**Предоставить ответы на следующие вопросы:**

**1 Нужно ли делать автоматизацию? Почему?**

**2 Что можно заавтоматизировать? Почему?**

1. Да, делать автоматизацию на нашем проект потому, что:

* длительный проект (уже длится более 5 лет)
* тесты выполняются довольно часто
* улучшить тестовое покрытие
* нужно поддерживать всегда транк в стабильном состоянии
* кастомер хочет автоматизацию

1. Заавтоматизировать можно следующее:

* Смоук тесты для всех вендоров (при выполнении мануально для большого количества вендоров очень время затратно – при автоматизации может выполнятся в несколько параллельных потоков)
* Core Features regression (чтобы ослабить нагрузку на мануальное тестирование и тем самым улучшить качество тестирования)
* Устойчивые Vendor Specific features (чтобы ослабить нагрузку на мануальное тестирование и тем самым улучшить качество тестирования)
* Testing API (Очень-очень трудозатрадно тестировать мануально)
* Performance testing (не протестируешь мануально)
* Тестирование в разных браузерах (при таком количестве кейсов не реально покрыть все браузеры мануально, приходится расставлять приоритеты)

**Estimations for Manual and Automation costs in Man/Hours**

**Assumptions:**

* **Builds are delivered twice a week (Smoke test each time)**
* **Regression once in sprint**
* **All estimations are based on real data for the features.**

