

Enter the world of



Analytics *Driven*
QualityInsight 2018

introducing Quality Insights

*Greater Business
Requirements
Coverage*

BizInsight

*Eliminate
Non Productive
Testing*

DevInsight

*Proactively
Plan the Test Process*

TestInsight

*Close the
feedback loop by
learning from logs*

OpsInsight

*Assure Immersive
Customer experience*

CxInsight



Requirements

Coding & Unit
Testing

System & SIT

Operations

Customer
Feedback

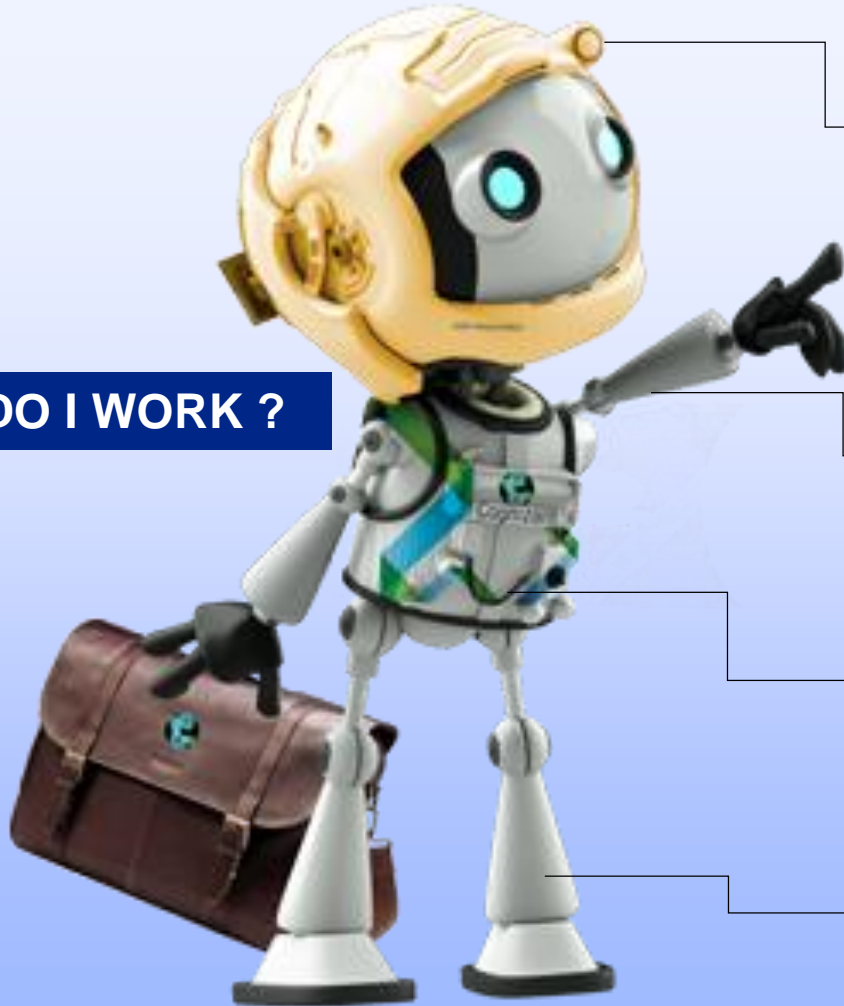
Insights powered by BOTS

BizInsight : Powered By BIZBots

HOW DO I WORK ?

Data Source

- User stories
- Defect logs
- Test Execution logs
- Defect BackLog
- User Story Points



DEFECT PREDICTOR (BIZ)

*Predict defects early in the cycle by application of advanced machine learning techniques on **user stories and defects** and Predict count of defects in upcoming release using key parameters relating to defects in past releases*

TC FAILURE PREDICTOR (BIZ)

Perform risk based testing by identifying the failure test cases from user stories based on pattern analysis.

DEFECT BACKLOG PRUNER

*Prune and optimize defect backlog by identifying priority defects based on active **user stories** and invalidating stale defects that are no longer business relevant.*

