A Novel Approach of Automation Test for Software Monitoring Solution

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Agenda

- Motivation
- A Novel Power of Automation Test
- Advertisements Monitoring Architecture Pattern
- Applying the proposed pattern for:
  - Online advertisements monitoring solution
  - Video advertisements monitoring solution
- Advantages and Disadvantages
- Short demo
- Conclusion & Future work

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Motivation

As a software tester, we have used automation test for:

- Sanity Test
- Functional Test
- Regression Test
- System Test
- Performance/Load Test...

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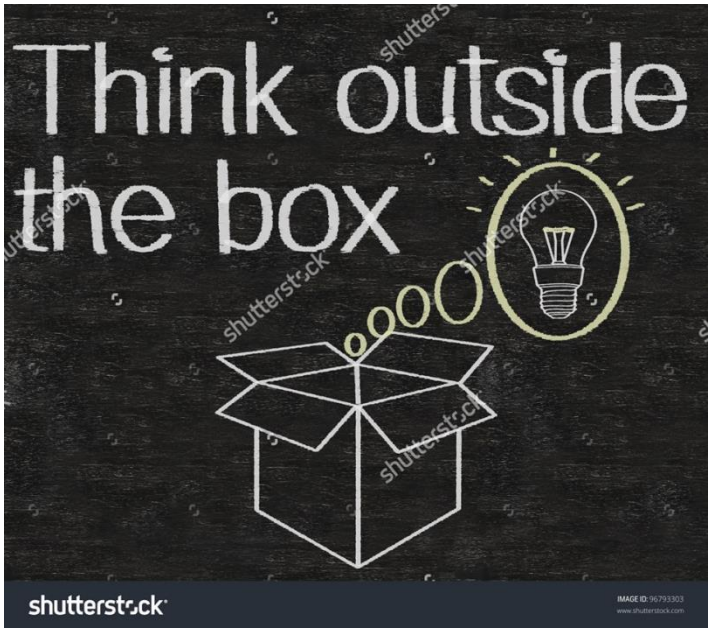
Motivation

With thinking out of the box, we wonder whether automation technique is able to apply for others, out of testing.



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A Novel Power of Automation Test

In the traditional approach, automation is used to find bugs and assure the software quality.

In this research, we have a novel approach using automation test to build software monitoring solution.

The power of automation is not only for testing.

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A Novel Power of Automation Test

Monitoring software and Automation test mapping.

Monitor Software	Automation Test
Object monitoring	Object verification
Object tracking -> **display** or not display	Object exist -> **Pass** or Failed
Record, compress images	Capture images
Writing log and **monitoring report**	Automation Log and **test report**
Alarm and Warning	Alert

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Advertisements Monitoring Architecture Pattern

Advertisements monitoring architecture pattern based on automation test:

- Automation Test Framework:

  customize for monitoring purpose.

- Scheduler:

  configure how often the script runs.

- Cloud Service:

  verify the object's display from multiple platforms.

