17th Annual International
STC 2017
Software Testing Conference
December 07 - 08, 2017
Bangalore
Organised by QAI

Transforming Automation through Artificial Intelligence

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Allscripts®

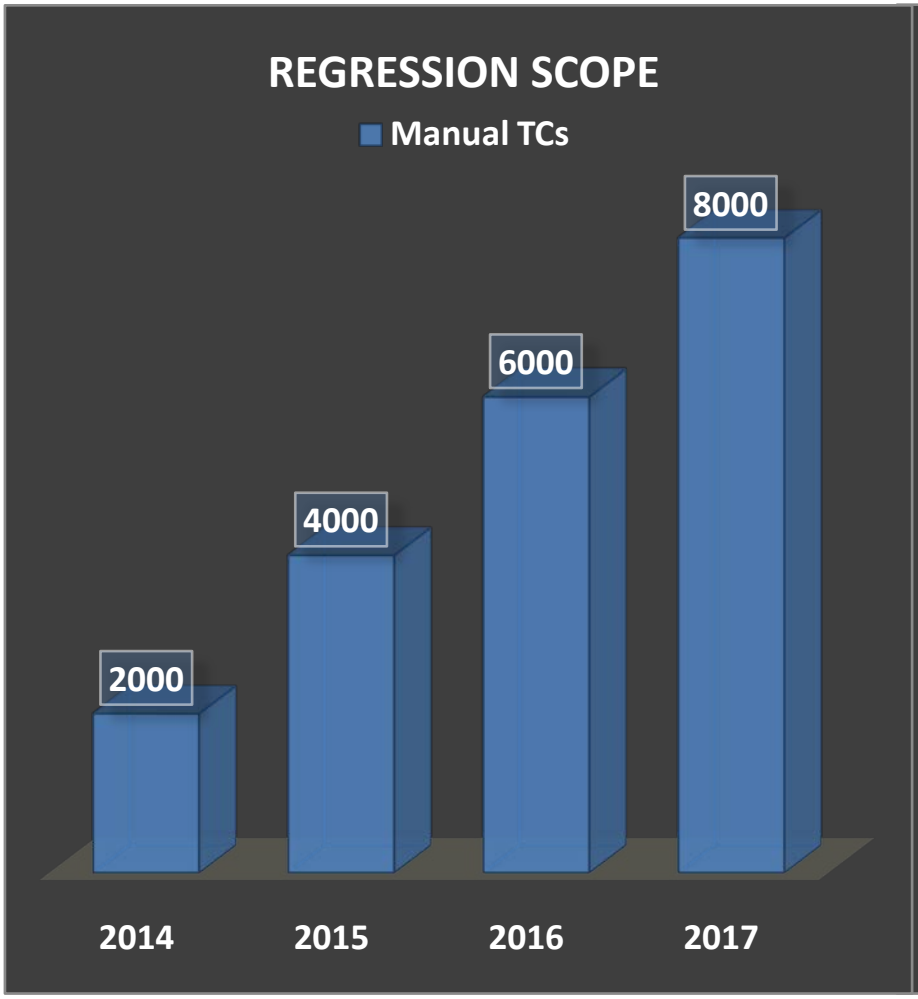
Abstract

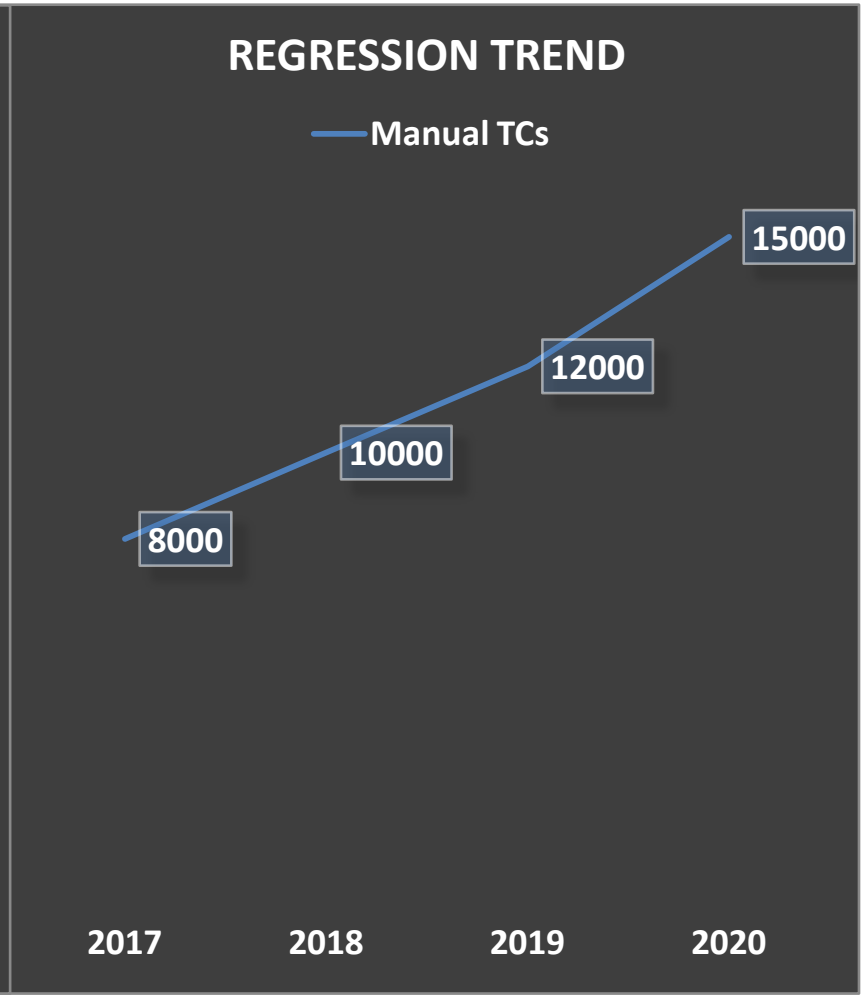
Automation of the legacy test case along with new test cases is very much necessary in the digital era for the continuous integration and delivery. But with growing number of features, maintaining the existing test cases and developing new scripts by using the traditional way of scripting is no longer an optimal method in the disruptive technology.

