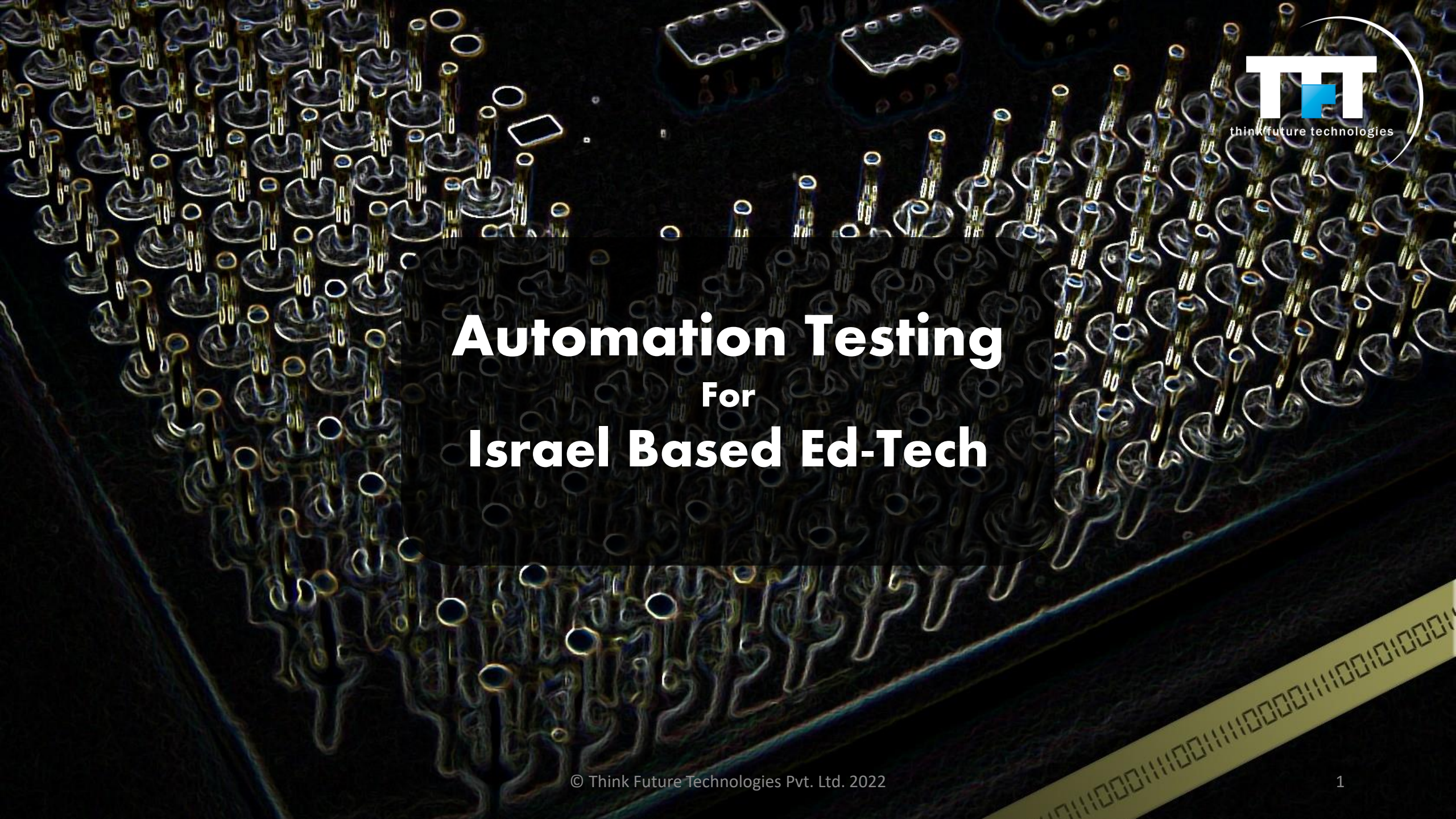

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About the Client:
Client is a global cyber education company with a commitment to reskilling the workforce and upskilling the industry in cybersecurity. They tackle the industry's two greatest threats: the talent shortage and the skills gap. Their team is comprised of military cyber experts, industry professionals, and educators united under the vision of creating a safer digital world through education, training, and collaboration.

