



## INTERNSHIP REPORT

Leon Fernandes

2016

# **REPORT OF INTERNSHIP DONE AT INFUSE CONSULTING**

**SUBMITTED BY**

**LEON FERNANDES**

**2016**

**UNDER THE GUIDANCE OF**

**MR. SUBODH BORKAR**

**(Head of Product Development, useMango, Infuse Consulting)**



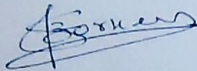
2<sup>nd</sup> June 2023

**INTERNSHIP CERTIFICATE**

This is to certify that **Leon Ryan Fernandes**, Roll No. 2016, currently pursuing the 6th Semester of the MCA program in the Computer Science and Technology discipline at Goa Business School, Goa University, has been actively engaged as an intern with our organization since January 9th, 2023. During his internship, he has consistently displayed exemplary performance by successfully accomplishing assigned tasks and other related responsibilities.

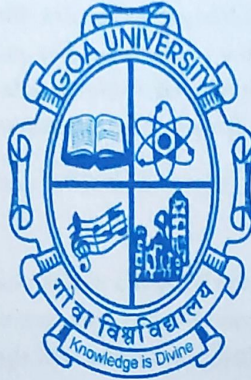
Leon exhibits a strong sense of self-motivation and requires minimal supervision to effectively complete his assigned tasks. He has demonstrated remarkable aptitude for swiftly acquiring the required domain knowledge and mastering the necessary technologies. His rapid learning pace has greatly contributed to the overall productivity and successful delivery of the team.

Yours Sincerely,



Subodh Borkar,  
Head of Product Development - useMango

## GOA UNIVERSITY



## GOA BUSINESS SCHOOL

### CERTIFICATE OF EVALUATION

This is to certify that Mr. Leon Fernandes has been evaluated for the project work titled **"Report of Internship done at Infuse Consulting"** in partial fulfilment for the award of the degree in Master of Computer Application.

Examiner 1

Examiner 2

Place: Goa University

<sup>14<sup>th</sup></sup>  
Date: June 2023

Dean, Goa Business School



## Acknowledgement

The internship opportunity I had with Infuse was a great chance for learning and professional development, especially to have so many wonderful people leading me throughout this period. The internship wouldn't be complete without expressing my gratitude and appreciation to all the people who made it possible.

I would like to thank Mr. Nalin Parbhu (CEO/CTO, Infuse Consulting) for giving me the opportunity to intern at Infuse.

My sincerest gratitude to Mr. Subodh Borkar (Head of Product Development useMango, Infuse Consulting) for being my mentor and giving me necessary advice and guidance. I choose this moment to acknowledge his contribution gratefully.

My great appreciation to Mr. Piyush Sharma (Product Engineer, Infuse Consulting) who in spite of being extraordinarily busy with his duties, took time out to hear, guide and keep me on the correct path and allowing me to carry out my tasks during the internship.

I thank all the faculty and staff at the MCA, Goa University for their constant encouragement and support during the entire course work.

I would like to thank my family and friends for all the love, support and encouragement they provided me during this internship which will never be forgotten.

Finally, I would like to express my gratitude towards the Infuse family, especially my seniors Delroy Martins, Imtiyaz Khan, Vinay Prabhu, Joyrel Vaz, Rochelle Martins, Minaxi Patil, Onkar Parshekar, Preshly Fernandes who were always ready to help me and guide me. Also, I would like to thank my internship colleagues for helping me to learn new things and always supporting me during this period.

I perceive this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement.

- Leon Fernandes



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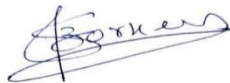
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## Introduction

This report is a short description of my full-time on-site internship at Infuse.

I joined as an Intern at Infuse Consulting on 09<sup>th</sup> January 2023 and have been here since then. This report contains necessary information about the organization, the projects I worked on and the other tasks I completed in this internship period.

In the chapters that will follow, I will talk about the company, the work here, the culture, etc. Then, I shall elaborate on the projects I worked on, a brief information about the projects, the modules I built and the tasks I completed in those modules.

This report highlights my learning experience and my contributions to the organization as an intern. This will describe the knowledge that I gained by successfully completing the tasks that were assigned to me.

I'll also discuss the tools and technologies that were used, as well as the timeframe for my internship. Finally, I'll talk about my experience and how it has helped me grow both personally and professionally.



## Company Profile



### About Infuse Consulting

Infuse Consulting is an international company and leverages strategic consulting partners as well as its technology partners to deliver the best solution.