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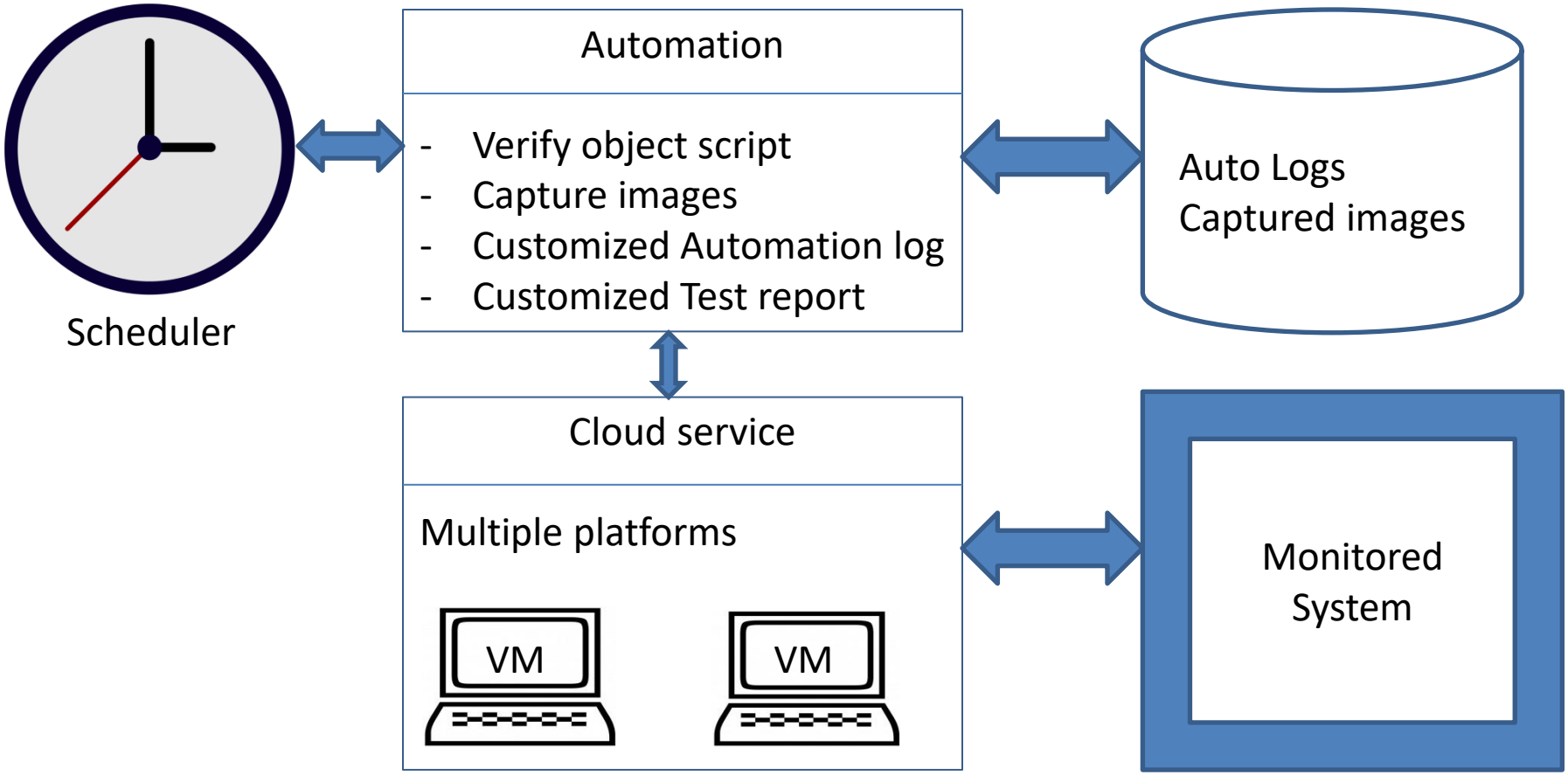
Advertisements Monitoring Architecture Pattern

Proposed Architecture:



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Applying for Online Advertisements Monitoring

Business requirements for Online advertisements monitoring :

- Automated monitoring capability which verifies whether online advertisement is displayed
- Cross OS/browser/platform validation, and automated monitoring can be run on selected combinations.
- Online advertisements' display depends on locations.

➔ Solution:

- Automation: Selenium.
- Scheduler: Crontab / Jenkins.
- Cloud service: Saucelabs.

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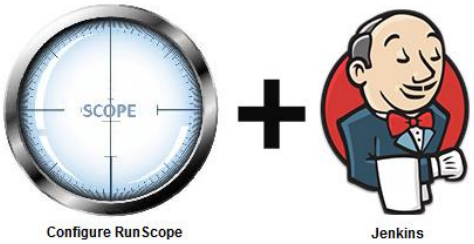
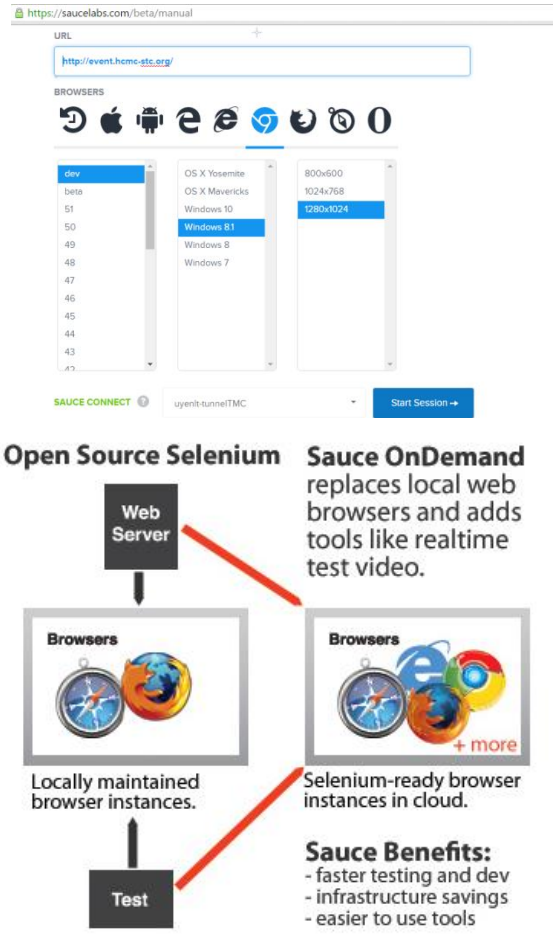
Applying for Online Advertisements Monitoring

