PiCopterX Software Development Manual

# Setup

Install the following on your PC:

* Git
* Cygwin
* A good text editor or IDE (CLion)

# Windows Cygwin

Ensure packages for gcc, cmake, g++, gdb are installed

## Build PicopterX

Open the terminal

Clone the PicopterX Repository

* Git clone <https://github.com/nallack/picopterx.git>

Navigate to /picopterx/code/

Run:

* cmake .
* make -j4

Navigate to /picopterx/code/bin/

Run:

* picopterx

# Simulator

Running picopterx will attempt to initialize connection with the PixHawk and all connected peripherals on the RaspberyPi which are not available on a dev PC.

Testing of picopterx is possible via the use of running the arducopter simulator

## Build ArduPilot

Clone the ArduPilot Firmware Repository

* Git clone <https://github.com/ArduPilot/ardupilot.git>

Run:

* Make -j4

Follow this guide: <http://ardupilot.org/dev/docs/sitl-native-on-windows.html>

Navigate to /ardupilot/Tools/

# MAVLink

Mavlink is standardized communication protocol for RC vehicles capable of many two way communication features.

Some of these include:

* Fetch accelerometer, gps, gyroscope data
* Get flight time, voltage, wattage, etc
* Change flight mode
* Set PWM values
* Set RC inputs

MavLink is able to communicate over APM Telemetry modules.

It connectsconnects directly to APM boards (Pixhawk, 4DR) and another machine via usb (OES/Raspbery Pi, GCS PC or phone)