



Accenture Actuarial Calculation Engine



High performance. Delivered.



Accenture offers an advanced product calculation engine to drive faster speed to market for new products and increase flexibility to meet the needs of a rapidly changing market.

To drive competitive advantage, life and annuity carriers must continuously innovate within their product portfolio to move new products to market rapidly and efficiently. The Accenture Actuarial Calculation Engine gives carriers the ability to define and maintain the advanced processing functions and multi-dimensional tables needed when implementing complex insurance products. Such added configurability enhances carriers' existing systems, enabling greater flexibility and faster product speed to market.

As an industry-leading, highly configurable tool, the Actuarial Calculation Engine supports standard mathematical, financial, statistical and actuarial calculations. It also provides for the freeform definition of complex insurance calculations.

This innovative solution means that carriers can establish calculations once, and then share them across platforms. Integrated into the Accenture Life Insurance & Annuity Platform's (ALIP) product rules engine, the Actuarial Calculation Engine can immediately reference all data sets and variables.

Additionally, product features, coverages and financial transactions can be defined using standard expressions and functions. The Actuarial Calculation Engine is also available as a standalone component for integration with third-party solutions.

How does ALIP help life and annuity carriers?

ALIP eases the critical path of new product development, helping life and annuity carriers to compete more effectively and, ultimately, achieve high performance. In this way, organizations can be more nimble and responsive to the needs of an everchanging insurance marketplace. For instance, after switching from a legacy environment to ALIP, one insurer cut new product roll-out time by approximately 65 percent, while tripling the number of new product introductions.

Features

The Actuarial Calculation Engine offers the following key features:

Native functions and symbols: More than 200 ready-to-use native functions are available, forming the foundation for insurance calculations. These include direct support for common biometric, commutation and actuarial symbols; statistical distributions and standard financial functions; logarithmic, trigonometric, and other standard mathematical operations; string manipulation and date calculations.

These functions can be used independently or as part of larger calculations to support life and annuity products.

User functions: The engine also provides extended configuration capabilities by supporting the free-form definition of complex insurance calculations. The engine handles basic mathematical formulas as well as complex multi-line functions, and users have the ability to incorporate additional layers of functions. When the Actuarial Calculation Engine is used with ALIP, all components of the platform are available—that is, a standard set of data and variables can be used in all calculations.

When implemented as a stand-alone component, the calculation engine can be configured and integrated with external systems, such as New Business and Policy Administration.

Configurable matrices: The engine enables users to configure the size and dimensions of their product matrices and create custom tables based on the specific needs of the product. Users also benefit from a referencing engine, which analyzes the dependencies between functions and matrices.

Actuarial tables: The engine provides standard actuarial table support to allow for the importing/exporting of tables. Standard functions are provided to allow access

Figure 1. A configuration view of the Accenture Actuarial Calculation Engine

The screenshot displays the 'Functions' configuration page in the Accenture Actuarial Calculation Engine. The top navigation bar includes 'Home', 'Contexts', 'Functions', 'Matrices', 'Templates', 'Tables', 'Glossary', 'Variables', 'Expressions', and 'Test Center'. A search bar is present with the text 'I'm looking for a... function' and filters for 'By Name' and 'That Starts with'. Below the search bar, a table lists 18 functions. The function 'TestAnnualPremium' is selected, and its details are shown in the 'Preview' pane on the right.

ID	Owner	Name	Description	Last Modified At	Last Modified By
1	Annuities	calcRateFromLifeExpectancy	Calculate the interest rate based on joint life expectancy.	Feb 8, 2012	root
2	Rider	getPremiumRate	Get the premium rate for a given age.	Apr 9, 2012	Seed Data
3	Rider	setup	Initialize values for this rider.	Apr 9, 2012	Seed Data
2	TermLife	TestAnnualPremium	Test the calculation of an annual premium for a 24-yr-old male smoker at \$75K face amount.	Apr 7, 2012	administrator
3	TermLife	calcAnnualPremium	Calculates the annual premium	Apr 7, 2012	administrator
5	TermLife	calcAnnualPremiumBasic	Calculates the annual premium	Apr 7, 2012	administrator
2	TermLife	calcFees	Calculate the fees	Apr 7, 2012	Seed Data
9	TermLife	feeCalcAgent	Determines whether or not the insured is eligible for this product	Apr 7, 2012	Seed Data
2	TermLife	isEligible	Determines whether or not the insured is eligible for this product	Apr 7, 2012	Seed Data
15	VUL	AtIssueWithdrawalChargeSchedule\$	Generate a withdrawal schedule	Apr 19, 2012	administrator

