



**aiju** Technological Institute  
for children's products & leisure



AIJU – Research Association of the Toy and related industries– is a private non-profit making organisation aiming to boost research development and technological innovation within toy, childcare products and leisure industry.





525  
Associated  
companies

1.150  
Active  
clients

37.560  
Technologic  
al services  
to  
companies

80  
Professionals



66%  
Coverage  
Related  
industries and  
other articles  
for children

### Services in figures 2017

90%  
Coverage  
Toys sector  
In Spain

75%  
Coverage  
Childcare  
articles  
sector

141  
Training  
activities and  
Dissemination  
sessions

1.195  
Participants  
in training  
activities





## Capabilities

### Laboratory & Engineering Development

- Materials & Processes
- Rapid Manufacturing
- Product safety

### Children Research and Leisure

- User & Consumer
- Psycho pedagogy & Therapy
- Market & Trends

### Design & Digital Leisure

- Design & Simulation
- Augmented & Virtual Reality
- Information Communication Technologies

### Management & Innovation

- Management & Organisation
- Energy
- Environment
- Training





# The importance of teaching & learning about drones. To build or to buy a drone?

Technological Institute for children's products & leisure  
AIJU, Spain



Prepared by Ignacio Segui





# We are in the Age of the Drone



A new artilugio y uns nueva palabra para dedinirlo: really?



# 100 years before: the origin of drones

- Historically, was dated in 1917. Several models were designed but they did not work properly during the World War I



Photo: De Havilland DH82B "Queen Bee"



Drone

Queen

Worker

In homage to the Queen Bee, the word "drone" was adopted by the Navy as a nickname for unmanned aircraft.

# But, what is a drone?

- We can say a drone is a flying robot
- Drones are remotely controlled or they can fly autonomously through flight plans programmed in their embedded systems working in conjunction with onboard GPS and other sensors.
- Drones are more formally known as **Unmanned Aerial Vehicles (UAVs)**



# Unmanned Aerial Vehicles (UAVs)

- According to this definition: it is an aerial vehicle which can carry things or people without a pilot driving it on board.





# More clearly:

- This is a drone:



- This is not a drone if we have a pilot on board:



# More clearly II:

- This is a drone:



- This is not a drone if we have a pilot on board:



# More clearly III:

- This is a drone:



- This is not a drone:



# More clearly IV:

- This is a drone:

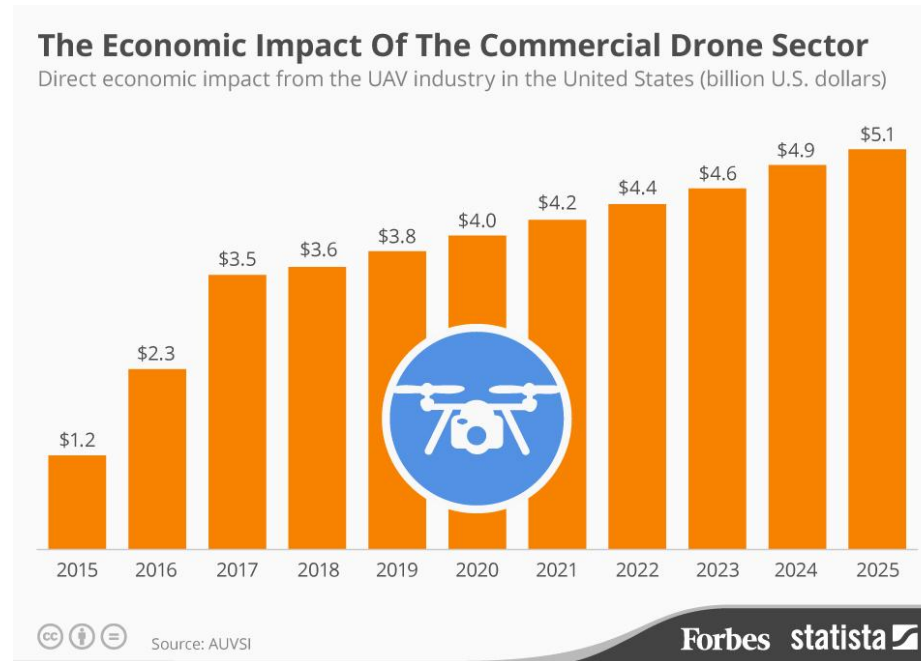


- This is not a drone:



# Some Facts About the Drone Sector:

- Is projected that the economic impact of the drone industry by 2025 will be \$8-10bn USD.



# Some Facts About the Drone Sector:

- 100,000+ Anticipated international job creation directly related to the drone industry.





# Some Facts About the Drone Sector:

- Drones provide affordable solutions: they are 10 times simpler to operate than a helicopter



# Some Facts About the Drone Sector:

- Drones can be as small as 5cms and as large as 50 metres.