Recognized as the leading provider of Test Automation and Lifecycle Transformation Services for successful, ambitious organizations, Infuse Consulting is headquartered in the UK and since 2002 has helped more than 500 businesses get the most out of their Software Delivery Teams.

Infuse Consulting works hard in the fields of Test Automation and DevOps to reliably deliver several clear benefits for organizations seeking assistance with their Software Delivery.

Infuse is a Gold Partner of Micro Focus and Oracle, and has a partner network including CA, Microsoft, AWS and SAP.

Infuse prides itself on its ability to provide innovative solutions, especially in test automation. They have been automating mobile testing since 2003 and developed a functional scriptless test automation tool, useMango™.



## What is useMango?

- Easy to use Test Automation Tool.
- Designed so non-technical individuals can build robust automation scripts.
- Flexible framework functionality that can be adapted to match your testing ability.
- Avoids the costs of engineering your own high maintenance frameworks.
- You can use useMango to create automated tests for web and packaged applications such as Oracle and SAP.

## What are the key benefits of using useMango?

- Component based test building removes the need for technical developers.
- Reduce months of manual testing into minutes.
- Fast ROI, allowing you to focus on business-critical issues.
- Increase confidence in your continuous delivery output with automated end to end testing.
- Enable Continuous Delivery by adding automated end-to-end testing of your build pipelines

## About useMango

With useMango tests are quicker and more efficient, saving businesses time and money. With useMango you can build a test by selecting from 200+ pre-built components, just add data and it is ready to run. If you have problems with forms, or complicated pages useMango provides an easy solution, you can activate the useMango scanner to scan your application, with a single click, this will identify all the testable objects on any UI and create a new component. If you need to create a custom component, useMango provides you the means to do so. A software tester can complement the useMango generated scripts with custom code, using in-built frameworks made with Ruby, VBScript, Python etc.

## Other Key Features

- Works on modern web & desktop applications.
- Codeless test tool & framework.
- Extended to support Package Applications SAP (GUI and Web Variants), Oracle E-Business, Oracle Fusion.
- Ensure application quality with fast and frequent testing.
- Test processes from end-to-end across multiple platforms and technologies.
- Business users and manual testers can automate tests without coding.
- Easily keep hundreds of tests up to date as your application changes over time.
- Expand the scope of your testing with data-driven tests.
- Meet exceptional automation requirements with simple scripted components.
- A scalable cloud-based test service which meets your growing needs.
- Get automated test outcomes directly in your continuous integration pipelines.
- Integrates with your modern continuous integration tooling.

## Product – UseMango

### Overview

UseMango is a windows application which has several different architectural structures, from the server to website and common libraries that contain shared code. UseMango is maintained and developed by the Infuse team and has customers worldwide.

### Tools and Technologies

- C#
- .NET framework
- WPF
- Ruby
- Python
- JavaScript
- React JS
- AWS
- Postman
- Git
- MongoDB



## My Contributions

At the beginning of my internship, we focused on familiarizing ourselves with the useMango product and the technologies employed by the company. Once we became comfortable with the useMango app, we were assigned a task to explore its features, write tests, execute them, and report any issues or bugs encountered during the exploration process. We were also encouraged to provide suggestions on how to enhance the user-friendliness of useMango and propose additional features we would like to see in the tool. We compiled our findings and feedback into a comprehensive report, which we then shared with our mentor. Upon the completion of my training, I was assigned to a research team consisting of four members. Our primary objective was to investigate the feasibility of incorporating a self-driven testing feature into useMango, with the ultimate goal of making it a fully autonomous tool. To initiate the research process, we started by identifying potential methods and conducting brainstorming sessions to generate innovative ideas that could help us achieve this ambitious aim.

Following my previous assignment, I was assigned to a team of two to build an ROI (Return on Investment) calculator for the useMango website. To begin the task, we conducted thorough research to gain a deeper understanding of what an ROI calculator entails and its significance. We also identified the specific requirements put forth by the stakeholders. To ensure we were aligned with their expectations, we engaged in meaningful discussions with the stakeholders, seeking their insights and guidance on the design and functionality of the calculator. By actively involving the stakeholders in the process, we aimed to develop a calculator that effectively addressed their needs and provided valuable insights into the return on investment for the useMango platform.

After gathering requirements from stakeholders for the ROI calculator, our team proceeded to conduct research on similar tools implemented by useMango's competitors. We studied the ROI calculators offered by these rival products, analyzing the parameters they used for their calculations. By examining their approaches, we aimed to gain insights into industry best practices and identify potential areas for improvement in our own implementation.

