

QUALITY ASSURANCE: WHAT IT IS & THE BUSINESS BENEFITS

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QUALITY ASSURANCE ANALYST

The CTFL-AT means Certified Tester on the Foundation Level with the Agile Testing certification addition.

AGENDA

- ▶ Welcome & Introduction
- ▶ Quality Assurance vs. Quality Analyst
- ▶ Business Benefits of Quality Assurance & Quality Analyst
- ▶ Where Does QA fit in for Agile and Waterfall Methods
- ▶ Tricks & Demo
- ▶ What Should You Look for in a Quality Analyst?

Speaker: Lyle

A LITTLE ABOUT ME

- I began as an embedded Quality Assurance Tester on Friday, November 3, 2006
- 2 QA certifications
- Worked on over 20 games and web/client based applications.
- Responsible for approximately 10k bugs
- One day I logged 93 bugs with pictures (all menu art related)
- All iOS devices & Mac, Game Consoles, Windows-XP up
- ...I love shooting pool, fishing, and playing video games too!

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When I started QA, I really had no idea what I was getting into. I just knew I loved technology, knew how to type, loved games and loved to learn. I figured, since there was a game company in town, that I'd give it a shot by starting anywhere on the ladder that I could. QA, as they call a gateway job into games, is where most people start; so did I. After only 6 months, I had to give a milestone report to our CEO and all of the management in the company. I was extremely nervous but the more I talked, the easier it got. I became more confident in the messages I was trying to convey to the team.

As time and experience went on, my responsibilities grew and the more I began to appreciate the position I held as being the center of attention when things were broken and how to break it. I was "that guy" that was like "what's this and is this supposed to happen?" Everyone knew I could be counted on to really give my best effort when I tested something.

As I've grown in QA as a profession, I've begun feeling like this is information I would like to start sharing with other people to inform them of just how important QA really is and what bugs, when found early, can do for a company as far as lower cost and help improve quality early on.

The 2 certifications are from ISTQB – International Software Testing Qualifications

Board. One is basically Waterfall Methodologies (the standard SDLC) and an Agile Certification

- with #3 right around the corner
- One of the games took over 3 years
- Some years, 5-6 games were tested

A lot of people used to ask me “did you have problems testing games then playing them later on?”

I’m fairly

A LITTLE MORE ABOUT ME

Overall, I love what I do and I try to advocate for QA with the mentality:

- ▶ “After having been devoted to a project and a team, would I buy or use this application/tool/”thing” knowing how well it works, feels, and how easy it is to learn?”
- ▶ “Would I be proud to sell or use this?”

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If you say “yes” to these, then you’re going to have a successful product in regards to presenting it to the client as a working, and stable product or tool

So, I’ve spoken a little about myself, now I want to ask you a couple of questions ...
(lead to next slide)

WHAT IS QUALITY ASSURANCE (QA)?

Poll the audience

THE DICTIONARY SAYS...

The definition of *Quality* is:

“The standard of *something* as *measured against* other things of *a similar kind*; the *degree of excellence* of something”

The definition of *Assurance* is:

“A positive declaration intended to give confidence; *a promise*”

WHAT IS A QUALITY ANALYST (QA)?

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Poll the audience

THE DICTIONARY SAYS...

Again, the definition of *Quality* is:

“The standard of *something* as *measured against* other things of *a similar kind*; the *degree of excellence* of something”

The definition of *Analyst* is:

“*A person* who conducts analysis”

The Analyst, or the “QA”, analyzes the quality of the application to promise Version 2 is at least no worse than version 1, but also better than Version 1

The Quality Assurance is the Promise the Quality will be better, the Analyst is the person that does the work that *ensures* the promise

TO CLEAR UP THE CONFUSING ACRONYM: “QA”

QA – Quality **Analyst**

- This is the person responsible for doing the work (testing for quality) on the application

QA – **Quality Assurance**

- This refers to the **promises** that an analyst will assess and scrutinize the level of quality throughout the SDLC.

