

Upgrading Oracle eBusiness Suite from 11.5.9 to R12

Kimberly A. Sowers
Rochester Institute of Technology

Abstract

RIT is upgrading our 11.5.9 eBusiness Suite implementation (Financials, HR, Payroll, HR self service and iRecruitment) to R12. Our target go-live date is Memorial Day weekend 2008. Our initial project plan, the progress made to date against that plan and factors that were considered in developing the plan will be discussed. Issues that have been encountered as well as how they were addressed will be shared. Things we've learned that we wish we knew when the project started will also be discussed.

Introduction

This paper will share with readers some of the experiences of Rochester Institute of Technology's R12 upgrade project team. Rather than presenting issues specific to our implementation and how we addressed them, the approach used by this paper will be to generically describe issues we encountered along with the associated resolution. This should allow for broader application of the information being presented.

As specific 'new' functionality is referenced in this paper, it is assumed by Rochester Institute of Technology (RIT) that the new features were introduced in R12. This may not be case as some of these changes may have actually been introduced in either 11.5.10 or Financials family packs released after the last one applied.

This paper was written in late February 2008 so statements about the features of the R12 eBusiness Suite, issues encountered and the resolution (or lack thereof) is accurate as of that time.

About Rochester Institute of Technology

RIT is currently running Oracle eBusiness Suite Applications version 11.5.9 CU 2. We've implemented the General Ledger, Accounts Payable, Accounts Receivable, Purchasing, Fixed Assets, Cash Management, Payroll and HR modules (including Standard Benefits, Employee Self Service, Manager Self Service and iRecruitment). We run two payrolls – bi-weekly and semi-monthly. The HR and Payroll modules are up to date as we applied the FP K RUP 2 patches in August 2007. The technology stack is also up to date as we applied ATG.H RUP 5 at the same as we applied the FP K RUP 2 patches. The Financials modules are dated as we haven't applied any family pack patches to them since we upgraded to 11.5.9 in 2004.

We also use desktop ADI in several departments where our power Financials users reside. Discoverer desktop is used throughout the Institute for HR and Financial data analysis purposes. Discoverer Viewer is used to display reports in Manager Self Service.

RIT has four 11.5.9 Oracle eBusiness Suite Applications instances – production, test, QA and development. Each instance has its own ORACLE_HOME and APPL_TOP. The development and QA instances share a single Linux server. The test environment has its own database server and two middle tier servers (one public, one private). The production environment consists of a database server, a concurrent manager server, multiple public and private middle tier servers and a dedicated server running Discoverer 10g. We anticipate carrying this architecture forward, with modifications as needed, to our R12 environments.

Systems administration, Oracle Applications DBA and related support activities have been outsourced to Oracle on Demand (OoD) by RIT.

Project overview

Our decision to upgrade to R12 revolved around the fact that 11.5.9 would be de-supported by Oracle on June 30, 2008. We decided to upgrade to R12 rather than 11.5.10 since premiere support for 11.5.10 would expire on November 30, 2009, meaning that we'd finish one upgrade project and almost immediately launch into a second upgrade project. (An option exists to acquire extended support for 11.5.10 past November 2009 but we couldn't get a commitment from OoD at the time we were making a decision on which version to upgrade to that they would allow us to take this option. Since we made our decision to upgrade to R12, OoD has agreed to support 11.5.10 customers on extended support.) An additional contributing factor to the decision to upgrade to R12 is that the HR and Payroll users didn't see any payback for them in upgrading to 11.5.10 whereas they did see a payback in upgrading to R12.

We made the decision to upgrade to R12 during the summer of 2007. Based on our business calendar, this meant our go-live on R12 had to be Memorial Day weekend 2008.

RIT initially went live on 10.7 NCA in 1997. We upgraded to 11.5.5 in early 2002 and again to 11.5.9 in mid-2004. Our philosophy whenever we do an Oracle Applications eBusiness Suite upgrade is to go-live on the new version with the same functionality we're using today, modifying it as minimally as possible in order to get it to work with the newer version. Once the upgraded production environment is stable, we review the new functionality available and deploy it as needed. We always do a complete parallel payroll test of each payroll type we run during an upgrade. Our approach for implementing R12 followed this philosophy.

The RIT project team is comprised of the systems development team that supports our eBusiness Suite implementation as well as the key users of the Applications. These users, who have day to day operational duties independent of the upgrade, are responsible for all user acceptance testing and ultimately determine whether or not we go forward with the upgrade in production.

We needed to have dedicated Applications DBA resources to work on the upgrade so we chose to contract with Oracle on Demands' upgrade team to assist us with our implementation. This team would apply the R12 patches for us, ensure the hardware and operating systems were configured properly and work with product support as needed when product related issues were uncovered during our testing. Typically, OoD's upgrade team does 3 conference room pilot (CRP) upgrades when they're working with a customer. Since we run two payrolls, we added a fourth CRP to the plan OoD initially proposed.

During the planning stages of our project we had heard that Oracle Reports would no longer be supported in R12. We inventoried our list of custom reports developed in Oracle Reports (there are over 100) and began discussions with various third party consultants to contract their conversion to BI Publisher as part of the R12 upgrade. After getting access to our first upgraded instance, we realized that we didn't need to convert all reports to BI Publisher as part of this upgrade since Oracle Reports is still supported. A decision was made to take the HR and Payroll reports (44 altogether) and have them converted to BI Publisher as part of this upgrade in order to better prepare us for the time when Reports wouldn't be supported.

Prior to the start of our upgrade project, we were concerned about the changes to the Financials modules that we would see in R12 since we hadn't patched or upgraded them in over three years. We expected the changes to the HR and payroll modules to be minimal since we were up to date with their patches. iRecruitment was an unknown to us since we had never upgraded it before. Due to our concerns about the changes to the Financials modules we contracted with a third party consulting firm to provide us with functional support on an as needed basis.