STORY POINT PREDICTOR

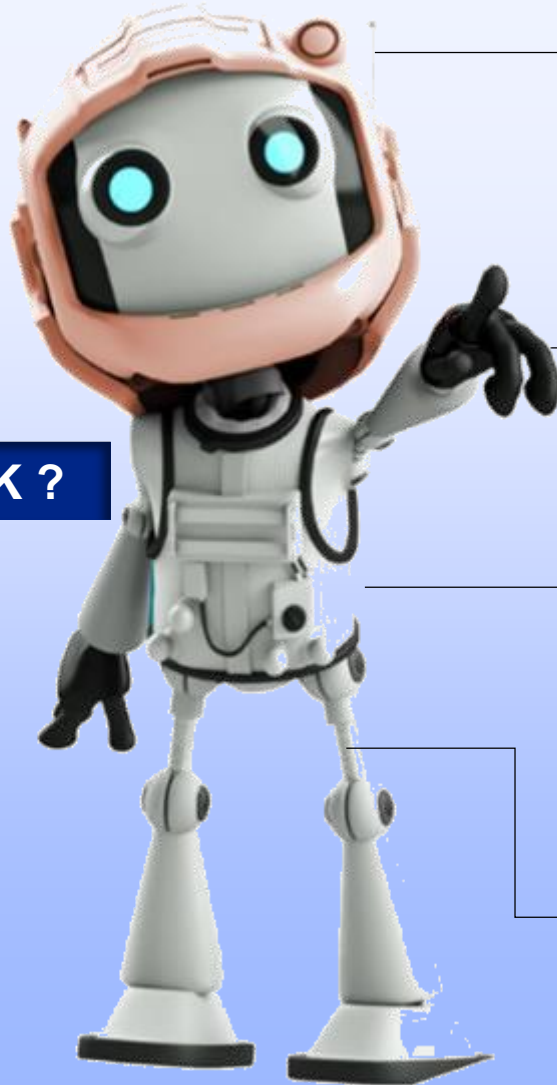
*Predict the user story point by application of clustering machine learning algorithm on **user stories**.*

DevInsight: Powered By DevBots

HOW DO I WORK ?

Data Source

- SCM logs
- Code
- Build logs
- Defect Logs
- Test Execution Logs



BUILD VERIFICATION PREDICTOR

*Predict success percentage of build based on **SCM & build logs***

TC FAILURE PREDICTOR (DEV)

Helps to identify impacted test cases from file changes during the release from SCM logs

DEFECT PREDICTOR (DEV)

- Predict defects based on file modification patterns from the **SCM logs**
- Predict defect based on **duplicate code** analysis

CHANGE IMPACT ANALYZER (CODEINSIGHT)

- Regression/functional test set optimizer based on **changes in the code**

TestInsight: Powered By TestBots

HOW DO I WORK ?

Data Source

- Defect logs
- Test cases
- Test execution logs
- Test plans



REGRESSION TEST OPTIMIZER

Identify test scripts that are similar by applying text analytics and clustering algorithms on http, https logs from client during test case execution

DUPLICATE DEFECT IDENTIFIER

Identify duplicate defects by using keyword matching techniques

DEFECT RESOLUTION TIME PREDICTOR

Predict defect resolution time by analyzing historic defects and resolution time

SCHEDULE VARIANCE PREDICTOR

Predict schedule variance using the historical data.

TRACEABILITY MAPPER

Automatic Traceability mapper that generates traceability between Defects and Test cases using advance text analytics.

OpsInsight: Powered By OpsBots



HOW DO I WORK ?

Data Source

- Application Logs
- Database Logs
- Server Logs
- Event Logs
- Error Logs
- Performance Logs
- Test Mgmt. data
- Database records

TESTING GAP ANALYZER USING APP SERVER LOGS

Identify gaps in testing process by establishing the correlation between production logs and test execution logs.

TRIAGEBOT

Predict root causes of the defects using ML based solution that learns from historic defect data.

TESTING GAP ANALYSER USING DB FOOT PRINT

Identify testing gap in test data by comparing patterns of data from production and test databases key columns.

