Polarion Software®

WHITE PAPER

GAME TESTING EVOLVES:

SOLVING QUALITY ISSUES IN A FAST GROWING INDUSTRY

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Executive Summary

The global gaming industry has enjoyed phenomenal growth and continues to be one of the fastest evolving industries. However, it has also paid a price for its success - the production cost of game design and publication has increased exponentially, leaving gaming companies with little room for error.

Most small to medium size gaming companies are forced to release products earlier than desired and that are not 100% ready. Predictably, user experience suffers, and they can lose credibility and consequently customers. Testing is even more crucial to these companies but is an expensive proposition that must be carefully planned and managed for maximum efficiency.

The larger gaming studios focus on reducing the time it takes to get games market ready, where they have a tendency to reduce testing cycles while demanding the same level of testing, thus further increasing the pressure on the QA department.

In the early days of computer and video games, development was in charge of all the testing. No more than one or two testers were required due to the limited scope of the games. In some cases, the programmers could handle all the testing themselves.

As games become more complex, a larger pool of QA resources called "Quality Assessment" or "Quality Assurance" becomes increasingly necessary. Most game publishers employ a large QA staff for testing various games from different developers. Despite the large QA infrastructure most game publishers have many developers but retain a small group of testers to provide QA on demand.

Now, most game developers rely on their highly technical and game savvy testers to find defects/bugs in either the programming code or graphic layers. Game testers usually have a background in playing a variety of different games on a multitude of platforms. They must be able to notate and reference any problems they find in detailed reports, meet deadlines with assignments, and have the skill level to complete the game titles on their most difficult settings. Though the game tester position is typically very stressful, competitive, and offers little pay, it is nevertheless highly sought after as it opens the door to a rapidly growing industry.

A common misconception is that all game testers enjoy alpha or beta version of the game and report occasionally found bugs. In contrast, game testing is highly focused on finding bugs using established and often tedious methodologies before the alpha version.

The Role of a Game Tester

Video game testers play a crucial role in the development of new video games. Game testers put games through the paces while they are still in development to ensure gamers have a good experience. They also conduct video game QA, or quality assurance, by finding mistakes, bugs, and other problems that could annoy or turn off the gaming community if they are not addressed.

Video game testers must have lots of patience, be methodical in their approach, and have a keen eye for details. They must be good communicators and have some understanding of computer hardware and software. It is a fast pace environment in which testers must work well under intense pressure to deliver results quickly and precisely.

A key role of a game tester is to properly document the behavior of a game while testing for not only defects but also gaming experience. The gamer must have access to a system that allows easy methods to document bugs using the following process:

Identify incorrect program behavior that is analyzed and identified as a bug.

The bug is reported to the developers using a **defect tracking system**. The circumstances of the bug and steps to reproduce are included in the testing report. Developers may request additional documentation such as a real-time video of the bug's manifestation.

Analysis. The developer responsible for the bug, such as an artist or game designer, checks the malfunction. This is outside the scope of game tester duties, although inconsistencies in the report may require more information or evidence from the tester.

Verification. After the developer fixes the issue, the tester verifies that the bug no longer occurs. Not all bugs are addressed by the developer. For example, some bugs may be claimed as features (expressed as "NAB" or "not a bug") and may also be "waived" (given permission to be ignored) by *producers, game designers*, or even lead testers according to company policy.

The Challenge

Video game testers often work on "alpha" or even earlier versions of a game. Testing this version is aimed at finding and fixing major and fatal flaws early. Missing a major flaw can be very costly to the video game creator/publisher. The earlier or more severe the flaw, the more additional code will be built upon it and the harder it will be to fix it later in the process. For this reason, video game testers who are skilled at approaching the game from various angles are a vital part of the development team.

For example, Madden NFL 2008, a hugely popular game series, had fans complaining about numerous bugs and even labeling it "unplayable" [source: ConsumerAffairs.com].

Another example - Hardware problems, such as the alleged crashing problem cited in a now settled lawsuit against Microsoft's Xbox 360, can also take a bite out of company profits [source: Todd Bishop's Microsoft Blog].

Fan feedback on the internet and social media can do irreparable damage to a company's brand. For these reasons, competent video game testing is crucial to gaming companies.

There is a need to test production level (not necessarily ready) software at a frenetic pace in order to find bugs early and quickly, where gaming companies sometimes [feel that they have to] resort to using poorly adapted tools and processes because of time constraints and general lack of adaptable tools ...

Game Software Testing Methodology

There is no standard method for game testing, and most methodologies are developed by individual video game developers and publishers. Methodologies are continuously refined and may differ for different types of games. For example, the methodology for testing an MMORPG *(Massively multiplayer online role-playing game)* such as World of Warcraft will be different from testing a casual game. Many methods such as unit testing are borrowed directly from general software testing techniques.

