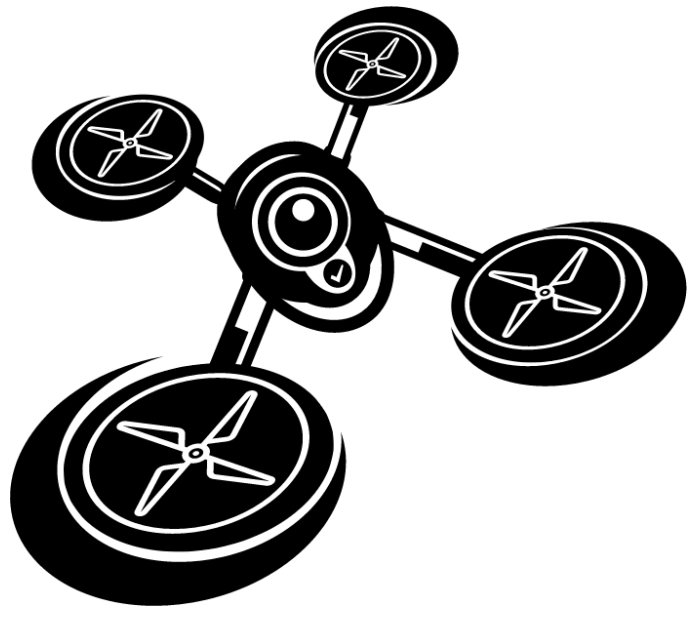




# VESO-Drone: A Novel Drone-Carried Service System for Emergency Response Applications



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## Background

- **Machine to Machine (M2M)** refers to technologies that allow both wireless and wired systems to communicate with other devices of the same type.
- The **VERsatile Service-Oriented Wireless Mesh Network (VESO-Mesh)** is a mobile ad-hoc network (MANET) that provides data storage and processing capabilities in each node.
- **Motivation:** to design an application, using VESO Mesh as the platform, that helps **Emergency First Responders (EFR)** gather data via use of a drone.

