

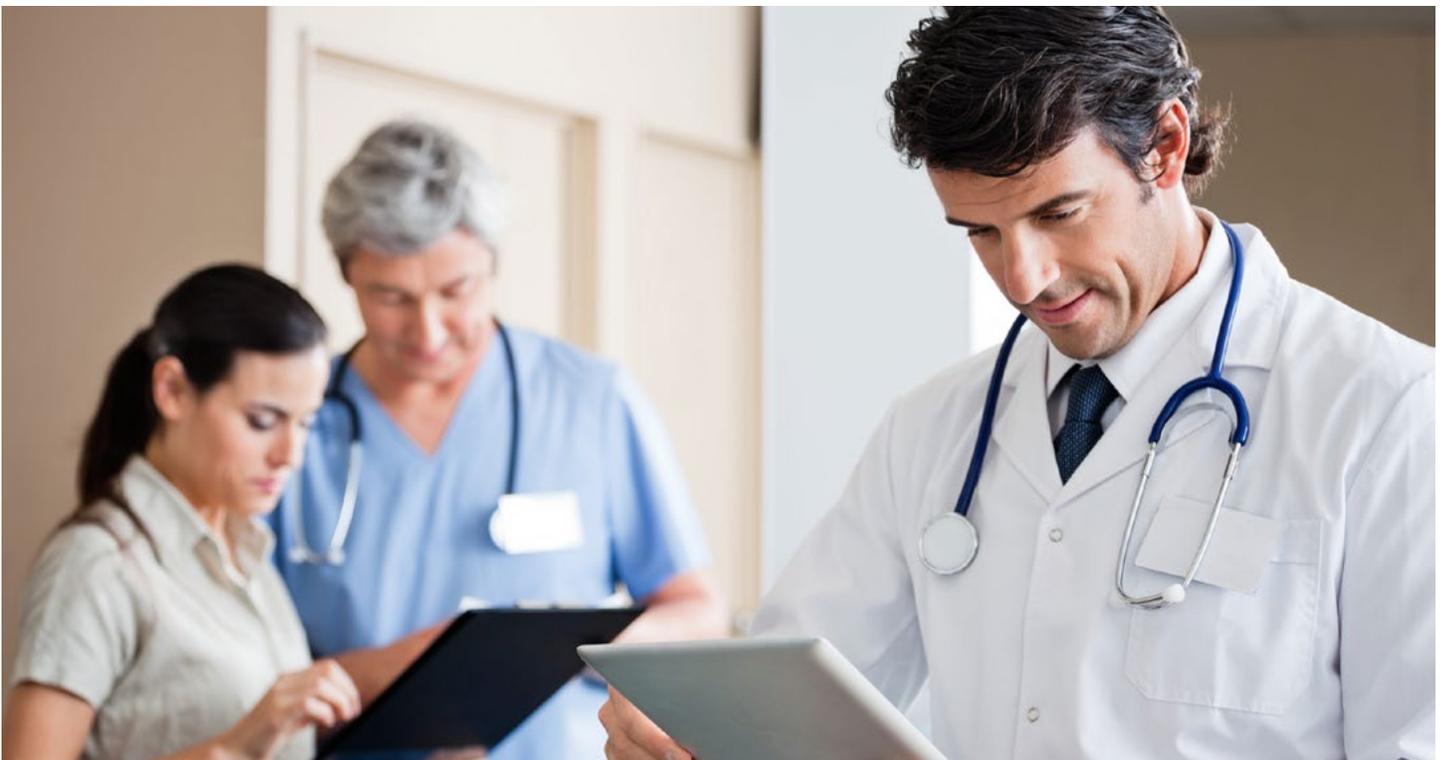


# GENROCKET X12 EDI TEST DATA SOLUTION

## MEETING THE CHALLENGE OF X12 EDI TEST DATA

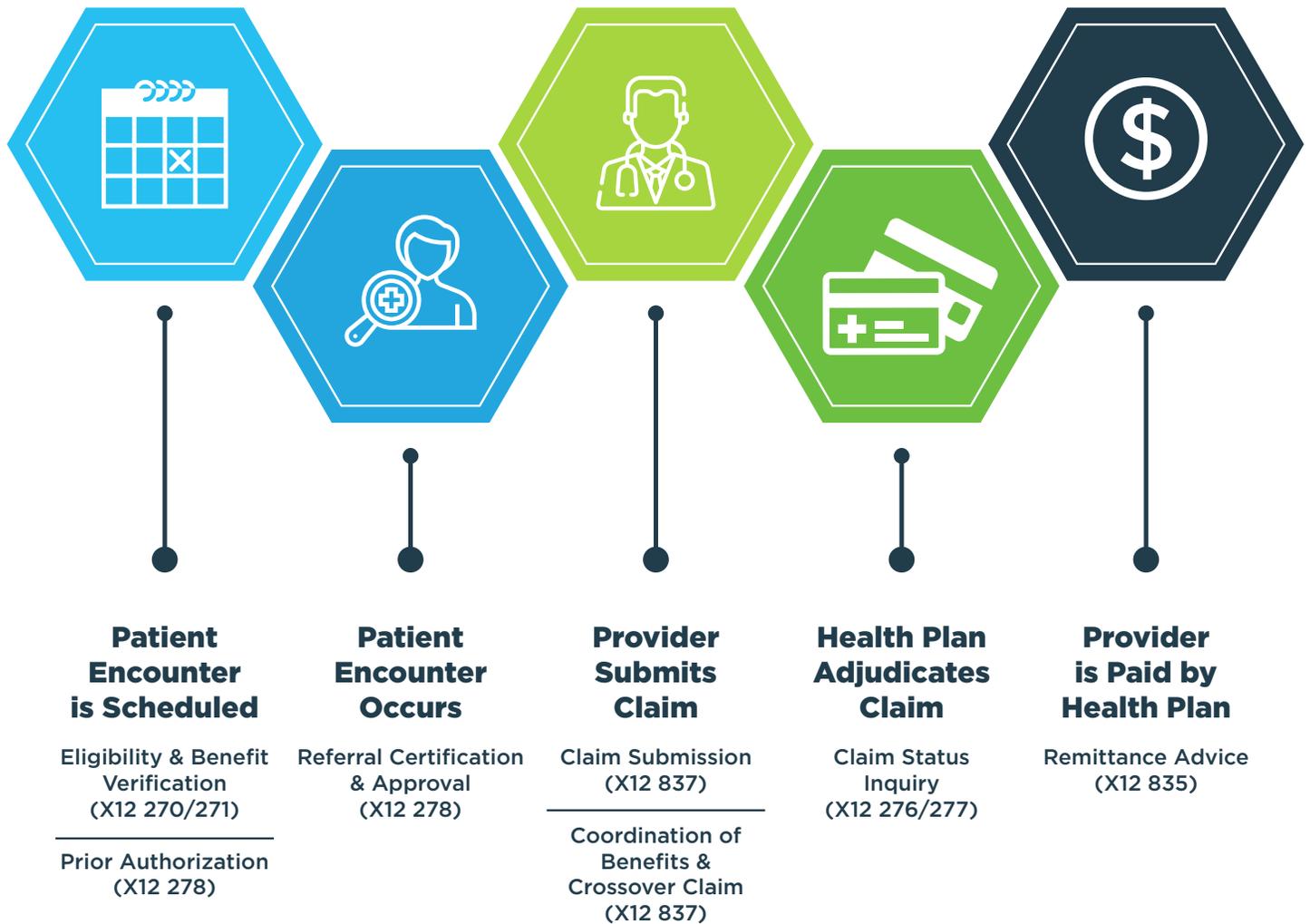
The exchange of healthcare information between insurers, providers, and patients is a complex process that is increasingly automated by electronic transaction processing. Multiple digital interactions and data exchanges occur when patient claims for treatments and medications are submitted to insurance companies for payments to providers.