Typically RIT introduces temporary instances to be used during the upgrade as test instances, removing them once the upgrade has been deemed stable in production. While planning for the R12 upgrade, Oracle on Demand informed us that they would be moving all of our instances to new hardware to accommodate the new R12 architecture. We would have brand new R12 development, test and production environments created during the project that would become the permanent versions of those

instances once the upgrade had been completed. The QA instance would be introduced to this new configuration after production go-live. This allowed us to maintain our four existing 11i instances in order to support activities during the upgrade project that couldn't be deferred (e.g., Payroll end of year patching, 1099 patching, the quarterly security patches) while having adequate instances available for our R12 testing.

Senior management mandated that there would be no new functionality deployed in 11i during the upgrade project. The only changes that were to be made to 11i included required patches as well as any patches or extension modifications needed to address production issues.

A high level view of our overall project timeline follows –

Project start	9/12/07
CRP 1 available for testing	11/9/07
CRP 2 available for testing	12/18/07
BI Publisher versions of reports	2/21/08
CRP 3 available for testing	2/21/08 (bi-weekly parallel payroll testing)
CRP 4 available for testing	mid-March (semi-monthly parallel payroll testing)
Go-live	Memorial Day weekend 2008

CRP 1 was completed in the R12 development instance. CRP 2 was completed using the R12 test instance. CRP 3 was completed using what will become the R12 production instance, then refreshed to the R12 test instance. CRP 4 will be done using the R12 production instance (so that we can get more accurate timings on how long it will take to do the upgrade on all of the nodes in our production environment). CRP's 1, 2 and 3 were available for testing on time per the plan.

The reason CRP 4 hasn't been fully planned out yet is due to the large number of product issues we're encountering that require patches to fix (more detail on these later in the paper). We're pushing CRP 4 out later than originally planned in order to perform the last test upgrade with as many product fixes as part of the upgrade as possible without putting the semi-monthly parallel payroll testing in jeopardy.

General observations

Before discussing specific functionality changes introduced in R12 and some specific issues we encountered, some general observations about R12 will be shared.

Product Software

Based on our experiences to date, the product quality of R12 isn't as good as that in 11i. We anticipated more issues with our R12 upgrade than we had seen with our 11i upgrade since we were upgrading to 12.0.3 whereas our 11i upgrade was to 11.5.5. Since R12 had been out for over 9 months by the time we started our upgrade, we did expect that fundamental issues (such as error messages on forms that have no impact on the transaction being processed once you click the OK button to acknowledge the error) would have been addressed. We quickly discovered this wasn't the case.

We also quickly learned that some of the functionality in R12 that replaced functionality we were using in 11.5.9 didn't work well either. For example, in R12 the *Collector's Work Queue* functionality in the new Collections Agent responsibility replaces the functionality we use in Accounts Receivable in 11i. After determining that we needed to implement this new functionality, we immediately ran into an issue trying to open the form. This issue has yet to be resolved.

It appears as though a goal of the R12 product suite is to implement a strategy to better protect identity information stored in the Applications as well as assist in the separation of duties essential to organizations that need to meet the requirements of Sarbanes-Oxley and related laws. Unfortunately, in our opinion, the product development needed to support that strategy has been poorly executed, especially where the changes cross modules.

For example, new functionality in Accounts Payable (AP) only allows an employee to be paid via AP to their home or office address. These addresses need to be entered and maintained via the Human Resources (HR) module. However, AP users are allowed to create a new address for an employee (e.g., pick-up) – but you can't pay the employee at that address – making the creation of that address useless. At the time this paper was written, AP product development was determining whether or not to prevent AP users from creating addresses in AP for employees that couldn't be used to pay them. On the other side of this issue – you cannot enter and/or maintain an address in HR other than a home or office address. We have a requirement to pay employees via AP at an address either than their home or office address. Given the new functionality in R12, we will be modifying the custom processes we use to process created AP payments to continue meeting those requirements since the standard Oracle functionality no longer supports them.

We found several cases where the security features of R12 were not well implemented. For example, the Account Analysis report didn't restrict the data users could see based on the security built into the responsibility they were using. Since we use a custom version of this report, we added the security logic to our version of the report.

RIT's development team is often frustrated when trying to troubleshoot issues in R12. More of the forms, or screens, are now written in Java, which means the source code is 'encrypted' so it can't be read. This means the developers can no longer access the source code to see what it's doing to help in their troubleshooting activities the way they can when Oracle Forms is used to implement the form. It also appears as though many programmers at Oracle were involved in the development of related functionality but that a master design of how the individual components should fit together was never done. For example, with the supplier API's, there isn't a single API that can be called to create a supplier and all information related to a supplier (e.g., location, payment method, bank information). There are numerous API's that must be called in order to perform the simple task of programmatically creating a supplier. These API's are implemented inconsistently, meaning that not only do you have to investigate numerous API's in order to determine which you need to use, but the various API's may expect different information when they're called or handle the same information differently.

Upgrading to R12 introduced numerous new schemas (e.g., the *pos* schema used by Payments) and increased a reliance on schemas that we used to use only on the periphery (e.g., the trading community architecture's *hz* schema). Numerous new API's were also introduced. From the RIT's development team perspective the introduction of these new schemas and API's adds significant complexity to upgrading extensions and customizations. We've also seen performance issues with some of our initial extension upgrade activities that have caused us to reprogram some upgraded extensions.

Setup

Given how RIT has implemented the eBusiness Suite, there were significantly more setup changes needed when we upgrade to R12 than we needed to make when we upgraded from 10.7 to 11i. As a result, it took us longer to be able start successfully testing after the first test upgrade had been completed. We anticipate needing more time go-live weekend to execute our post upgrade steps once Oracle on Demand has completed the R12 upgrade than we originally planned for (our estimate was based on our 11.5.5 and 11.5.9 experiences).

