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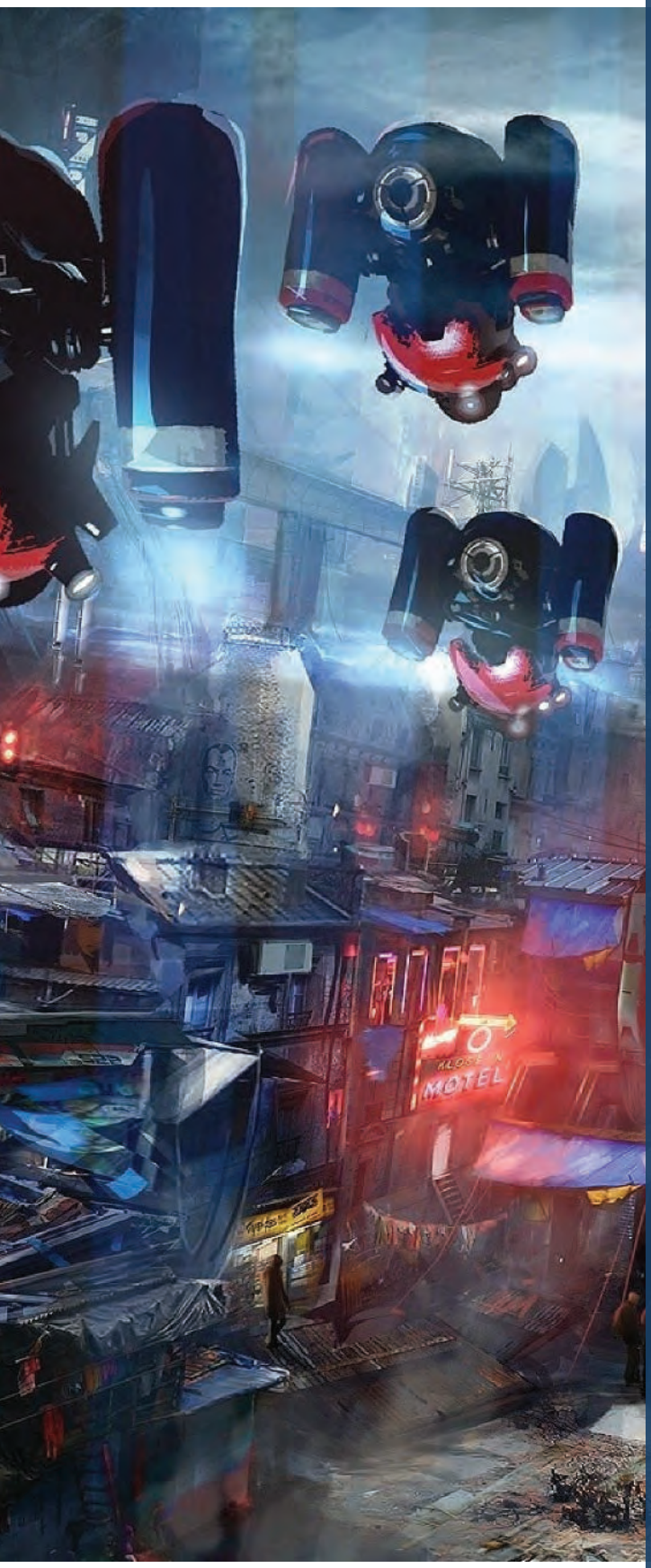
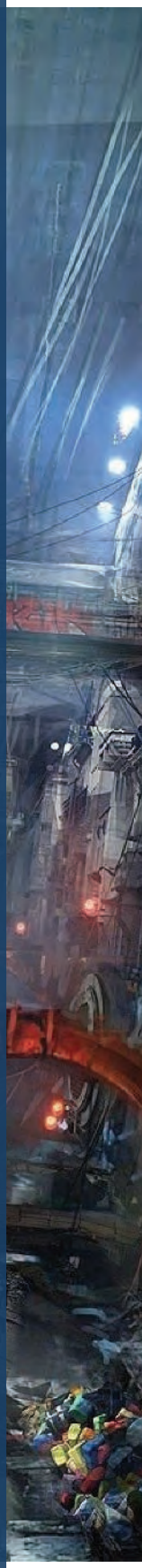
quality is a rule



VIDEO GAME TESTING **GUIDE**

The ultimate way to elevate your product to new heights



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INTRODUCTION

Video game creators have the ongoing task of ensuring maximum quality while developing magical worlds and breathtaking challenges. Market competition is ever-increasing, and conformance of the game to high customer expectations needs to be continually assessed.

