Exposing Test Analyses with DrTests

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Roadmap

- Variety of test analyses available
- What architecture to handle these analyses?
- DrTests
- Evaluating DrTests on various analyses
- Conclusion

Roadmap

- **Variety of test analyses available**
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Variety of analyses on tests

	Runner	Coverage	Profile	Parametrisable test	Mutation testing	Run examples in comment	Rotten Tests Finder	...
Input	Test cases							
Output	Results of tests run							

Variety of analyses on tests

	Runner	Coverage	Profile	Parametrisable test	Mutation testing	Run examples in comment	Rotten Tests Finder	…
Input	Test cases	Test cases						…
Output	Results of tests run	Percentage of methods covered						…

Variety of analyses on tests

	Runner	Coverage	Profile	Parametrisable test	Mutation testing	Run examples in comment	Rotten Tests Finder	…
Input	Test cases	Test cases	Test cases					…
Output	Results of tests run	Percentage of methods covered	Time taken for each test run					…

Variety of analyses on tests

	Runner	Coverage	Profile	Parametrisable test	Mutation testing	Run examples in comment	Rotten Tests Finder	...
Input	Test cases	Test cases	Test cases	Test cases + parameters				
Output	Results of tests run	Percentage of methods covered	Time taken for each test run	Results of tests run depending on parameter				

Variety of analyses on tests

	Runner	Coverage	Profile	Parametrisable test	Mutation testing	Run examples in comment	Rotten Tests Finder	...
Input	Test cases	Test cases	Test cases	Test cases + parameters	Test cases + mutations			
Output	Results of tests run	Percentage of methods covered	Time taken for each test run	Results of tests run depending on parameter	Mutants to be killed			

Variety of analyses on tests

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Input	Test cases	Test cases	Test cases	Test cases + parameters	Test cases + mutations	Comments		
Output	Results of tests run	Percentage of methods covered	Time taken for each test run	Results of tests run depending on parameter	Mutants to be killed	Comments containing failing examples		

Variety of analyses on tests

	Runner	Coverage	Profile	Parametrisable test	Mutation testing	Run examples in comment	Rotten Tests Finder	…
Input	Test cases	Test cases	Test cases	Test cases + parameters	Test cases + mutations	Comments	Test cases	…
Output	Results of tests run	Percentage of methods covered	Time taken for each test run	Results of tests run depending on parameter	Mutants to be killed	Comments containing failing examples	Rotten tests	…

Roadmap

- Variety of test analyses available
- **What architecture to handle these analyses?**
- DrTests
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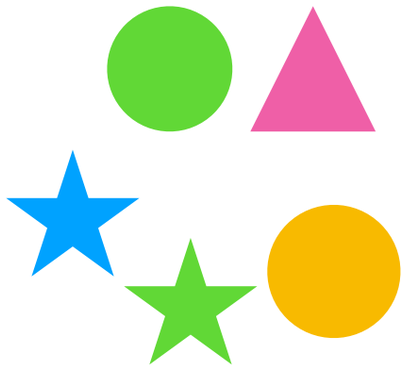
- Conclusion



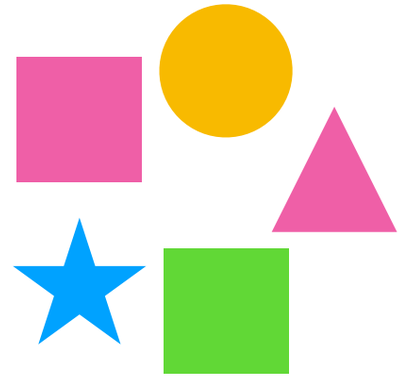
Different Inputs

Test Runner

Test Coverage

Test profiling

⋮



Different Outputs

How to design an infrastructure dealing with all these analyses?

Roadmap

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- **DrTests**
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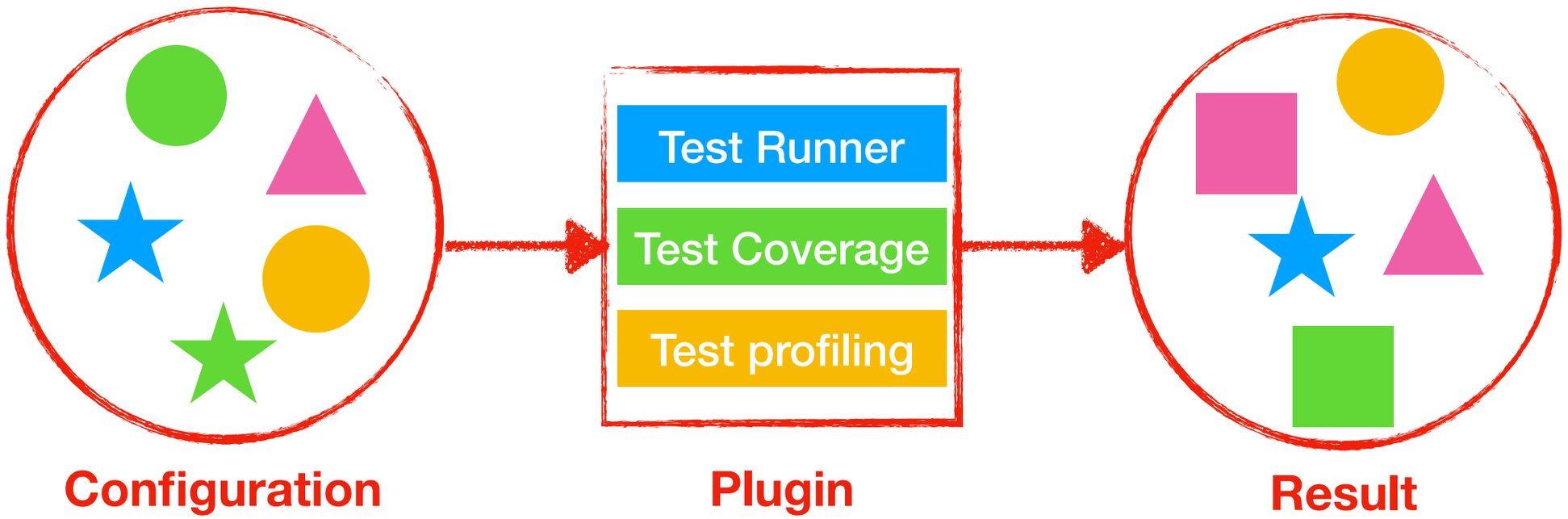
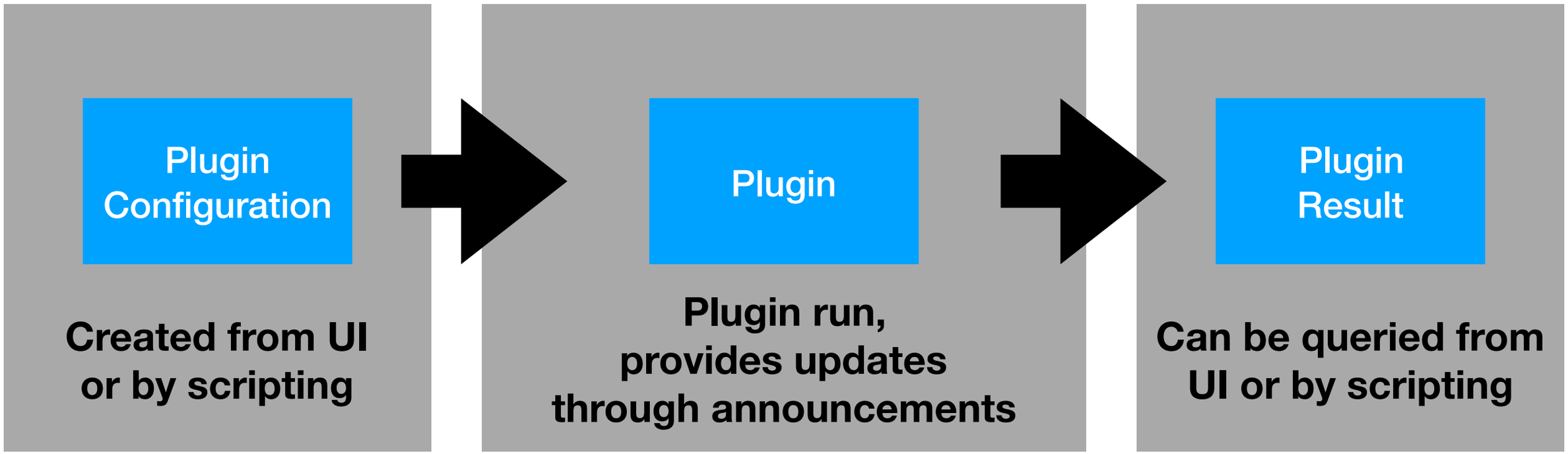
An architecture to handle test analyses variety:

