



REMOTE CONTROLLED AIRPLANE

- Ayush Jain

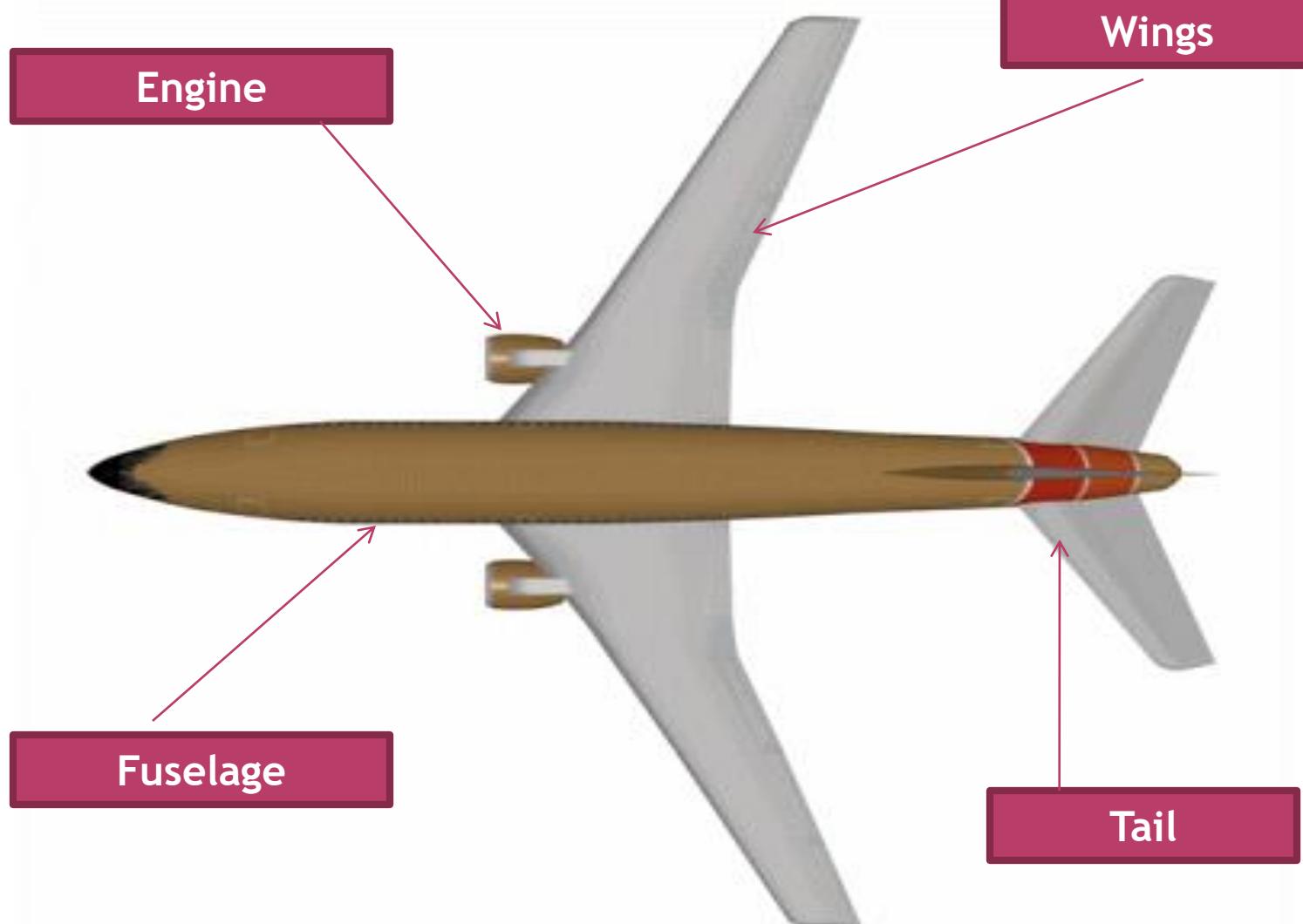
Mass production of planes



Major parts of an aircraft

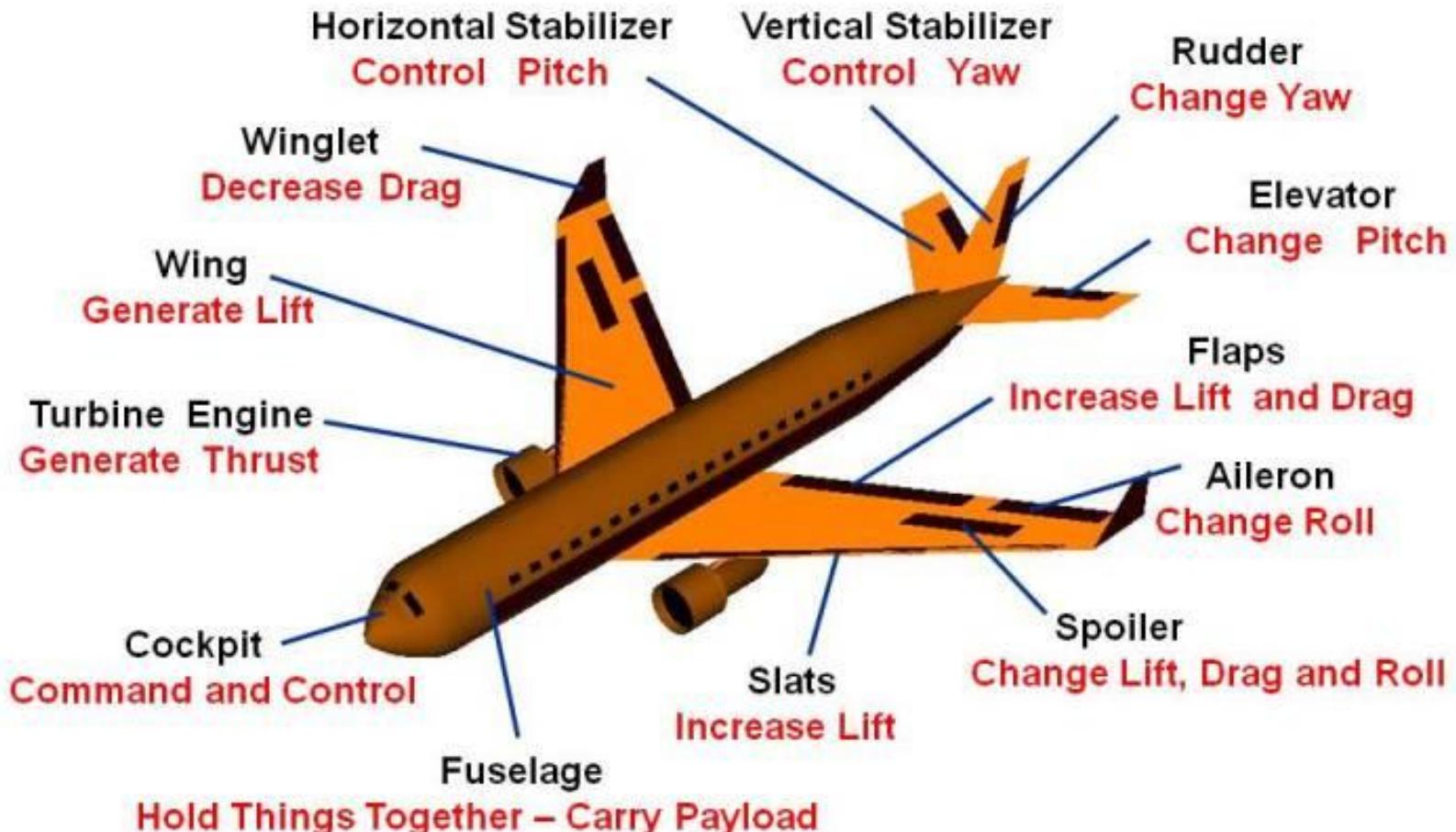
- Fuselage
- Wings
 - * Ailerons
 - * Flaps
 - * Winglets
 - * Spoilers
- Tail
 - * Vertical Stabilizer
 - * Rudder
 - * Horizontal Stabilizer
 - * Elevator
- Engine