The setup we need to perform is more complicated in R12 that it was in 11i. In part this is due to the new Tax Manager and Trading Community Architecture responsibilities that need to be used due to the centralization of functionality that occurred during the major re-write of the Financials modules.

Documentation

Generally speaking, the quality of the R12 documentation available via Metalink isn't as good as that available for 11i. RIT's development team needed to spend substantially longer searching for documentation or other sources of information on Metalink when troubleshooting R12 issues than they have needed to spend when working on comparable issues in 11i. Our functional users have shared the same frustration with the lack of accessible documentation on how R12 works and how it's different from

11.5.9. It isn't uncommon for the R12 documentation to reference an appendix to that document that doesn't exist – then refer the user to the 11.5.10 version of that appendix. Both groups struggled in determining whether the software behavior they were encountering was a bug, incorrect use of the R12 functionality or a combination of the two.

A significant change in the R12 documentation is that the API Reference Guide is no longer available as a separate document. It is being replaced with the Integration Repository (see Metalink note 462586.1). This is new functionality within the eBusiness Suite, allowing users to search for API's based on the module you're interested in or the standard you need to meet. This information is accessed via the new Integration Repository responsibility. While the documentation available on integration functionality that's implemented via concurrent programs used to load data from external systems is relatively robust, information on true API's from the developers perspective (e.g., programs called by PL/SQL scripts) is rather weak or non-existent.

A good starting point for gathering information on R12 is to access the Metalink **Knowledge tab**, selecting eBusiness Suite under Product Categories. Here, you will see a link called **Release 12 Information Center**, which is a collection of launching points for R12 information. One useful item is Metalink note 403349.1, which discusses Release 12 Transfer of Information (TOI) Online Training (this note can be accessed after clicking on the On-line Training link under Browse Product). This resource was frequently referenced as we tried to determine if our upgraded instances were working as intended in R12 or if we had a product issue.

Aside from getting information on where to find product specific and upgrade documentation, the information center provides access to Metalink note 423541.1 (which discusses the R12 RUP release schedule) as well as Metalink note 433461.1 (which discusses the R12 maintenance strategy). There are significant changes to how bugs will be fixed and new functionality introduced in R12 so anyone considering an upgrade should review these to understand how maintenance to their implementation will be affected.

Differences between 11.5.9 and R12

R12 had been discussed by Oracle for some time before we started our upgrade project so even though we were upgrading to one of the early releases of the product we were generally aware of some of the larger changes that would be introduced in the new version. The changes we were concerned about included the introduction of operating units; the re-write of how sub-ledger accounting would be done; the replacement of the desktop ADI client with Web ADI, including the use of Report Manager functionality; the new “swan” look and feel, etc.

While we were aware of some of the changes being introduced, due to project participants day to day operational activities as well as the fact that project was launching as we were preparing for benefits open enrollment, year end payroll processing and a fiscal year close, we didn't spend a lot of time getting knowledgeable about R12 prior to our first upgrade being completed. “Just in time” training had worked for us during our 11i upgrades and we expected it to work similarly for the R12 upgrade. In hindsight, we should have dedicated more time to learning about R12 prior to our first upgrade as we encountered significantly more functionality changes, and related product issues, than we had anticipated at the start of the project.

Being a single operating unit entity, the core changes made in R12 to support the new operating unit and sub-ledger accounting changes did not have a significant impact upon us once we understood the additional set-up steps needed and the new concurrent programs used to support them. Migrating activities currently executed in the desktop ADI product to Web ADI was straightforward, although we're still working through the details of how we want to implement the Report Manager aspects of this functionality. The introduction of case sensitive passwords was a welcome change, albeit one we will need to plan for in terms of communicating about it to our users and preparing our Help Desk for an influx of calls immediately following the upgrade.

There were major functionality changes that impacted us that we didn't expect when we started the project. Some of these changes include:

- Substantial changes to how the trading community architecture (TCA) has been leveraged in R12 within the HR and AP modules
- The new Tax Manager module
- Significant changes to how AP standard processes work (independent of the changes made to support the new sub-ledger accounting engine)
- Adoption of a new coding standard that dramatically changes how searching can be done in several modules
- Changes to how the taxpayer ID for individuals is treated

The net result of these unexpected changes is that the RIT development team has spent the majority of their time supporting the users in addressing product issues, including developing workarounds to intended functionality changes, or assisting in the understanding of how R12 works compared to 11i rather than on retrofitting our extensions to work with R12.

Operating Unit

Since we're a single operating unit entity, the biggest change for us related to the adaption of the operating unit concept introduced in R12 was ensuring that the Operating Unit Mode was set properly in standard Oracle reports and in any custom report that called standard Oracle functionality that used operating unit mode to select data.

Sub-ledger accounting

Earlier versions of the eBusiness Suite Applications stored data related to transactions within the sub-ledgers in the module specific schemas used by those sub-ledgers (e.g., po for purchasing, ap for accounts payable). Transferring information from the sub-ledger to the general ledger could be accomplished by running the General Ledger Interface program. R12 consolidates all of these module specific tables into one location in order to have a single source of data for sub-ledger information. To transfer data from a specific sub-ledger to the general ledger requires the use of the new Create Accounting concurrent program.

TCA Architecture

In earlier versions of the eBusiness Suite Applications, many modules contained module specific tables to contain information on people and organizations used in that module (e.g., the po_vendors table in Purchasing). This meant that a single person or organization was entered multiple times into each of the modules that they were referenced by (e.g., an employee who was paid for an expense report via accounts payable had a set of data in AP that was independent of their data in the HR module).

R12 uses the concept of one central location to define people and organizations used by all eBusiness Suite modules. The concept of a "single source of truth" dominates this design – one module "owns" the data related to specific types of people / organizations. Changes that need to be made to a specific person or organization must be made via the owning module – no changes are allowed via modules that use the data owned by another module. For example, any data needed in order to pay an employee's expense report in AP in R12 must be entered and maintained via the HR module. Individuals using AP can no longer perform this data maintenance.

