



UPES Centre for
Continuing Education

Dissertation for Degree of BBA Aviation Operation

THE SOCIETAL IMPACT OF COMMERCIAL DRONES

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Indian Institute of Drones

Academic Year : 2017-2020

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1. Introduction

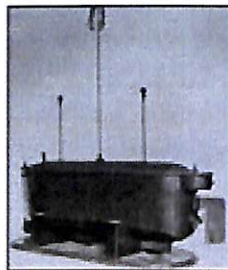


Drone Which is also known as [UAV] ‘Unmanned Aerial Vehicle’ is an aircraft without a human pilot on board.

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2. Literature Review History of Drones.

BRIEF HISTORY OF DRONES



1898
Nikola Tesla premieres a small radio operated boat at a Madison Square Garden exhibition



1935
Queen Bee
Created in the UK, this drone was used by the military for moving target practice.



2001- Present
Predator
Designed in the U.S. This drone is used for surveillance and targeted warfare.



2003- Present
Commercial drones gain popularity in construction, real estate, search and rescue, ect.

1918
Kettering Bug
Designed to drop bombs on targets during WWI. The war ends before the Bug is used.



Photo by Greg Hume

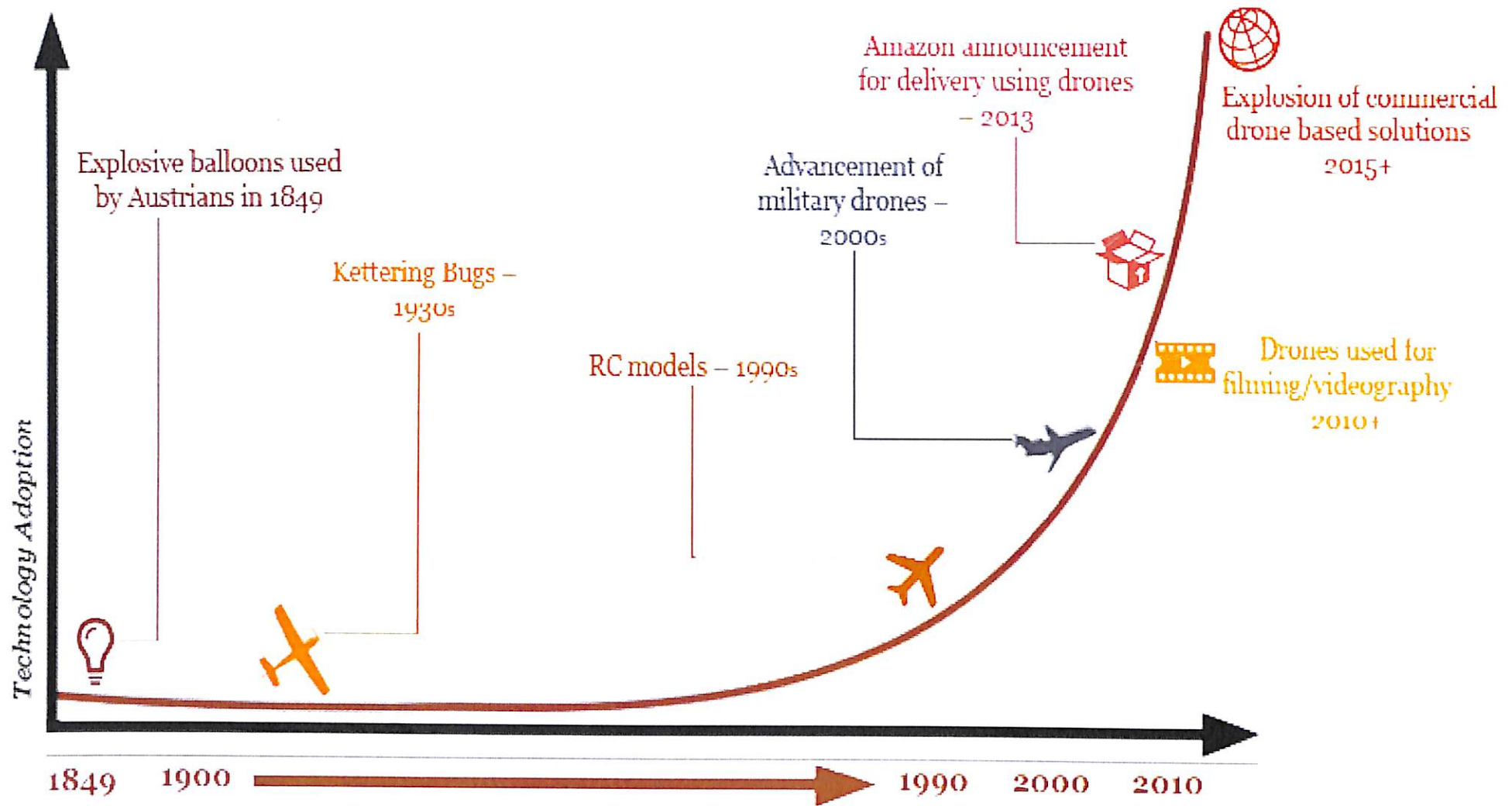
1964-1969
The Lightning Bug was created for surveillance during the Cold War by the United States.



