The task if below:

Взять за основу SUT (system under test) текущего проекта

Предоставить ответы на следующие вопросы:

\* Нужно ли делать автоматизацию? Почему?

\* Что можно заавтоматизировать? Почему?

Если автоматизация на проекте уже есть:

Определить срок окупаемости автоматизации исходя из затрат на ручное и автоматизированное тестирование.

The solution:

Let’s analyze Elateral project where Automation is already in place.

What should be automated and why it’s needed?

Elateral is a quite difficult project with lots of QA environments, a couple of UAT and Prod environments and lots of features for testing. It’s **long-term** project that has recently celebrated 5th year birthday. It’s quite **stable system**, with lots of functionality and **repeatable tests** so Automation was really needed for project *to save money*, *to save time*, *to focus manual testing more on exploratory testing* as this type of testing defines quite tricky issues and finally improve the product.  
Some parts of functionalities could be **tested only by Automation** tests (e.g. API part, Performance tests) and UI parts are under automation as well.

Tests are running on TeamCity on servers that are used together with developer team. Mostly tests are executed at night so there are no conflicts with their usage so we can ignore these type of costs.

The formula to calculate ROI is the next:

**ROI = (Gain from Investment - Cost of Investment) / Cost of Investment**

where: Gain from Investment – cost of manual

Cost of Investment – cost of automation

Smoke tests are executed on QA and UAT environments quite often (12 times per month – average count). It’s minimum number of executions but with Automation it can be performed on daily basis for each deployment as part of CI. No doubts ROI for Smoke part is quite well. Let’s calculate ROI for Smoke tests, include here Framework Setup even for whole application, tests implementation and update, support, tests execution and results analysis.

Smoke tests analysis (1 year)

|  |  |
| --- | --- |
| **Project duration** | **12 months** |
| **Average manual testing cost** | **10 m/h per Smoke test** |
| **Framework Setup + CI configuration** | **120 m/h** |
| **Smoke tests implementation and its update** | **40 m/h per month (average)** |
| **Tests Support** | **12 m/h per month (average)** |
| **Automated test execution & result analysis** | **12 m/h per month (average)** |

Cost of manual = 10 \* 12 \* 12 = 1440 man hours.

Cost of Automation = 120 + 40 \* 12 + 12 \* 12 + 12 \* 12 = 888 man hours.

ROI = (1440 – 888) / 888 = 62%

We need to adjust this value as automation man hour = 1.3 \* manual man hour (in average). So finally we have:

ROI = (1440 – 888 \* 1.3) / (888 \* 1.3) = 25%

So we see that’s ROI is quite fine and it will grow in next years.

Of course we’re working with end-to-end scenarios that are executed not so often but in big time line it will have quite well ROI on the project. End-to-end scenarios are executed 2 times per month (average).

End-to-end tests (2 years)

|  |  |
| --- | --- |
| **Project duration** | **24 months** |
| **Manual end-to-end tests** | **64 m/h per one execution** |
| **Framework Setup + CI configuration** | **Included into Smoke tests part** |
| **End-to-end tests implementation and its update** | **48 m/h per month (average)** |
| **Tests Support** | **24 m/h per month (average)** |
| **Automated test execution & result analysis** | **8 m/h per month (average)** |

Cost of manual = 2 \* 24 \* 64 = 3072 man hours.

Cost of Automation = 48 \* 24 + 24 \* 24 + 24 \* 8 = 1920 man hours.

ROI = (3072 – 1920\*1.3) / (1920\*1.3) = 23%

To keep ROI high the team need to have right priorities and not try to automate all possible scenarios but do the progress accordingly:

1. Automate and support firstly more frequent scenarios;
2. Consider expensive scenarios for manual testing;
3. Involve into tests execution and analysis manual testers (to reduce costs).