Tax Manager

The new Tax Manager module builds on the theme of centralizing similar data used in multiple modules into a single module. Rather than setting up taxes in each module they are used by (e.g., Accounts Receivable, Accounts Payable), the tax manager module is now used to set up all taxes used throughout your implementation. As a non-profit organization, a major change for RIT was that we had to set up taxes for all of the modules we use where taxes are generally applicable, then disable them, in order to get key functionality to work.

AP Functionality Changes

There are numerous functionality changes introduced in R12 that impacted RIT. The segregation of data maintenance for employees being paid via AP has already been discussed earlier in this paper. Payment output used to create checks and electronic fund transfers are now produced using XML Publisher (also commonly referred to as BI Publisher) rather than Oracle Reports. This means mapping the standard Oracle data definition of the data included in those outputs to a XML Publisher format template before executing your final processing of that data (e.g., printing checks).

TINS

In conjunction with the 2007 1099 patch, Oracle released their TINS functionality changes. As of the time this paper was written we were unable to obtain any formal documentation on these functionality changes from Oracle. What we've been able to determine via reading source code and opening SR's is that this is part of their effort to protect identity data (SSN) that's conceptually a good idea which hasn't been well executed. This functionality moves the SSN (taxpayer ID) for anyone in AP who is classified as an individual to a new field called individual_1099 and removes visibility to this data from numerous AP screens. Unfortunately for RIT, it removes the data from the inquiry screens that the RIT employees who actually create payments use to verify data. Standard Oracle functionality does allow RIT employees entering payment data to see this information. Since users of our inquiry responsibility have a legitimate business need to see this information, we have added it back to the necessary screens via a personalization. This is the opposite of what we did in 11.5.9 where we removed it from forms for most users via a programming change made to the custom.pll library.

Web based forms

Many of the functionality changes introduced in the AP and AR modules that affected us were done via new web forms rather than the traditional Oracle Forms form users are used to working with. Not only has new functionality been introduced via web forms, existing functionality has been extended by replacing existing menu functions with new web forms. Since we've created numerous custom responsibilities based on standard Oracle responsibilities, we needed to revisit them to be sure they still work as expected. Part of this review was to be sure that additional access hasn't inadvertently been granted to users who have been granted the responsibilities as well as ensuring that users have access to everything that we want them to be able to access.

For example, RIT has taken selected aspects of the System Administrator and System Administration responsibilities and created custom responsibilities providing limited access to selected features of those responsibilities to certain users. One of those items is the Define Concurrent Program menu option. Our customization is based on the 11i System Administrator menu option (see Figure 1). While the R12 Define Concurrent Program menu option in the System Administrator responsibility has remained the same, the Define Concurrent Program menu option under the System Administration responsibility has changed (see Figure 2). Since our data center operations team makes manual adjustments to our concurrent programs, we need to replace the existing Define Concurrent Program screen they use in 11i with the new R12 screen in the custom responsibility they use to perform that work.

We have performed similar analysis on many of our custom responsibilities. In some cases we've needed to add functions and/or sub-menus back to the standard R12 menus used by those responsibilities and in other cases we've needed to exclude functions and/or sub-menus included in the standard R12 menus.

