Artificial Intelligence-led quality assurance

Applying machine intelligence to assurance practices

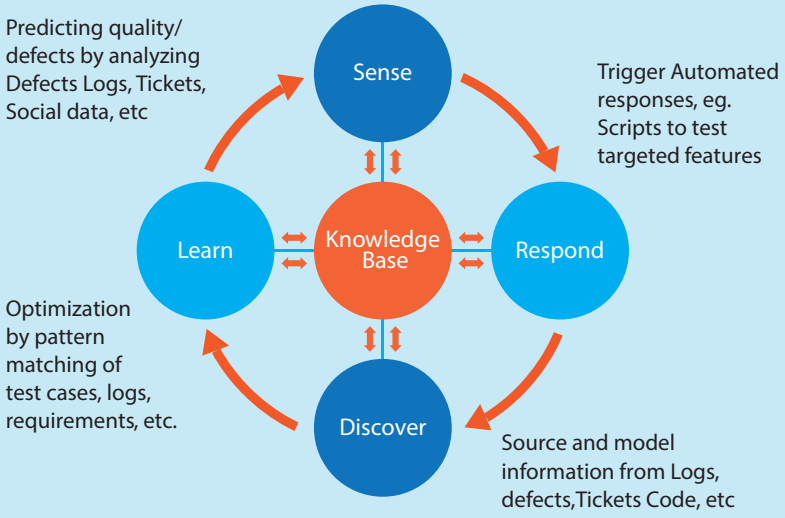
Our approach on artificial intelligence (AI)/ machine learning (ML) based quality assurance is design based complying with the following steps - Discover > Learn > Sense>Respond cycle. The knowledge base constantly helps in storing and building pattern, which in turn helps in self-learning and responding to actions.

Discover - Create smart assets using data repositories including defects, tickets, logs, etc. that can be used for analysis

Learn - Identify causal relationships between test assets such as defects and software requirement documents for developing insights

Sense - Predict the occurrence of an incident, impact and likelihood led by analytics and insights

Respond - Respond to an incident, input the resolution, and results for continuous learning



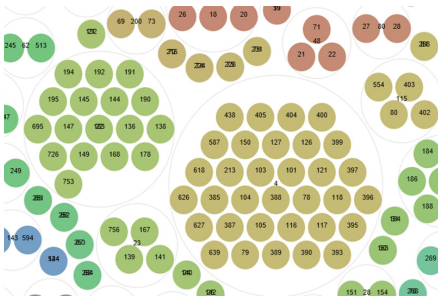
Test Suite Optimizer (TSO)

Need:

- Growing test repository —Duplicity or considerable overlap
- Huge regression suite versus short time boxed execution window
- Reduce automation effort

Benefits:

- Test case optimization — Upto 15 percent effort savings due to identification of similar test cases
- Structured Risk Based Testing
- Reduced Automation effort



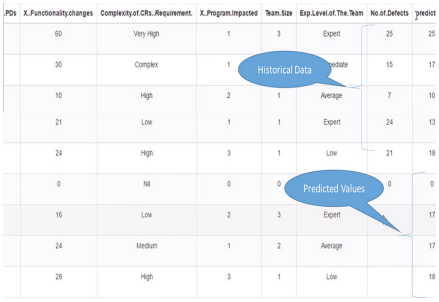
Predicting the next

Need:

- High test coverage within time boxed window
- Unavailability of scientific methods to identify buggy modules
- Enables prioritizing regression

Benefits:

- Helps in regression suite prioritization
- Stop test framework – strategic decision to abort testing of a module
- Shift left on high risk area
- Better positioning of skills



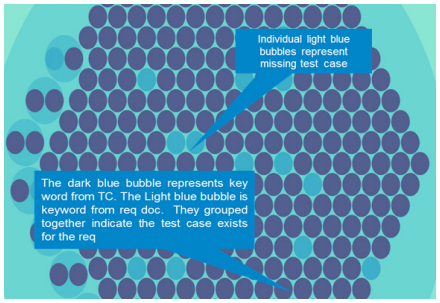
Traceability

Need:

It proves to be of help when test cases do not get written for some requirements. Owing to poor review or traceability, these missing test cases are not detected until the end of the LC stage

Benefits:

Expensive rework can be avoided by identifying missing and impacted test cases early in the life cycle



Test scenario mining

Need:

Ability to execute the appropriate test cases based on potential failure areas of application

Benefits:

- Next-gen intelligent automation
- Intelligent risk based testing - algorithms act as a deciding factor for test cases to be executed
- Reduced cost due to early defect detection
- Increased testing efficiency by identifying optimal regression suite

Defect analytics

Need:

- Identify dependencies across complex and interconnected components
- Know application hot spots to optimize testing and ensure quality
- Make sure adequate testings are done for frequent changes and roll outs

Benefits:

- Reduced costs due to early defect detection
- Improved risk management through prioritization of critical areas
- Increased testing efficiency by identifying optimal regression suite
- Detection of a 'hot spots' by identifying optimal regression suite

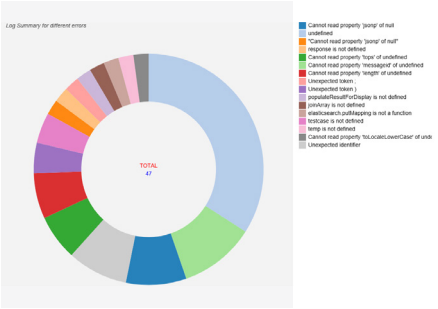
Customer sentiment analytics

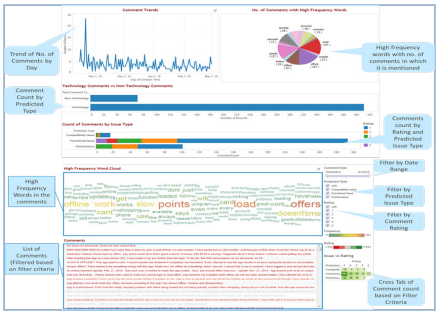
Need:

- Mining end user feedback to gain insights on customer needs
- Identify, most rigorous issues impacting customer behavior
- Ensure real-time learning and complete the feedback loop

Benefits:

- Enhanced customer experience
- Better risk management by prioritizing critical areas
- Increased testing efficiency by identifying optimal regression suite





We have implemented our AI led quality assurance (QA) solutions successfully across verticals, including proof-of-concepts (PoC), projects, etc. Here are few of our success stories:

- For one of the largest food and beverages companies in North America, large test case suite had accumulated over a period of time. Test Case optimizer of AI led QA tool helped in identifying the duplicate test cases ensuring higher risk based testing with an effort savings of around 10-15 percent per cycle
- For a leading Australian bank with largest branch network, Test Case Optimizer of AI led QA tool was used to optimize huge regression suite. It helped realize significant reduction in test case count leading to effort savings per cycle and higher risk based testing with more confidence.
- For a leading aerospace manufacturing company, Test Case Optimizer of AI led QA tool helped in reducing automation preparation and execution time by 10 percent through optimization of regression test suite
- For the world's largest health care insurer in the US, test scenario mining and defect analytics of AI led QA tool were used to improve test effectiveness during last minute changes in agile environment
- For one the leading banks in Australia, we have implemented our Traceability solution and Predicting the Next solution to improve efforts savings upto five percent in test coverage review and predict the weakest module
- Implemented customer sentiment analytics solution for a leading pharmacy retailer in Canada, reduced negative customer comments from 75 percent to 14 percent and improved regression coverage based on customer feedback collated through the tool

For more information, contact askus@infosys.com

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