Solution

Accelerate testing by using Test Management Software

What if you could use a testing platform to manage all of your testing activities that is easy to access and allows you to post defects on the fly?

Testing software should be an accelerator to your process and not an impediment. Creating and managing test cases should be as simple as a click of a button and be easily traced back to the original requirements while auto generating defects when your test case fails.

Workflow Engine

Typically, there is an existing process in place for most gaming software development and testing. Although not perfect, the process relies on expediency and quality.

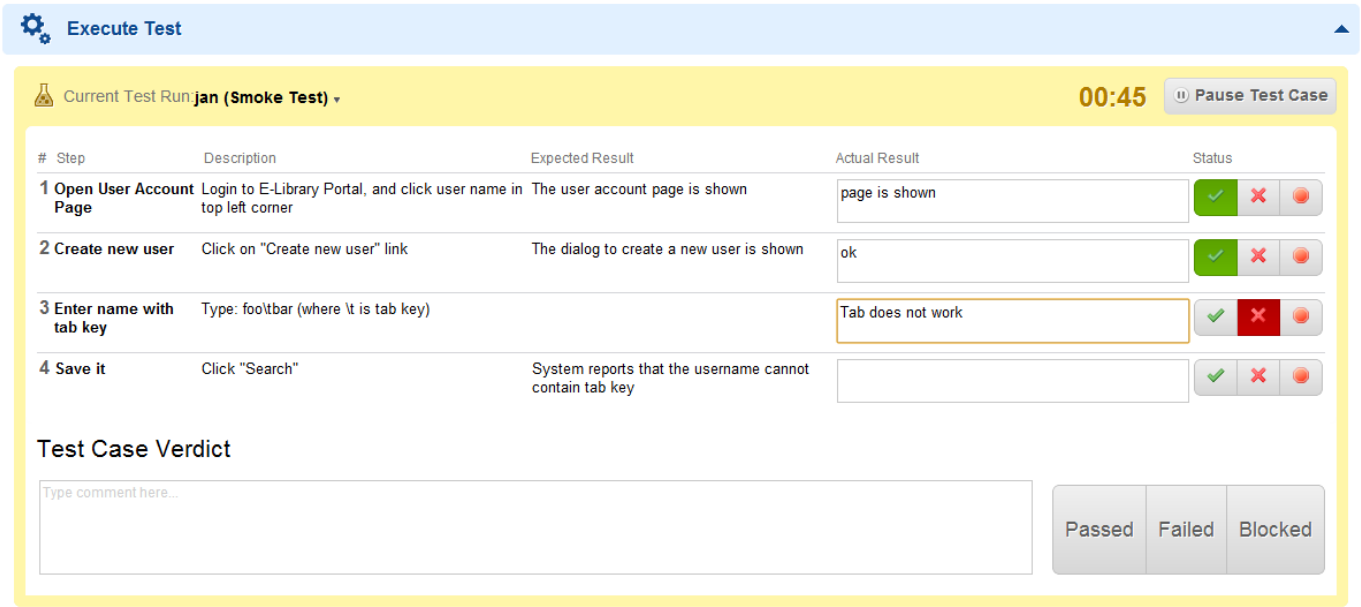
Fully integrating our customizable workflow engine with your testing environment allows you to continue with your existing process while automating many mundane tasks that streamline what is often a tedious methodology, thus allowing you as a game tester more time to focus on what is important.

If your game design company does not have a set methodology in place for managing your game testing process, Polarion facilitates the implementation by offering a predefined workflow that allows you to create tests that can be applied to the following for video game testing:

Functionality testing

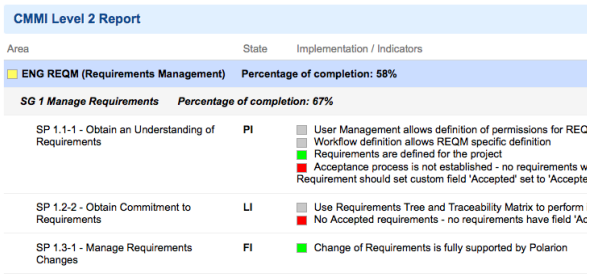
Functionality testing is most commonly associated with the phrase “game testing,” which basically means playing the game in some form. Functionality testing does not require extensive technical knowledge. Functionality testers look for general problems within the game itself or its user interface such as stability issues, game mechanic issues, and game asset integrity.

Polarion QA provides the facility to provide user instructions on test cases for functionality testing as well as the mechanisms to report the results with Test Runs.