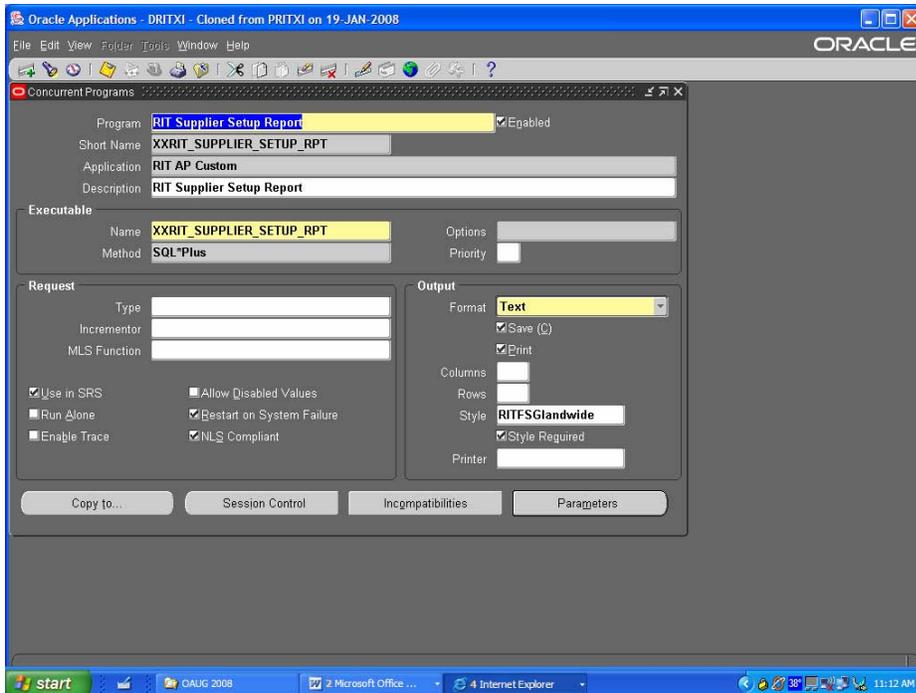


Figure 1 - 11i System Administrator Define Concurrent Program form

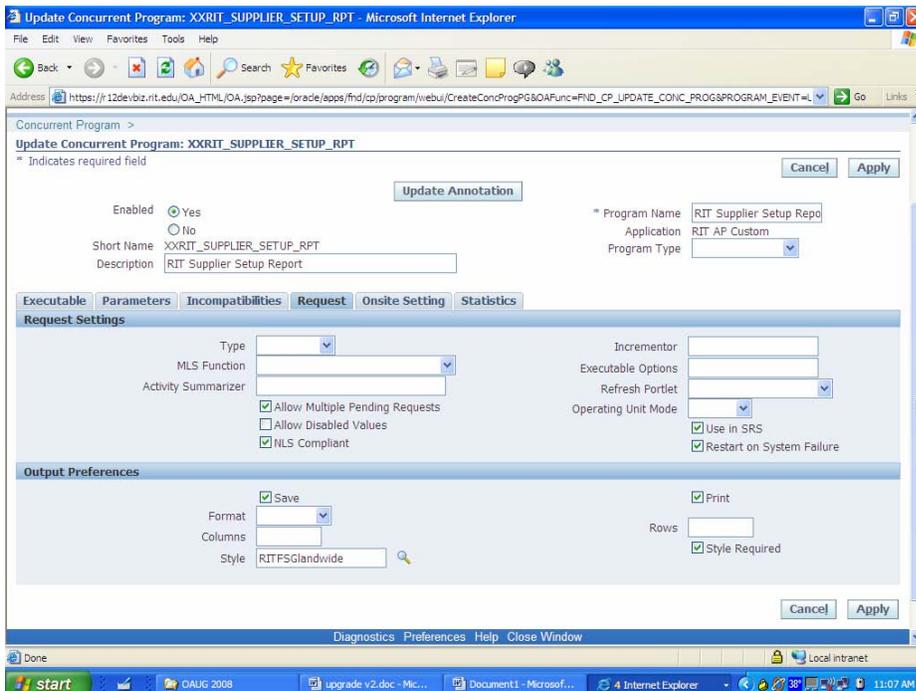


Figure 2 - R12 System Administration Define Concurrent Program form

New Search Coding Standard

While R12 still uses Oracle Forms as a key component of the user interface, introducing a new look and feel to those forms, as 11.5.9 users we discovered many instances where web based forms are now used instead of the “professional” forms interface we’re used to. In 11.5.9 AR, for example, navigating View Customers -> Standard takes the user to the form shown in Figure 3 whereas using the same navigation in R12 takes users to the form shown in Figure 4. As a result of the form changing from being developed

in Oracle Forms to a web based form using the Oracle Applications Framework standard, there have been some significant changes introduced to how these forms work.

One of the changes relates to searching. At RIT, it is common for users of the Financials modules to use a search screen in 11.5.9 with a search criteria `%<criteria>%`. During our R12 testing, users used the same search criteria that they use in 11.5.9 today as part of their testing. What we learned is that the programming standards Oracle is using in the development of these new web based forms no longer allows the use of a wild card as the first character in a searchable field. When entering a search using the format `%<criteria>%`, users will receive an error message indicating "Please fill in search criteria values in at least one of the following fields ,,,, Note that the search criteria values should not begin with a % or _ for at least one of the listed fields."

After opening an SR on this issue we learned this was intended functionality. After further researching the issue, we learned that we could leverage standard Data Quality Management (DQM) functionality to mimic the functionality our users were used to in 11i. This was done by setting the HZ: Enable DQM Party Search profile option to YES at the site level and the HZ: DQM Resolution for Party Name Searches that Exceed Maximum Number of Results to Perform Standard SQL Search at the responsibility level. Next we ran the DQM Staging Program using the Trading Community Manager responsibility (selecting STAGE_ALL_DATA for the staging command). Lastly, we bounced apache and cleared the cache on all middle tier servers. After doing this, the Advanced Search button appeared on the Customer screen (see Figure 5). Clicking the Advanced Search button and typing `<criteria>%` acted the same as if we had entered `%<criteria>%`.

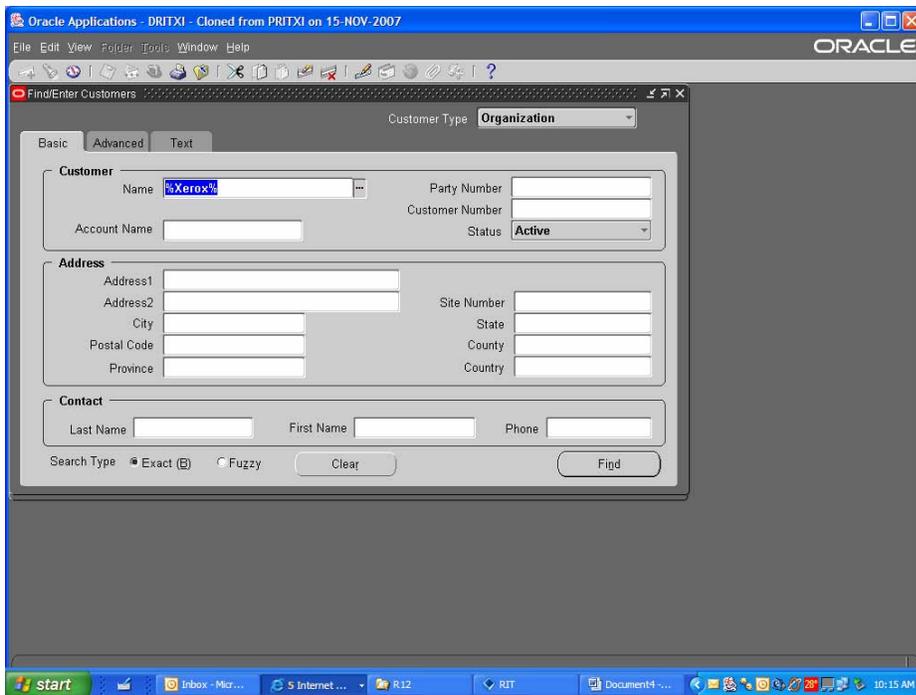


Figure 3 - 11.5.9 AR customer search screen

It is strongly recommended that anyone considering the R12 upgrade review the appropriate Functional Upgrade Guide: Release 11i to Release R12. For the Financials and Procurement modules, this is part number B31543-01. These documents are available via Metalink and the Oracle Technology Network (otn.oracle.com).