So, QA means the person(s) **and** the promises of quality while maintaining quality throughout the lifespan of development.

...We should be called QAA's

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(mention before slide 1)

I went over the specific definitions to help describe and explain this point...

I was talking to our marketing team the other day about QA this and QA that, and they asked me a really good question...What exactly is QA? Is it a process you follow or is it just another word for “tester”?...what is it?

I hope this will help make what “QA” means, a little easier to understand.

Questions?

AN ANALYST'S GENERAL FUNCTION

QA is primarily a person or group of people working either remotely or along-side developers, programmers, designers, or business analysts as they design, document, update, implement, and build an application; hardware or software.

We, QA, manage and help maintain an expected level of quality and risk associated with the application.

I've described the meaning of QA. Now, I'm going to talk about what a QA is and what a QA does.

ANALYST GENERAL FUNCTION

QA ensures installation, uninstallation, functionality, product stability, usability, possible legality and consistency between what the customer needs and expects vs. what's developed using **various testing methods** and some **tricks** here and there.

In a nutshell

QA finds bugs, issues or risks before the application is put into production.

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While working with the previously mentioned group of people (dev's, designers, BA's)...
(first line)

Various Testing Methods:

To keep a long story short and a lot of QA Jargon to a minimum, I'll explain something of a buzzword; Accuracy Testing

Accuracy testing is primarily the testing methods used to prove all of the numbers you use vs what you expect to see are "accurate". So, if you enter 2+3, you expect "5" not 6 etc

Tricks..I'll show some of those near the end of the presentation

A Risk is anything note-worthy that a consumer or end-user would find problematic (anything from data loss, unexpected software "glitches" to physical injury). The higher the risk, the more severe the issue.

WHY INVEST IN QUALITY ASSURANCE / QUALITY ANALYSTS?

QUESTIONS YOU MIGHT HAVE

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Before listing the questions, tell the audience that I'm open for any and all questions you may have for your company (big or small project) and to ask at the end of the demo

WHY INVEST IN QA OR A QA TEAM?

Investing in QA is similar to having a safety net under a tight-rope walker.

Quality Assurance is your safety net – ensuring that you not only get to live and try again, you can continue to “try again” to help accomplish your goals.



Sure, it's *possible* to make it across with the tools at your disposal (in this case a good sense of balance and a balance beam); but if even one of those “messes up” or “fails” you’ve bet your life on it.

What I mean by “try again” is finding critical bugs, fixing them, then “getting back on the tight-rope and trying again”

WHY INVEST IN QA OR A QA TEAM?

QA is used to help mitigate risks from an application by finding issues as early in the Software Development Life Cycle (SDLC) as possible.

We continue throughout the life of the project to ensure that there is as little risk as possible for the end-user.

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((Before clicking through the slide...)) Not that I'm suggesting that your lives are at stake by any means; it's just, initially, some companies just don't tend to think of exactly what kind of insurance having QA actually is and what we can actually do for you. (now read the slide)

((Read after the slide)):

An analyst works with the mindset of the end-user to the best of his ability based on his/her knowledge of the application to assess the app as the end user would.

I'll discuss the "timing" of when to invest in QA later on

Also, "I did a little research and found that the US economy suffers almost 60b dollars annually due to bugs in production."

That's why I mention (here) fix bugs early and throughout development

WHAT COULD MY TEAM LOOK LIKE?

Key Stakeholder (Client)

User Acceptance Testers (UAT)

Project Manager/Scrum Master and-or Business Analyst

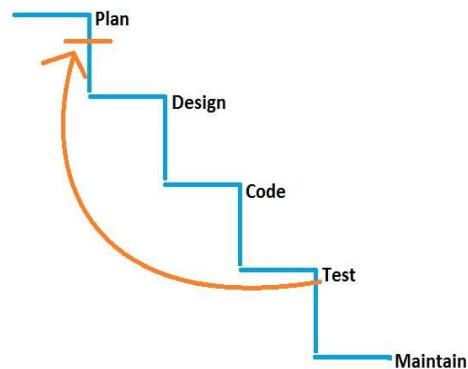
Developers

Quality Analyst(s)

WATERFALL VS. AGILE

When does, or when *should* QA become involved?

