



GENROCKET ROI ANALYSIS

December 2023

The Impact of Synthetic Test Data Automation

GenRocket's *Synthetic Test Data Automation* provides multiple benefits to Agile teams and delivers increased ROI at every stage of adoption and deployment. Its flexible self-service platform allows developers and testers to generate any volume or variety of synthetic data for any testing requirement on-demand. GenRocket technology has been successfully deployed across the full spectrum of testing categories.

- Component testing
- Performance testing
- Functional testing
- Integration testing
- API testing
- Regression testing

***Synthetic Test Data Automation* eliminates the need for manual data creation and drastically reduces provisioning time when compared to testing with sensitive production data.**

Real-World Impact of the GenRocket Platform

To project the ROI that your organization can achieve with GenRocket, consider the recent experience of a global financial services company that has deployed the platform. They implemented a GenRocket technology adoption program across their Card, Bank, Payments, Analytics and Enterprise teams to achieve the following goals through the broader use of synthetic data:

- Assured data privacy versus testing with sensitive production data
- Accelerated data provisioning time enabling fully automated testing
- Greater testing accuracy leading to lower software defect rates
- Improved agility in responding to new application requirements

During a six-month initiative they were able to increase the adoption of scrum teams to 23 total teams and realized a dramatic increase in operational efficiency.

- Annual time savings of 1,212 hours (equal to 30 person-weeks per year)
- A 98% reduction in test data provisioning time (days reduced to minutes)
- A 67% improvement in test coverage (more testing with greater data variety)

Here are some examples of the test data use cases implemented by scrum teams:

- Increase combinatorial testing to cover 6,000 data permutations
- Ensure PCI compliance with synthetic data for 532 functional tests
- Simulate shopping transactions to train machine learning algorithms
- Test over 60,000 mapping rules across multiple general ledger data feeds
- Validate the rules used by a Data Loss Protection tool to ensure its effectiveness

Reduction in Test Cycle Time

To project an ROI for your organization, the experience of the financial services company described above provides a baseline for calculating annual cost savings as GenRocket is rolled out to your own internal teams. If we assume a blended labor cost for a team comprised of software developers, quality assurance analysts, and testers, we can calculate the dollar value of time savings associated with accelerated testing and a reduction in software defects enabled by the GenRocket platform.



U.S. BUREAU OF LABOR STATISTICS

The blended labor cost of \$124,200 is based on the 2022 median pay published by the [US Bureau of Labor Statistics](https://www.bls.gov). The median pay is the wage at which half of the workers in the occupation earned more than that amount, and half earned less. Median wage data are from the BLS Occupational Employment and Wage Statistics survey. We burdened this annual salary by 25% to cover benefits, facilities expenses and overhead. This translates to a full burdened labor cost of \$75 per hour.

The financial services company cited above realized a reduction in test cycle time of 1,212 hours across 23 scrum teams during the first year. That means that each scrum team averaged just over 52 hours in time savings during the year. **This time savings was due to significantly faster data provisioning time by replacing the use of copied, subsetting and masked production data with synthetically generated data and by eliminating the use of manually created data.**

Based on the average time saved and the average hourly labor cost, we can project the annual cost savings for various stages of deployment of GenRocket’s *Growth Edition*, the lowest pricing tier of its TDA platform. The *Growth Edition* provides capacity for scaling up to 100 teams, assuming 5 teams per Test Data Project and 1 Test Data Project per application under test.

The projected annual cost savings are given in the table below.

Savings From Reduced Cycle Time

Number of Scrum Teams	Hours Saved per Team	Annual Time Savings	Average Hourly Cost	Annual Cost Savings
25	52	1,300	\$75	\$96,876
50		2,600		\$193,752
75		3,900		\$290,628
100		5,200		\$387,504

We believe these assumptions are conservative. **GenRocket routinely accelerates days of test data provisioning time down to just a few minutes.** This creates a dramatic reduction in test cycle time, while at the same time, increasing the number of tests that can run with a greater volume and variety of test data.

Reduction in Software Defects

While GenRocket technology can significantly accelerate the testing process, an even greater benefit is increasing the coverage and quality of testing. This can drastically reduce the number of software defects that must be corrected, either during the development and release cycle or after bugs are introduced into a production environment. In this regard, **GenRocket truly delivers on the promise of *quality at speed*.**

Here's how GenRocket can deliver significant cost savings by reducing the number of software defects. There are many estimates for the average number of bugs introduced in 1,000 Lines of Code (LOC).

