Maximizing the value of HP Quality Center for testing within an Oracle E-Business Suite environment

Lessons learned from Harvard Pilgrim Health Care

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Executive summary

Complexity and change is inherent in any large business application implementation, presenting a constant challenge to quality assurance (QA) professionals. The application environment could potentially include dozens of interconnected application modules, requiring hundreds of updates and changes throughout the year, and as a result, thousands of regression tests. Not surprisingly, manual methods of managing the testing process across this dynamic environment can quickly become cumbersome, time consuming, and prone to error.

HP Quality Center is a suite of tools that provide a consistent, repeatable, and efficient means for quality testing and management of business applications, including Oracle E-Business Suite. These tools incorporate a wide range of features and capabilities for creating and executing tests, as well as managing defects. As a result, HP Quality Center can significantly reduce the time and cost of testing, mitigate risk for your enterprise, and enable more successful delivery of high-value applications. Yet, maximizing the value of HP Quality Center often goes beyond the software itself. Carefully planning an application release strategy, properly organizing and structuring content within the tools, and following a phased approach to introducing new testing processes into your organization can all have a major impact on the success of your quality program.

Harvard Pilgrim Health Care (HPHC) is a not-for-profit health plan that provides a variety of benefit options and funding arrangements to approximately one million members in Massachusetts, New Hampshire, and Maine. HPHC has applied its regression-testing methods with impressive results. Faced with a growing Oracle E-Business Suite environment with approximately 20 individual application modules, HPHC's traditional approaches of manually performing and tracking regression tests could no longer keep up. Like many organizations in this situation, HPHC sought a tool that could help regain control of the testing process and produce greater efficiency going forward. After evaluating a number of vendors and their offerings, HPHC ultimately chose HP Quality Center.

In the following pages, this paper examines HPHC's experience implementing HP Quality Center, providing valuable insights and guidance for other organizations charged with assuring quality for Oracle applications.

Adopting a new QA methodology

As HPHC examined its business requirements and explored ways to optimize available resources, the company's quality professionals determined that software alone would provide only part of the solution. Therefore, to better manage the constant bombardment of updates and changes across 20 Oracle® application modules, HPHC's QA team established a more controlled release strategy for Oracle, allowing application upgrades just three times per year. This strategy enabled the organization to better plan and manage testing for these upgrades, minimizing disruption to business users, and reducing the burden on IT staff.

With a controlled release strategy in place, HPHC was in a far stronger position to leverage the capabilities of HP Quality Center for its Oracle E-Business Suite environment. In the following sections, we will examine more closely the process HPHC followed to introduce these tools into the testing process.

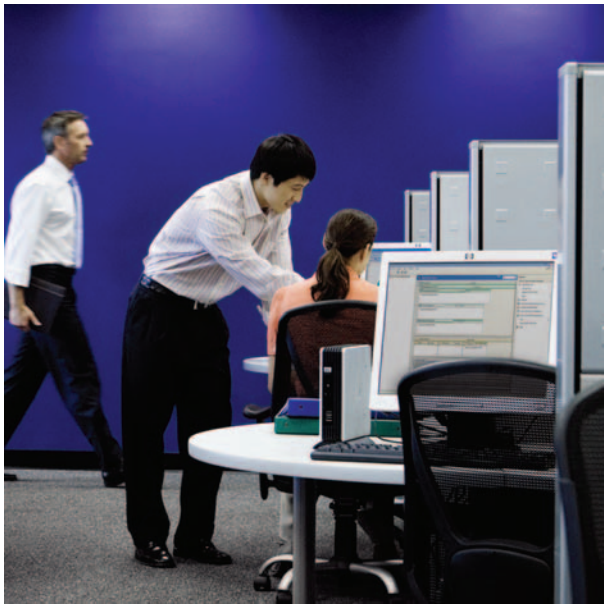
PHASE 1—Target high-value, low-risk opportunities

While typically much attention is placed on full regression testing with business users, HPHC looked first at the functional testing performed at the IT level. This was a strategic decision for two reasons. First, it provided a smaller, contained environment that offered rapid return on investment by automating tasks that would free IT staff. Second, it allowed HPHC's QA team to gain valuable experience with the HP tools prior to a broader roll-out to the business users.

