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Executive Summary

SGI Canada was new to Guidewire InsuranceSuite, faced with complicated business rules and stringent regulatory obligations, and a phased rollout of core functionalities. With critical project dates looming, the team was behind schedule and at risk of missing key milestones. They needed a sustainable, scalable, and fully automated approach to ensure accurate rate testing and maintain compliance in a rapidly evolving environment.

This case study demonstrates how CenterTest enabled SGI Canada to automate data-driven testing for large volumes of migrated policies, ensuring rating accuracy and significantly reducing development effort. The final outcomes included an 80% reduction in project timelines for testing, faster resolution of high-impact issues, and enhanced data integrity through API-based credit score handling and optional UI bind validation.

Comparison of Approaches:

- **External Party Proposal:** an external party proposed a three-month (or longer) implementation for an initial version of rating testing that supported only a limited set of coverages. When new coverages eventually needed testing, each batch could require several additional weeks of development and setup.

- **CenterTest Implementation:** In contrast, Kimputing delivered a comprehensive solution in just two weeks, dynamically supporting all coverages along with additional functionality. An initial version was ready for review after one week, with

the final version provided by week two, reducing the timeline by 80%, which was critical for the project. CenterTest also provided robust analytics for focused issue resolution, resulting in SGI achieving a 90% reduction in analysis time while maintaining complete coverage for future product needs.

While the primary focus is on rate testing, this study also highlights how CenterTest's UI testing capabilities supported and enhanced the overall testing strategy, contributing to measurable improvements in project timelines and quality.

The Challenge

Organizations migrating from legacy insurance systems to Guidewire face significant challenges in ensuring that rating algorithms remain accurate and compliant. These challenges are amplified by the need to manage two independent migration paths:

- **Data Transformation Complexity:** The rating migration involved two distinct data conversion processes:
    1. **Policy Data Migration:** Ensuring accurate migration of policy data from the legacy system into Guidewire InsuranceSuite was a foundational requirement. Though not the primary focus of this paper, issues were found with the policy data migration when quotes were inaccurate, and it was discovered that policy data discrepancies—not just rating rules—contributed to the inconsistencies.
    2. **Rating Engine Transition:** The legacy system utilized a different rating engine than Guidewire's native engine, which is built around the U.S. ACORD standard. Whether the legacy engine was proprietary or a third-party solution, its processes and outputs differed significantly from Guidewire's approach. SGI engaged a system integrator (SI) to implement an abstraction layer to handle the conversion process. Rating data was retrieved in a CSIO format from the legacy system, and the SI's abstraction layer managed the transformation to and from Guidewire's ACORD-compatible format. This approach minimized complexity within the testing process by allowing CenterTest to operate with consistent CSIO-formatted request and response files.
- **Ensuring Rating Consistency:** Validating that premiums, coverages, and deductibles match expected results despite system and data changes to the lowest level, ensuring that premium accuracy alone does not equate to complete rating accuracy.

- **Managing Volume and Scale:** Executing thousands of rating tests efficiently while minimizing manual effort, particularly given the complex data transformations involved.
- **Maintaining Data Security:** Protecting sensitive information, such as credit scores, is critical to ensuring compliance with PII regulations. CenterTest minimizes exposure through efficient API-driven processes, securely handling data throughout the rating testing workflow.

Solution Approach

CenterTest provided a structured and efficient framework to address SGI Canada's complex rating migration challenges. Leveraging Kimputing's deep expertise in both Guidewire and test automation, the team designed a robust, data-driven API process for rate testing and extended it with a data-driven UI process for bind verification. This foundation of specialized knowledge allowed them to streamline the rating migration process, enhance data accuracy, and reduce development and testing effort—an outcome that would have been far more difficult to realize without an intimate understanding of Guidewire's intricacies and automated testing best practices.

Rating-Specific Process

The rating migration process involved a well-defined series of steps, as illustrated in Figure 1. The workflow ensured a seamless transition from legacy systems to Guidewire InsuranceSuite, validating rating accuracy and minimizing potential data discrepancies.

Step 1. **Client Process Initialization:** The client system used their legacy Quote Vendor Request XML to produce two new files: a legacy quote response file transformed into CSIO format for comparison, and a CSIO-formatted request for consumption by the new rating system. This approach ensured that all initial data was accurately captured for subsequent testing.

