



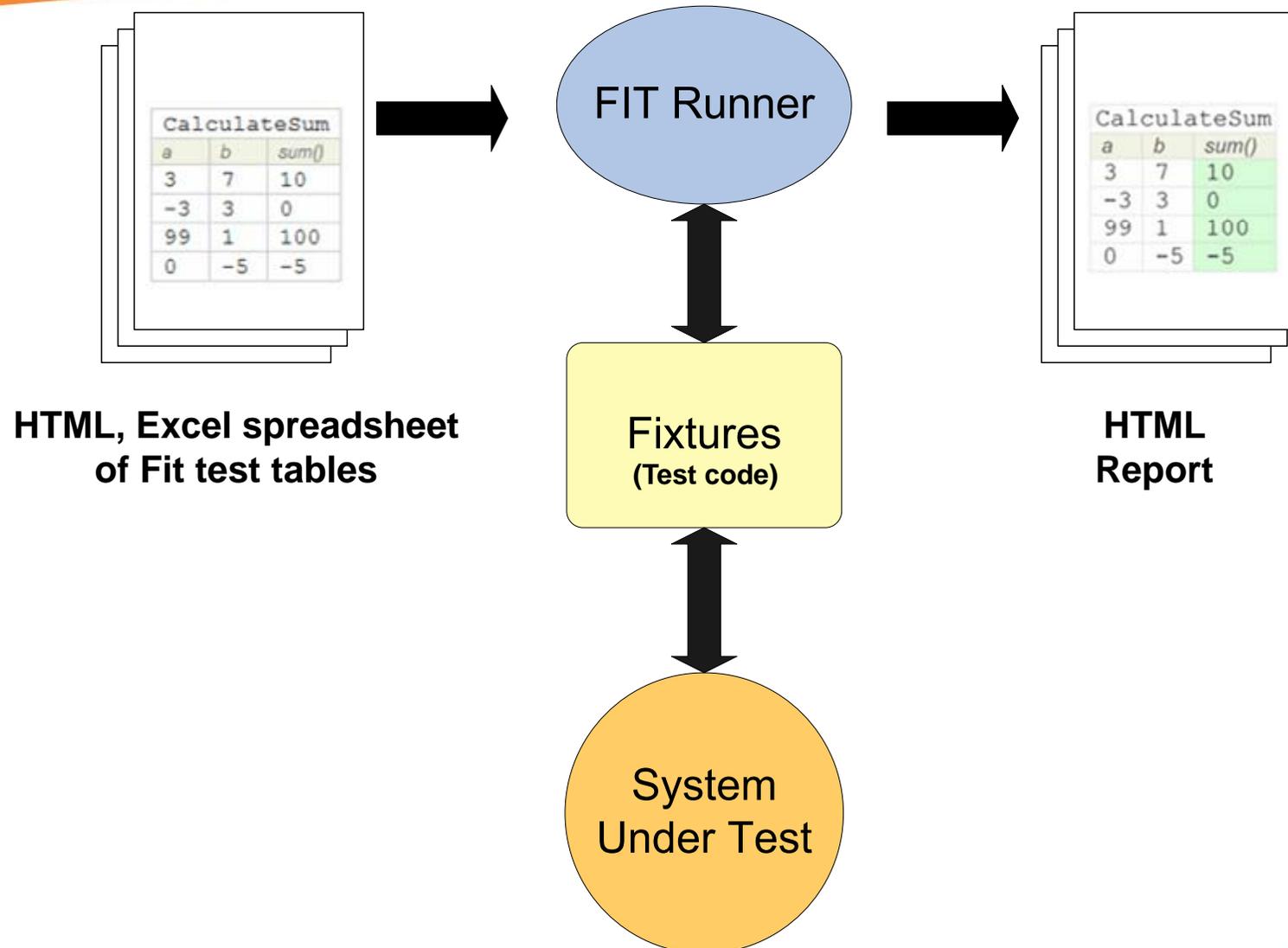
An introduction to Framework for Integrated Tests (FIT) and FITpro

What Is Fit?