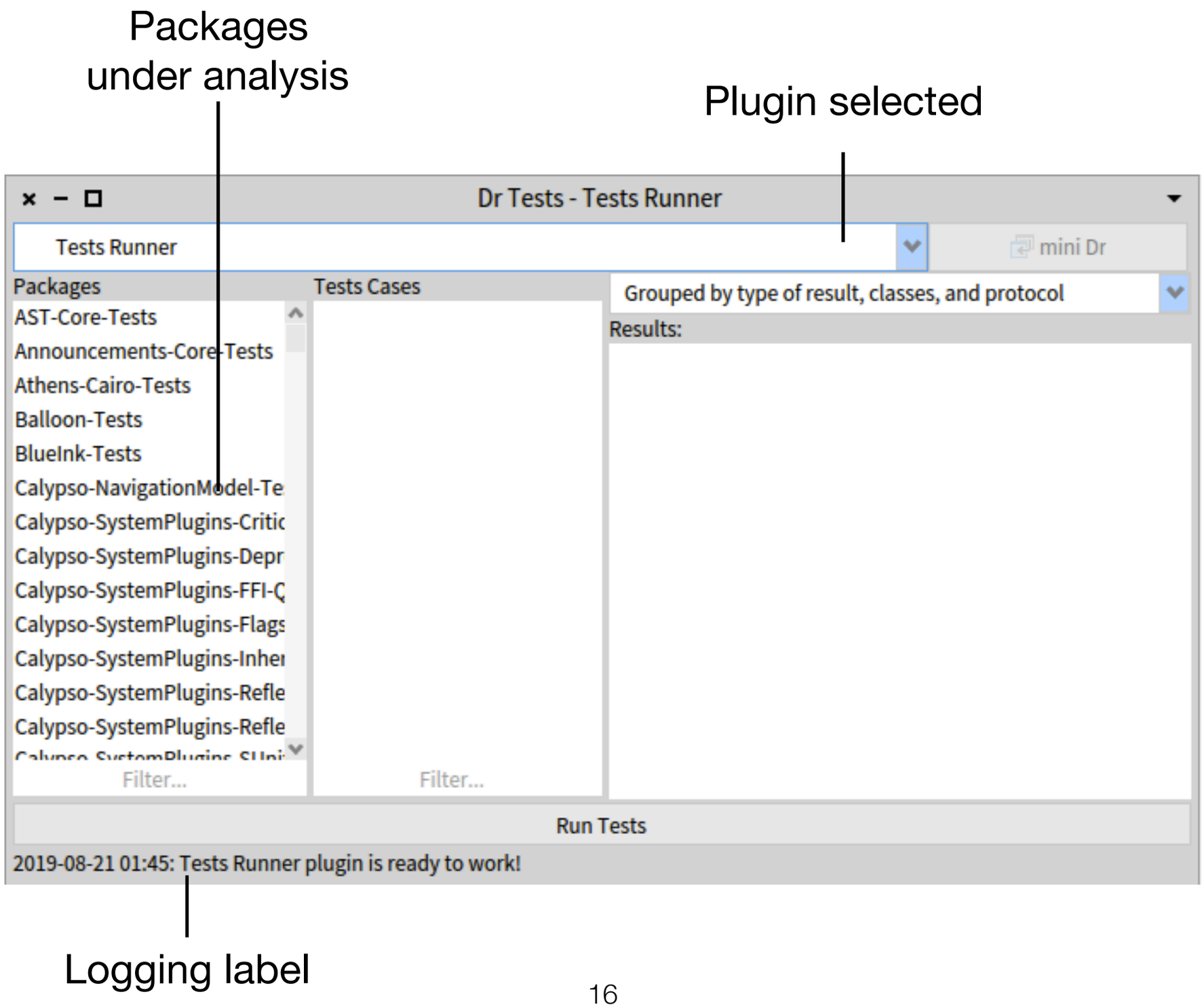


DrTests

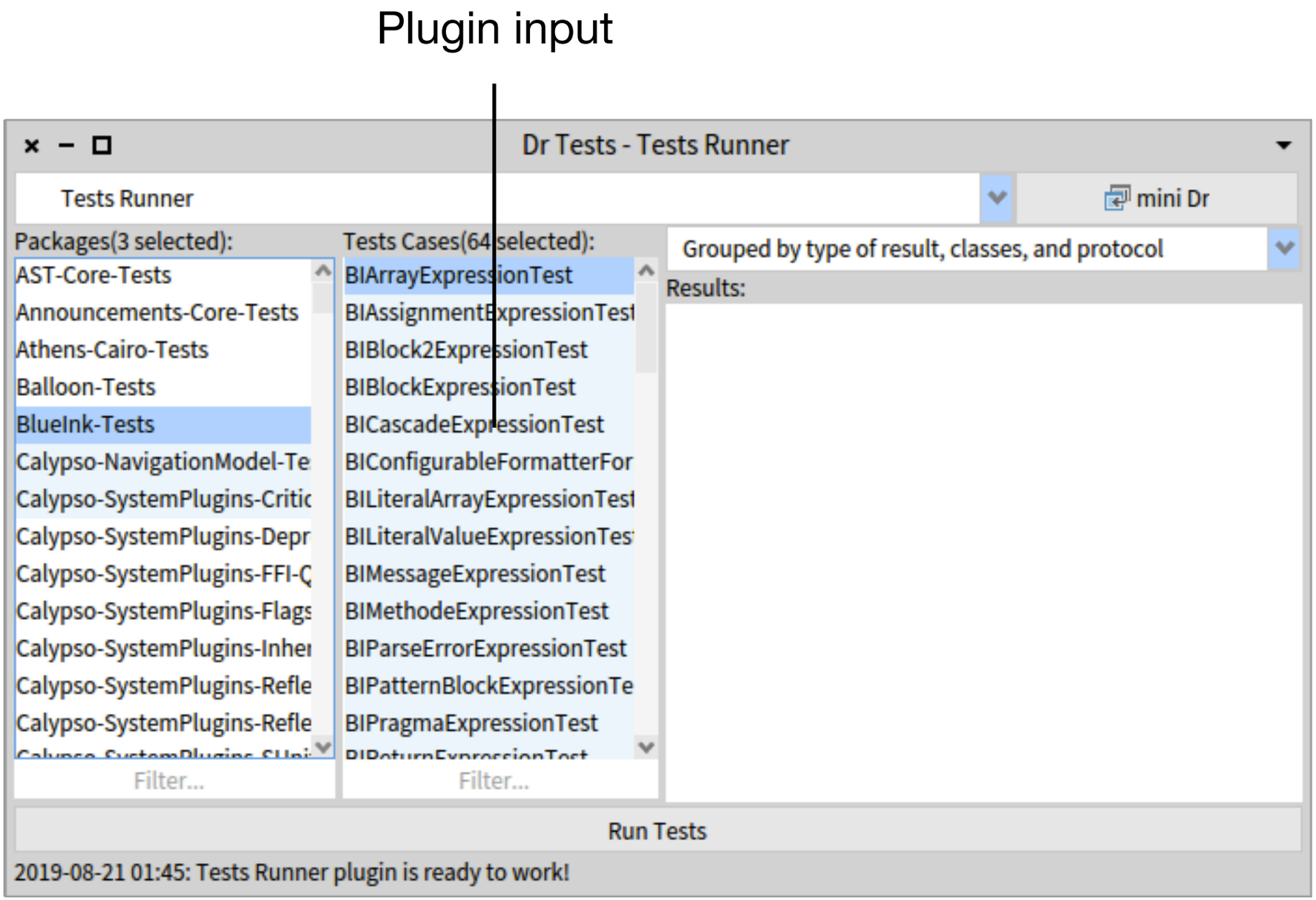
Dr Tests Model



Dr Tests UI


Packages
under analysis
Plugin selected
Dr Tests - Tests Runner
Tests Runner
mini Dr
Packages
Tests Cases
Grouped by type of result, classes, and protocol
Results:
AST-Core-Tests
Announcements-Core-Tests
Athens-Cairo-Tests
Balloon-Tests
BlueInk-Tests
Calypso-NavigationModel-Te
Calypso-SystemPlugins-Critic
Calypso-SystemPlugins-Depr
Calypso-SystemPlugins-FFI-C
Calypso-SystemPlugins-Flags
Calypso-SystemPlugins-Inher
Calypso-SystemPlugins-Refle
Calypso-SystemPlugins-Refle
Filter...
Filter...
Run Tests
2019-08-21 01:45: Tests Runner plugin is ready to work!
Logging label

