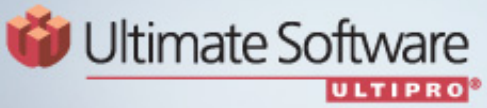
Applying modern software development techniques to UI testing



Ultimate Software: Mission Statement

To provide United States and Canadian businesses with 200 or more employees the highest quality, most complete, and well-integrated suite of strategic human resources, payroll, and talent management solutions.

Who we Are

Michael Longin – Ultimate Software

- Software Engineer
- Certified Scrum Master
- Project Lead - SWAT

Christopher Taylor – Ultimate Software

- QA Automation/Tester
- Certified Scrum Master

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Tools we will use

- SWAT
  - Simple Web Automation Toolkit
  - http://ulti-swat.wiki.sourceforge.net/
- Fitnesse
  - Wiki based requirements test tool
  - www.fitnesse.org
- Both are open source and can be used either together or stand alone

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Goals for this session

- Attendees should be able to apply modern software development techniques to UI testing to create more agile and resilient tests and improve overall quality.

- "*Automated testing* done right is Software Development"
  - Elfriede Dustin and Marcus Borch @ GTAC 2008

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Syllabus

- Why we do UI testing
- What is wrong with the record\playback technique
- Introduction to example project
- Applying Test First Development
- Refactoring
- Pair testing
- Compare our way vs. the “old way”

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Why we do UI testing

- All the way through
  - Through the product
  - Through the layers
  - Its truly how the user will use your system
  - 100% Functional

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Record-Playback technique failures

- Brittle
  - Easily broken when features change, even when the feature is not part of the test
- Very hard to update without re-recording
- Not Agile
  - Can only be done when code is complete
- Only tests what you record and not what you expect
- Time consuming because of the above
- Hard to read and understand

Our User

- Name: JB
- Occupation: Midlevel government employee
- Skills:
  - Web browsing
  - Word
  - Excel

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User Story #1 : Login

- As a user I want to provide my username and password to login
- Conditions of Satisfaction
  - Login and Password boxes are present
  - Title should read “M&C Life Insurance”
  - Valid Login should lead to homepage
    - Example Login: jbauer\password
  - Homepage should read “Welcome”

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User Story 2:View My Name

- As a user I want to be welcomed by my name after I login
- Conditions of Satisfaction
  - My first and last name are correct
  - Title should read “Welcome ‘first name’ ‘last name’”
    - Example: Welcome Jack Bauer

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User Story 3:Change My Name

- As a user I want to be able to update my name
- Conditions of Satisfaction
  - I should get to the page by a menu located on the home page
  - There should be a first name and last name text box on the screen
  - Pressing save should bring me back to the homepage

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Applying TFD

- Test can be written before the feature
- Allows parallel effort of development and automation
- Turns vertical slicing into completed automation
- Starts with well written conditions of satisfaction
- Consistent naming standards are key
  - txb -> Textbox
  - btn -> Button
  - lbl -> Label
  - *if naming is wrong, can be easily updated
- If the developer writes the automation, becomes almost a UI TDD

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Applying TFD continued

- Example User Story #1
  - Title should read “M&C Life Insurance”
    - Title means an H2
    - Text reads: “M&C Life Insurance”
  - Login and Password boxes are present
    - 2 text boxes
    - Login - >txbLogin
    - Password -> txbPassword
    - Login Button -> btnLogin

Applying TFD continued

- Example Automation Code

|AssertElementExists|expression|innerhtml:M.C Life Insurance|h2|

|SetElementAttribute|Id|txbLogin|value|jbauer|input|

|SetElementAttribute|Id|txbPassword|value|password|input|

|StimulateElement|Id|btnLogin|onclick|input|

|AssertElementExists|Expression|innerHtml:welcome|

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TFD Demo

- Demo:

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Refactoring

- Why refactor
  - Less time to write automation
  - Less maintenance
  - Creates reusable code
  - Creates a domain specific language
- What is refactoring
  - For our purposes
    - Turn frequently used blocks of code into single line reusable entities
    - Use variables to make tests more robust
    - Creates an easily readable test by using English named functions

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Refactoring continued

- Allows tests to be easily updated if core features change
  - If login changed for example, only one update needed
- Allows those beginning to write tests to take advantage of previously created work
- Makes tests much easier to read and debug

Refactoring continued

- Example:

|OpenBrowser|
NavigateBrowser	www.m&cinsurance.com
SetElementAttribute	Id	txbLogin	value	${userName}	input
SetElementAttribute	Id	txbPassword	value	${password}	input
StimulateElement	Id	btnLogin	onclick	input

- Becomes:

!define loginUserName (jbauer)
!define loginPassword (password)
!include .Macros.Login

- Example:

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Refactoring Demo

- Demo:

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Pair Testing

- Benefits rival those of Pair Programming
  - http://en.wikipedia.org/wiki/Pair_programming#Benefits
    - (Yes we did infact just site wikipedia)
- Can be very effective for both writing automation and locating missing requirements
- Two heads are always better then one
- While automating you can also accomplish exploratory testing
- Can replace manual testing phase with the creation of automation

Compare 2nd test example vs a “recorded version of the same test”

- Unreadable
- Unorganized
- Not useable as documentation (concept of testable documentation)

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Where to get help

- Questions
  - SWAT:
    - http://sourceforge.net/forum/?group_id=199701
  - Fitnesse:
    - http://tech.groups.yahoo.com/group/fitnesse/?v=1&t=search&ch=web&pub=groups&sec=group&slk=2
  - Email
    - michael_longin@ultimatesoftware.com
    - christopher_taylor@ultimatesoftware.com
  - Blogs
    - devXero.wordpress.com
    - www.agile-tester.com
- Websites
  - http://www.fitnesse.org/
  - http://ulti-swat.wiki.sourceforge.net/

Questions

- Questions????