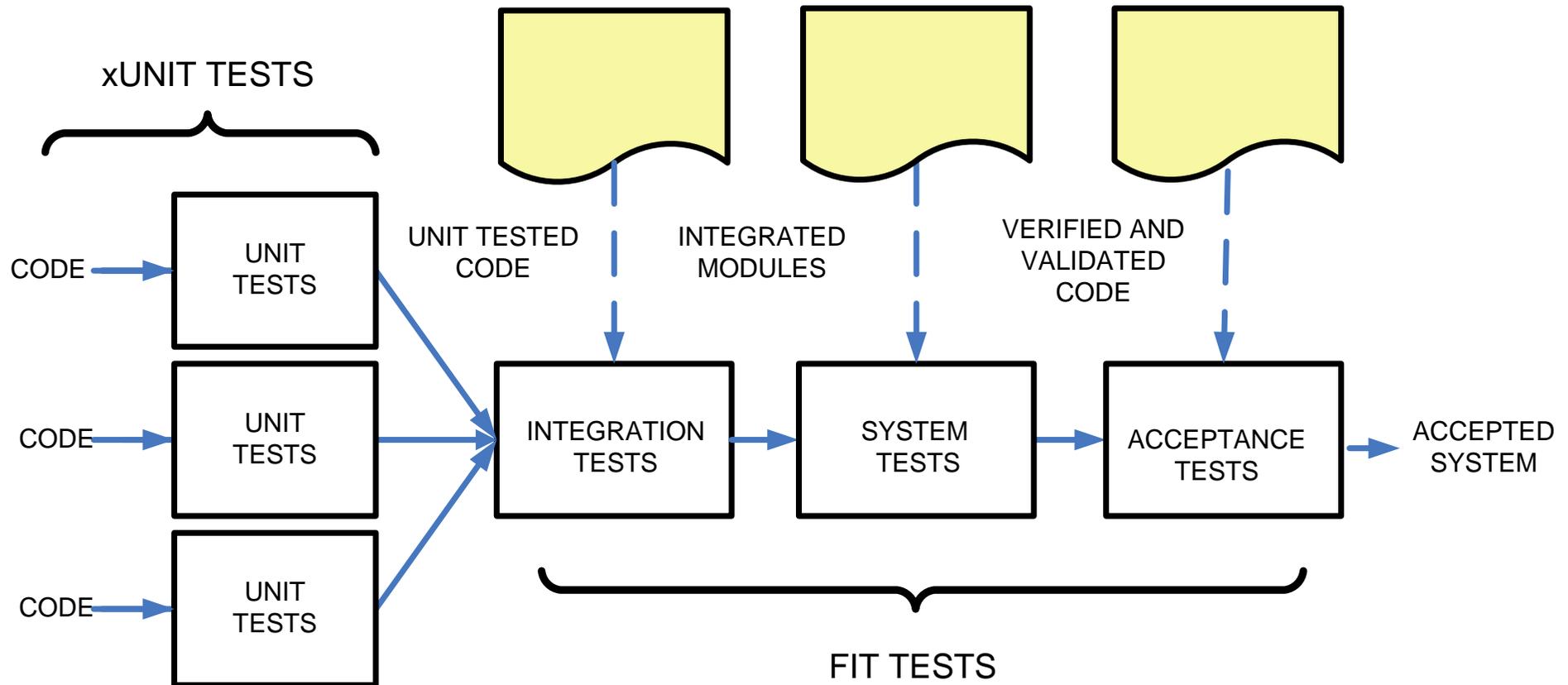


- **Test harness for acceptance testing**
- **Defines tests/requirements in table form**
- **Collaboration tool**
- **Provides common language - tenet of domain driven design**
- **Available for various languages - Java, DotNet, C++, Python, Ruby, Smalltalk**

How does Fit work?

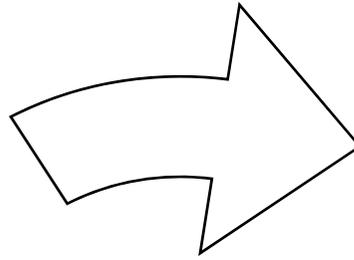


Acceptance Testing

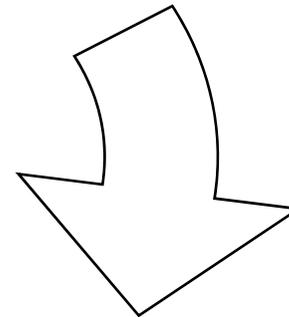


Test-Driven Development & Fit

**1. Clarify
requirement
with Fit tests**

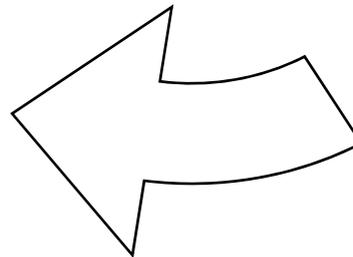


**2. Write high level
requirements**



3. Write code

**4. Test code
with Fit tests**



Writing Requirements with Fit

- Business Analyst will write high level requirements, and then supplement them with Fit tests that provide concrete examples.

High Level Requirements for an Online Bookstore

Business Rule 1. A customer gets free shipping if they spend \$50 or more, else shipping adds a 10% fee.

Business Rule 2: An employee may ask for a list of all books currently in the system. The list includes the book name, author and price

Business Rule 3. A customer selects several books. The running total is accumulated and shown to customers.