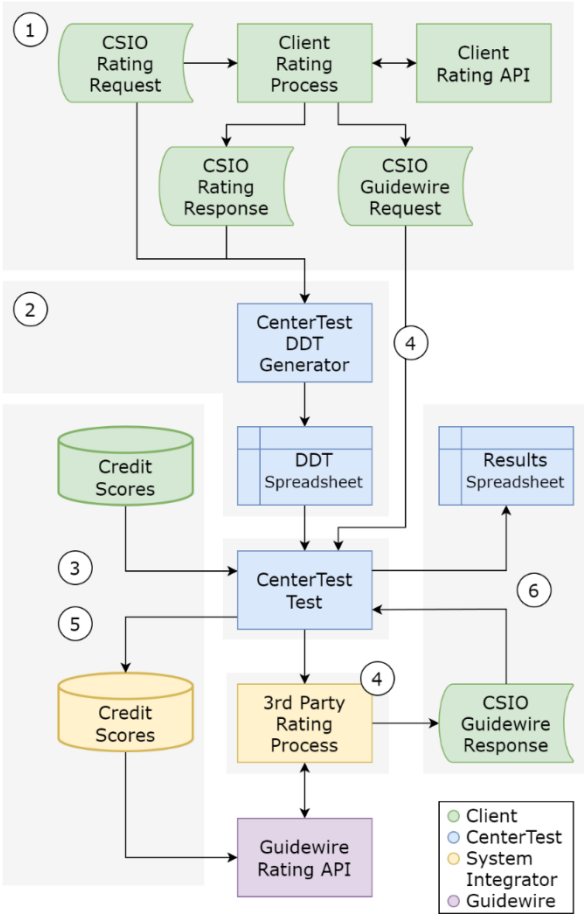

Figure 1. Rating Migration Testing

Step 2. **DDT Spreadsheet Generation:** CenterTest automatically scanned legacy Quote Vendor XML requests and responses to generate a comprehensive Data-Driven Testing (DDT) spreadsheet. Key advantages included:

- **Automated Spreadsheet Creation:**
  Eliminated the need for manual test-case creation by parsing both the request and response files to produce fully populated entries for each policy scenario.
- **Large-Scale Data Processing:**
  SGI regularly produced new data sets—sometimes weekly—containing 12,000 to 20,000 payloads per batch. With CenterTest, these payloads could be loaded and made available for testing in less than an hour, providing rapid feedback whenever new or updated data became available.
- **Dynamic Coverage Discovery:**
  All coverage elements (e.g., premiums, fees, limits, deductibles) for all coverages were identified and updated automatically. This ensured that new or modified coverages were tested without requiring manual code changes.
- **Accelerated Results:**
  The external party's approach was estimated to take three months or longer, but CenterTest delivered initial results in under a week and achieved full coverage in two weeks, providing immediate, actionable insights for SGI.
- **Pattern-Driven Design:**
  By treating coverage attributes as patterns, CenterTest minimized maintenance overhead and made it easy to track changes across different policy types or lines of business, facilitating quick resolution of any coverage discrepancies.

Step 3. **Load Credit Score:** CenterTest identified the user from the request data, retrieved their secure credit score from the client's system, and loaded it into the Guidewire Credit Score File via a secure API. This process ensured the Guidewire rating engine used a valid score to generate accurate quotes while maintaining data privacy. Sensitive PII data was only accessible during the API execution phase, with additional data privacy measures handled in Step 5 to ensure minimal exposure.

Step 4. **Rating Request Processing:** The saved CSIO Guidewire Request file was sent through the SI's rating processor, initiating the rate call with the correct data format and context. During this process, the Guidewire rating engine retrieved the specific credit score loaded for the policy in Step 3, ensuring the accuracy of the rating outcome. This approach ensured a tight coupling of the DDT test and its associated CSIO Guidewire Request file, maintaining data integrity throughout the process. The SI-managed abstraction layer converted the CSIO request to the ACORD format and handled the response translation seamlessly.

