

AUTOMATED TEST FRAMEWORK (ATF) FOR THE 702SP SATELLITE



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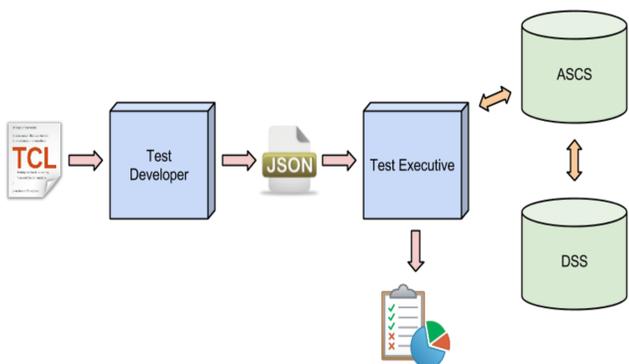
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The Automated Test Framework is a suite of software designed to automate the testing of software updates.

The test environment consists of the Advanced Satellite Control System (ASCS), which controls satellite operation, and (for testing purposes) the Dynamic Satellite Simulator (DSS). ASCS operations are controlled by Tcl scripts. Traditionally an engineer is required to sit at the ASCS terminal to click prompts and perform other interactions. The ATF replaces the engineer, thus saving engineering time and costs.

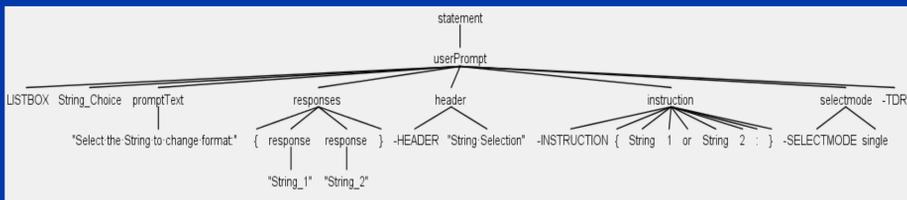


The ATF consists of two main modules, the **Test Developer** which prepares test cases, and the **Test Executive**, which executes the test cases.

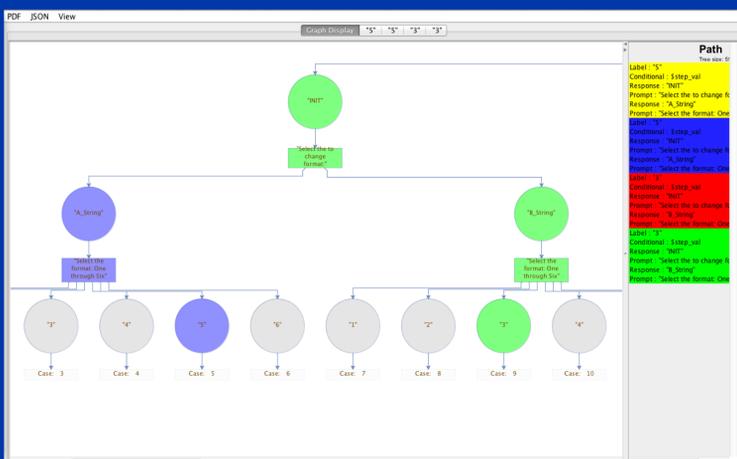
Test Developer

The Test Developer parses Tcl scripts to identify the possible use cases.

The script is parsed using ANTLR (**A**n**O**ther **T**ool for **L**anguage **R**ecognition). Labels are defined so that a built-in tree-walker can extract the test cases.



An interactive Tree is then presented to the test engineer.



The engineer selects desired case(s). Each test case is encoded in JSON. It contains the action(s) that the test engineer would have to perform to run the test.

Test Executive

Sikuli, a GUI (Graphical User Interface) automation tool is used to execute the test cases. Sikuli is able to find images on the screen and interact in the place of the user.

```

*Start Satellite
1 type ("C:\\MyData\\School\\CS496\\702SP\\MYSATELLITE\\start.sh" + Key.ENTER)
2 find('Application ASCS')
3 click('Start System')
4 switchApp("System(Configuration)")
5 click(Key)
6 type('Commence 1.2.3')
7 wait('COMPLETE', 666)
8 click('OK')
9 switchApp("Application ASCS")
10 click('Satellite')
11 type("WORK" + Key.TAB)
12 click('OK')
13 exit()
  
```

The Test Executive parses the JSON file and using the Sikuli library, executes the test case instructions.

The testing activity is logged and is available to the engineers when they return.

Accomplishments

- Integrated software with existing hardware.
- Managed complex library integrations.
- Managed software development with version control.
- Documented and delivered software to client.