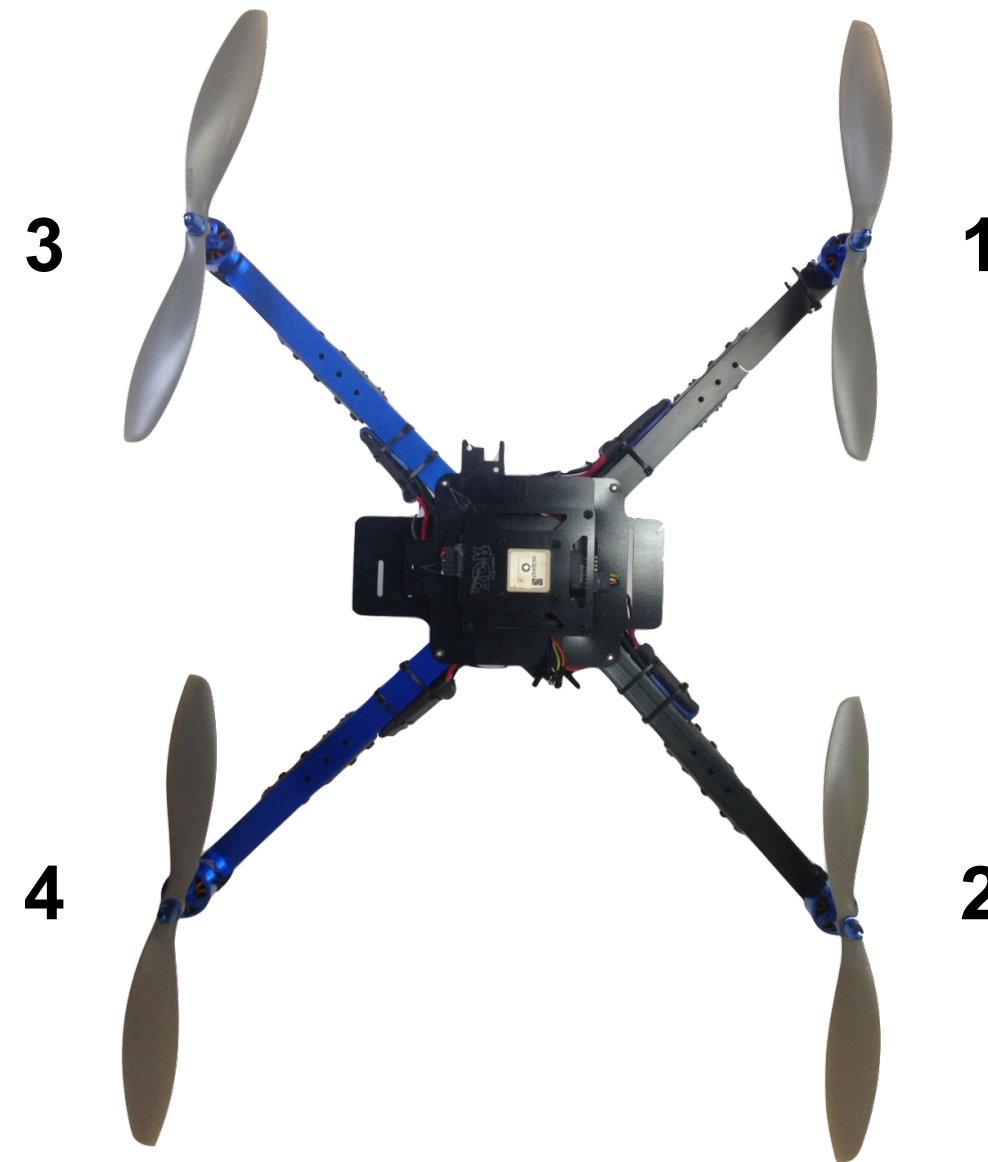
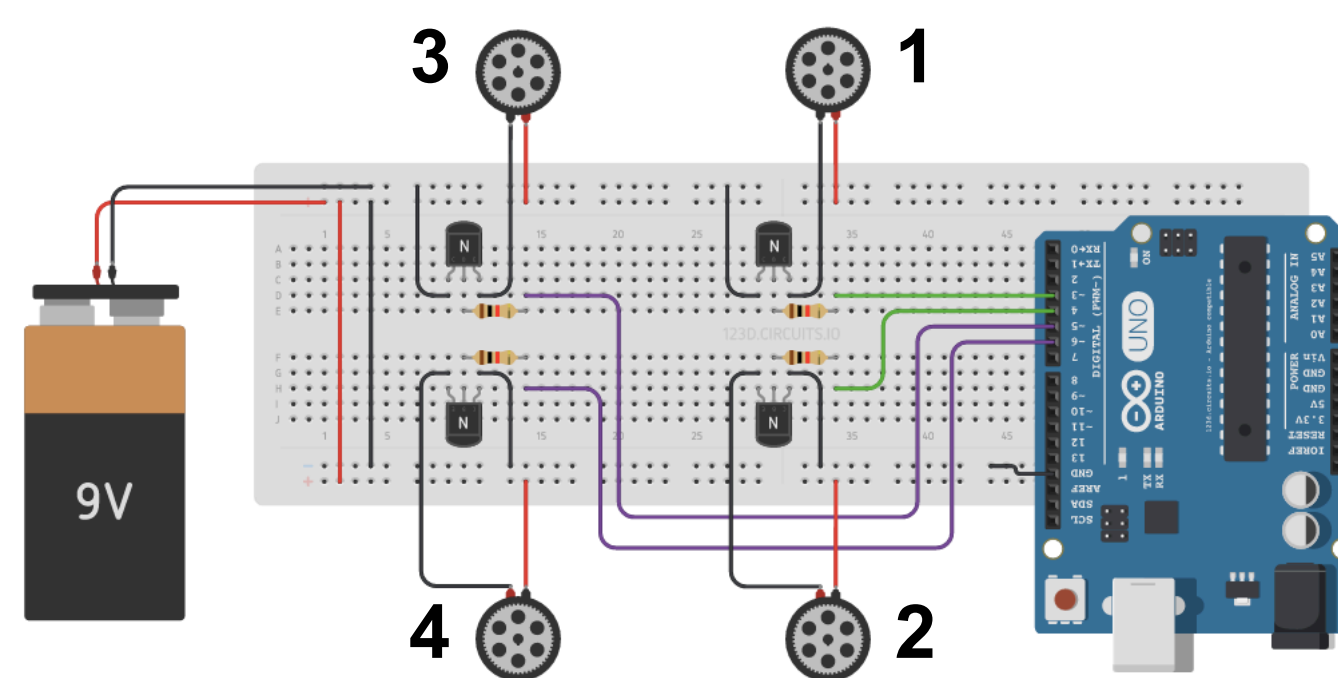
## VESO-Drone

- **Purpose:** Develop and evaluate a VESO-Drone system for data dissemination in emergency response via a web and/or mobile application.

## Objectives

- Research **Emergency First Response** applications and management.
- Design node configuration and web application.
- Configure VESO-Drone hardware connection and interfacing.
- Develop a web and/or mobile application to allow connectivity between the user and the drone.
- Update the **Interface Control Document (ICD)** for VESO-Mesh as a M2M platform.

