

## BORROWING PASS/FAIL DECISION WITH MITIGATION CRITERIA

### INTRODUCTION

We used the IDIOM Decision Manager v4.1 to solve the problem scenario described in the Decision Management Challenge October 2014.

IDIOM Decision Manager is an integrated rules development environment which incorporates:

- ✓ Decision modelling.
- ✓ Formula modelling.
- ✓ A full set of validations.
- ✓ Onboard multi-level testing, including full regression testing.
- ✓ Schema management.
- ✓ Complete source code generation, deployment and reporting.

All actions are drag and drop – the only typing is for names and descriptions.

The full IDIOM product can be implemented by a novice user in less than 5 minutes on any Windows OS. There is no requirement for any third party tool.

The finished solution has been generated with a single click into multiple forms including Java, C#, and Logical English (See Appendix A).

## THE DECISION MODEL

The decision model requires only one relatively simple decision.

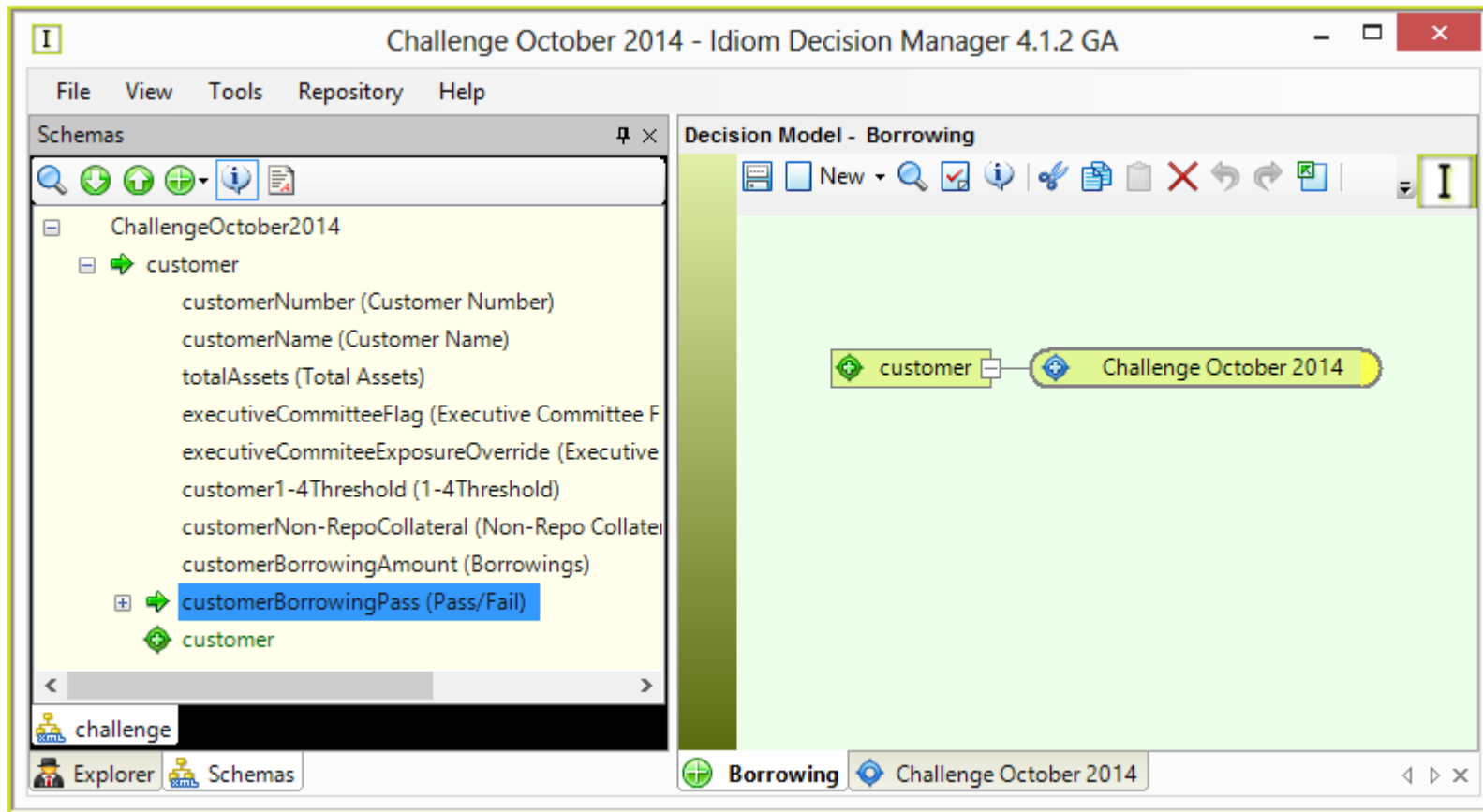


Figure 1: The decision model palette.

This Decision Model and its Formula will pass the transaction if it meets the criteria for both Rule # 1 and Rule # 2 (although this was not explicit in the challenge requirements)

## THE FORMULA PALETTE

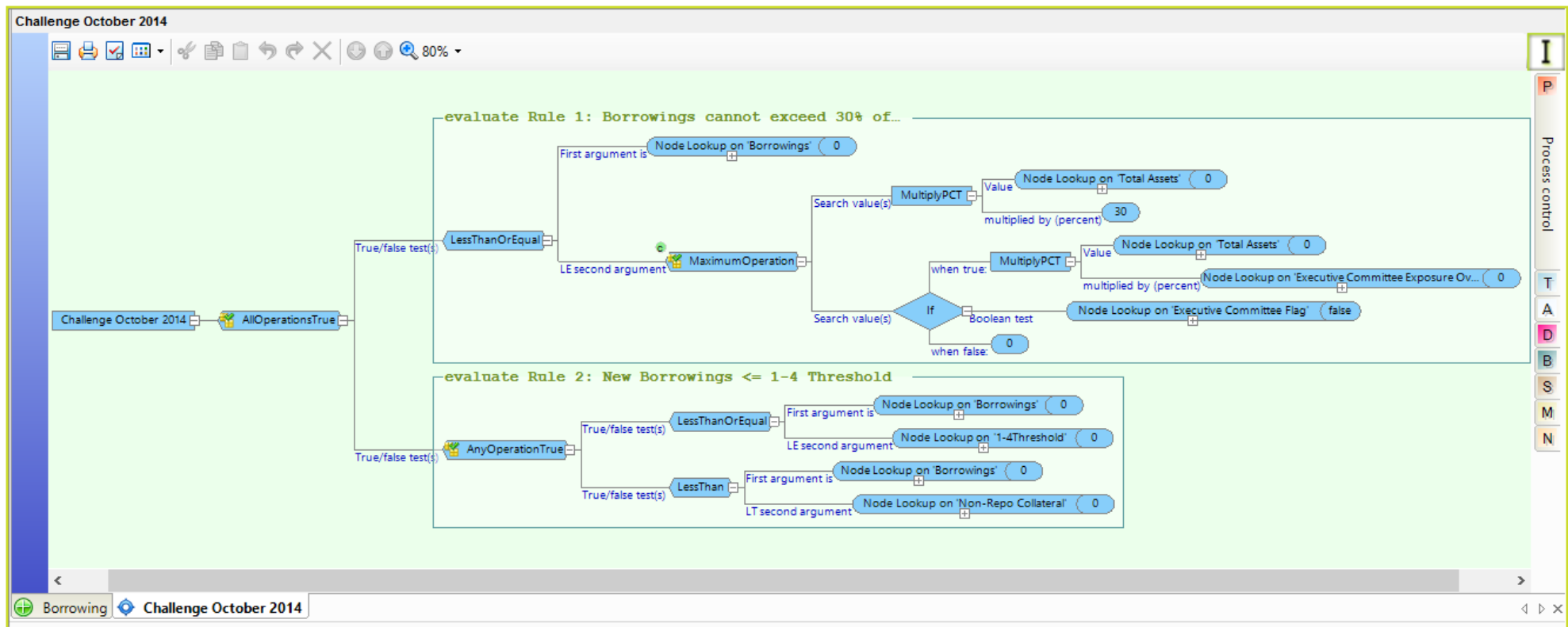


Figure 2: Rule # 1 and Rule # 2 Formula.