Dr Tests UI


Plugin input
Dr Tests - Tests Runner
Tests Runner
mini Dr
Packages(3 selected):
Tests Cases(64 selected):
Grouped by type of result, classes, and protocol
Results:
AST-Core-Tests
Announcements-Core-Tests
Athens-Cairo-Tests
Balloon-Tests
BlueInk-Tests
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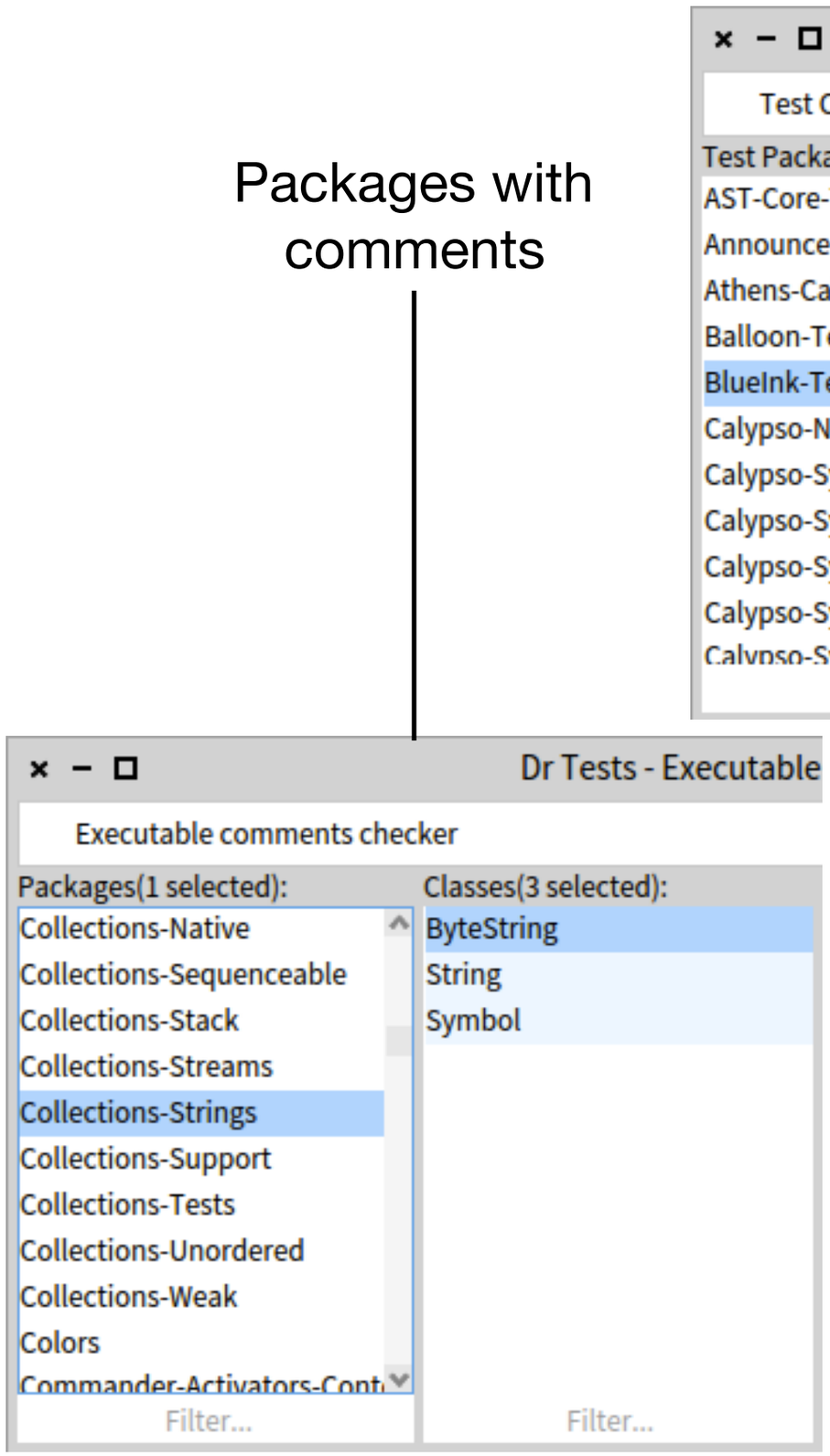
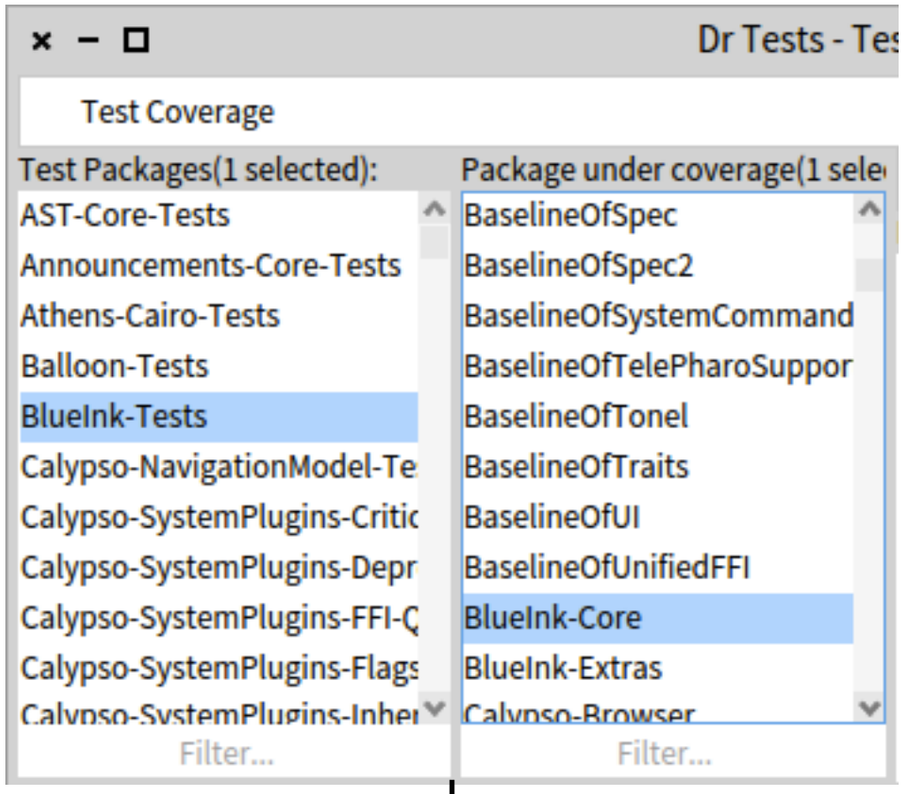
BIArrayExpressionTest
BIAssignmentExpressionTest
BIBlock2ExpressionTest
BIBlockExpressionTest
BICascadeExpressionTest
BIConfigurableFormatterFor
BILiteralArrayExpressionTest
BILiteralValueExpressionTes
BIMessageExpressionTest
BIMethodeExpressionTest
BIParseErrorExpressionTest
BIPatternBlockExpressionTe
BIPragmaExpressionTest
Filter...
Filter...
Run Tests
2019-08-21 01:45: Tests Runner plugin is ready to work!