Tools for online advertisements monitoring:





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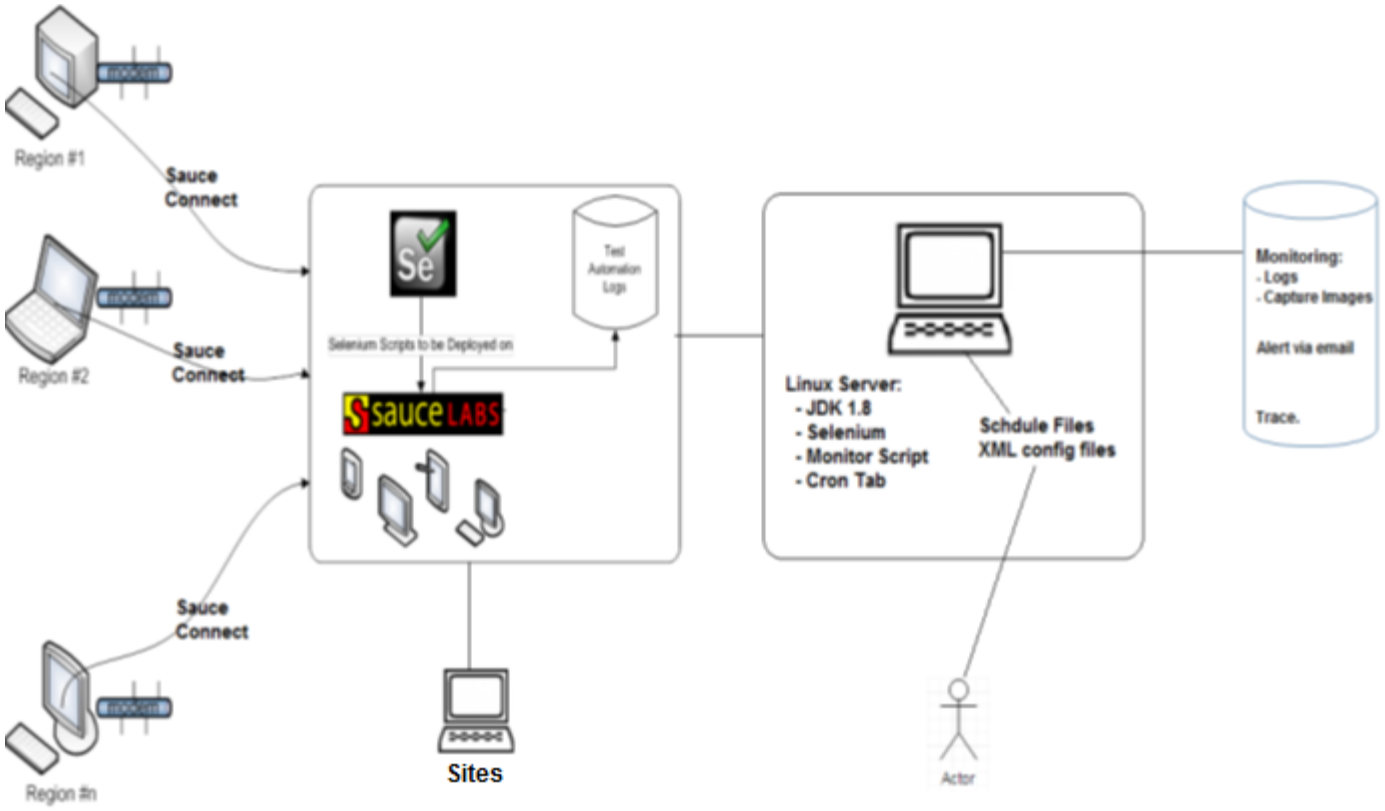
Applying for Online Advertisements Monitoring

Online Advertisements Monitoring Solution:



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Applying for Video Advertisements Monitoring

Business requirements for Video advertisements monitoring:

- Automated Monitoring – real time and automated monitoring capability which verifies whether video advertisement is displayed.
- Logging – offer logging details in Monitoring capability for further analysis and trending
- Control STBs. Capture images or video, send remote control commands, AC power ON/OFF.