In the book "[How Google Tests Software - Help me test like Google](#)," the authors describe a mid-size software development project and present Google's own numbers for code size (200K LOC), the defect rate (8 bugs per 1,000 LOC) and the average cost to fix a bug (\$1,500). Other sources estimate the average defect rate per 1,000 LOC in the range of 5 to 15 bugs. Developers in [Stack Overflow](#) report lower defect rates in the range of 1-15 per 1,000 LOC. The actual number of defects depends on the type of code, programming language, the stage of development, and the level of test automation rigor and sophistication.

To keep the ROI analysis very conservative, we'll use an average of 2 bugs per 1,000 LOC.

The next important factor to consider is the average cost to fix a bug. Again, the estimates cover a wide range depending on the severity of the bug and its stage in the development process. Google's average cost estimate for fixing a bug is \$1500.

[Capers Jones](#) describes a range of 3 hours to 10 hours depending on the type of bug. We believe a conservative estimate is 2 hours of a developer's time to correct a software defect. This is half the estimate provided by [Jeff Sutherland](#), one of the inventors of Scrum.

To estimate the average cost of fixing bugs, this ROI analysis will use a conservative \$150 per bug based on 2 hours of a developer's time at the rate of \$75/hour.

The following table shows potential cost savings for code ranging in size from 1,250K LOC to 5M LOC (see the first column). This range assumes an average scrum team contains 7 individuals, 5 of whom are developers with each developer generating 10K LOC per year. This range of application sizes allows the reader to match the projected cost savings to the scope of their own environment. The next three columns calculate the number of bugs that must be resolved each year, the time to fix them, and the labor cost measured in developer time.

Saving From Reduced Software Defects

Size of Application	Defect Rate Bugs/ 1000 LOC	Time to Fix Hours	Developer Rate Hourly Rate	Projected Defect Reduction
	2	2	\$75	50%
LOC	Bugs	Time to Fix	Cost to Fix	Cost Savings
1,250,000	2,500	5,000	\$375,000	\$187,500
2,500,000	5,000	10,000	\$750,000	\$375,000
3,750,000	7,500	15,000	\$1,125,000	\$562,500
5,000,000	10,000	20,000	\$1,500,000	\$750,000

The last column presents the projected cost savings from defect reduction after deploying GenRocket's Synthetic Test Data Automation solution.

The GenRocket platform can easily reduce any defect rate by 50% or more through the use of advanced and intelligent data-driven testing methods. GenRocket is routinely used to test scenarios that are simply not possible with conventional test data sourced from a production database. **GenRocket allows developers and testers to design and generate any type of synthetic data to maximize test coverage.**

- All combinations and permutations of data
- Positive and negative test data values
- Boundary and edge case conditions
- Patterned and rules-based data values
- Stateful and dynamic workflow data
- Fresh data uncorrupted by prior usage
- Billions of rows of data for load and performance testing

And as stated previously, the accelerated cycle times enabled by GenRocket allow for more testing at all stages of the software development lifecycle.

The Combined Benefits of Acceleration and Defect Reduction

The table below summarizes the combined benefits of **Cycle Time Reduction** and **Defect Reduction**. It illustrates the total annual savings GenRocket can deliver for various levels of scrum team deployment and across a range of application code sizes. It illustrates the potential ROI for the *Growth Edition* investment of \$55,000 as more Test Data Projects are used by more scrum teams to deliver greater acceleration and defect reduction.

After 25 teams have deployed GenRocket into their dev and test environment, your organization can realize \$284,376 in annual cost savings driven by accelerated testing and improved defect reduction. That equates to a 417% ROI.

Summary of Cost Savings and Projected GenRocket ROI

GenRocket Investment	GenRocket Projects	Cycle Time Reduction		Defect Reduction		Total Annual Savings	ROI
		Scrum Teams	Labor Cost Savings	LOC	Labor Cost Savings		
\$55,000	5	25	\$96,876	1,250,000	\$187,500	\$284,376	417%
	10	50	\$193,752	2,500,000	\$375,000	\$568,752	934%
	15	75	\$290,628	3,750,000	\$562,500	\$853,128	1451%
	20	500	\$387,504	25,000,000	\$750,000	\$1,137,504	1968%

The annual cost savings in the table demonstrate how rapidly the return-on-investment in GenRocket technology increases with each stage of scrum team deployment and progressively larger application sizes. The GenRocket solution easily pays for itself in a matter of weeks or months. The faster and broader the GenRocket deployment grows, the greater the return-on-investment your organization will realize.

To see GenRocket's *Synthetic Test Data Automation* platform in action, schedule a demo with one of our TDA experts. Then request a Proof of Concept (POC) to experience the benefits of this advanced technology in your environment.

SCHEDULE A DEMO