# Redback Operations: Data Science and Analytics Team

### Project 15: Workout Categorisation Model

#### Project Lead: Nicholas Manning

### Project Overview

Developing a feature to categorise workouts for Smart Bike users into workout types to tailor the experience to the requirements of each user and further gamify their training sessions. Whether a user is attempting to lose fat, improve cardio vascular fitness or simply increase endurance different workout types will provide different outcomes and we can highlight the benefits, recommend workouts that best suit their needs or identify if the user is not meeting their chosen goals. This project will analyse user outputs to develop a clustering model to label workouts based on similar features. Once these labels are assessed as appropriate, these labels can be used for further workout recommendations.

### Aims for Trimester

* Research and identify appropriate clustering models for a numerical dataset.
* Research and identify performance metrics for assessing quality and uniqueness of clusters.
* Use BigQuery to attain a dataset which mirrors the standard user training session.
* Clean and filter data to provide useful information for the model to form rich clusters.
* Determine the most relevant number of clusters, by applying models and performance metrics to the attained dataset.
* Analyse and decompose each cluster to determine the workout type and assign labels to each datapoint.
* Develop a workout recommendation engine based on the workouts composed.
* Documentation of process steps and results.

### Deliverables

Trimester 1 - 2023:

* A dataset which exemplifies the standard user session.
* A machine learning model clustering model able to cluster workout types.
* An identification model to determine workout types from clusters.
* A recommendation model to recommend potential future workout options.
* Handover document for Trimester 2 – 2023