This formula assesses the criteria for Rule # 1 and Rule # 2 and will pass the transaction only if both conditions are met. i.e. the maximum borrowing amount for each customer is ultimately defined by the Non-Repo Collateral:

- ✓ ABC Bank: < \$2,500,000
- ✓ Bank One: < \$3,250,000

### Change to the mitigation rules:

There are many ways to change the mitigation rules. Since we are not the authorized representative, we would not make this change without consultation.

However, an arbitrary example of an amended rule is shown below. In this case we have changed Rule # 2 to allow a 20% increase to the Non-Repo Collateral amount if the Customer's Total Assets exceed \$30,000,000.

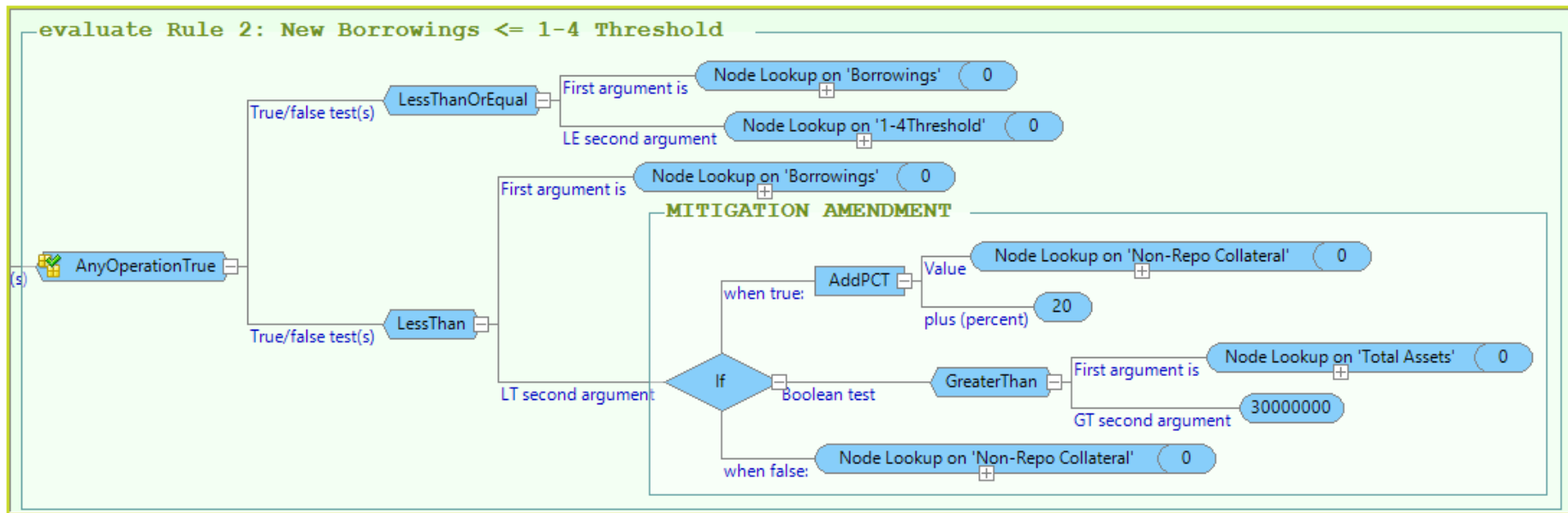


Figure 3: Amended Rule # 2 Formula.