Fit Test File

Business Rule 1. A customer gets free shipping if they spend \$50 or more, else shipping adds a 10% fee.

CalculateShippingFees	
amount	shippingFees()
0	0
10	1
25	2.50
49	4.90
50	0
100	0

Business Rule 2: An employee may ask for a list of all books currently in the system. The list includes the book name, author and price.

BookList		
bookname	author	price
Rapid Development	Steve McConnell	100.00
UNIX in a Nutshell	Tim Robbins	22.00

Business Rule 3. A customer selects several books. The running total is accumulated and shown to customers.

Fit.ActionFixture		
start	BuyActions	
check	total	0.00
enter	bookname	Rapid Development
enter	price	100.00
Press	buy	
Check	total	100.00

Fit Test – Column Fixture

- Here's a Fit test table example using a column fixture
- Business Rule 1. A customer gets free shipping if they spend \$50 or more, else shipping adds a 10% fee.

CalculateShippingFees	
amount	shippingFees()
0	0
10	1
25	2.50
49	4.90
50	0
100	0

Fixture Code for Fit Test



- A developer will write test code called a “fixture” to hook the Fit tests into the system under test.
- Here’s example fixture code for our Column Fixture example:

```
public class CalculateShippingFees extends fit.ColumnFixture {
    public double amount;
    private ShippingFees application = new ShippingFee();

    public double shippingFees(){
        return application.getShippingFees(amount);
    }
}
```

Fit Report Results

CalculateShippingFees	
Amount	shippingFees()
0	0
10	1
25	2.50
49	4.90
50	0
100	0



CalculateShippingFees	
Amount	shippingFees()
0	0
10	1
25	2.50
49	4.90
50	0 <i>expected</i>
	5 <i>actual</i>
100	0

Fit Test - Row Fixture

- **Business Rule 2:** An employee may ask for a list of all books currently in the system. The list includes the book name, author and price.

BookList		
bookname	author	price
Rapid Development	Steve McConnell	100.00
UNIX in a Nutshell	Tim Robbins	22.00

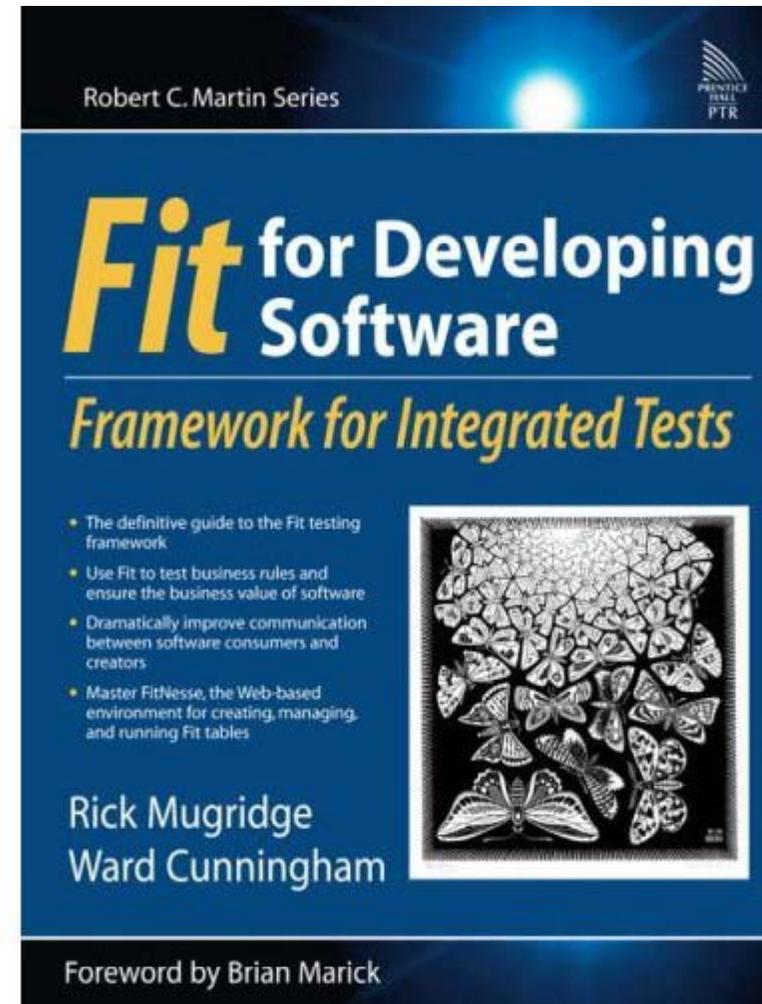
Fit Test - Action Fixture

- Business Rule 3. A customer selects several books. The running total is accumulated and shown to customers.