➔ Solution:

- Automation Test integrates with TMC system.

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Applying for Video Advertisements Monitoring

What is TMC?

- Windows/Web based test automation tool
  - Supports OCR for reading text on screen. Supports image comparisons.
  - Write scripts in Java or Ruby language.
  - View the video on all 16 STBs remotely via a web browser.
  - Interact with STB (i.e. IR commands) via web browser.
- Test automation framework
  - Includes Execution Service for launching test scripts (serial or parallel).
  - Logging mechanism.
  - Easily view test results details or summary.
  - Headless selenium server for testing web based interfaces (e.g. MAS).

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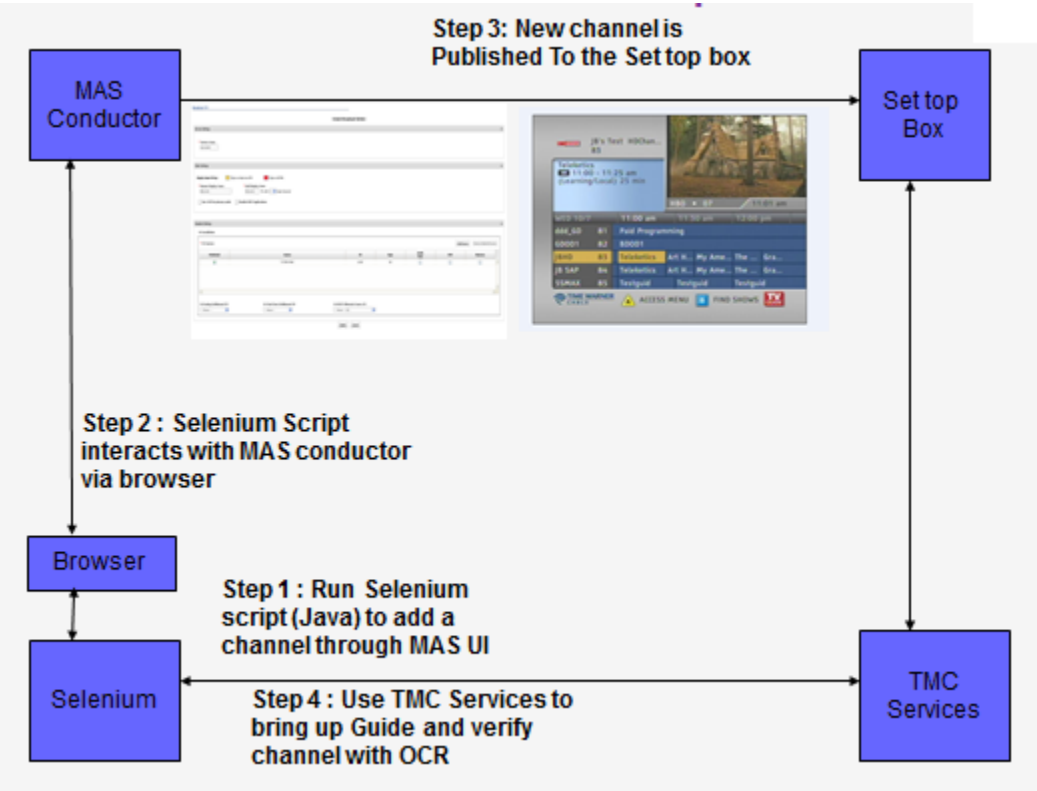
Applying for Video Advertisements Monitoring

Video Ads Monitoring Solution:

Selenium and TMC integration



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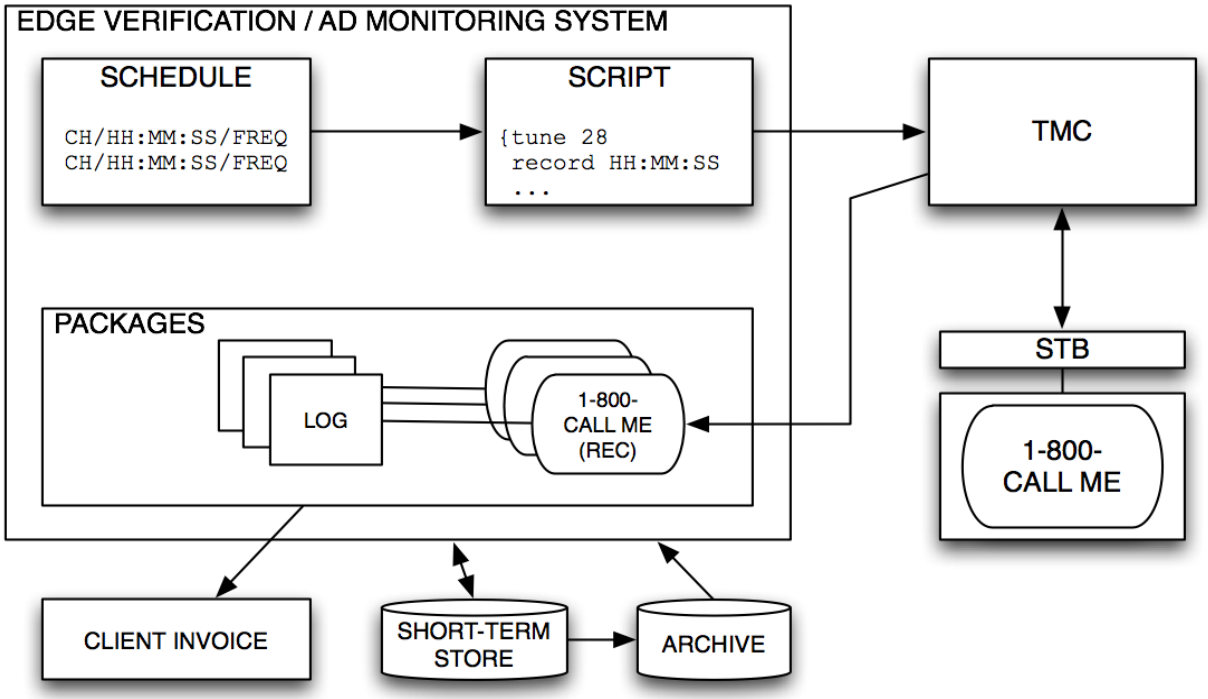
Applying for Video Advertisements Monitoring

Video Advertisements Monitoring Solution:



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Advantages and Disadvantages Analysis

Advantages:

- Ability to monitor objects cross platforms
- Re-use the power of automation test
  - Verify object for checking the display
  - Automation log, and capture images for recording
  - Test report for monitor report

Disadvantages:

- Compatibility of multiple components.
- Depend on automation test tool.