TRUCK ROLL PREDICTOR

Predict whether truck roll can be avoided using predictive analytics model

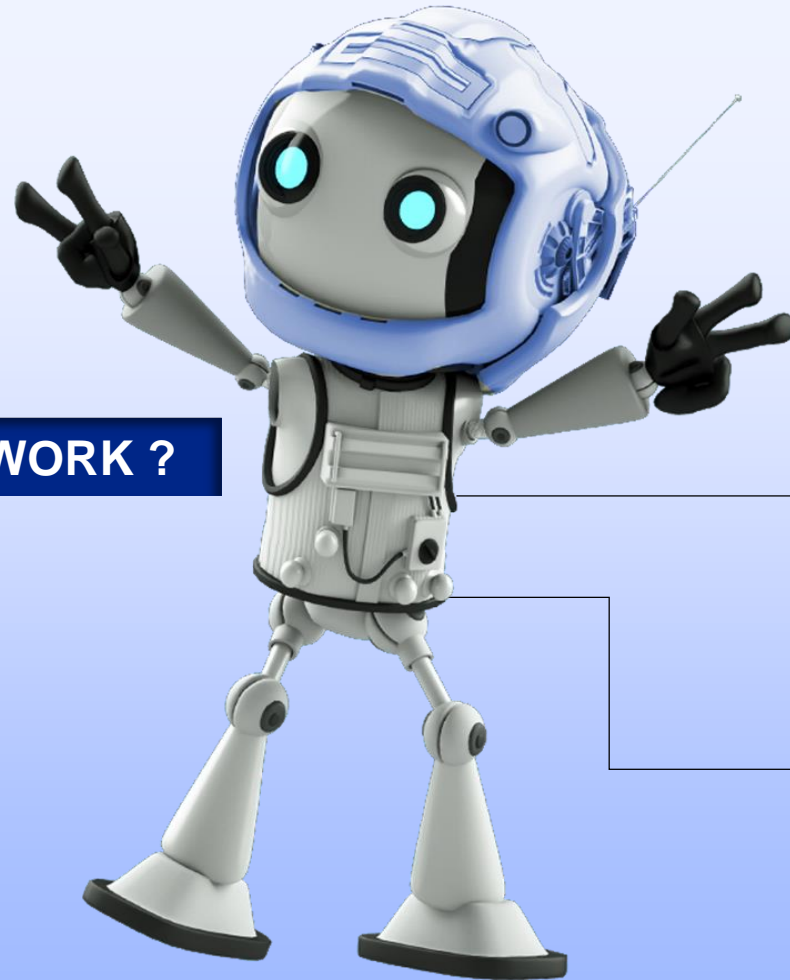
FIRMWARE UPDATE PREDICTOR

Predict whether firmware upgrade is required using predictive analytics model

TEST DATA DISTRIBUTION ANALYZER

Algorithm based solution that plots data distribution patterns and identifies data mining attributes such as unique combination of data.

CXInsight: Powered By Customer Experience Bots



HOW DO I WORK ?

Data Source

- Mobile App reviews (Playstore & iTunes AppStore)
- Social Media Comments/Tweets
- End User/ Survey Feedback in Excel format

