Audit Considerations for your 11i implementation

Author:	Richard Byrom
Organisation:	RPC Data Ltd
Position:	Oracle Applications Consultant
Conference:	EOUG/OAUG Oracle User Forum - Applications 2003
E-mail	richard@rpcdata.com richard@richardbyrom.com
Web Site	http://www.rpcdata.com http://www.richardbyrom.com

Abstract

Post implementation audit and review blues? Here's how to ensure your 11i implementation conforms to the standards of auditors and reviewers. I will provide attendees with a holistic view of the audit and review process as well as outline steps to be taken to ensure audit and review compliance.

Introduction

In the many Enterprise Resource Planning (ERP) implementations I have been involved with, review and audit is an inevitable part of the journey. This is particularly true today with the enactment of the Sarbanes-Oxley Act of 2002 and other worldwide initiatives to enhance corporate governance. The objective of this paper is to outline the lessons I have learnt from being involved in audit and review of business systems both during the implementation and post implementation. Initially I will examine the reasons for auditing such systems and will then look at common problems encountered during audit and review exercises. In answer to the problems experienced I will outline the Oracle solution at a high level and then take a look at more detailed features within the application itself.

Reasons for an ERP audit

Before any work is undertaken within an organisation that could involve significant costs, it should be determined whether such an exercise would add value to the business. I believe ERP audits and reviews can be justified by outlining the wide-ranging consequences of undertaking an ERP implementation. Certainly, if implementing a system can impact a company in a multitude of ways then there will be a need to monitor and control such an implementation as well as ensure its continued success. Implementing an ERP system will significantly increase risks which in turn will require the establishment of mitigating controls and a mechanism for monitoring such controls.

Increased Risk

Enterprise Resource planning systems use data from a wide range of business areas to provide cross-departmental management and process information. Such systems manage the core critical business processes of an organisation. Implementations can fail to deliver expected results if not adequately managed and controlled. Furthermore, there are emerging trends and changing technologies that support expanded use of ERP systems (such as, web-enabled customer interfaces), which will increase the importance of the security and control consideration for ERP. Hence, an ERP implementation will have wide ranging impacts on the technology, people and processes of an organisation and its trading partners.

ERP's are implemented to support the operations of an enterprise and, to be successful, must be fully integrated into all the significant processes and procedures that together enable the enterprise to work effectively. Given the integrated nature of ERP's, they can further add to the risks or challenges of an organisation related to:

❑ Industry and business environment.
❑ User or management behaviour.
❑ Business processes and procedures – possibly influenced by ongoing BPR exercises.
❑ System functionality.
❑ Application security.
❑ Underlying infrastructure.
❑ Data conversion and integrity.
❑ Ongoing maintenance/business continuity.

<u>Higher Levels of Regulation</u>

Perhaps the greatest justification for an ERP audit at this point in time is the increasing levels of regulation being imposed on organisations. In the wake of corporate financial scandals, governments and regulatory agencies are responding to failing investor confidence by implementing new regulations. In the United States for instance, stricter reporting rules, such as those defined in the Sarbanes-Oxley Act of 2002, require company executives to certify the accuracy and legitimacy of corporate financial statements or face the possibility of punitive and criminal action.

European Union members are mandated to report financial results as per the International Accounting Standard (IAS) by 1 January 2005. At that time, they also have to restate 2003 and 2004 results, per the IAS. Further, IAS is going global. In addition to the EU, Hong Kong, Korea, Singapore, Australia, Canada, and most recently, Russia have announced either their support for, or adoption of the IAS. The U.S. Financial Accounting Standards Board is conducting discussions with the IAS board on the reconciliation of differences between the two standards. Multinational corporations may have the added burden of complying simultaneously with the Sarbanes-Oxley Act and the IAS, as well as a host of local regulations in the countries in which they operate.

Required Action

Wherever risk is increased, management should institute controls which mitigate the risks posed. The objectives of such controls would be to: -

1. Safeguard all the assets of the enterprise
2. Ensure accurate and reliable accounting (and other) information
   - Validity - only valid items are allowed to enter a system (authorisation)
   - Completeness - all valid items are captured and entered into system (number of items)
   - Input accuracy - data that is entered into the system is correct (data fields)
3. Improve operational effectiveness, efficiency and security
   - Effectiveness - fulfils intended objective.
   - Efficiency - prevents unnecessary waste of resources.
   - Security - protection of resources from misuse or destruction.
4. Promote adherence to managerial policies

It is imperative that when such controls are established, continuous audit and review work be undertaken in order to assess the effectiveness of these controls. The audit of an ERP system requires specific knowledge and an understanding of the complex features and integrated processes built into and required for the successful implementation, use and control of specific vendor products. As financials audits require specialised audit skills so do ERP audits. Not only should the auditors have specialised skills but the methodologies they use should also be uniquely tailored to deal with the different risks involved. Audit and Review guidelines should be developed which provide a management-oriented framework and proactive control self-assessment specifically focused on: -

1. Performance measurement—How well is the IT function supporting business requirements?
2. IT control profiling—What IT processes are important? What are the critical success factors for control?
3. Awareness—What are the risks of not achieving the objectives?
4. Benchmarking—What do others do? How can results be measured and compared?

With respect to IT control profiling in point 2 above, I believe organisations should reassess the controls in place using the maturity framework outlined in figure 3 and the subsequent text. For each control the required level of maturity should be determined and where the control is not found to be at that level, corrective action should be taken.
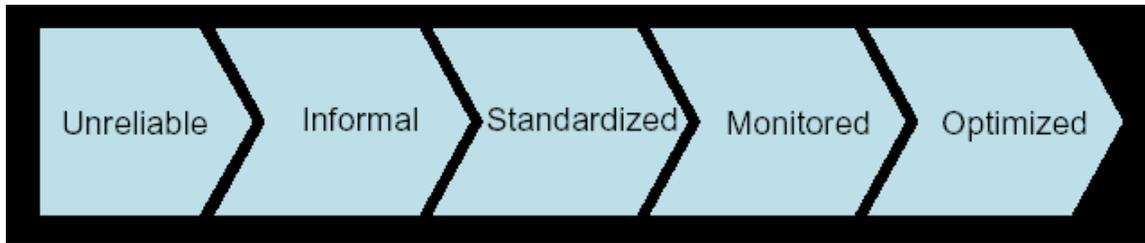
Figure 1: Internal Controls Maturity Framework *Source: PricewaterhouseCoopers paper on Sarbanes Oxley Act of 2002*

Level 1: Unreliable

Unpredictable environment where **controls are not designed or in place.**

Level 2: Informal

- Controls are designed an in place but are **not adequately documented**.
- Controls mostly **dependent on people**.
- No formal training or communications of controls.

Level 3: Standardised

- Controls are designed and in place.
- Controls **have been documented** and communicated to employees.
- Deviations from controls **may not be detected.**

Level 4: Monitored

- Standardised controls with **periodic testing** for effective design and operation with reporting to management.
- **Automation and tools** may be used in a limited way to support controls.

Level 5: Optimised

- An integrated internal control framework with **real-time monitoring** by management with continuous improvement (Enterprise-Wide Risk Management).
- **Automation and tools** are used to support controls and allow the organisation to make **rapid changes to the controls if needed.**

Common Mistakes

Having been involved in many an implementation as well as audits and reviews of such implementations I have come across several common mistakes which I believe if corrected will enable ERP audits to deliver far more value than they are presently. Implementations will also run far more smoothly if these errors in approach are rectified.

Poor planning

In many instances there is no concerted effort to ensure that audit and review processes are embedded in the project life cycle. I believe it is essential during the initial planning of a project to ascertain who will be performing audit and review activities as well as the duration and frequency

of such activities. At the outset of a project it is important that all parties involved understand the scope of the activities to be performed.