As Bank One has Total Assets over \$30,000,000 the Non-Repo Collateral amount has increased by 20% i.e. the maximum borrowing amount for each customer is now:

- ✓ ABC Bank: < \$2,500,000
- ✓ Bank One: < \$3,900,000

## THE DEBUGGER

To test the decision model, data can be easily imported or entered into the Debugger pane (see figure 4 below), and executed in the decision model. Execution can be halted at any point during runtime and the contents of the formula inspected via the Formula Palette to assist with explaining why decisions behave in the manner they do.

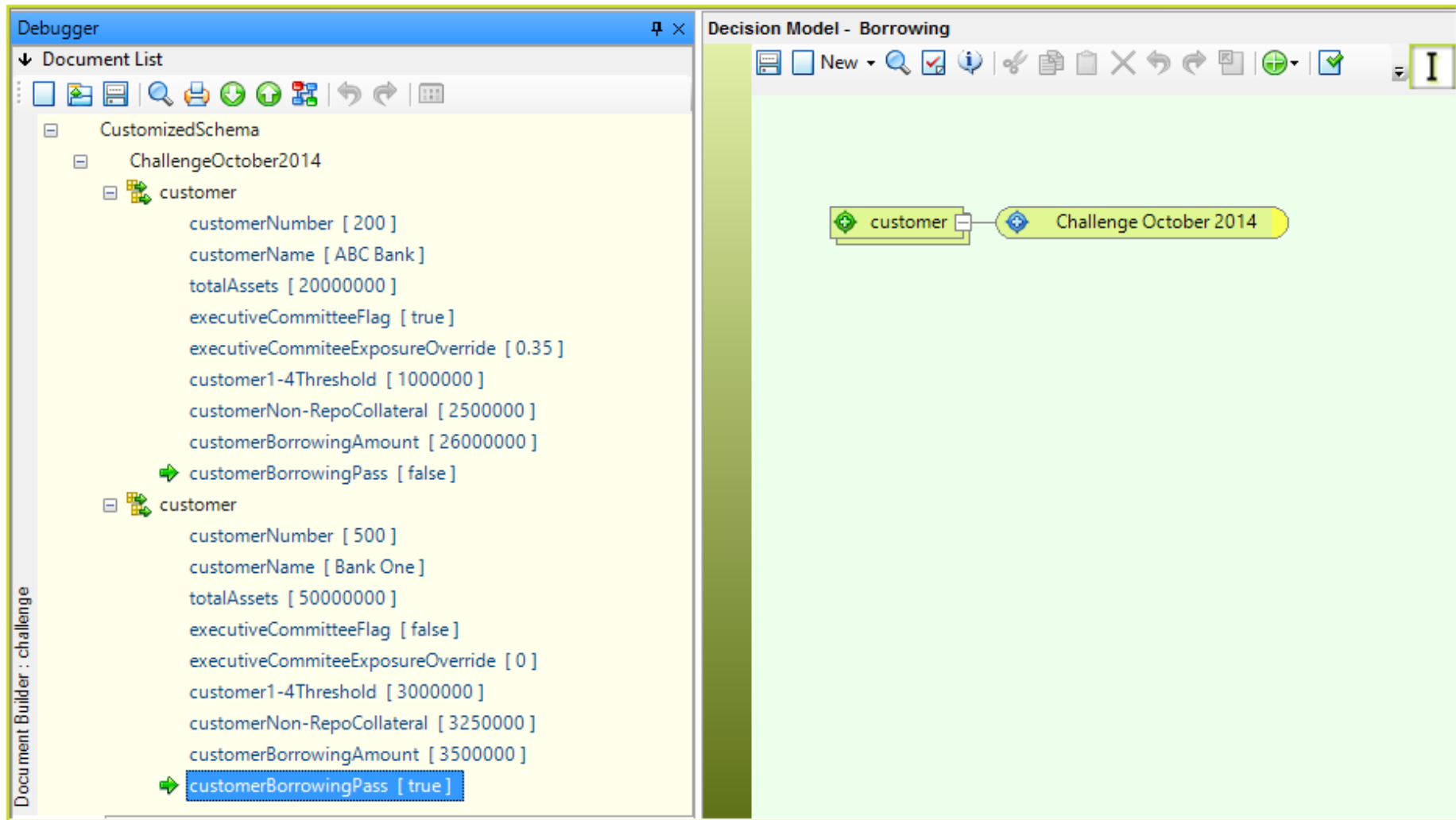


Figure 4: IDIOM Decision Manager Debugger.

## THE RELEASE PROCESS

Note that the Validations are performed automatically when the Release tab is entered.

Clicking on the tool bar icons will perform various forms of release. The release process can generate a wide variety of signed or unsigned artefacts, including source and compiled code. Hot deployment is possible, although we do not recommend this.