In this initial phase, HPHC used the QuickTest Professional tool to automate scripts that enable IT staff to test the basic functionality of an application prior to engaging the business users. By utilizing QuickTest Professional on a test instance, the QA team was able to shadow an IT person and record each keystroke and mouse click taken to maneuver through the application. The objective was to create a script that could be run without manual input to test that an updated application functions properly.

To determine whether the test scripts pass or fail, the HPHC QA team also created checkpoints, which validate that the information produced on-screen is correct as the script navigates through an application. Although the QuickTest Professional tool would ultimately automate these functional scripts, initially defining both the scripts and the checkpoints required a methodical, personal, hands-on process.

After receiving initial training on the QuickTest Professional tool, HPHC's QA team developed a plan for how to use the tool to record keystrokes and identify checkpoints. It was critical to first define a very structured approach for asking the right questions and organizing the information being gathered into a form that would be repeatable and facilitate troubleshooting if a script failed. This entailed sitting down with the IT tester and navigating through the application step by step, recording with QuickTest Professional, and determining the key checkpoints along the way. The key is leveraging the knowledge of IT, but structuring the manner in which they share that knowledge in order to make the most efficient use of the QuickTest Professional tool and ultimately produce scripts with plenty of mileage. For example, the QA team member provided guidelines to ensure the script had the most potential for re-usability by structuring navigation back to general-use menu screens at the end of each action step.



Tip: Leverage the knowledge of IT, but do so in a highly structured manner in order to make the most efficient use of the QuickTest Professional tool and produce scripts that will provide a lot of mileage.

By automating these scripts, HPHC has freed up a significant amount of IT time. Today, for example, if one Oracle module is updated, which requires functional testing on all related Oracle Modules, rather than engaging multiple IT professionals to spend their time clicking on items to determine if the right screen appears, one person in QA can run all the scripts without engaging IT. This has reduced the time to complete these tests from a minimum of five days to just one day. And it allows IT to remain focused on more strategic, high-value business projects. Most important, the automated scripts ensure that updated Oracle applications are validated efficiently with minimal chance for error before handing them off to the business users for full regression testing.

PHASE 2—Start small, grow methodically

To organize scripts in a central repository, as well as manage the testing process from end to end, HPHC implemented additional capabilities within HP Quality Center to manage and govern quality processes and automate software testing. With these features, QA professionals can better manage software requirements, plan testing activities, schedule and run tests, manage defects, and generate reports and graphs of quality metrics.

Rather than attempt to transform all its QA processes at once, HPHC followed a strict methodology of starting small, achieving incremental successes, and gradually expanding. Therefore, when first implementing Quality Center, the QA team started with the automated scripts that had been created for the application functional tests.

Because they controlled the automated scripts, the QA team had an opportunity to gain experience with Quality Center using a small, manageable inventory and without yet involving the business users. As a result, the team was able to not only learn the features of Quality Center but also create a system for organizing the scripts. For example, the team designed naming conventions for test sets and folders so that, just by the test set name and folder location, a user will know what Oracle module was tested, which instance, and

Project milestones

Q1 2004	Opportunity for automation within the Oracle eBusiness Suite (EBS) identified
Q2 2004	HP Quality Center chosen, purchased
Q4 2004–Q4 2005	**Phase I:** QuickTest Professional rolled out in IT for existing EBS modules
Q1 2006	**Phase II:** QuickTest Professional expanded to include new CRM module; CRM users adopt Quality Center for regression testing
Q2 2006	**Phase II:** Quality Center rolled out for remaining EBS modules as central repository for all manual and automated scripts

The QA team codified procedures for tying defects directly to specific test runs, which would ultimately pay dividends in improved cross-department communications.

in what round of testing. In addition, the QA team codified procedures for tying defects directly to specific test runs, which would ultimately pay dividends in improved cross-department communications, better reporting, more effective defect tracking, and greater efficiency through multiple rounds of regression testing.

Tip: Start with a small inventory of test scripts, gain experience with organizing test sets and using the features of Quality Center, then expand your script inventory gradually.

