Optimizing manual testing with HP Business Process Testing software

Customer perspective white paper

Table of contents

About the author

Michael Warner is a quality assurance (QA) specialist in the quality assurance and testing organization at Raymond James, one of the largest financial services firms in the United States. He and his Quality Assurance team help developers and subject matter experts manage testing procedures for more than 200 applications that are critical to the success and competitiveness of Raymond James. He has been with Raymond James for four years.

Introduction

Global 2000 companies continue to rely on manual testing processes for up to 80 percent of go-live efforts according to analysts; and most shops still do not conduct any test automation at all. Yet, much of the innovation around functional testing tools and processes continues to focus on test automation.

There seems to be an underlying assumption that manual testing is a throwback—a necessary but inefficient practice that will one day be supplanted as technologies and processes mature and become more sophisticated. I hold a very different view, and I'm far from alone. I believe manual functional testing makes sense in many cases—both from a practical perspective and from an ROI perspective. I believe this will continue to be the case for many years to come, and that technology vendors should focus on improving manual testing processes, not just test automation.

HP has proven to my satisfaction that it is committed to delivering breakthroughs in efficiency for manual functional testing as well as automated testing—and to easing the transition from manual to automated testing when that transition makes sense.

This paper summarizes my experiences at Raymond James with what I consider to be a breakthrough product: HP Business Process Testing software. Using HP Business Process Testing software, our team of three QA engineers supports over 40 subject matter experts and more than 100 developers, and we have seen a 50 percent reduction in compatibility testing time. It has helped us optimize our testing and it has given us the flexibility to do manual or automated testing as we see fit.

This paper provides an overview of the product and how we use it, along with practical advice for those who are considering HP Business Process Testing software for optimizing their own manual processes or moving toward test automation.

Manual functional testing versus automated testing

The goal of functional testing is simply to verify that an application works as it should from the end user's perspective. Manual functional testing calls upon business analysts and testers to capture user requirements, prepare test plans and document their interactions with the application in order to validate the software's operations. Through test automation, functional test scripts that have already been validated can be quickly applied to every application that uses that particular component of software, so more tests can be done in less time.

There are many myths about both manual and automated functional testing. Many people believe that test automation is too expensive relative to its value; therefore it should be used rarely if at all. Others (such as agile developers) insist that automation of 100 percent of all tests is the ultimate objective.

There is no set formula; the relative merits of manual testing versus automated testing for your company will depend on many factors. The next sections examine a few of them.

Drawbacks to manual testing

While manual testing may be the best option for a high percentage of projects, it is not without its shortcomings. For example:

- Manual testing relies heavily on ad hoc practices, and there is often no formalization of processes and procedures within the QA organization or across departments and lines of business (LOBs)—so individual team members are constantly re-inventing the wheel.
- Manual tests can simply take too long—testers must tediously document each step of a test case and manually execute each test, reproduce defects, and so on.
- The dramatic increase in complexity of today's computing environments is amplifying test coverage requirements, creating more pressure to move to automated testing.
- Corporate globalization and geographically dispersed teams create a need for standardized testing processes, which manual testing does not readily facilitate.
- When there is no automated process for testing, there is typically no automated way to keep documentation synchronized with the testing process; each element of the test plan is a separate entity and every change must be managed and maintained individually.
- Manual tests are subject to higher risk of mistakes and oversights than automated tests.
- Manual tests do not allow the tester to create a data-driven test; data must be hard-coded into the test script or the test script must reference an external data file.

What's needed is a manual testing solution that makes the whole process more efficient—from test design to test creation to test maintenance and documentation. That is exactly what HP is trying to accomplish with HP Business Process Testing software for manual testing.

Why 80 percent of functional testing is still manual

Manual testing is typically far simpler and less expensive than automated testing, and it requires a much lower skill level to execute. Those are only the obvious reasons most functional testing is still done manually. In addition:

- Many applications and business processes simply do not benefit from automation. These may include non-critical legacy applications and business processes; single-use software components; applications that address low-level tasks; applications that do not require multiple builds, patches and fixes; applications that are tightly coupled with a particular type of hardware or configuration; and applications that support a limited number of concurrent users.
- The ROI of automation tools and processes often does not support their adoption. The move to automation must be carefully assessed from a skills perspective and a financial perspective. In many instances the QA team does not have experience/competence in automation. New tools and training can be expensive; new processes can be disruptive. Typically, automation takes three to four test cycles to break even with manual testing. So any testing tasks that require fewer test cycles might not be a good candidate for automation. You need to consider all these factors in determining the true ROI of automation.