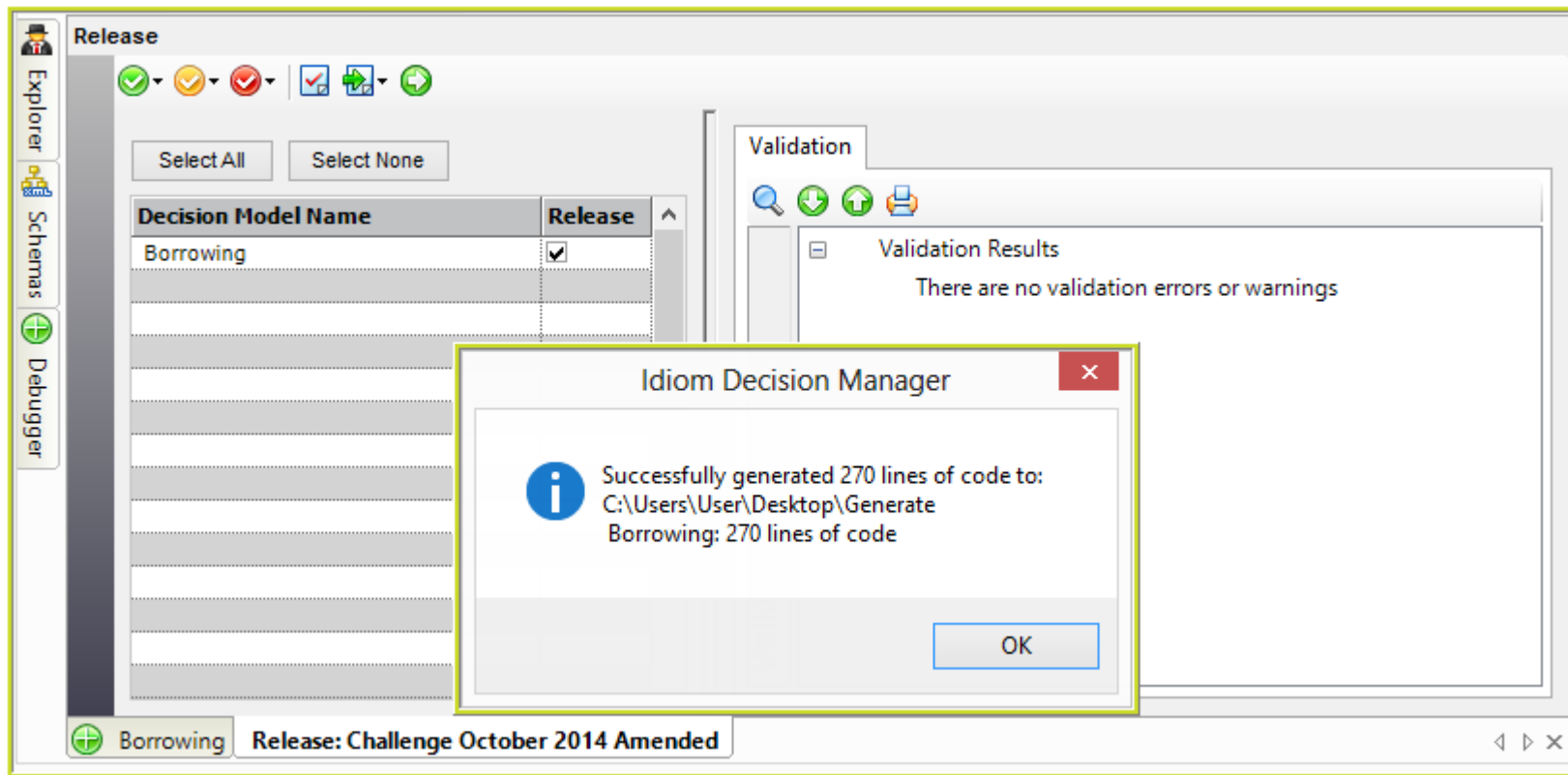


Figure 5: IDIOM Decision Manager Release Pane

## CONTACT INFORMATION:

Mark Norton +64 21 434669 mark.norton@idiomsoftware.com. For more information and contact please see our website at

[www.idiomsoftware.com](http://www.idiomsoftware.com)

Appendix A

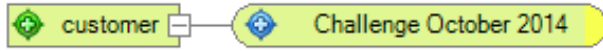
***Challenge October 2014  
Amended  
Borrowing***

## **Business Description:**

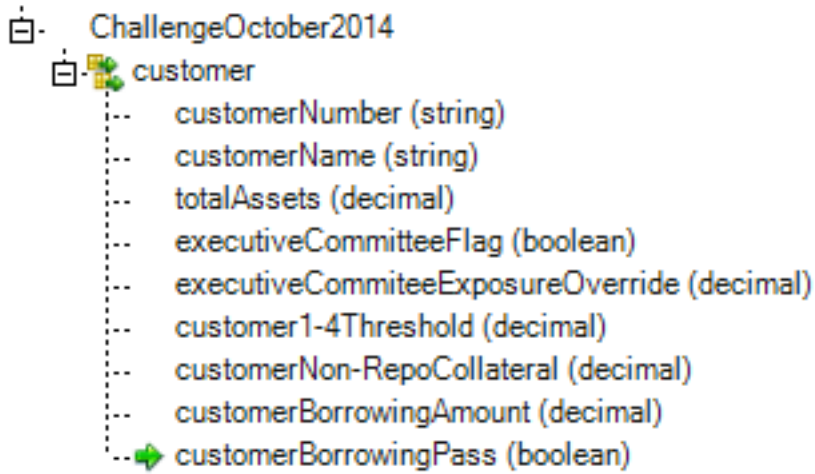
Decision Model: "Borrowing PASS/FAIL Decision with Mitigation Criteria"



Decision Model: Borrowing



## SCHEMA DETAILS: challenge



**Schema Annotations:**

**/ChallengeOctober2014**  
October Challenge 2014

## DECISIONGROUP DETAILS

customer

<b>ID</b>	JE3vHQ12XECD7z6pdzJoPA		
<b>Context Node</b>	/ChallengeOctober2014/customer		
<b>Parent</b>	Borrowing (DecisionModel)		
<b>Execution Order</b>	0		
<b>Action</b>	Update	<b>Created By</b>	SystemAdministrator
<b>Repeats</b>	false		
<b>Tags</b>	(No tags found)		
<b>Business Description</b>	(No Description found)		
<b>Technical Description</b>	(No Description found)		

**Execution List:**

[Challenge October 2014](#)