PHASE 3—Centralize management of all scripts

Armed with the knowledge and experience of working with its automated scripts, HPHC's QA team was ready to introduce Quality Center to its business users. Again, before engaging its entire base of existing business users, the QA team worked with a new group of Oracle users who would have to be set up to perform regression testing for the first time. In this way, the team could further refine procedures within Quality Center without disrupting users who had previously established manual testing practices.

This pilot group enabled the QA team to put Quality Center through its paces, from running tests, to tracking defects, to reporting. With general proficiency in Quality Center now strong, the team was ready to roll out Quality Center to all the remaining Oracle business users. All information that had previously been tracked using spreadsheets or other manual methods was then entered into Quality Center and organized into a hierarchical structure.

At this point, for the first time, all of HPHC's automated IT test scripts, as well as the full complement of manual business test scripts, were inventoried, managed, and tracked in Quality Center. As a result, everyone involved in regression testing has a common source of information and much broader visibility into test progress, defect tracking, and application release.

Getting the most out of HP Quality Center

HPHC's experience with Quality Center is a model for other organizations seeking to improve the efficiency and effectiveness of their regression testing processes. Within Quality Center, HPHC uses several key features including Test Plan, Test Lab, Defect Log, and Reporting.

Organizing test plans

All scripts, whether automated IT scripts or manual business scripts, are housed in the Test Plan module, providing an easily accessible inventory of scripts (or Test Plans) that can be used for each round of testing for the full suite of Oracle applications. To make it easy for users to identify the appropriate test plan for their needs, HPHC's QA team now places test plans in folders corresponding to the Oracle modules for which they are designed. For each test plan, the team also provides a brief description of the test. For select modules, the manual steps involved in executing the test are also included.

Connecting test runs and defect tracking

Test Lab is the heart of the test tracking process where every run of a test plan is tracked, along with a record of whether the test passed or failed. Related test plans are grouped into test sets based on the corresponding Oracle application module. The test sets follow a naming convention that identifies the test, the instance, and the module for which it was run.

In addition to running test plans, business users also log defects through the Test Lab. In this way, all the information related to a specific test is connected, providing more detailed and insightful information for the business manager. If more information is needed about a defect and the status of its resolution, the business manager has a direct link to that information. In addition, the IT person working on the defect can get more information about the instance, module, and round of testing in which the defect occurred with a simple click. As a result, communication between business users and IT is improved, leading to faster and more effective defect resolution.

Tip: Carefully structuring your testing process to log defects for a failed test from within Test Lab rather than directly in the defect log is the key to creating meaningful reports and more efficient defect tracking.

Streamlining defect resolution

With all defects reported through Quality Center into a central log, HPHC has increased visibility into IT efforts to address reported problems. Because the entire process is managed through a central tool, there is also a valuable bridge back to the business users alerting them to re-test the module as soon as the programmer has finished fixing the problem. Also through Quality Center, the programmer provides details of how the defect was fixed, which provides application managers with a historical knowledgebase of what problems have been fixed with what solutions to improve long-term application management. For example, if a similar script is run in the future, the manager will know what potential problems to expect and how they can be resolved.

In addition, HPHC customized Quality Center to provide additional details useful to the IT staff. For example, beyond the basic status of a defect, IT also wanted to know whether the defect is critical to launching the application. In certain cases, the problem may have low impact and therefore could be deferred until after the launch. Therefore, the QA team added several list items to the status field. "Deferred, Post Go-Live" enables IT to keep track of non-critical defects so they can be addressed following the application launch. In the past, individuals would keep this information in a variety of forms; but today, it is organized in one place for easy reference and effective follow-through. "Fixed –changes" and "Fixed—no change" allow IT users to track additional details about each defect—for example, whether the defect was fixed with changes or not. If changes were necessary, then this information can be added to IT's master plan for appropriate follow-up. If no changes were necessary—such as a situation in which the defect was that a user pressed the wrong button—then no follow-up would be necessary.

Filtering is your friend.
Because multiple tests may be running concurrently, business testers and IT staff need a way to focus only on their individual assignments. HPHC employs filtering so that users logging in to Quality Center only see test runs and defects associated with areas of testing on which they're working. Users can also create a variety of filters to isolate certain rounds of testing, certain application modules, or other views based on individual needs.