Major parts of an aircraft





Airplane Parts and Function



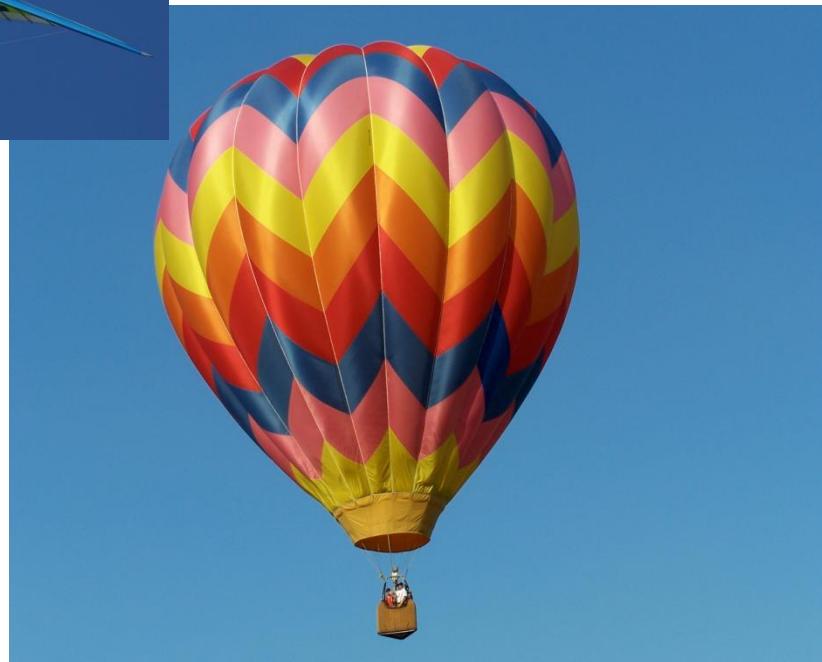
Flight Mechanism

How does anything
that flies stays up
in the air ??