Dealing with different inputs

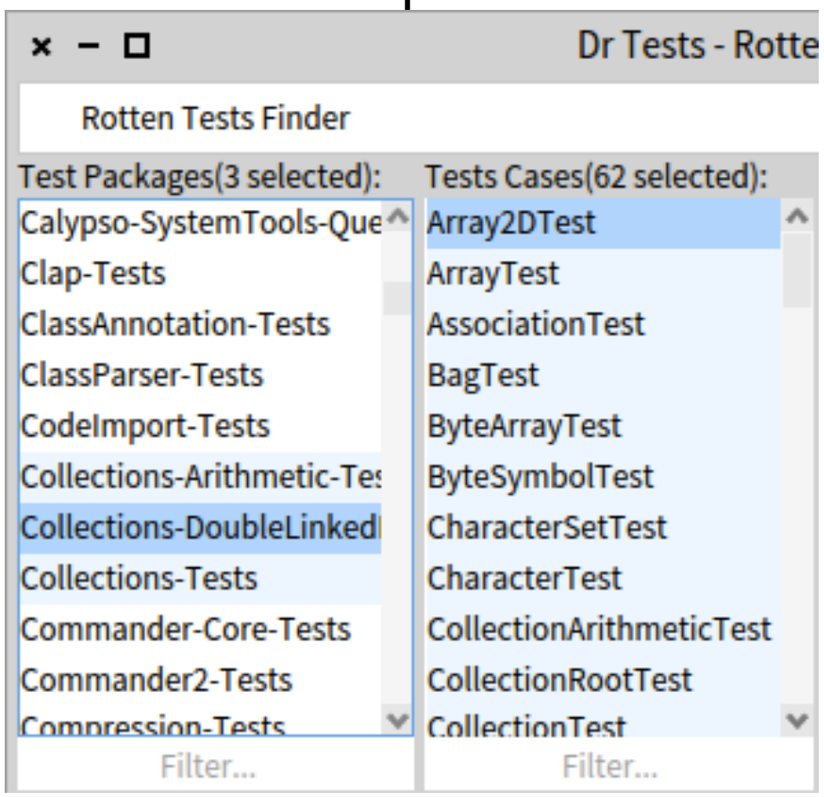
Packages with comments



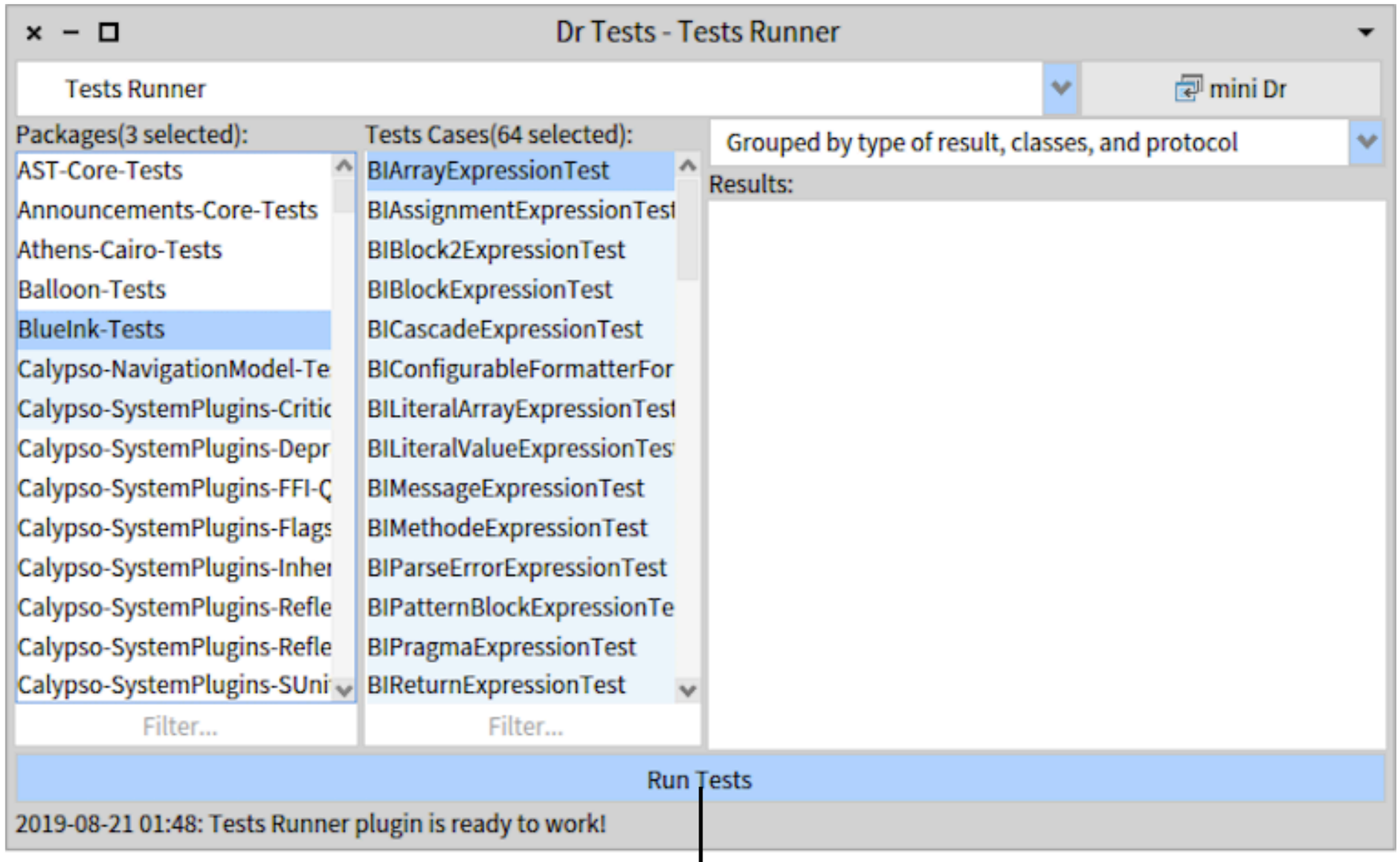


Test package
&
Package under analysis

Tests



Dr Tests UI


Dr Tests - Tests Runner
Tests Runner
mini Dr
Packages(3 selected):
AST-Core-Tests
Announcements-Core-Tests
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Balloon-Tests
BlueInk-Tests
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Calypso-SystemPlugins-SUni
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Tests Cases(64 selected):
BIArrayExpressionTest
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BICascadeExpressionTest
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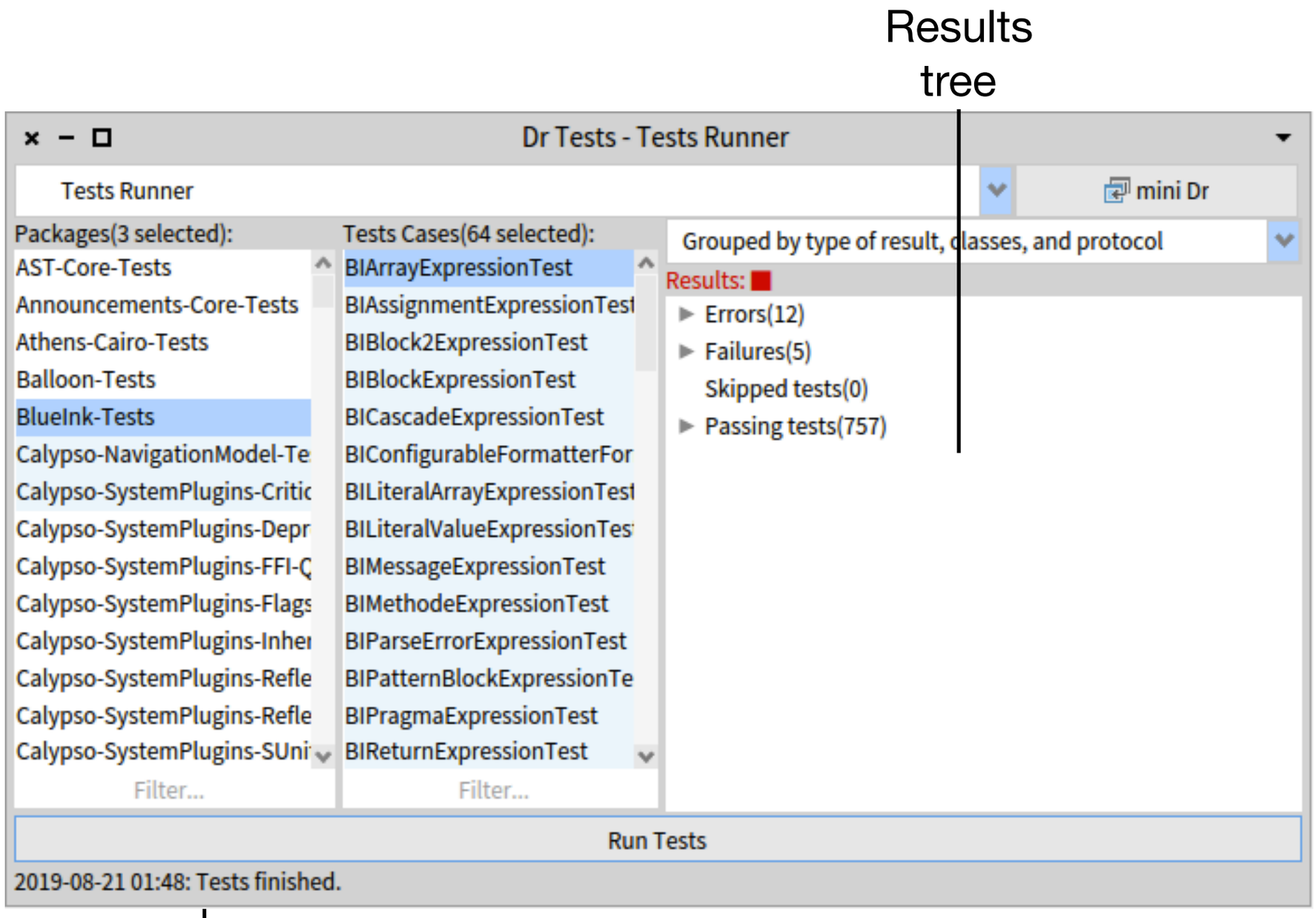
BILiteralValueExpressionTes
BIMessageExpressionTest
BIMethodeExpressionTest
BIParseErrorExpressionTest
BIPatternBlockExpressionTe
BIPragmaExpressionTest
BIReturnExpressionTest
Filter...
Grouped by type of result, classes, and protocol
Results:
Run Tests
2019-08-21 01:48: Tests Runner plugin is ready to work!
Start plugin

