**National College of Ireland**

Software Project

Project Proposal

**Country’s Economy Monitoring & Management**

**Dashboard**

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**BSc (Honours) Computing - Year 4**

**Specializing in Data Analytics**

**(2019 - 2020)**

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# Objectives

The objective of the project is to develop a dashboard application that monitors, analyze and manage a country’s economy. The software application should provide a visualization that will give an insight of how the country is doing. The application should also provide descriptive, diagnostic, predictive and prescriptive analysis.

The application should assist government, leaders and policies maker to monitor and manage the country.

# Background

Technologies are becoming a part of people’s live. The world is more connected than ever. With information technologies used in all areas of industries, there are tons of data out there to be analyzed and use it to solve problems in all areas of life.

This project will look at how Data Analytics can be applied to help improves people’s quality of life and standard of living. One of the biggest factor is how the country is being managed by leaders and governments. This project will focus on assisting leaders and governments in Ireland to help manage the country by applying Data Analytics and Software Development.

This project taps into all the available data about a Ireland; data includes economic data, business data, census, market data, resources data etc. These data sets will then be analysed, processed and combined to produce descriptive, diagnostic, predictive and prescriptive analysis.

# Technical Approach

## Approaches

This project will be using the KDD process. The first step is to gather the available data sets. The data sets will likely be extracted from a website : <https://data.gov.ie/>. This website *“is intended to provide easy access to datasets that are free to use, reuse, and redistribute.”* (data.gov.ie [Access 2019]). The data sets that are available includes Ireland’s data in the area of environmental, society, economy, health, government, housing, transport, science, education and sport, agriculture, energy, arts, towns and crime.

The second step is to review the data collected and clean it. This step is called Data Cleaning. This is where the the student (the project owner) removes irrelevant data and clean it from the collection (Rajput, 2019).

The third step is to combine multiple sets of data from different sources. The sets of data could be from different areas or domain.

The next step is data selection. This is where data is decided and retrieved in relevance to the analysis. Then Data is being transformed into appropriate requirement; this process has two steps; data mapping and code generation (Rajput, 2019).

The final step is Data Mining, which is a technique that are used to extract patterns potentially useful. Then these processed data are then used to generate reports and visualization about the country's economy. (Rajput, 2019)

# Technical Details

The technologies that will be use for this project is R and Python.

According to Python.org (2019), Python is an interpreted, object-oriented, high-level programming language. Python's syntax makes it easy to read and maintain a program. Python has thousands of libraries which focuses in all areas of industries.

Plothly.py (Plot.ly.2019). is an open-source, interactive graphing library for Python. It supports over 40 unique chart types covering a wide range of statistical, financial, geographic, scientific, and 3-dimensional use-cases. This library will be use for developing the interactive dashboard for the application.

R is a language and environment for statistical computing and graphics. R provides a wide variety of statistical and graphical techniques, and is highly extensible (R-project.org. 2019).

R and Python will be used side by side for this project.

# Evaluation

**Backend Testing**

The database will be tested to make sure data are being stored when users inputs data.

**Graphical User Interface Testing**

For Graphical User Interface Testing, the dashboard will be tested to make sure that the dashboard is interactive. Menus, button and input field will be verified according to the GUI mockup screens.

**Integration Testing**

For this project, multiple technologies will be integrated such as api, libraries and two programming languages ; R and Python. The testing will verify and test that all different technologies work properly as one system.

**Load Testing**

A huge amount of data will be loaded to the application to test how much data the application can take without crashing.

**Data Integration Testing**

The objective for this test is to test that data extraction is extracted completely. It also involve testing the Application's Data filtering mechanism and transformation logic.

**Analytics Testing**

This test involves testing the predictive models and its accuracy.

**Visualization Testing**

Visualization Testing involves evaluating the data insights and making sure that the application is displaying charts, graph and representation properly.

**Other Evaluation**

Other datasets from other countries will also be tested to see if the application provides an accurate output compare to the project’s chosen country, Ireland.

#### Bibliography

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