

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

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Background

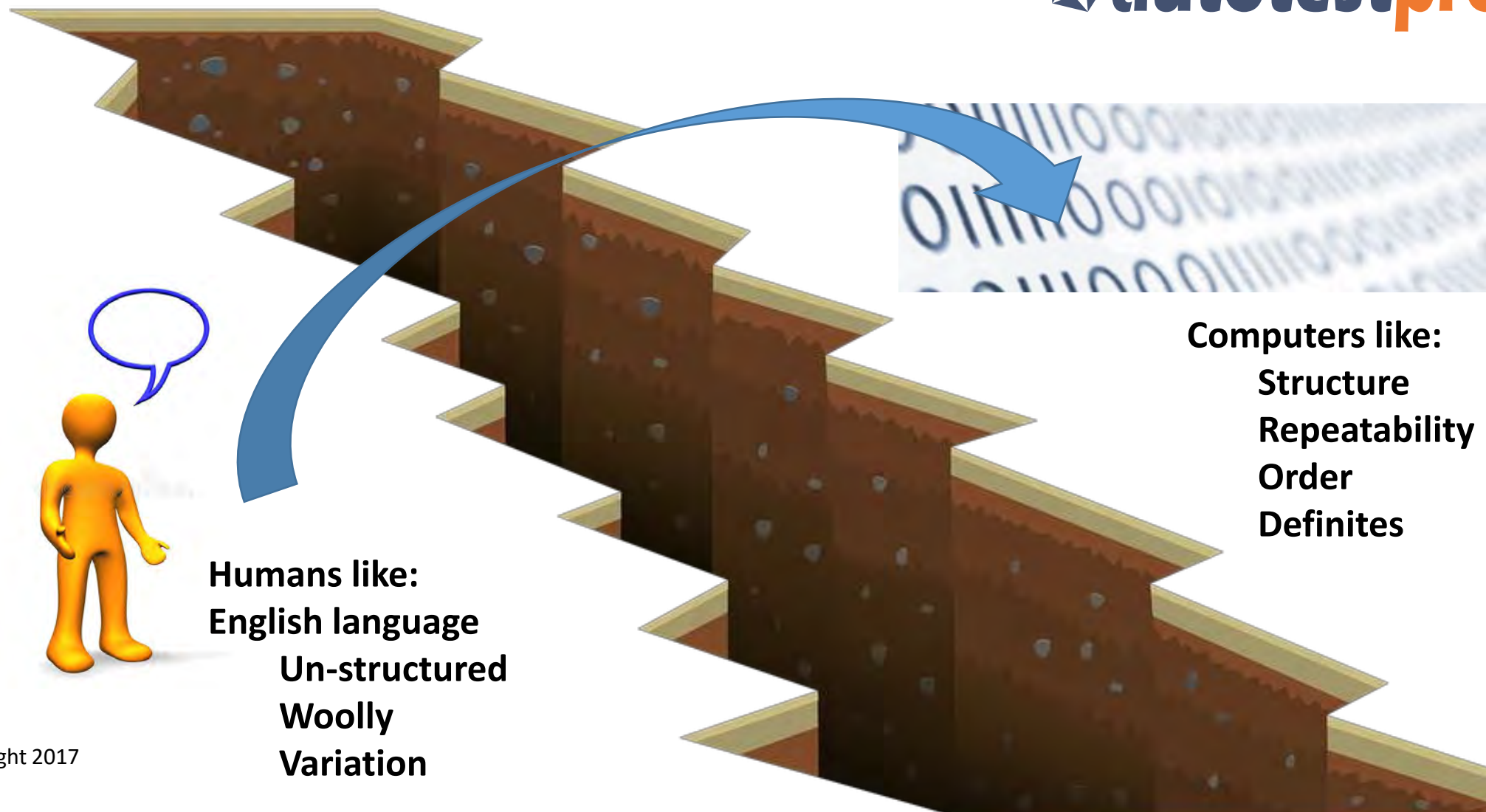
- AutotestPro Ltd (formerly Pro-Intex IT) was formed in 2013
- Managing partners with over 50 years experience in IT
- Until 2 years ago, prime business was IT consultancy
- Large Public and Private Sector Customers
- Identified need for automated testing solution for ServiceNow
- AutotestPro concept 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