Dr Tests UI


Results tree
Dr Tests - Tests Runner
Tests Runner
mini Dr
Packages(3 selected):
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BIAssignmentExpressionTest
BIBlock2ExpressionTest
BIBlockExpressionTest
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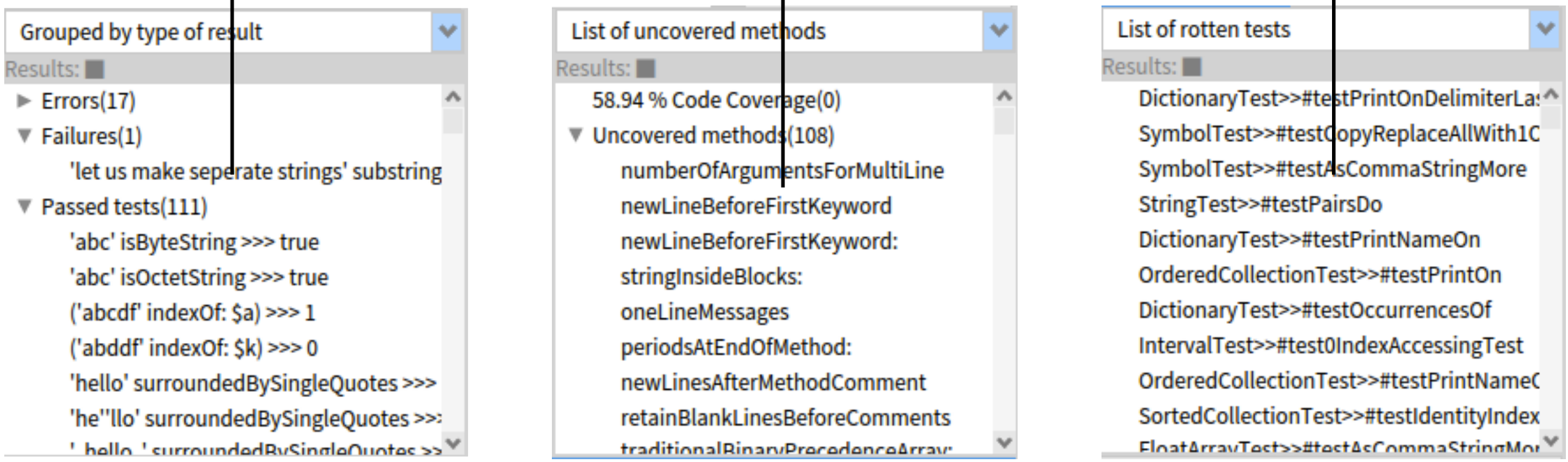
BILiteralValueExpressionTes
BIMessageExpressionTest
BIMethodeExpressionTest
BIParseErrorExpressionTest
BIPatternBlockExpressionTe
BIPragmaExpressionTest
BIReturnExpressionTest
Filter...
Results:
Errors(12)
Failures(5)
Skipped tests(0)
Passing tests(757)
Run Tests
2019-08-21 01:48: Tests finished.
Logging label

Different results

Comments

Percentage &
Uncovered methods

Rotten Tests



Roadmap

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- **Evaluating DrTests on various analyses**
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We implemented 3 plugins with various input and output

Dr Tests model validation

	Test Runner	Rotten Test	Test Coverage
INPUT	Tests Cases (packages and classes)	Tests Cases (packages and classes)	Tests and Package under analysis
ACTION	Run the test cases	Find Rotten Green Tests	Run tests and verify that methods inside the package were executed
RESULT	Test result sorting by groups	A list of rotten tests	Percentage of covering and list of uncovered methods

Dr Tests model validation

	Test Runner	Rotten Test	Test Coverage
		Tests Cases	

These analyses are implemented inside DrTests architecture and it works!

RESULT	Test result sorting by groups	A list of rotten tests	Percentage of covering and list of uncovered methods

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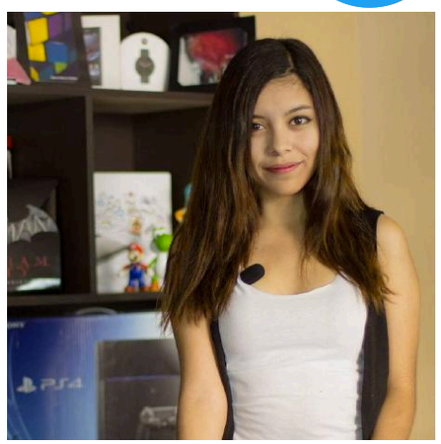
Conclusion

- Extensible via plugins
- Provides good model to configure, run and gather results from plugins
- Be integrated in Pharo 8.0
- **Future work:**
  - Extend the validation by implementing more plugins

