SYNTHETIC TEST DATA AUTOMATION

Enterprise Features and Their Value

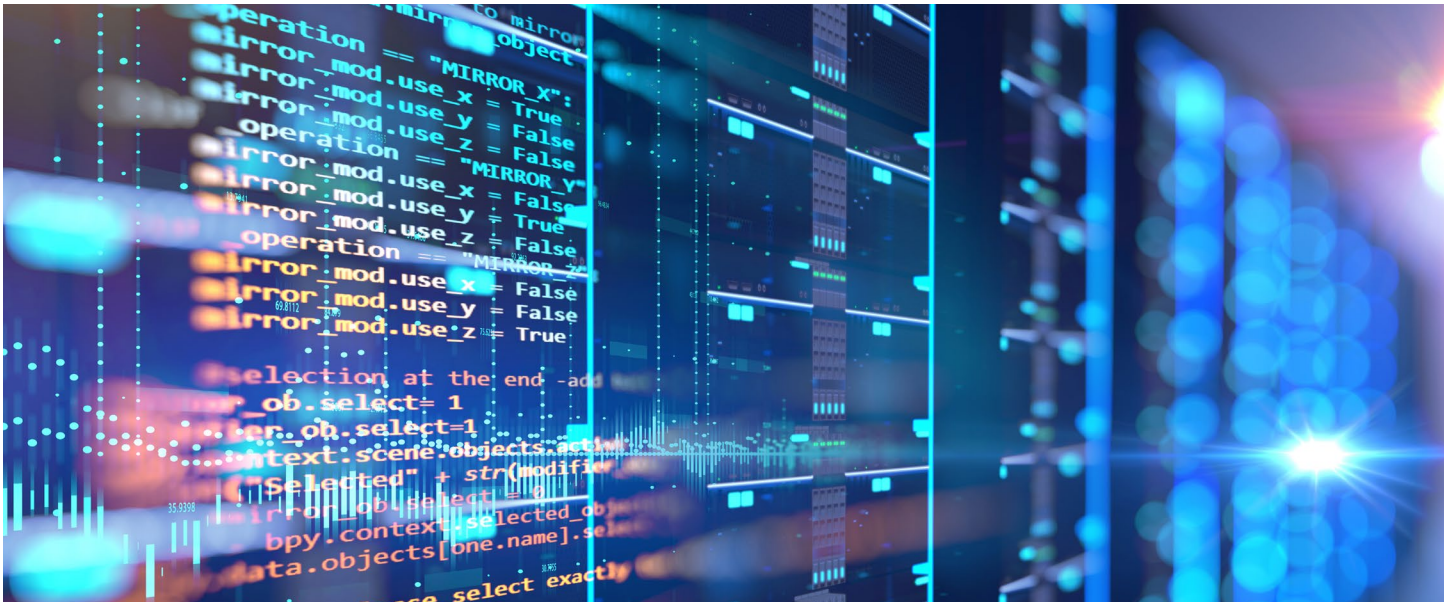
MODELING Your Application or Database

In order to generate test data that accurately reflects the structure of your application or database, an enterprise class test data platform must offer many ways to automate the setup of an accurate data model as a Test Data Project. In addition, multiple versions of the Test Data Project will be needed to allow testers and developers to use test data that accurately reflects different versions of the application data model. And, as all software goes through a life cycle, the enterprise class test data solution must offer automations to make it easy to detect and update changes to the data model.

Test Data Project Modeling - 15 Different Tools to Accelerate Project Setup		
Referential Integrity	**Support**	**Why this is Important**
Maintain referential integrity of parent/child/sibling relationships across the data domains within an application database or across mulitple databases used by multiple applications.	YES	Maintaining referential integrity (parent-child-sibling relationships) is required for data to be valid and useful. The data must maintain referential integrity within one test data project and across potentiall many different test data projects. GenRocket holds a U.S. patent for generating test data while maintaining referential integrity. Patent Number: US 9,552,266 B2
Ensure data consistency across multiple applications, data sources and targets. For example, a customer name must always match the same customer ID across multiple transactions simulted by real-time synthetic data generation across multiple applications.	YES	Data consistency is essential for regression testing where the exact same data needs to be generated on every test run. Data consistency is also essential for test data when data flows through API's and across many applications in complex workflow testing.