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| --- | --- | --- | --- |
| **Sprint#** | **Features** | **Estimated Manual Costs** | **Estimated Automated Costs** |
| Sprint 1 | Groups  Vendor User | Set up framework 80 m/h | Planning 40 m/h  Requirements Analysis 10m/h  Test Cases Creation 3.5 m/h  Smoke tests 2.5 m/h  Feature Testing 4 m/h  Bug fixing 10 m/h  Test Reporting 10 m/h  Total: 80 m/h |
| Sprint 2 | Partner | Set up framework 80 m/h | Requirements Analysis 10m/h  Test Cases Creation 1.5m/h  Feature Testing 1.5m/h  Smoke tests 8 m/h  Regression 4 m/h  Bug fixing 10 m/h  Test Reporting 10 m/h  Total: 44 |
| Sprint 3 | Partner User | Test Cases Creation 7m/h  Smoke implementation/debug - 28 m/h  Regression implementation : 123 m/h  Execution&Analysis: 4 m/h  Total: 162 | Requirements Analysis 10m/h  Test Cases Creation 2m/h  Feature Testing 2m/h  Smoke tests 10.5 m/h  Regression 6 m/h  Bug fixing 10 m/h  Test Reporting 10 m/h  Total: 50.5 |
| Sprint 4 | Solr Search | Test Cases Creation 3.5m/h  Smoke implementation/debug – 3.5 m/h  Regression implementation : 49 m/h  Execution&Analysis: 4 m/h  Tests Support: 2m/h  Total: 61 | Requirements Analysis 10m/h  Test Cases Creation 3.5m/h  Feature Testing 3.5m/h  Smoke tests 12 m/h  Regression 10 m/h  Bug fixing 10 m/h  Test Reporting 10 m/h  Total: 59 |
| Sprint 5 | Tactics | Test Cases Creation 1m/h  Smoke implementation/debug – 3.5 m/h  Regression implementation : 21 m/h  Execution&Analysis: 4 m/h  Tests Support: 2m/h  Total: 31.5 | Requirements Analysis 10m/h  Test Cases Creation 1m/h  Feature Testing 1m/h  Smoke tests 13 m/h  Regression 11 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 52 |
| Sprint 6 | Brand pages  Campaigns | Smoke implementation/debug – 7 m/h  Regression implementation : 56 m/h  Execution&Analysis: 6 m/h  Tests Support: 4m/h  Total: 73 | Requirements Analysis 10m/h  Test Cases Creation 3m/h  Feature Testing 3m/h  Smoke tests 17 m/h  Regression 14 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 63 |
| Sprint 7 | Search on the Campaign page | Smoke implementation/debug – 3.5 m/h  Regression implementation : 31.5 m/h  Execution&Analysis: 6 m/h  Tests Support: 4m/h  Total: 45 | Requirements Analysis 10m/h  Test Cases Creation 1.5m/h  Feature Testing 1.5m/h  Smoke tests 19 m/h  Regression 15 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 63 |
| Sprint 8 | Cloud Storage  S3 Uploads | Smoke implementation/debug – 7 m/h  Regression implementation : 56 m/h  Execution&Analysis: 8 m/h  Tests Support: 6m/h  Total: 77 | Requirements Analysis 10m/h  Test Cases Creation 2.5m/h  Feature Testing 2.5m/h  Smoke tests 21 m/h  Regression 18 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 70 |
| Sprint 9 | Personal Content | Smoke implementation/debug – 7 m/h  Regression implementation : 122.5 m/h  Execution&Analysis: 8 m/h  Tests Support: 6m/h  Total: 143.5 | Requirements Analysis 10m/h  Test Cases Creation 8.5m/h  Feature Testing 8.5m/h  Smoke tests 24 m/h  Regression 26.5 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 93.5 |
| Sprint 10 | S3 Downloads | Smoke implementation/debug – 3.5 m/h  Regression implementation : 52.5 m/h  Execution&Analysis: 10 m/h  Tests Support: 8m/h  Total: 74 | Requirements Analysis 10m/h  Test Cases Creation 2.5m/h  Feature Testing 2.5m/h  Smoke tests 25 m/h  Regression 29 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 85 |
| Sprint 11 | Bulk upload | Smoke implementation/debug – 3.5 m/h  Test Cases Creation 3m/h  Regression implementation : 59.5 m/h  Execution&Analysis: 10 m/h  Tests Support: 8m/h  Total: 84 | Requirements Analysis 10m/h  Test Cases Creation 3m/h  Feature Testing 3m/h  Smoke tests 26 m/h  Regression 32 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 90 |
| Sprint 12 | Dynamic File conversion | Test Cases Creation 8m/h  Smoke implementation/debug – 3.5 m/h  Regression implementation : 150.5 m/h  Execution&Analysis: 10 m/h  Tests Support: 8m/h  Total: 180 | Requirements Analysis 10m/h  Test Cases Creation 8m/h  Feature Testing 8m/h  Smoke tests 28 m/h  Regression 40 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 110 |
| Sprint 13 | Image Conversion | Test Cases Creation 17m/h  Smoke implementation/debug – 10.5 m/h  Regression implementation : 245 m/h  Execution&Analysis: 12 m/h  Tests Support: 10m/h  Total: 294.5 | Requirements Analysis 10m/h  Test Cases Creation 17m/h  Feature Testing 17m/h  Smoke tests 32 m/h  Regression 58 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 150 |
| Sprint 14 | Download of Layered Files | Execution&Analysis: 14 m/h  Tests Support: 12m/h  Total: 26 | Requirements Analysis 10m/h  Test Cases Creation 2.5m/h  Feature Testing 2.5m/h  Smoke tests 32 m/h  Regression 60 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 123 |
| Sprint 15 | Deep Links | Test Cases Creation 3m/h  Smoke implementation/debug – 3.5 m/h  Regression implementation : 52.5 m/h  Execution&Analysis: 14 m/h  Tests Support: 12m/h  Total: 85 | Requirements Analysis 10m/h  Test Cases Creation 3m/h  Feature Testing 3m/h  Smoke tests 33 m/h  Regression 63 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 128 |