WHAT IS WATERFALL?



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Waterfall is a form of sequential methodology that most companies use that is a heavily documented and uses formal process.

If you're in the testing phase but then realize something is wrong with the design, you must stop testing and coding to fix the design, then start designing over again, then testing. It's very "expensive" to back-track in Waterfall

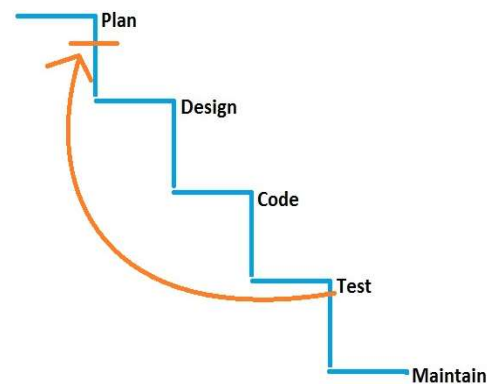
A project that doesn't need software maintenance would be something like a ball-bearing company

One that would need maintenance would be something like any tax-based software, banking, or oil "industry-type" projects

WHEN DO WE START USING QA FOR WATERFALL?

QA *should become* involved near the **Planning** phase. Why?

- To learn the schedule and plan ahead
- Research or Assess any competition (if applicable)/marketing trends (if applicable)



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If you can, try and assess the competition if there's competition out there. See what the team can do and try to help come up with ways "we" can do it better, more efficient, and/or cheaper (have the competitive advantage). As QA, if there is absolutely no advantageous reasoning to be a part of the planning phase, then QA can begin by making test case templates, getting tools in order and making sure all preparation steps are in-place if new QA ever need to be on-boarded before design begins

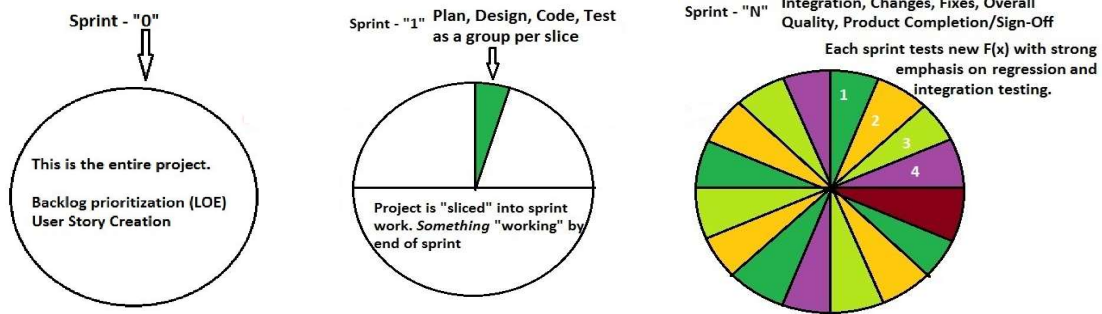
Tech research:

See if the "best thing ever" is about to be outdated with the newest operating system upgrade and plan for that with your first versions of the product

Or, plan ahead by working with the next-best OS, while also being compatible with the most commonly used (found through research)

Good examples of this would be Windows Vista or Windows 7 and min specs for either machine, then having your application being compatible with everything up-to windows 10 – IE/Chrome/Safari

WHAT IS AGILE?