Additionally, we paid close attention to the UI (User Interface) designs of these competitor calculators. We sought inspiration and valuable insights from their UI layouts, considering user-friendliness and intuitive design elements. By studying their UI approaches, we aimed to create a visually appealing and user-centric experience for the useMango ROI calculator.

After conducting research on competitor ROI calculators and gathering insights on UI design, our team shifted our focus to formulating the necessary formulas for our useMango ROI calculator. We delved into understanding the specific calculations and mathematical models employed by industry leaders and competitors.

We examined various factors considered in ROI calculations, such as initial investment, expected returns, timeframes, and potential risks. Through thorough analysis and consultations with subject matter experts, we carefully crafted formulas that accurately represented these factors and provided meaningful results.

To ensure the calculator's reliability and accuracy, we rigorously tested the formulas against different scenarios and real-world examples. We also took into account any feedback received from stakeholders and made necessary adjustments to enhance the calculator's performance and precision.

By dedicating time and effort to research and formulate the appropriate formulas, we aimed to deliver a reliable ROI calculator within the useMango website that would assist users in making informed decisions and evaluating the potential returns on their investments. Finally, leveraging the power of React and JavaScript, our team successfully built the ROI calculator for useMango.

As part of my contribution, I focused on developing the backend code of the calculator. Using my proficiency in programming languages, I implemented the necessary logic and functionality to ensure seamless calculations and accurate results.

By incorporating insights from our research on competitor tools and UI designs, we were able to develop a comprehensive and user-friendly ROI calculator for the useMango website.

In my final assignment, I was assigned to a client project with Solent University. The client, a UK-based university, was transitioning their student management system to a new software called SITS:Vision by Tribal. My role in this project was as a tester, responsible for thoroughly testing the application developed by the Solent developers.

To ensure a comprehensive understanding of the client's system, our team conducted walkthrough sessions with them. This allowed us to gain insight into the functionality and workflow of their existing system, which helped me create effective test cases.

Using the information gathered, I diligently wrote test cases covering various scenarios and functionalities of the new STUDENT INFORMATION SYSTEM. I executed these test cases, meticulously examining the software for any potential bugs, glitches, or inconsistencies. When issues were identified, I promptly reported them to the development team, providing detailed information and steps to reproduce the bugs.

By fulfilling my role as a tester and actively collaborating with the client, I contributed to the smooth testing and quality assurance of the new system. Through my efforts, the Solent University project aimed to deliver a robust and reliable student information system that would enhance the university's student management processes.

## Tools and Technologies Used



### C#

C# is a general-purpose, modern and object-oriented programming language. It was developed by Microsoft led by Anders Hejlsberg and his team within the .Net initiative.



### .NET Framework

The .NET Framework is a software framework developed by Microsoft that runs primarily on Microsoft Windows. It includes a large class library called Framework Class Library and provides language interoperability across several programming languages.



### WPF

Windows Presentation Foundation is a UI framework that creates desktop client applications. WPF uses the Extensible Application Markup Language (XAML) to provide a declarative model for application programming.



### Ruby

Ruby is an interpreted, high-level, general-purpose programming language. It was designed and developed in the mid-1990s by Yukihiro "Matz" Matsumoto in Japan.

## Python

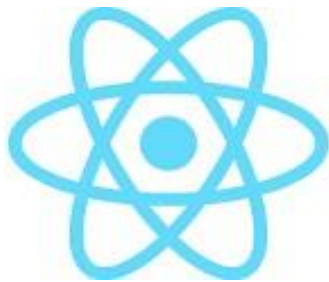


Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its built-in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting language.



## JavaScript

JavaScript is a lightweight, interpreted, object-oriented language with first-class functions, and is best known as the scripting language for Web pages, but it's used in many non-browser environments as well.



## React JS

React is a free and open-source front-end JavaScript library for building user interfaces based on UI components. It is maintained by Meta (formerly Facebook). Although React is a library, it is widely used in web development. React makes it painless to create interactive UIs.



## AWS

Amazon Web Services is a subsidiary of Amazon providing on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered pay-as-you-go basis.



## Postman

Postman is an API platform for building and using APIs. Postman simplifies each step of the API lifecycle and streamlines collaboration so you can create better APIs—faster.





## Git

Git is a distributed version-control system for tracking changes in source code during software development. It is designed for coordinating work among programmers, but it can be used to track changes in any set of files.