By making this information searchable in the defect log, HPHC's IT staff can track their work more easily and ensure that all follow-up work is carried out.

Managing more effectively with detailed reporting
HPHC takes full advantage of the reporting capabilities provided by Quality Center, which is made possible by the well-planned structure of the test repository and the close integration of test runs with associated defects. As a result, both business managers and IT managers can obtain the information they need to effectively monitor test progress and address issues affecting that progress.

Keeping security simple
Security features within Quality Center enable HPHC to manage user access privileges based on responsibility within a group. HPHC kept the organization very simple by defining only two groups: business testers and IT staff assigned to resolve defects. In addition, there are supervising IT staff with authority to close defects, and a business manager with broad oversight of the entire regression testing process.

Within this group, only business testers can log whether a test passes or fails, while only IT staff can update the defect status and ultimately close the defect. All users, however, can view the status of a test or defect to facilitate overall awareness and cross-departmental communications.

For HPHC's business managers, reports provide a comprehensive view of the testing process, including the status of which tests have run, who is responsible, which tests have passed or failed, etc. Reports also enable the business manager to sort information to gain an overall assessment of progress or to zero in on specific modules or test instances—all through a single screen.

In the past, test information would have involved making phone calls to the testers, relying on their subjective assessment. In addition, because Oracle application modules are tightly connected, tests often span two or more groups, which created the possibility of "buck passing," making it even more difficult to track down who is responsible for a test. Today, test runs and defects are entered directly into Quality Center, providing a central repository of all test details that eliminates guesswork. And with comprehensive oversight of the entire testing process, accountability is greatly improved.

IT managers at HPHC also gain greater insight for managing defects with reports that identify open defects, their urgency, the programmer or analyst responsible for resolving the defect, and all associated comments that have been logged. As with business reports, all the information is in one place so that everyone involved is working from the same information, which can be efficiently tracked and managed.

Looking ahead

Currently, HPHC has automated its IT functional test scripts and implemented a central management system for all scripts (automated and manual) using HP Quality Center. As a next step, the QA team plans to automate some of the manual application scripts for select Oracle modules. Throughout the process of adopting the HP quality solution, HPHC has followed a practice of taking slow, methodical steps to ensure incremental successes that build knowledge along the way. The team will continue this approach as its quality solution evolves.

Conclusion

As we have seen, HP Quality Center offers many valuable capabilities to gain control over regression testing to improve efficiency and enhance business outcomes in an Oracle E-Business Suite environment. In addition, Harvard Pilgrim Health Care has demonstrated how QA professionals can maximize the value of HP Quality Center through carefully planning a structured implementation and gradual rollout. As you evaluate your quality assurance practices and how HP tools may enhance them, consider these lessons learned by HPHC:

- Adopt a controlled release strategy in conjunction with implementing a centralized test management solution.
- Start with a small, controlled set of scripts, such as IT functional application scripts, to gain familiarity with the tool.
- Automating and centrally managing IT scripts returns value quickly with minimal risk.
- Time and effort invested in up-front planning and perfecting pays off with scripts that deliver value for many years.
- When first engaging Oracle business users, choose a new application area to avoid "undoing" old practices while trying to perfect new ones.
- When rolling out the solution to other business users, start by centralizing all manual scripts in the tool before attempting to automate any business scripts.
- Because of the interconnectedness of Oracle E-Business Suite modules, choose test naming conventions that associate each test to a specific module, instance, and testing round.
- To get the most out of Quality Center's reporting capabilities, be sure to log defects from within Test Lab.
- Implementing a comprehensive quality solution is a long-term initiative that should be approached slowly and methodically to achieve the highest return on your investment.

By capitalizing on the lessons learned by Harvard Pilgrim Health Care, you can successfully introduce HP Quality Center to your QA organization. As a result, you will be in a strong position to reap the rewards of centralized and automated QA management, gaining more efficient and effective implementation of Oracle applications and upgrades, with reduced time, cost, and risk.

For more information on how HP can help you address the risks and maximize the value of open-source software for your enterprise, contact an HP representative, or visit www.hp.com/go/oraclesoftware

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