Business needs addressed:

- As the company is going to next level with each success. New requirements and enhancements are always on hands.
- As all the products are expanding, Manual testing started becoming a bottleneck for big releases.
- Manual testing team was always under pressure due to heavy workload & repetitive tasks
- The following needs popped up as the company and its platforms were expanding:
    - Automate all repeated tasks
    - Automatic verification of multi region platforms
    - Performance & Load testing
    - Parallel Automation
    - Ability to give rapid Releases

- Automate all repeated tasks: All the operations that are repeated every time while verification of the release should be converted into Automated scripts. It should be called "Acceptance Tests". Its goal is to make the life of Manual tester a bit easier so that the resource can focus on special cases.
- Automatic verification of multi region platforms: Internationally available platforms are accessed from different regions and some components are different that needs verification before every release.
- Performance & Load testing: There are a lot of users on platform, we have to be always ready for future loads. Different platforms needs different verification of load like Network limits, Processing limits, Scaling limits, etc. Theoretical numbers never matches with reality, there is always a requirement to verify how much load can the platforms handle with every big release or any special event.
- Parallel Automation: With lots of test cases even automation will take time, we need to reduce time of execution and need to get quick test reports.
- Ability to give rapid Releases: With proper test plan and test execution, we need to provide quick test reports with automated scripts.
- With quick QA verification reports we will be able to release the builds faster.

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Solution:

- We created an Automation framework which has an easy-to-use interface and highly informative report generated at the end of test execution. Thus, it can be easily understood by those who do not understand the Automation tool to view the report with status.
- Following features are included in framework to provide better quality:
    - Ease of readability of test cases which are written in Gherkin language on Jira Xray.
    - Ease of executing test cases as a batch based on the category.
    - Generating the HTML report through Jenkins daily.
    - Generating the xray report through jira daily
- Repeated Tasks: Start with automating the most valuable tests. Which will result in a quick Smoke Suites. By picking up cases from multiple smoke suits, we will be able to build a full-fledged regression suit from it.
- Multi region Support: Create automation scripts in such a way that the execution should be done with switching between VPN based on region requirement.
- Performance Verification: To test the limits of platform, create a special test suit that is built upon replica of reality with the load limit provided by the company. A special infra should be configured to execute this suit.
- Built a more complete automated regression suite over a period of time

Process:

- Initially built an extended team of QA Engineers that were adept in both manual and automation testing. The team members focused on some of the major areas of the Web applications.
- An initial set of test cases were identified for the regression suite to be automated.
    - Test cases are written in Gherkin language on Jira Xray.
    - Automated test cases are grouped together in test sets.
    - Test Plan for automated test cases is to be created.
    - Test Execution will be processed by test jobs (CICD)
- A special Test Job (CI) is designed in such a way that it can execute a test set multiple times while switching between VPN's for different regions.
- A special test script is designed to create N number of fake users and execute a specific flow at same time and generate a customised report to review the performance. Remote web driver is used to run parallel flows.
- A test job is created to run the performance scripts to specially configured infrastructure.
- A customized Reporting Portal was used to provide insight to the stakeholders on the current Automation Test Execution
- TFT team also joined onshore Sprint Planning, Retrospective and Backlog meetings through Google Hangouts and also communicated with tools like Slack
- A failure Investigation process is introduced in which some team members go over the report to verify cases and raise tickets for dev team or automation team
- It was decided at the highest levels that the automation was a key in ensuring that the Company kept on rolling out new features. The CTO of the Company decided to be part of the regular meetings and ensure that all road blocks were promptly addressed

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Pros:

- Reduced the time required for regression
- More often regression tests were performed
- We were always prepared for future loads with automated load test
- Support agile methodology
- Easy and smooth releases
- Automated complex test cases
- Acceptance test suit for releases
- Improved test scalability (Parallel Tests)
- Increased productivity

Cons:

- Needed one and sometime two dedicated resources to continuously do failure investigation and take suitable action
- Running thousands of parallel test required complex infrastructure configurations
- Need regular updation of scripts for new changes

Challenges:

- Finding the right framework and tool
  - Ease of use
  - Scalability
  - Maintainability
  - Integration with third-party tools like Github, Jira, Jenkins, Maven/Gradle, etc.
- Demanding Skilled Resources
- Selecting a Proper Testing Approach
- Identifying the test automation strategy
- Setting realistic expectations of automation
- Inadequate testing infrastructure