## Hardware Interfacing



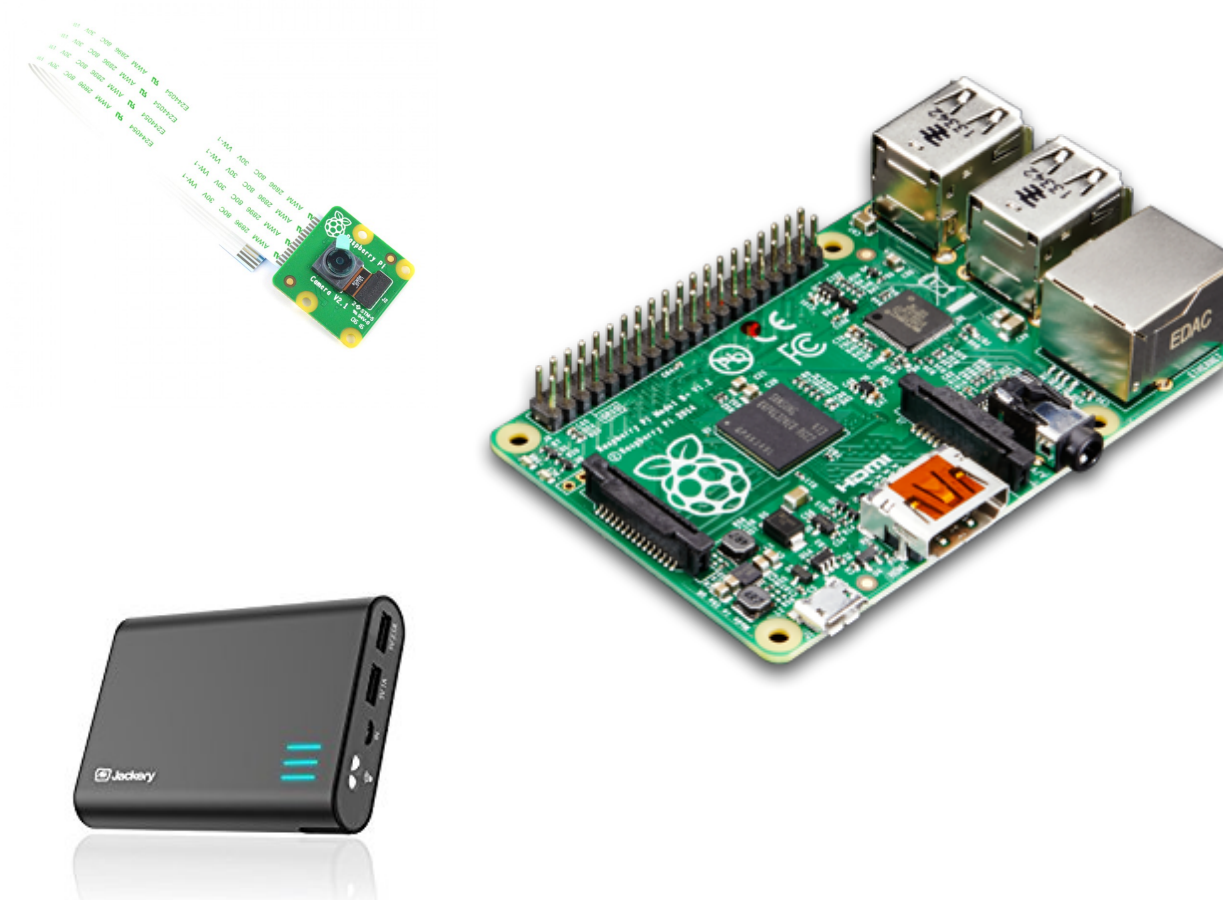
### Features:

- Arduino to Raspberry Pi interfacing allows the user to control the drone by issuing real-time commands.
- Built-in GPS allows the user to keep track of the drone's location.
- Gas Sensors collect data to warn users about possible harmful gasses present in the environment such as smoke, benzene, and CO<sub>2</sub>.
- Cameras collect data and allow the user better control the drone's current flight path.
- Proximity sensors allow the drone to avoid collisions with foreign objects.

## Software Development

### Features:

- Live streaming of VESO-Drone camera feed.
- Display of data gathered from the drone.
- SMS notifications inform users of VESO-Drone status.



## Timeline

Month	Task
August - September	Research and Study Necessary Skills
October	Planning and Design
November - December	Configuring VESO-Drone
January - April	Development and Integration
April - May	Testing

## References

- K. Lu, Y. Qian, and H. Chen, "A secure and Service-Oriented network control framework for Formalize Configuration Documentation WiMAX networks," IEEE Communications Magazine, vol. 45, no. 5, pp. 124-130, 2007.
- W. Liu, K. Lu, J. Wang, Y. Qian, T. Zhang, and Liusheng Huang, "Capacity of distributed content delivery in large-scale wireless ad hoc Networks," in Proc. of IEEE INFOCOM 2012, Orlando, USA, March 2012.