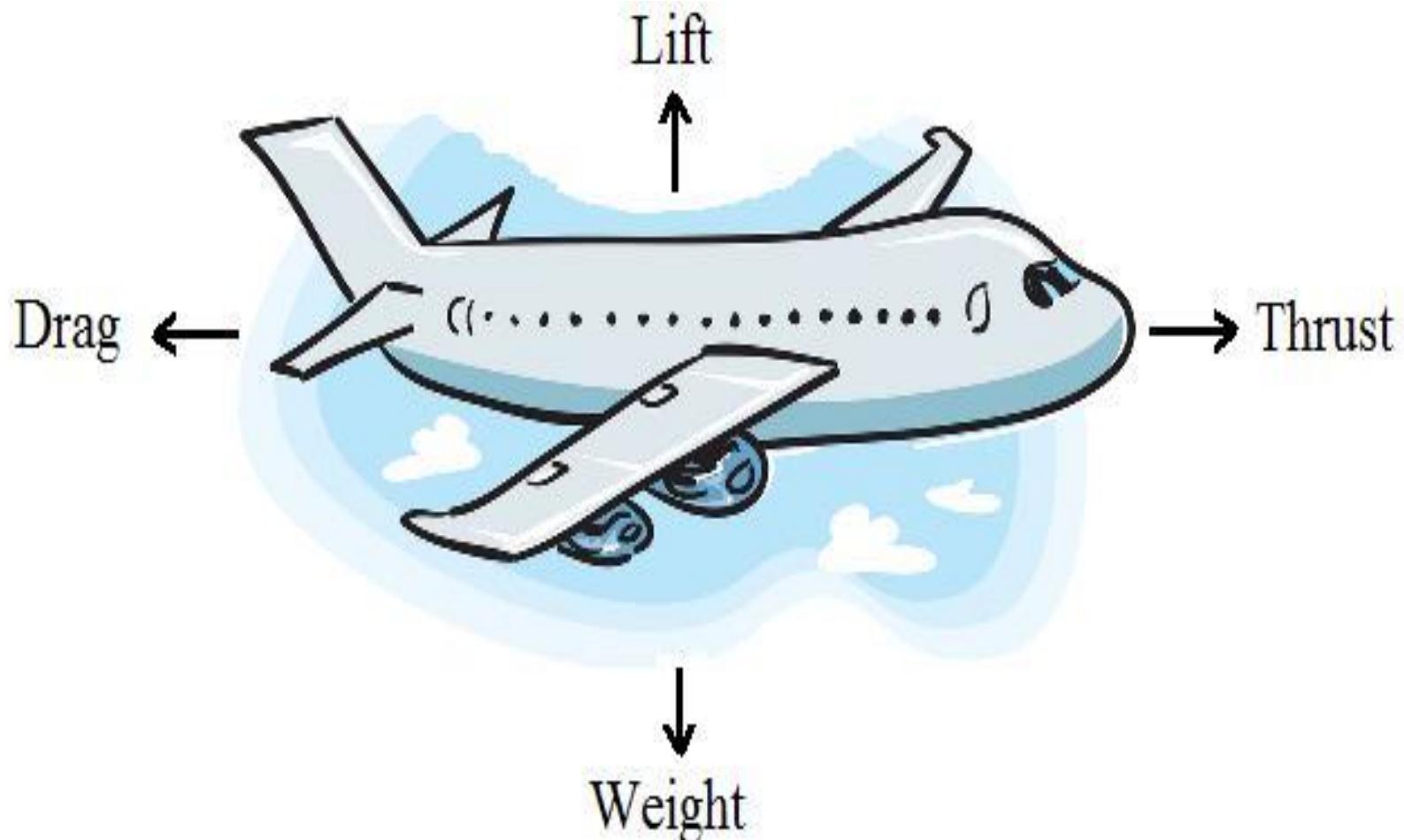


What about
GRAVITY !!!