To be more cost effective, the new way of approach is simultaneously design the test case and Test script development. This will help us to automate in an efficient manner using **AI - Natural Language Processing** with minimal technical Knowledge.

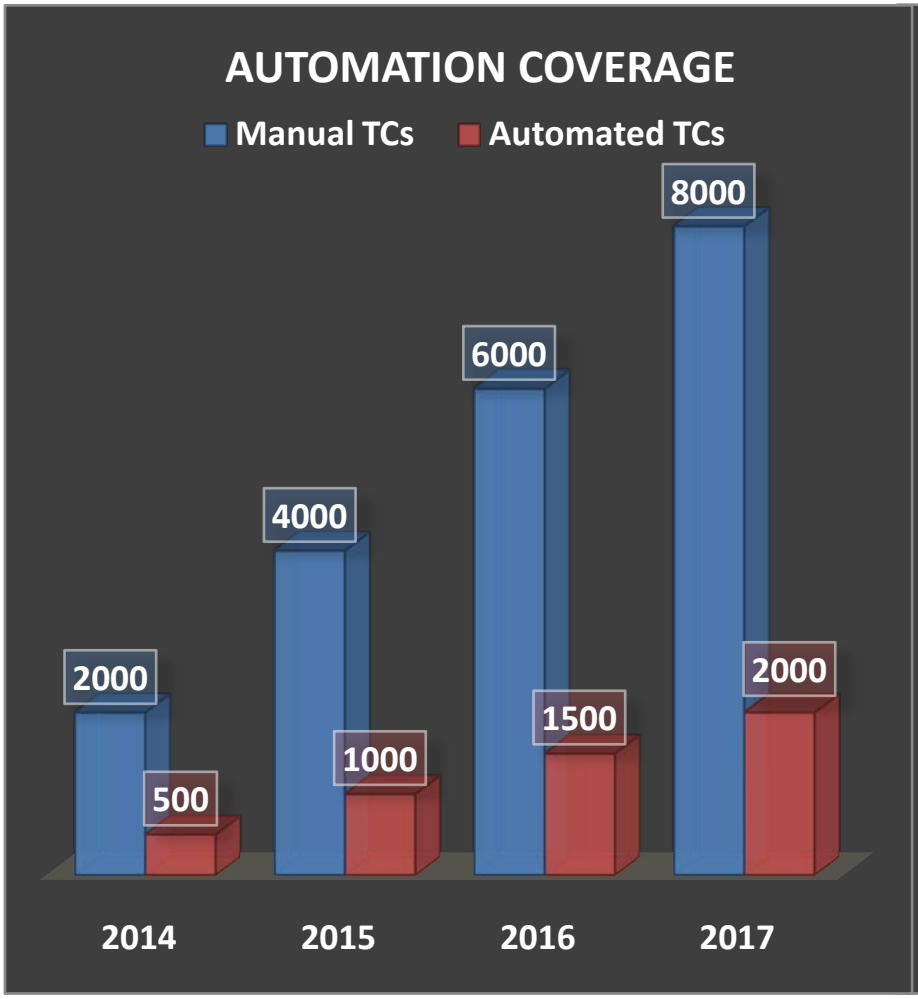
This white paper will cover more insights on how to build the test script along with test case design by using the 'Automation Artificial Intelligence Framework'