The Accredited Standards Committee ASC X12 has standardized the data structure and syntax used for all electronic healthcare EDI transactions in North America. All EDI documents conform to HIPAA standards to protect patient privacy. A number of sub-standards specify various transaction sets for activities like enrollment, claims processing, remittance of payments and explanation of benefits to members.



The diagram below illustrates this administrative workflow and the most common X12 transaction sets used for EDI Electronic Data Interchange between healthcare providers, clearinghouses and insurance companies.

# Healthcare Administrative Workflow



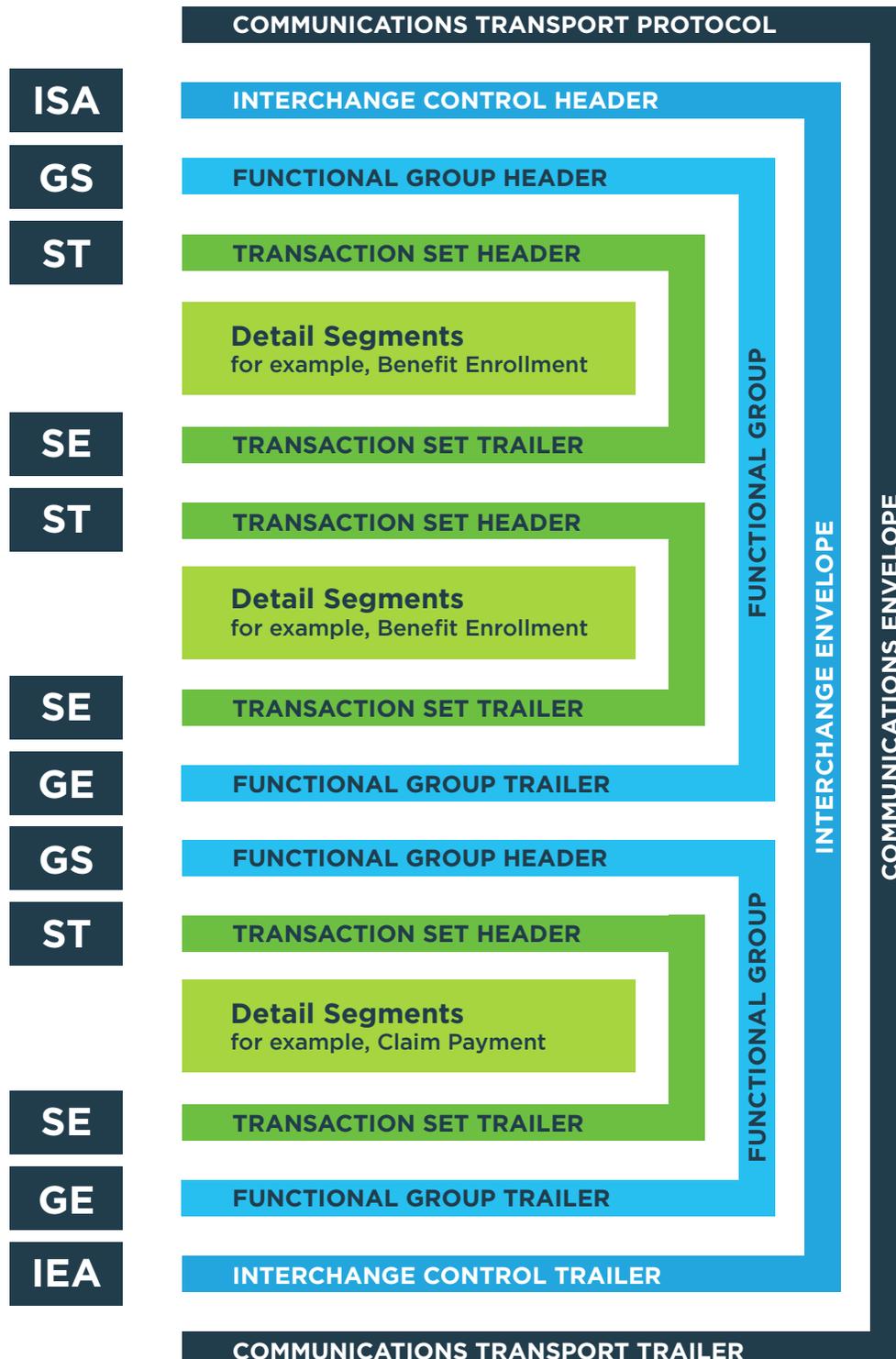
The applications used to automate the stages of this workflow must continuously adapt to change. Advancements in medicine, the enactment of new state and federal regulations, policy changes to insurance plans and revisions to the X12 standard itself all require information systems to be continuously updated, tested and released into production. All the while, applications must remain HIPAA compliant to safeguard sensitive healthcare information from being exposed or compromised in any way.