Lack of focus

I previously outlined that one of the major reasons why ERP audit and review should be conducted is the high levels of risk attached to such implementations. Even when audits and reviews are undertaken they often fail to focus on the areas of an implementation that pose the greatest threat to implementation success or organisational control. This to a large extent relates to the previously mentioned point of planning. Implementation planners should identify potential problem areas and then determine how to adjust their audit and review approach to deal with these concerns.

Competency of Auditors

This is probably one of the biggest problem areas I have encountered in deploying business systems. In many instances the parties made responsible for audit and review do not know the workings of ERP systems. Secondly they are often not aware of the workings of the particular system they are auditing (e.g. Oracle, SAP, JD Edwards). In many instances the financial auditors audit around the system using the "black box" approach i.e. they rely on inputs and outputs and don't look at what happens in between.

I believe it is essential that ERP auditors have at least a high level knowledge of how such systems work and how the modules relate to each other. Certainly, they should know the key features of the particular software they are working with and ensure they ascertain whether the package has any problem areas. Being able to query and pull out reports from the system is the ideal situation. This would necessitate persons responsible for audit and review being included in implementation activities such as training and testing.

Independence

In the past, instances have arisen where the auditors of the system are also the parties responsible for the implementation. This can certainly create a conflict of interest. Recent scandals in large accounting firms have led to the Securities and Exchanges Commission (SEC) introducing requirements upon various consulting and accounting firms to operate as separate entities. Whatever the case, ERP auditors should be independent from the actual system implementers.

Reliance on technology for the solution

All too often people have a tendency to believe that by implementing a highly functional system, controls will automatically be taken care of as there is a high degree of sophistication embedded in these systems. However, this is not the case and care should be taken to ensure that all business processes are carefully documented and users clearly understand what components of a process require manual or human intervention.

Silo Approach.

Too often auditors fail to take a holistic view of the business. There should be a concerted effort to take a big picture view of business and understand the inter-relationships between all of the functional areas.

Reports and reviews not taken seriously

After audit and review reports are produced it is essential to take action on them. I have seen many "Encyclopaedias" produced by auditors sitting collecting dust.

Some Considerations

Having looked at the reasons for ERP audit, the types of activity that we should undertake to deal with the risks involved and common mistakes people make in the review/audit process, I will now propose potential solutions. Initially I will outline who should be involved in the review process and what should be reviewed. Following this I will look at how Oracle E-Business Suite is designed to handle the audit and review requirements of any type of organisation.

Who should review?

I believe that at a minimum there are five key parties that need to be involved in an implementation. It is essential to get the right contribution by each of these parties to ensure an audit is effective and efficient. In many instances I have seen clients rely too heavily on one particular type of resource and not at all on others. Potential audit and review groups are: -

Internal Audit

Internal audit will already have an understanding of the existing systems that are in place within the organisation and therefore be able to make a substantial contribution to the audit and review process. This group should have a high level of involvement during each phase of the project lifecycle.

External Audit

May not necessarily understand the software package itself, however, they should at least have a basic knowledge of how ERP systems work. External auditors would obviously be expected to have a holistic understanding of the business operations and processes. The level of involvement may not need to be as high and intensive as internal audit. At the very least, external audit should perform reviews at the end of each project stage.

Implementation Consultants/Partners

Implementation consultants should have a complete understanding of the system functionality and the business processes and are thus well placed to perform audits and reviews. However such audits and reviews should not be entirely relied on by management, as there could be conflict of interests and independence issues. Any audit and review work carried out by implementation consultants should be performed more for the purpose of checking setups and system configurations.

Departmental/Functional Level Management

Managers for each department will need to have an understanding of the implementation issues for their particular area of the business. They will need to perform periodic reviews at each stage of the project life cycle and be intimately involved in the design of management reports, as these will affect their particular area of the business.

Senior Management

Lack of commitment by executives and senior management has been cited as one the main contributors towards project failure. Increasing levels of regulation require managers to be more vigilant in expediting their duties. To this end, senior management should ensure that at each stage of the project life cycle they obtain a holistic view of the implementation process and the

controls that are being installed as a result. Executives should ensure that they are involved in the design of Financial Statements as well as the establishment of Performance measures (KPI's) for their organisation. This will ensure that they are able to effectively audit and review the activities of the business.

Third party review

In several implementations I have been involved in we have obtained a third party review or independent audit. This party should be completely independent from systems implementers and internal/external auditors. The third party may know the system but not necessarily be familiar with the business processes of the particular organisation being reviewed. This means that the reviewer will have to learn the existing processes relatively quickly and in doing so will hopefully be able to give fresh insight into implementation issues. Incorporating this type of review into the implementation is, I believe, of great importance since it is always useful to obtain a different outlook on the implementation process and the problems being encountered.

What should be reviewed?

In any systems implementation, it is not just about the software. There are many other components that make up a successful implementation and these will be identified. Each of these areas may necessitate specialised audit, as they require a unique level of knowledge and skills set. Although I have mentioned each of these components separately, it is important to understand that they all interact with each other and are part of an organisational system.

Hardware

Each software vendor will provide the business with certain minimum specifications that they should follow when determining the hardware requirements of clients and servers. These requirements should be strictly adhered to. Often these specifications will be based on statistics that the auditors have provided the vendor with regarding volumes of transactions that are to be processed. Every effort should be made to ensure that these statistics are correct as this may result in sizing problems. The organisation should ensure that they size the hardware in such a manner that it provides for growth.

Network

There's nothing worse than going live and finding that inadequate network speed brings the system to a screeching halt. Efforts should be made to ensure that network speeds are tested and that all persons involved in system operation have access to the network. Control should also be maintained over the network to prevent unauthorised users gaining access.

Software

Every organisation has various layers of software upon which their ERP systems reside as well other systems, both internal and external, with which they interact – see figure 2. Audits should be conducted of software subsystems within the organisational system. The following are key areas that should be examined: -

❑ Standard ERP parameters, including application controls, authorisations and standard security configuration.
❑ Application security - to ensure processing occurs in an efficient and controlled manner, while protecting valuable data.
❑ Configuration decisions - to help provide reasonable assurance of the integrity of business processes and application security.
❑ Design documentation – to ensure appropriate security and control.

❑ The security administration process - to provide reasonable assurance that access granted is appropriately identified, evaluated and approved.

Many business processes may be extended out over the intranet, extranet or Internet. The auditor should provide reasonable assurance that security processes appropriately address these risks.
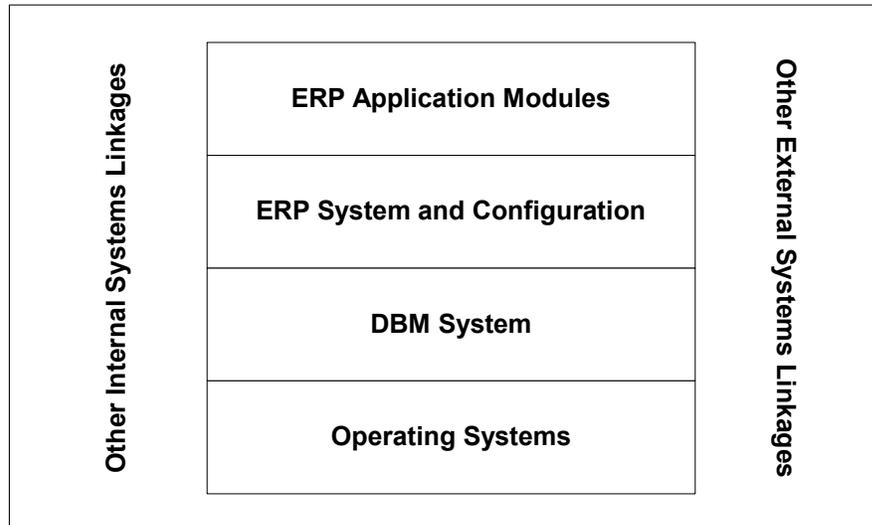

Figure 2: Software Layers and Linkages Source: Information Systems Audit and Control Association, 2003. *ERP Systems review guideline.*

Processes

An audit of an ERP should provide assurance on the integrity of processes in use by the business. Specifically, the following tasks relating to audit and review should be undertaken.