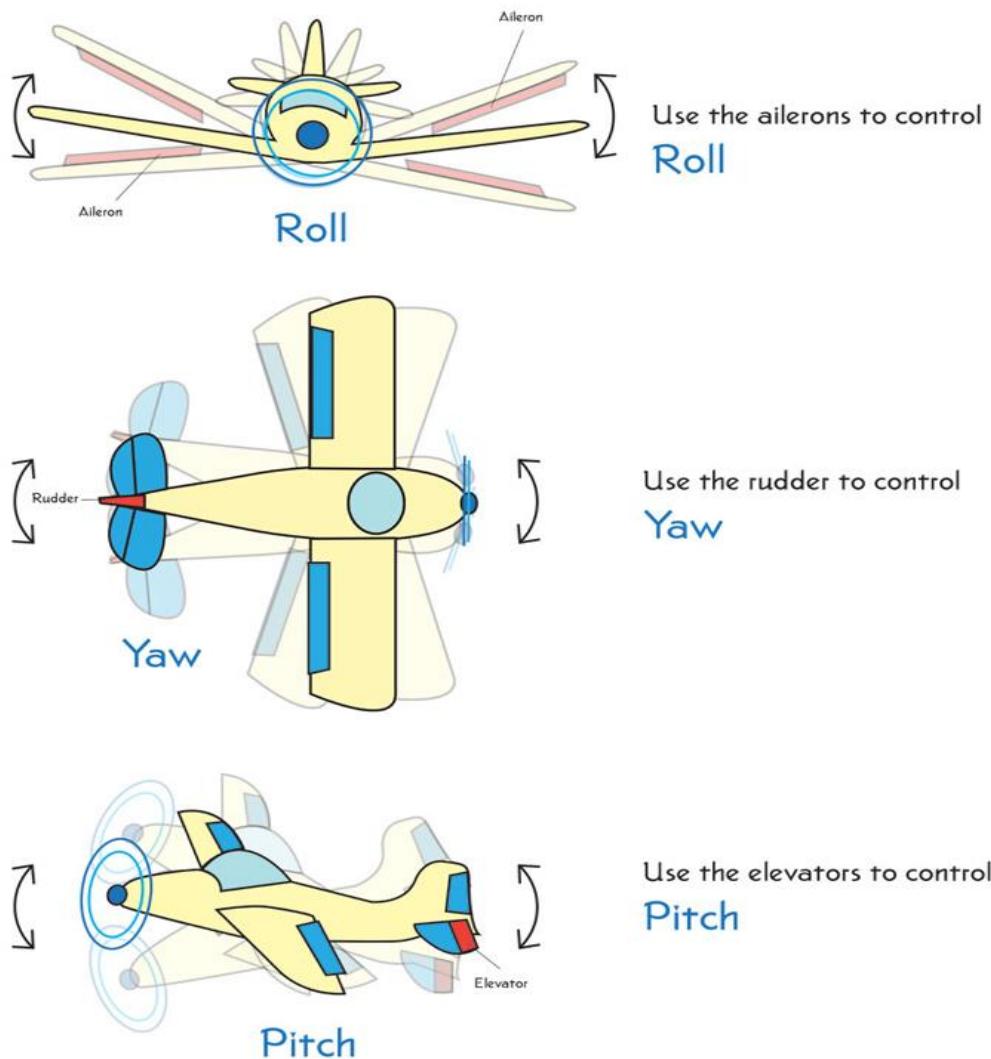
Lift to Drag Ratio



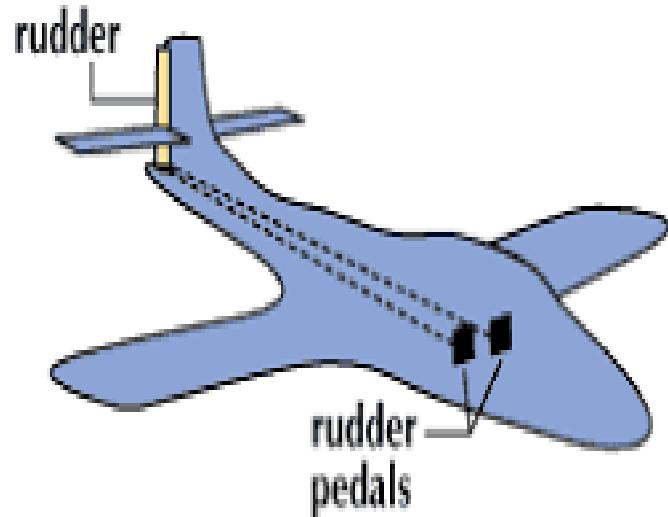
Navigations

There are three major components that control the navigation of an aircraft.