To keep pace, software development teams are adopting DevOps and Agile practices and QA teams are transitioning to a continuous integration and testing environment. They need a source of secure and continuous test data that provides an alternative to the cumbersome process of cloning and scrubbing production X12 databases. **GenRocket TDG can be an integral part of the transition to continuous testing with the advent of Real-Time Synthetic Test Data Generation of comprehensive X12 EDI test data.** With GenRocket TDG, testers can generate any data, in any volume, at any time.

# CONFORMANCE WITH THE X12 EDI DATA STRUCTURE

X12 EDI transactions are complex, nested data structures separated by segment, element and sub-element delimiters. Each segment starts with a 2-3 letter code that identifies its function and they are grouped into a hierarchical envelope structure that ensures the integrity and efficiency of the information exchange.

This diagram of the X12 EDI message structure illustrates its hierarchical structure beginning with the *Interchange Envelope* (designated by ISA/IEA identifiers), the wrapper for all data sent during an X12 EDI transmission.



This wrapper contains multiple *Functional Groups* (designated by GS/GE identifiers) that in turn contain multiple *Transaction Sets* (designated by ST/SE identifiers) which can all be batched into a single transmission. Within each *Transaction Set*, data *segments* are grouped into loops that carry specific information related to each transaction.

For example, information about a patient's name and address may be represented by a series of segments within a loop. Multiple instances of patient names and addresses can be sent as multiple loops. Segments and loops are separated by special delimiter characters.

It is critical that healthcare applications strictly conform to this standardized X12 EDI structure to ensure interoperability between all upstream and downstream participants in the process. The data used for testing those applications must accurately represent real-world transaction scenarios and the tester must have complete control over the volume and variations of test data needed for testing. **GenRocket's X12 EDI solution generates test data that conforms to any X12 transaction set specification and provides a self-service management layer to help testers design the precise data needed for any application test case.**

## SCALING TEST DATA TO SIMULATE REAL-WORLD TRANSACTION VOLUMES

X12 EDI transactions are the lifeblood of the healthcare industry and the volume of information exchanged between participants grows every year. According to the [2018 CAHQ Index](#), 32 billion healthcare transactions took place in 2018, a 17% increase over the previous year. Health insurance claims in EDI 837 format represent the highest percentage of those transactions and 96% of all submitted claims are now electronic EDI X12 transactions versus traditional paper-based claims.

The enormous volume of data that must be accurately captured, coded and securely communicated presents a challenge for developers to deploy code that is fully compliant, error-free and capable of operating under extreme load conditions.

This puts pressure on quality assurance teams to develop test plans that maximize coverage, minimize defects and scale to millions of EDI transactions, or more. The GenRocket TDG platform generates synthetic test data in real-time and is capable of provisioning millions of rows of X12 transaction test data the same day it's requested. GenRocket can be seamlessly integrated with test automation tools and CI/CD pipelines to fully automate the testing process.