Humans like:
English language
Un-structured
Woolly
Variation

Computers like:
Structure
Repeatability
Order
Definites

Programming Language Generations

1GL



2GL

```

i = j + k;      1  ILOAD j    // i = j + k    0x15 0x02
if (i == 3)    2  ILOAD k    0x15 0x03
k = 0;         3  IADD      0x60
else          4  ISTORE i   0x36 0x01
j = j - 1;     5  ILOAD i    // if (i < 3)  0x15 0x01
              6  BIPUSH 3    0x10 0x03
              7  IF_ICMPEQ L1 0x9F 0x00 0x0D
              8  ILOAD j    // j = j - 1    0x15 0x02
              9  BIPUSH 1    0x10 0x01
              10 ISUB      0x64
              11 ISTORE j   0x36 0x02
              12 GOTO L2    0xA7 0x00 0x07
13 L1:         13 BIPUSH 0    // k = 0 0x10 0x00
              14 ISTORE k   0x36 0x03
15 L2:
  
```

(a) (b) (c)

3GL

BASIC

C++



Visual Studio



4GL+



5GL

OPS5

Prolog

Constraint
Based

Machine
Language

Natural
Language?

‘Very’
Natural
Business
Language

Problem
Solving

Human interaction with anything

- I do something...to something

- I throw...the ball
- I drink...from a bottle
- I sit...on a chair

Verb...Noun

- I click...on a button
- I select...a menu option
- I pick...a choice from a list
- I type...into a field

“Every action has an equal and opposite reaction”, Newton’s 3rd 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

Do something (Verb)	To Something (Noun)	Data (optional)	Pass or Fail
Throw	the water bottle		Pass
Check	audience member	catches it	Pass or Fail?

Do something (Verb)	To Something (Noun)	Data (optional)	Pass or Fail
Remove	the water bottle top		Pass
Check	the water bottle has no lid		Pass
Throw	the water bottle		Pass
Check	audience member	catches it	Pass or Fail?
Check	audience member	is wet	Pass or Fail?