❑ Identify control objectives for processes being implemented.
❑ Identify and assess potential business risks and financial risks in the processes being implemented.
❑ Develop and design the most effective and efficient ways of controlling these risks (which implementers generally do not focus on or do not have the expertise to develop).
❑ Perform an independent analysis of key business activities, comparing organisation processes to leading practices and recommending process improvements.
❑ Provide assurance that the controls within ERP are appropriate and effective.
❑ Review the interfaces feeding into ERP from non-ERP systems (such as, including legacy, web-based and mobile computing applications).
❑ Perform audit tests focusing on business process and internal control. Many organisations reengineer business processes during ERP implementation. Review business continuity plans and provide reasonable assurance that they have been tested.

People

All implementations require a successful combination of the elements of people, process and technology. It is essential that an audit be conducted of the staff involved in the implementation as well as the way in which their roles are structured in relation to the ERP software implemented. In particular the following tasks should be undertaken: -

❑ Identify staff, their responsibilities and skills sets.
❑ Assess training and knowledge transfer requirements.
❑ Ensure staff are adequately trained and test knowledge transfer.
❑ Determine roles and responsibilities for staff by mapping existing staff complement to processes in the ERP systems.
❑ Ensure that appropriate segregation of duties is maintained.

Implementation approach or strategy

Each implementation has to adopt strategies and approaches that relate to the organisation and the unique circumstances under which it is implementing. Efforts should be made to provide reasonable assurance of a smooth transition to the new ERP environment, with minimal effect on employees, and without any loss in confidence as to the integrity, security and accuracy of data. In light of this, the various approaches taken to the implementation need to be carefully scrutinised in order to ensure that they will have the desired effect.

How to Effectively Utilise your Software

In many instances I find that users do not know all of the features of the software that they have purchased. This next section will highlight the key features of Oracle Business Suite that can be used to assist in performing audits and reviews.

The Oracle Information Architecture

Oracle has an information architecture which I believe enhances users abilities to carry out audit and review work. As wonderful as this architecture is, it also increases the level of risk an organisation is exposed to. Hence measures have to be taken to ensure that appropriate controls are in place. The key elements of the Oracle information architecture are: -

Unified Data Model

The Unified Data Model provides a single definition of customers, suppliers, partners, employees, and business events. This single source of truth, throughout the organisation, means that the information on which decisions are made is accurate and timely.

Accessible by anyone, with any device

Pre-built, role based portals deliver personalised information to managers. These portals are delivered in ways that best support an individual user - for example, e-mail for executives or radio frequency (RF) devices for warehouse workers.

Global

Global means that all data, worldwide, are consolidated into a single instance. The Oracle E-Business Suite handles multiple currencies, languages and different security needs of different countries. This means that costs are reduced, by consolidation of data centre's and data administration, and the quality of the information is improved.

Configurable

The Oracle E-Business Suite lets users configure their applications to meet their business needs without changing the application code. This reduces implementation time and makes it easier to take advantage of upgrades and new features as each organisation can configure the Oracle Application to suit their own requirements.

Open

The Oracle E-Business Suite makes it easier for standards-based customers to integrate with Oracle's applications. This integration, based on Oracle9i Application Server, offers choices at multiple levels, including:

❑ User interface - pre-built portlets, 9iAS Portal for custom portals.
❑ Services - Web services (SOAP, ebXML).
❑ Business documents - OAG, EDI.
❑ Industry-specific - Rosettanet, HL-7.
❑ Functions, components - APIs, EJB.
❑ High-volume integration - interface tables.
❑ Directory – LDAP.

Efforts to meet new regulatory requirements

Oracle's solution to the new regulatory requirements posed by the Sarbanes-Oxley Act of 2002 is as follows: -

Compliance Challenge	Strategy	Enabler
CEOs and CFOs must personally certify Financial reports	➢ Provide complete and accurate information with confidence ➢ Access information in real-time to proactively address issues that may arise	**Visibility** ➢ Setup transparent integrated processes across the enterprise ➢ Enable executives to access relevant and timely information
Disclosure of internal controls and processes for Financial Reporting; Auditors must verify adequacy	Setup better controls that work and enable regulatory compliance Make audits easy, fast, and effective	**Control** ➢ Establish centralised internal audit processes and controls across the enterprise that are documented, secure, and easily accessible ➢ Train employees and monitor skills to maximize compliance with policies and procedures
Aggressive deadlines for Financial reporting	Close books quicker	**Efficiency** ➢ Roll up and reconcile financial data quickly and accurately ➢ Implement centralised, low cost, error-reducing processes as a backbone to ensuring consistent, error-free data across the enterprise

Table 1: The Oracle Solution to Sarbanes-Oxley Act of 2002 *(Source: oracle.com)*

Visibility

Enterprise visibility is imperative to give you immediate access to high-quality business information. In most companies, the best information executives have about the state of their business comes from the close of the preceding quarter. However, without access to the current state of your business, you risk making decisions that solve yesterday's problems, not today's. To exercise good governance and meet regulatory demands, you need access to timely, relevant, and accurate information across your organization. Only a business system with a complete set of integrated business intelligence and analytics can provide managers with continuous, current, customised information about their business which can enable them to: -

- Access a complete and accurate view of financial data for quicker reporting and meaningful disclosure.
- View global enterprise information that is timely, relevant, consistent, and available in real-time.
- Obtain a complete view of your business with global information from a single source of truth.

Control

Enterprise control is necessary to accurately provide information based on standardised processes and procedures. With effective control, you can avoid careless accounting practices, enable compliance through documented business practices and procedures, implement your vision and business strategies, and find and fix discrepancies proactively. To control your enterprise more effectively, you need to centralise and secure policies, processes, and procedures across your organisation. Business systems can help you streamline the transparency of policies and procedures, enforce them, reduce the risk of malfeasance and errors, and improve confidence in your business data. With Oracles E-Business suite applications you can: -

- Support the audit department in enforcing corporate compliance with documented policies and procedures, risk and process control management, visibility to business process workflow, and improved project management.
- Keep your employees informed - document and track critical business processes, determine workflow, and develop and deploy applicable training to ensure compliance.
- Manage and document corporate communications and data with an integrated suite of enterprise level applications that focus on managing all of the communications between individuals and teams, the content they create, as well as the information for supporting them.
- Centralise and automate processes and controls for information consistency. Eliminate duplicate processes, reduce overhead, and cut costs.

Efficiency

To meet the reporting deadlines imposed by new legislation, your organisation must operate at maximum efficiency. By removing the complexity from your business applications you can confidently face new governance demands. A truly efficient business system operates on a single data model with data consolidated in one location. Integrated applications and automated business flows quickly moves business data among global front and back office operations. Data can be rolled up and reconciled accurately and business processes run smoothly and quickly - all while reducing administrative overhead. Oracle's E-Business Suite software applications allow you to: -

- Eliminate bottlenecks and streamline the rollout of new internal processes and procedures with self-service.
- Reduce the risk of malfeasance and accidental errors by streamlining inter-user approvals and participation in review processes.
- Enable efficient execution of internal audits by providing project team members complete visibility into audit data.
- Integrate enterprise data and business processes based on a unified data model to support global compliance.