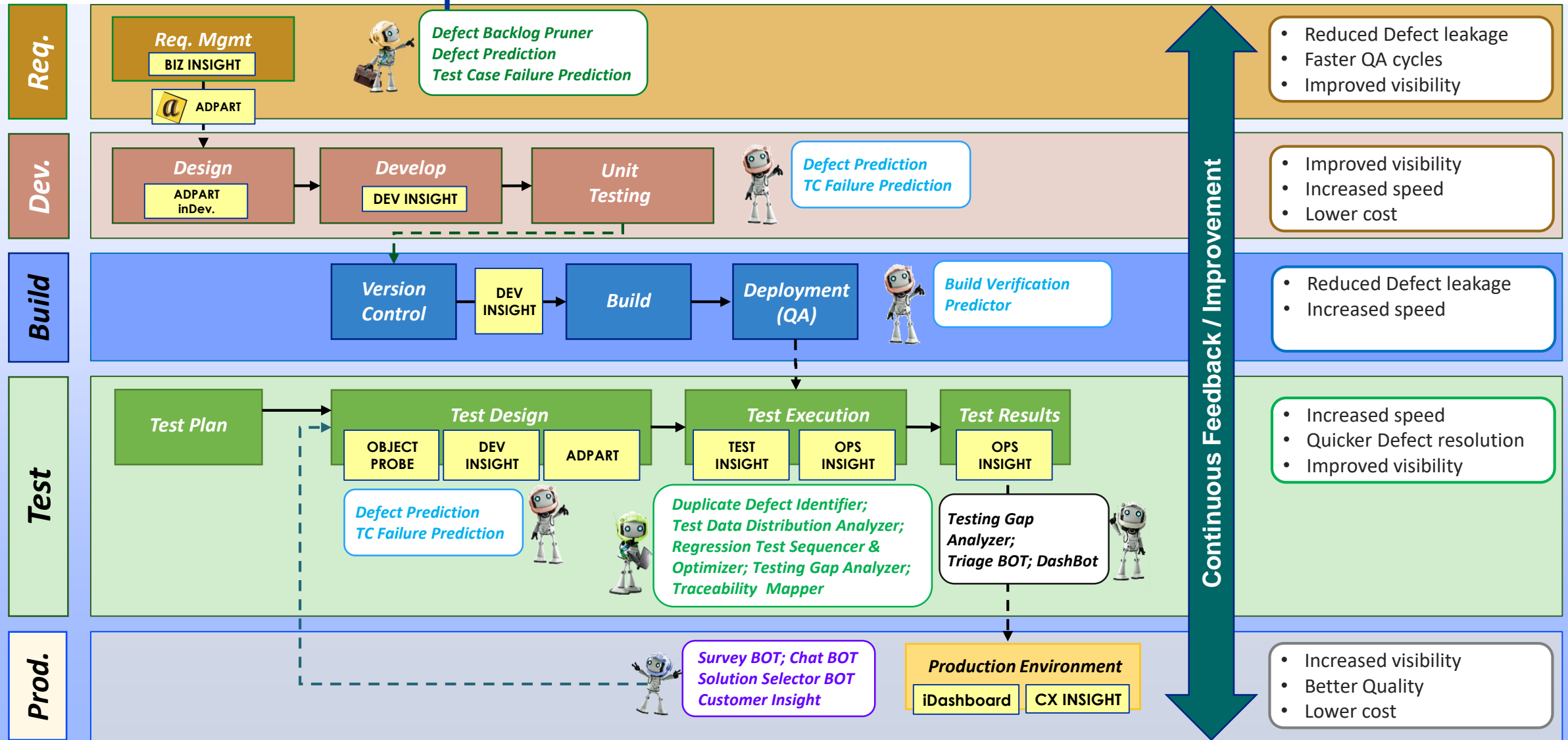
CUSTOMER FEEDBACK ANALYSIS BOT

Helps capturing the voice of the customer and the underlying human emotions with sentiment analysis and clustering end-user feedback into actionable QA attributes like Functionality, Performance, Usability etc

CONVERSATIONAL BOT

Help user in selecting suitable bot in a conversational way/manner.

BOTs in a DevOps workflow



Quick Recap



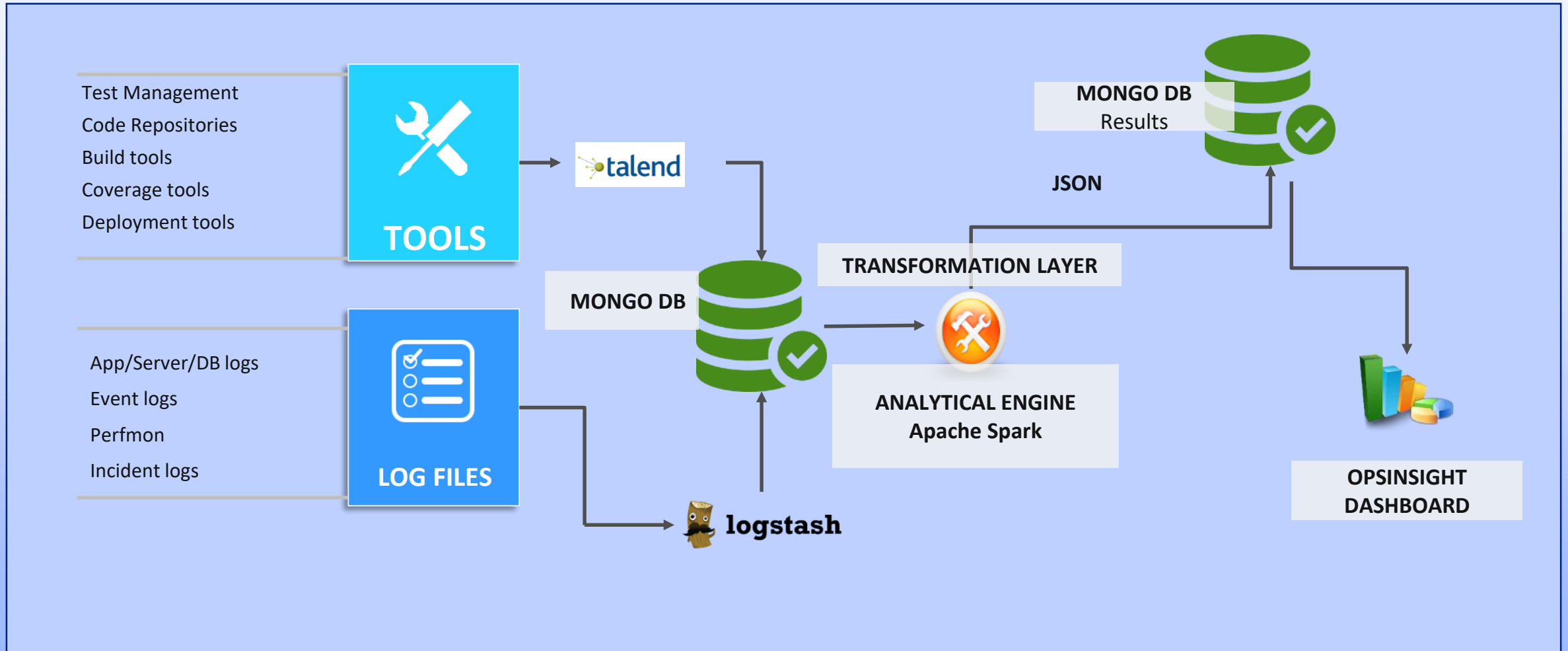
Insight	BoT name
BizInsight	Story Point Predictor
BizInsight	TC Failure Predictor (biz)
BizInsight	Defect Predictor (biz)
BizInsight	Defect Backlog Pruner
DevInsight	Build Verification Predictor
DevInsight	TC Failure Predictor (dev)
DevInsight	Defect Predictor (dev)
TestInsight	Traceability Mapper
TestInsight	Defect Resolution Time Predictor
TestInsight	Duplicate Defect Identifier
TestInsight	Test Data Distribution Analyser
TestInsight	Testing Gap Analyzer Using DB Foot Print
TestInsight	Schedule Variance Predictor
TestInsight	Regression Test Optimizer
OpsInsight	Truck Roll Predictor
OpsInsight	Firmware Predictor
OpsInsight	TriageBot
OpsInsight	Testing Gap Analyzer Using App Server Logs
CXInsight	Conversational Bot

