rascal.

Over the past few years the Rascal Research and Development department (R&D) has been busy investigating software technologies that will move Rascal from a first generation object based ERP modelling, development and implementation environment into the new world of XML platform independent based graphic front ends, and web based front ends. This, without losing any functionality in terms of the traditional Rascal high performance character based environment.

In This Issue

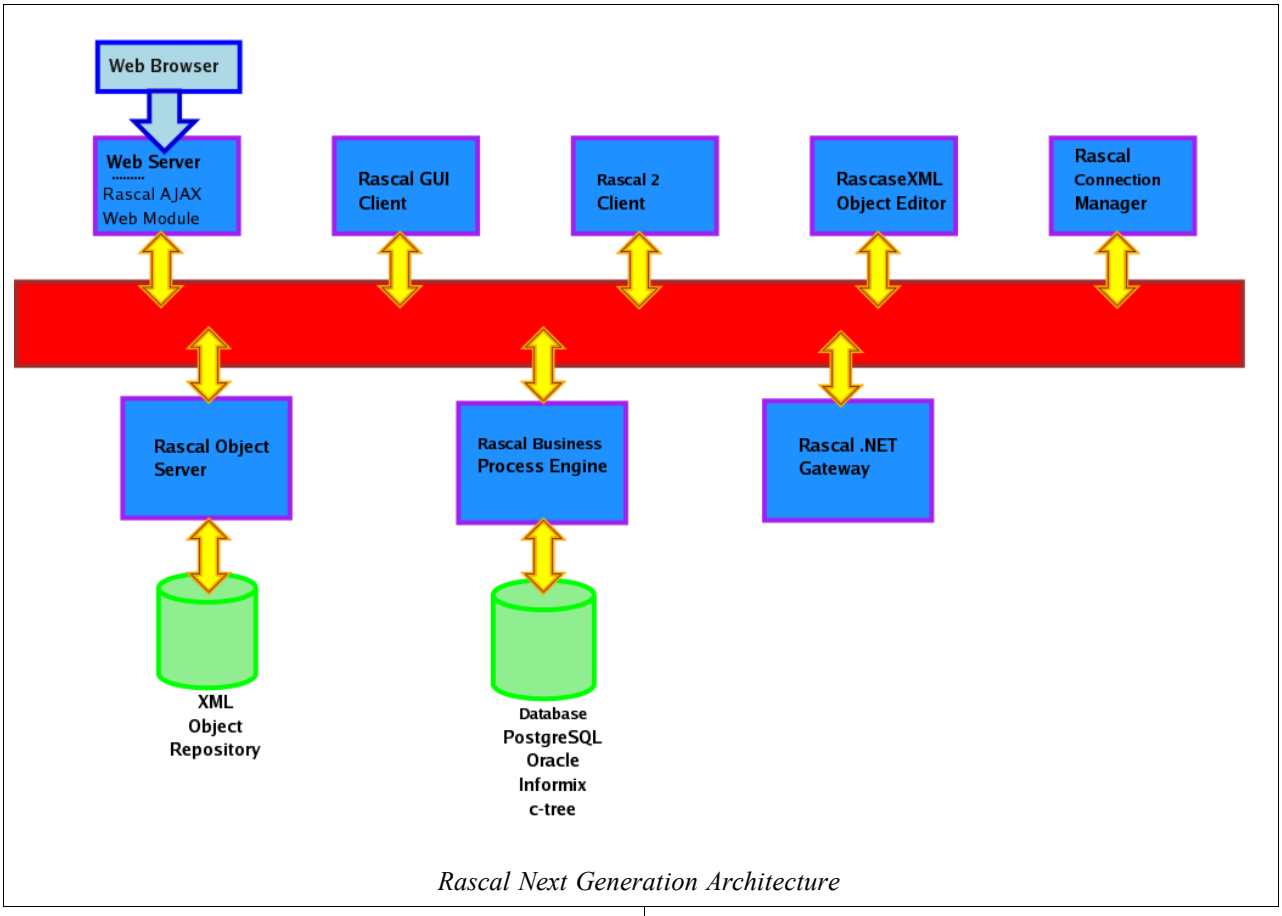
Rascal has always been a leader when it comes to Linux and Open Source. This with the Rascal Object Repository which has been open source since the late 1980s. Rascal was the first ERP system to run on Linux back in 1997 when Linux was still in it's infancy. Linux has now become the platform of choice for secure high reliability computing environments and we are pleased to see that many other organisations such as Oracle and SAP have made Linux a platform of choice. Rascal has again taken the lead with the release for the PostgreSQL Open Source Database. During the late 1980s and early 1990s Rascal was unique in closing the conceptual chasm between methodology and implementation. We believe that our approach has stood the test of time as can be seen by the discussion in this newsletter on why an application written for Rascal in 1985 runs without change today.