Oracle's solution to the increasing adoption of International Accounting Standards (IAS) is as follows: -

Compliance Challenge	Oracle Recommendation
Consistency - all reporting units worldwide to report the same items in the same way according to the same definition	➢ Performing all your accounting, from any country, against a single database and a single source of truth, enables you to maintain a common basis (or definition) for global data, and to report data in any way you require. ➢ Oracle's financial software is designed to accommodate a global single instance. Worldwide consistency is a fundamental part of the design philosophy of the Oracle E-Business Suite.
Simultaneous compliance with IAS and multiple local regulations for subsidiary reporting	➢ With Oracle Financials, you can support multiple languages, major international currencies, and local regulations. ➢ An integrated architecture, single data model, and powerful analytic tools enable you to roll-up, view, and report global financial performance at a corporate level in the desired language and currency while adhering to local requirements.
Detail disclosure required by the IAS statements is more comprehensive than what is required in most exchanges and countries	➢ Effective disclosure requires complete visibility into enterprise-wide information, continuous monitoring for changes, and proactive management of disclosure obligations. ➢ Oracle's Business Intelligence software works seamlessly with Oracle's E-Business Suite to provide you accurate information about any part of your business when you need it.
Greater regulation and control increases costs, slows down business processes and impedes organizational agility	With centralised administration through shared service centres, you can obtain dual benefits of reduced costs and increased control. You can further reduce administrative overhead by leveraging self-service for employees, customers, and vendors. Oracle's financial software lets you completely leverage the benefits of shared services, and self-service.

Table 2: The Oracle solution to the increasing adoption of International Accounting Standards (IAS) *(Source: oracle.com)*

Certainly, the Oracle information architecture as well as the broad range of products that it offers, enables it to meet the increasing demands of regulatory bodies. The products that enable strategies adopted by Oracle to comply with enhanced regulatory requirements are highlighted in Table 3. For purposes of this paper I will provide a high level overview of two fairly new products, namely Daily Business Intelligence and Oracle Internal Controls Manager. Secondly a detailed

look at how Oracle E-Business suites financial applications and system administration features can be used to optimise audit and review capabilities will be provided.

Visibility	Consolidate Global Financial Data	•Oracle Financials 11i •Global Single Instance Model
	Provide Single Source of Truth	•Oracle Common Data Model
	Enable Real-Time Information and Corporate Performance Management	•Oracle Daily Business Intelligence •Oracle Corporate Performance Mgmt.
Control	Monitor Business Issues	•Oracle Workflow & Approvals Manager •Oracle Alerts & Notifications
	Integrate and Centralise Business Operations	•Oracle E-Business Suite •Shared Service Center Model
	Document Corporate Communications	•Oracle Collaboration Suite
	Document Business Processes and Support Compliance	•Oracle Tutor •Oracle iLearning
	Document, View, Test, & Certify Internal Controls Efficiency	•Oracle Internal Controls Manager
Efficiency	Automate Business Processes	•Oracle Self-Service Solutions
	Offer Project Collaboration	•Oracle Project Collaboration
	Integrate Technology & Applications	•Oracle 9i, 9iAS, and E-Business Suite

Table 3: The Oracle Corporate Governance Solution Set (highlighted areas to be discussed in this paper)

From a control perspective the various Oracle products should provide a business with appropriate levels of general and application controls. **General controls** are those that relate to all information systems. They are designed to ensure that the organisations Information Technology (IT) environment is stable and well managed. Examples include segregation of duties, physical access controls, logical access controls and documentation standards.

Application controls are those that are specific to applications with a focus on transaction processing. The primary objective of application controls is to ensure the accuracy of a specific application's inputs, files, programs, and outputs. Examples include Source data controls, Input validation routines, On-line data entry controls, Output Controls, Data processing and file maintenance controls. For each of the controls I am about to highlight I will indicate whether such a control is a general control or application control.

All general and application controls can also be classified as either preventative, detective or corrective. In some instances a control may be both preventative and corrective. Detailed explanations and examples are: -

Preventative

These are designed to discourage errors or irregularities from occurring. An example would be the application of cross validation and security rules to a Chart of Accounts to ensure that data is captured correctly.

Detective

These are designed to find errors or irregularities after they have occurred. An example would be the production of reports to indicate whether accounting information had been correctly captured. Most of the Oracle functionality to be discussed here will relate to detective controls. Preventative and corrective controls will be the subject of another paper.

Corrective

These are designed to fix errors or irregularities after they are detected. For example, to adjust a journal raised in error, a journal adjustment form may have to be completed, properly approved, and sent to Finance.

<u>Global Audit and Review capability</u>

Oracle has several tools available which enable a high level and cross-functional view of the organisations operations and controls, each of which is detailed in figure 3. Here I will highlight two fairly new releases on the market, namely Daily Business Intelligence and the Internal Controls Manager. These tools leverage the information architecture previously mentioned to provide management with an accurate, timely and cross-functional view of the business.

Daily Business Intelligence

Daily Business Intelligence (DBI) can be defined as a reporting framework that enables senior managers and executives to see an accurate and integrated daily summary of their business. DBI provides the technology components that enable cross-functional analysis, daily summarisation, and optimised reporting performance.

Intelligence products then build on this framework to provide a set of pre-defined portal pages that are designed for a particular business role. Each portal page contains a set of management summary portlets, related links, and key performance indicators for the business role as seen in figure 3. These portal pages are tied or linked to underlying reports and other pages, which provide more details on the information on the page. Daily Business Intelligence comes with over 200 pre-defined, role based portals and organisations can also build their own.
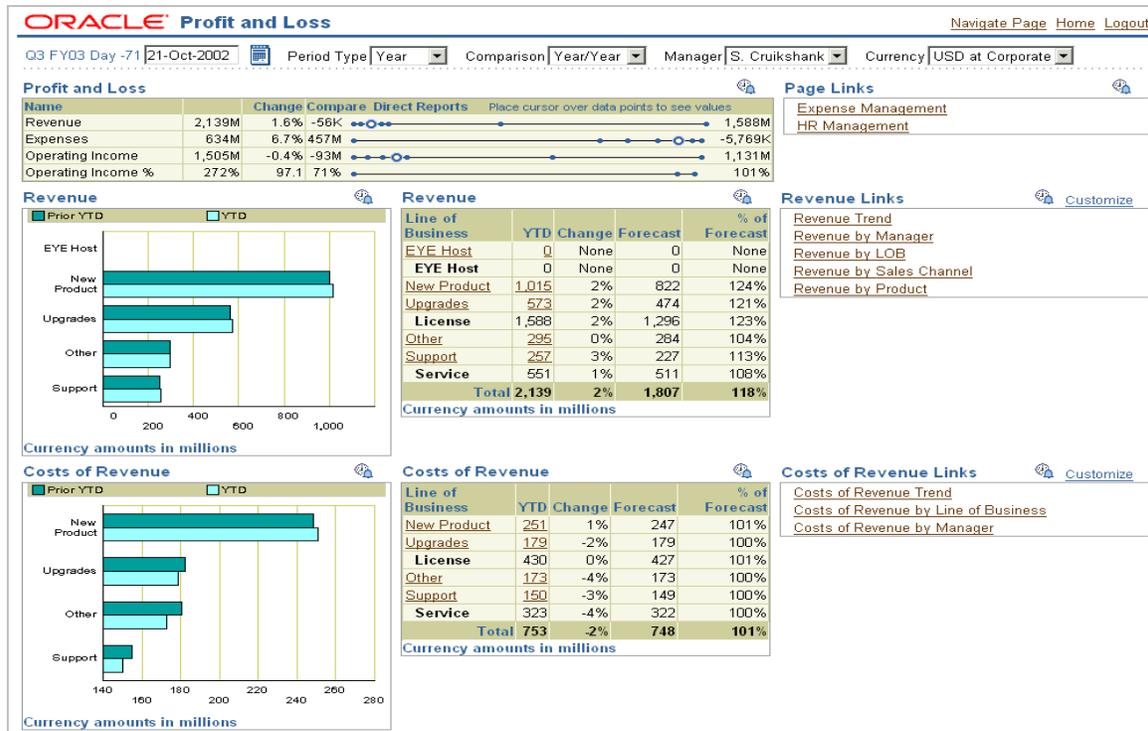
Figure 3: The Daily Business Intelligence Portal Window/Page