Test Data Model Setup	Support	Why this is Important
Currently available number of methods to ingest a data model from many different formats or sources such as a database or design a test data project from scratch.	15 Methods	Customers want automations that will allow a Test Data Engineer to quickly and accurately build a test data project that accurately reflects the data relationships in the related application or database. GenRocket offers 15 different methods for data model setup. The most widely used are XTS (Extract Table Schema), Import from GenRocket JSON Schema (importing a data schema from Metadata Management tools such as Ab.Initio and Alation and Collibra) and XSD (XML Schema Definitions). Other, currently available, Test Data Project setup methods include an X12 EDI accelerator, DDL, Quick Pattern, Standard Domain, Scratchpad, Presets (Pre-Built Templates), CSV, YAML, JSON, Avro JSON Schema, Spark Schema, and Salesforce.
Ability to read a SQL database as a data source	YES	Customers want to quickly and accurately create their data model as a test data project for SQL databases. XTS (Extract Table Schema) reads the meta data of any SQL database and uses the metadata and intelligent automations to accelerate and automate the setup of a test data project for that SQL database. An XTS wizard helps to accelerate the tuning of the data relationships and other data model setup steps.
Ability to setup a Test Data Project using information available in Metadata Management (MDM) tools such as Ab.Initio, Alation, or Collibra	YES	Ability to setup a Test Data Project using information available in Metadata Management (MDM) tools such as Ab.Initio, Alation, or Collibra
Ability to setup a Test Data Project using XSD's	YES	Data models are often being defined as XML Schema Definitions os XSD's. XSD's tend to have variations in how they are defined so GenRocket offers a generic import method for JSON that provides Test Data Project setup based on the different JSON formats from MDM tools.
Ability to setup a Test Data Project using DDL's	YES	Databases have the ability to export their data model (metadata) as a DDL. GenRocket has the ability to automate the setup of a single Domain (Table) or many Domains (Tables) via DDL. Test data project setup via DDL is available for 30 popular databases including DB2, MS SQL, MySQL, S/4HANA, Oracle, PostegreSQL, RedShift, Snowflake and Teradata.
Ability to read a NoSQL database as data source	YES	Customers want to quickly and accurately create their data model as a test data project for NoSQL databases

Test Data Model Setup	Support	Why this is Important
Ability to read JSON data structures as data source	15 Methods	Customers want to quickly and accurately create their data model as a test data project using JSON data structures
Ability to quickly build data models / relationships for permutation testing	YES	Quick Pattern Domain is a GenRocket test data project setup tools that allows a Test Data Engineer to quickly create data Domains that follow a common design pattern. There are currently three available design patterns through the Quick Pattern Domain setup method: Map/Type Table, List, or Permutation. Data permutations and combinations allow developers and testers to generate data to fully test data combinations for an application that goes far beyond the data that is available in production data copies.
Ability to build models of data on the fly without direct reference to a database as a data source	YES	Scratchpad is a convenient tool that quickly sets up a test data Domain with associated Attributes. This tool is ideal for developers and testers who previously created data manually or in spreadsheets or who wrote scripts to generate data. In a matter of minutes, Scratchpad can be used to model, design and generate new, accurate test data.
Graphical display of data relationships	YES	Proper testing requires that developers and testers understand the data relationships of what they are testing. GenRocket's graphic visualization of data relationships within data families allows developers and testers to visually see data relationships allowing a better understanding of what they testing and the data they need to accurately test.



Life Cycle Management	Support	Why this is Important
Ability to intelligently detect data model changes in a source SQL database	Yes	Data models change over time. GenRocket's G-Delta, combined with XTS Wizards, detects data model changes in SQL databases, notifies the GenRocket Org Admin, and allows the Org Admin to approve automated updates to the data model.
Ability for the data model, relationships and data generators to automatically adapt when a change occurs (e.g. a new Table is added or removed or a new Column is added or removed)	Yes	When an Org Admin approves a data model update, G-Refactor handles tha update automatically and will update all impacted data Domains, Attributes, Scenarios and Test Data Cases in that Test Data Project version.
Ability to manage multiple versions of data models and sources as different Test Data Project versions	Yes	Test data projects should be easily versioned so that test data can be provided for many different versions of the software application / database. GenRocket versioning is fully automated and can be done with the click of a button. The number of available project versions is dependent on the GenRocket license level.