Several familiar faces have remained with Rascal in delivering cost effective solutions to the manufacturing industry. This newsletter contains a section on our consultants and what they have been up to.

Rascal – the Next Generation

Over the years Rascal has proven to be highly flexible in it's methodology and the implementation thereof. It has also proven to be highly adaptable to changes in technologies including the ability to integrate with both web based technologies such as web servers and email with no changes to the base business engine.

This has, however, not been without limitations in particular in taking full advantage of the user interface and integration with desktop applications as provided on the modern desktop. Recognising this the R&D department has come up with a highly adaptable architecture that will lay the foundation for many years to come. The new architecture will not only



Rascal Next Generation Architecture

ensure that Rascal becomes fully integrated with the modern desktop, but will provide 100% backward compatibility with the existing high performance character based interface. Most importantly, recognising that existing customers have many years invested in Rascal applications, the next generation architecture will ensure 100% compatibility with existing business applications.

The above diagram illustrates the Next Generation Architecture. The architecture is based on a CORBA extensible bus architecture. Components that make up the architecture have been derived from the well proven high performance Rascal 2 architecture ensuring maximum return in investement for all Rascal users.

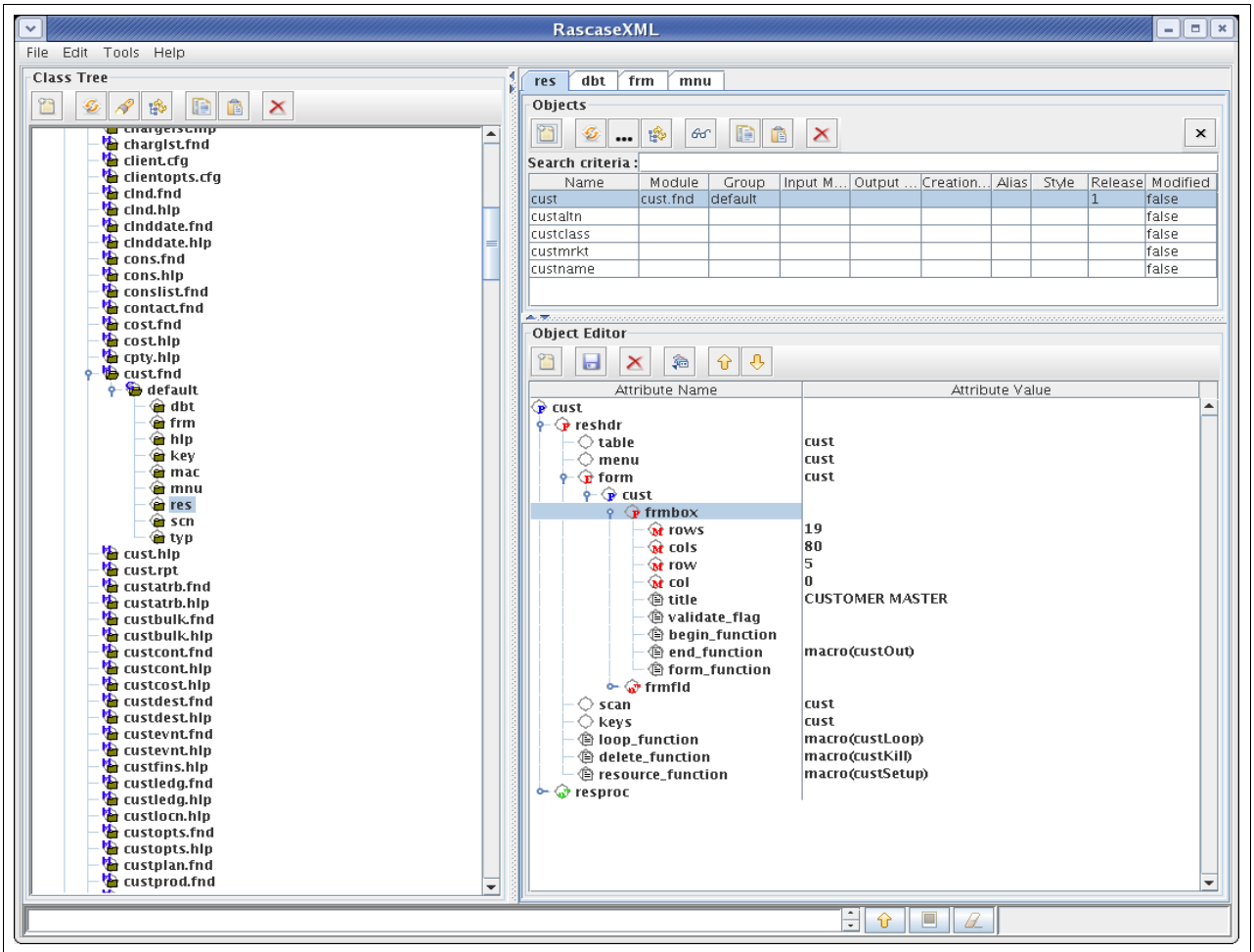
Components that make up the next generation architecture include, but are not limited to the following

- ***CORBA Bus (Red area)*** – Open bus based on the Common Object Request Broker (ORB) Architecture as defined by the Object Management Group (OMG). The ORB provides the mechanism by which objects transparently make requests and receive responses. Hence, the ORB provides interoperability between applications on different machines in heterogeneous distributed environments and seamlessly interconnects multiple object systems. Available now for use with the Object Server, the combined Rascal 2 client/business engine and RascaseXML.
- ***Rascal Business Process Engine*** - The Business Process Engine is a High Performance C Engine based on Rascal 2 technology. The main business process engine providing 100% backward compatibility with existing Rascal 2 applications. Available during 2006.
- ***Database Engine*** – Any one of PostgreSQL, Oracle, Informix or the Faircom c-tree high performance file server. Available now.
- ***Rascal Object Server*** – Serves Rascal objects in any of XML, Rascal 2 or HTML format. Objects are stored using the PostgreSQL database server. Provides

