

Capgemini's Pega PRPC Testing Services

Automated business rules and workflow validations can lower your testing time by 95%

The behavior of many financial services applications are governed by business process and workflows which are defined by business rules. These business rules must be validated during application testing. For many financial services firms, testing business rules is a costly and complicated process which involves business users and testers.

Capgemini has invested in state-of-the-art automated test methods and tools integrated by Pegasystems into PegaRULES Process Commander® (PRPC) 6.1, Test Management Framework and Project Management Frameworks.

Within the framework of PRPC is a process of design which utilizes not only business process, but a tool called Direct Capture of Objectives or DCO. This process turns use cases based on requirements into design, thus providing fundamental testing paths for automated testing. This allows you to develop an application using a design based upon business rules, use cases, best practice development and quality principles.

Capgemini has experience with automated tools to accelerate testing and improve accuracy

Employing automation tools to test and validate business rules adds breadth and depth to your testing efforts. By using pre-defined testing parameters, hands-off automation methodologies, and innovative solutions, you can accelerate and simplify a complex process.

Test Automation Using Pega PRPC Tools

Capgemini takes business rules validation testing one step further by automating the creation of test scripts using parameterized data and automating the execution of test cases. For example, Capgemini can execute 65 rule validations in 1.1 minutes using automation, versus 32.5 hours for manual execution.

We use the Automated Unit Testing functionality within Pega PRPC to help you build a series of test cases to satisfy test requirements defined by the business requirements and use cases. These test cases are the foundation for automated test scripts. Automated test scripts can be built to pass from workflow to workflow, thus describing a partial or complete path through the application for scenario or end-to-end testing.

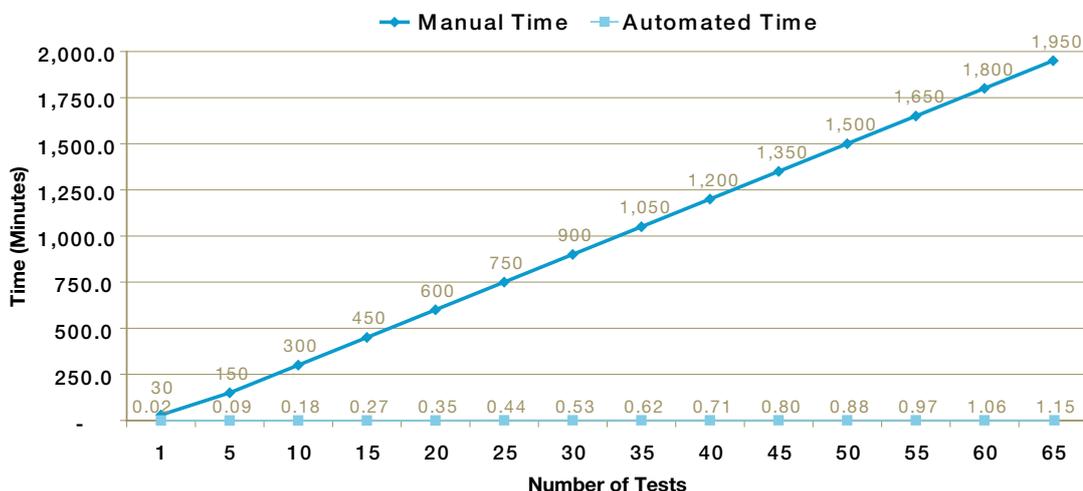
With the use of Test Management Framework (TMF), use case steps and parameters as described within the automated test scripts can be satisfied using the Scenarios and Suites features. The Scenarios and Suites test the **behavior** of the application and verify compliance with the original requirements.

Besides providing significant savings in cost, time and efforts, automation lets you run many more tests during your testing process as a suite to provide hands off results.

Boundary Testing

Capgemini provides boundary or negative testing of the business rules and process to confirm the effectiveness of rule sets by requesting conditions that don't exist. This helps ensure the business rules engine returns the correct value or an appropriate error. These boundary tests are set up as part of the actual application within each workflow.

Time to execute manual versus automated rules testing



32.5 hours to perform 65 rules tests manually

1.15 minutes to perform 65 rules tests using automation

Performance Testing

Capgemini uses Pega’s Performance Analyzer (PAL) to gather statistics about the performance of your Process Commander system. This tool collects snapshots of your application on demand as it executes. You can use it to observe the rules cache and see how client requests are resolved. PAL is used to gain insight into where the system is spending resources; use PAL to determine resource issues impacting performance, or it may begin to do so when more load is added to the system.

Capgemini uses PAL to provide point-to-point application performance metrics in combination with standard testing tools like HP LoadRunner, Quicktest Pro, JavaScript, VuGen with LoadRunner, DBTrace.

Capgemini’s Service Testing Toolkit for externally exposed services in Pega or SOA applications

By analyzing the testing process across various financial services clients, we noticed common problems which could be addressed with innovative solutions. Our Service Testing Toolkit contains accelerators, methods and tools to perform common testing tasks with exposed services of PRPC and any other web-based service by using SOAP over HTML, MQ and XML/Java.

