Challenges of Automated Testing:
A structured language for describing a users interaction with a system

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Background

• AutotestPro Ltd (formerly Pro-Intex IT) was formed in 2013
• Managing partners with over 50 years experience in IT
• Until 2 years ago, prime business was IT consultancy
• Large Public and Private Sector Customers
• Identified need for automated testing solution for ServiceNow
• AutotestPro concept was born
• AutotestPro SaaS DevOps software built embodying this structured language
• Patent pending in Europe and US
Why do we need a structured language for describing a users interaction with a system?

• Example of actual test scenarios/scripts:
  1. Fill in the helpdesk form
  2. Check the fields are populated as expected
  3. Check that the relevant fields are mandatory and read-only

• Requirements captured as narrative text
  “As a helpdesk user I log on and fill in the helpdesk incident form. I select the customer enter a short description. Etc etc”

• Unstructured and no re-usability
Scenario: ITIL created incident from call

Given: I am / that an ITIL user

Then: I can navigate to the create incident form

Aim: Create an incident with a type of "call."

TMTP 000 1019 - b00c0f04872062664f53e1650e20 - tm - test: plan - return

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SYSTEM ASSOCIATION

<table>
<thead>
<tr>
<th>Structure</th>
<th>Test 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITIL</td>
<td>L3</td>
</tr>
</tbody>
</table>

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**HAVE A NICE DAY LOVE ALICE**

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**Hello Good bye**
Humans like:
- English language
- Un-structured
- Woolly
- Variation

Computers like:
- Structure
- Repeatability
- Order
- Definites
Programming Language Generations

1GL
Machine Language

2GL

3GL
BASIC

4GL
Visual Studio

4GL+
C++

5GL
OPS5

Prolog
Constraint Based

Natural Language?

‘Very’ Natural Business Language

Problem Solving

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Human interaction with anything

- I do something...to something
- I throw...the ball
- I drink...from a bottle
- I sit...on a chair
- I click...on a button
- I select...a menu option
- I pick...a choice from a list
- I type...into a field

Verb...Noun
“Every action has an equal and opposite reaction”, Newton’s 3\textsuperscript{rd} Law

- I throw...the ball...someone catches it
- I kick...the ball...the ball moves
- I drink...from a bottle...the level in the cup decreases
- I sit on a chair...I’m sat on a chair
- I click on a button...something appears/disappears

I do something...to something...and something happens...to something
## Worked examples

<table>
<thead>
<tr>
<th>Do something (Verb)</th>
<th>To Something (Noun)</th>
<th>Data (optional)</th>
<th>Pass or Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throw</td>
<td>the water bottle</td>
<td></td>
<td>Pass</td>
</tr>
<tr>
<td>Check</td>
<td>audience member</td>
<td>catches it</td>
<td>Pass or Fail?</td>
</tr>
<tr>
<td>Remove</td>
<td>the water bottle top</td>
<td></td>
<td>Pass</td>
</tr>
<tr>
<td>Check</td>
<td>the water bottle has no lid</td>
<td></td>
<td>Pass</td>
</tr>
<tr>
<td>Throw</td>
<td>the water bottle</td>
<td></td>
<td>Pass</td>
</tr>
<tr>
<td>Check</td>
<td>audience member</td>
<td>catches it</td>
<td>Pass or Fail?</td>
</tr>
<tr>
<td>Check</td>
<td>audience member</td>
<td>is wet</td>
<td>Pass or Fail?</td>
</tr>
</tbody>
</table>
**Users Interaction with a System**

<table>
<thead>
<tr>
<th>Do something</th>
<th>To something</th>
<th>With something (some data)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log in</td>
<td>The helpdesk system</td>
<td>Username ‘Paul Chorley’ and password</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Log in to the helpdesk system as Paul Chorley.”</td>
</tr>
<tr>
<td>Check</td>
<td>The helpdesk system</td>
<td>Paul Chorley is logged in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Check that Paul Chorley is logged in”</td>
</tr>
<tr>
<td>Select</td>
<td>Menu option</td>
<td>‘Create new’ incident menu option</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Select the ‘Create new incident’ menu option.”</td>
</tr>
<tr>
<td>Check</td>
<td>Menu option</td>
<td>Is selected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Check that the ‘Create new incident’ form is displayed.”</td>
</tr>
<tr>
<td>Type</td>
<td>Short Description field</td>
<td>‘This is some text’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Type ‘This is some text’ into the ‘Short Description’ field.”</td>
</tr>
</tbody>
</table>
1. Log in as Paul Chorley.
2. Select the ‘Create new incident’ menu option.
3. Type ‘This is some text’ into the Short Description field.
4. Select ‘Medium’ from the ‘Impact’ drop-down list.