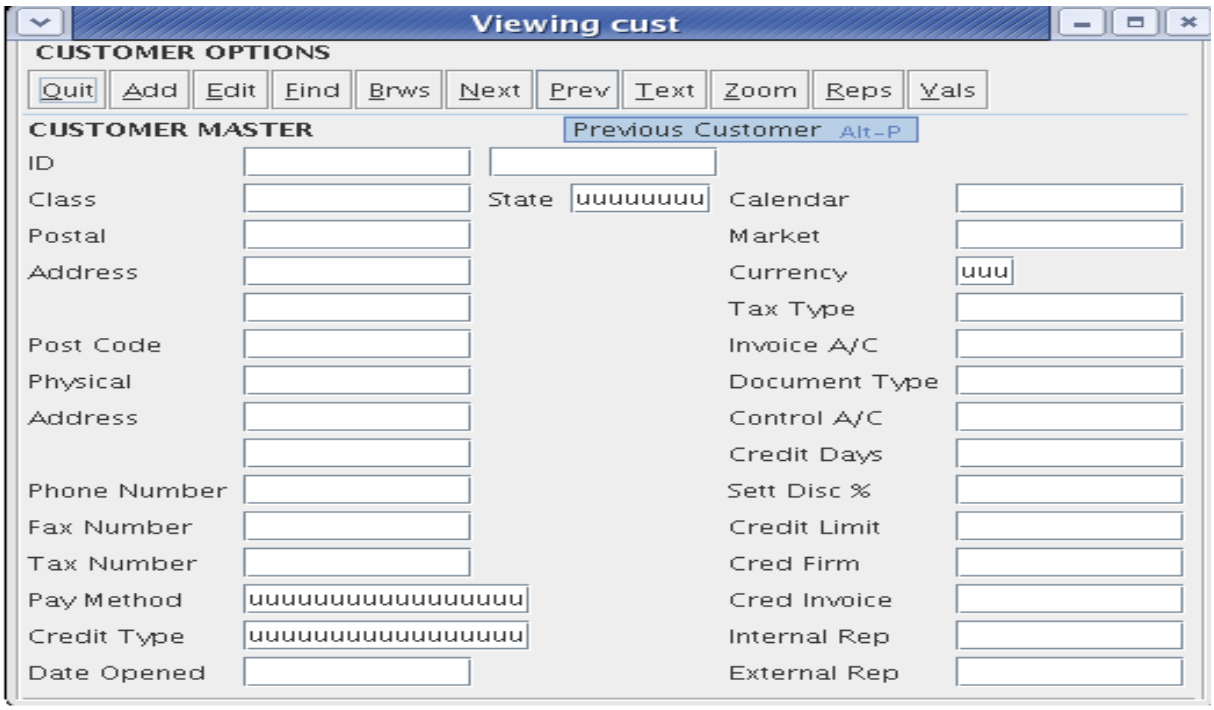
user authentication, object versioning, and sophisticated audit trail on object usage and modification. Available now.

- ***XML Object Repository*** – Contains Multiple sets of Rascal objects. The object hierarchy is based on project, module, role and class. Objects are migrated from the traditional Rascal 2 based text format to a modern XML based format. XML technology provides the advantage of extending objects to provide new and enhanced functionality as demanded by modern computing environments. This including the ability to associate styles with visible objects for customising these to user requirements. Availabile now.
- ***.NET Gateway*** – One of the many envisioned gateways to third party applications and services. Planned for a future release.
- ***Rascal GUI Client*** – Java based Rascal Client. Uses the latest technologies for rendering user interfaces across heterogenous platforms. Available during 2006.
- ***Rascal 2 Client*** – Traditional high performance character based client. Preserves investment in legacy hardware and still provides the fastest interface for data capture. A combined Rascal 2 and Business Engine for use with the Next Generation Object Repository is available now. The separate Rascal 2 Client will be available during 2006.
- ***Rascal Web Module*** – HTML/Javascript Module and Client based on AJAX technologies. Provides remote web based interfacing to the suite of business processes. Available early 2007.
- ***Rascase XML Object Editor*** – Graphical developers tool for the Object Repository. Used for the creation and maintenance of Rascal projects. The Object Editor is a powerful development environment. Available now. Some of the features are listed below
  - All new GUI design providing full traversing of the object tree across projects, modules, roles and classes.
  - A highly configurable interface for customising developer preferences.
  - Simple point and click interface for easy and fast access to object maintenance.
  - Copy and paste of objects both within and between projects
  - Powerful object browsing via the object tree.
  - Interactive tool for comparing and merging objects.
  - Object editing using the editor of your choice in the format of your choice including XML, Rascal 2 and HTML.
  - Import tool for importing objects from the traditional Rascal 2 format.
  - Export tool for exporting objects from the next generation XML format back to the Rascal 2 format.
  - Graphical based visible object editor providing powerful '*what you see is what you get*' editng.
  - Multiple Tabbed Concurrent Object Editing.
  - Multi Window Concurrent Object Editing.