Fit.ActionFixture		
start	BuyActions	
check	total	0.00
enter	bookname	Rapid Development
Press	buy	
Check	total	100.00

Further Examples

- More examples of use of Fit in testing complex systems in “Fit for Developing Software” by Mugridge and Cunningham



Fit Benefits for Business People

- Clearer communication
- Transparency – business people can clearly see what is tested
- Ensures compliance with your business rules
- Allows for traceability between requirements, tests and code



Fit Benefits for Developers

- Takes guess-work out of interpreting requirements
- Gives confidence that code changes have not broken business logic
- Indicates features meet expectations



Fit Benefits for Testers

- Fit tests are quicker to develop than other automated tests
- Easy to develop tests before code is complete
- Can bypass changing GUI to test business logic
- Finds recurring bugs

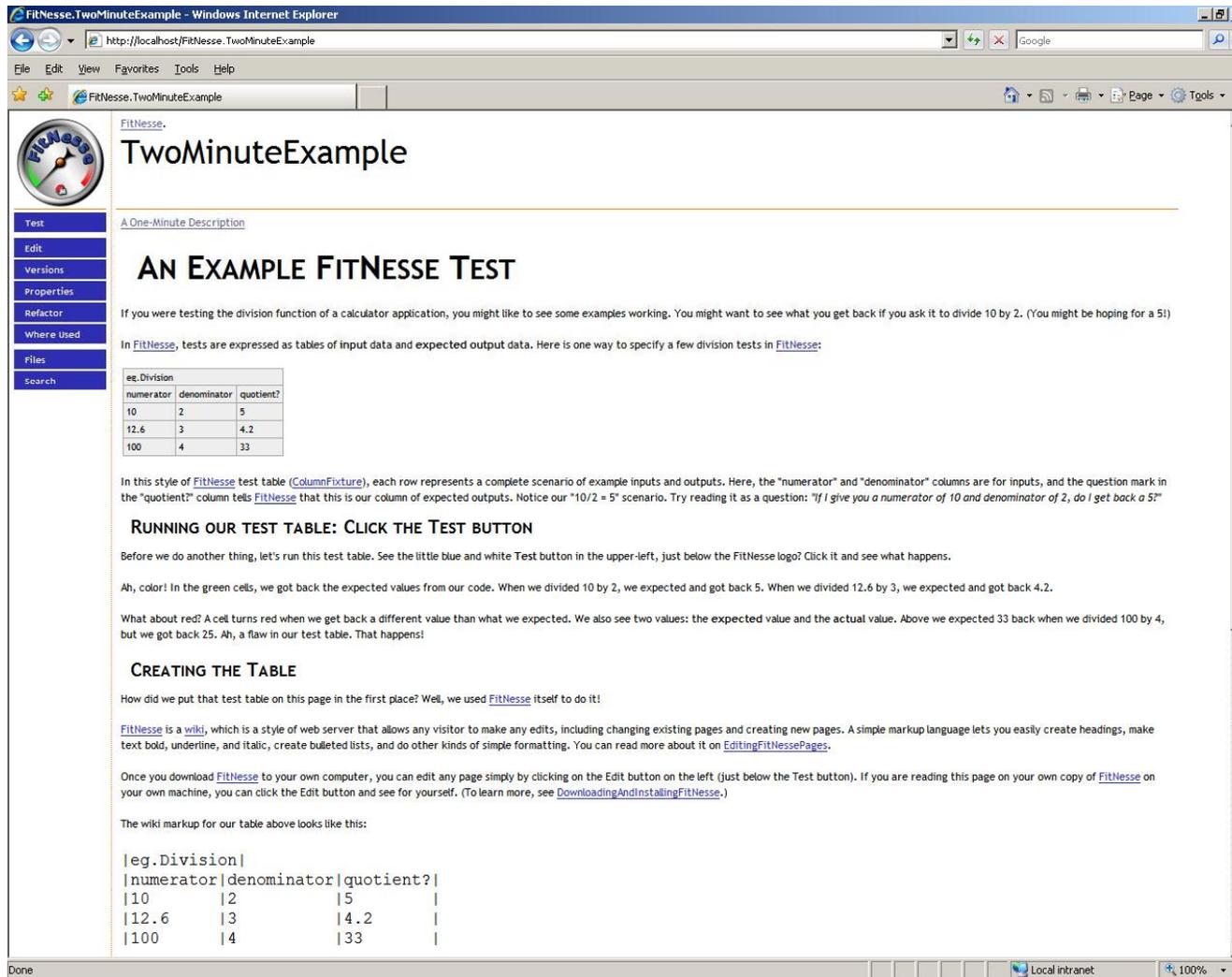


Tools that supplement Fit

- **FitLibrary** provides new fixture, Do Fixture
- Allows to execute folders of tests
- Various GUI-based Fit Runners that execute Fit tests
- Selenium + Fit can do UI testing within a browser



