# Project Configurability and Field Deployment Plan:

## Project Configurability:

### Reusability:

* The nucleo board is utilising zephyr allowing it to be easily installed onto other zephyr supported platforms.
* The TurtleBot is run through a python script that has been converted into a python executable file.
* Communication between the m5core2 and nucleo board is done through MQTT communication allowing the m5core2 to be replaced if necessary.
* M5core2 and nucleo board communicate via UART, and the nucleo board and ultrasonic sensors do as well. UART communication is supported by almost all devices in this space, so reusing this will be easy – provided that the nucleo board alternative supports 2 different UART channels.
* The turtlebot could be replaced by any autonomous robotic system, provided that they are able to run ROS – which should be generic. This robot doesn’t even necessarily need to have a LiDAR sensor, provided that the LiDAR sensor has (UART?) communication to the turtlebot.

### Reconfigurations or possible addition features:

* The ultrasonic sensors could be replaced with other sensors allowing variable inputs to be used. An example is utilising Lidars for proximity detection instead of ultrasonics.
* The nucleo board could be replaced by another board that has additional features such as the nRF52840 DK board which has the additional ability to utilise low energy Bluetooth capabilities.
* Could combine multiple different sensors in order to broaden the gesture capabilities
* Could replace sensor(s) with a camera and integrate machine learning in order to further diversify gestures.

## Field Deployment Plan:

### Ease of use:

* The TurtleBot is run through a python script that has been converted into a python executable file.
* M5core2 only requires itself to be turned on, it has already been programmed.
* Manual describing gestures
* Simplify and outline wiring in a manual.