Users Interaction with a System



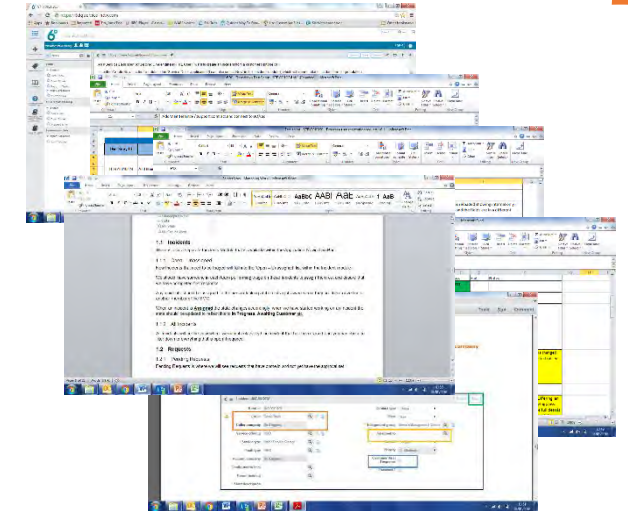
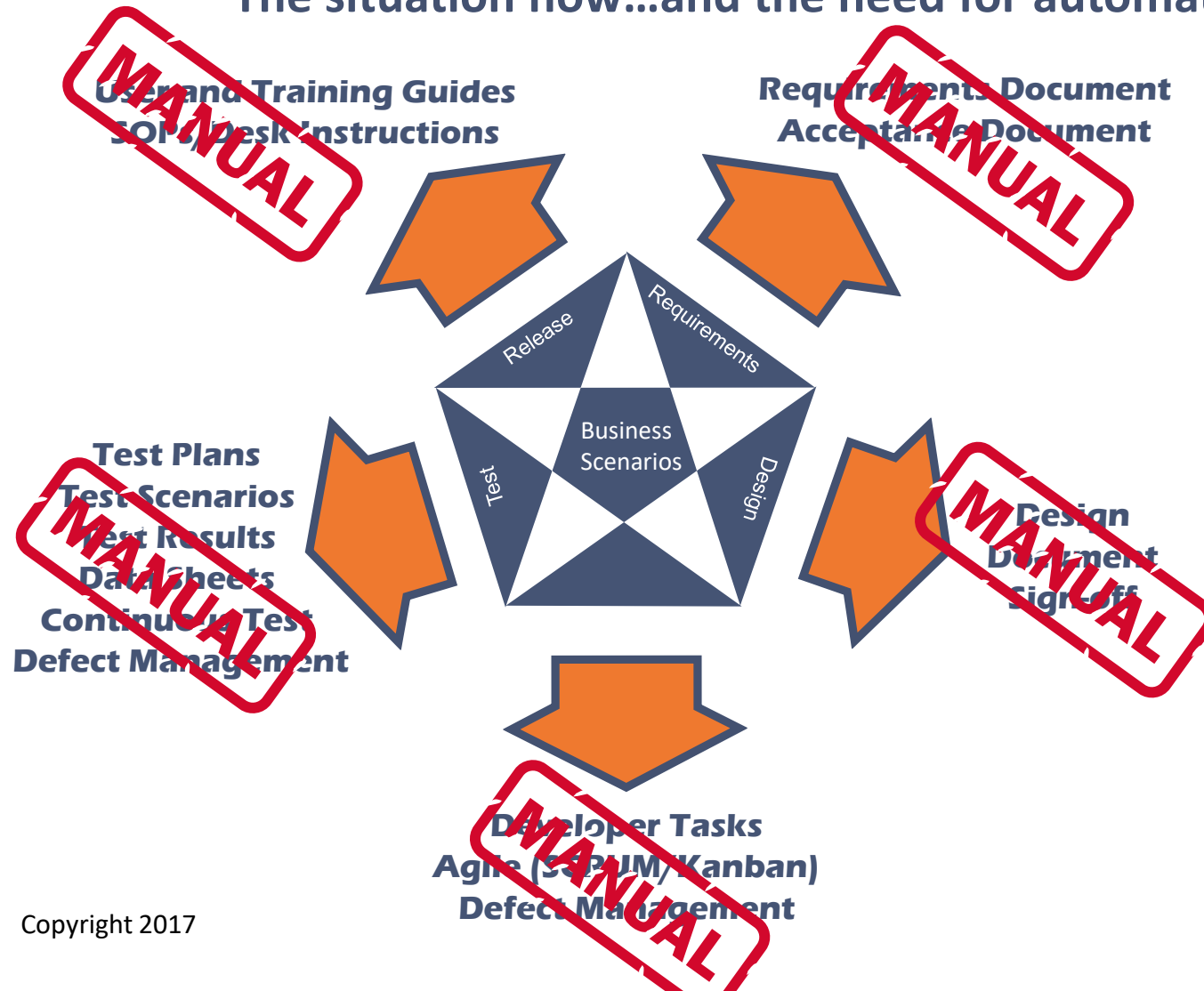
Do something	To something	With something (some data)
Log in	The helpdesk system	Username 'Paul Chorley' and password
"Log in to the helpdesk system as Paul Chorley."		
Check	The helpdesk system	Paul Chorley is logged in
"Check that Paul Chorley is logged in"		
Select	Menu option	'Create new' incident menu option
"Select the 'Create new incident' menu option."		
Check	Menu option	Is selected
"Check that the 'Create new incident' form is displayed."		
Type	Short Description field	'This is some text'
"Type 'This is some text' into the 'Short Description' field."		