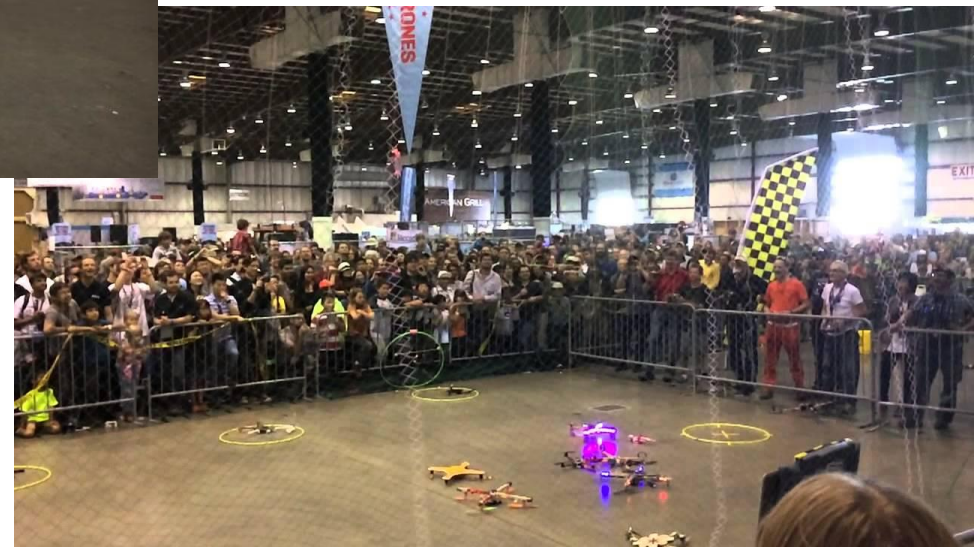




# Many applications:

- Drones are now also used in a wide range of civilian roles ranging from search and rescue, surveillance, traffic monitoring, weather monitoring and firefighting to personal drones.
- Probably business drone-based photography & videography, agriculture and delivery services are more popular.

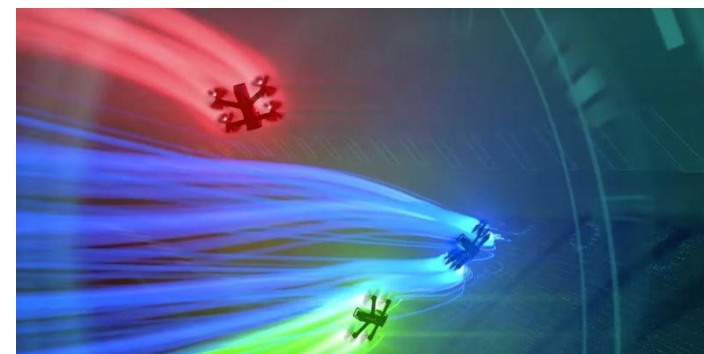
# Drone competitions for leisure:





# The World Drone Prix in Dubai was the first million dollar drone race

March 2016





# Education is a crucial sector

- Drones are sparking a new wave of ideas and innovation among educators. The aim is to inspire and empower students with new skills required for the new digital age.





# Education is a crucial sector

- It is a new way to draw students into science and technology subjects.



# To build or to buy a drone? That is the question!



# Buy the drone or make it?

- The best answer: It depends on your needs and budget.
- 4 types
  - professional uses
  - camera drones
  - racing drones (need FPV Glasses)
  - toy drones



# For Education is advisable to make it

- It is a powerful tool for the teacher: it implies creativity and motivation of the students.







# For Education is advisable to make it

- They can work in: design, 3D printers, motors, electronics and electricity, batteries, environment, mechanics, aerodynamics, meteorological knowledge, how to fly, coding and communications, photography and video, security, new English words, etc.



# PROS OF MAKING YOUR OWN DRONE

- **Upgrading:** If you build your own drone, each part can be replaced or changed with an improved one.
- **Enriches learning:** You will gain tons of knowledge on assembling the parts.
- **A sense of self-achievement:** building a drone will give you a feeling of achievement.



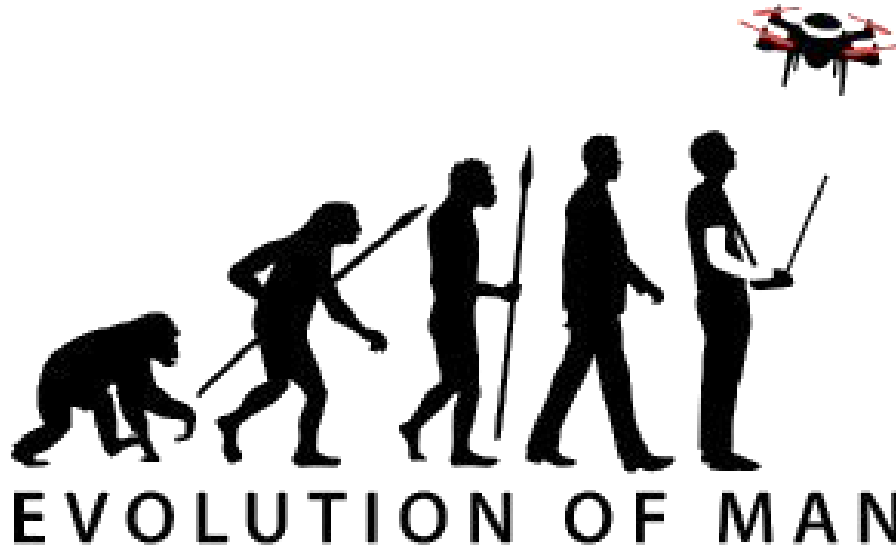
# PROS OF BUYING A DRONE

- **Ready to fly:** can be put into flight almost immediately. Only require assembly the battery and may be propellers.
- **No technical know-how required:** You do need technical knowledge.
- **Assistance:** You can have manufacturer warranty.
- **All components are compatible and tested.**





# Thanks for your attention!



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