FitNesse Wiki Server



The screenshot shows a web browser window titled "FitNesse.TwoMinuteExample - Windows Internet Explorer". The address bar shows "http://localhost/FitNesse.TwoMinuteExample". The page content includes a FitNesse logo, a navigation menu with buttons for Test, Edit, Versions, Properties, Refactor, Where used, Files, and Search, and a main heading "TwoMinuteExample". Below the heading is a sub-heading "AN EXAMPLE FITNESSE TEST" and a paragraph explaining the purpose of the test. A table of division tests is shown, with some cells highlighted in green and one in red. The table is as follows:

eg.Division	numerator	denominator	quotient?
10	2	5	
12.6	3	4.2	
100	4	33	

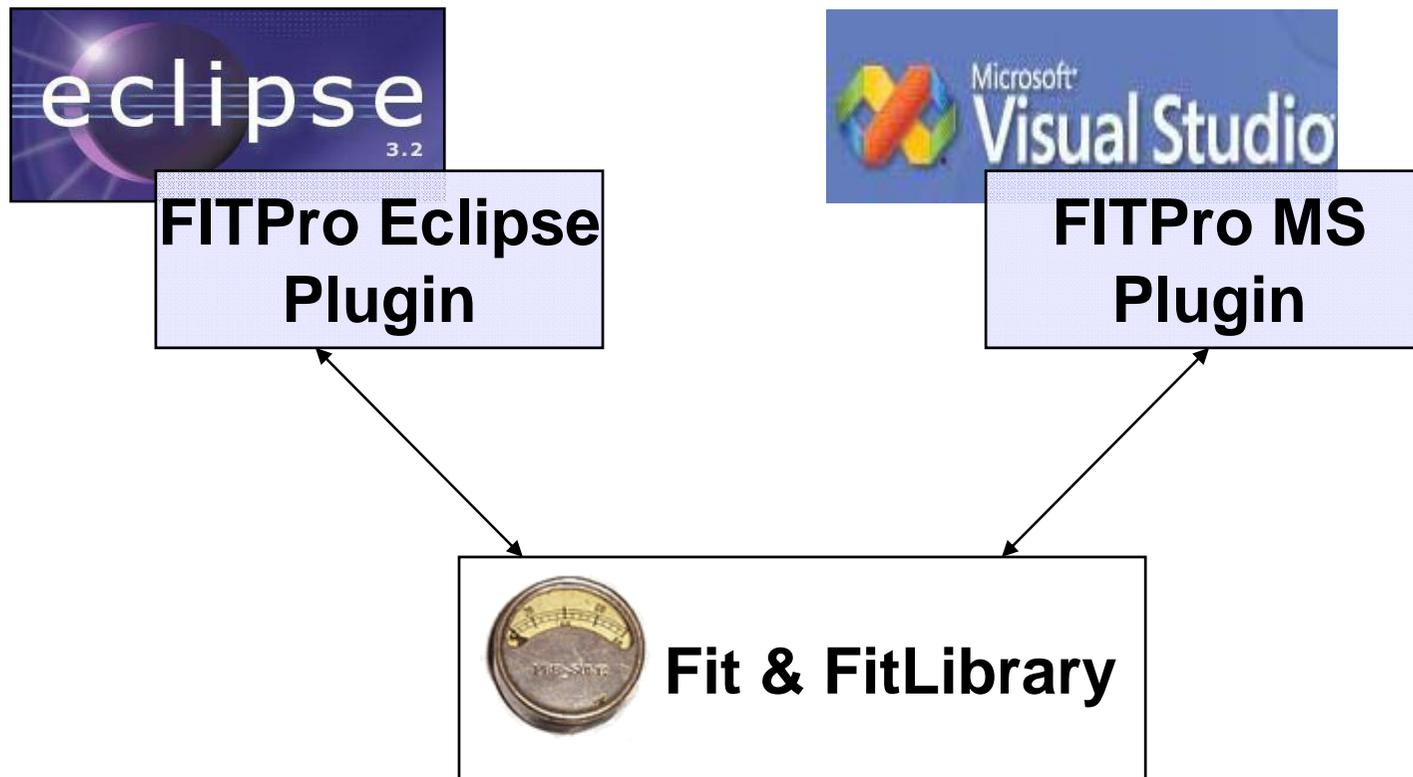
Below the table, there is a paragraph explaining the table structure and a section titled "RUNNING OUR TEST TABLE: CLICK THE TEST BUTTON". The text describes the expected results of the test, including a red cell indicating a failure. A section titled "CREATING THE TABLE" explains how the table was created using FitNesse's wiki markup. The markup for the table is shown at the bottom of the page:

```
|eg.Division|
|numerator|denominator|quotient?|
|10      |2      |5      |
|12.6   |3      |4.2    |
|100    |4      |33     |
```