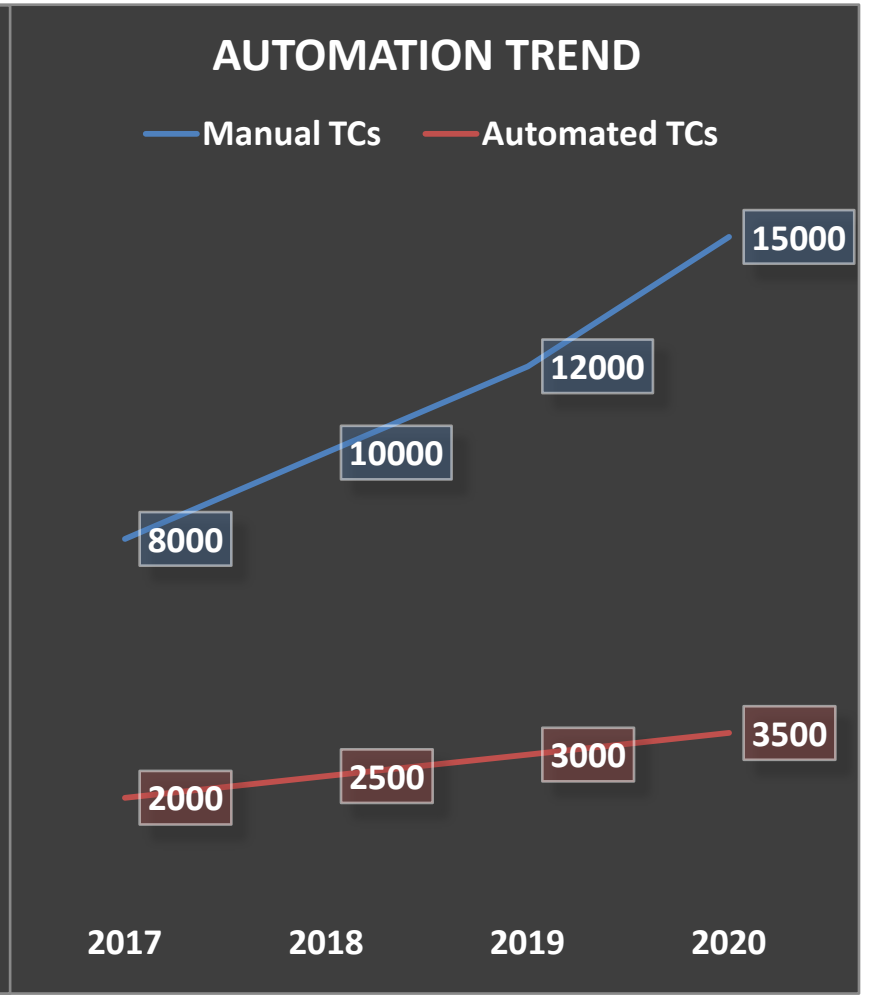
CHALLENGE


REGRESSION SCOPE
Manual TCs
2000
4000
6000
8000
2014
2015
2016
2017

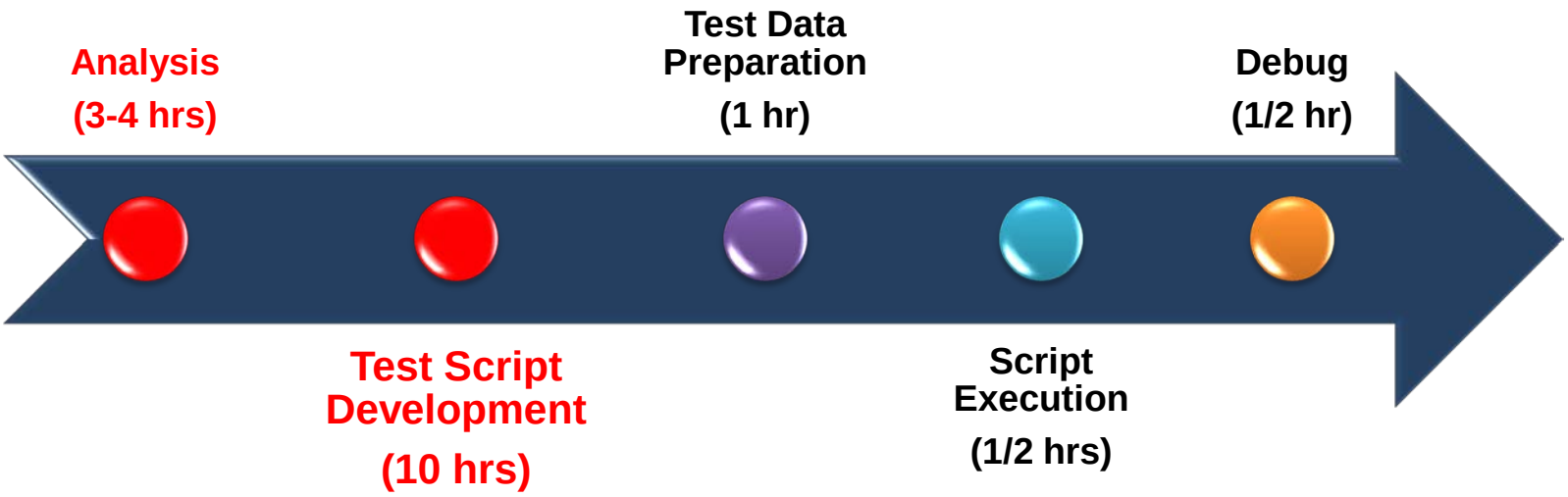

REGRESSION TREND
Manual TCs
8000
10000
12000
15000
2017
2018
2019
2020

CHALLENGE