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Calculates the annual premium
calcAnnualPremium FaceAmount, IssueAge, riskClass$,
gender$
- Calculate the base policy premium
- Calculate the annual premium
Dim baseUnits = FaceAmount / baseChargeBasis
currentPremiumRate = PremiumRates(IssueAge,
riskClass$, gender$)
currentPremium = baseUnits * currentPremiumRate
- Calculate annual premium component for each
rider, and accumulate
Dim riderPremium = 0
For i = 1 To UBound(RiderFace)
Dim riderFace = RiderFace(i)
Dim riderUnits = riderFace / Rider.baseChargeBasis
currentPremiumRate = Rider.PremiumRates(IssueAge,
riskClass$, gender$)
riderPremium = riderPremium + riderUnits *
currentPremiumRate
Next i
- Sum up the annual premium
calcAnnualPremium = currentPremium + riderPremium +
policyFee
Exit
    
```

to actuarial table data, with advanced functions supporting additional manipulation and configuration.

Procedure debugging: Product and calculation testing performance is improved through procedure debugging. End-users have the ability to debug through a function, calculation by calculation, and traverse into nested functions. This allows them to capture concerns in configured calculations during the design phase, prior to moving into the user acceptance testing phase. The result is significantly increased calculation validation and, through early identification of issues in the product life cycle, a reduction in the overall testing of new product introductions.

Intuitive Interface: The user interface allows product managers to leverage existing functions or configure new functions and advanced mathematical formulas to support the most complex product needs. This eliminates the need for code and the lengthy back and forth process between product designer and developer. See 'figure 1' for example.

Benefits

Increased speed to market: The engine is highly configurable, minimizing the need for code development, helping carriers to speed time to market for new products. Users can quickly define and evaluate an expression,

with the engine telling them what that function will do. Users can then run test cases against a configured expression or function.

Robust calculation functionality: The engine provides a comprehensive library of calculation components, including system functions, pre-configured user functions, actuarial tables and matrices. These calculation components provide the building blocks for product definition. Users can introduce any calculation needed for product development.

A flexible and compatible solution: The Actuarial Calculation Engine is designed to operate as a standalone offering and readily integrates with third-party systems. Calculations can be performed using either Web services or Spring JDBC. Legacy platforms can also leverage the robust product configuration, functions and features of the calculation engine. This means that older systems can now support new and flexible product calculations.

Streamlined, integrated product testing: Carriers can debug and test new products using a single calculation engine. Tables, matrices and calculations that are developed can be immediately debugged and tested at a higher level once all components have been developed.

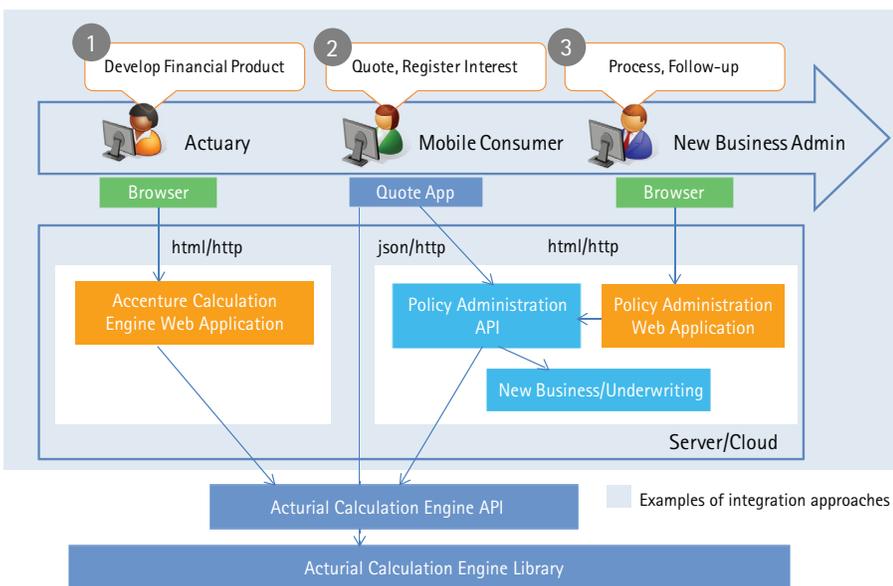
High Performance Delivered

- Faster speed to market for new products
- Respond to market changes through configuration
- Real time product testing and calculation debugging at the time of change to evaluate impact
- Integration options that enable greater portability, scalability and improved performance
- Full internationalization
- Great improvements to calculation performance times (up to 200% in some cases).

"A product calculation engine such as Accenture's Actuarial Calculation Engine for life insurance & annuity carriers is a key component that is often-overlooked when insurers turn to modernizing their systems.

A modern calculation engine has the necessary configurability that enables insurers to take full control over product creation, driving faster speed to market and increasing flexibility as customer needs evolve and regulatory environments change. Such an engine should be standalone and able to integrate with third party solutions, like Accenture's Actuarial Calculation Engine." Chad Hersh, Managing Director, Insurance Practice, Novarica

Figure 2. A technical view of the Accenture Actuarial Calculation Engine
Example of how the Accenture Actuarial Calculation Engine can be integrated with existing systems.



Contact us

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