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



Action (from Library)	To something	Data (optional)
Log-in	Log-in page	Username, password
Select menu option	Menu option	'Create new incident'
Type	Short Description field	'This is some text'
Select	Impact choice list	'Medium'

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?

PERIODIC TABLE OF DEVOPS TOOLS (V2)

EMBED DOWNLOAD ADD

1 Gh Github	2 Fm Fm	3 Os Os	4 En En	5 Os Os	6 En En	7 Os Os	8 Os Os	9 Os Os	10 Pd Pd	11 Os Os	12 Os Os	13 Os Os	14 En En	15 Os Os	16 Fr Fr	17 Os Os	18 En En	19 Os Os	20 Pd Pd	21 Os Os	22 Os Os	23 Os Os	24 Os Os	25 Os Os	26 Os Os	27 Fr Fr	28 Os Os	29 Pd Pd	30 Os Os	31 Pd Pd	32 Os Os	33 Os Os	34 Os Os	35 Os Os	36 En En	37 Os Os	38 En En	39 Os Os	40 Os Os	41 Os Os	42 Fr Fr	43 Os Os	44 Fr Fr	45 Os Os	46 Fm Fm	47 Pd Pd	48 Fm Fm	49 Fr Fr	50 Fr Fr	51 Os Os	52 Os Os	53 Os Os	54 Os Os	55 Os Os	56 Os Os	57 Os Os	58 En En	59 Fr Fr	60 Os Os	61 Fr Fr	62 Fr Fr	63 Os Os	64 Fm Fm	65 Os Os	66 Os Os	67 En En	68 Fm Fm	69 En En	70 En En	71 Os Os	72 Fm Fm	73 En En	74 En En	75 Os Os	76 Os Os	77 Fr Fr	78 Os Os	79 Fr Fr	80 Os Os	81 Os Os	82 Os Os	83 Fm Fm	84 Pd Pd	85 En En	86 En En	87 Fm Fm	88 En En	89 Os Os	90 En En	91 En En	92 En En	93 En En	94 En En	95 En En	96 En En	97 En En	98 Pd Pd	99 Fm Fm	100 Pd Pd	101 Fm Fm	102 Fm Fm	103 Fm Fm	104 Pd Pd	105 En En	106 Os Os	107 Fm Fm	108 En En	109 Os Os	110 Os Os	111 En En	112 Os Os	113 Fm Fm	114 En En	115 Fm Fm	116 Fm Fm	117 Os Os	118 Os Os	119 Os Os	120 En En
Gt Git	Dm DBmaestro	Bb Bitbucket	Lb Liquibase	Gl GitLab	Rg Redgate	Mv Maven	Gr Gradle	At ANT	Fn FinNexus	Se Selenium	Ga Gatling	Dh Docker Hub	Jn Jenkins	Ba Bamboo	Tr Travis CI	Gd Deployment Manager	Sf SmartFrog	Cn Consul	Bc Bcf2	Mo Mesos	Rs Rackspace	Sv Subversion	Dt Datomic	Gt Grunt	Gp Gulp	Br Broccoli	Cu Cucumber	Cj CucumberJS	Qu Qunit	Npm npm	Cs Codeship	Vs Visual Studio	Cr CircleCI	Cp Capistrano	Ju Julia	Rd Rundeck	Cf CFEngine	Ds Swarm	Op OpenStack	Hg Mercurial	Dp Delphi	Sb sbt	Mk Maven	Ck CMake	Jt JUnit	Jm JMeter	Tn TestNG	Ay Artifactory	Tc TeamCity	Sh Shippable	Cc CruiseControl	Ry RapidDeploy	Cy CodeDeploy	Oc Octopus Deploy	No CA Nolio	Kb Kubernetes	Hr Heroku	Cw CSPW	Id Idra	Msb MSBuild	Rk Rake	Pk Packer	Mc Mocha	Km Karma	Jm Jasmine	Nx Nexus	Co Continuum	Ca Continua CI	So Solano CI	Xld XL Deploy	EB ElasticBox	Dp Deploybot	Ud UrbanCode Deploy	Nm Nomad	Os OpenShift	Ch Chef	Pu Puppet	An Ansible	Sl Salt	Dk Docker	Az Azure	Gc Google Cloud Platform	Aws Amazon Web Services																																				