## DECISION DETAILS

### Challenge October 2014

<b>ID</b>	xtKppEWxuUWHfr3c6H4QIlw		
<b>Context Node</b>	/ChallengeOctober2014/customer/customerBorrowingPass		
<b>Parent</b>	<a href="#">customer (DecisionGroup)</a>		
<b>Execution Order</b>	0	<b>Data Type</b>	boolean
<b>Action</b>	CreteIfNecessary	<b>Created By</b>	SystemAdministrator
<b>Repeats</b>	false		
<b>Tags</b>	(No tags found)		
<b>Business Description</b>	(No Description found)		
<b>Technical Description</b>	(No Description found)		

#### Formula References:

- [1753-01-01 to 9998-12-31] [Challenge October 2014](#)

# LIST OF FORMULAS BY SCHEMA

challenge

[Challenge October 2014](#)

- [1753-01-01] [Challenge October 2014](#)

## FORMULA DETAILS

### Challenge October 2014

<b>Context Node</b>	/ChallengeOctober2014/customer/customerBorrowingPass		
<b>Private?</b>	False	<b>Data Type</b>	boolean
<b>Created By</b>	SystemAdministrator		
<b>Business Description</b>	(No Description found)		
<b>Technical Description</b>	(No Description found)		

#### Versions:

- [1753-01-01] [Challenge October 2014](#)

## FORMULA VERSION DETAILS

### Challenge October 2014

<b>Context Node</b>	/ChallengeOctober2014/customer/customerBorrowingPass		
<b>Status</b>	Complete	<b>Data Type</b>	boolean
<b>Effective Date</b>	1753-01-01	<b>Created By</b>	SystemAdministrator
<b>Calculation Mode</b>	Use 'int' for whole number calculations		

#### Business Description

The english language description of this rule is ambiguous. There is no indication whether either, or both rules must pass for a pass. If it is 'either', then the high order 'AllOperationsTrue' would be replaced by 'AnyOperationTrue'. We have followed the interpretation used by others.

#### Technical Description

Can be generated as Java or C#.

#### Alias Legend

<b>1-4Threshold</b>	/ChallengeOctober2014/customer/customer1-4Threshold
<b>Borrowings</b>	/ChallengeOctober2014/customer/customerBorrowingAmount
<b>Executive Committee Exposure Override</b>	/ChallengeOctober2014/customer/executiveCommitteeExposureOverride
<b>Executive Committee Flag</b>	/ChallengeOctober2014/customer/executiveCommitteeFlag
<b>Non-Repo Collateral</b>	/ChallengeOctober2014/customer/customerNon-RepoCollateral
<b>Total Assets</b>	/ChallengeOctober2014/customer/totalAssets

## FORMULA VERSION DEFINITION

### The Formula Version "Challenge October 2014" is defined as follows.

Perform the following series of tests. This operation will return true only when ALL tests in the series are true:

- The first test will **evaluate Rule 1: Borrowings cannot exceed 30% of Total Assets.**
- The second test will **evaluate Rule 2: New Borrowings <= 1-4 Threshold**

Ⓜ A: The largest of: <sup>1</sup>

- The first operation to test for largest value is Total Assets \* 30%
- The second operation to test for largest value is When Executive Committee Flag is true
  - THEN return Total Assets \* Executive Committee Exposure Override%
  - ELSE return 0

### Evaluate Rule 1: Borrowings cannot exceed 30% of Total Assets. is defined as follows:

Return true when Borrowings <= A

### Evaluate Rule 2: New Borrowings <= 1-4 Threshold is defined as follows:

Perform the following series of tests. This operation will return true when at least ONE test in the series is true:

- The first test will return true when Borrowings <= 1-4Threshold
- The second test will return true when Borrowings < **MITIGATION AMENDMENT**

### MITIGATION AMENDMENT is defined as follows:

When Total Assets > 30000000

- THEN return Non-Repo Collateral + 20%
- ELSE return the value of Non-Repo Collateral

<sup>1</sup> Use higher value if the Executive Committee Flag is 'true'



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