| Sprint 16 | Lightbox | Test Cases Creation 10m/h  Smoke implementation/debug – 7m/h  Regression implementation : 206.5 m/h  Execution&Analysis: 14 m/h  Tests Support: 12m/h  Total: 249.5 | Requirements Analysis 10m/h  Test Cases Creation 10m/h  Feature Testing 10m/h  Smoke tests 36 m/h  Regression 73 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 155 |
| Sprint 17 | Expiry Date | Test Cases Creation 7m/h  Smoke implementation/debug – 7m/h  Regression implementation : 115.5 m/h  Execution&Analysis: 16 m/h  Tests Support: 14m/h  Total: 159.5 | Requirements Analysis 10m/h  Test Cases Creation 7m/h  Feature Testing 7m/h  Smoke tests 39 m/h  Regression 80 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 159 |
| Sprint 18 | Content Variables | Test Cases Creation 3m/h  Smoke implementation/debug – 7m/h  Regression implementation : 59.5 m/h  Execution&Analysis: 16 m/h  Tests Support: 14m/h  Total: 99.5 | Requirements Analysis 10m/h  Test Cases Creation 3m/h  Feature Testing 3m/h  Smoke tests 41 m/h  Regression 83 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 156 |
| Sprint 19 | Production Partner | Test Cases Creation 6m/h  Smoke implementation/debug – 3.5m/h  Regression implementation: 122.5 m/h  Execution&Analysis: 16 m/h  Tests Support: 14m/h  Total: 162 | Requirements Analysis 10m/h  Test Cases Creation 6m/h  Feature Testing 6m/h  Smoke tests 42 m/h  Regression 89 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 169 |
| Sprint 20 | Saved Items | Test Cases Creation 2m/h  Smoke implementation/debug – 7m/h  Regression implementation: 45.5 m/h  Execution&Analysis: 18 m/h  Tests Support: 16m/h  Total: 88.5 | Requirements Analysis 10m/h  Test Cases Creation 2m/h  Feature Testing 2m/h  Smoke tests 45 m/h  Regression 91 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 166 |
| Sprint 21 | List Management | Test Cases Creation 2m/h  Smoke implementation/debug – 7m/h  Regression implementation: 49 m/h  Execution&Analysis: 18 m/h  Tests Support: 16m/h  Total: 92 | Requirements Analysis 10m/h  Test Cases Creation 2m/h  Feature Testing 2m/h  Smoke tests 48 m/h  Regression 94 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 172 |
| Sprint 22 | Order History | Test Cases Creation 2m/h  Smoke implementation/debug – 3.5m/h  Regression implementation: 42 m/h  Execution&Analysis: 18 m/h  Tests Support: 16m/h  Total: 81.5 | Requirements Analysis 10m/h  Test Cases Creation 2m/h  Feature Testing 2m/h  Smoke tests 49 m/h  Regression 96 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 175 |
| Sprint 23 | Authorization page | Test Cases Creation 2m/h  Smoke implementation/debug – 3.5m/h  Regression implementation: 42 m/h  Execution&Analysis: 18 m/h  Tests Support: 16m/h  Total: 81.5 | Requirements Analysis 10m/h  Test Cases Creation 2m/h  Feature Testing 2m/h  Smoke tests 52 m/h  Regression 98 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 180 |
| Sprint 24 | Ad Rotator | Test Cases Creation 1m/h  Smoke implementation/debug – 3.5m/h  Regression implementation: 28 m/h  Execution&Analysis: 20 m/h  Tests Support: 18m/h  Total: 70.5 | Requirements Analysis 10m/h  Test Cases Creation 1m/h  Feature Testing 1m/h  Smoke tests 53 m/h  Regression 99 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 180 |
| Sprint 25 | Batch Edit | Test Cases Creation 21m/h  Smoke implementation/debug – 21m/h  Regression implementation: 444.5 m/h  Execution&Analysis: 20 m/h  Tests Support: 18m/h  Total: 524.5 | Requirements Analysis 10m/h  Test Cases Creation 21m/h  Feature Testing 21m/h  Smoke tests 61 m/h  Regression 121 m/h  Bug fixing 8 m/h  Test Reporting 8 m/h  Total: 250 |
| Sprint 26 (stabilization) |  | Smoke  Execution&Analysis: 25 m/h  Tests Support: 22m/h  Total: 47 | Smoke tests 61 m/h  Regression 121 m/h  Bug fixing 20 m/h  Test Reporting 20 m/h  Total: 222 |

Manual Costs = Manual Costs/26/2 ~ 62.5 m/h per week

Automation test development costs:

* framework set up = 160 m/h
* tests development = (Tests adapt+Smoke dev+Regression dev+Tests Support)/ 24/ 2 = 2681.5/ 24/ 2 ~ 56 m/h per week
* Automated test execution & result analysis = 309/ 24/ 2 ~ 6.5 m/h per week

Project duration - 1 year

Manual testing cost: 62.5 man-hour per week \* 1 year \* 52 weeks = 3250 man-hours

Automated tests development cost: 160 man-hours setup framework + 56 man-hours per week scenario development \* 0.9 year \* 52 = 2621 man-hours

Automated test execution & result analysis: 6.5 man-hours per week \* 0.9 year \* 52 = 304 man-hours

ROI = (3250-(160+2621+304))/(160+2621+304) ~5.3%

More accurate calculation:

ROI = (3250-(160+ 2681.5+309))/(160+2681.5+309) ~3.1%

Conclusion: automation testing is profitable, whereas not so much to be 100% sure as there could be another factors which may affect costs, for example team experience.