DESIGNING Your Test Data

Masked or synthesized production data copies lack the volume and variety of data that is needed by developers and testers which is why so much test data is currently created by hand, in spreadsheets or by writing scripts. An enterprise class test data platform must allow any volume and variety of data to be quickly **designed** by a small, central team of Test Data Engineers and deployed through a self service portal for use by large teams of developers and testers.

Test Data Design		
Automated and Accelerated Test Data Design	**Support**	**Why this is Important**
Ability to automate the design of commonly used test data such a data for Unit, Integration and Load testing	Yes	Commonly used test data needs be made available to developers and testers quickly without delay. GenRocket's G-Families tool allows Test Data Engineers to automate the design of test data for common requirements such as Unit, Integration and Load testing within a family of related data tables.

Automated and Accelerated Test Data Design	Support	Why this is Important
Ability to accelerate the design of essential test data such as unique, negative, edge case and data for permutation and combination testing	Yes	Essential test data such as unique, negative, edge case and permuation data needs be made available to developers and testers quickly without delay. GenRocket's G-Families allows Test Data Engineers to accelerate the design of essential test data within a family of related data tables in minutes.
Ability to have a central Test Data Engineer design test data with "self service" modification of the test data by developers and testers	Yes	Developers and testers want to be able to get the data they need through a "self service" portal and be able to adapt / modify the data themselves to meet their exact test case requirements. GenRocket's G-Questionnaire allow developers and testers to go through minimal GenRocket training and be able to modify test data cases to meet their exact test case requirements.
Data Generators	**Support**	**Why this is Important**
Number of data generators currently available	710	An enterprise class synthetic test data platform must offer an extensive range of data generators that meet all data variety requirements. GenRocket's 10+ years of experience working with enterprise customers means we currently offer over 710 data generators that currently meet all of the diverse data requirements of our customers across the world. GenRocket also adds new data Generators for customers at no cost, upon request.
Data generators have parameters that allow user defined control over the data that is generated (random data, patterned / sequential data, null, %, etc.)	Yes	Random test data coming from production databases is not ideal for many test case requirements because the data is not in a known state or condition. Synthetic data offers the ability to generate data that exactly matches test case requirements. Often data needs to be patterned and sequential, null, or broken into percent weightings. GenRocket offers full accuracy and control of the data that is generated as well as the desired volume and format.
Ability to configure Generators so that data is generated in exact length and types	Yes	To accept data, databases often require data of an exact length and type. GenRocket allows exact control over length and type of data.

Data Generators	Support	Why this is Important
Ability for data to be dynamically generated based on variables that change *during* the data generation process	Yes	In complex testing, where data is flowing through multiple systems, the data may need to be dynamically generated based on an evaluation of the data at a particular stage in a process. So when a customer balance reaches $50,000 in a savings account and the customer is a "gold" customer then a Gold customer account number prefix can be generated. GenRocket data is not static and offers a rich set of dynamic data generation functionality
Ability to generate all valid permutations & combinations of data	Yes	In regulated industries, where compliance and full testing is required, partial testing isn't enough. Full testing comes from testing all valid permutations and combinations. Permutation testing with production data copies is not possible and attempting to do this in spreadsheets is close to impossible. GenRocket provides automations to accelerate the setup and generation of data to fully test all valid permutations and combinations.
Data generators can generate identical data every time data is generated	Yes	In testing environments, data for each test needs to be predictable and often needs to be the identical data for every run of that test case to ensure validity of the test. GenRocket's "seed" feature allows test data that is generated by a data generator to be identical every time the data is generated.
Data Generators can insert data into an existing database that already contains data ("data augmentation"). For example, additional transactions or claims. The added synthetic data needs to accurately augment the existing data in the database	Yes	When generating data to be added to existing data in a database, there needs to be a method to ensure data generation starts from the last data value in the database. GenRocket "Eval Case" Generators can determine the last ID number or Account number (for example) and accurately add incremental synthetic data to the production data.
Data Generators can remember where they stopped generating data and start again where they left off. Often called "stateful data generation"	Yes	Sometimes you need to generate a set of data for a test and then continue, picking up data generation, where you left off. For example, you generate 10,000 records and then when you start again you want to start on record 10,001. GenRocket Generators have the ability to hold "state" and support this requirement.
Ability to combine (link) multiple generators to increase the flexibility of data that is generated	Yes	For thorough application testing there is an almost infite variety of data that is needed. While GenRocket already offer 710 Generators, our "Linked Generator" feature allows multiple Generators to be linked together to allow an almost unlimited variety of test data to be generated.