The following intelligence products utilise the daily business intelligence reporting and analysis framework to give users a cross functional view of their business: -

- Contracts Intelligence
- Human Resource Intelligence
- Financials Intelligence
- Interaction Centre Intelligence
- Marketing Intelligence
- Projects Intelligence
- Purchasing Intelligence
- Quoting Intelligence
- Sales Intelligence
- Supply Chain Intelligence

Before any of these intelligence products can be used, various set up steps need to be performed which dictate how the information for each of these products is extracted from Oracle Applications.

DBI uses Oracle 9i R2's materialised views and incremental refresh capabilities to obtain a summary of organisational data from the main database. This summarisation of data occurs within the 9i database itself hence avoiding the costs and complexities of building a separate data warehouse. The key components of the DBI framework are highlighted in figure 4 and a brief description of each of the components follows: -
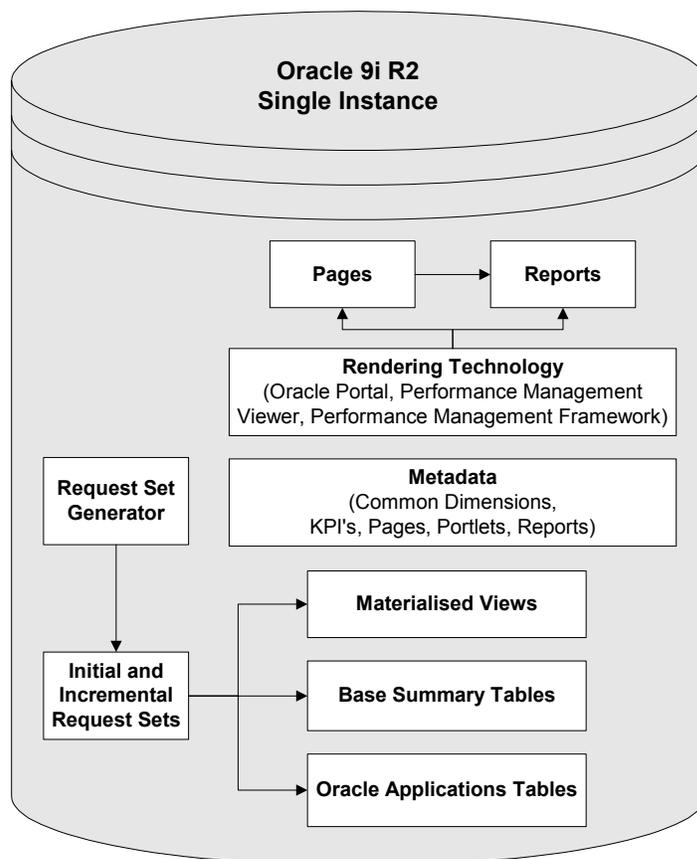
Figure 4: The Daily Business Intelligence Framework

Single Oracle 9i R2 Instance

The most important feature of the DBI architecture is that it resides in a single instance. The DBI reporting summaries and the detailed e-Business Suite transaction tables are stored in the same database. Consequently, DBI does not require a separate reporting instance. This single instance architecture reduces the need for a separate maintenance and administration team and optimises porting performance. Traditionally transactional and summarised data has always been stored in separate databases due to the mixed workload required. With Oracle 9i R2 materialised views and incremental refresh capabilities enable DBI to summarise a large amount of data efficiently. Because 9i R2 enables incremental refreshes, after initial load is complete, DBI only has to update the data that has changed since the last refresh, thereby optimising the refresh process. The incremental refresh programs can be fine-tuned so they can be run daily, hourly, or at any required frequency.

E-Business Suite Tables

Within the 9i R2 instance, the e-Business Suite tables are the foundation for DBI data. This architecture ensures that whenever you update data in an e-Business Suite application, that update is automatically reflected in DBI pages and reports. By leveraging the e-Business Suite architecture, DBI can also provide cross-enterprise functionality that is not available as part of standard Oracle reports, such as manager reporting. Manager reporting associates your manager hierarchy (defined in Oracle Human Resources) with your cost centre hierarchy (defined in Oracle General Ledger). This enables you to view DBI summaries by manager or by cost centre organisation (line of business)

Base Summary Tables and Materialised Views

Above the e-Business Suite tables lie the base summary tables and materialised views. These tables and views are used to store summarised DBI data. Each intelligence product delivers a unique set of base summary tables and materialised views that serve as the source of the data on each portlet and portal page.

Metadata

Above the base summaries and materialised views, sits the DBI metadata layer. The DBI metadata defines the common dimensions, roles, menus, initial and incremental request sets, KPI's, pages, portlets, and reports. The metadata layer is predefined by the DBI intelligence products and cannot be modified.

Rendering Technology

Above the metadata layer are the rendering technologies. DBI uses Oracle Portal and Oracle Performance Management Viewer to render the DBI pages. DBI uses Oracle Performance Management Framework to define the KPI's and the KPI portlets for each page.

Request Set Generator

Within the DBI architecture, but not a part of the data structure, is the request set generator. The request set generator is a tool that enables you to create initial and incremental request sets for each DBI page. This tool uses the definitions in the DBI metadata layer to generate request sets that you can use to load or refresh DBI pages. The generated request sets include all of the concurrent programs that you need to load or refresh a page. They also run the concurrent programs in the proper order, so that you do not encounter any data load or refresh issues.

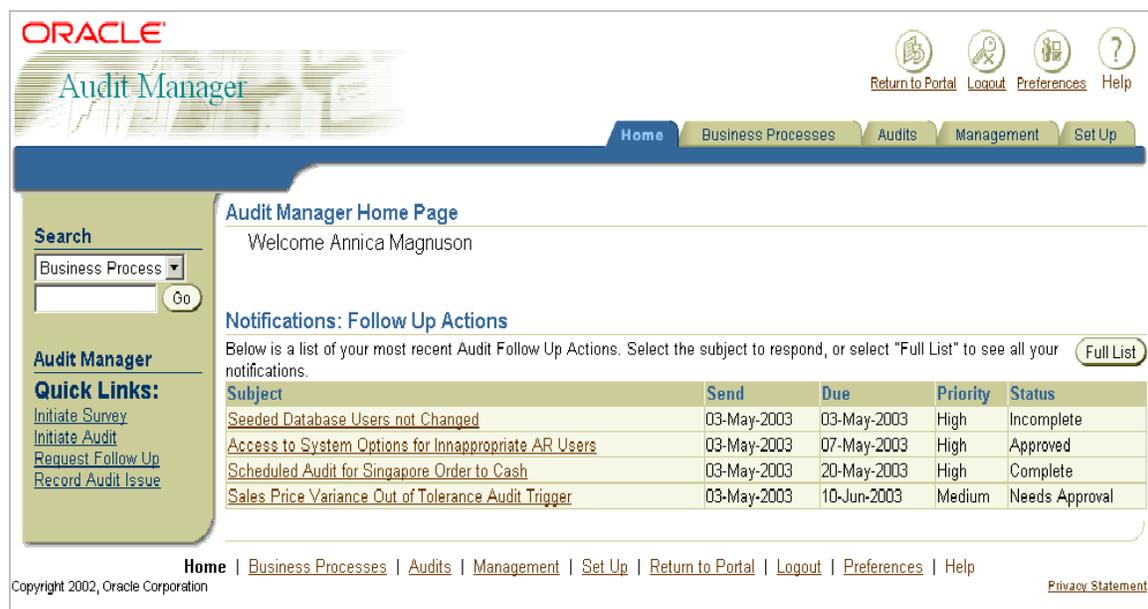**Initial and Incremental Request Sets**

Just below the request set generator are the initial and incremental request sets.
These request sets are used to load or refresh the DBI pages. The system administrator must create these request sets during the DBI post-implementation steps using the request set generator. The administrator should create one initial and one incremental request set for each page.

