

The challenge of testing in a creative environment...

Karine Roy

SQA Manager

Autodesk Media and Entertainment

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Abstract:

Many people think of testing jobs as an entry level position and a step to move towards the job they really want to do. Many will think anybody can become a tester, as it is just a matter of knowing the product under test. Many believe testers should not be involved in the development life cycle, or should only be involved at the end. Many engineers see testers as a necessary pain, but have very little desire to develop a closer relationship with them, as they don't see the value. Many believe we should invest in development more than we invest in testing. Are those beliefs true, what if they weren't???? In this presentation Karine will talk about those beliefs that surround testers in their day to day lives, and how overcoming those beliefs could lead to positive results.

Presentation:

2min: M&E demo reel

3min: introduction

30min: body

10min: Q&A

Body:

How many of you grew up knowing or wishing you would become a tester? People grow up to be accountants, lawyers, doctors, developers, ...but testers???? Rare are the people who will choose to make a career out of testing software and will specialize and develop those skills. Perhaps is this due to a lack of knowledge on what this profession is really about? Rare are the universities providing degrees or complementary courses on the subject. At Concordia, luckily a few courses are offering an overview of testing and test planning and methodologies. The Florida Institute of Technologies offers a specialization in testing for computer science students in which you learn about the art and techniques of testing. Unfortunately there are no such programs offered in Montreal, to the great disadvantage of companies who are desperately seeking those skills and

talent. More companies nowadays start to see the value of integrating a testing group in their development process. The QA industry has been emerging lately as we now see more and more consulting firms offering such services. Companies are also now faced with the new challenge of offshoring development and testing activities. India and China are getting stronger in this growing market. Although this can be considered a strategic move at first, offshoring testing activities does come with its load of challenges. Especially in a creative environment such as the one we have at Autodesk. Testing our products requires a deep knowledge of the application; one cannot learn how to be a 3D artist after following a basic training and going through a few tutorials. The ability to model and animate characters such as the ones you see in movies like *Finding Nemo*, *The Incredibles* or *Toy Story* doesn't come with a few hours of work and studies, but requires native creative skills and an artistic mindset. It also involves the study, use and manipulation of many tools and techniques that take years to master. For that reason, we have no choice but to hire 'production-level' people or media, entertainment and 3d graphics students to form our main core testing team. On the other hand, those 'artists' are often lacking the 'technical' side; they lack knowledge on how a piece of software is put together, they lack basic programming concepts, they lack knowledge on operating systems and knowledge of troubleshooting tools and techniques one needs to become an effective tester. For that matter, companies like ours often seek to hire the 'technical gurus' of the production world such as technical directors or the like. We also try to find good talent to compose our automation team, which are not made of artists, but developers, like yourselves, for which we provide further training on the applications under test.

But now we face another challenge; how can we be so attractive that technical directors would want to come and work for a QA department? How can we convince developers to do a career out of testing or automation development, when what they really want to do is develop the 'real things' ????

My talk today is aimed at providing a bit more insights on the world of testing. There are a lot of false beliefs and misconceptions about our world and rare are the companies that attribute the same weight, credibility or value to the testing group, than the one they attribute to the development group. Of course, without developers to build the product, there is nothing to test and hence no testers required. But then again, with no testers involved, how would you know if the features you develop are ready for production, that they offer stability and performance for your client's needs and that they can have sufficient faith in its reliability to deploy the version in the middle of a production (thing they would never do by the way ☺). In a creative environment such as ours, we do make a heavy use of alpha and beta sites, to validate the workflow of our new feature set, however the testing group are the first clients and the first ones to see the accomplishments of the development team. As most testers come from the production world, they can easily assess the reliability, workflow and value of most of the features delivered by the engineers, and this contributes to reducing the risk and uncertainties surrounding the release of those features. As a result, they are included very early in the development process. Actually they are included right from the start, at the moment the specifications are first written. They will often be consulted even before the specification

is written; testers are good people to bounce ideas on, they serve as good devil's advocates. They can for sure test the code at the moment it is being delivered, but they can also test the specifications, the requirements or simply test your ideas, in a middle of a conversation. Whereas many developers will build their code and their designs with the intention of proving that their feature works and meets the requirements, testers should orient some of their testing to prove that it doesn't. The development approach we are using at M&E is somewhat of a bridge between the waterfall and the agile models, which is gaining more and more momentum nowadays. We do have formal phases of analysis, design, specifications, coding, stabilization (testing) and release, although we involve testing a lot earlier and will often develop in smaller chunks and do mini cycles within the big blocks.

It is a well known fact that the earlier you test, the less costly the defects will be to fix. At Autodesk we act upon this fact and thus start testing at the specification and requirements level. This process however has one big challenge; it requires a lot of humility, understanding and cooperation from the product designers and/or engineers involved. Having your work and ideas reviewed and severely tested is never an easy task to go through. However when seeing the value and results of implementing such a process, it becomes hard to argue against. The mistakes you will not catch in the requirements will obviously be coded as is, and the challenge for testers will be to catch them before the clients do. Another challenge we often face in our environment is the lack of timely delivery and lack of completeness of the specifications. Mixed with the tight deadlines and pressure the entire team goes through, it is not trivial to find the right balance between starting to test without prior knowledge of what the feature should do, versus pressuring development or product designers to deliver specifications before you will even attempt to test it. Compromises have to be taken as time to market is one of the most important factors in our industry, however it may and does have an impact on the overall quality of the resulting product.