Step 5. **Clear Credit Score:** CenterTest minimized PII exposure by immediately removing the credit score from the Guidewire via a secured API upon receiving the response or encountering a failure. Even though this was a test environment with secure data stores and secure APIs, removal was essential to ensure the credit information remained only for the duration of the rate request, significantly reducing the window for potential exposure.

Step 6. **Results and Analysis:** CenterTest generated a detailed results spreadsheet, incorporating both original request and response data with the new Guidewire response data. The analysis provided insights into variances, errors, count discrepancies, and missing results, enabling targeted issue resolution. Advanced analytics categorized discrepancies by coverage type, premium differences, and validation errors, allowing SGI to focus on high-impact issues first. *(See Step 6 in the diagram)*

DDT Generation and Dynamic Coverage Handling

The Data-Driven Testing (DDT) generation process was a critical component of CenterTest's efficiency and adaptability in the rating migration project. By automating the creation of the DDT spreadsheet, CenterTest incorporated all necessary data elements from both the legacy Quote Vendor XML and the legacy response files, ensuring a comprehensive and accurate testing foundation.

	A	B	C	D	H	IQ	UX	WP	WQ	WS	XD	XX	YE
1	Code	FileList	QuoteNumber	FullTermAmt	Veh1CovAmt - 20	Veh2CovDeductible - CMP	Veh6CovDeductible - 39A	MessageStatus	Province	RemarkText1	RemarkText2	RemarkText38	ReqUID
2	auto_00024883	auto_00024883.soap	00024883	3185.0	45	500		SuccessWithChanges	AB	CV 3	Eff date greater than 30 days. Quote may not be honoured		00000000-0000-0000-0000-0003
6	auto_000fc19a	auto_000fc19a.soap.	000FC19A	10151.0				SuccessWithChanges	AB	Do Not Bind - Due to licence suspens	Do Not Bind - Cancellation within past 3 years		00000000-0000-0000-0000-0003
7	auto_0011a91d	auto_0011a91d.soap	0011A91D	5413.0	70	500		SuccessWithChanges	AB	CV 3	Quote Ref ID 0011A91D		00000000-0000-0000-0000-0003
13	auto_00278c94	auto_00278c94.soap	00278C94	2792.0				SuccessWithChanges	AB	Do Not Bind - Criminal conviction	CV 3		00000000-0000-0000-0000-0003
23	auto_00451f13	auto_00451f13.soap.	00451F13	0.0				Error	AB	ContractNumber is required	Quote Ref ID 00451F13		00000000-0000-0000-0000-0003

Figure 2. DDT Test file

Figure 2 is a sample generated DDT file with up to 6 vehicles for some policies, 55 distinct coverages for those vehicles, and 38 potential remarks from the legacy system. All were dynamically generated directly from production response files for rating testing.

The DDT generation included high-level policy information such as:

- **Policy Information:** policy type code (legacy and Guidewire), province, effective date
- **Insured Items:** Including home or vehicular coverable information.
- **Source File Names:** Referencing original data files for traceability.
- **Testing information:** unique test code, environment

Beyond high-level data, CenterTest also captured detailed quote information, including:

- **Premium Amounts:** Ensuring rating accuracy.

- **Fees and Surcharges:** Validating all cost components.
- **Coverage Details:** Automatically identifying coverage patterns by analyzing the response payloads.

By examining the structure of XML and JSON payloads, CenterTest dynamically identified coverage elements and their attributes, such as Coverage Amount, Deductible, Limit, and Expected Values. This process was underpinned by a pattern-driven design that accommodated changes in payload structure while clearly distinguishing between coverage content and high-level policy information. The approach also adapted seamlessly to different policy types, including homeowners, personal auto, and potentially commercial lines if needed.

This dynamic coverage handling allowed CenterTest to automatically adjust to new coverages without manual coding changes, contrasting with the external party's recommended approach of manually adding coverages when needed. Additionally, the pattern-driven design enabled the business to add supplementary information to the analytics output for later review within Excel, eliminating the need to revert to original payloads. This automation was instrumental in delivering fast, scalable testing with minimal maintenance requirements.

