## **Programming Challenge:**

The coding test is to build an Analytics Dashboard supported by REST Api and Database. There is no time limit.

## **Expected:**

1. Implementation of the code using best practices like SOLID principles, design patterns and TDD or BDD.
2. The approach and design decisions made during the development of the solution will be discussed in the next steps of the process.
3. Code and Design should be scalable to allow any future commodities, models and metrics.
4. This solution should be returned in full.

## **Database**

Use SQL Database for persistence with Entity Framework Core.

Create a relational database and store the data provided in ModelResults.xlsx file organized into relevant tables with keys adhering to database design standards.

## **C# REST API**

Create a REST API using .net core version 2.1+

The API should serve below purpose:

* Return data to serve all the charts, table and any other data to the UI
* Handle any logic to create derived metrics.

## **Angular Front End**

Front End should be created in Angular 7+. Any libraries like Bootstrap, high charts, ag grid can be used.

The dashboard should allow the following functionality. Please design the solution catering for various users like (E.g.: Management, Traders, Developers, Data Scientists etc):

1. **Display key metrics.** Use your experience to Identify the best way to display the key metrics for the users. E.g., group related metrics or highlight certain metrics etc. **Please show at least two of these metrics.**
   * Market/Commodity
   * Model
   * Current Position – Tonnes/Lots
   * Var Allocation – configure a fixed value per model and commodity (shouldn’t be hardcoded)
   * PnL Daily
   * Price
   * Any other derived metrics –
     + PnL YTD – Cumulative Sum of Daily PnL in the year
     + PnL LTD – Cumulative Sum of Daily PnL since first date in the Model Results.
     + DrawdownYTD - Is derived by subtracting the current PnLYTD from PeakValue of PnLYTD
2. **Display historical trend of the metrics using charts**. Allow any interactive options on the charts for better analytics. Below metrics can be displayed in multiple charts or combine 1 or more timeseries into 1 chart if you believe the metrics can be better analysed together. **Please show at least one of these charts**
   * Historical PnL
   * Historical Position
   * Drawdown timeseries
3. **Display last 5 days history of the key actions in a grid /html table**

Allow filtering option by Model and Commodity.

* + Model
  + Commodity
  + New Trade Action – Tonnes/Lots

## **TDD/BDD**

Code should be supported by any associated Unit tests/Jasmine tests.