2013
Amazon CEO, Jeff Bazos, announces the company's drone delivery plan, opening the door for commercial drone use.



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Types of Drones.



1. Multi-rotor Drone.



2. Tilt-rotor Drone.

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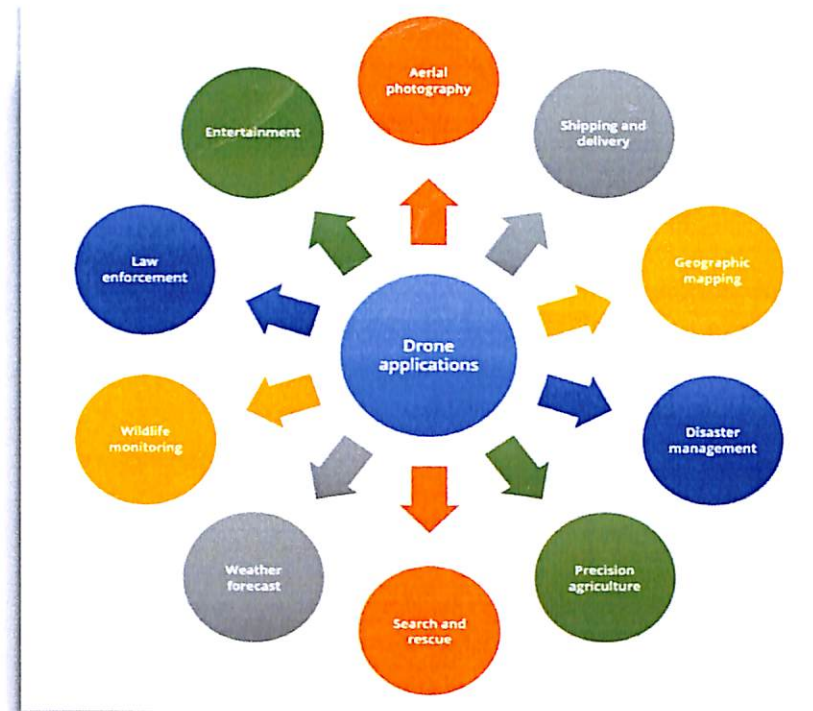
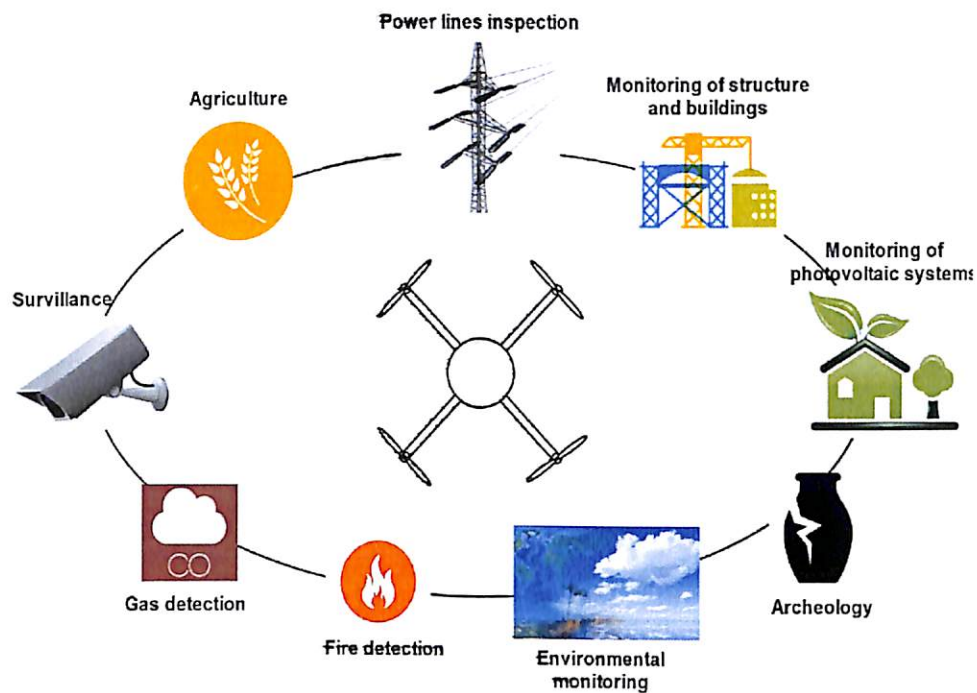
3. Fixed Wing Drone.



