

UPOD

0.1.0

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Overview

The UPOD is an embedded-systems platform developed at the University of Colorado at Boulder intended for mobile air quality and environmental monitoring. The configurable design accommodates a variety of sensors, making it a valuable tool for a multitude of applications.

Why chose to build your own system? Size and affordability.

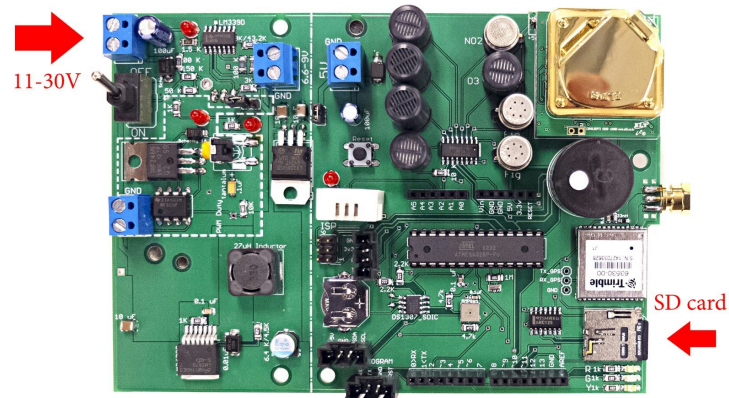
Traditional air quality monitors offer high measurement precision and accuracy, yet are prohibitively bulky and expensive in widespread monitoring applications. Using affordable monitors makes air quality monitoring accessible to a larger population of scientists and citizens.

A local government may, for example, decide to fund a network of affordable sensors instead of one traditional monitoring system. While the traditional system provides high measurement precision, it says nothing of spacial variability within the district. Several dozen UPODs are equivalent in price to one fixed site station.

Goals

Specifications

The UPOD is also scalable in design, making it ideal for those wishing to integrate it into existing projects, or use it as the foundation for a project of their own. Just a few features include: Variable speed DC motor control (eg. fan or pump), 6.6V (standard) or 9V regulated DC voltage to power peripheral devices, 5V regulated DC voltage output, streaming UART serial data output and a header for interfacing with other I2C protocol devices.