Os

Open Source

Fr

Free

Fm

Freemium

Pd

Paid

En

Enterprise

SCM

CI

Deployment

Cloud / IaaS / PaaS

BI / Monitoring

Database Mgmt

Repo Mgmt

Config / Provisioning

Release Mgmt

Logging

Build

Testing

Containerization

Collaboration

Security

Today's Application Delivery Tool Chain is Complex and Fragmented

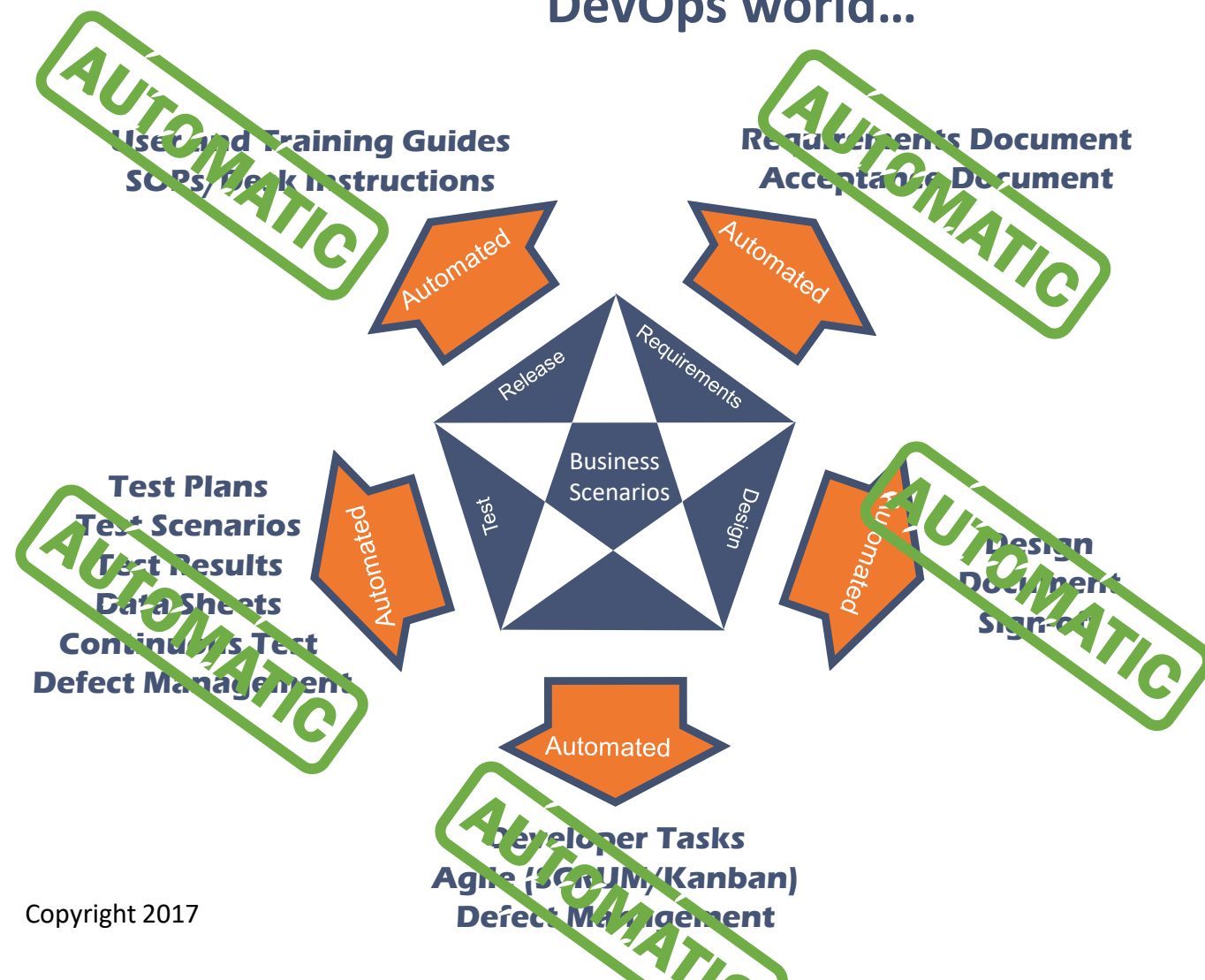
Organisations have to patch together a complex tool chain to automate their delivery pipelines...The good news: The situation is improving.
Forrester, 2017

