The Bionic Vision Technologies Pty Ltd (BVT) Bionic Eye is a retinal prosthesis developed to restore a sense of vision in people with profound vision loss due to the inherited condition Retinitis Pigmentosa.

This technology makes use of an implant that is surgically placed in the back of the eye, an external digital camera and an external processing system.

The BVT Bionic Eye consists of implanted and body worn components that together provide a sense of vision to people who have lost their sight from degenerative diseases such as Retinitis Pigmentosa.

How does the BVT Bionic Eye work?

The patient wears a pair of glasses with a video camera mounted on the side that captures the visual scene. This information is processed in a small hand-held unit and is transferred to a receiver implant behind the ear. This implant then passes the visual information to an electrode array implanted at the back of the eye via a wire. The electrode array stimulates the surviving retinal nerve cells, generating electrical impulses.

These signals travel along the optic nerve to the vision processing centre in the brain and are decoded into visual patterns.

Patients learn to interpret these visual patterns, allowing them to detect shapes and objects in their surroundings. Plasticity of the brain plays an important role in enabling the outcomes of the devices.

Every patient’s experience with a bionic eye will be different. With time, training and patience, individuals will be able to use the new information to be more independent and mobile.

The BVT Bionic Eye has several significant advantages over other retinal implants, including a superior surgical approach, improved stability of the device, and unique vision processing software that aims to optimise the patient’s experience.
**Surgical Approach**

The retinal implant is placed between two layers of the retina: the choroid and the sclera; in a naturally occurring pocket known as the suprachoroidal space. This location is advantageous as it does not damage any tissues of the eye during insertion and does not block the natural vision of any remaining healthy cells.

**Clinical Stability**

As the BVT Bionic Eye is securely implanted within the suprachoroidal pocket, once it is placed into position, it does not move. The implant is composed of materials that are stable and biocompatible.

**Advanced Vision Processing**

BVT has developed and tested advanced methods for real time processing of the video feed into stimulations that provide meaningful input for the user. Early work with prototype devices has resulted in improved navigation and independence for patients.

**Path to Market**

A clinical trial is currently underway in patients with Retinitis Pigmentosa following a successful two-year proof of concept study in three patients\(^1\). The company is aiming for CE Mark approval in Europe followed by regulatory approval in other countries.