DrTests

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The future of testing in Pharo

Julien Delplanque

julien.delplanque@live.be
Developers

- Entering last year of PhD in RMoD team
- Hacking Pharo around many aspects... just for fun :-) 
- Hit by testing topic "by accident"

- 2nd year of Master
- Did an internship in RMoD team working on DrTests for the last 6 months
- Participated to GSOC
Roadmap

• SUnit’s TestRunner and its limitations

• DrTests - an architecture to build tools around tests

• DrTests internal

• Next steps
TestRunner UI

- Packages containing tests
- TestCases
- Results summary

- Run tests
- Profile test execution
- Analyse code coverage
- Failed tests
- Re-run failures or errors only
- Export results
- Errors

Test Runner

Network-
Network-Tests-*,
Network-Tests-MIME,
Network-Tests-Mail,
Network-Tests-Protocols,
Network-Tests-RFC822,
Network-Tests-UUID

TestCases

166 run, 164 passes, 2 skipped, 0 expected failures, 1 failures, 1 errors, 0 unexpected passes

Base64Tests>>#testRangeEncoding

Base64Tests>>#testPrimesEncoding
TestRunner UI

We can do more than that!
What can we do around tests?

Run them!

Test coverage

Find rotten green tests

Check executable comments

Test profiling

Parametrisable tests

Mutation testing

and more!
TestRunner UI

Adding more buttons does not scale!
TestRunner model
What do we want?

Power-up testing experience in Pharo by:

- Letting you plug your analysis via plugins
- Providing a model to configure, run and gather results from plugins
- Letting you customise the way to visualise results (e.g. sort them according to your needs).
DrTests
An architecture to build tools around tests
Who has the control?

Managed by plugin

Managed by result
Who has the control?

Managed by plugin

Managed by result

YOU!
Demo
DrTests’ model

- **Plugin Configuration**: Created from UI or by scripting
- **Plugin**: Run, provides updates through announcements
- **Plugin Result**: Can be queried from UI or by scripting
Consequence of DrTests’ model

Plugins can be exposed via different UIs easily
DrTests

Switch to Mini DrTests
Mini DrTests

Quick visual feedback
DrTest API

In a nutshell

DTPluginConfiguration

• Stores data required for the plugin to run in instance variables

DTPluginConfiguration subclass: #DTTestsRunnerConfiguration
slots: { #tests }
classVariables: { }
package: 'DrTests-TestsRunner'
DrTest API

In a nutshell

- Set UI labels for lists, tree and buttons.
- Describe how to fill lists to let user create a configuration
- Create configuration by reading UI’s state in
  #buildConfigurationFrom:
- Define how to run the plugin in
  #runForConfiguration:
- Define if can be minified or not via
  #allowMiniDrTests
DrTest API

In a nutshell

- Define how to build UI trees via pragmas
- Define actions available for nodes via commands
In a nutshell

Define how to build result trees via pragmas

buildGroupedByTypeTree
<dTTestRunnerResultTreeNamed: 'Grouped by type of result'>
^ DTTreeNode new
  subResults:
    {DTTreeNode new
      name: DTTestResultType error pluralName;
      subResults: (self buildLeavesFrom: self testsResult errors type: DTTestResultType error);
      yourself.
      ...}
    }; yourself
Define actions available for nodes via commands

``` Smalltalk
buildContextualMenuGroupWith: presenterInstance
  ^ (CmCommandGroup named: 'TestRunnerResult context menu')
  asSpecGroup
  basicDescription: 'Commands related to results.';
  register: (DTRerunCommand forSpec context: presenterInstance)
    beHiddenWhenCantBeRun;
  register: (DTDebugTestCommand forSpec context: presenterInstance)
    beHiddenWhenCantBeRun;
  beDisplayedAsGroup;
  yourself
```
6 months of dev later

Vision

- We want a testing ecosystem able to evolve

- Enhanced SUnit
- Uniform API for SUnit clients
- Plugin-based testing UI = Dr Tests
- More tools to handle tests = Dr Tests plugins

Done!

On its way: CommentToTest, Mutation testing, etc...
Next steps

- Calypso integration
- Enhance SUnit
- Unify SUnit’s API tools are exposed to Damien on github
Conclusion

- DrTests will be part of Pharo 8, SUnit runner will be deprecated

- The new infrastructure allow people to plug their analyses

- Tests are super-valuable, DrTests will help to extract the gold out of them

Dr Tests opens a lot of possibilities of future tools around tests!