



# Drones in Healthcare: The Rise of the Machines

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**CENTRAL & SOUTHERN OHIO** *Chapter*

# Drone Technology is Poised to Revolutionize Healthcare



## Definition of Disruptive Technologies

- New technical way of doing things that disrupt or overturn the traditional business methods and practices
- An innovation that creates a new market and value network and eventually disrupts an existing market and value network, displacing established market leading firms, products and alliances

# Disruptive Technologies Have Changed the Way We Conduct Healthcare

Examples include:

- CT Scans
- Digital Thermometers
- Electronic Blood Pressure cuffs
- Hand Held Glucose Monitors
- Gemmotherapy Cancer treatment Profiling
- Remote Patient Monitors (Vital Signs)
- Electronic Medical Records
- Electronic Medication Cabinets / Robots
- Telemedicine

# Drone Technology is Poised to Revolutionize Healthcare

Examples include:

- Seattle's VillageReach
- Flirtey
- Ehang
- ZipLine
- Tu Delft
- Google Drones
- Project Wing
- HiRO (Healthcare Integrated Rescue Operations)
- Vayu Drones

## Seattle's VillageReach

- A joint venture between a Seattle based company and a company called Matter Net
- Transports blood samples from remote community hospitals to a large hospital in Lilongwe, the country's capital city.



## Flirtey

- A Nevada Based start up testing drone deliveries of first aid kits and emergency medication
- The company has made an autonomous delivery of food and water



# Ehang

- Ehang has signed a contract with Lung Biotechnology PBC in US to develop up to 1,000 units of its 184 drone, the world's first autonomous drone capable of transporting a human.
- Ultimately the company plans to automate transportation of donated organs to people all over the country in emergency situations.





# ZipLine

ZipLine, a San Francisco based UAV startup has earlier this year signed a contract with the government in Rwanda to conduct a trial transporting blood for transfusion across the country.





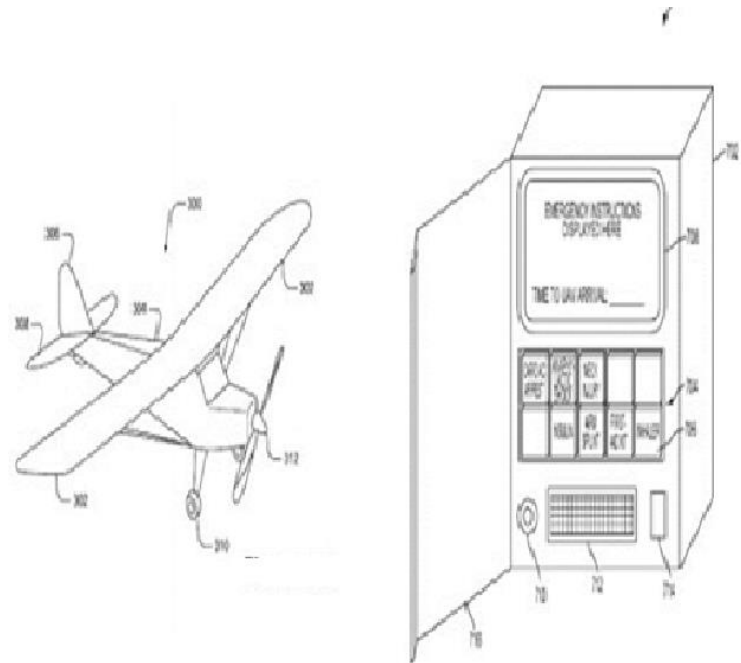
## TU Delft

- The TU Delft Ambulance Drone has been designed as a prototype integrating a cardiac defibrillator and a 2-way communication radio + video into the drone.
- In case of cardiac arrest, the emergency services would send out the drone to the patient and bystanders would be instructed on how to perform CPR and start using the automatic defibrillator until the emergency services arrive to take over.



# Google Drones

- Google\_has\_also filed a patent for a drone that would bring medical aid to people in distress. Just as the previous example,
- The drone would arrive to the scene before an ambulance arrives.
- The patent also included a device or an application that allows you to select the nature of the emergency and will also display the drone's ETA.