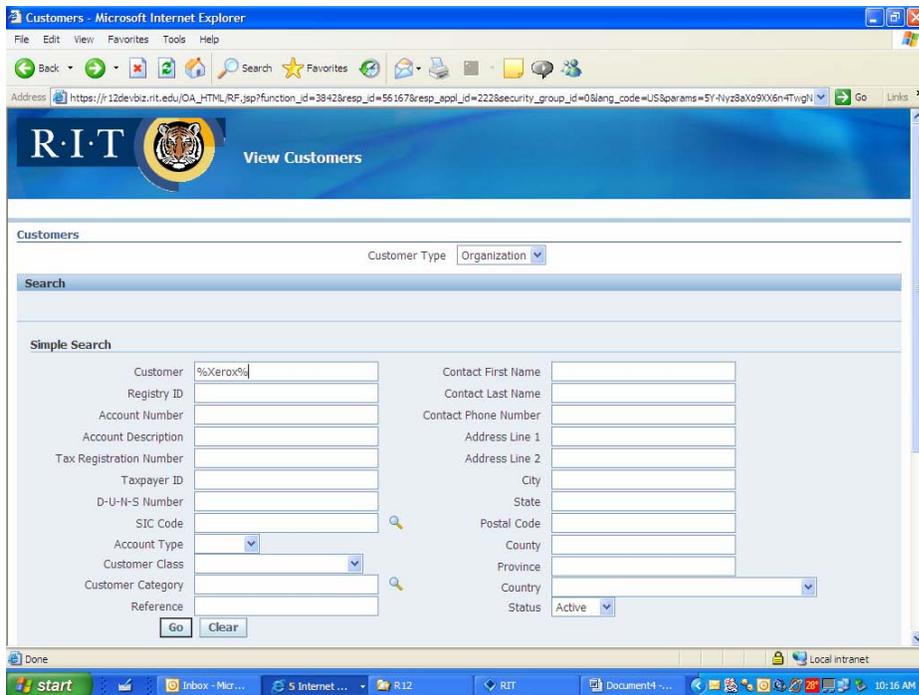


Figure 4 - R12 AR customer search screen

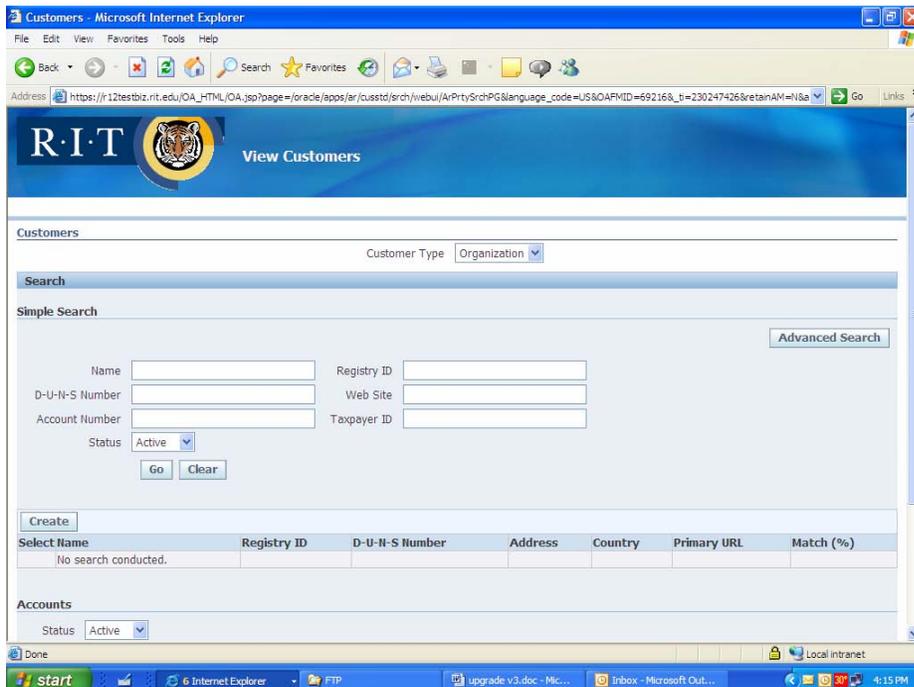


Figure 5 - Post DQM enabled customer search screen

Upgrade process

As stated previously, Oracle on Demand did the actual upgrade of our 11i instances to R12. The process we followed was to clone our production 11i instance to our 11i development instance. After verifying that the clone was completed successfully, we would turn the 11i development instance over to OoD. During that time they would perform all of the pre-upgrade steps that needed to be done in an 11i instance,

including backing up our HR audit data and disabling HR auditing. Once those steps were completed, they would take a backup of the 11i database, and then restore that database in the new R12 instance, where they would continue with the R12 upgrade steps. Once the upgrade was completed they would perform post upgrade steps that had been identified (including re-enabling HR auditing as well as other steps that were identified after each CRP) before turning the instance over to us. At that point we would execute any post upgrade steps we needed to do (e.g., change profile options, setup values, move modified CEMLI's) before making the instance available to the users for general testing.

The table below lists the patches directly related to the upgrade that we have applied to our R12 test instances to date. Note that the patches applied to our instances are specific to our implementation and may not be appropriate for other sites. The information is being provided to show the number and types of patches we needed to apply.