This is where Game Quality Assurance comes in — the ultimate way to elevate your product to new heights. Undertaking a series of well-planned and accurately reported tests provides insight into product weaknesses and provides the support required to remove the defects.

However, game testing is a complicated process. It is often very technical in nature, with processes and outputs riddled with terminology. It is also quite difficult for a non-tester to determine the depth of test coverage, frequency, critical areas, required testing types, and manage risks associated with potential system failure.

That is why many game development teams choose to appoint a trusted QA and software testing provider to help them conduct the necessary defect management procedures. If you would like to leverage our bug detection superpower, check out this guide with practical advice on carrying out an effective, value-for-money game testing program.

Ready? Let's get started!

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WHO ARE GAME TESTERS?

Game testers find bugs as early as possible and make sure they get fixed.

Game testing can be brought into play throughout the development lifecycle. In general, a game is ready to enter the testing phase once its prototype is available.

The golden rule states that the tester and the developer should not be the same person, as the objectivity during defect analysis is crucial for game quality. It is also useful to note that the duration of testing is equivalent to 40% of the development time. Therefore, concentrate on the code, and entrust the tester to check and challenge this code.

Do not deceive yourself into thinking that testing a game merely means playing it. Finding and reporting bugs is much more than just playing the game. Being a good tester requires competency, experience, and great communication skills. You must also be proficient in writing algorithms to determine in-game bugs and be able to describe them in detail.

That said, the QA team usually contains the highest ratio of gamers among all departments.

We test all day
and play games all night!

TESTING IN THE GAME DEVELOPMENT LIFE CYCLE

START

PRODUCT MATURITY	TESTING STYLES
Concept	Test sympathetically throughout the earlier development stages, as the product is immature and lacks major functionality. Use simple tests (such as smoke or capability testing) to check whether the features, as they are implemented, are operational.
Prototype	

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PRODUCT MATURITY	TESTING STYLES
Vertical Slice *(a fully playable sample)*	Test aggressively in the middle of the development process, as new features get implemented and are shaken down. Embark on full-time bug fixing with more demanding and complex tests.
Alpha *(carried out by QA engineers) and Beta (performed by «real users»)* Testing	Keep executing high-quality testing by diversifying tests near the end of the project. Get creative with customized approaches, automation, heuristics, beta testers, and so on.
Gold Master / Release	Test meticulously in the final days before release, examining every change and verifying the correct version of all the files.
Post-Launch	Keep testing your game as long as it exists. Ensure high-quality updates, added functionality, bug fixes, and performance improvements that are indispensable for game longevity and gamer engagement.
Game Decommissioning *(requires extra effort when it comes to online multiplayer games that involve monetization)*	

Carrying out QA should be placed in the context of the entire game development life cycle. The time and costs of fixing a bug increase with each development stage. To gain an appropriate level of quality, a range of testing activities should be performed.

- Documentation testing and correction.
- Prototype and Vertical Slice testing.
- Content testing.
- Alpha and Beta testing preparation and execution, followed by data collection, processing, and analysis.
- Post-release QA support.

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TEST DOCUMENTATION

TEST PLAN

The testing process cannot operate in a vacuum which is why it requires a plan. This is the primary means by which QA engineers communicate their intentions to the game development team.

The purpose of a test plan is to define the scope, approach, resources, and schedule of the testing process, as well as to identify the tasks to be performed, testers responsible for each task. and associated risks. In many ways, the process of creating a plan is worth more than the plan itself, as getting everyone to understand and agree to the contents of the plan is key.

TEST CASES

A test case is an action algorithm executed to verify a particular feature or functionality of the product under test. It documents the values used for input along with the anticipated outputs, as well as identifying any constraints on the test procedure.

Positive test cases are used to ensure that end-users can perform appropriate actions when using valid data. On the other hand, negative test cases are conducted to challenge the game by performing invalid or unacceptable actions, or by using invalid data (for instance, using an incorrect password for authorization).