The following diagrams illustrate the new RascaseXML and a graphical view of a Rascal Customer Resource. The RascaseXML view illustrates the object tree browser, multi tabbed panes for object browsing within a particular class as well as the actual object editor for editing object attributes.



RascaseXML



Customer Resource

Rascal on PostgreSQL

Once again Rascal leads the way by becoming the first commercial ERP system to be released (January 2006) on PostgreSQL.

PostgreSQL is the most advanced Open-Source database system in the world. Many organizations from small online businesses, to government institutions, to large corporations have implemented PostgreSQL to handle their most valuable data and mission critical applications.

Some of the advantages of PostgreSQL include the following

- ***Uncompromising Reliability and Stability*** – PostgreSQL has a reputation of providing 24x7 uptime. The architecture is based on a multi-threaded model that ensures that no single client connection can affect the stability of another client connection. Maintenance such as rebuilding of indexes may be done without the need for stopping the database server.
- ***Client Server*** – PostgreSQL is based on a client server model allowing separation of database and application clients.
- ***Excellent Support*** - PostgreSQL has a vibrant community of committed professionals and commercial companies that are available to assist in all support and maintenance activitities.
- ***High Concurrent Transaction Volume Environments*** - PostgreSQL provides Multi Version Concurrency Control (MVCC) which makes it ideal for high volume transaction enviroments supporting many concurrent connections.
- ***Cross Platform Support*** – PostgreSQL is available for all flavours of UNIX and Linux and is also available on MS Windows 2000 and 2003.
- ***Extensible and Open*** – PostgreSQL provides drivers allowing easy interfacing to web servers, office applications, reporting and decision tools and custom built applications. This including, but not limited to, drivers for ODBC, JDBC, php and ASP.
- ***High Availibility*** – PostgreSQL supports hot standby replication allowing for high availibility environments.
- ***Online Backup*** – PostgreSQL supports full online backup facilities ensuring that the database need never be shutdown during backup.
- ***Point in Time Recovery*** – PostgreSQL supports point in time recovery which simply means that should a disaster occur the database can be restored to any point in time before the disaster situation.
- ***Secure Database Platform*** – PostgreSQL supports the latest in secure connectivity and client authentication including connections over SSL and Kerberos authentication.
- ***Multiple Databases*** – Multiple independent databases are supported providing multiple independent application environments.
- ***Configurable Table Spaces*** – Databases, data tables and indexes may be configured across separate disk volumes providing maximum performance and control over disk usage.
- ***Sophisticated Maintenance Tools*** – PostgreSQL support a multitude of methods for analysing peformance, usage statistics, disk space, lock usage etc. Additionally several third party utilities are available for managing and maintaining PostgreSQL.

Special Rascal Upgrade Offer

Rascal Systems is offering a 50% discount special on the cost of the upgrade to the Rascal Rollback Server using PostgreSQL until end January 2007.

Please contact your Rascal Consultant for upgrade details and the latest pricing.

Rascal Methodology stands the test of time

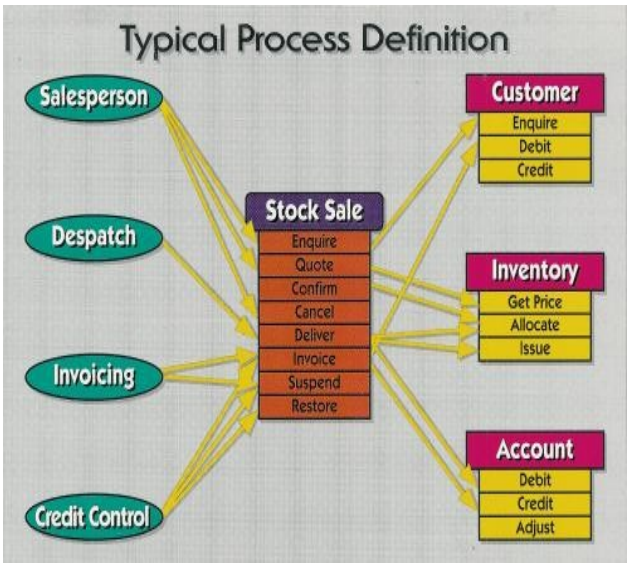
Why does an application written for Rascal in 1985 run without change today?