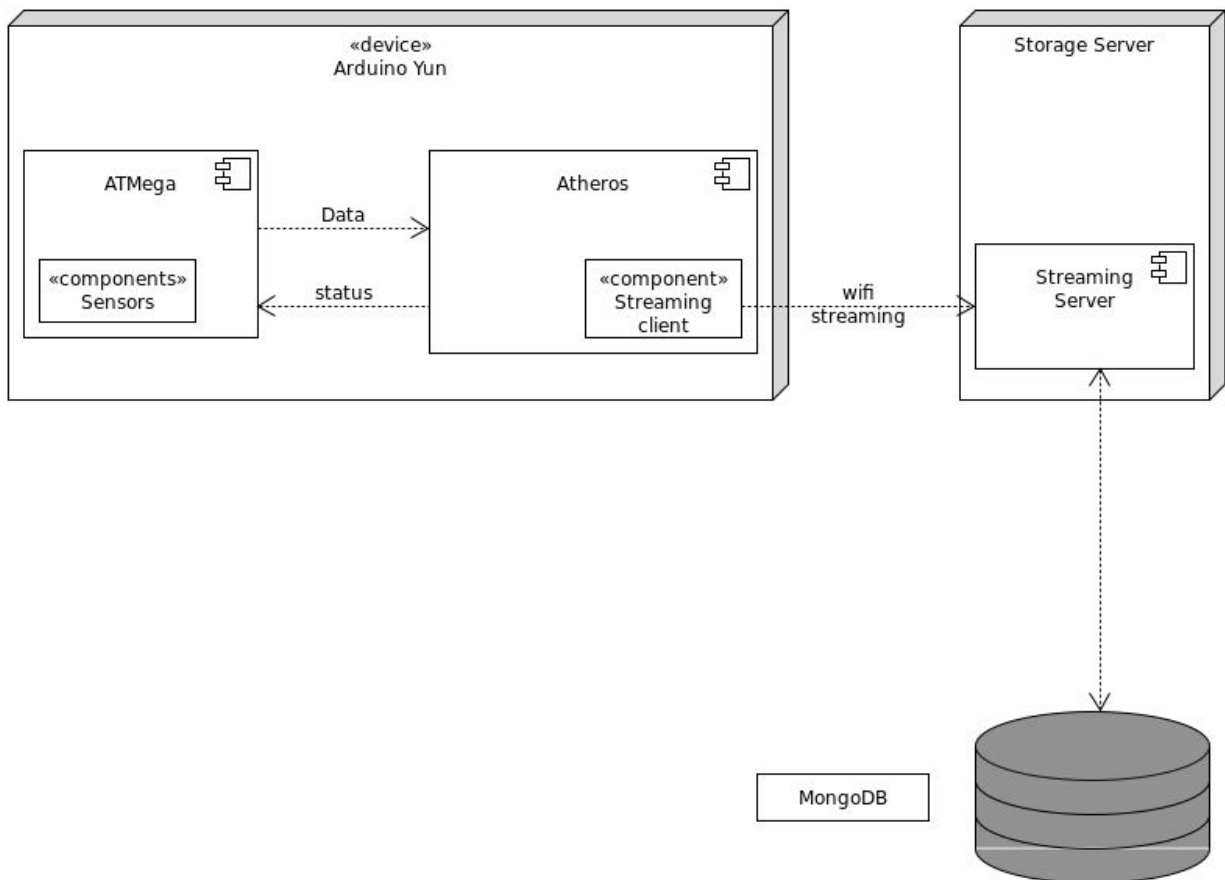


Sensors

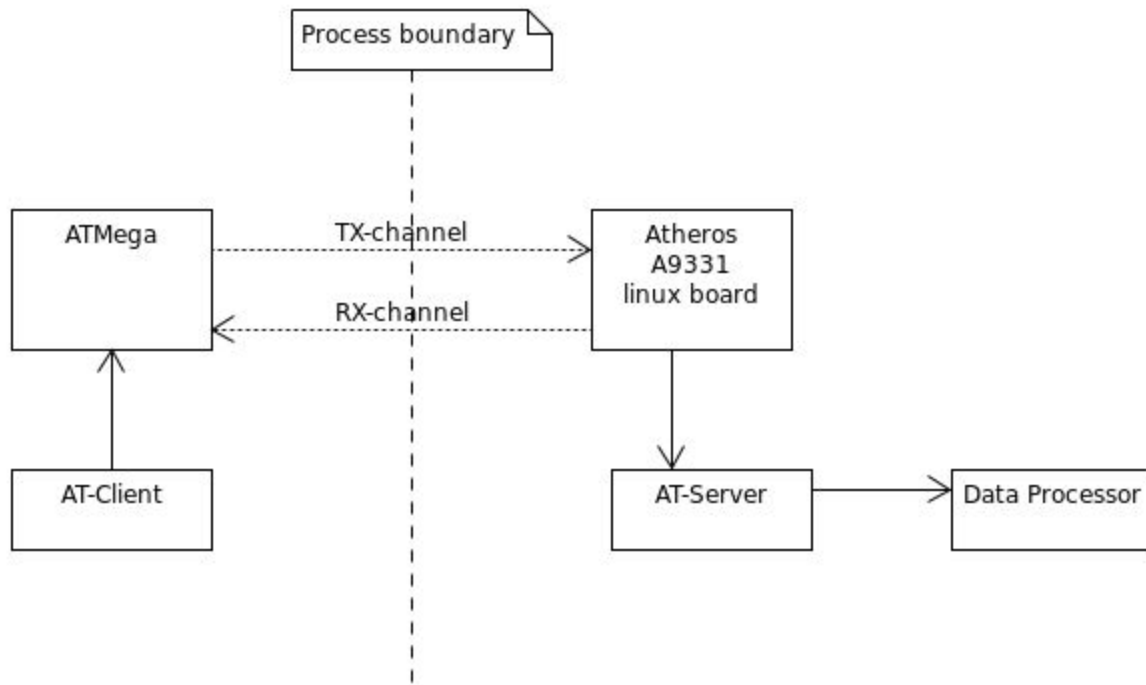
The UPOD has headers which can accommodate a variety of sensors.

- **S100 CO2 NDIR sensor**
- **e2v metal-oxide type sensor**
- **Figaro metal-oxide type sensor**
- **Baseline Mocon PID TVOC sensor**
- **Relative Humidity and Temp**
- **Barometric Pressure and Temp**
- **GPS module**

Architecture



ATMega-Atheros Communication



Milestones

I. Firmware

Firmware for arduino yun has been developed and tested both in the controlled lab environment and day-in-the-life testing.

II. Streaming data to DB(MongoDB/MySQL on AWS?)

Not yet implemented!