## SUT DESCRIPTION

Upload domain area is chosen as SUT from eDp project stream. It is a combined feature to be verified, consists of multiple job states being executed. Uploads are running by groups of authorized users. Two major sub-flows exist for processing: documents file and load file uploads.

## Part 1

* Is it necessary to set up test automation processes for this SUT? Why?

eDp is considered as long-term project, planned to be liquid for 5+ years from customer side. In Epam it passed approximately 3 years for now.

eDp encapsulates variety of modules (20+), the substantial part of them currently have active development state and produces many issues, such as Undo work data, Undo meta data overlay, Placeholder support, Billing reports, Postback modules. This explained by high complexity and business logic of the project components. For automation these parts not recommended as not stable parts, which could have possible modifying changes in current future.

Meanwhile, the production or re-design of each new feature is significantly lifting up the costs of manual testing now. This affects critical path flow check and regression, as more tests should be running with increasing variety of scenarios and data sets. The test team is obligated to perform daily and weekly environment smokes as well. It’s obvious, automation of at least one of main components, as Upload processing would have help to speed up performing of routine tasks at the project.

eDp is released to Production monthly, regression cycles are being started each two iterations. Therefore, automation of critical path flows would have significantly decrease time of tests execution and exempt facilities on deep new feature and exploratory testing.

* What should/could be automated for this SUT? Why? How?

Multiple scenarios are advised for automation coverage in SUT. Uploads are produced by application’ users frequently, the functionality steps are quite stable and not expecting the change of the logic. These are the scenarios examples:

* Regular user uploading;
* Uploading with adding working data;
* Non-usual file types uploading;
* Uploading with OCR recognition of documents;
* Load file uploads with metadata;
* Load file replacing uploads;
* Load file republishing uploads.

In addition to, many P1 issues from the project could be included in automation check, as these issues areas attract steadfast attention from customer’s side. For example following parts could be covered:

* Load file uploads with family structure;
* Uploading with family structure and file tree structure;
* Uploading with deduplication of documents;
* Load file uploads with OCR recognition.

Currently at the project we are using Test Complete and SOAP UI PRO tools for performing most of UI and back-end automation with Keyword Driven Tests approach, Script testing, endpoints checks. These technics used depending on the specific feature implementation or complexity of application’s module.

For Production smoke test, we have initial .Net frame work developed for Selenium/WebDriver tools execution. On the perspective, we plan to integrate Selenium automation more widely, scale and update existing solution to cover most projects areas like uploading, productions, search, work data, doc list viewer, and reporting.

## Part 2

Simplified approach based on man-hours is used for calculating ROI rate (Return of Investments) for SUT automation. The formula is:

, where

*CM* – cost of manual testing (man-hours)

*I* – investments into automation (man-hours)

,

*FW* – time spent for implementing framework;

*S* – time spent for creating TA scenarios;

*E* – time spent for tests execution (human job);

*R* – time spent for results analyzing.

If we insert all the elements into the formula we will have following:

Cost of manual testing - (Framework scale/setup/update + Scenarios development + Execution test + Result analysis)

***ROI*** = ---------------------------------------------------------------------------------------------------------------------------

Framework scale/setup/update + Scenarios development + Execution test + Result analysis)

SUT that was chosen at eDp project has stable support perspective for 5+ years in future. Average time required for manual testing at the project is 20 man-hours per week. We have three manual testing effort in our team. Therefore, we calculate the cost of manual testing:

***CM*** = 20 man-hour per week \* 3 person\* 52 weeks \* 5 years = 15600 man-hours

We expect two testers being participated in framework development and scenarios creation. Estimated time effort for framework installation is 80 man-hours for 2 weeks. See the calculation below:

***FW*** = 4 man-hours per day \* 2 weeks \* 5 days \* 2 persons = 80 man-hours

Average estimate for test scenarios automation is:

***S*** = 4 man-hours per day\* 4.5 weeks \* 5 days \* 2 persons \* 4 months duration =

= 180 man-hours per month \* 4 month duration = 720 man-hours

Average estimate for test execution and results analysis is 3 man-hours per day for one person.

***E + R*** = 3 man-hours per day \* 1 person \* 5 days \* 5 years \* 52 weeks = 3900 man-hours

(15600 - (80 +720 +3900)) 15600 – 4700

***ROI*** = --------------------------------------- = ------------------ = 2.319

(80 +720 +3900) 4700

By calculation, we got positive ROI rate, which means that we do not expect material losses for automation project. Moreover, rate value has reached one point. This shows that project investment should totally pay off expenses. Along with that, the rate counts even more than two points, which shows that profits from investment (time saving) will count 132% for 5 years. In addition, we admit that manual execution costs threefold surpass automation effort investments in calculation, which is obvious time saving profit.

These marks considered as valuable arguments for starting automation of SUT.