Because we anticipated the following trends that are only now emerging in enterprise information systems two decades ago:

- Model Driven Architecture
- Service Oriented Architecture
- Document Oriented Applications

Model Driven Architecture

The model-driven architecture (MDA) is a software design methodology in which business functionality is defined as a platform-independent model using a specification language and then translated to a platform-specific model for the actual implementation. One of the main aims of the MDA is to separate design from the technologies that implement the design. The design addresses business requirements while the technologies provide the infrastructure through which non-business requirements like scalability, reliability and performance are realized. MDA therefore defines models which represent business concepts that will survive changes in particular technologies and software architectures. To accomplish this goal, Rascal implements an architecture that directly executes specifications expressed as models of how business processes transform enterprise resources to create value.



Service-Oriented Architecture

A Service-Oriented Architecture (SOA) defines software services to support the requirements of users in a standardized way. SOA is often associated with web services but may be implemented using any service-based technology. The modeling and design methodology for SOA applications has become known as service-oriented analysis and design. In order for a SOA environment to operate successfully, developers need to adopt the mindset of creating common services which are then orchestrated to implement business processes. Development of systems using the SOA requires a commitment to this model in terms of planning, tools, and infrastructure. The purpose of using SOA as a business mapping tool is to ensure that the services created properly represent the business view and not that of technologists. Enterprise architects believe that SOAs help businesses respond more quickly and cost-effectively to changing market conditions by reusing existing information assets rather than by time consuming and costly reinvention.

Rascal's resource transform analysis (RTA) is an example of a SOA methodology which has been successfully used since the 1980s to analyze and design systems for a wide range of business processes and industry categories. The approach focuses on the business and leaves implementation issues to the Rascal environment. The Rascal server is an excellent example of a SOA that implements a specific set of business services. The Rascal macro language takes the service concept one step further by providing a method of defining and supporting workflows and business processes that use these services.

Document Oriented Applications

Documents are central to systems that store information drawn from many sources and deliver that information as required by users. A document may be stored in final form or may be generated on-the-fly, undergoing substantial transformations in the process. Document technologies like XML are having a profound impact on data modeling, in part because of the way these technologies bridge and integrate a

variety of paradigms. The Universal Business Language (UBL) is a recent development in the use of XML vocabularies - in any human language, the same word can mean different things for different industries - conversely, different words sometimes can mean the same thing in different industries. The UBL defines a common XML business document library to provide a set of building blocks to enable business partners to unambiguously identify and exchange documents.

Rascal recognizes the central importance of business documents by providing a direct mapping between documents (forms) and the underlying business objects. The original Rascal declarative format for defining forms and other objects anticipated XML by many years, and the Rascase XML repository is a natural evolution towards new ISO standards. Future developments will support UBL to allow documents to be used as much between as within organizations.

Conclusion

An understanding of these concepts helps answer the question posed above:

Why does an application written for Rascal in 1985 run without change today?

Firstly, the Rascal architecture implements an abstract business model (phased resource transforms) that is independent of technology and has been ported to many different operating systems and databases without change to that model.

Secondly, the Rascal server implements *stateless* services, meaning that it may be used by any application that conforms to its model. The Rascase tool and repository ensure that applications conform to the model and are entirely independent of the underlying technology.