Data Generators	Support	Why this is Important
Generators must be intelligent and be able to "talk" to each other - for example a city must match a valid state and postal code	Yes	To be useful and valid, synthetically generated data values need to relate to other data values. For example a City, State and Postal Code should all match. GenRocket Generators have the ability to "talk" to each other to ensure that generated data is valid.
Ability to generate a dataset based on percentages as well as percentages within percentages	Yes	Testing usually requires control over the test data to ensure that the weighting (percentage) of data generated is realistic or intentionally unrealistic (negative, edge). Percentages and percentages within percentages should be able to be generated easily. GenRocket has extensive data weighting (percentage) generation functionality.
Ability to store or add re-usable assets into a Generator (e.g. a list of car types: sedan, convertible, hatchback)	Yes	Not all data needs to be synthetically generated. When there is a small list of known values, such as car types, it's useful to store the required values and use them. GenRocket offers a "List Generator" for this purpose as well as 18 different Query Generators that can query data such as a list of real postal codes from a file (spreadsheet) or from a SQL or NoSQL database in real time during the data generation process.
Ability to generate transactional / historical data for the past or future	Yes	Some test cases need to test transactions that have not yet happened (future) or need to be simulated for the past. GenRocket easily generates transactional data in the past, present or future.
Data Generators can remember where they stopped generating data and start again where they left off. Often called "stateful data generation"	Yes	Sometimes you need to generate a set of data for a test and then continue, picking up data generation, where you left off. For example, you generate 10,000 records and then when you start again you want to start on record 10,001. GenRocket Generators have the ability to hold "state" and support this requirement.
Test Data Cases, Stories & Epics	**Support**	**Why this is Important**
Ability to design and organize test data for many different testing scenarios that can be used by one or many different testing teams	Yes	Testing at the enterprise level involves the creation of potentially thousands of test cases. Each test case needs data that exactly matches test case requirements. The ability to rapidly design accurate test data for each test case is essential. GenRocket has a powerful "Test Data Case Management" module that is used by Test Data Engineers to design and organize Test Data Cases that can be searched for through the GenRocket Portal by teams of developers and testers.

Test Data Cases, Stories & Epics	Support	Why this is Important
Ability to orchestrate a series of test data scenarios in a sequence as part of a larger testing process or an end to end workflow	Yes	System testing and end to end workflow testing requires test data that is referentially accurate and that is sequenced at the right time in the testing process. GenRocket Test Data Cases can be packaged into a group of Test Data Cases called Test Data Stories and groups of Test Data Stories can be packaged up into what we call Test Data Epics. This packaging makes it much easier to orchestrate delivery of test data.
Test Data Rules	**Support**	**Why this is Important**
Ability to create simple or complex rules that control what test data is generated. No coding should be required to create or use the rules.	Yes	Accurate testing of software algorithms requires test data that meets very specific values and conditions. Production data copies often do not contain data that exactly matches specific rules and conditions so test data for many test cases has to be built by hand, spreadsheet or via a script. GenRocket allows any volume and variety of data to be generated and that data can be generated based on very specific rules and conditions without any coding skills.
Test Data Rules can be reused	Yes	For versatility of the data generation platform, test data rules should be able to be created and re-used to control data generation for many different scenarios. In GenRocket, different Test Data Rules can be created once and re-used in one or many different Test Data Cases.
Test Data Queries	**Support**	**Why this is Important**
Ability to query and blend real production data values (e.g. account#, member ID#) with synthetically generated data for data validity	Yes	While synthetic test data meets most testing requirements, there is certain "enumerated" data (real production data values) such as Member ID#, Account #, ICD-10 Code (healthcare) that is real and necessary for data validity in a system. GenRocket offers 17 query generators that can query specific enumerated data values. Test Data Queries make it easy to query specific data values and blend those data values into a Test Data Case with synthetically generated data.