Enabling Digital

Are you ready ?!



QI Architecture



DevInsight: CodeInsight for a Leading Healthcare Solutions Provider

Solution

- ❖ CodeInsight solution was used to automatically scan the application build and tests to develop baseline application and test footprints.
- ❖ The plug and play solution was seamlessly integrated with existing testing tools via in-built plugins and APIs.
- ❖ Leveraged CodeInsight to identify code modifications which were not covered by the existing test suite and plan for additional tests, thereby improving coverage.

Problem Statement

Major Applications followed fortnightly release cycles with significant challenges in completion of testing.

- ❖ Longer regression cycles for every change
- ❖ Repetitive tests due to lack of visibility on code changes
- ❖ Issues with Production stability due to missed test coverage

Benefits

90%

Reduction in the size of the test set from **840 to 84 tests** that were impacted by code changes



Enhanced Collaboration

QA Engineers worked with developers to test each new feature as it was developed, thus ensuring that the final version was reached more quickly through **continuous testing**.

89%

Reduction in test execution time

OpsInsight: Automated Triage For a Major Communications Provider

Solution

- ❖ OpsInsight solution was deployed for automated root cause analysis using a hybrid approach comprising text analytics + classification, boosting the prediction accuracy to 55%.
- ❖ Automated selected of prediction models for processing each new defect
- ❖ Integration with ALM for defect triage update, dashboard and reporting

Problem Statement

- ❖ 3000-4000 defects needed to be triaged on a weekly basis across the enterprise
- ❖ Significant defect triage time of 5-6 hrs per week from multiple stakeholders
- ❖ Initial attempts of Machine Learning based Triage resulted in an accuracy of just 11%

Benefits

45%

Reduced MTTR (mean time to resolve)

QA Engineers were able to identify the root causes of defect in considerably less time leading to a significant reduction in the MTTR. 79 hours/defect in Q1'2017 to 49 hours/defect in Q2' 2017.

~55%

Accuracy of BOTs; 65% for key programs

~\$16M

Projected annualized cost avoidance

\$9.8M

Realized YTD cost avoidance Dec 2017

OpsInsight: Testing Gap Analyzer For a Major Media Company

Solution

- ❖ Analyzing 2 weeks of QA Server Logs, BOT identified 7 defects out of 121 which could have leaked into production due to missing test cases as part of the testing phase.
- ❖ BOT solution used 2749 log message as input and able to cluster the log files into 11 groups their by having similar log message content.
- ❖ The team added 20 new test cases to address these gaps

Problem Statement

- ❖ To identify the gaps in testing by analyzing errors in Server Logs
- ❖ Prevent Defect leakage to production
- ❖ To obtain quicker insights from server logs by applying Machine Learning Algorithm

Benefits

6%

Improved Test Effectiveness

37% of QA defects were identified as additional defects with QA Server Logs for 1 Release



Enhanced User Experience

Preventing these defects in production led to better user experience



Recurring Effort Savings

Reduction in Devops effort every release due to prevention of defect leakage to production