**1.0 Introduction**

The website “Data to Intelligence” is designed to ease the data science exploration, analysis and visualization for researchers not familiar with web programming and common statistical tools. The goal of this project is to allow data analysts, researchers or scientists to have a platform where they can upload data and “bring it to life”.

The applications backend is built with Python and MongoDB. The front-end is developed with JavaScript along with D3.js libraries. The solution utilizes these high-level technologies and presents them in a way that is user friendly and interactive. This solution provides a more cost-effective alternative to the paid solutions that exist. The “Data to Intelligence” website provides a one stop shop for individuals or small organizations, to easily upload and understand their data, while using statistical and visualization tools to find different ways to make sense of it.

When it comes to data exploration, there is a high learning curve for researchers and data analysts to turn raw data into useful information. Currently, there are very few options to visualize data, most of which are paid options. Some of the existing solutions are Power BI, SAS Forecasting, and erwin Data Modeler. What these solutions have in common is that the licensing fees are very expensive and not always accessible to the average consumer. The other option is to use statistical languages for analysis such as Python. The issue with this is that building a custom solution comes with a high level of difficulty; the average user does not have the expertise and knowledge to build their own solution. As a result, researchers are left with limited options for data analysis tools.

The success factors of this website must be well defined to satisfy the requirements and seamlessly made it deliverable to the client. For this project to succeed, the website must:

* Be able to develop in Linux Ubuntu environment, version 21.04
* Be able to utilize Python libraries for development, version 3.8.5
* Be able to use Flask to deploy JavaScript Frameworks, version 2.0.1
* Be able to run MongoDB database to store unstructured data, version 4.4.5
* Be able to design and visualize the look and feel using D3.js and DC.js libraries, version 7.0.0
* Be able to securely obtain data in correct format and verify the integrity of the data
* Be able to manipulate and massage the data efficiently
* Be able to dismantle the data exactly 24 hours after uploading, in respect of privacy
* Be able to implement at least ten different types of visualizations from Python libraries to different types of data
* Be able to perform business analysis and regression analysis for its scalability
* Be able to incorporate functionality to extract data into .pdf files or webpages
* Be able to allow users to view all code issues/resolutions related to the development process of the project through developer sections from the development team

Chapter 1 of this report is comprised of the introduction, which consists of the purpose, background information, as well as the goals of the Data2Int project. Chapter 2 contains an in-depth analysis of the various designs and implementations considered for this project. Chapter 3 consists of a detailed overview of all the visualization elements and data analysis techniques being utilized for the final design. Chapter 4 covers the verification process of the various visualizations and data analysis techniques finalized in chapter 3. Chapter 5 details the changes made to the original design during the website deployment and regression testing stages. Chapter 6 compares the results of our regression testing and verification stages to the original project criteria and design. Additionally, it provides recommendations for future updates to the website. Chapter 7 concludes the report with a summary of our research findings and results from our website deployment.

With the implementation of this new website, it will serve as a knowledge base for data analysts, researchers, and grad students writing their theses. This tool will be offered at no cost, providing a more financially accessible option for researchers that may be working on a lower budget and cannot afford proprietary tools. As a result, their work of consolidating their data will be significantly shorter and less cumbersome. In addition, this report will also act as a guide for both data analysts and developers who are seeking to build their own data analytic solution.

The scope of this project is the research, UI implementation, database integration, CSV data processing, data visualization, user-data interaction, real time data analysis dashboards, dashboard extractability, documentation of each stage, source code for all data analysis and visualizations. Instruction set for recreating visualizations and data models, testing documentation, project overview documents, operation manuals. The website design and layout are not in the scope of this project as it was already provided by the client as a bare bones template.