Another false and common belief is to blame everything on QA. The testing group is often perceived as the sole owners of quality, the people that build quality into the software. When you think about it, how can one build quality if he doesn't own the building blocks? How can one build a house with no wood and bricks? Testers are often blamed for not finding defects or finding them too late. But the real question should really be around finding the source of the defects and preventing, rather than fixing them. Although thorough and early testing helps increasing the overall quality of the product, by preventing important flaws and defects from hitting the client's premises, building quality into the product would involve a more thorough development effort. The challenge is to stop seeking for someone to blame and start understanding the role of each player.

Some of the testers' main responsibilities include:

- Supporting development activities
- Identifying problems early on when it is the least costly to fix them
- Validating features against pre-established requirements

- Providing increased visibility on the stability and reliability of the parts of the application they have tested
- Identifying risks related to shipping applications in their present states
- Providing guidance for defect prioritization
- Providing early customer-like feedback on new feature workflow

Now coming back to the main topic of this presentation, how can we find the talent and skills we need to overcome the challenge of testing such creative and highly graphical applications? How do we attract people and show them the value of belonging to a team such as ours? At Autodesk we do have an internship program for both development and QA automation and core teams where we groom people with the skill set we need. The more support we can have from universities in offering courses in our domain of expertise (3D graphics, testing, media management, etc...), the easier it is for us to find this rare talent.

Some of you may have the intention of seeking a job in the testing field in the near future. Now let me tell you what your life will be. If you decide to choose this profession know that there are great challenges but also great opportunities and rewards. There is also so much to be explored. Although prior knowledge of the application does help a great deal in an industry like ours, becoming a tester as I mentioned before is not only a matter of having application knowledge, but it also involves developing skills you are not taught in school. Developing those reflex, so important for testers; the ability to uncover bugs quickly, to find weak areas in the software rapidly, to infer why bugs have been introduced, what was their root cause and what behavior or scenarios could lead to similar problems, to be creative and curious and attempt actions that no one will think of, to challenge and question the information you are presented and first and foremost, to take nothing for granted.

Other soft-skills for testers include being...

- Curious
- Methodical
- Structured
- Good negotiation skills
- Self-confidence
- Communication
- Flexibility
- And *** risk taker

Another challenge for testers is to overcome resistance from management and from different teams, especially from development. Testers must be able to fight for their beliefs and be able to convince others on the importance of resolving certain problems they uncover. They play an important role in prioritizing work for developers and ensuring customer satisfaction.

Working in the QA department also offers a great advantage in that QA is connected to many concurrent activities in software development. Testers are involved in many circumstances and with many different departments for a variety of reasons; they get to review and participate in the creation of product documentation and training material (tutorials), they are sometimes involved in tradeshow, building content or assisting the production team, assisting support in the investigation of issues and timely delivery of fixes, they work with marketing, training, product managers, developers and they are also and most importantly, often closely involved with the customers, and exposed to their creative minds and work, such as the ones you saw in the demo real at the beginning of this presentation. That in itself is worth its pound of gold. If one complains about the redundancy of his job as a tester, it can be due to the lack of ability for this person to see how they could contribute and how their knowledge and skills can become important and useful for others in the company.

Management teams ought to realize the value testers can bring to their organization. Provided they have the right support, training and guidance and develop the right skills, they can offer a great support to all of the above mentioned departments, not to mention the immediate support they offer to their development team. Developers also ought to realize the value of having a dedicated testing team for their areas or features. Working with testers early on has many benefits, including

- Validating your assumptions
- Increasing your knowledge of client workflows and application usage – as most developers know very little about real life scenarios of the application under test
- Increasing the robustness of your code – provided they will test for error conditions, limits and boundaries, etc...
- Increasing the confidence in your code, as it will have gone through a variety of test conditions and scenarios to prove itself
- Increasing the confidence in your code meeting the pre-established requirements
- Reducing the amount of noise generated by introducing defects, if they can be prevented or caught on the developer's machine, before it gets merged to the rest of the code base.
- Ensuring your code has not damaged other parts of the application
- Etc...

Even if they come from different worlds, developers and testers do have a lot to gain by working together. In reality, they should have one and the same goal; delivering the best product, on time!

In conclusion, although many people can think of testing and QA as entry level positions and something they don't want to do all their lives, once they get the hang of it and see the opportunities, they may change their mind. At Autodesk, we put a lot of emphasis on the testing group and work with them to improve their skills and techniques, and develop the testing mindset. We have a large team composed of highly creative and dedicated people, who strive for excellence and are passionate about their work. They all have the same goal; participate in the creation of next generation tools for the creative minds. Our

biggest reward is seeing the magic on screen and realize that we, together with the rest of our co-workers, made it happen, that we were behind the scenes the whole time!

Thank you for your time.

Karine Roy.