4. Helicopter Drone.

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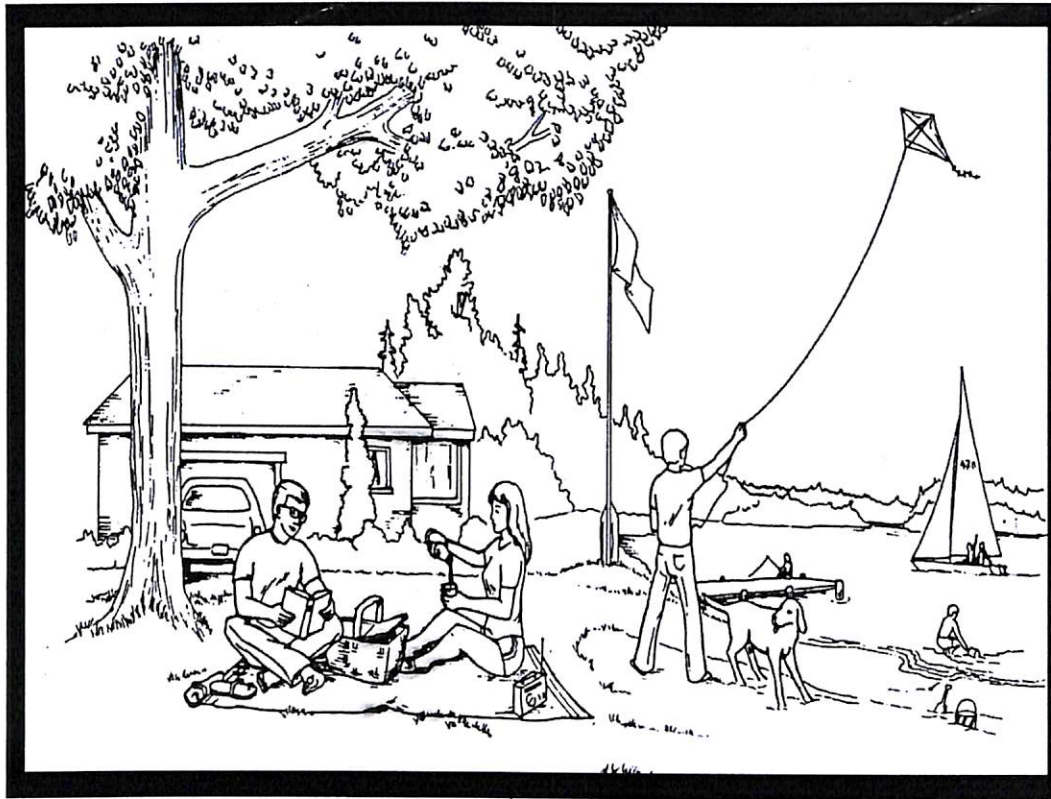
Applications of Drone.



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3. Research Methodology.

Discourse Analysis.



Example of picture used in 'Discourse Analysis'

Discourse Analysis is comprehensive concept that includes any practice by which individual imbue reality with meaning.

