**Bahari Explorer**

**Expedition 1:**

***Applications of technology:***

1. Test the ability of the OpenROV to carry the standardised stereo video setup (unit 1)
2. Based on challenges experienced during the expedition (unit 1), the technical team will further develop the hardware to overcome these problems (unit 2)
3. Unit 2 will then be brought into the field during the expedition and further tested

***Technical challenges:***

1. Can the ROV carry the additional weight and drag of the standardised stereo video setup?
2. As a consequence of the above there will be additional drag, hydrodynamic and buoyancy issues that need to be overcome.
3. Stability of the unit with the stereo video super structure
4. Ability of the unit to maintain a bearing relative to current/water movement
5. Amount of thrust (side/forwards/backwards/up/down) to move the whole unit
6. Amount of power required to run additional thrusters/overcome friction of tether
7. Potentially assessing capability to determine the ROV position relative to the vessel

**Working towards in the future:**

***Applications of technology:***

The OpenROV is a useful technological device that can be used for marine exploration. However, the technology can be developed further, to considerably improve its scientific capabilities.

There is a five-year vision to develop the Bahari Explorer to have a number of capabilities, as follows:

1. Ability to house probes to record environmental data (such as temperature, depth, conductivity etc)
2. The ROV must become wireless, thereby being remotely operated without a tether to the surface vessel, i.e. thereby powered by battery.
3. The ability for multiple ROVs to work in conjunction, as a network
4. The network of ROVs must have the capabilities for 3D mapping, filming, recording ecological data
5. This can be a platform/model that can be scaled up to different scientific applications, as the scientific community requires
6. The unit/technology must remain affordable, cost-effective and easily developed, using accessible materials