# Business Understanding.

MTN( Mobile Telephone Networks) is a South African multinational mobile telecommunications company with its services operating in many African, European and Asian countries. As of 2020, MTN recorded 273.44 million subscribers making it the ninth largest mobile network operator in the world.

In Ivory Coast, the subscriber base has grown to around 12 million mobile phone and internet subscribers. With the increase in the number of subscribers, MTN wants to upgrade its technology infrastructure for the growing number of users in Ivory Coast.

## 1.1 Business Objective

The main objectives of this data report are:

1. Which are the most used cities.
2. Which cities were the most used during business and home hours
3. Which city was mostly during the three days.

## 1.2 Business Project Plan

In order to achieve the objectives, we are going to perform an analysis of the users during the three days and look on how we can upgrade the telecommunication services.

## 1.3 Business Success Criteria

To analyse the dataset to find strategies to be used during the upgrade of the technology infrastructure for it’s mobile users.

## 1.4 Assessing the Situation

1. Task 1 - Research Hardware Resources

1. Datasets:

* cells\_geo\_description.xlsx [[Link]](https://drive.google.com/a/moringaschool.com/file/d/1-rIM5ihDu79RaH7rAs-d-7SQSAQhrY9N/view?usp=sharing)
* cells\_geo.csv [[Link]](https://drive.google.com/a/moringaschool.com/file/d/1ABZux280OjL3yWcOn8BDA_f5QsyO0QPU/view?usp=sharing)
* CDR\_description.xlsx [[Link]](https://drive.google.com/open?id=1cVoNXl25IO5-_yQk97ThdeqhE6yw8YTD)
* CDR 20120507 [[http://bit.ly/TelecomDataset1]](http://bit.ly/Telcom_dataset1)
* CDR 20120508 [[http://bit.ly/TelecomDataset2]](http://bit.ly/Telcom_dataset2)
* CDR 20120509 [[http://bit.ly/TelecomDataset3]](http://bit.ly/Telcom_dataset3)

1. Software( Github, Google Collaboratory)
2. Hardware ( Lenovo laptop)

2. Task 2 Assumptions

1. The data provided is accurate.
2. The data provided is from three days

3. Task 3 - Constraints

1. The constraints are the merging of the three datasets.

# 2. Data Mining Goals

The main goal while data mining is to find out the services that were most used in the city for the past three days so that the company knows which products to continue providing to the customers. In addition, the data mining goal is also to find the busiest city in the three days. All these will be achieved after working on the dataset.

## 2.1 Data Understanding Overview

## 2.2 Verifying Data Quality

The Dataset from the three days had a few missing values which I replaced with zeros(0) so that they could be easier to work on.

# 3. Data Preparation

In order to prepare the data for analysis, I took the following steps.

1. Downloading datasets from the CSV to my local machine.
2. Cleaning of the data by removing duplicates, null values and converting the categorical data to numerical.
3. Merging of the datasets from the 3 days
4. Splitting the ‘date\_time’ field to the respective days, hours and minutes.
5. Removing the unwanted columns
6. Sorting of the columns according to the service used; ‘voice’, ‘data’ or ‘sms’

# 4. Analysis

During our analysis, we were able to get the following insights;

1. There were more voice users over all the services
2. Country of Part A had more users over the three days
3. An increase in the allocation of sites would result in an increase in the infrastructure.

# 5. Recommendations

In order to upgrade the technology infrastructure, we should increase the allocation of cell towers to parts of the country that had more services run on satellite positions.