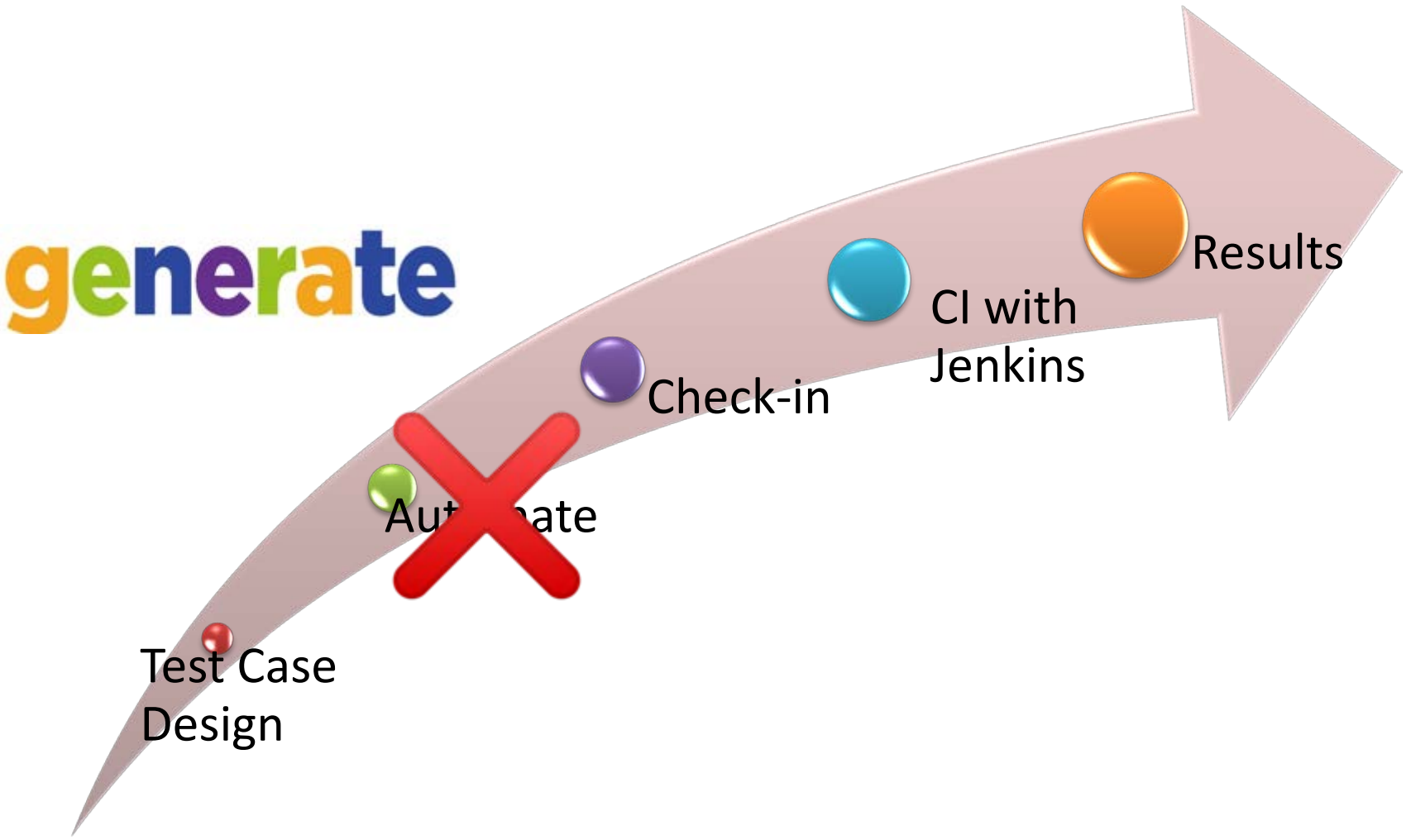

AUTOMATION COVERAGE
Manual TCs
Automated TCs
2000
500
4000
1000
6000
1500
8000
2000
2014
2015
2016
2017


AUTOMATION TREND
Manual TCs
Automated TCs
8000
10000
12000
15000
2000
2500
3000
3500
2017
2018
2019
2020