Regulatory and Compliance Testing

Compliance testing is the primary reason for the existence of game testing labs. First-party licensors for console platforms have strict technical requirements titles licensed for their platforms. For example, **Sony** publishes a *Technical Requirements checklist* called TRC, **Microsoft** publishes TCR *(Technical Certification Requirements)*, and **Nintendo** publishes a set of "guidelines" *(Lotcheck).* Some of these requirements are highly technical and fall outside the scope of game testing. Other parts, most notably the formatting of standard error messages, handling of memory card data, and handling of legally *trademarked* and *copyrighted* material, are the responsibility of the game testers.



Even a single violation in submission for license approval may have the game rejected, possibly incurring additional costs in further testing and resubmission. In addition, the delay may cause the title to miss an important launch window, potentially costing the publisher even larger sums of money.

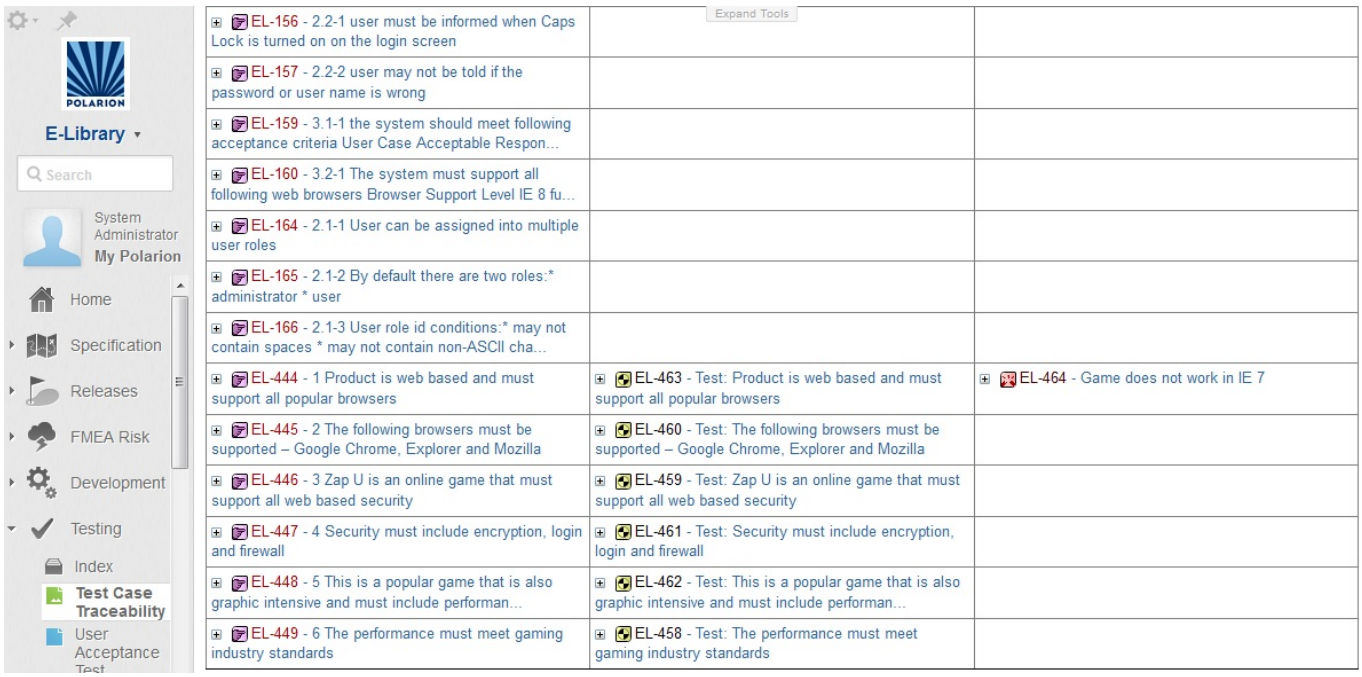
The requirements are proprietary documents released to developers and publishers under confidentiality agreements. They are not available for the general public to review, although familiarity with these standards is considered a valuable skill to have as a tester. With Polarion, all requirements are recorded and can be linked to every single test case that is generated for testing. Additionally, any test case that fails can automatically create a defect that notifies game designers of the status and the issue at hand. All tests can repeatedly be verified.

Templates for compliance can be created and continuously re-used for managing all of your licensing requirements while linking all test results to all technical requirements.