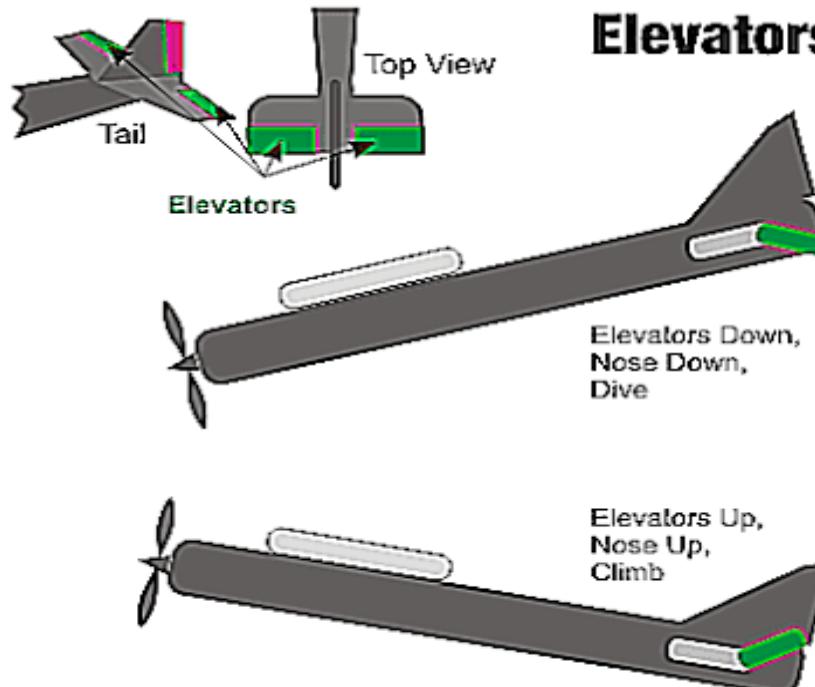
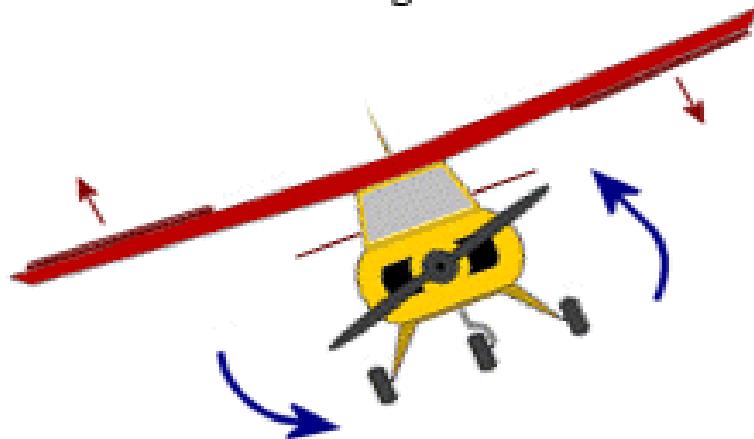
- Ailerons : - Used to control the roll.
- Elevator : - Used to control the pitch.
- Rudder :- Used to control the yaw.



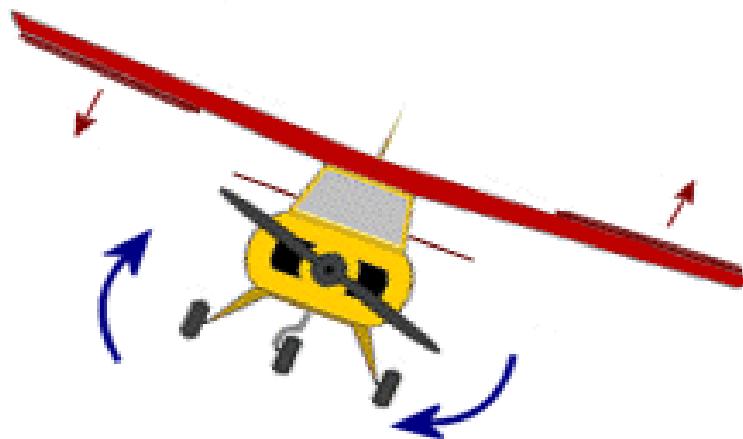
How Rudder Turns Airplane



Left aileron down, right one up
causes a roll to the right



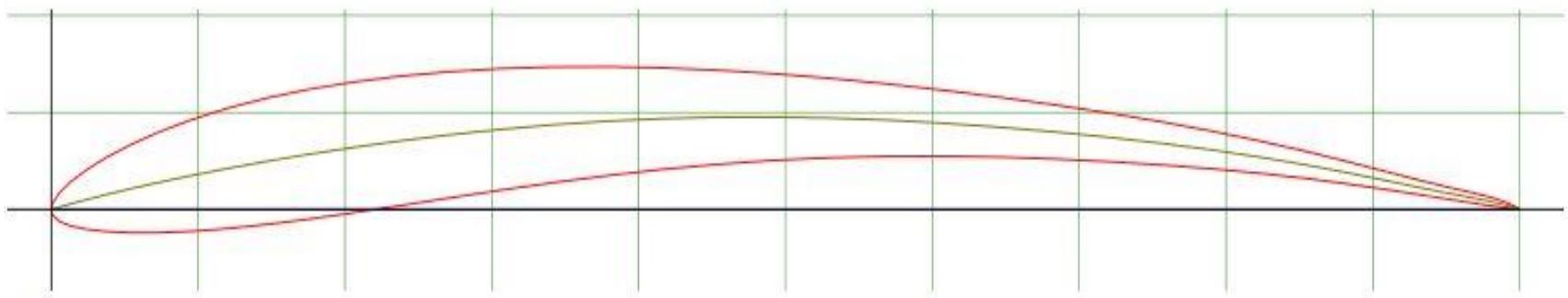
Left aileron up, right one down
causes a roll to the left