Patch	Description	Comments
5120936.11i	TUMS for R12: TO DELIVER TUMS UTILITY FOR UPGRADES FROM 11I TO R12	Applied in 11i instance
5233248.11i	SLA PRE-UPGRADE PROGRAM MODIFICATIONS FOR 11I	Applied in 11i instance
4502962.A	Minipack 4502962	
4440000.0	Oracle Applications release 12	
4377566.A	Applications interoperability patch for JRE 1.5.0_X plugin	
5051400.R12		
6272715.A	R12.AD.A.DELTA.3	
6141000.0	Oracle eBusiness Suite 12.0.3 release update pack (RUP3)	
6507026.A	HRGLOBAL: 12.0.3 supplemental files	
6133333.A	YE2007P1: Americas (US, Canada, Mexico) year end 2007 update – 1	CRP's 2 & 3 (not available during CRP 1)
120GLOBAL	HR global driver for R12	
5717700.R12	Consolidate on-line help for 12.0.3	
5843357.A	R12 apps patch for fixes required for em plug-in	Applied as result of issue in CRP 1 upgrade process
6026929.A	On demand: V2 plug-in: status of ICM shows wrong EM	OoD specific patch
4630372.A	R12.IZU.A	CRP2 only
6265820.A	R12.IZU.A.DELTA.3	
6361318.A	ERROR WHILE SETTING UP THE CHECK LIST	
6333519.A	WORKER FAILS ON LOAD OF APIAWATT.LDT ORA-00001 HR.AME_ATTRIBUTES_PK VIOLATED	CRP3 only (upgrade issue)
6401588.A	HRGLOBAL: R12 BRANCHLINE GENERIC DRIVER PATCH	CRP 3 only (upgrade issue)

Table 1 - Patches applied during upgrade process

During our first upgrade, OoD encountered some issues with the upgrade process. The fixes to these issues were incorporated into each subsequent upgrade. Unfortunately, each subsequent upgrade encountered new issues during the upgrade process, that hadn't been previously encountered, that required assistance from either the R12 upgrade team or product support for a specific module in order to correct them. Our hope is that we will not encounter this situation during our fourth, and final, upgrade. Based on our CRP3 upgrade, we anticipate it will take Oracle on Demand 100 hours to perform their part of the upgrade. We're still estimating how much time we need to perform our post upgrade activities.

Upgrade process issues

We encountered numerous issues during our R12 upgrade testing. We categorized issues as either “upgrade” issues (a program that was run once to move data / update data as part of the actual upgrade process) or “product” issues (an issue that affected RIT’s ability to use a specific module in R12 the way we were using in 11i). This section will discuss the upgrade process issues; the next section will address the product issues.

After completing the upgrade, we found that we couldn’t create external candidate accounts in iRecruitment. After support spent weeks investigating the issue, we learned that the iRecruitment functionality had been moved from the PER module (which places source code in the \$PER_TOP directory) to the new IRC module (introducing the new \$IRC_TOP directory). Apparently the upgrade script hadn’t migrated the \$PER_TOP references in iRecruitment functions to \$IRC_TOP. The manual updates have been added to the upgrade process performed by OoD.

After encountering issues trying to get taxes to work correctly in AR, we learned that the Vertex tax data that we use wasn’t upgraded to the R12 data files during our initial upgrade. After several attempts we finally got the R12 Vertex data loaded. As of the time this paper was written, we were still experiencing issues getting taxes to work with AR as expected.

Product Issues

This section will share some, not all, specific issues we encountered. The intent of this section is to give the reader a sense of the type of issues we experienced rather than being a comprehensive list of every issue we experienced.

The majority of critical product issues we encountered were in the Accounts Payable and Accounts Receivable modules, as well as the new related modules used by those core modules. In general terms, our issues with AP were primarily related to creating and maintaining suppliers. We also had issues with the standard remittance functionality, so we ended up writing a custom version for us to use. In AR most of our issues were related to Vertex taxes not being installed and the new collections functionality.

Regarding the remainder of the Financials modules that we use, the limited Cash Management functionality we’ve deployed worked exactly as expected. In general, Purchasing and General Ledger also acted as expected once some configuration changes were made. Fixed Assets encountered issues with mass allocations and depreciation.

In 11i our users use fields like alternative name and some descriptive flexfields (we use a University ID to uniquely identify all employees and students) to query individuals in AP. We found that we were unable to add these fields to the new web based AP search screens. Instead, using personalizations, we added these fields to the search results so that the users could use them to validate that the individual they selected was the correct one. We also learned that searching on the “Pronunciation” field was a case sensitive equivalent to searching on alternative name, so adding a tip to this field also assisted our users.

We discovered that numerous standard AP and Purchasing reports completed with no data when run immediately after the upgrade. We applied over half a dozen patches after the upgrade process was completed to get all of these standard reports to work correctly. Additionally, there were several AP reports that were configured to use BI Publisher that were shipped without the data templates the configuration referenced. In these cases we simply defaulted the output back to “text”. Payroll wasn’t exempt from the reporting issues as several standard Payroll reports required us to execute the Generate Run Balance Program for the Social Security and Medicare tax balances before data would properly appear on them.

As expected, iRecruitment experienced numerous issues, including the fact that we couldn’t create an account as an external candidate. We also noticed that many of the customizations that had been implemented in our 11i version of iRecruitment didn’t translate properly when they were upgraded to 12.

We encountered several important issues in HR that we didn't anticipate encounter. One was related to our use of form templates to streamline the entry of student worker applicant and employee data. Another issue we encountered was that the Security List Maintenance program wouldn't work correctly in batch mode (for all responsibilities) although it would work correctly for an individual responsibility. This impacted our ability to enforce responsibility dependent security rules throughout the applications.

An additional issue we encountered with HR is that the data synchronization that is supposed to occur between AP and HR for employees wasn't working correctly. After waiting several weeks for Oracle product support to provide us with a fix, we decided to write a custom program to do this data synchronization since we were unable to work on numerous extensions until the data was synchronizing properly. As of the time this paper was written we still hadn't received a fix from Oracle.

To date, in the limited testing we've done, no major product issues have been uncovered in Payroll.