Vision for FITPro Solution

Fit Solution that provides:

- Improved productivity & usability of Fit



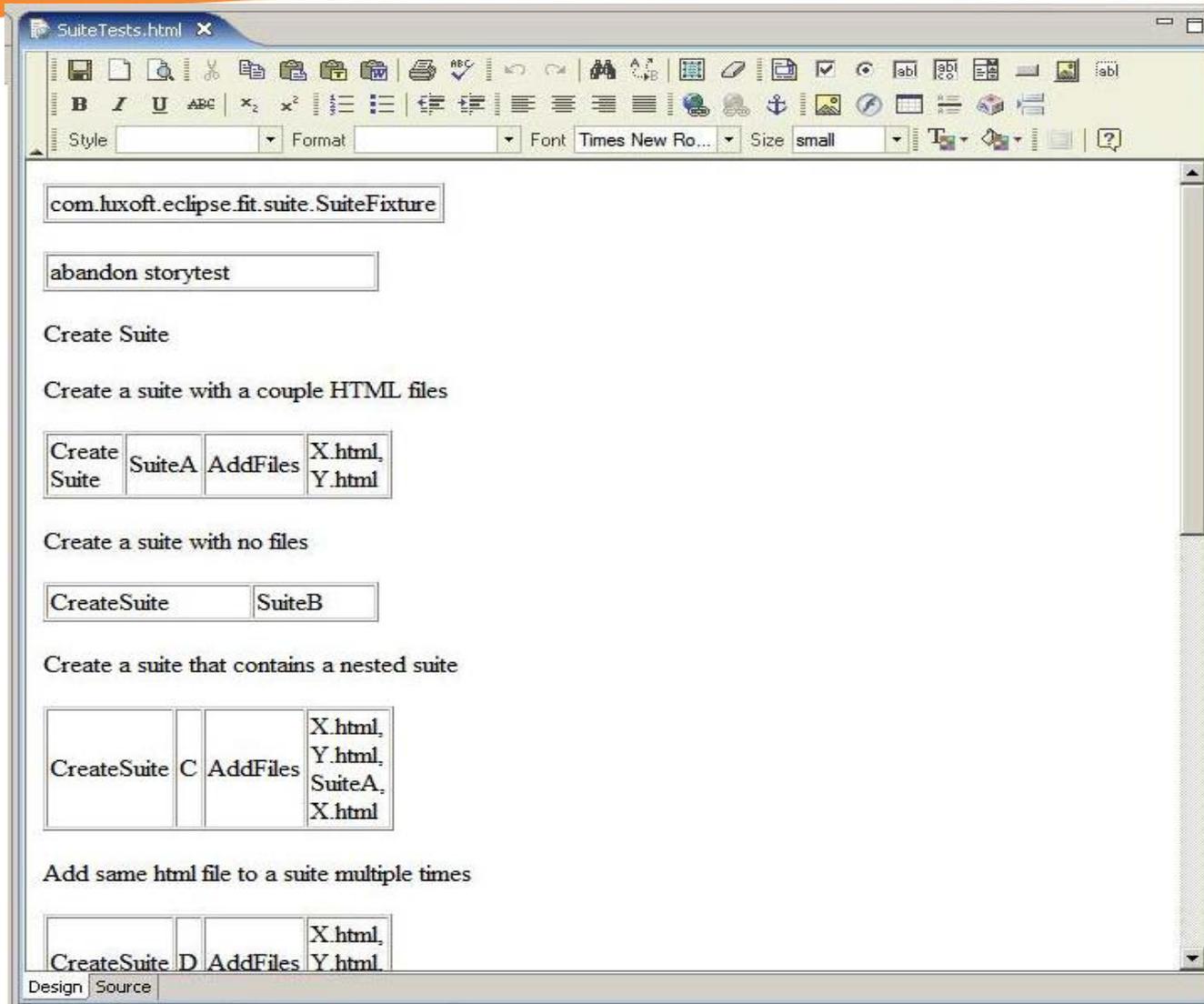
FITPro Plug-in For Eclipse

FITPro Eclipse Plug-in:

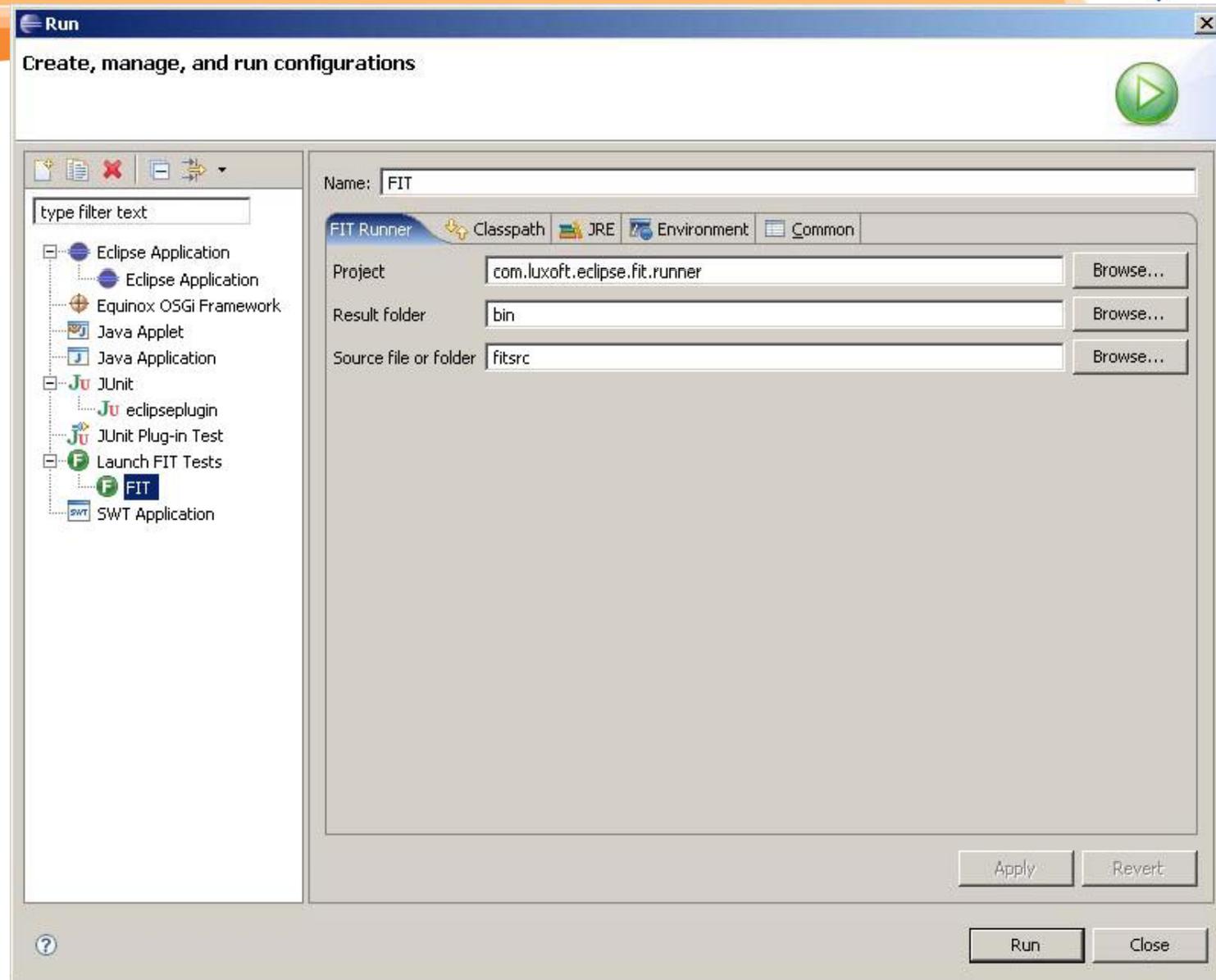
- Simplifies requirement/test creation
- Eases burden in managing tests
- Provides flexible test execution
- Allows for transparency in reporting
- Provides linking between requirements/tests and code