Traceability and Communication

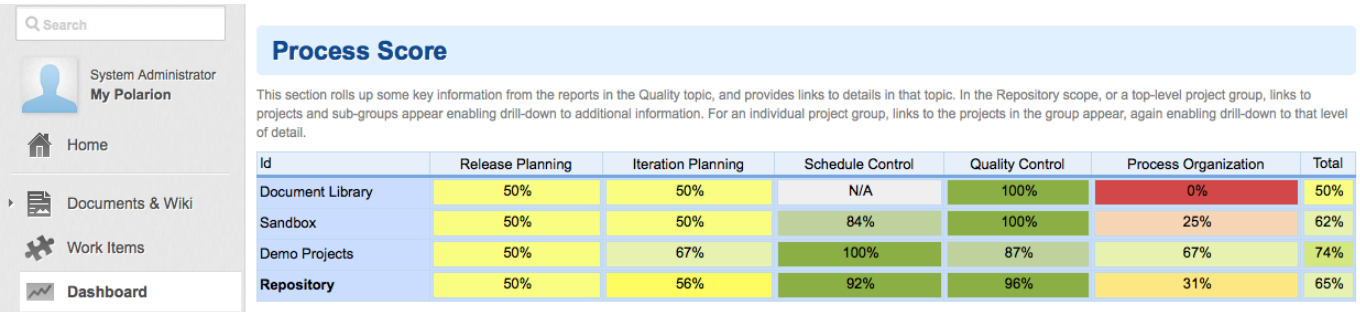
Tracking changes are crucial to the development of any gaming software, as testers need to know what and why they are testing. When development makes changes, testers need to know what the impact will be and finally, when a game tester finds bugs, everyone needs to know when and the level of severity.

With **Polarion's linking capability**, everyone knows what is exactly going on throughout the entire development process. All artifacts are stored in a central repository and with a click of a mouse can be connected to any corresponding artifact.



The video game tester is involved early and often in this process, ferreting out problems that arise along the way. The game tester must be part of the development team, as some bugs that arise can stop the process in its tracks until they're solved. The game tester helps find such fatal bugs early, so that others can fix the problems before they compound.

A robust test management system will allow you to automatically post defects that trigger appropriate actions and notifications. **With Polarion QA, your entire gaming team is constantly kept up to date with real time activity streams, interactive dashboards, email notifications, and live reports.**



Integration into your existing environment requires multiusers to collaborate from various locations with multiple devices. Game Testers are typically located offsite, working from home and various other sites. Polarion offers a web based universal platform that allows access to your testing environment from any web enabled device including Xbox and PS3.

Conclusion

Bringing a new video game to market costs millions of dollars and takes many months of planning, developing, and testing resources. Video game testing plays one of the most crucial roles in the development of new video games. Game testers put games through the paces while still in development and when finished, to ensure gamers have a **good experience**. Game testers conduct video game **QA**, or quality assurance, finding mistakes, bugs, and other problems that could annoy or turn off the gaming community if they're not fixed.

The most critical success factors of a game are its **underlying development and testing**. Video game manufacturers rely so much on testers to make sure games work properly. The **market expectations for gaming have increased exponentially**, and even the simplest of errors can make or break the future of any game. **Testing** and most notably its accuracy have **become critical for the ultimate success of any new software game**.

Ironically, most **gaming companies do not use commercial test management software** or any testing software to manage one of the most crucial elements of their production lifecycle. And yet the correct Test Management software like **Polarion QA can improve the quality of gaming software exponentially** while providing the benefits of instant **communication and the complete traceability** between all artifacts.

To be sure, video games have come a long, long way since Pong featured two lines paddling a "ball" back and forth across the screen. But as games become more powerful, faster, and complex, the video game industry needs extraordinary test pilots to push their products to the limit.

Don't let the word "game" in this job title fool you. **Video game testing is a serious job**. If you think it involves wasting away the hours playing the latest games, think again. Video game testing *can be as tedious and frustrating as any job*. It **requires an organized, disciplined approach to product testing** and not just finding new ways to score high or beat the game but actually finding defects, providing user experience while meeting all the fast evolving regulatory requirements.

About the Author

Regg Struyk is a serial entrepreneur with 20 years of experience in software development. He is currently working with Polarion Software managing the Polarion QA software product portfolio. Regg has been actively involved with various testing methodologies that include rapid testing, exploratory testing, and functional unit testing environments. Regg has also been involved with beta testing of various gaming software such as World of Warcraft.

About Polarion Software

Polarion Software's success is best described by the hundreds of Global 1000 companies and over 1 Million users who rely daily on Polarion's Requirements Management, Quality Assurance, and Application Lifecycle Management solutions. Polarion is a thriving international company with offices across Europe and North America, and a wide ecosystem of partners world-wide. For more information, visit www.polarion.com.

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