Test Data for Complex End to End Workflow Testing	Support	Why this is Important
Ability to design test data for testing complex end to end workflows across heterogeneous environments. Ability to handle complex decision-trees and have the test data system map / keep track of key value pairs between the data components	Yes	Enterprise class testing is rarely within a single, isolated application. Full application testing usually requires end to end workflow testing. GenRocket offers architectural components that allow test data to be designed and mapped as part of complex workflows while maintaining referential integrity throughout a workflow. One of the key GenRocket components is called G-Map Server.
Ability to design and orchestrate test data delivery for complex multi-system workflows	Yes (New Feature also in Development)	Delivering test data that is useful for complex workflow testing such as an airline reservation system or an insurance policy system is a significant challenge. GenRocket has an ideal architecture to handle complex workflow testing across many different applications. Key GenRocket components for complex workflow testing include G-Map Server, Master Projects, Organization Variables, Organization Attributes and a new module that allows easy design of test data for complex test data workflows, G-Workflow. The new G-Workflow module is in development with expected availability in November / December 2022.
Data Stubbing	**Support**	**Why this is Important**
Ability to "stub" or mock a response coming from an external system	Yes	In complex workflows, where there are multiple steps, there are often external system dependencies such as a United States Social Security Number being validated against the the U.S. Social Security Administration database. In some instances, the external system is not available, is expensive to connect to, or testing is being done in a "black box" so there is no external connectivity. In these cases, it's essential to be able to stub or "mock" the response from the external system. GenRocket offers the ability to design stub responses from external systems as part of complex workflows.

DEPLOYING Your Test Data

Supporting the test data needs of the large enterprise means that the test data platform has to support an extensive range of data formats across industries. It also means separating who models and designs the test data (a small, highly trained central Test Data Engineering team) and who uses / deploys the test data (users, meaning developers and testers). Test data must be available through a “Self Service” portal that provides access to test data by large, distributed dev & test teams. And test data must integrate cleanly into any testing tool or framework and be deployed “on demand” as part of an automated CI/CD pipeline.

Deployment and Integration with Test Environments		
Test Data Formats and Databases	**Support**	**Why this is Important**
Number of data types, data formats and databases supported	96	Enterprises require support for a wide range of data formats and databases. An enterprise class test data platform must support a broad variety of data formats from legacy formats such as VSAM and EBCDIC for IBM mainframes, just about any SQL database such as DB2, MS SQL and MySQL, NoSQL databases such as MongoDB, flat and nested XML and JSON, message formats like Kafka and SWIFT, nested transaction sets such as X12 EDI, data in motion over sockets and REST API's, support for clouds such as AWS, Azure and GCP, as well as support for modern cloud formats and databases such as Parquet, Avro, Redshift and Snowflake. GenRocket supports the widest range of data formats of any test data vendor. Test data formats are supported by the 96+ different GenRocket "Receiver" components. The list of current supported data formats is here: https://genrocket.freshdesk.com/support/solutions/articles/19000114411-genrocket-supported-output-formats New Receivers are usually added, upon request, for our customers within one or two sprint cycles.
Ability to directly insert data into SQL databases with no coding required	Yes	Test data solutions should be able to directly insert data into any SQL database without any coding required. GenRocket Receivers are automatically pre-configured so setup is quick and easy and the Receivers allow data to be inserted into just about any SQL database over JDBC. In addition, GenRocket offers "bulk load" Receivers for huge volume of data insertion into (currently) five popular databases (DB2, Oracle, MS SQL, PostgreSQL and MySQL). New bulk load Receivers can be added upon customer request at no cost.

