

Validata **Sense.ai**[™]

AI-powered Risk Coverage Optimiser

Doing more with less

Risk is the new currency and with DevOps and Continuous Delivery, releasing with both speed and confidence, requires having immediate feedback on the business risks associated with a software release candidate. Testing is an absolute essential component to accelerate the delivery of new digital applications and to ensure that these will work as expected or will break the core functionality. QA is continuously being asked to deliver more with less time and less resources and there is simply not enough time to test everything – every possible customer journey before each release.

If we re-assess the way we do our testing, we can achieve better coverage with much less testing. This does not mean that the quality of your applications has to suffer. In fact, advances in AI and QA can help increase the level of quality when resources and time are shrinking.

Validata

For example...

What is optimal when you have limited amount of time and budget, let's say one day available for testing and 500 USD to spent on this?

Optimal is to maximize defect detection, minimize costs by reducing the number of resources, machines, testers etc, minimize execution time by reducing the number of test cases and maximise risk coverage in a pre-defined time frame and budget.

How can we achieve that?

There are 4 key factors in this risk optimization exercise:

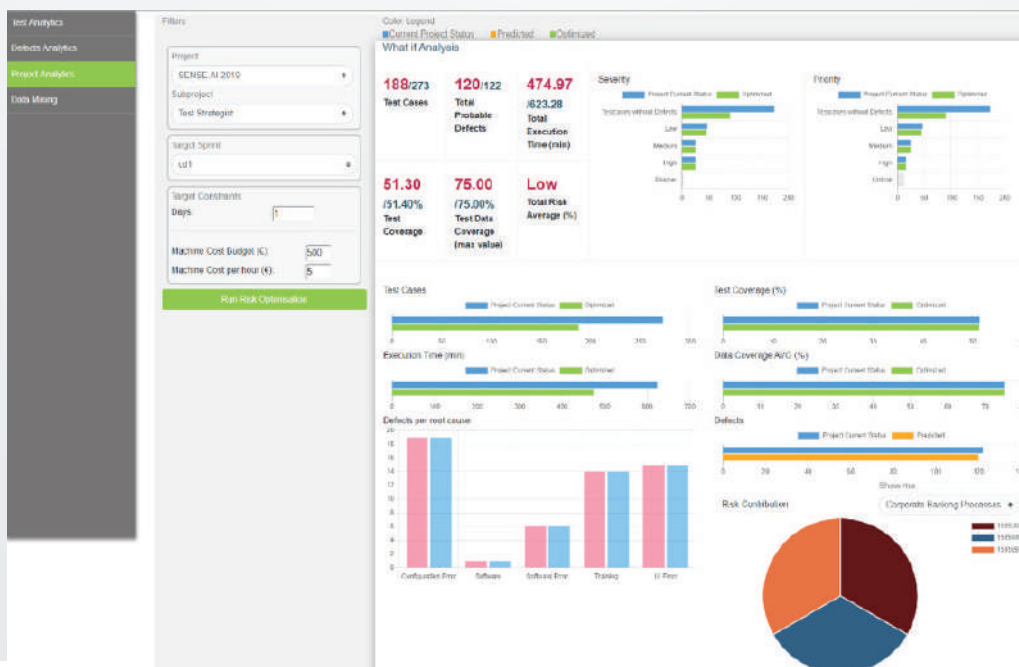
- i) Frequency in business activity of an end user journey – transaction
- ii) Damage to the business in case it has an anomaly
- iii) Defect identification ratio in the same transaction area, and
- iv) the test cases that have revealed previously the highest ratio of defects, which means that their risk optimization contribution is high!

We need to know the probability that a certain test case will detect a defect of a certain severity and the average execution time of each test case, and this can be derived and approximated from past runs. For new test cases this can be estimated based on average execution time of test cases with similar sequence of test actions. We also need to know the risk contribution of each individual test case and this can be identified when this test case is linked to a requirement and business risk.

Leveraging AI and machine learning, **Validata Sense.ai Risk Coverage Optimiser** allows you to minimize the number of test cases required for optimum coverage and lower business risk. This means that the testing activities can be aligned with the risk business objectives and the organization can achieve a **higher ROI, faster time to market while reducing business risk**.