Test automation tools are being deployed to conduct a full range of test operations including functional, integration, interoperability, performance and regression testing. **To fully automate healthcare application testing, QA teams require controlled, accurate, and secure X12 EDI test data for any kind of test, in any volume, on-demand and GenRocket fully meets this requirement.**

# MEETING THE X12 EDI TEST DATA CHALLENGE:

Provisioning data for testing an X12-based application is different than most other test data requirements. X12 test data must contain clinically accurate data for diagnostic and procedure codes, valid member and provider ID's and realistic transaction data in a variety of patterns and permutations to validate business logic and fully test application workflows (e.g., testing the claims approval and denial process).

Before GenRocket's X12 EDI management solution, there were no viable alternatives to the use of production data to meet this difficult test data challenge. The use of production data is problematic and very often it must be manually conditioned to include the data values needed for test cases and scrubbed to eliminate private patient data.

GenRocket allows testers to generate test data to conduct controlled test procedures for:

- Positive and negative testing
- Range and boundary testing
- Data permutations and combinations
- Workflow testing across multiple API's
- Synthetic data to ensure patient privacy
- Production data to inject real-world data values
- High volume data for load and performance testing

With *GenRocket X12 EDI Management*, testers can specify the precise data needed for each test case and generate that data in the required X12 EDI format. **GenRocket stores each test data configuration as a Test Data Scenario that is used during the testing process to generate real-time synthetic test data instantly and on-demand.**

## ANNOUNCING THE GENROCKET X12 EDI TEST DATA SOLUTION

GenRocket's new X12 EDI Management is a health care industry solution package available for the *Enterprise Edition* of **GenRocket TDG™**, the industry's most complete Test Data Generation (TDG) platform. The new solution simplifies the process of leveraging XML Schema Definition (XSD) files from X12 to quickly model and generate EDI test data that is fully X12 compatible.

The *GenRocket X12 EDI Test Data Management* solution meets the challenge of provisioning controlled and accurate X12 test data in real-time with a simple and scalable self-service model. In collaboration with the ASC X12 organization and through integration with the Washington Publishing Company (WPC) database of X12 specifications, GenRocket has become the definitive source of X12 test data.

The solution comes with three powerful new self-service modules – **Test Data Cases**, **Test Data Rules** and **Test Data Queries** that speed the creation of test data sets for different test cases. Collectively, they are part of GSelf-Service, a user interface that simplifies the design of test data in X12 format and provides extensive control over the way data combinations and permutations are specified and allows the use of rules to generate test data cases for testing the business logic and workflows of the application under test.

GenRocket enables continuous integration and testing of X12 EDI applications to:

- Generate complete X12-compliant transaction sets instantly and on-demand
- Define accurate test data with complete control over data volume and variation
- Customize test data to match any implementation of the X12 EDI standards
- Assure patient privacy and HIPAA compliance with the use of synthetic test data
- Blend synthetic data and production data to produce realistic test data scenarios

LEARN MORE ABOUT THE GENROCKET X12 EDI TEST DATA SOLUTION

## ACCELERATED TESTING AND MAXIMIZED ROI

*GenRocket X12 EDI Test Data Management* helps QA organizations meet the challenge of testing healthcare applications with a solution that maximizes ROI. It starts with improving the quality of software release to production.

GenRocket's impact on quality can be summarized by this simple but powerful statement:

**Quality Data enables Quality Testing that ensures Quality Code**

GenRocket TDG allows complete and comprehensive test plans to fully exercise applications at a faster pace while delivering the following benefits:

- Errors that lead to rejected claims are minimized
- Mechanisms that prevent fraud and abuse are validated
- Compliance with HIPAA regulations are completely assured
- System availability and performance are maximized
- Interoperability with upstream/downstream systems is ensured
- Time to market for new code releases is accelerated
- Correcting defects after release to production is avoided
- The operational efficiencies of automation are fully realized

GenRocket accelerates the testing process and delivers the full benefit of continuous testing by integrating with test automation tools and CI/CD pipelines. Its intuitive, GSelf-Service user experience streamlines and simplifies the test data provisioning process. And with GenRocket, testers have total control over the kind of test data they need to perform any kind of test using secure data that is fully compliant with the X12 EDI standards.

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