CHECKLIST

A checklist is a list of tests required for a product. It helps to keep the team in the loop about the current state of the testing process, as well as to assess the overall product quality.

Throughout the testing process, the QA engineer marks each item on the checklist according to its status: Passed, Failed, Blocked, In Progress, Test Not Run, or Skipped.

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TYPES OF GAME TESTING TECHNIQUES

Game testing involves the use of a variety of manual and automated techniques, identified by the scope of the test. System analysis for potential vulnerabilities is carried out by a QA engineer and a potential gamer. The game testing process requires implementing some testing techniques not included in traditional software testing.

BALANCE TESTING involves making sure that the easy levels are challenging enough while the harder levels are not too difficult. For multiplayer games, it verifies maps are neutral in their design, weapons are equal in power, and spawn points are placed fairly. Game balance is the keystone to ensuring winning a game is both fair and fun.

COMPATIBILITY TESTING is a technically demanding process intended to ensure that the game is compatible with multiple hardware configurations, such as GPUs, RAM modules, or various peripherals.

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COMPLIANCE TESTING certifies that the game follows technical standards, system documentation is complete, and development and design are as per specifications.

LOCALIZATION TESTING involves a thorough check of the adaptation and linguistic accuracy of the user interface and in-game content for other locales. To ensure successful game localization, a LocKit (Localization Kit) is needed containing tools, instructions, and resources, including the list of text blocks translated into multiple languages.

PLAYTESTING involves a potential target audience trying out an unfinished project. It serves to assess the fun factor and emotional engagement the gameplay creates. Apart from merely playing the game, it also includes session preparation, controls, and analysis.

AD-HOC TESTING is a freestyle testing type that requires no documentation. QA engineers, who are familiar with the product under test, perform random checking and thereby detect bugs unreachable via structured testing. Put simply, ad-hoc testing requires naturally progressing in the game while trying to be ambushed by an undetected gang of bugs.

USABILITY TESTING makes sure the gameplay mechanisms, including the user interface, are consistent, flexible, intuitive, and comfortable to use. It helps improve end-user satisfaction, makes the system highly effective, and provides insights from a potential target audience.

FUNCTIONAL TESTING covers all game mechanics required by specifications, objects, locations, as well as the game engine interactions. For this purpose, developers create additional functionality in the code, usually called cheat codes. A cheat code allows testing engineers to check a specific game location or plotline without the need to complete quests first.

PERFORMANCE TESTING allows assessing the maximum possible technical load on the system. This testing technique is essential for video games as it enables QA engineers to identify and fix the most technically challenging areas requiring a lot of device resources.

PROGRESSION TESTING is about playing the game in a linear way to ensure gameplay is never interrupted. Progression breaks are often caused by scripting issues and prevent the system from responding to gameplay events, eventually blocking progress across the game.

SECURITY TESTING involves an analysis of the game system for any potential vulnerabilities that could be exploited by cheaters, and a thorough bug fixing process to guarantee integrity, security, and accessibility of the gamers' data.

REGRESSION TESTING is a crucial part of the testing strategy because functionality that used to work may sometimes become broken after multiple modifications. Conducted regularly, regression testing confirms the system seamless operation free from side effects of new feature implementation and old bugs in the current code.

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BUG REPORTING

Bug reporting is the primary way to inform the developers about the problems that occurred during the testing process. It is a multifaceted beast requiring a high level of detail regarding the process the tester used to achieve the outcome, test evidence, and associated technical risks.

A bug report usually covers the following: bug description, summary, background details, steps to reproduce the bug, expected and actual results, and other relevant information, namely stack traces, test cases, screenshots, error reports, etc.

THE BEST PRACTICES OF BUG REPORTING INCLUDE:

- Report each bug promptly, but don't try to fix them.
- Make sure your report is compact, unique, specific about the problem, unambiguous in terms of the flaw severity, and detailed about the bug behavior.
- Remember that the summary is an essential part of the bug report. A good summary briefly outlines the information to visualize the failure, indicate its limits, and point out the impact of the bug.
- Specify the platform (PC or mobile) as well as the OS type and version the bug can be reproduced on
- Create an easy-to-follow algorithm for the developer to trigger the bug and reproduce it on their computer.
- Be non-judgmental in your approach and be aware of your tone as developers will see the reports.