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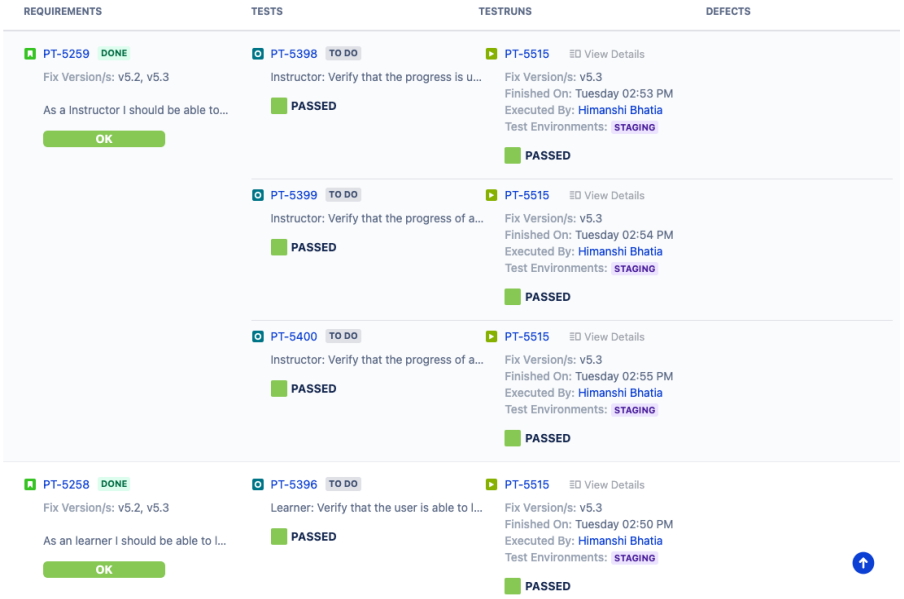
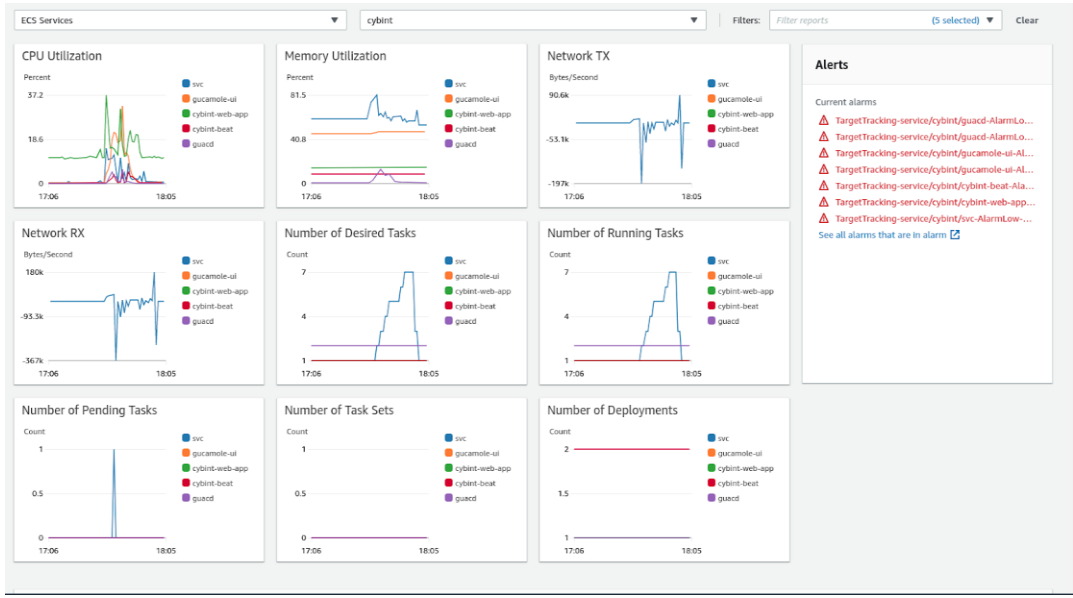
Current Status:

- Today the Company has grown a lot and also built partnership with different companies.
- Today the TFT team has complete business knowledge of the application and is actively involved in manual, automation and performance testing.
- TFT resources are part of the CTO office to define and configure process for the company.
- Now the platform is multi region compatible.
- We are always prepared for user load for upcoming year.
- We have full reports of infrastructure scalability.
- We have proper alerts for daily changes in infrastructure scale.
- We have proper traceability reports & matrices for all releases.

Traceability Report



Infra Report for Performance Test



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