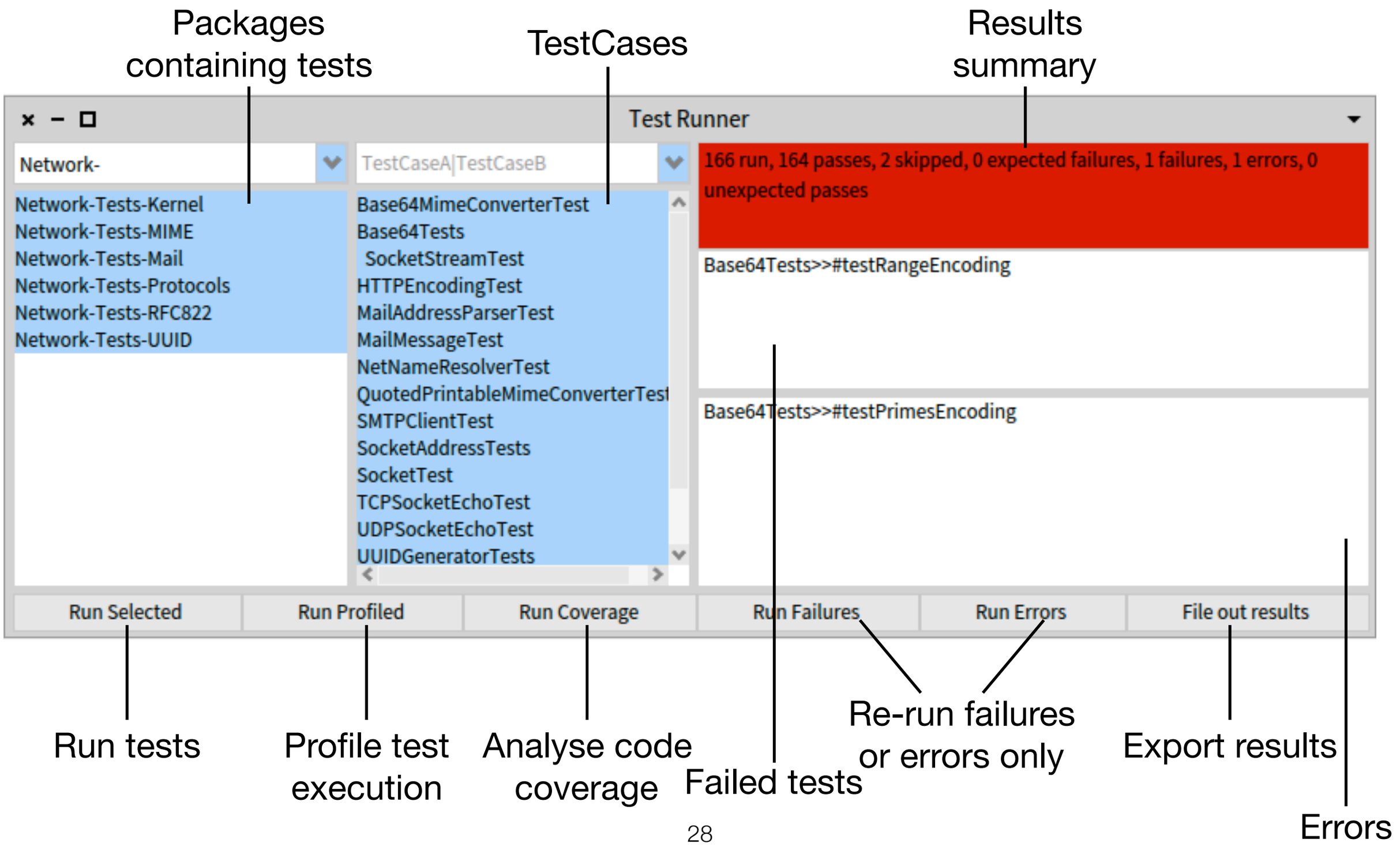
GDayne

@dayneStorm_

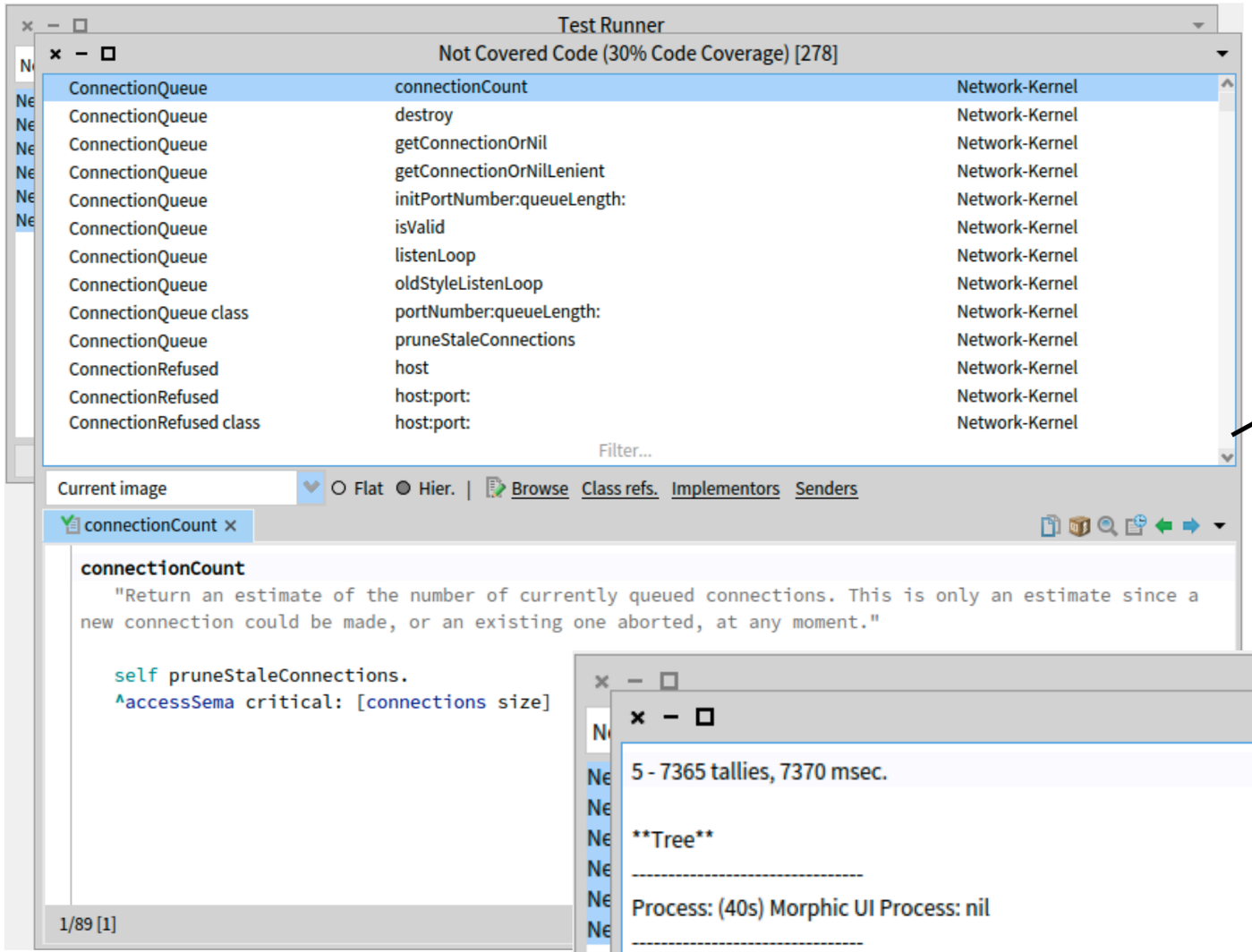


juliendelplanque/DrTests

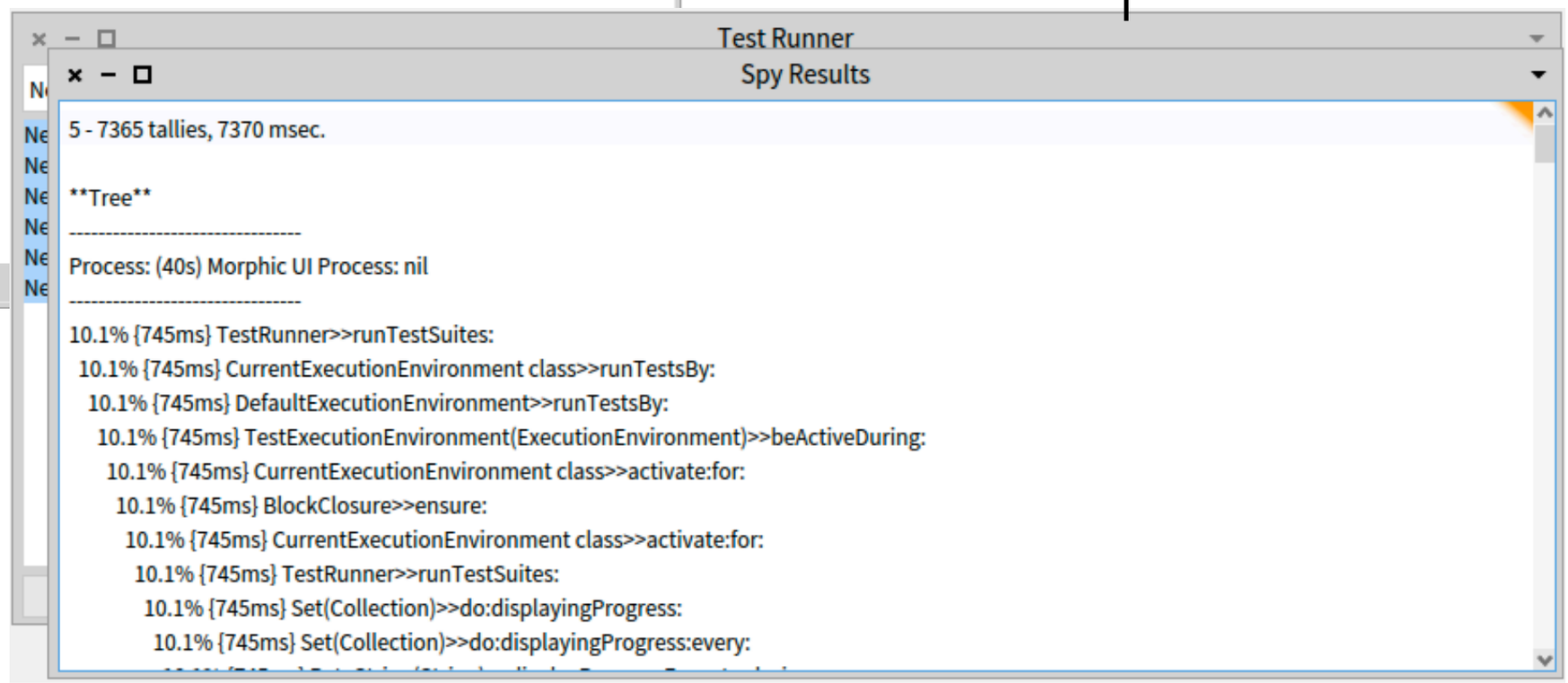
TestRunner UI



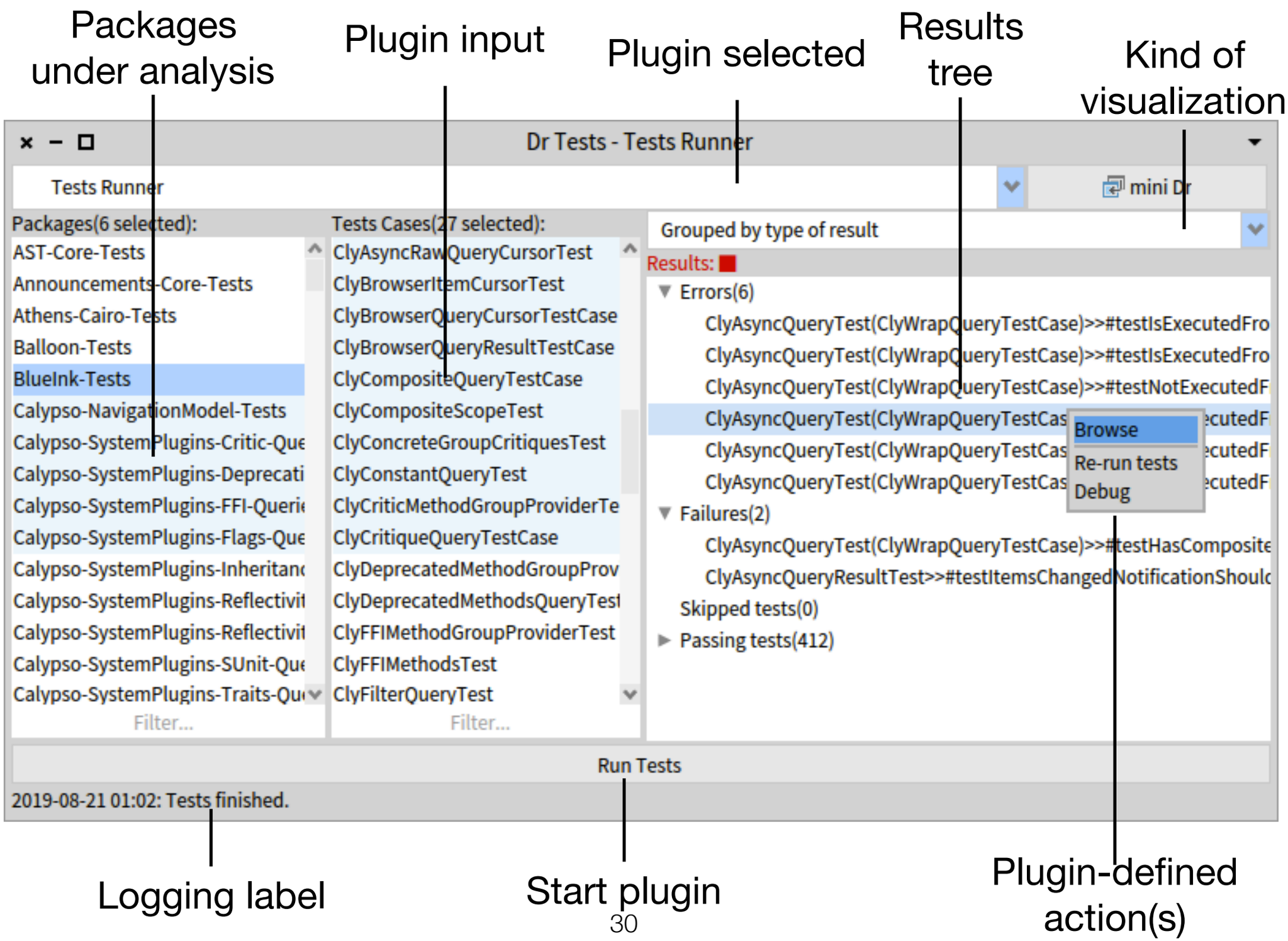
TestRunner UI: coverage and profile



Extra windows generated for results



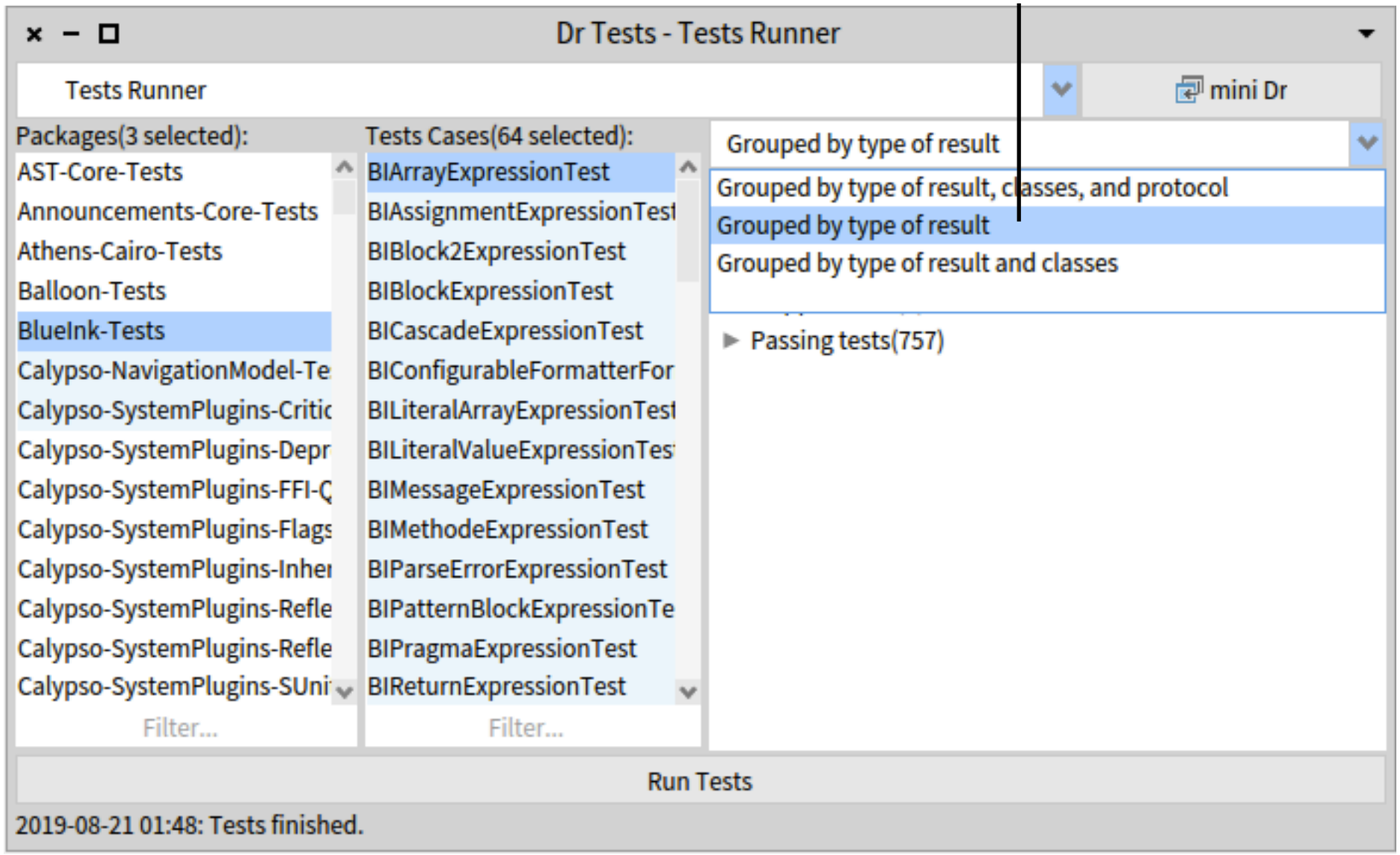
Dr Tests


Packages under analysis
Plugin input
Plugin selected
Results tree
Kind of visualization
Dr Tests - Tests Runner
Tests Runner
mini Dr
Packages(6 selected):
AST-Core-Tests
Announcements-Core-Tests
Athens-Cairo-Tests
Balloon-Tests
BlueInk-Tests
Calypso-NavigationModel-Tests
Calypso-SystemPlugins-Critic-Que
Calypso-SystemPlugins-Deprecati
Calypso-SystemPlugins-FFI-Queri
Calypso-SystemPlugins-Flags-Que
Calypso-SystemPlugins-Inheritanc
Calypso-SystemPlugins-Reflectivit
Calypso-SystemPlugins-Reflectivit
Calypso-SystemPlugins-SUnit-Que
Calypso-SystemPlugins-Traits-Qu
Filter...
Tests Cases(27 selected):
ClyAsyncRawQueryCursorTest