Test Data Formats and Databases	Support	Why this is Important
Ability to directly insert data into NoSQL databases with no coding required	Yes	Test data solutions should be able to quickly insert data into NoSQL databases without any coding required. GenRocket can connect to just about any NoSQL database over JDBC and directly insert data without any coding.
Ability to deliver files in real time over REST API's and SOAP	Yes	Data in most modern COTS (Commercial Off The Shelf) applications is sent over REST API's and not directly inserted into the underlying database. Enterprise class test data solutions need to be able to support these modern REST API interfaces. GenRocket can talk over a socket, over REST, over SAP's BAPI interface, over SOAP and also via JDBC.
Ability to simulate complex data feeds with nesting and calculations	Yes	With most industries going through digital transformations from legacy to modern cloud solutions, data is often delivered between cloud applications in the form of a data feed. Test data solutions should be able to generate and format data to exactly simulate data feeds such as data that simulates complex, nester credit card payment transactions. GenRocket's architecture is perfectly suited to simulate any type of complex data feed with any level of nesting and complexity.
Ability to simulate message formats such as Kafka, MQ and SWIFT	Yes	Kafka messages are used by 80% of the Fortune 100. The ability to simulate and test Kafka, MQ and SWIFT messages is important for an enterprise class test data solution. GenRocket's architecture is perfectly suited to simulate simple to complex message formats.
Ability to generate files in flat and nested XML and JSON	Yes	A standard requirement for any enterprise class test data solution is to be able to simulate flat and nested XML and JSON data formats; these formats are fully supported by GenRocket
Ability to generate data onto PDF forms such as bank checks, driver licenses, medical or insurance forms	Yes	An enterprise class test data platform needs the versatility to provide data in many formats including PDF's for industries such as banking, healthcare and insurance. GenRocket offers an integrated solution where small forms such as bank checks, passports and drivers licenses are ingested as a blank background image and synthetic data can be positioned into X and Y coordinates on top of the backaground image. For larger forms, such as insurance forms, GenRocket can send the data into a PDF forms editor such as https://pdfgeneratorapi.com/ over a REST API to generate the exact volume and variety of PDF's required.

Test Data Formats and Databases	Support	Why this is Important
Ability to generate image formats such as JPEG, GIF, PNG, TIFF and TIF	Yes	An enterprise class test data platform needs the versatility to provide data in many formats including images for industries such as ecommerce and retail. GenRocket supports many image formats including JPEG, GIF, PNG, TIFF and TIF.
Ability to accurately and quickly generate X12 EDI transaction in any volume with "good" data as well as "edge case" and "negative" X12 EDI transaction data	Yes	In the North American healthcare market, X12 EDI (Electronic Data Interchange) is the industry standard for how electronic data is sent such as an X12 EDI 837 Institutional claim. GenRocket is the only test data company to partner with X12, the industry standards body, and fully supports all HIPAA mandated EDI formats such as EDI 837, EDI 835 and EDI 834. GenRocket also supports other EDI formats such as EDI 850 which is a purchase order used in supply chain / logistics.
Self Service Test Data Portal	**Support**	**Why this is Important**
Provide a Self Service Portal for large teams of developers and testers to search for test data that is useful for their test cases	In Development	Enterprise class test data platforms separate the task of modeling and designing test data (by a small team of trained Test Data Engineers) from developers and testers searching for and deploying test data into their test cases. GenRocket is developing G-Portal to meet the needs of the large enterprise. G-Portal allows different Test Data Projects to be categorized and tagged and allows developers and testers to find the test data they need through the Portal. If a request needs to be made by the developer or tester, G-Portal includes an integrated ticketing system to track and respond to test data requests. G-Portal is expected to be released into Beta test in October 2022.
Ability to categorize and tag different Test Data Projects and different sets of test data such as Unit, Integration and Load within a particular Test Data Project	Yes	Everything is about speed and self service for enterprise class test data platforms. Test Data that represents different test data scenarios needs to be easy to find or easy to request through a portal. GenRocket's G-Portal provides enterprise class categorization and tagging for hundreds of different Test Data Projects and an easy-to-use Portal to request test data from the central Test Data Engineering team.

Automated Test Data Repository	Support	Why this is Important
Provide a central, automated repository for all test data and configuration files for an entire enterprise	Yes	Enterprise class test data platforms make it easy to distribute and maintain "fresh" accurate test data across many different teams of testers and developers. As software applications are updated, test data models and test data also must be updated. Test data platforms need to automatically and transparently update test data that is in use by developers and testers. GenRocket's G-Repository automates the distribution and maintenance of all Test Data Cases and configuration files across global teams of developers and testers in On Premise and Private Cloud environments.
Ability to categorize and tag different Test Data Projects and different test data sets and test data scenarios such as Unit, Component, Integration, Negative, Edge Case and Load test data within a particular Test Data Project	Yes	Making "self service" test data easy for developers and testers is essential for enterprise class test data platforms. Users need to be able to search for and find test data quickly and easily. GenRocket's G-Portal provides enterprise class categorization and tagging for all the different Test Data Projects and an easy-to-use Portal to search for and request test data from the central Test Data Engineering team.
Test Environment Integration	**Support**	**Why this is Important**
Ability to cleanly integrate exact volume and variety of test data into test automation frameworks and CI/CD pipelines (AWS, Azure, GCP, etc.)	Yes	Most organizations have either fully embraced testing automation or are headed that way. An enterprise class test data platform must have the flexibility to directly integrate test data into any test automation framework and CI/CD pipeline. In addition, test cases require specific test data to meet their test case requirements so the solution needs to integrate test data that exactly matches the requirements of a test case. GenRocket's Java based Runtime, GMUS (GenRocket Multi User Server), and REST and Socket engines offer complete versatility of how to integrate specific sets of test data into any test automation framework or CI/CD pipeline and GenRocket's synthetic data design approach allows Test Data Cases to be designed and automatically called by each test case.

