## 2.1.2 Training Platform Requirements

The Zwift application provides support for many different training platform types as well as independent sensors to be used as input devices. The main types of configuration that are described on the official website are: wheel-on trainers, direct drive trainers and smart bikes. These were investigated in more depth in Section 2.4.

The training platform serves three main purposes: to facilitate the training session by providing the cyclist with a means of cycling, to measure, process and transmit the data that is required by Zwift and to adjust the training experience based on feedback from the Zwift application. As shown in Figure 2.1, the training platform sends and receives data from the device where the Zwift application is installed and running. This is achieved using BLE or ANT+ technology.

If the connected training platform utilizes ANT+, the Fitness Equipment - Control (FE-C) protocol is implemented for communication, where a BLE connection will utilize the Fittness Machine Data (FTMS) protocol. These are investigated in more depth in section 2.2. The Zwift application also provides the option to connect to speed, cadence and power sensors in addition to smart trainers. The supported and required measurement data are explained in the following subsections.

**Cycling Power**

The most important parameter that is required for experiencing the Zwift application is the Power input by the cyclist. This can be measured using power sensors, or calculated from other measurements. Power sensors measure the input force provided by the user, and multiply this by the cadence to find the input power using equation 2.1. If the input force is not known, but the braking force can be determined and the wheel speed is known, then the power can still be calculated using equation 2.1. This is called simulated power, and is what Zwift uses when it does not receive direct power measurements.

$$P = \omega \times T \tag{2.1}$$