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Data Sources [Secondary Data].



**Federation of Indian
chamber of Commerce
and Industries.**



**Directorate
General of
Civil
Aviation**



Skylark Drones.



Aarav Unmanned System.



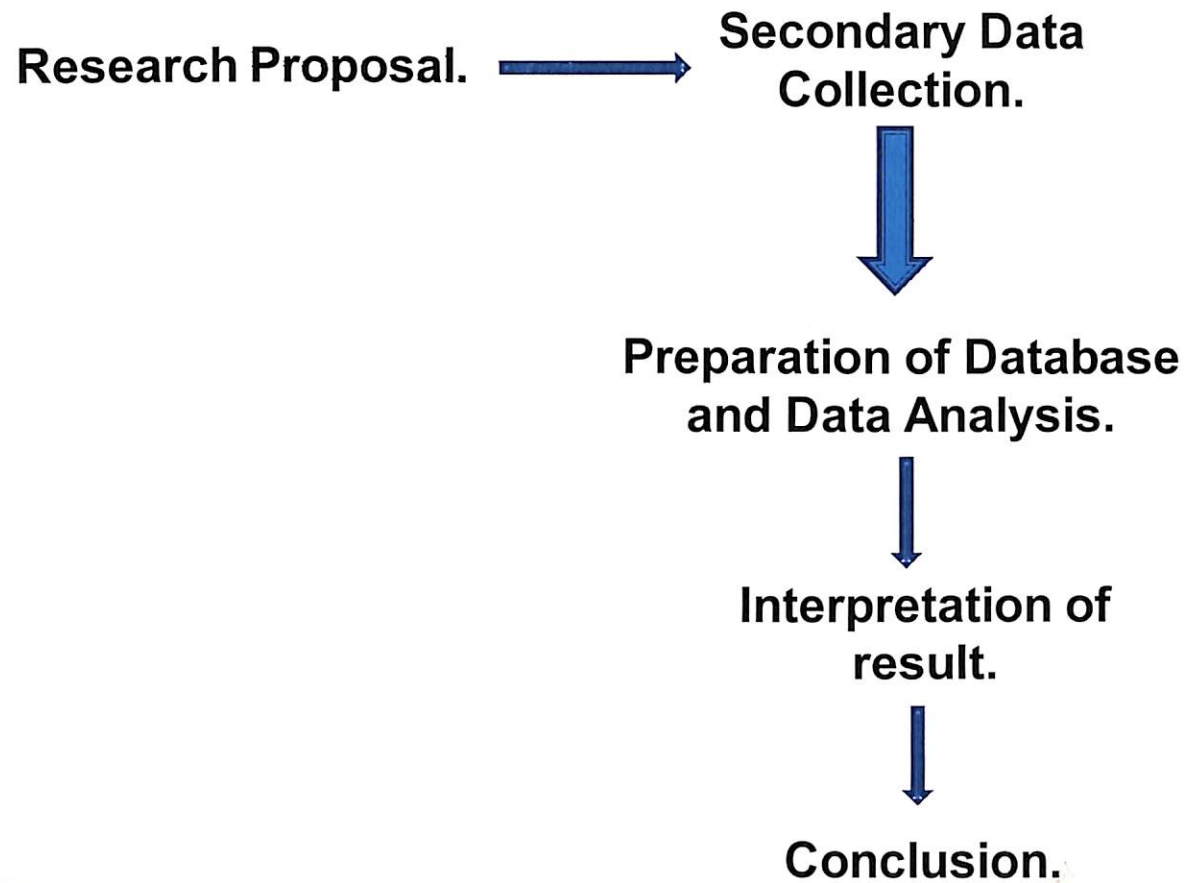
**Indian Institute of
Drones.**