Automation Efficiency Analysis



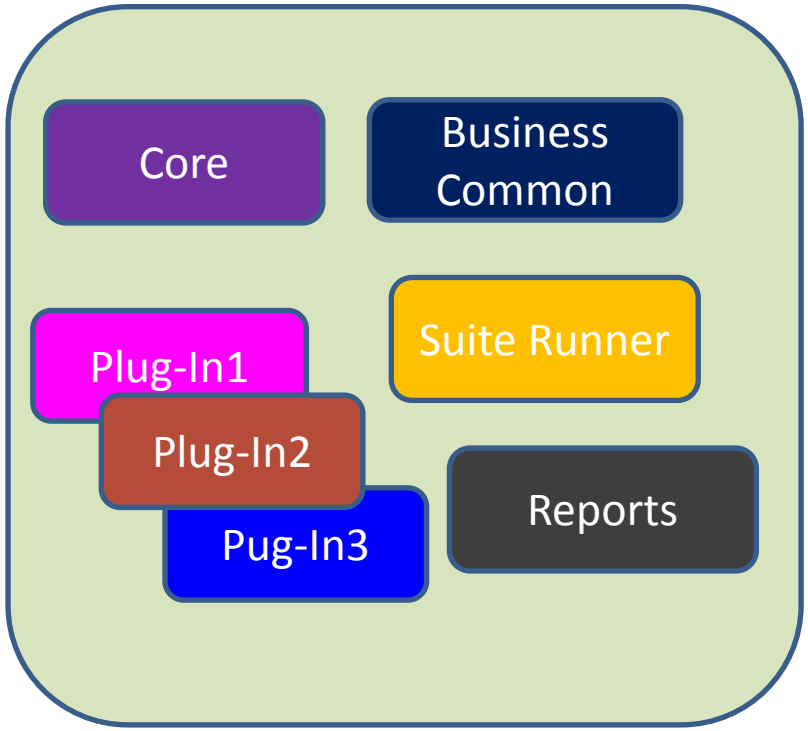
Continuous Integration



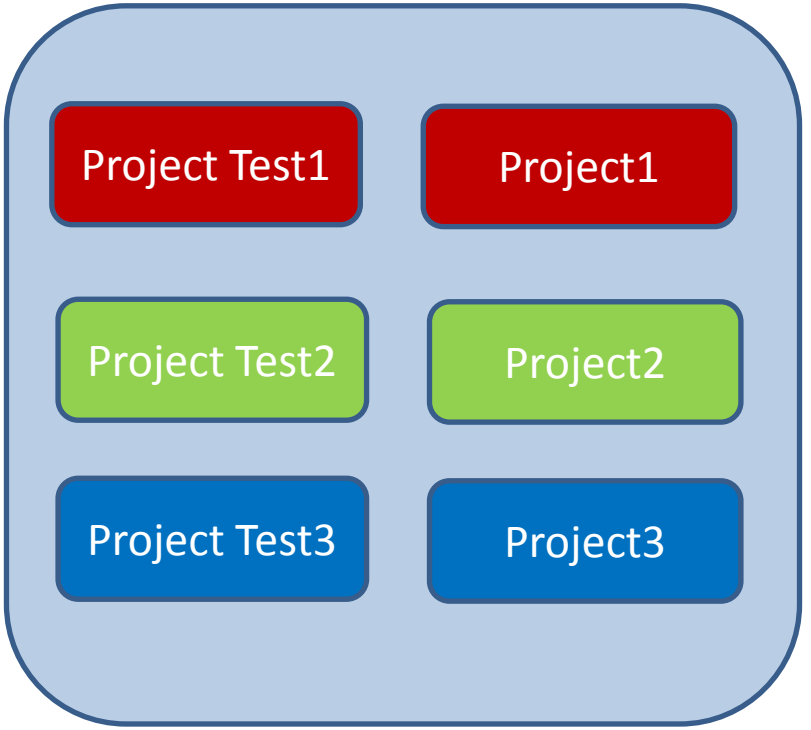
Automation Framework Using Artificial Intelligence