We also experienced issues that crossed modules. For example, numerous value sets (custom and standard) needed to be modified in order for parameters to work correctly when running concurrent programs and reports.

The table below lists the publicly available patches we applied to address the issues we encountered. We were also provided with numerous password protected one-off patches to fix our issues.

Patch	Description
6350666.A	Amount value is appended with 'PT' if negative currency profile is '(XXX)'
6353624.A	Org setting issues with reports
6365474.A	TST1203:HCM X BUILD 2: PDF FOR US GROSS TO NET ERRORS OUT
6391632.A	APP-FND-01238 CANNOT SET VALUE FOR FIELD LINE_SUM_FOLDER.COST_CENTER_SEGMENT
6430537.A	No data in transaction detail report
6523981.A	This patch resolves the issue of bank account and assignment details not refreshed properly and displaying banking details of other suppliers
6687238.A	In Oracle Purchasing, Printed Requisition report ends with no data found.
6698108.A	PEOPLE GROUP FLEXFIELD NOT WORKING WITH CUSTOM TEMPLATE
6714400.A	RAXPTL: AR PAYMENT TERM LISTING SHOWS 'NO DATA FOUND'
6728124.A	ERROR LOADING TAX PARTNER DATA FILE
6743991.A	ISSUES WITH THE TAX RECONCILIATION REPORT
6746584.A	In Oracle Purchasing, View Output for PO reports shows no data found.
6764546.A	In Oracle Purchasing, the reports "Blanket and Planned Purchase Order Status Report", "Cancelled Requisition Report", "Requisition Activity Register" and "Requisition Distribution Details Report" errors out or returns No Data Found
6831127.A	1OFF:6524642:12.0.3:12.0.3:R12RUP2:APP-FND-01030 ERRORS ON GATHER SCHEMA STATIST

Table 2 - Publicly available patches applied to correct product issues

RIT Extensions

Numerous RIT concurrent program extensions are based upon standard Oracle functionality (we make a copy of the standard oracle source code and modify it, registering the new custom functionality as "*RIT <standard program name>*"). For many of these extensions the standard Oracle functionality the extension is based upon changed as part of the upgrade. This required us to completely re-customize those extensions.

Other extensions that we have developed rely on the use of standard Oracle tables and / or views. Many of our extensions were dependent upon the po.po_vendors table that is no longer available in R12. We needed to revisit each of these extensions and re-write them to use the proper new R12 tables and / or

views. Most of the changes that we needed to make to our extensions were to the extensions in the Financials modules, specifically GL and AP.

Lastly, we needed to re-apply our customizations to Oracle's standard workflows. The changes we needed to make to our extensions were the type and number we expected. All of this extension related work was anticipated, although some of it took longer than expected to complete.

We also created some new extensions in order to enable our user community to continue using their existing business processes even though the underlying Oracle eBusiness Suite functionality no longer supported those processes out of the box.

Discoverer

RIT uses the PC client Discoverer Desktop and Administrator software as well as the web based Discoverer Viewer in our 11.5.9 implementation. Discoverer Viewer is working as expected in our upgraded instances. We faced challenges in getting the client software to work with the upgraded environments.

Today, RIT uses Discoverer Desktop and Administrator version 10.1.0.48. When we tried to connect to our R12 instances using the same version of the software and the needed changes to tnsnames.ora, we would get the "invalid username / password" error message. We discovered that we needed to make the following changes to all desktops running Discoverer Desktop and/or Administrator in order to be able to access our R12 instances:

1. Place a version of PERL on the desktop (step 2 requires this)
 - o Our version of PERL was obtained from a desktop version of the 10gR2 database we had installed at RIT. We simply took the PERL folder from this installation and copied it to the BI_TOOLS_HOME directory on PC's using Discoverer.
 - o Create new Windows system variables
 - ORACLE_HOME was set to the same path as BI_TOOLS_HOME
 - PERL5LIB was set to the same values as those found on our desktop 10gR2 database installation.
 - o Windows system variable PATH was updated to include the PERL5LIB system variable as well as the ORACLE_HOME\perl\5.6.1\bin\MSWin32-x86 directory which contained the PERL executable at our installation
2. If you're not running at least version 1.0.0.0.57 of the desktop **opatch** utility, upgrade using using patch 2617419
3. Upgrade the Desktop and Administrator client software to 10.1.2.50.0x using password protected patch 5592391 (we were on version 10.1.2.48.18)
4. Add two new Windows registry settings under the HKEY_CURRENT_USER -> Software -> Oracle -> Discoverer 10 -> Database folder
 - o EnableTriggers REG_DWORD value 1
 - o DefaultPreserveDisplayPropertyForRefresh REG_DWORD value 1
5. Use <instance>.dbc files provided by your DBA
 - o Create a directory called *secure* in your Windows Discoverer home directory
 - o Create a Windows system variable FND_SECURE that points to that directory

Note that you will need to reboot your PC in order for the system variables to take effect.

Our challenge is how to propagate these changes across approximately 50 desktops without personally visiting each desktop.

Summary

This paper provided an overview of some of the experiences of Rochester Institute of Technology's R12 upgrade project team. Our initial project plan, the progress made to date against that plan and factors that were considered in developing the plan were discussed. Issues we encountered were generically

described along with the associated resolution. This should allow for broader application of the information being presented.

Generally speaking, anyone considering undertaking an upgrade to R12 in the near future should build substantial contingency time into their plans. Even for experienced 11i users things take significantly longer to accomplish in R12 than they do in 11i.

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About the author

Ms. Sowers works in the Information and Technology Services division at Rochester Institute of Technology where she is the Assistant Director for Financial and Administrative Systems. She has over 18 years experience with Oracle technology, including working with the Oracle eBusiness Suite Applications for over 12 years. She can be reached via email at kimberly.sowers@rit.edu.