**Throttle Aerospace
systems.**

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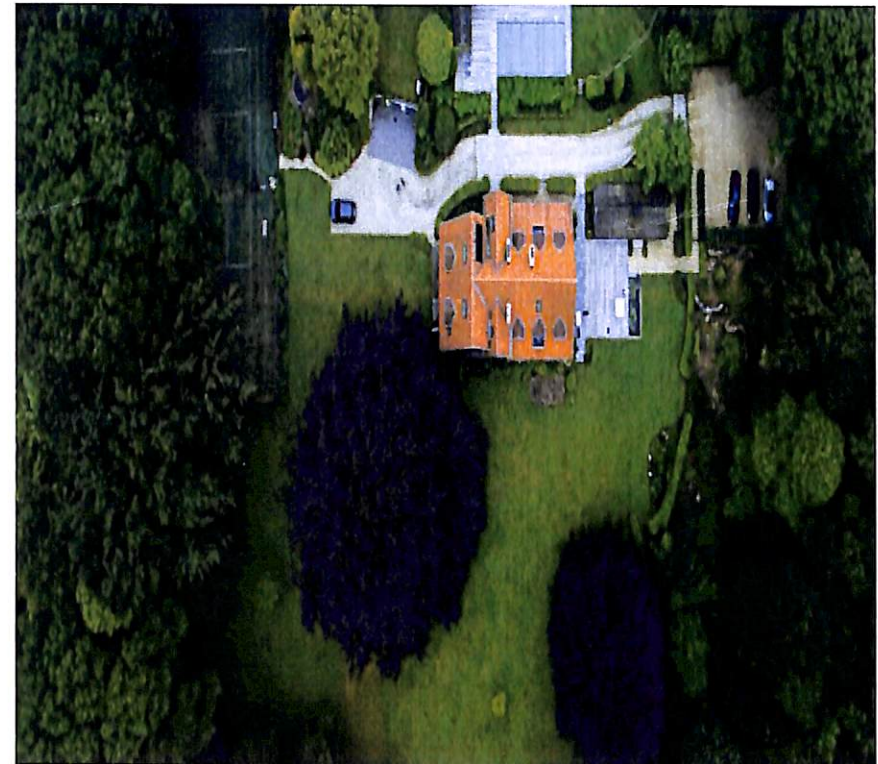
Research Design.



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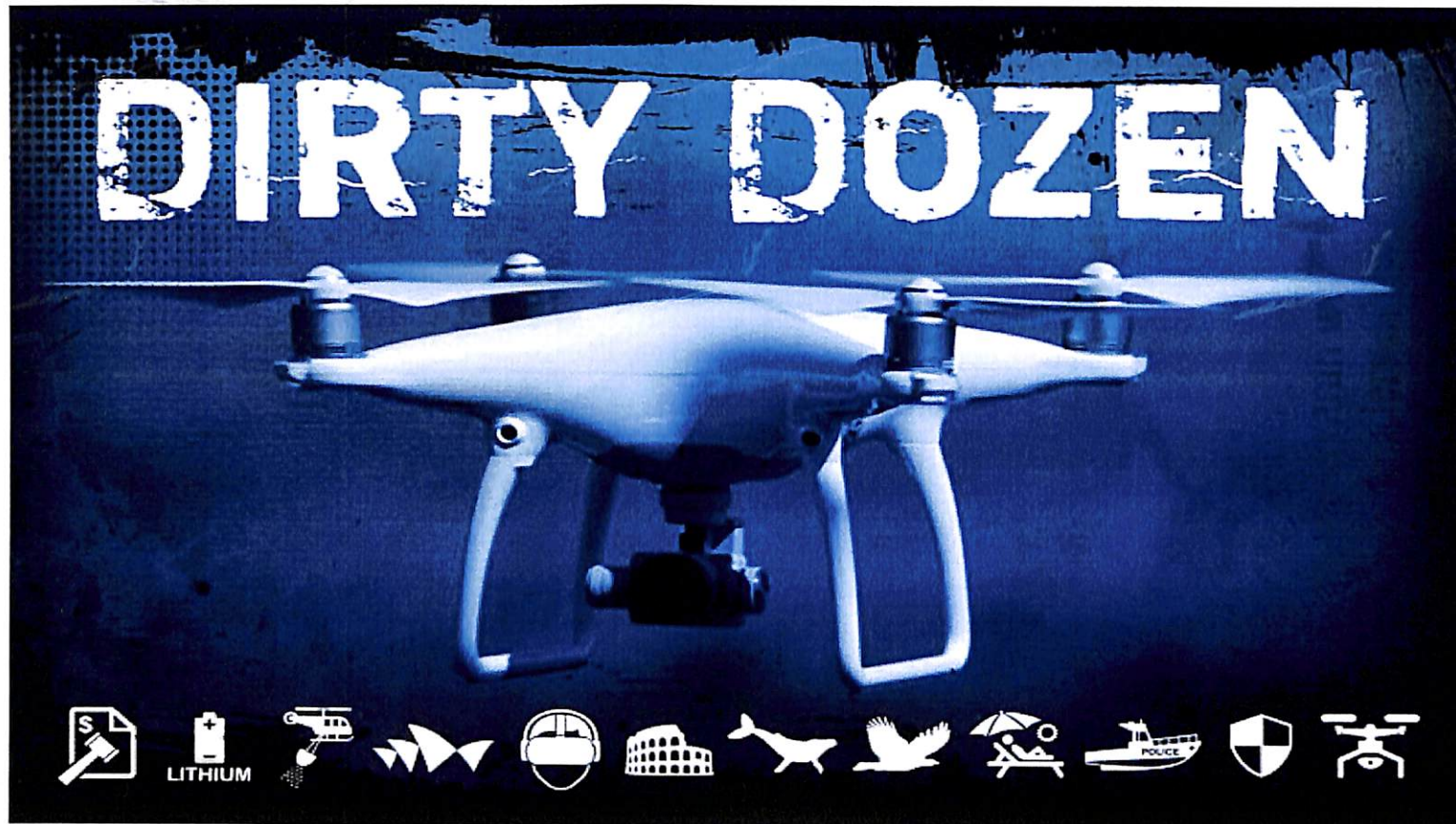
4. The Societal Impact of Commercial Drones.