Automation Framework

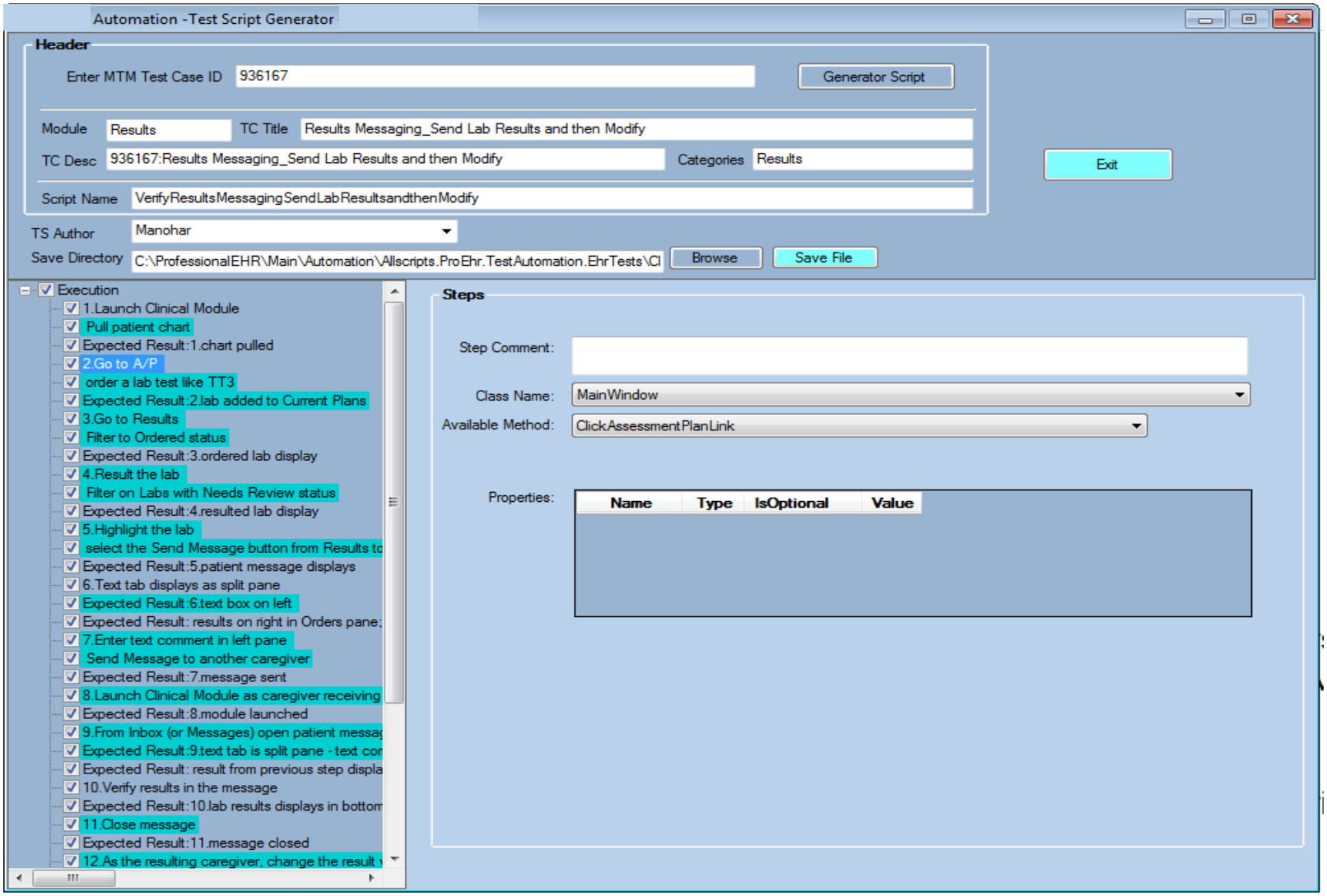
Framework



Automation



Automation Script Generator



Sample Test Scripts


```
Copyright © 2010 Allscripts Healthcare Solutions, Inc.

using System.ComponentModel;
using Allscripts.Automation.Core;
using Allscripts.ProEhr.TestAutomation.Ehr;

using System.Collections.Generic;
using Allscripts.ProEhr.TestAutomation.Common;
using Allscripts.ProEhr.TestAutomation.Ehr.BusinessComponents;
using Ranorex;
using System.IO;
using System;
namespace Allscripts.ProEhr.TestAutomation.EhrTests
{
    [Script("VerifyCarePlansGoalsPlansRevisionHistory", "Care Plans & Goals_Plans Revision History", "regression, Care")]
    public class VerifyCarePlansGoalsPlansRevisionHistory : BaseScript
    {
        /// <summary>
        /// Default constructure passes base ApplicationUnderTest interface
        /// </summary>
        public VerifyCarePlansGoalsPlansRevisionHistory() : base(ApplicationUnderTest.Instance) {}
        // ------------------------------------------------------------------------------------------------------------------------------------
        // ------------------------------------------------------------------------------------------------------------------------------------

         /// <summary>
         ///
         /// </summary>
         protected override void Setup()
         {

         }


         [Description("3282918:Care Plans & Goals_Plans Revision History")]
         protected override ScriptResult Exec()
         {
              //1. Go to Administration Module &gt; Settings &gt; Dictionary &gt; Plans (for Care Plans &amp; Goals) </P><P>2. System-defined items in the dictionary


            //<P>Login to CM&gt; Pull a patient &gt; Click on Care Plans &amp; Goals icon available on the tool bar</P></DIV>

                 Patient.Instance.CreateAndPullPatient("",,"",,,);


             // 3.Click on "+" icon on 'Care Plans

            // 4.<DIV><P>Enter a name in the 'Care Plan Name' field

             //  hit the Enter key</P></DIV>

             // 5.<DIV><P>Add a Health Concern to the shopping cart.</P></DIV>

             //6.<DIV><P>Select multiple Goals
```

```
    // 10.<DIV><P>Select the above added care plan on the Summary screen

    //click on Edit toolbar button</P></DIV>


     //11.<DIV><P>Verify Revision history tab is not available when an edit goal screen is opened for the first time</P></DIV>

         MainWindow.Instance.ClickHistory();
    // 12.<DIV><P>Select the first goal in the shopping cart

      //  change the status in the Goal Details. Click on OK button.</P></DIV>

                  // 13.<DIV><P>Select the above care plan on the Summary screen


      // click on Edit toolbar button</P></DIV>


      // 14.<DIV><P>Select the first goal in the shopping cart


     // verify the Revision history tab </P></DIV>

         MainWindow.Instance.ClickHistory();
      //
         MainWindow.Instance.ClickHistory();
     //16.<DIV><P>Verify Revison History tab is Not present for other goals.</P></DIV>

        // 17.<DIV><P>Click on OK button</P></DIV>


      // 18.<DIV><P>Select the above care plan on the Summary screen


      // 19.<DIV><P>Verify no changes to the Revision history of first goal.</P></DIV>

         //20.<DIV><P>Verify Revison History tab is Not present for other goals.</P></DIV>



if(OverAllScriptStatus)
 {
       Info("Care Plans & Goals_Plans Revision History Functionality success");
       return ScriptResult.Pass;
 }
else
 {
       Failure("Care Plans & Goals_Plans Revision History Functionality Fail");
       return ScriptResult.Fail;
 }
 }
```