Thirdly, Rascal focuses on the concept of a business document, not of a user interface. The rendering of a document for data entry and presentation depends on the document structure and purpose, not on the creative extravagance of an interface designer! By putting function before form (pun intended) in a world that is obsessed with the reverse, Rascal has avoided the high cost of re-engineering user interfaces.

Finally, because of its sound and proven architectural foundation, Rascal is well placed to benefit from emerging MDA, SOA and UBL standards to deliver many more years of painless and inexpensive enterprise computing.

Rascal Customer News

Argo Dealers Go Online

Farming equipment importer and distributor Argo Industrial (SA) is forging forward to get its nation wide network of dealers online in order to improve efficiency.

The parts department works under pressure to pick, pack and despatch all orders received by 15:00 on any working day by 17:00 on the same day. This enables the dealers to keep the farmers' equipment running.

For a few years the dealers have been able to make enquiries on pricing and availability of parts via the web.

A web-based system is currently being implemented that will allow all dealers to enter their orders directly in Rascal 24 hours a day.

Future plans include tracking of the order, possibly linked to the courier who delivers the parts to the dealer.

Credit Information via the Web

The Credit Information Ombud is a new implementation using Rascal to provide a case logging and case management facility for the Office of the Credit Information Ombud over the world wide web.

Implemented almost entirely with an HTML font-end this system is an excellent example of how the Rascal technology continues to fit seamlessly with current web technologies.

OMC Gearing Up

Land Systems OMC (formerly Reumech OMC) are currently gearing up for increased production. The number of vehicles produced has increased dramatically over the past year or

two.

In order to assist with the extra workload, the following has been done:

- Automated e-mailing of documents to external parties in the supply chain. These include remittance advices, purchase orders, outstanding orders and requests for quote.
- Increasing automation of issues and MRP releases.
- Porting to the PostgreSQL database running on an Intel server. This will significantly improve speed from the c-tree rollback server running on an older Sun server. It will also allow access to the database from other programs.

Ian Cooper of Land Systems OMC has done extensive testing of PostgreSQL Rascal and has yet to come up with any problems in performance and stability. Tests have shown that PostgreSQL has the ability to import more than 3 million records into a database in 25 minutes on a 3.4 Ghz machine.

No change to the application objects is required, however, report throughput may be improved by combining the selection criteria within a report with a SQL based view on the PostgreSQL database server.

PostgresSQL allows for dynamic dumps to be done while users are accessing the system. This means that there is no downtime required for backups

Prowalco – CRM in a Service Organisation

Prowalco provides asset care and breakdown repair services to the petroleum industry utilising a Rascal based highly specialised call-centre environment.

The system manages SLA (Service Level Agreement) contracts, assets in and out of contract, response times with calendars for different geographical regions both in and outside South Africa, call logging and analyses to mention a few of the key features.

Using Rascal and supplementary business intelligence technologies, such as COGNOS , Prowalco delivers daily hundreds of fully automated reports , graphs and service analysis documents. Documents are then automatically forwarded to internal managers as well as customer managers around the continent ensuring a well lubricated delivery of service to the petroleum industry.

Rascal Consultants

TSF Pty Ltd (TSF)

The team at TSF is headed up by Stephen Ashford and Ivan Andersen. Both experienced IT and Rascal consultants who have been in the IT industry for over 25 years each.

TSF has been providing Rascal systems consultancy, design, development and implementation services to their clients for more than 16 years.

Many of their clients have been running their Rascal systems for 10 years or more, and have experienced, and continue to experience the value of the Rascal methodology.

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Reengineering & Development Pty Ltd (RAD)

The team at RAD is headed up by Jon Hyde. RAD provides specialist skills using Rascal in the manufacturing and distribution industries.

Based on the East Rand RAD is ideally situated to address the needs of the manufacturing hub of Gauteng and surrounding areas.

In addition to the above RAD provides skills in SQL Databases with emphasis on PostgreSQL as well as computer hardware and networking services.

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