<table>
<thead>
<tr>
<th>Action (from Library)</th>
<th>To something</th>
<th>Data (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log-in</td>
<td>Log-in page</td>
<td>Username, password</td>
</tr>
<tr>
<td>Select menu option</td>
<td>Menu option</td>
<td>‘Create new incident’</td>
</tr>
<tr>
<td>Type</td>
<td>Short Description field</td>
<td>‘This is some text’</td>
</tr>
<tr>
<td>Select</td>
<td>Impact choice list</td>
<td>‘Medium’</td>
</tr>
</tbody>
</table>
The situation now…and the need for automation

- Write same thing many times
- Uncertainty of result - risky
- Tedious - error prone
- Resource hungry - costly
- Time consuming – slower release/upgrades
- Lack of control of releases
So why isn’t everyone doing DevOps?
DevOps world...

- **Reduced Risks**
  - Automatically created artefacts
  - Automatic creation of defects
  - Increased test coverage

- **Improved Quality**
  - No transposition errors
  - Increased test coverage
  - Test repeatability

- **Lower Costs**
  - Fewer resources required
  - Increased delivery capacity
  - Faster release cycles times
  - Re-useable test scenarios
  - Testing in hours not weeks

- **Increased Control**
  - Real time output of results into dashboards and detailed reporting
A Quick Demo of the Structured Language in action
<table>
<thead>
<tr>
<th>Task ID</th>
<th>Type/Selection</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATRUT0001179</td>
<td>Type into a field</td>
<td>Type the text 'Minotar is showing horizon... Minotar is showing horizon...'</td>
</tr>
<tr>
<td>ATRUT0001180</td>
<td>Select choice</td>
<td>Select the 'Phone' choice from the 'Contact' phone</td>
</tr>
<tr>
<td>ATRUT0001181</td>
<td>Select choice</td>
<td>Select the '1 - High' choice from the '1'</td>
</tr>
<tr>
<td>ATRUT0001182</td>
<td>Select choice</td>
<td>Select the '1 - High' choice from the 'Urgency' choice lookup field</td>
</tr>
<tr>
<td>ATRUTC0001263</td>
<td>Choice is selected</td>
<td>Check that the '1 - High' choice is selected</td>
</tr>
<tr>
<td>ATRUTC0001264</td>
<td>Choice is selected</td>
<td>Check that the '5 - Planning' choice is selected</td>
</tr>
</tbody>
</table>
1. Log-in as 'ITIL User'.

Acceptance Criteria
The user 'itil' is successfully logged into the system.

2. Navigate to the 'Create New' module.

This menu option allows you to raise a new incident. If you wish to amend an existing incident, refer to 'Amend Incident' user story.

Acceptance Criteria
Check that the 'Incident' screen is displayed.
The field 'Number' is displayed on the screen.
The 'Caller' is mandatory.
The field 'Category' is displayed on the screen.
The field 'Subcategory' is displayed on the screen.
The 'Business service' is not mandatory.
### User Story Test Execution Details

<table>
<thead>
<tr>
<th>Number</th>
<th>Order</th>
<th>Action Text</th>
<th>Task Status</th>
<th>% Complete</th>
<th>% Passed</th>
<th>Defect</th>
<th>Originating User Task</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATEUT0005230</td>
<td>90</td>
<td>Select the 'Phone' choice from the 'Contact type' choice lookup field.</td>
<td>Passed</td>
<td>100</td>
<td>100</td>
<td></td>
<td>ATRUT0001180</td>
<td>true</td>
</tr>
<tr>
<td>ATEUT0005235</td>
<td>110</td>
<td>Select the '1 - High' choice from the 'Impact' choice lookup field.</td>
<td>Failed</td>
<td>100</td>
<td>50</td>
<td>ATDFCT0001281</td>
<td>true</td>
<td></td>
</tr>
<tr>
<td>ATEUT0005231</td>
<td>120</td>
<td>Type 'Network' into the 'Assignment group' reference lookup field and select the 'Network' option.</td>
<td>Passed</td>
<td>100</td>
<td>100</td>
<td></td>
<td>ATRUT0001214</td>
<td>true</td>
</tr>
<tr>
<td>ATEUT0005229</td>
<td>130</td>
<td>Type the text 'This is an important incident as it is a member of the Senior Management Team.' into the</td>
<td>Passed</td>
<td>100</td>
<td>100</td>
<td></td>
<td>ATRUT000184</td>
<td>true</td>
</tr>
</tbody>
</table>

Run By: Paul Chorley
Screen shot: 0000006_Navigate to the portal page ‘Service Catalog’.

4. **Select the catalog item 'Sales Laptop' from the catalog category Hardware.**

Select the relevant item from the categories provided.

In this example, we will be selecting to order a Sales laptop from the Hardware category.
I have a dream...

Defining, Developing, Testing and Releasing IT systems should be easy

Automate using structured language for describing a users interaction with a system
Questions
Please don’t hold back...

Visit our website for more info on Autotestpro
www.autotestpro.co.uk

Contact Me
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