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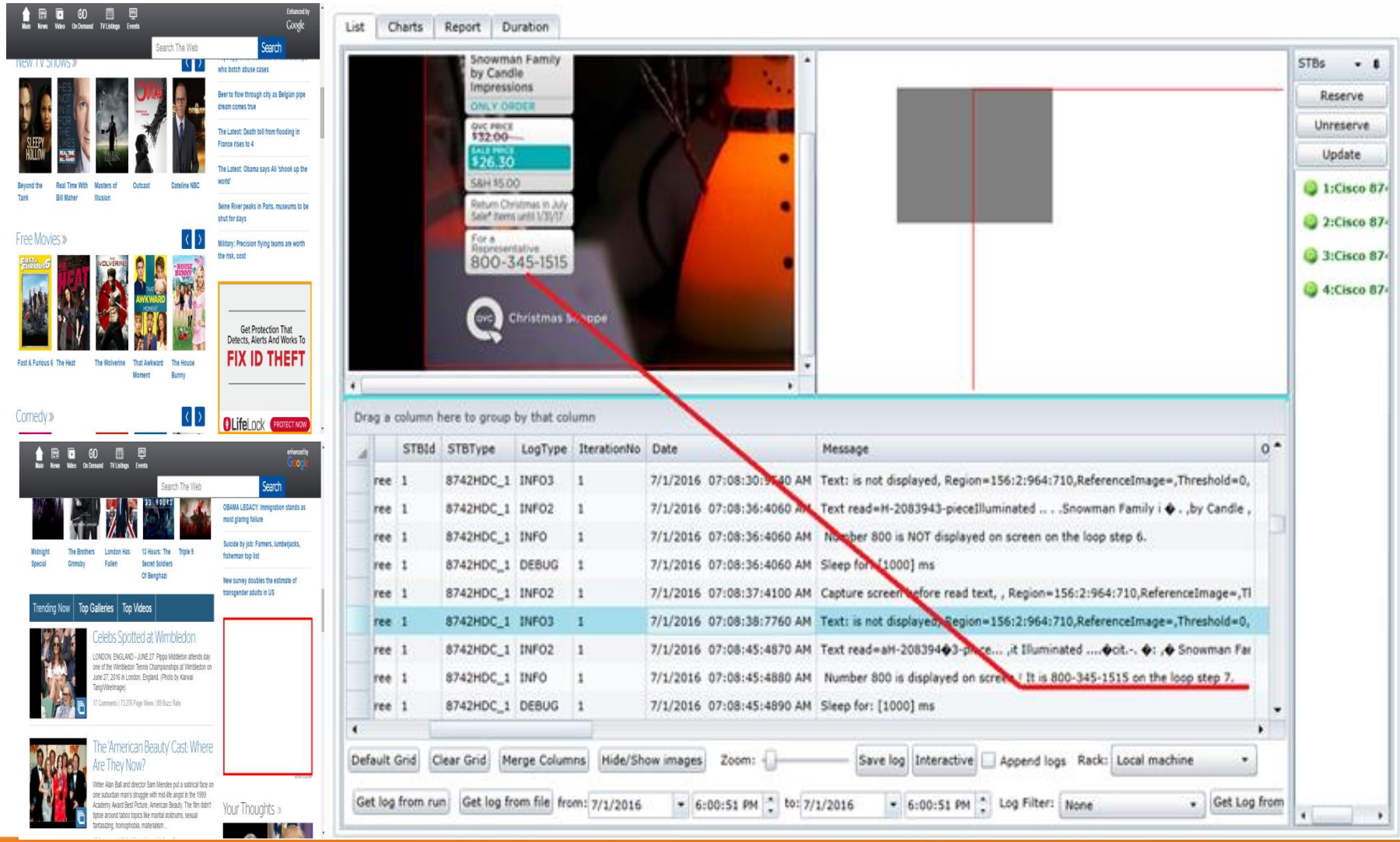
Short Demo



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Conclusion

- An architecture pattern for monitoring solution based on automation test
  - Automation Test.
  - Scheduler.
  - Cloud service.
- An approach of Automation Test for software monitoring solution:
  - Apply for Online Ads Monitoring system.
  - Apply for Video Ads Monitoring system.

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Future work and open problem

- Integration with image processing programming in computer vision to enhance the monitoring system.
- Apply for object tracking system.
- Comparison monitoring software base on automation with developer.
- Integrate with Business Intelligent system for mining logs/report data.

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[3] Kim, Eun Ha, Jong Chae Na, and Seok Moon Ryoo. "Implementing an effective test automation framework." *Computer Software and Applications Conference, COMPSAC'09, 33rd Annual IEEE International* (2009): Vol. 2.