Analytics and Prioritization

Analytics were a critical component of the CenterTest implementation, providing dynamic insights into rating discrepancies and guiding prioritization of issue resolution. CenterTest employed a flexible and dynamic approach, allowing business users to define exception limits for expected results without requiring input from test engineers or SDETs.

```
centertest.assert.coverage.ALVE.percentage=3
centertest.assert.coverage.DWELL.value=-5,10
```

Figure 3. Keyword-driven Variance Definition

Equality testing is the default, but Figure 3 provides an example of how variance testing supports positive, negative, or both positive and negative tests, including the ability to set different positive and negative amounts if needed. Limits could be defined by specific amounts, such as $5, or by percentage thresholds, such as 3%. Additionally, the analytics could test any amount, including total premiums, fees, or detailed coverage elements such as coverage amounts, limits, and deductibles.

This flexible approach also allowed certain discrepancies to be temporarily ignored while underlying issues were being addressed, maintaining testing momentum.

By enabling business teams to configure these parameters, CenterTest minimized the need for testers to interpret business priorities, streamlining the testing process and ensuring alignment with organizational goals.

When producing analytics, CenterTest made a clear distinction between **result discrepancies** and **test errors**. Result discrepancies referred to situations where expected and actual values differed, such as premium variances within defined exception limits. Test errors, on the other hand, indicated issues that prevented the completion of the test, such as missing information or improperly formatted payloads. By categorizing failure messages separately from variances, CenterTest enabled precise analysis of testing outcomes.

	A	B
1	Issue	Count
2	Loc 1 - Voluntary Medical Payments is required and has been added.	5867
3	Loc 1 - Voluntary Payment for Damage to Property is required and has been added.	5867
4	Loc 1 - Loss of Use is required and has been added.	5867
5	Loc 1 - Voluntary Compensation for Residence Employees is required and has been added.	5867
6	Backdating - refer	5259
7	Loc 1 - Fire Department Charges is required and has been added.	4628
8	Risk zone not found - refer	4315
9	Loc 1 - Deductible of Detached Private Structures is not valid and has been updated	3781
10	Loc 1 - Single Limit Coverage is no longer available and has been removed.	3545

Figure 4. Count Prioritization by Issue Type

CenterTest further categorized discrepancies by type of error and by the number of times an error or discrepancy occurred, allowing the team to prioritize issues by volume, see Figure 4. This volume-based prioritization helped SGI focus on resolving high-frequency issues first, increasing the overall success rate of policy processing.

Additionally, CenterTest's analytics allowed errors containing specific keywords, such as "is required and has been added", to be automatically categorized or ignored once verified. This capability was particularly useful for scenarios where Guidewire explicitly added certain coverages that were processed as defaults without being identified in the legacy system, maintaining testing efficiency and reducing noise in analytics output. This approach enabled SGI to focus on resolving the most impactful problems first, often increasing the number of successful quotes by eliminating high-volume errors. As discrepancies were addressed and fixed, the success rate of policy processing improved significantly, providing immediate feedback to both testing and development teams.

Finally, by allowing individual tests to be rerun rapidly, CenterTest facilitated a continuous improvement cycle, ensuring quick validation of code changes and reducing regression risks. This capability provided a strong closure to the analytics process, demonstrating how

prioritized insights and rapid test execution contributed to an efficient and resilient testing strategy.

Results and Impact

The implementation of CenterTest for SGI Canada's rating migration project delivered significant and measurable results across several critical metrics:

1. Accelerated Implementation Timeline

- The initial rate testing framework was delivered in less than one week, with full implementation achieved within two weeks.
- This performance far exceeded the external party's estimate of three months, which was for a limited subset of CenterTest's functionality, demonstrating an 80% reduction in delivery time while delivering a broader and more comprehensive solution.

2. Enhanced Testing Coverage and Efficiency

- CenterTest generated 12,000 to 20,000 new automated tests as needed using dynamic DDT capabilities,
- The dynamic coverage handling eliminated the need for manual updates, ensuring all relevant coverage scenarios were tested without additional coding.
- Allowed business-driven analytics configuration, reducing test engineer involvement and increasing test automation efficiency.

3. Improved Accuracy and Reduced Errors

- CenterTest's pattern-driven design accurately identified discrepancies between the legacy system and Guidewire, providing clear analytics on premium variances, coverage differences, and deductible discrepancies.
- By categorizing test errors separately from result discrepancies, CenterTest enabled SGI to focus on high-impact issues, quickly achieving successful quoting rates exceeding 95% and accuracy levels surpassing 99%.