Test Environment Integration	Support	Why this is Important
Ability to cleanly integrate exact volume and variety of test data into testing tools (e.g. Selenium, JMeter, Tricentis TOSCA, MicroFocus UFT, SauceLabs, Eggplant, etc.)	Yes	GenRocket has the ability to support any testing tool on the market today. GenRocket's Runtime can be launched directly from a test case at the Command Line, with a batch file, with a shell script, by a scripting language, by a compiled language, via a REST API or by an orchestrator such as Jenkins. Data can be generated and inserted into a simple unit test or functional test case in about 100 millisecond making "on demand, real time" test data a reality. No data needs to be stored, shared, reserved, or refreshed. Testing does not need to happen in a shared database where the state / condition of the data is unknown. All GenRocket test data can be directly launched by the test case, deployed in seconds, the test can run, the assertion can be completed, and then the data can be deleted and the next test case can run with fresh, accurate, controlled test data.
Ability to deploy the test data solution into the test environment via a container	Yes	Some enterprise organizations want to launch virtual test environments with testing frameworks, testing tools, and test data all launched in packaged container solutions. GenRocket supports containerization; a container can be created using a container platform like Docker. The GenRocket Runtime or GenRocket Multi User Server and all required components such as GenRocket's G-Repository can be packaged into a containerized solution.
Ability to deploy the test data solution into the test environment via a Maven Repository	Yes	Some enterprise organizations use Maven Repositories to automate the storing and management of artifacts for their organization. GenRocket supports Maven Repositories for deployment of GenRocket components such as the GenRocket Runtime and GenRocket Multi User Server.
In-House test automation framework integration	Yes	Some organizations have developed their own in-house test automation frameworks and need to have test data cleanly integrated into that framework. GenRocket's Runtime, GMUS (GenRocket Multi User Server), REST and Socket engines offer many different ways to integrate on demand, realtime data with any custom testing automation framework written in any language.
Data generation into multiple test environments simultaneously	Yes	In some use cases, data not only needs to be delivered in one format in one test environment but also, at the same time, in another format or database in another test environment. GenRocket Scenarios and Test Data Cases support multiple Receivers in the same Scenario so can easily accomplish this requirement

Test Environment Integration	Support	Why this is Important
Ability to generate data fast (e.g. millions to billions of rows of data in minutes)	Yes	Fast data generation is defined in a number of ways. 1) How quickly can data be delivered to a simple unit or integration test 2) How many rows of data per second can be generated 3) how long does it take to generate millions to billions of rows of data. GenRocket can generate data for a simple unit or Integration test in about 100 milliseconds, can generate on average about 10,000 rows per second, and when running multiple instances in parallel through the Partion Engine, millions to billions of rows of data in minutes. For example, GenRocket can generate one billion rows of statistically accurate data for machine learning use cases in under two hours.
Ability for multiple users to request and run multiple scenarios simulataneously and deliver test data on demand to the automation framework	Yes	When test data solutions are being used in larger organizations it is likely that multiple testers will have test data requirements at the same time; the solution needs to be able to scale and handle large volumes of simultaneous requests, possibly from hundreds of testers. For GenRocket, this requirement is handled by the GenRocket Multi User Server (GMUS)
Ability to read and process an API response in a test environment	Yes	Testing more complex use cases with dynamic data may require the test data system to read and process an API response. GenRocket has an extensive, well-documented API that can read and process API commands
Ability to keep a log of data that has been generated	Yes	In regulated industries, there are often requirements to have a record / log of the data that has been generated and used in particular test cases. GenRocket offers a data logging feature and, because GenRocket supports multiple data Receivers in the same Scenario / Test Data Case, one Receiver can be used for the actual test case and another Receiver can be used to simultaneously generate the exact same data and send it to a logging system.