ClyBrowserItemCursorTest
ClyBrowserQueryCursorTestCase
ClyBrowserQueryResultTestCase
ClyCompositeQueryTestCase
ClyCompositeScopeTest
ClyConcreteGroupCritiquesTest
ClyConstantQueryTest
ClyCriticMethodGroupProviderTe
ClyCritiqueQueryTestCase
ClyDeprecatedMethodGroupProv
ClyDeprecatedMethodsQueryTest
ClyFFIMethodGroupProviderTest
ClyFFIMethodsTest
ClyFilterQueryTest
Filter...
Grouped by type of result
Results:
Errors(6)
ClyAsyncQueryTest(ClyWrapQueryTestCase)>>#testIsExecutedFro
ClyAsyncQueryTest(ClyWrapQueryTestCase)>>#testIsExecutedFro
ClyAsyncQueryTest(ClyWrapQueryTestCase)>>#testNotExecutedF
ClyAsyncQueryTest(ClyWrapQueryTestCas
ClyAsyncQueryTest(ClyWrapQueryTestCas
ClyAsyncQueryTest(ClyWrapQueryTestCas
Browse
Re-run tests
Debug
Failures(2)
ClyAsyncQueryTest(ClyWrapQueryTestCase)>>#testHasComposite
ClyAsyncQueryResultTest>>#testItemsChangedNotificationShoulc
Skipped tests(0)
Passing tests(412)
Run Tests
2019-08-21 01:02: Tests finished.
Logging label
Start plugin
Plugin-defined action(s)