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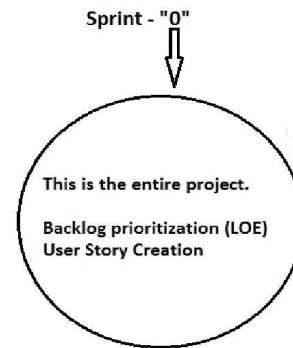
Agile is a very quick turnover type of methodology/process where there is very little documentation and work is done in chunks of time called "Sprints"; sometimes called "Iterations". Agile incorporates the primary phases from waterfall, but uses them in 1-2 week cycles. Agile plans, designs, codes and tests all within 2 weeks in each little section (see above)

Agile plans don't require QA to have test plans or test cases due to the time constraints within sprints. With proper time management, however, it's very possible to incorporate having TC's and plans in your project.

WHEN DO WE START USING QA FOR AGILE?

In the **Agile method**, QA needs to become involved in Sprint Zero.

- ▶ This is the requirement-gathering (user story)/product backlog planning time.
- ▶ QA can begin assessing effort levels, getting an idea or plan to assess the upcoming work, and helping make user stories.



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User Story – Basically a scenario based on some form of user type “As a _ user, I want to be able to...”

START USING QA - AGILE

In the Agile method, the whole team is responsible for quality, not just QA. Quality must be addressed every sprint to demonstrate that part of the application.

In Agile, even though it's a small team, QA is not alone..

WHEN DOES QA BECOME INVOLVED?

Waterfall Methods:

- ▶ Planning and Design discrepancies prior to Coding
- ▶ Consistent data flow across the QA team to avoid duplicating efforts

Agile Methods:

- ▶ User Stories, Requirements and/or Product Backlog Items in sprint 0
- ▶ Communicate with the team to ensure QA as a whole.

For Waterfall, this is when QA begins flushing out design issues as the design is being written and well before any code is written

Since Sprint – 0 is basically the planning phase for Agile client requirements, begin getting prioritized and *somewhat* categorized in difficulty-ranges and managed as a series backlog items or user stories

For both methods, communication must happen across the team to help mitigate duplicating efforts and maximizing productivity

WHEN DOES QA BECOME INVOLVED?

Waterfall Methods:

- ▶ Test cases built from the **Design**, Test Plans, Checklists, Metrics (where applicable), etc.

	1	2	3	4	5
Red	FAIL				X
Yellow		PASS	PASS	BLOCKED	
Blue		X			BLOCKED
Green	FAIL			FAIL	
Black					

Agile Methods:

- ▶ Testing based around requirements per sprint.

Tracking Information				
Tested	9		PASS	2
Remaining	16		FAIL	3
			BLOCKED	2
Total Checks	25		X	2
Pass %	8.00%		Fail %	12.00%

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During Waterfall, it's heavily documented and there will be time to write test cases and plans per milestone. Testing is based around the design

Because Agile is very document-light, test cases, and test plans aren't necessarily used for an agile project. Testing is based around and directly around requirements. Being able to edge-case, run regression checks and integration checks, then think outside the box in Agile is always a really good skillset to have.

Personally, regardless of method, I always prefer to build some form of checklist, especially if there is a little extra time in a given sprint before testing is required. This way, using the picture above, you can get a quick idea of how many spots or checkpoints there could be to test if you ran all of the permutations. (given a 1-on-1 type of check)

WHEN DOES QA BECOME INVOLVED?

Waterfall Methods

- ▶ Milestone reports for area completions
- ▶ Testing that design documents match the application and visa versa

Agile Methods

- ▶ Sprint-release demos to stakeholders, clients and team
- ▶ Agile- Ensuring any changes made from sprint-to-sprint still “work” with the rest of the application (Regression Testing and Integration Testing)

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This slide is basically the “testing” sector

(bullet row 1) In waterfall, when you give a milestone report on all of the functions that should be working up-to that point on a case-by-case basis. In the same vain of thought, Agile will demonstrate the functionality to a client or stakeholder.