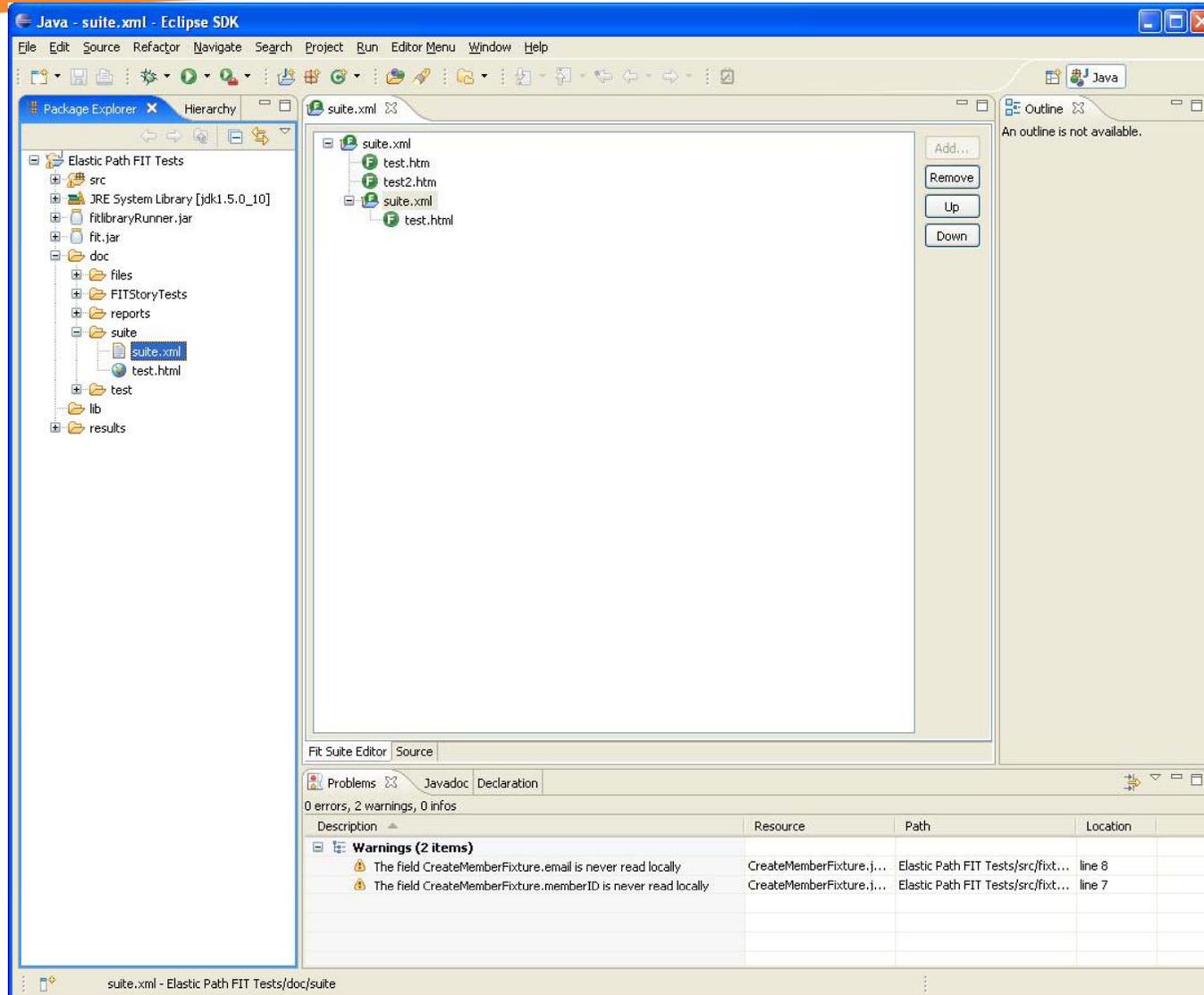
Capture requirements/tests in WYSWIG HTML



Fit Test Execution within Eclipse



Fit Test Suite Management



The screenshot shows the Eclipse IDE interface for managing a Fit Test Suite. The Package Explorer on the left shows a project named 'Elastic Path FIT Tests' with a 'suite' folder containing 'suite.xml' and 'test.html'. The main editor displays the 'suite.xml' file with a tree view showing 'suite.xml' containing 'test.htm', 'test2.htm', and 'suite.xml'. The Outline view on the right is empty, displaying the message 'An outline is not available.' The Problems view at the bottom shows two warnings:

Description	Resource	Path	Location
Warnings (2 items)			
⚠ The field CreateMemberFixture.email is never read locally	CreateMemberFixture.j...	Elastic Path FIT Tests/src/fixt...	line 8
⚠ The field CreateMemberFixture.memberID is never read locally	CreateMemberFixture.j...	Elastic Path FIT Tests/src/fixt...	line 7

Link from Tests to Code

```
SuiteTests.fit SuiteFixture.java x
1 package com.luxoft.fit.suite;
2
3 import java.util.ArrayList;
11
12 /**
13  * This method hooks into the FIT tests for Suites.
14  */
15 public class SuiteFixture
16     extends DoFixture {
17
18     private Map<String, Suite> suites = new Hashtable<String, Suite>();
19
20     /**
21      * This method creates a FIT suite.
22      *
23      * @param suiteName name of suite you want created
24      * @return boolean indicating if successful in creating suite
25      */
26     public void createSuiteWithFilenameWithSuiteNameWithDescription(final String fileName,
27         final String description) {
28         Suite suite = new Suite(fileName);
29         suite.setLogicalName(logicalName);
30         suite.setDescription(description);
31         suites.put(fileName, suite);
32     }
33
34     public void suiteNameFilename(String fileName) {
35
36     }
37
38     public CalculateFixture checkSuiteProperties() {
39         return new SuitePropertiesFixture(suites);
40     }
41
42     /**
43      * This method creates a FIT suite and add files to it.
44      */
```