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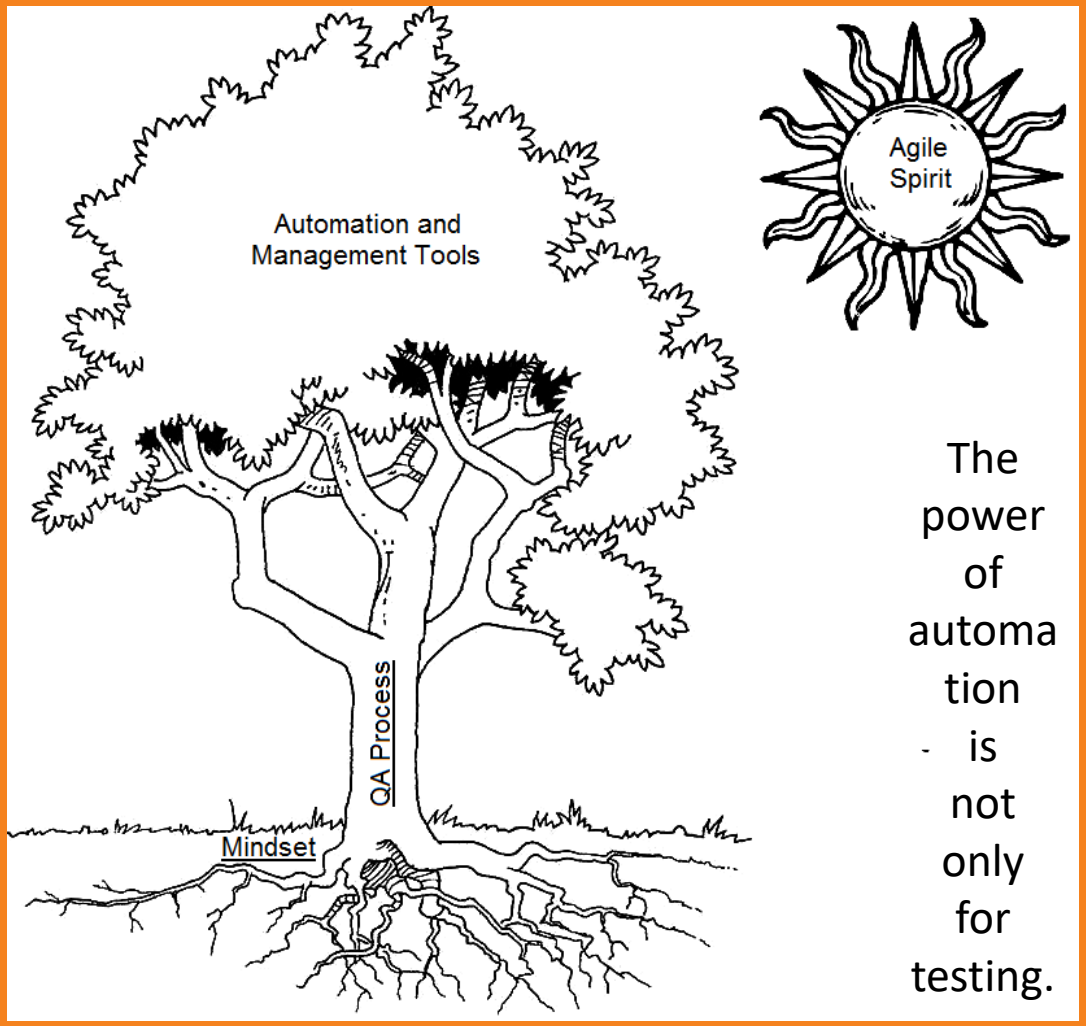
[5] Le, Thai Hoang, Hai Son Tran, and Thuy Thanh Nguyen. "Applying Multi Support Vector Machine for Flower Image Classification." *Context-Aware Systems and Applications*. Springer Berlin Heidelberg, 2012. 268-281.

THANK YOU



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Appendix

A Novel Approach of Automation Test for Software Monitoring Solution

Tran Son Hai, IMT

Keywords: Automation Test, Architecture Pattern, Monitoring Solution

Abstract

Automation test is an interesting research problem in recent years. There are many reasons why we use automation test in the software development. In the traditional approach, automation test has been used for regression test, functional test, performance test... in order to find or prevent bugs and software quality assurance. In this research, we have a novel approach using automation test to build software monitoring solution. The purpose of automation scripts use as monitoring software to capture images and write logs. The architecture pattern of automation for monitoring based on automation test tool, cloud service, and scheduler. The proposed architecture pattern has been applied for online advertisement monitoring. Instead of reporting passed/failed, automation scripts will monitor whether the advertisement is display or not, and how often it was display on multiple platforms. The proposed architecture pattern can also apply for video advertisement monitoring solution.

References

[1] Alcaraz Calero, J. M., and Juan Gutierrez Aguado. "MonPaaS: an adaptive monitoring platformas a service for cloud computing infrastructures and services." *Services Computing, IEEE Transactions on* 8.1 (2015): 65-78.

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[5] Le, Thai Hoang, Hai Son Tran, and Thuy Thanh Nguyen. "Applying Multi Support Vector Machine for Flower Image Classification." *Context-Aware Systems and Applications*. Springer Berlin Heidelberg, 2012. 268-281.

Biography

Tran Son Hai is a senior principle software engineer in IMT. Hai has been working in software development and IT trainer for 12+ years on different roles such as developer, trainer, tester, leader, and researcher. His research interests include automation test, computer vision, and machine learning. He is co-author of ten papers in the domestic/international conferences and journals indexed by google scholar. Besides, he also took part in Agile Vietnam translation team with two documents published on scrum.org, and scrum guides.org.

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