(bullet row 2) In Waterfall, QA makes sure the design matches the application and visa versa. When there are discrepancies, they are given to the BA and Devs (depending on where the concern lies) If the issue is in the Documentation, the BA is consulted, and Dev if the app isn’t like the design

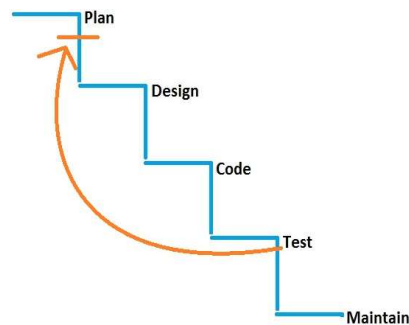
For Agile, a client can make changes from sprint-to-sprint. Upon this happening, QA needs to ensure these changes don’t “break” the previous installments (sprints) and that the new functions work as intended

Integration testing = (grouping new functionality to old and testing them together) making sure no new implementations have broken any old functionality where the group(s) of efforts of work (sprint/milestones) still work correctly.

Regression testing = (comparing fixed bugs to current build making sure no new issues have arisen) making sure no fixes to existing work have broken anything else. Basically, re-running a completed test that once passed, that is now failing

WATERFALL – MAINTENANCE PHASE

- The project is sent to production at this phase
- UAT can be done at this phase also (User acceptance testing)
- If the customer needs adjustments, “tweaks” or change requests, QA assesses these changes per. *Like a new mini-project*



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QA basically helps with the up-keep of the application. For very large maintenance jobs, this could be an on-going phase for a long time if you're supposed to support that application, tool, or product over the span of time (think commercial and industrial) (bank/oil/gas/etc)

AGILE – MAINTENANCE PHASE

- UAT is performed throughout a specified time by the PO/Client (usually last quarter of the project ***but can exist throughout the entire project*** *best case*)
- The closer the project gets to the final sprint, the more concise testing is done to the project as a whole by the development team and UAT
- Upkeep is done as-needed on a case-by-case basis from the customer after the application is in development (similar to Waterfall)

Depending on the size, budget and overall needs of a project, maintenance isn't a required "Phase" for either Waterfall or Agile

SO, WHEN TO INVOLVE QA? EARLY, VERY EARLY.

Waterfall – Not long after planning has begun OR
just before Design phase depending on the Plan

Agile – During Sprint 0

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Regardless of the method used, the sooner QA can begin working with their team, the sooner critical issues can be found and resolved giving more time to find and address other issues.

I did some research on this type of timeframe. On average, if you find issues during:

Design: it's a 1-to-1 defect and fix cost comparison (best case scenario)

Coding: it's a 6.5-1 defect and fix cost comparison (due to the time to find, fix, and re-test)

Testing Phase: It's a 15 – 1 defect and fix cost comparison (due to time to find the bug, then fix, and re-test and regression)

Maintenance Phase: It's a 100-1 cost if issues or bugs are found while the application is live or in production (worst case)

The phrase “death by a thousand cuts” could be as powerful as a single critical issue.

Again, by the end of a project, QA wants to confidently say “We’ve tested and verified this *“thing”* works to the best of our knowledge and ability. We’ve done our best job and we’re confident in its Quality”

TRICKS

1. Use Hamlet to test max bounds for textbox fields. Look for “shot off”
2. See if the application gracefully handles symbols like 08 09
3. Take note that entries like “<!” can easily break javascript
4. Wrap text around braces or quotes, “test” could show @\$test@\$
5. The magic SQL date that breaks is 1752. Anything above 1753 works
6. Quick and easy way to spellcheck, copy-paste into MS Word
7. Attempt website addresses to see if the link works in textbox fields
8. Invert the From-To fields for dates
9. Build shortcut keys for commonly used tools (pictures and snip-its)
10. If a sequence of numbers is expected like 1-9, test 0,-1, and 10
11. If the application is an .exe, make sure only 1 .exe can run at once
12. Try to force yourself into URL locations by entering text in the address bar

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All of these tricks are extremely easy to execute regardless of your technical skillset or job role.