Attribute Definitions


```
namespace Allscripts.ProEhr.TestAutomation.Ehr
{
    /// <summary>
    /// Represents the Clinical Module Care Plans Flyover window
    /// </summary>
    [MagicAttribute("CarePlansAndGoals")]
    public partial class CarePlansFlyover
    {
        [MagicAttribute("Click the green + to create a new goal|Click on Add button|Add")]
        public void ClickOnAddGoals()
        {
            Report.Debug("Click on add goals button");
            CarePlansFlyoverForm.ButtonAdd.Click();
        }

        [MagicAttribute("Click on Close button|Close the Window|Close")]
        public void ClickCloseIcon()
        {
            Report.Debug("Click on close icon button");
            CarePlansFlyoverForm.CloseImage.Click();
        }

        [MagicAttribute("Click on Edit button|Click on Edit|Edit")]
        public void ClickOnEditGoals()
        {
            Report.Debug("Click on edit goals button");
            CarePlansFlyoverForm.ButtonEdit.Click();
        }
```

AI - Natural Language Processing

Definition:
Natural Language Processing (NLP) refers to AI method of communicating with an intelligent systems using a natural language such as English.

The input and output of an NLP system can be:

- Speech
- Written Text

Key Benefits

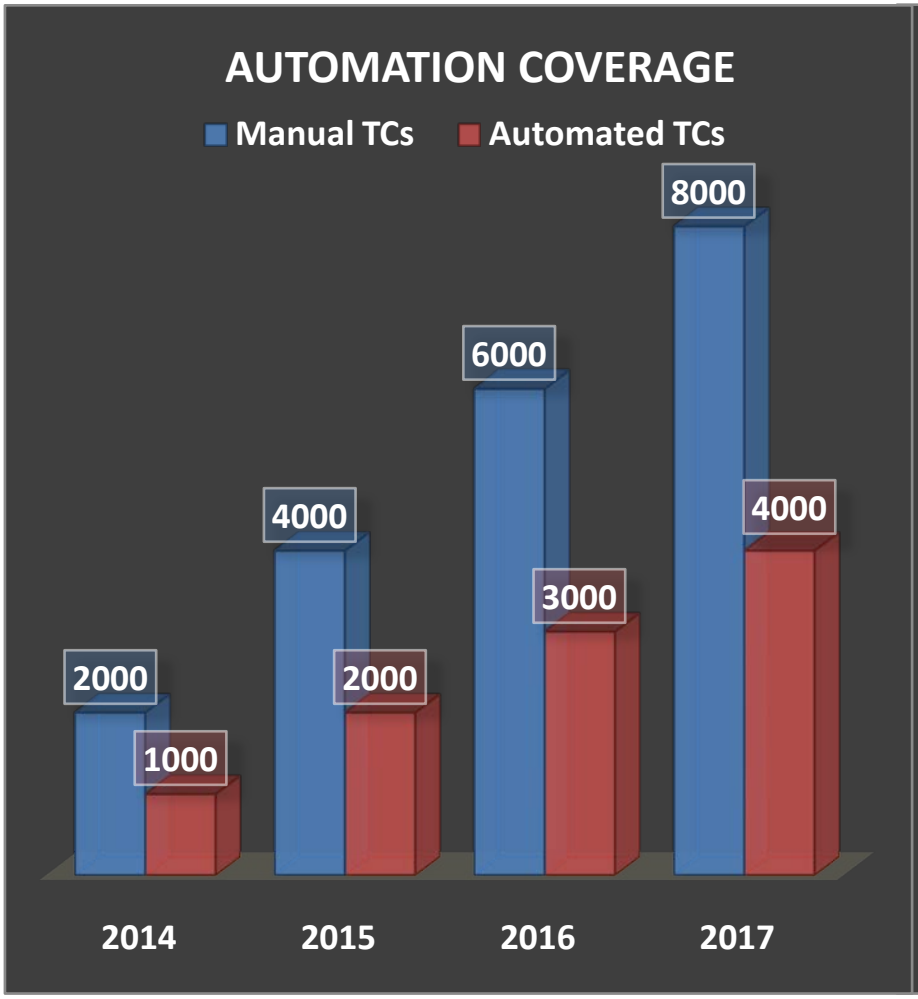
- Generates the automation scripts.
- Reduces time and cost of developing the automation scripts.
- Maintenance of automation scripts is easier as the automation scripts regenerates release on release.
- Test coverage achieved due to automatic selection of the impacted areas.
- Quickly develops the regression automation suite.
- No reworks, since standard methods used to generate the scripts.