Privacy and Ownership.



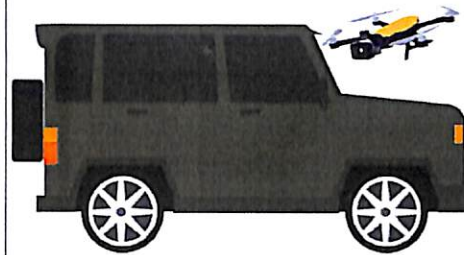
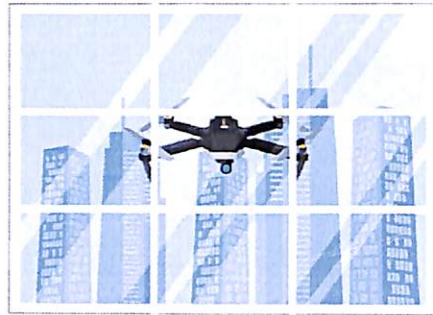
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Safety and Security.



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Personal and Commercial Liability.



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Regulations – Attempt and Challenges.

UNMANNED AIRCRAFT SYSTEMS
**DRONE USERS
OPERATING
UNDER FAA RULES**



! Users of small unmanned aircraft systems (sUAS) must:

- **Register** your aircraft, registermyuas.faa.gov
- **Obtain** an FAA remote pilot certificate
- **Follow** FAA regulations
- **Be at least** 16 years old
- **Fly** a UAS weighing less than 55 lbs
- **Perform a pre-flight check** to ensure the flight can be conducted safely
- **Fly only within class G airspace** (Class B, C, D and E airspace needs FAA approval)
- **Fly within visual line of sight***
- **Fly at or below 400 feet***
- **Fly during the day***
- **Fly at or below 100 mph***
- **Yield right of way to manned aircraft***
- **Not Fly over people***

**The operator may apply for a waiver to these rules.*

For more information, visit: WWW.FAA.GOV/UAS

For all operating rules, visit: www.faa.gov/uas/resources/uas_regulations_policy

The FAA may pursue enforcement action against anyone who operates an unmanned aircraft system in violation of FAA regulations.