Automated Rate Matching

Rate matching has always been a tedious and time-consuming effort which often involves manual processes to conform to all the rate variances within the auto insurance business rating methodology. Capgemini developed a testing harness that provides complete rate matching functionality between several components including legacy, mainframe and web-based applications.

Capgemini’s Service Testing Toolkit	
Business Rules XML Test Tool	<ul style="list-style-type: none"> External harness for automated XML testing of business rules Dramatically accelerated business rule validation process
Automated Rate Matching Tool	<ul style="list-style-type: none"> Internal/backend conversion or migration rate matching Dramatically accelerated rate matching process using batch and scripted tools
GUI-based Rate Matching Tool	<ul style="list-style-type: none"> GUI rate matching and validation with mainframe using XML tool interface
External Manual XML Service Test Interface	<ul style="list-style-type: none"> Provides deep dive analysis of XML requests and responses from the Business Rules Engine for defect management

Our [back end rate matching tool](#) captures rates and policy data and creates a rate comparison between two or three sources such as a legacy, mainframe or web-based application. The tool delivers the rate matching results to an Excel report.

Capgemini’s [GUI rate matching tool](#) captures rates from mainframe applications and Pega for comparison and creates a work object for the created policies. This work object is copied to the web-based application URL address. When executed, the GUI application is populated with the rate

and quote data, bypassing the manual input. Only 3 to 4 dynamic fields need to be refreshed to complete the calls to update the fields. Rates can be visually validated in minutes rather than hours.

Capgemini XML test tools for other business rules engines

Our testing toolkit for rate matching and business rules engine validation can be applied to any web-based service or cluster of services providing business rules to govern application behavior and any web-based application.

IN PRACTICE: Capgemini and Pega alliance yields innovative solutions for banks, insurance companies and capital markets firms

As a Pegasystems Service Partner, Capgemini collaborates with Pegasystems to leverage our experience and create repeatable, high-value frameworks for our clients.

In a recent initiative, we combined Pega PRPC frameworks and Test Management Framework with our expertise in testing insurance systems to build a proof of concept for First Notice of Loss which now resides on the Pega Amazon Cloud environment. We now have a fully integrated, end-to-end demonstration of this capability using Pega PRPC and TMF to run scenarios against an FNOL demo in the cloud environment.

Capgemini has dedicated and experienced staff available for onsite, near shore or offshore deployment for your Pega and web service testing efforts.

World class expertise

Capgemini has over 6,400 career quality professionals globally, 1,600 devoted exclusively to financial services testing. We bring industry standards such as TPI®, TMap® and Quality Blueprint to your testing engagements as well as world-recognized thought leadership with over 10 books published on Quality Management. Our experienced testing leadership averages 10-15 years experience and we have over 500 professionals certified in technology, business and

leadership domains such as Certified Software Test Engineer (CSTE), ISTQB and NSE's Certification in Financial Markets.

In addition to our experienced team, we deliver testing services using our Rightshore® network of centers in 32 cities across 15 countries Capgemini has long lasting and strong alliance partnerships with leading quality assurance and testing vendors including HP, IBM, Blueprint, Surgient, and iTKO.

About Pegasystems

Pegasystems (NASDAQ: PEGA), the leader in Business Process Management, provides software to drive revenue growth, productivity and agility for the world's most sophisticated organizations. Customers use our award-winning SmartBPM® suite to improve customer service, reach new markets and boost operational effectiveness.

Our patented SmartBPM® technology makes enterprise applications easy to build and change by directly capturing business objectives and eliminating manual programming. SmartBPM® unifies business rules and processes into composite applications that leverage existing systems – empowering businesspeople and IT staff to Build for Change®, deliver value quickly and outperform their competitors.

Pegasystems' suite is complemented by best-practice frameworks designed for leaders in financial services, insurance, healthcare, government, life sciences, communications, manufacturing and other industries.

Headquartered in Cambridge, MA, Pegasystems has offices in North America, Europe and Asia. Visit us at www.pega.com



About Capgemini and the Collaborative Business Experience

Capgemini, one of the world's foremost providers of consulting, technology and outsourcing services, enables its clients to transform and perform through technologies.

Capgemini provides its clients with insights and capabilities that boost their freedom to achieve superior results through a unique way of working, the Collaborative Business Experience™.

The Group relies on its global delivery model called Rightshore®, which aims to get the right balance of the best talent from multiple locations, working as one team to create and deliver the optimum solution for clients.

Present in 40 countries, Capgemini reported 2010 global revenues of EUR 8.7 billion and employs around 110,000 people worldwide.

Capgemini's Global Financial Services Business Unit brings deep industry experience, innovative service offerings and next generation global delivery to serve the financial services industry.

With a network of 17,000 professionals serving over 900 clients worldwide, Capgemini collaborates with leading banks, insurers and capital market companies to deliver business and IT solutions and thought leadership which create tangible value.

For more information please visit www.capgemini.com/financialservices

For more information, contact us at financialservices@capgemini.com