XebiaLabs

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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

Epic

ATREP0001042

Update

Copy Epic

Copy User Story

Create Test Run from Epic

Create Design Doc

Delete

<input type="checkbox"/>			ATRUT0001179	80	Type into a field	Type the text 'Minotor is showing horizon...	Minotor is showing horizon...
<input type="checkbox"/>			ATRUT0001180	90	Select choice	Select the 'Phone' choice from the 'Cont...	phone
<input type="checkbox"/>			ATRUT0001181	100	Select choice	Select the '1 - High' choice from the 'I...	1
<input type="checkbox"/>			ATRUT0001182	110	Select choice	Select the '1 - High' choice from the 'Urgency' choice lookup field.	

User Task Checks

New

Go to

Order

Search

User Task = [ATRUT0001182](#)

<input type="checkbox"/>		ATRUTC0001263	10	Choice is selected	1	Check that the '1 - High' choice is sele...
<input type="checkbox"/>		ATRUTC0001264	20	Choice is selected	5	Check that the '5 - Planning' choice is ...

Actions on selected rows...

<input type="checkbox"/>			ATRIUT0001214	120	Reference lookup	Type 'Network' into the 'Assignment grou...	Network
--------------------------	--	--	-------------------------------	-----	----------------------------------	---	---------

new Vesuvius Dev | ATP Servi

new ATETR0001003 | Service

new ServiceNow

Autotestpro Ltd

Secure

https://piit17.service-now.com/nav_to.do?uri=%2Fkb_view.do%3Fsys_kb_id%3Da397ce7bdb09070061ab70d9bf9619d4

6DG WAP

ServiceNow

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PC Paul Chorley

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Create Incident

Edit

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.

Type here to search

Task View

File Explorer

Microsoft Edge

Google Chrome

PowerPoint

Outlook

Skype

Calendar

Photos

PDF Reader

System Tray

21:47
13/09/2017

13-09-2017 21:48:18 British Summer Time

Page 3





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.



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```

graph LR
    1[Requirement gets Captured in Requirements Repository] --> 2[Design and Acceptance get signed off by user]
    2 --> 3[Change gets made in Dev]
    3 --> 4[Change gets Tested in Dev]
    4 --> 5[Change gets auto promoted to Test]
    5 --> 6[Change gets in Test]
    6 --> 7[Change gets auto promoted to Staging]
    7 --> 8[Change gets tested in Staging]
    8 --> 9[CAB Approval]
    9 --> 10[Documentation created to support the CAB request]
    10 --> 11[Release note gets sent to users]
    11 --> 12[Change gets implemented on Production]
    12 --> 1
  
```

Automate using structured language for describing a users interaction with a system

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Questions
Please don't hold back...



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



Contact Me
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