## MongoDB

MongoDB is a non-relational document database that provides support for JSON-like storage. The MongoDB database has a flexible data model that enables you to store unstructured data.

## Certifications Completed under Internship



## Project timeline/Project diary

### January 2023

- Week 1
  - Formal Orientation and onboarding process.
  - Introduction to useMango.
  - Exploring features of useMango.
  - Automated a test using the product.
  - Environment and tools set up for development.
- Week 2
  - Introduction to Programming with Ruby
  - Ruby Program Exercises
  - Introduction to HTML, CSS, JS & DOM
  - Exercises
  - Introduction to Automation
  - Introduction to Selenium
  - Selenium Exercise
  - Introduction to Git & source code management
  - Exercises
  - Introduction to Containerization and Docker
  - Exercises
- Week 3
  - Workshop introduction + Sample solution
  - Workshop: Build a basic containerized testing framework for a practice website
  - Demo of work shop
  - CI & CD pipelines (with Jenkins)
  - Exercises
  - Workshop: CI & CD
  - Programming in Python
  - Exercises

### February 2023

- Week 4
  - Introduction to Webservice architecture
  - Python Webservice Framework
  - Exercises
  - Workshop: Build WebService
  - Workshop: WebService Unit Testing + API Testing
- Week 5
  - Workshop:  
Involves the use of entire set of skills learned so far. For a given a problem statement

expected to design, develop and test solution. This was under the guidance of team mentors.

- Workshop review + fixes
- Week 6
  - Introduction to AWS Services
  - Workshop project manual deployment to AWS
  - Infrastructure as Code
  - Workshop project automated deployment on AWS
  - Teams demo project To Head of Training
- Week 7
  - Hosting demo project on AWS using EC2, S3 Bucket, Lambda function

## March 2023

- Week 8
  - Preparation for ISTQB Certification Exam
- Week 9
  - Answering ISTQB Certification Exam
- Week 10
  - Introduction to Jira Xray plug-in
  - Demo on writing testcases on Jira
- Week 11
  - Assigned to Research team for Self-driven feature for UseMango
- Week 12
  - Assigned task to build ROI calculator for UseMango website
  - Research on ROI calculator
  - Research on ROI calculator build by UseMango competitors

## April 2023

- Week 13
  - Formulating formulas for ROI calculator.
  - Building Demo ROI calculator
- Week 14
  - Building backend using JavaScript.
  - Integrating backend to front end (react)
- Week 15
  - Assigned to Client Project (Solent University)

- Introduction to Project and our objective for this project
- Reading reference materials to gain insight on project
- Walkthrough session on SITS client
- Reading Reference materials to gain insight SITS Client

- Week 16
  - Training sessions on testing

May 2023

- Week 17
  - Walkthrough session by Solent team
  - Access provided to client software
  - test cases preparation / writing test cases
- Week 18
  - Walkthrough session by Solent team
  - test cases preparation / writing test cases / Executing test cases
- Week 19
  - test cases preparation / writing test cases / Executing test cases
- Week 20
  - Walkthrough session by Solent team
  - test cases preparation / writing test cases / Executing test cases
- Week 21
  - test cases preparation / writing test cases / Executing test cases

## My Reflections / Experiences of Internship

My internship at Infuse Consulting has been an incredible experience. The dynamic nature of the work environment means that I face new challenges every day, which has helped me grow both personally and professionally. The company fosters a culture of continuous learning, and I have developed an insatiable appetite for acquiring new knowledge and skills.

One of the standout aspects of my internship at Infuse is the strong sense of support and collaboration. I have never felt alone as I have had the freedom to interact, consult, and seek guidance from my colleagues. This open and inclusive culture has greatly contributed to my learning and growth throughout the internship.

Working on an actual product within the industry has been immensely beneficial for my learning journey. I have gained valuable experience and knowledge in software development, clean code architecture, and writing efficient code. Infuse has provided me with the opportunity to try out new concepts and ideas, and see them implemented in the product. This hands-on experience has allowed me to continuously explore and learn new things each day.

Overall, I am extremely grateful to be a part of the Infuse team and for the wealth of new experiences and knowledge I have gained during my internship. I extend my best wishes to everyone at Infuse as they continue to thrive and succeed.

## References

<https://docs.aws.amazon.com/> <https://docs.microsoft.com/en-us/dotnet/csharp/>  
<https://docs.microsoft.com/en-us/dotnet/api/> <https://docs.microsoft.com/en-us/dotnet/desktop/wpf/> <https://www.ruby-lang.org/en/documentation/>  
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<http://docs.usemango.co.uk/>