# Project Wing

- Google's parent company Alphabet has also been working on Project Wing which will be used for disaster relief and delivery of food, clean water and other medical supplies.
- The project has been successfully tested both in U.S (partially) and Queensland, Australia.
- The project received full approval from the Federal Aviation Administration (FAA) to undergo full scale testing at one of the FAA approved sites.



# HiRO

- Subbarao from Hattiesburg, Mississippi is working on delivering a telemedicine drone to better deal with the after-effects of natural disasters on US soil.
- Tornados of the past have left residents stranded, and unreachable by ambulances.
- The company envisions the drone will be guided by GPS and be capable of dropping off equipment relevant to the emergency situation.





# Vayu Drones

- Operating in Madagascar, Vayu Drones have been successfully used to deliver stool and blood samples to the country's central laboratory for testing.
- Although the drone looks like an airplane, it has the ability to take off vertically thus requiring no runway.
- The drone has the ability to fly autonomously to its destination



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## Benefits of Using Drone in Healthcare Delivery:

- Increased ability to reach victims who require immediate medical attention
- Autonomously transport medicine within hospital walls and currier blood between hospital buildings
- Increased ability to care for the elderly as the age in place
- Potentially decrease the cost associated with providing medical care
- Increases the efficiency of providing care to patients in remote locations

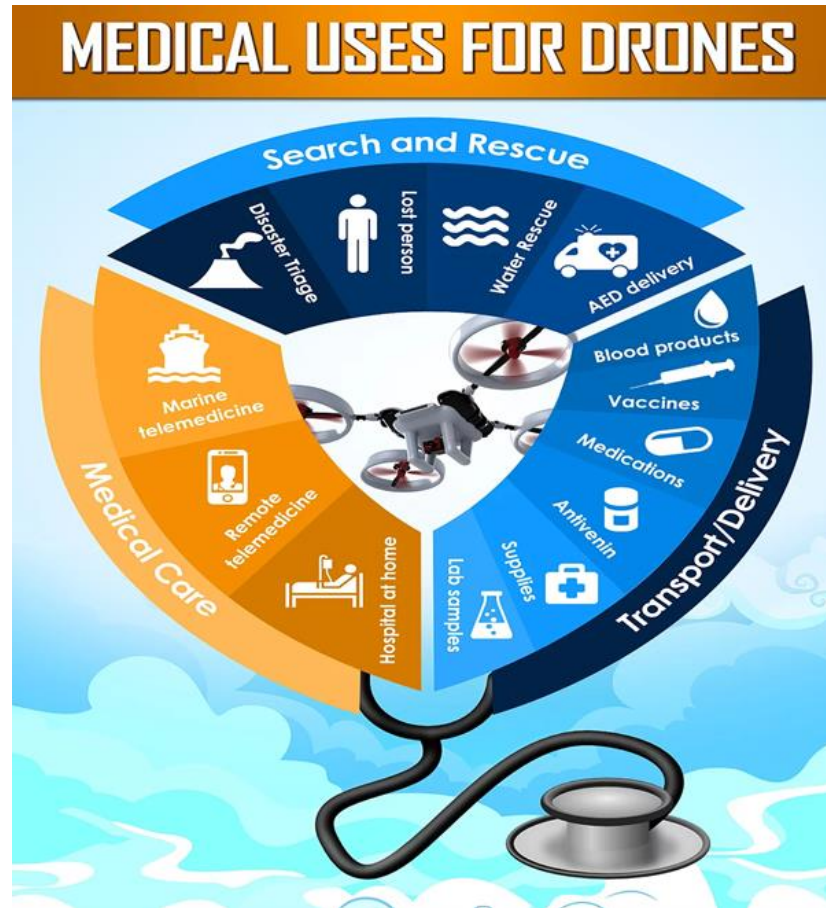
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## Challenges Associated with Using Drone in Healthcare Delivery:

- Maintaining the integrity of specimens during delivery
  - Temperature control
  - The need for special equipment (packaging)
- Payload capacity
- Battery life
- Security for controlled substances
- Regulations; Federal, state and local (All must agree on operational procedures.)
- Consumer Demand



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Thank You

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