From the point of view of controls, Daily Business Intelligence represents an application control and is detective in nature. Auditors and reviewers should examine the information provided by DBI to assess the level of accuracy and reasonableness.

Internal Controls Manager

Oracle Internal Controls Manager is a comprehensive tool for executives, controllers, internal audit departments, and public accounting firms to use to document and test internal controls and monitor ongoing compliance.

Oracle Internal Controls Manager assembles the components necessary to document, test, and monitor internal controls and compliance. It provides users with an easy-to-use workbench from which you can organise, execute, and manage the audit work as displayed in figure 5

Figure 5: The Internal Controls Manager Workbench

The benefits of implementing the Internal Control Manager are three fold: -

1. More Efficient Internal Control Testing

The Internal Controls Manager exposes the native processes of the E-Business Suite applications in an auditor's context so that so you can determine the risk associated with each process and perform more efficient internal controls testing – saving your company time and money. The Internal Controls Manager achieves this by utilising existing workflow processes and associated process flow documentation from Tutor as illustrated in figure 6.

Figure 6: How the Internal Control Manager displays native controls and processes

Once Risks related to a process have been identified the associated controls that mitigate that risk should be identified and recorded as indicated in figure 7.

Figure 7: The recording of detailed information on controls that mitigate risk

A summary of the controls that mitigate risk is available through the compliance workbench. The compliance workbench allows you to check the effectiveness of mitigating controls on each risk, as verified by the audit procedures. If a risk is mitigated by say five controls, the compliance workbench allows you to see the audit results of those five controls and assess the extent to which the corporation is exposed to that risk. Once you perform this assessment at the risk level, the compliance workbench allows you to assess the risk level from the perspective of business processes, organisations, and financial statement items.

Other features, to mention a few are: -

Audit program office/project management

❑ Creating an internal audit project
❑ Executing an internal audit
❑ Submitting audit findings
❑ Issuing audit summary report

Risk assessment questionnaires

Uses a product called iSurvey as a tool for quickly building questionnaires, easily identifying survey participants, deploying the surveys via email, and allowing respondents to fill out questionnaires via the Internet. Oracle iSurvey enables you to provide an effective control environment and perform macro level risk assessments.

Confidential Feedback Mechanism

Oracle Scripting/iSurvey also enables you to effectively monitor operations by providing a confidential feedback mechanism. Section 301 of the Sarbanes-Oxley Act requires each audit committee of a public company to establish procedures for the receipt of confidential and anonymous submissions by employees regarding questionable accounting or auditing matters. This "whistleblower" provision now requires employers to provide all employees with a safe way to give anonymous feedback. You can also create and deploy such surveys, where employee confidentiality is of prime importance.

Reviewing Reconciliation Status of All Subsystems

Oracle Internal Controls Manager provides you with a reconciliation workbench. The reconciliation workbench gathers together a number of reconciliation tools and shows you the statuses of all reconciliations for a given trial balance date. The reconciliation tools are broken out into categories of: -

❑ Sub-ledger to general ledger
❑ Feeder system to accounting
❑ Plan to actual

Reviewing Policy Compliance

Oracle Internal Controls Manager deals with the relationship between corporate policies, the legislation that the policies must respect, and the procedures through which the policies are implemented. By using the Oracle Internal Controls Manager's Policy workbench, you are able to see the:

❑ Hierarchy of jurisdictions
❑ Legislation passed within each jurisdiction
❑ Policies written in response to the legislation

- ❑ Procedures written to implement the policy
- ❑ Business processes affected by a procedure

At any level in this hierarchy you can see the status of compliance. If legislation ever changes within a jurisdiction, or if you request a manual change in policy, Oracle Internal Controls Manager identifies which of your policy statements and procedures are impacted and then requires validation. This validation process confirms the legality of all policies and procedures used by the company.

2. Higher Certainty in Your Risk Assessment

If your internal audit system is part of your operational system, you can be assured that you are portraying accurate, real-time business information. If your internal audit system is separate from your operational system, there will always be a possibility that verifications are being performed against an outdated or inaccurate picture of your enterprise.

Oracle has also worked with world leaders in Audit and Risk assurance to ensure that the risks contained in the risk library have a set of related controls, thus easing the job of internal auditors.

3. Lower External Audit Verification Costs

Oracle Internal Controls Manager ensures that your internal auditors understand your business system's internal controls and identifies the risks that need to be mitigated. This integration and automation means that your internal and external auditors will spend less time trying to understand and document your business system – saving you money.

The Internal Controls Manager essentially enhances the level of application control within an organisation as it identifies risks and implements controls at each stage of the business process i.e. from input of data through to output. The controls it installs are largely preventative in nature since it attempts to ensure that all risks are mitigated by appropriate controls. Some elements of the software, like the various workbenches it provides, are detective in that they will be used to monitor the status of various procedures, policies and reconciliations that should be performed.

<u>Modular/Detailed audit and review capability</u>

Having briefly outlined the capability of some of the tools that enable a birds eye view of the organisations operations and controls, I will now discuss some of the 11i E-Business Suite functionality at a modular and detailed level. I believe that many of these features are overlooked and their importance is under estimated. By utilising the functionality mentioned, auditors and reviewers will be able to significantly improve the efficiency and effectiveness of their work.

Modular integration

Every system within an organisation has three core components namely, financial, operations and Payroll/HR as indicated in Figure 8. Oracle E-Business suite can offer highly integrated solutions for each of these components of the system as they all reside on the same database and share important information. The fact that the modules are highly integrated is a preventative control in that this should ensure all transactional information ends up in the central repository of the general ledger. The key features of modular integration that assist in the audit and review process are the reconciliation reports as well as month end reports which can be found for each particular module. These reports enable reconciliation of inter modular movement to take place. The fact that the modules interface in a standard way also means that it is easy to trace the flow of transactions from one module to the other.