4. Faster Issue Resolution and Testing Cycles

- Volume-based prioritization of errors allowed SGI to address high-frequency issues first, often resulting in significant improvements in quote success rates.
- By allowing individual tests to be rapidly rerun, CenterTest supported quick validation of code changes, contributing to a continuous improvement cycle.

- Automated analytics led to a 90% decrease in error analysis time as supported by the >99% accuracy levels achieved.

5. Performance and Scalability

- The API-first approach enabled 20,000 rating tests to be executed in approximately three hours, demonstrating exceptional scalability.
- Optional UI Bind validation provided an additional layer of accuracy without introducing delays, ensuring the bound amount matched the quoted amount seamlessly.

Quantitative Summary

- 80% reduction in project timeline: From an estimated three months or more to two weeks with increased functionality.
- 90% decrease in error analysis time: Through automated analytics and prioritized insights.
- Significant increase in test efficiency: Automated 12,000 to 20,000 tests compared to limited manual testing.

Optional UI Bind Validation

While the primary focus of the rating process was on API-driven automation, the SGI rating team requested support to optionally validate policy binding through UI validation. This optional testing was tightly coupled to the API tests as the results from selected API tests were further used to verify the results at the UI level by logging in to the specific policy and stepping through the bind process identifying underwriting issues and amounts during the flow. This process confirmed not only that quotes worked correctly (once validated), but also that the bound amounts matched the quoted amounts after binding.

UI Bind testing added an additional layer of validation beyond simple rate validation, providing assurance that policies were not only rated correctly but also fully operational within the production environment.

The careful separation of API and UI testing ensured SGI could run 20,000 rating tests in approximately three hours without delays from UI-based processes, while still ensuring that both the policy and rating rules were properly migrated and ready for use.

Key Learnings

The rating migration project with SGI Canada provided several valuable insights into effective testing strategies and migration processes. The following key learnings highlight

the practices that contributed to the project's success and offer guidance for future initiatives:

1. The Power of Architecture and Automation

- CenterTest's architecture allowed for rapid adaptation to complex rating scenarios and seamless integration with both legacy systems and Guidewire.
- The dynamic DDT generation not only automated test creation but also ensured sustainability, supporting weekly payload updates without additional development effort.
- Automation was critical in delivering a broad and comprehensive testing solution that extended well beyond the limited scope typically achieved with manual testing.

2. Data-Driven and Business-Led Analytics

- Allowing business teams to define exception limits and configure analytics reduced the dependency on test engineers and SDETs, streamlining the testing process.
- The use of volume-based prioritization and keyword categorization provided immediate insights into high-frequency issues, enabling rapid issue resolution.
- A flexible approach to managing discrepancies maintained testing momentum, even while underlying issues were being investigated.

3. Balancing Performance with Accuracy

- The API-first testing strategy delivered exceptional performance, allowing 20,000 tests to be run in approximately three hours.
- The optional UI Bind validation added a layer of assurance, ensuring bound policies matched quotes, while minimizing performance impact.
- Carefully separating API testing from UI validation allowed for high-speed execution while still offering deep validation where needed.

4. Importance of Data Privacy and Compliance

- Handling sensitive PII data with CenterTest using secured API processes minimized exposure risks, ensuring compliance with data protection regulations.
- Additionally, the automatic addition and removal of PII information immediately before and after processing demonstrated best practices in data privacy management.

5. Fostering a Continuous Improvement Cycle

- The ability to rapidly rerun individual tests enabled quick validation of code changes, supporting a continuous improvement cycle.
- Automated analytics provided real-time feedback, allowing development teams to focus on high-impact fixes and validate changes efficiently.

Conclusion

The SGI Canada rating migration project illustrates how CenterTest's automated processes, dynamic test generation, and advanced analytics address the complexities of Guidewire implementations. By reducing project timelines by 80% and error analysis time by 90%, CenterTest enabled teams to focus on resolving high-impact issues and maintaining data integrity. This adaptable foundation also supports continued scalability, ensuring organizations can evolve their rating capabilities as business needs grow.