Skip if no time

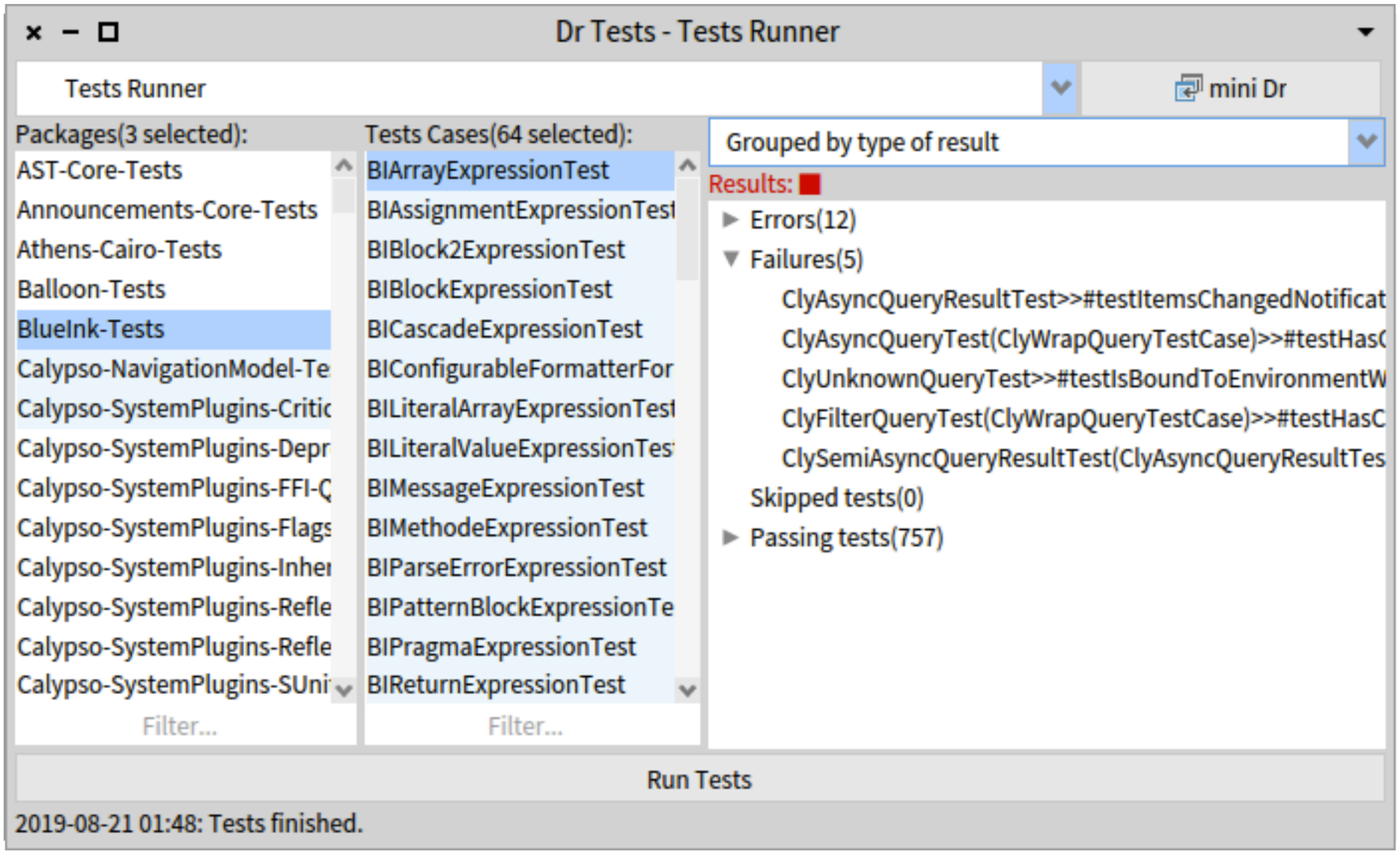
Dr Tests UI

Kind of visualization

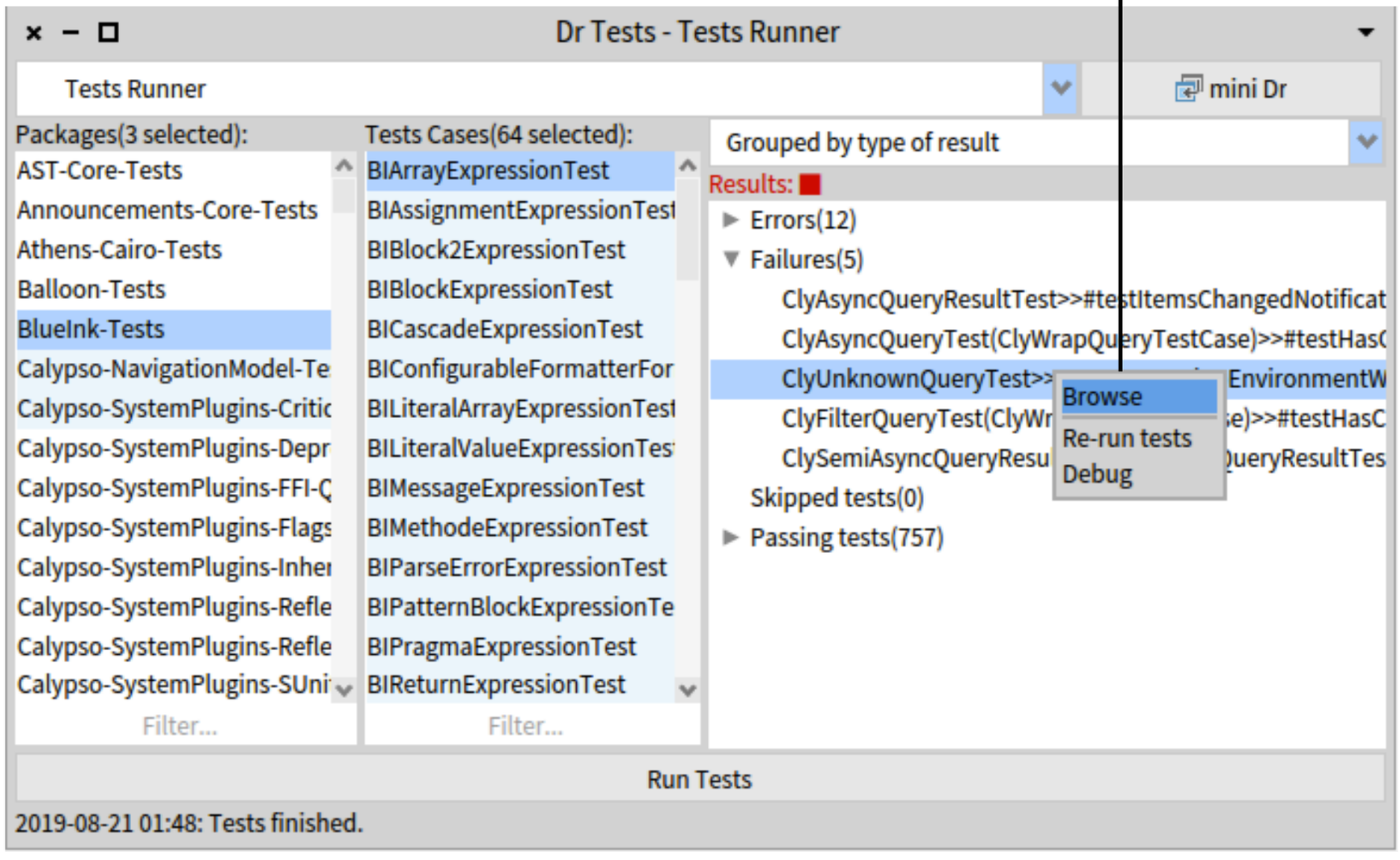


Skip if no time

Dr Tests UI



Skip if no time

Dr Tests UI

Plugin-defined action(s)