Where 3rd party interfaces exist or are used instead of an Oracle module, as indicated by the red arrows in figure 8, these also integrate/interface in a standard way and hence it is rather easy to trace interfaced transactions online or by printing out pertinent reports.
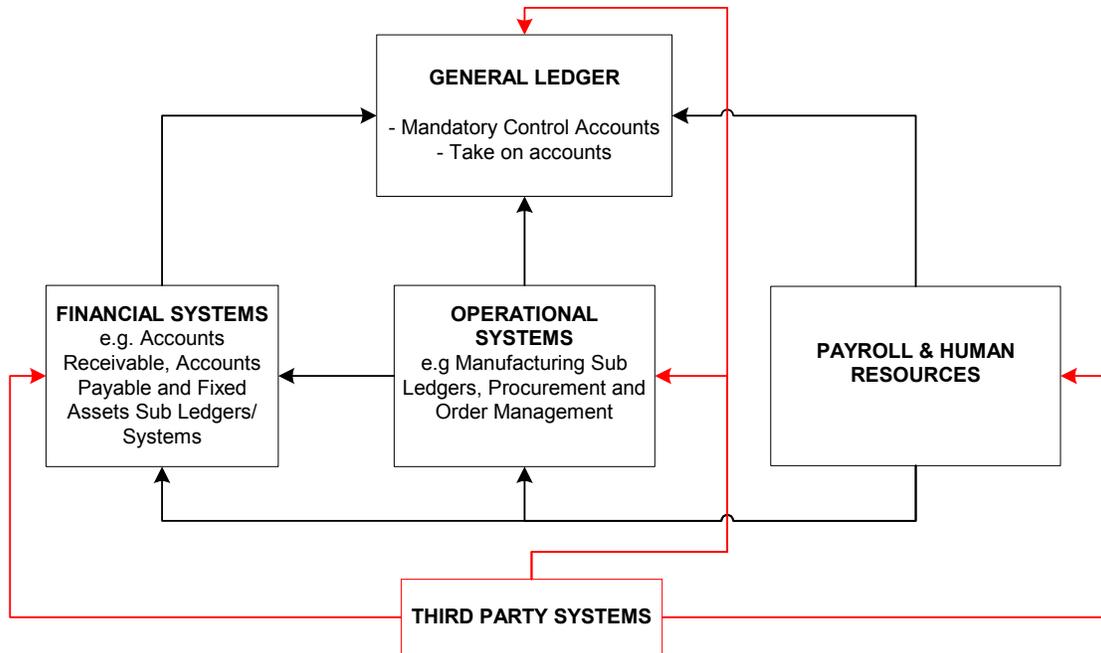

Figure 8: The three components of a system and how they interface.

Reporting Capability

On line reporting

Two way drill

Perhaps one of the most useful features in Oracle is the two-way drill facility which allows users to trace their sub-ledger accounting transactions to General Ledger (GL), or GL transactions back down to sub-ledger transaction detail. Being able to utilise the two-way drill will ensure that auditors and reviewer can easily follow up specific transactions they are investigating.

Transaction status

Each transaction generated by the system will be accorded a status. This status can be reviewed on line as well as in printed reports and will change depending on what action is taken on such a transaction. Each change in document status is typically followed by appropriate accounting entries. Knowing the accounting entries that result from a change of document status is an important part of auditing and reviewing transactional data. Figure 9 gives an example of a document status for a receipt in the Receivable module.

Figure 9: A receipt with a status of cleared

<u>T-accounts and activity summaries</u>

For the die hard accountants Oracle can provide a graphical view of the accounting entries in the form of a T-account as displayed in Figure 10.

Figure 10: Oracle allows the display of accounting entries in traditional T-account format.

Where there are many transactions flowing into a particular account for a specific transaction Oracle also provides an activity summary as indicated in Figure 11.

:ion	Entered Currency	Net Activity Entered Debit	Net Activity Entered Credit	Net Activity Debit (UGX)	Net Activity Credit (UGX)
nd-Staff Training	UGX	125,000		125,000	
nd-Trade Creditors	UGX		125,000		125,000
				125,000	125,000

Figure 11: Oracle displays a transaction summary for records with many accounting entries

Web reports

Oracle has web functionality embedded into its product suite which enables a wide range of reports to be delivered in web format. At the click of a button users can get timely and up to date information that provides a cross functional view of the business.

Standard reports

For each particular module standard reports are available in the following categories

❑ Transactional Data – details of invoice, payments and receipts can be printed out in a variety of reports and formats.
❑ Master Data – customer, supplier and employee listings.
❑ Roles and Responsibilities – roles and responsibilities assigned to particular users indicate which areas of the system they have access to.
❑ Setup parameters at modular and system level – should be reviewed to check for errors in setup. In addition to the setup reports that can be printed by the system, auditors should ensure that all setups are documented outside of the system. Oracle provides a tool called Oracle Applications Implementation Methodology (AIM) which contains document templates that can be used to document the system set up.
❑ Sequentially numbered documents – the General Ledger Report "Journals – Document number" can be used to trace sequentially numbered documents for all the modules and related transactions. It is important to ensure that all documents are numbered using a predetermined sequence so that they can easily be traced and proper cut-off of transactions can be maintained.

❑ Security Rules and Cross Validation – indicate what rules have been created for restriction and control of data entry by particular users.

The RXi Tool also enables customisation of certain standard Oracle Reports without having to hire a developer. Reports can also be exported into a text file, Excel file or HTML file format which certainly can help when trying to perform complex reconciliations. Most of the reporting options mentioned are application controls and are detective in nature.

Scripts

A useful tool I have encountered which can perform checks on your set up for each and every module is the CRM analysis toolkit. Although the tool name suggests it is for Customer Relationships Management it runs checks on several modules including each of the Financials modules. The setup and use of this tool is documented in note 167000.1 on Metalink and the results it generates will be demonstrated in the presentation. As an example, the following types of checks can be run on the General Ledger module: Verification of Setup of Set of Books, Chart of Accounts, Flexfield Structure, Calendar and Currency. Errors encountered are clearly highlighted in red text and references to documents on Metalink that can assist in correction of errors are displayed. The address for the log in to the CRM analysis tool is http://<hostname>:<port number>/OA_HTML/jtfqalgn.htm

A sample screen dump of the CRM analysis tool results for General Ledger can be found under the "Downloads" section on http://www.richardbyrom.com

Network Test

Certainly it is important to test the network speed to ensure that it is optimised. This can be checked by running the network test under System Administrator responsibility. Navigate to System Administrator > Application > Network Test. A network test is a general control relating to transmission of data over the network and is detective in nature.
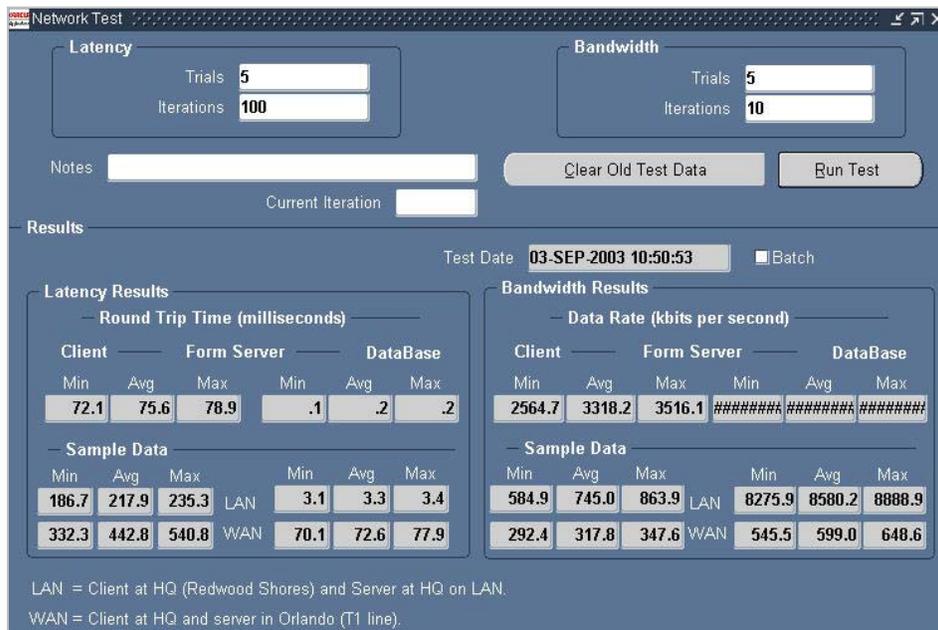

Figure 12: The results of a network test run from Oracle Applications.