HP Business Process Testing software for manual testing

Raymond James first began using HP Business Process Testing software three years ago when the product was known as Mercury and was still in pre-alpha release.

When HP introduced us to the concept behind the product, we were very interested. The value proposition was compelling: The product was designed to get beyond the limitations of previous-generation testing solutions such as capture/playback systems and test frameworks and usher in a new era of business-centric testing. It was the first product that streamlined testing for non-technical business experts.

The idea behind HP Business Process Testing software is to enable subject matter experts who have no coding expertise to quickly build tests for entire business processes. This greatly simplifies and speeds up the test design process, allowing QA/testing teams to start the test design process much sooner—during system design—and accelerate time-to-deployment. It also increases the productivity of both subject matter experts and QA teams because it engages them earlier, makes complex tasks simpler, and even helps keep the documentation in synch with current activities.

Equally important, HP Business Process Testing software for manual testing is designed to facilitate the transition from manual to automated testing at times when that transition makes sense from a business perspective.

Our initial concern was that HP Business Process Testing software was a test automation solution, not intended for manual processes. The latest release of HP Business Process Testing software has addressed this concern. Business process tests can be created for manual or automated functional testing—and can substantially increase the efficiency of both.

Test design: introducing the "component" concept

HP Business Process Testing software introduced the concept of re-usable business "components" for test design. Components are simply modules of a business process. Subject matter experts can use components to create a number of user scenarios, validate them and optimize the business process flow—all without ever having to touch any procedural code or keywords. For example, with the HP Business Process Testing software approach, there is a component called "log on" that includes all the various user steps in the log on process—launching the application, entering the user name, entering a password and clicking the submit button. The subject matter expert just selects the desired component from a tree-structured list (like the file manager in Windows®), then drags and drops it onto a HP Business Process Testing software workspace. This construct makes it possible to create data-driven manual test libraries in minutes.

Additionally, subject matter experts can copy and paste components, business process tests, and test sets within HP Quality Center software, so it is possible to leverage testing assets across multiple applications and different testing teams.

Key features for manual testing

HP focuses considerable effort and energy on features specifically designed to improve manual testing. Here are just a few of the features we find most helpful at Raymond James.

- **Parameterization**: Components can be set up to have a number of different parameters or user-defined data fields. The data that the script will use can be determined outside of the creation of the steps. The parameters can also be inserted into the actual test steps. When the test is executed in the HP Manual Runner software, the data that is set up in the parameters is inserted directly into the step during test execution.
- **Iterations**: Along with parameterization, the subject matter expert can set up the component to run multiple times on different sets of data. This allows the user to data-drive their tests. HP makes the process of adding iterations even easier by giving the user the ability to import data into a component from a comma-delimited file.
- **Maintenance**: When you make changes to applications, HP Business Process Testing software can show the QA engineer or subject matter expert which test components and tests need to be scanned for any needed updates. Changes are isolated to components, so there are fewer total changes and the changes are automatically populated to test cases.

How HP Business Process Testing software smoothes the road to automation

Once you design a manual test case in HP Business Process Testing software, it is easy to transition the same test case to automation. A lot of the hard work is already done.

To automate manual test cases, QA engineers can use HP WinRunner software or HP QuickTest Professional software to automate the existing componentized test definitions. Since the business components are re-usable, subject matter experts can leverage these same components in the design of future test cases—in hundreds of different test cases—with little to no extra effort. This eliminates the thousands of lines of redundant script code that used to be created, stored and maintained for each application.

Additionally, HP Business Process Testing software breaks the code out into small chunks for testing, so automation engineers can automate just one section at a time. New components are created as non-automated components, and testers can add manual steps to the component and run it manually within a business process test.

With HP Business Process Testing software, while you're designing the tests you're documenting at the same time. This saves an enormous amount of time because it is no longer a constant struggle to synchronize changes to the test automation script with the documentation. You can generate an updated test plan document at any time, in an instant, and you can export the documentation to Microsoft® Word or other word processors for reporting.

Because the automation and manual tests reside in the same component, users can run any test manually. A single business process test can contain both manual and automated components. Until every component in a test is automated, the test must be run manually. Even after every component in a test has been automated, the test can still be run manually, if the need arises.