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MOST COMMON VIDEO GAME BUGS

Let's zoom in a little to observe typical game bugs in their natural habitat. Chances are, you might be already familiar with what's listed here from your experience as a game developer or a gamer.

That said, it is time to deal with it like a testing engineer!

STABILITY BUGS
lower the extent to which the code behaves according to requirements. They are considered critical because they take away any control over a game.

Examples:
Freezes (the system becomes unresponsive), Crashes (the screen goes dark), and Loading Bugs (a halt in the level loading process).

LEVEL-DESIGN BUGS
represent a wide range of spatial flaws. Of course, sometimes items such as invisible walls and borders are intentional to make the level seem larger, but experienced testers recognize this technique.

Examples:
Stuck or Sticky Spots (impossible or requiring time and effort to get out), Map Holes (sometimes allow cheating by shooting others from under the map), Invisible Walls, and Missing Geometry (the art is present but it makes no barrier to the movement).

AUDIO BUGS, such as volume differences, can be easily detected even by a newbie tester.

Examples:
Audio Drops (especially annoying when happening in the middle of important dialogues), Skipping, Distortion, Missing Sound Effects, and Volume Level (too loud or too faint sound effects non-adjustable with volume sliders).

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VISUAL BUGS are errors affecting a graphical user interface. They can range from barely noticeable texture issues to ironclads flying through the air and leaving floating tracks. Still, regardless of the severity of a visual bug, they always drive gamers crazy.

Examples:
Clipping (a polygon penetrates another polygon), Z-fighting (overlapping textures), Screen Tearing, Missing Textures, and Visible Artifacts (small visual glitches of any type, such as speckles or jaggies).

ARTIFICIAL INTELLIGENCE BUGS, sometimes referred to as artificial stupidity, generate illogical behavior in non-player characters.

Examples:
Pathfinding (an NPC cannot find its way around the map) and NPC Behavior (NPC teammates are too clumsy blocking doorways or walking into walls that undermine the gamer's confidence as a grand commander).

PHYSICS BUGS decrease the credibility of the game reality. The objects in a game obey the laws of physics mainly by rebounding when cannoned into or breaking into pieces — the more realistically, the better.

Examples:
Dynamic Behavior (the objects your character interacts with do not behave according to the basic laws of physics) and Breakables (a lack of breakable geometry when objects break down in pieces due to the extensive damage).

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PERFORMANCE BUGS affect the speed of code processing. In general, they are the easiest to spot and hardest to fix.

Examples:
Frame Rate (performance below the frame rate goals), Load Time (long and random loading times), Minimum Requirements Machine (the game does not run properly on the lowest denominator machine it should run on), and Installation Time Bugs (the game takes too long to get installed).

COMPATIBILITY BUGS prevent the software from running seamlessly on different hardware, operating systems, network environments, and mobile devices. Testing game compatibility is a complicated task that requires emphasizing particular aspects.

Examples:
Video Card, Controller, Operating Systems, and Standards Compatibility Bugs.

NETWORKING BUGS negatively affect server-client connectivity and network bandwidth.

Examples:
Failed or Dropped Connections (between consoles), Lags (a delay between the user doing something and the game reacting to it) and Scoring Errors.

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DON'T LET BUGS MAKE IT PAST QA

When activities are planned, executed, and reported accurately, software testing can give you knowledge of nearly all your game bugs and provide you with the information and support required to fix them.

To achieve maximum quality, you should choose a testing services provider that meets all your requirements. The benefits of hiring an independent testing team include a structured expert-level testing approach, test automation, possibility of short-term engagements, and cost reduction when it comes to the need to employ specialized staff or train your internal team.

QATestLab is an independent software testing and QA services provider with extensive experience in all the newest tools and platforms to skyrocket game quality. We provide on-demand testing support from preproduction to the final stages of development.

In over five years of operation in this domain, we have established numerous partnerships with leading game development companies and accomplished multiple projects within various game genres, such as adventures, shooters, strategies, and more.

Get in touch with us today to elevate your game to new heights with the all-conquering power of testing.

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