Audit Trail

Report History

A history of all reports printed out by a particular user is maintained in the system. These reports can be reprinted and will show exactly the same result as was displayed when the report was originally printed. These reports can be viewed by selecting View > Requests on the menu and then searching for a specific request ID that relates to a report. The diagram below demonstrates the request centre manager and the history of reports it maintains.
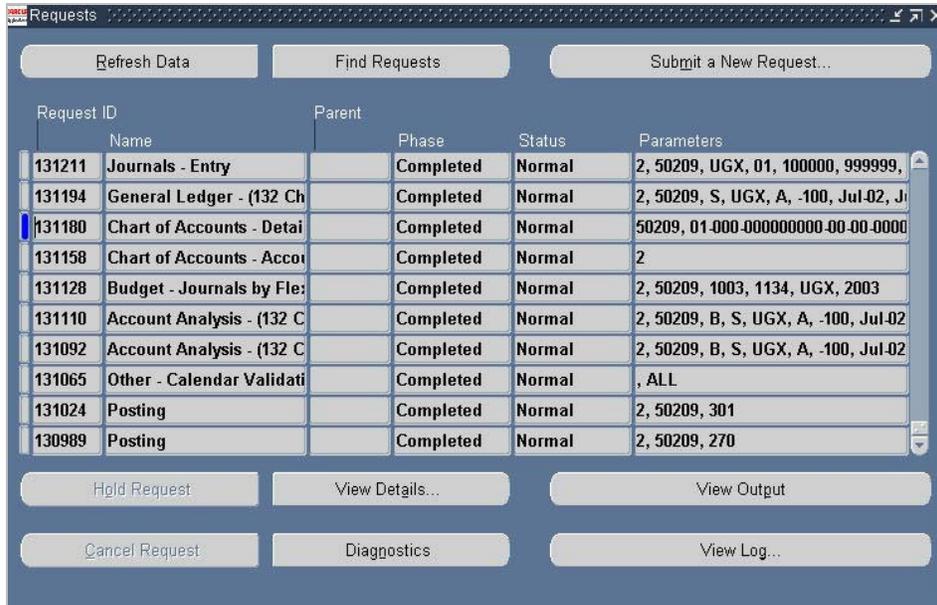

Figure 13: The Request Centre Manager that keeps a history/log of all reports printed

Record History

As a default, Oracle keeps a certain level of history for each transaction entered in the system. If you are reviewing a particular transaction simply choose Help > Record History on the menu and the information shown in Figure 14 below will appear. This is very useful in trying to determine who was responsible for a entering or modifying a particular transaction and can also be used to determine which table a transaction is being read from.

Figure 14: Examining the record history for a transaction

It should be noted that record history only maintains the information of the last update and does not show each and every update that was made to a particular record. For a detailed history of changes to a transaction one should use the Table Audit feature discussed next.

Table Audit

Where it is desired to monitor every amendment to a particular record, one can use the Audit trail facility available under System Administrator. This facility will allow you to monitor every INSERT, UPDATE & DELETE entry for any record that you would like to monitor. When using Audit trail the system creates a shadow table which maintains all the audit transactions. The information in this table can be extracted using SQL Plus or any other Oracle reporting tool like Oracle Discoverer. By default this option is not enabled as it would create a drain on system resources if every table were to have a detailed audit trail maintained, hence one should take care when deciding which tables to audit and what level of detail is required for your trail.

Sign on Audit.

You can audit and monitor user activity by enabling the Oracle Applications Sign-On Audit feature. This enables you to track the activity of users signed on to Oracle Applications. You can implement the Sign-on audit feature by updating the Sign-on Audit Level system profile. With Sign-On audit you can choose whom to audit and what type of user information to track. By choosing the appropriate profile option (Sign on Audit), you can audit at the following level of detail: None, User, Responsibility and Form. NONE being the lowest level of detail and FORM being the highest. Enabling the sign on audit feature will provide you with the ability to monitor users logged in as shown in figure 15.

User Name	Responsibility	Form	Login	Time	Oracle Process	Terminal Name
EMMA	System Administrator		trea5144	0:39	77	?
DAVIS	System Administrator		trea5144	0:40	59	?
JK	System Administrator		trea5144	0:46	78	?
RICHARD	System Administrator		trea5144	0:47	72	?
ALEX	System Administrator		trea5144	0:54	80	?
EMMA	System Administrator		trea5144	0:54	79	?
SAN_ALBER	System Administrator		trea5144	0:54	81	?
CLUBEGA	GoU System Administrat		trea5144	1:06	76	?
USER12	GoU System Administrat		trea5144	1:06	66	?
RICHARD	System Administrator		trea5144	1:07	63	?
USER01	GoU System Administrat		trea5144	1:09	65	?
MOFAHT2	System Administrator		trea5144	1:20	71	?
ARM	System Administrator		trea5144	1:29	60	?
SYSADMIN				7:13	55	
USER16				221:22	58	
USER20				221:35	58	
USER13				221:40	58	

Figure 15: The monitor users form

In addition to on line inquiry you will also be able to print various reports, namely: -

Sign on Audit Forms Report – who is navigating what form and when
Sign on Concurrent Requests Report – to view information about concurrent requests.
Sign on Audit Responsibilities Report – view who is selecting what responsibility and when
Sign on Audit Unsuccessful Logins Report – view who attempted unsuccessfully to log in to Oracle.
Sign on Audit Users Report – view who signs on and for how long.

The audit trail features mentioned are application controls that are largely detective in nature although sometimes just having detective controls in place can result in the control being preventative!

Conclusion

The enhanced risk posed to organisations implementing ERP systems requires a strong regime of internal controls to be implemented along side and in conjunction with such software. The increasing regulatory requirements posed by the Sarbanes-Oxley Act of 2002 and the adoption of International Accounting Standards (IAS) places organisations under further pressure to ensure that ERP systems support the requirements of the business in all respects. The risks of systems implementations as well as changing regulatory requirements also demand specialised audit and review skills at all levels of an entity. Persons responsible for audit and review should ensure that they are familiar with the ERP software in use and adopt any functionality that would help them in performing their work efficiently and effectively.

According to the Internal Controls Maturity framework highlighted in Figure 1, businesses should assess their level of control and rank them on a scale of 1 (unreliable) to 5 (optimised). Having highlighted some of the key features of the Oracle E-Business suite as they pertain to internal control, it is my firm belief that should organisations decide to implement the functionality outlined, they would soon find most of their controls jumping to level 5 in the framework.

About the Author

Richard Byrom is an Oracle Applications Consultant with RPC Data, an Oracle Certified Advantage Partner located in Botswana. He has spent the last 8 years consulting with various professional firms within the Southern Africa Region. He has also presented papers at numerous local, regional and international conferences and contributes to leading journals around the globe. Richard can be contacted at richard@richardbyrom.com or you can visit his web site to download Oracle white papers, training videos and presentations at http://www.richardbyrom.com

References

Information Systems Audit and Control Association, 2003. *ERP Systems review guideline.* Available from http://www.isaca.org. Accessed [1st September, 2003]
Oracle Corporation, 2003. *Oracle Internal Controls Manager Fact Sheet*. Available from http://www.oracle.com Accessed [1st September, 2003]
Oracle Corporation, 2003. *Assessing the Adequacy of Internal Controls with Oracle E-Business Suite.* Available from http://www.oracle.com Accessed [1st September, 2003]
Oracle Corporation, 2003. *Are Your Business Systems Up to the Tasks of Corporate Governance?* Available from http://www.oracle.com/corporate_governance Accessed [1st September, 2003]

Oracle Corporation, 2003. *Sarbanes-Oxley Response*. Available from
    http://www.oracle.com/corporate_governance Accessed [1st September, 2003]
Oracle Corporation, 2003. *International Accounting Standards (IAS) Response*. Available from
    http://www.oracle.com/corporate_governance Accessed [1st September, 2003]