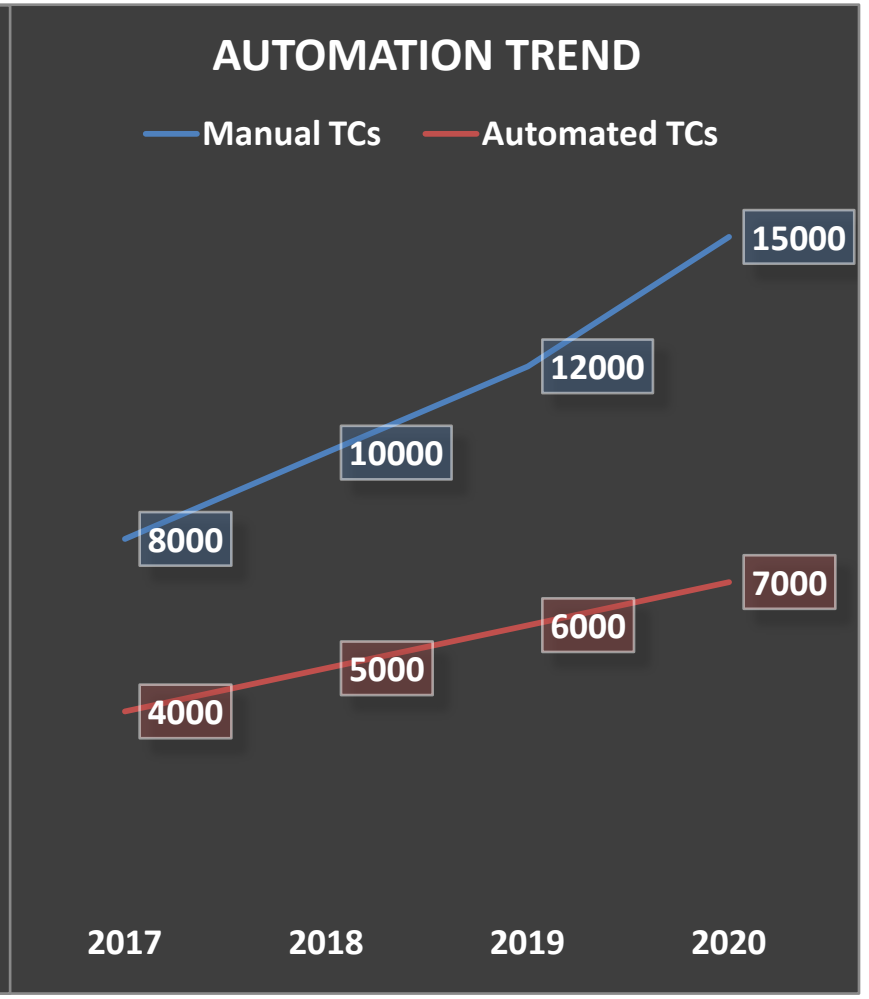
Case Study / Implementation

- Manual regression test cases addition per sprint - **80**
- Manual regression test cases addition per year - **2000**

Automation Scripts Generation	Traditional Method (Test scripts)	AAIF Method (Test scripts)
Automation scripts addition per sprint	**20**	**40**
Automation scripts addition per year	**500**	**1000**

ACHIEVEMENT





Key Takeaways

- *Breaking Traditional method of automation Approach*
- *Artificial Intelligence Concepts*
- *Implementing Artificial Intelligence to Automation*
- *Implementation of Attributes in Automation Framework*
- *Generation of Automation scripts using AAIF*

References & Appendix

- https://en.wikipedia.org/wiki/Artificial_intelligence
- http://www.evoketechnologies.com/blog/test-automation-framework-design/
- https://techbeacon.com/how-build-agile-friendly-test-automation-framework

Author Biography

- Developer by profession | Automation tester by heart
- | .NET programmer | Innovator
- Specialist in automation framework development
- 10+ years of experience in development, automation (Web, Windows)

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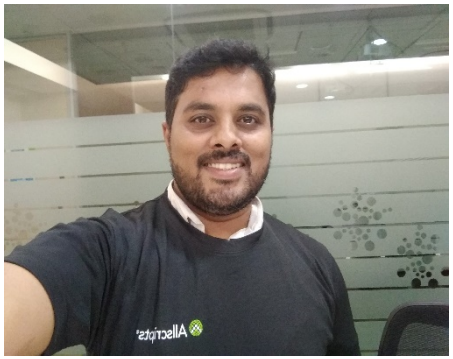

- 10+ years of experience in IT.
- Working as Automation tester (Web, Windows) for last 6 years and provided solutions and strategies for various testing Requirements like functional test automation, Compatibility Testing.

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Thank You!!!