Manual testing activities at Raymond James

The quality assurance team at Raymond James, which includes developers, automation experts and subject matter experts, manages testing procedures for more than 200 applications—many of which must be tested manually. This section examines the challenges the team was facing, the HP solution, how HP Business Process Testing software is used today at Raymond James and the results achieved.

Manual testing challenges

The quality assurance and testing organization at Raymond James began working with HP to help solve a key challenge: we had to find smarter ways to do manual testing. Our team is responsible for the quality of a large and growing portfolio of software projects that are critical to our organization, and our manual testing resources were not growing as quickly as the demand for test coverage.

Specifically, our quality assurance team oversees the testing of applications ranging from web services and client-server apps to home-grown financial services to third-party applications. Our staff includes three automation experts (one who must also do a lot of performance testing), 40 subject matter experts who test all the applications, and more than 100 developers.

Initially we looked at other solutions, but we were already using HP QuickTest Professional software and wanted to increase the return on that investment. HP then showed us a pre-alpha version of HP Business Process Testing software and we felt it had strong potential for our situation.

Who uses HP Business Process Testing software and how

Raymond James uses a standard waterfall development methodology. In the past, IT had silos of application development; each team had its own way of doing requirements, test cases, defects, and so on. Subject matter experts relied on their personal application experience for testing.

Today, we are strongly encouraging teams that are starting new projects to take advantage of HP Business Process Testing software for manual or automated testing. Our subject matter experts are responsible for creating the manual components, building tests from the components and assigning data and execution of tests.

The subject matter experts have indicated that they like the component construct of HP Business Process Testing software and the parameterization feature. It is far easier for them to build business process scenarios using components rather than test scripts, and they can iterate easily, one section at a time. Because this test data is saved in HP Quality Center software, our automation engineers can easily find all of the test data that they need.

We are using HP Business Process Testing software mainly for manual testing but also to automate selected tests. In general, we try to automate high-profile applications that are critical to the business and that meet the company's ROI standards. The decision about whether or not to automate also has a lot to do with the team that is handling the project—their skill sets and comfort levels working with automation tools and processes. Approximately 10 to 15 percent of our testing is automated today.

To build competency with HP Business Process Testing software across the organization, we provide teams with access to specialists for training and support. These specialists are extensively trained by HP and have considerable experience using HP Business Process Testing software.

Results and ROI

The productivity gains we've experienced with HP Business Process Testing software are primarily on the test execution side. We have seen substantial productivity improvements on test maintenance. This is because we modify a component in one place, and that change is replicated to all tests using that component. That is one of the reasons we have seen a 50 percent reduction in compatibility testing time.

The highest ROI for our implementation of HP Business Process Testing software stems from the transition to automation. With HP Business Process Testing software, we can take components that are already set up with data and simply automate those components. By developing the components in keyword, we can then pass the maintenance of the scripts back to the subject matter experts. This allows the automation experts to support more teams than they can normally support.

Today, very few of our tests are not run in HP Business Process Testing software—and that should be no surprise. There is no advantage to plain manual test cases. If you can take advantage of advanced capabilities such as parameterization and iteration, there is no reason not to.

Advice for implementing HP Business Process Testing software

This paper is not intended as a primer on implementation best practices, but here are a few lessons-learned and considerations for other companies making the move to HP Business Process Testing software.

- Start with HP Business Process Testing software for manual testing. It's not a total paradigm shift for subject matter experts and they'll see the benefits right away. You'll need their support if you're looking to use HP Business Process Testing software for automated testing in the future.
- Don't jump to the keyword-driven model prematurely. Make the move to the keyword-driven construct only after the subject matter experts really, truly understand components and are comfortable working with them.
- Don't scrimp on training. Make sure subject matter experts and automation engineers take full advantage of the training services HP, third-party vendors, and internal specialists provide because your subject matter expert's competence and confidence using the product is key to ultimate adoption and ROI.
- Give HP your feedback. Our experience is that HP is eager to work closely with customers to improve the product. One example: We spent several hours in a meeting with the HP R&D staff who were interested in what we wanted to see in the manual runner for HP Business Process Testing software. We told HP that we needed the ability to drill down to each individual step for all iterations, while at the same time be able to pass all the steps by passing the iteration. This was something very beneficial to us. That capability was delivered in the finished product. We could see our fingerprints on the design.

For more information

For additional details about HP Business Process Testing software, visit: **http://www.hp.com**

For more information about Raymond James, visit: **http://www.raymondjames.com**.

To learn more, visit www.hp.com/go/software

4AA1-1966ENW, April 2007

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