Dynamic Data Generation via an API	Support	Why this is Important
Real time dynamic data generation via an API	Yes	Computers can make decisions thousands of times faster than a person. Generating data dynamically, in real time via an API creates the possibily of an "electronic tester" making automated decisions and generating test data on the fly. GenRocket has a powerful, well-documented API that can be used to create an electronic tester which can make dynamic decisions and allows advanced testing teams to fully deliver on the potential of "testing automation".
Production Data Subsetting & Masking	**Support**	**Why this is Important**
Ability to copy a subset of production data from a single SQL database and migrate that data to a destination database of the same type	Yes	While GenRocket is a full, enterprise class synthetic test data platform that can generate any volume, variety and format of synthetic data, there are some use cases where enterprise customers want to select and migrate a subset of production data. GenRocket offers data subsetting from select SQL databases through functionality called G-Migration+. G-Migration+ currently supports migrating a subset of data from five popular SQL databases (DB2, Oracle, MS SQL, PosgreSQL and MySQL). All subset data is migrated at high speed and always with referential integrity.
Ability to mask sensitive data when migrating / subsetting production data copies	Yes	Production data copies usually contain PII or PHI and that data should never be exposed to non-production / lower environments. Rather than "masking" sensitive data, GenRocket never looks at, touches or stores sensitive data and uses a masking approach called "Synthetic Data Replacement" where sensitive data is synthetically generated while non-sensitive production data is being migrated / subsetted. The synthetic data replacement process is fully integrated into the G-Migration+ data subsetting workflow so that data subsetting and synthetic data replacement happen together in real time while maintaining referential integrity.

Production Data Subsetting & Masking	Support	Why this is Important
Ability to auto-detect sensitive (PHI, PII) data in a production database copy - to accelerate the data masking process	No	Some test data solutions have access to and store production data which allows them to run data discovery algorithms to detect what may be identified as sensitive data values. For architectural and security reasons, GenRocket has chosen to never store customer data on GenRocket systems; this means GenRocket is extremely secure and can never have a sensitive data breach. This approach also means that GenRocket currently does not offer a sensitive data discovery tool, however, no data discovery tool can guarantee 100% sensitive data discovery. So, regardless of the test data platform in use, a Test Data Engineer still has to review all the data that is planned to be migrated and masked.

MANAGING Your Test Data

High performing test data platforms provide the features needed to manage, monitor and secure the test data environment

Management, Reporting & Security		
Management	**Support**	**Why this is Important**
Access controls and permissions across teams and projects	Yes	Enterprise customers want to ensure that they have control over the levels of test data system access their users have; permission controls are important when there are multiple teams working in the system. GenRocket offers extensive security control through its Team Permissions feature.
Reporting	**Support**	**Why this is Important**
Ability to view user activity and data generation activity within the test data automation platform	Yes	Managers and users of test data systems want visibility into how the system in being used. A comprehensive reporting / analytics dashboard is a necessity. GenRocket's G-Analytics dashboard provides detailed views of users activities and test data Scenario and Test Data Case runs in the platform

Security	Support	Why this is Important
Secure architecture that does not expose any customer data in the cloud	Yes	The ideal design for a test data platform is cloud collaboration where test data scenarios can be created, modified, shared and organized with all data generation on premise and/or private cloud for full security and performance. GenRocket's hybrid cloud architecture perfectly meets these requirements as *no customer data is ever stored or processed in the cloud* and all data is generated in the customer's secure on premise or private cloud environment. GenRocket offers both Virtual Private Cloud (multi-tenant) and Dedicated Private Cloud (single-tenant) hosting.
Supports Single Sign On (SSO)	Yes	Larger enterprises use SSO to reduce the number of attack surfaces because users only log in once each day and only use one set of credentials. Reducing logins to one set of credentials improves enterprise security. GenRocket supports multiple SSO vendors and methods
Supports Multi-Factor Authentication (MFA)	Yes	Some enterprises require the use of MFA as an extra layer of security. GenRocket supports Multi-Factor Authentication.