Trick 1: You can cause “submission” forms to take a very long time, even timeout if you paste enough text into certain fields. Basically, from a quality perspective, it’s best to limit all textbox entries to a min and max value.

For **trick #2**, I’ve done this before and after the data was processed, the returned text would look like “?? ?? ? ???” because the syntax couldn’t be found. (Basically, from a Quality point of view, to disable charmap characters or ALT + Numpad

Trick 3, I’ve caused a great deal of null reference exceptions and just general page-load failures or timeouts

Awesome tools to use: Snagit, WinMerge, Allpairs, Excel, Solenium

DEMO

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UPON STARTING: to sign in it's test@test.com / Guest1! **OR: sql@today.com/Guest1!**
(use for the Multiple Admin bug... Bug #3)

Begin the demo stating, "I'm first going to go through this application as expected by the end-user and use the application for what it's used for (like requirements would show). I'm going to book a conference room and save it under my username." This is the ultimate goal of what this site is supposed to be able to do, and from what I can tell, it appears to work as expected; however, what I'm going to show you very soon is just how fragile the site is if you do anything outside of the expected functionality of the site.

As you start, login, click Conf Rooms > Book > Reserve This Room (today) > Select 8:00 – 9:00 > Click Book time (Observe the site appears to work)

Change the Date field and Click Search and observe the availability is open (showing the date you used is working)

Change the date back to (today) and observe the room is still booked

Click Home > Reset all data (seed data) and log off

Begin below

1. If you make any errors trying to make a new sign-in, you're locked from making a new account (there's an error)

2. There's no requirements on the create a new user page
3. After signing in and being on the home page, click manage users and show the current roles, then go back to the HOME screen > make the current user admin (click the button several times), click manage users and notice each time you click the "make current admin" the "Admin" is shown in the list
4. If you click Conference Rooms > "Add new conference room" the app will crash
5. If you edit a conf room and enter "-1" is allowed while "a" is invalidated
6. If you edit a conf room and you enter "1.8" the app returns "0"
7. In the conf room and you click delete, there's no confirmation of destructive action
8. Conf room > edit > entering a very long name returns a non-friendly error message
9. Conf room > book > you can book a room in the past (this could be an issue depending on the type of site you may have/use/ require)
10. Conf room > book > 8am to 8am returns an array is too long
11. Conf Room > Book > 8am to 9:15am returns an error too
12. Conf room > book > the hour dropdown doesn't show "7" when "7" shows in the listed times below
13. Conf Room > Book > attempts to book during times that aren't listed; the user isn't told they're invalid times.

HIRING ANALYST SKILLSETS

- ▶ Excellent verbal and written communication skills
- ▶ The ability to recall and demonstrate issues found in a reliable manner
- ▶ The ability to think outside the box (Edge-cases = bugs live)
- ▶ The ability to write test cases, test plans and bug reports
- ▶ Able to test product requirements and around them
- ▶ Knowledgeable of computer hardware and software
- ▶ Able to type
- ▶ Planning and time management skills
- ▶ Being tech-savvy is a big plus
- ▶ Any other company-specific need or requirement of QA
- ▶ Examples: SQL Experience, Automation Experience, Jira, TFS, etc.

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Edge case example (your series of checks is a list of numbers between 1-9.. Edge cases are 0 and 10

(when the page is done) Yep, it looks like a resume or job requirement.

RESOURCES

The site for Early defect detection:

<http://www.isixsigma.com/industries/software-it/defect-prevention-reducing-costs-and-enhancing-quality/>

Impact on the economy:

<http://www.rti.org/newsroom/news.cfm?obj=DA7FBFE6-4A4F-4BFD-B77E0FA3C04D9E22>

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THANK YOU