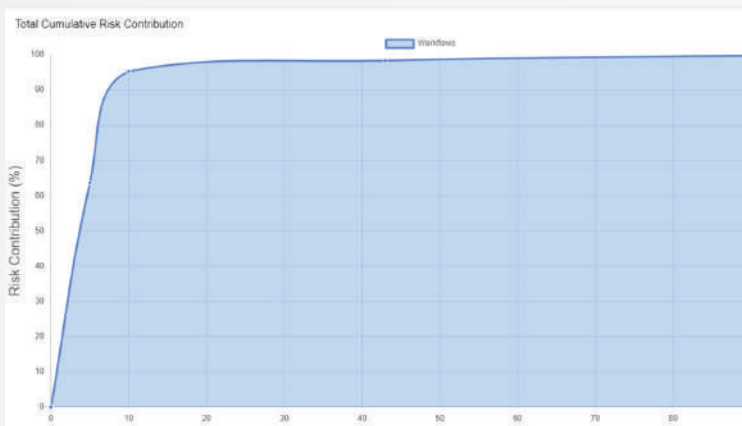
The core of **Validata Sense.ai** is our AI engine which is comprised of AI and advanced machine learning algorithms, as well as a learning engine that uses Particle Swarm Optimisation (PSO) and Artificial Bee Colony (ABC) algorithms which are part of our computational intelligence technology. It makes it safer to upgrade legacy code by showing the effect of certain upgrades and modifications of existing behaviour. It also provides a level of documentation to empower testers and developers to understand the impact of changes and make more informed decisions so further legacy challenges are prevented.

Other approaches to finding bugs suffer from lack of precision creating false positives and false negatives. Our **'build for change'** technology produces real, actionable test cases rather than just creating alerts. It delivers precise intelligent insights to the Project or Test Manager who would want to highlight the relevant high-risk test cases, making it the best solution for an organisation that aims to create high quality test cases automatically and streamline this challenging step in the software delivery lifecycle. Through the platform's explainable AI technology, the user gets 100% justified recommendations, that trigger proactive actions for the sprint or cycle test optimization against the business risk and bug hunting.



How does AI for Business Risk Coverage work?

Validata model follows the 80-20 rule, where the algorithms seek the 20% of the test cases that cover 80% of the business risk.



By monitoring and analysing past project data and historical trends, it predicts the performance impact and recommends which test cases should be run for maximum coverage, given constraints in time, resources and defects found. It prioritises user journeys and identifies the most important test cases to be executed first, enabling you to detect bugs for the critical business areas much earlier. This way, you can take advantage of a shift-left, risk-based testing approach to mitigate the risks and test changes more efficiently.

For each test case the following features are calculated:

- Frequency of the End user scenario in the bank's business
- Damage that can occur if the End user scenario is error prone and has anomalies
- Number of Defects found in past runs
- Risk contribution on each workflow to find the optimal workflow of one business area
- The time required to run the Test Case in minutes
- The coverage and data coverage of the Test Case
- The cost in terms of man-days / man-hours required to run the Test Case
- Budget constraints

Product	Frequency	Damage	Weight	Relative Weight	Risk Contribution
Corporate Banking Processes	3.00	4.00	120.00%	10.71%	63.60%
Requirement	Frequency	Damage	Weight	Relative Weight	Risk Contribution
Manage Mandates (Corporate)	3.00	4.00	120.00%	10.71%	63.60%
Core Parameter Maintenance Processes	5.00	5.00	1,024.00%	85.02%	31.68%
Requirement	Frequency	Damage	Weight	Relative Weight	Risk Contribution
Condition Priority	5.00	5.00	1,024.00%	85.02%	31.68%
Not linked to Requirement	3.14	2.29	43.07%	3.60%	3.07%
Requirement	Frequency	Damage	Weight	Relative Weight	Risk Contribution
Not linked to Requirement	3.14	2.29	43.07%	3.60%	3.07%

AI-powered Project Risk Assessment and Analysis

- The system calculates the values for each individual risk and then the **Global Risk Value** for the project. It is also able to calculate the Value at Risk (VaR) to estimate the maximum possible losses that may occur due to a risk.
- By combining the Global Risk and VaR values, the system **prioritises the projects with high risk** that require attention and actions, and generates AI recommendations with possible measures to lower the risk based on Time, Quality or Cost.
- By quantifying the risk of not detecting bugs and the impact of new product versions on the user before release, project stakeholders can take more informed, actionable decisions.



Benefits

- Anticipate the needs with 'next best action' technology
- Real-time insights into your current business risk coverage and release readiness
- Maximise defect detection
- Minimise execution times
- Accelerate your testing by minimising the number of test cases required
- Have the testing activities aligned with your business risks—all the way!
- Maximise your business risk and test coverage
- Achieve higher ROI