**HAPPINESS INDEX**

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| **HAPPINESS INDEX** | | | | | |
| **Level** | **Metric** | **Details** | **Calculations** | **Weight** | **Total of Index** |
| 1- Tweets coming in from customers | Sentiment analysis | Median**~** | Descriptive statistics | 50% | 60% |
| Mean | 25% |
| (Neg.) St. Dev.**^** | 25% |
| 2- Response to level 1 from First Group | Response time | Benchmark: 40 minutes**\*** | R = 40 mins -> 0  R < 40 mins -> 2  R > 40 mins -> -4  R < 20 mins -> 4  R > 20 mins -> -2 | n/a | 20% |
| 3- Feedback from customers based on level 2 | Feedback from customers | Negative or positive | Positive -> 4  Negative -> -2 | n/a | 20% |
| **Happiness Index =**  **[((median\*0.5) + (mean\*0.25) + ((-)variance\*0.25))\*0.5] + (average response time\*0.2) + (overall sentiment of feedback\*0.2)** | | | | | |
| **\****Benchmark to be set by client*  **^** *St. dev. presented as a negative, as higher variance means higher discrepancy within the data (undesirable)*  **~** *Median used to illustrate sentiment with highest frequency as mean can be distorted by outliers* | | | | | |

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| **Level of measurement** | **Interaction** |
| Personal | Data from specific customers is used to increase happiness index |
| Train specific | Train specific data is used to increase overall happiness index for train x |
| Network | Network data is used to identify issues across the network and increase happiness index across fleet |

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| **DELIVERABLES SUMMARY** | | |
| **Type** | **Title** | **Description** |
| **Happiness Index** | Sentiment Analysis | Overall sentiment distribution of tweets at specified times in regards to specific trains |
| Text Mining- Wordcloud | Text Mining presented as a wordcloud to identify key messages from tweets |
| Operational data | Train network data to identify possible disruptions, delays and missed connections in order to be proactive in regards to customers’ needs |
| Feedback | Sentiment Analysis of customer feedback at specified times in order to identify an increase/decrease in sentiment from point A to point B. In addition, time taken to respond will be recorded. |
| **Secondary Deliverables** | R | Statistical programming software used for sentiment analysis and text mining |
| Social media software | Social media software with sentiment analysis incorporated either through additional programming or readily available |
| Risks and mitigation plans | Evidence of identification of risks and associated mitigation plans |
| **Output** | Dashboard | Dashboard to be used by FirstGroup’s employees containing data that informs the Happiness Index |
| Presentation | Presentation to client supporting and explaining solution |
| Publicity | Publicity of happiness initiative |