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Directorate
General of
Civil
Aviation

Civil Aviation Requirement 2.0

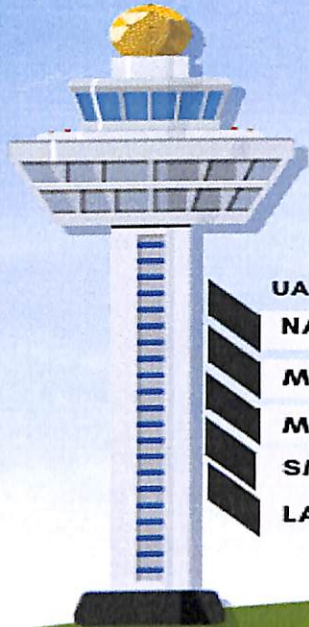


⚡ Drone Ports will enable drones to take off and land, charge and layoff during operations

A **DroneCorridor** will be defined in order to maintain separate airspace for manned and unmanned aerial vehicles

Beyond Visual Line of Sight (BVLOS) Missions will be permitted

An upper limit will be set to the **Life Cycle of Drones** exceeding which renewal of registration will be required



DroneDelivery of consumer goods such as food, medicines, blood will be permitted

UAV CLASSIFICATION

NANO	<250 g
MICRO	250 g - 2 kg
MINI	2 kg - 25 kg
SMALL	25 kg - 250 kg
LARGE	>250 kg

Categorisation of Nano & Micro Drones will be relaxed



One Drone Pilot will be able to man multiple drones at once



A Separate **Drone Body** will be established under the DGCA to facilitate drone registrations, licensing and permits



OEMs should include specific features that take into consideration principles of privacy and protection of personal data by design and by default



A
**TERRA DRONE
INDIA**
illustration

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5. Interpretation of Result.

UNMANNED AIRCRAFT, UNMATCHED POTENTIAL BY THE NUMBERS: FROM RHINOS TO RESCUES



- SMALLEST UAV** 2.8 LBS
- LARGEST UAV** 7,600 LBS
- # OF SYSTEMS PRODUCED** 556
- # OF UAV MANUFACTURERS** 195



In 2012, a backpack sized UAV helped Vanderbilt University researchers survey the Mawchu Llacta archaeological site in Peru.



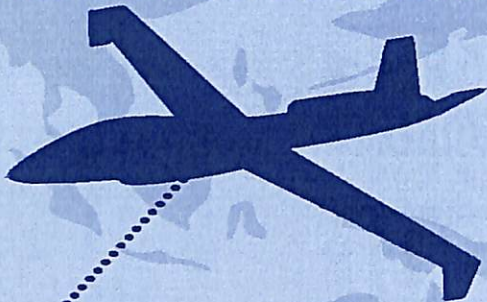
In Alaska, unmanned systems are being made available for search and rescue missions.



UAVs with thermal imaging have been deployed over California wildfires to help pinpoint hot spots and keep first responders out of harm's way.

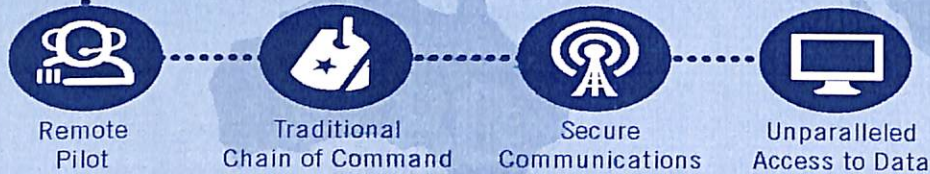


A UAV patrols South Africa's 7,600 square-mile Kruger National Park to help park managers and farmers catch rhino poachers.



UNMANNED SYSTEMS HAVE BEEN IN USE BY AMERICAN ARMED FORCES SINCE 1917

UNMANNED NOT UNPILOTED



- \$89 BILLION** PROJECTED MARKET SIZE
- 100 THOUSAND** JOB CREATION POTENTIAL
- 80 PERCENT** PUBLIC SUPPORT FOR DOMESTIC USE

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6. Conclusion.

SPORT AND RECREATIONAL FLYING WITH UNMANNED AERIAL VEHICLES



FLY WISELY – BE SAFE

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RPAS
REMOTELY PILOTED AIRCRAFT SYSTEMS



KNOW THE RULES – FLY SAFE

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Reference Websites.

- 1. Civil Aviation Authority – Poland**
- 2. Civil Aviation Authority – Thailand**
- 3. Directorate general of Civil Aviation – India**
- 4. Aerospace Industries Association**
- 5. Federal Aviation Administration – USA**
- 6. Civil Aviation Authority – Singapore**
- 7. Last and Best My Father - GOOGLE**

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