Airfoil

GM15 (smoothed) (gm15sm-il)

**GM15 (smoothed) - Gilbert Morris GM15 F1C
class free flight flapper airfoil**



Details

(gm15sm-il) GM15 (smoothed)
Gilbert Morris GM15 F1C class free flight flapper
airfoil
Max thickness 6.7% at 20.5% chord.
Max camber 4.8% at 49.3% chord
Source [UIUC Airfoil Coordinates Database](#)
[Source dat file](#)
The dat file is in Selig format

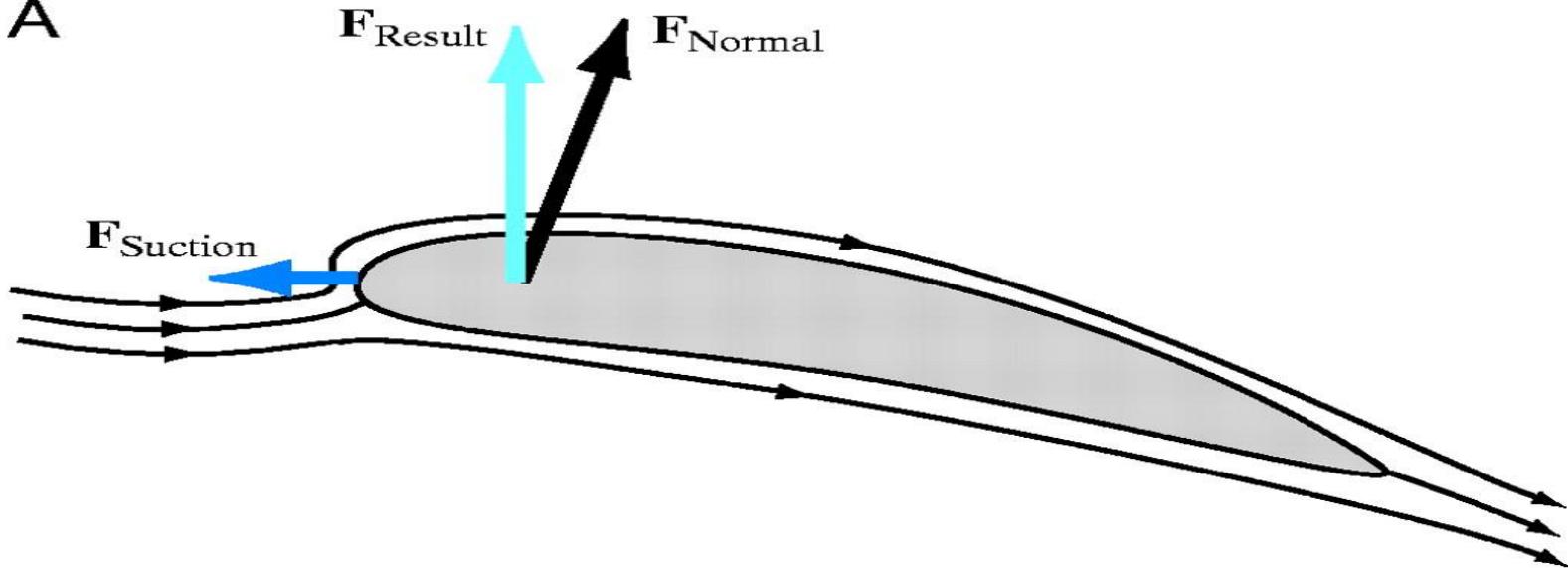
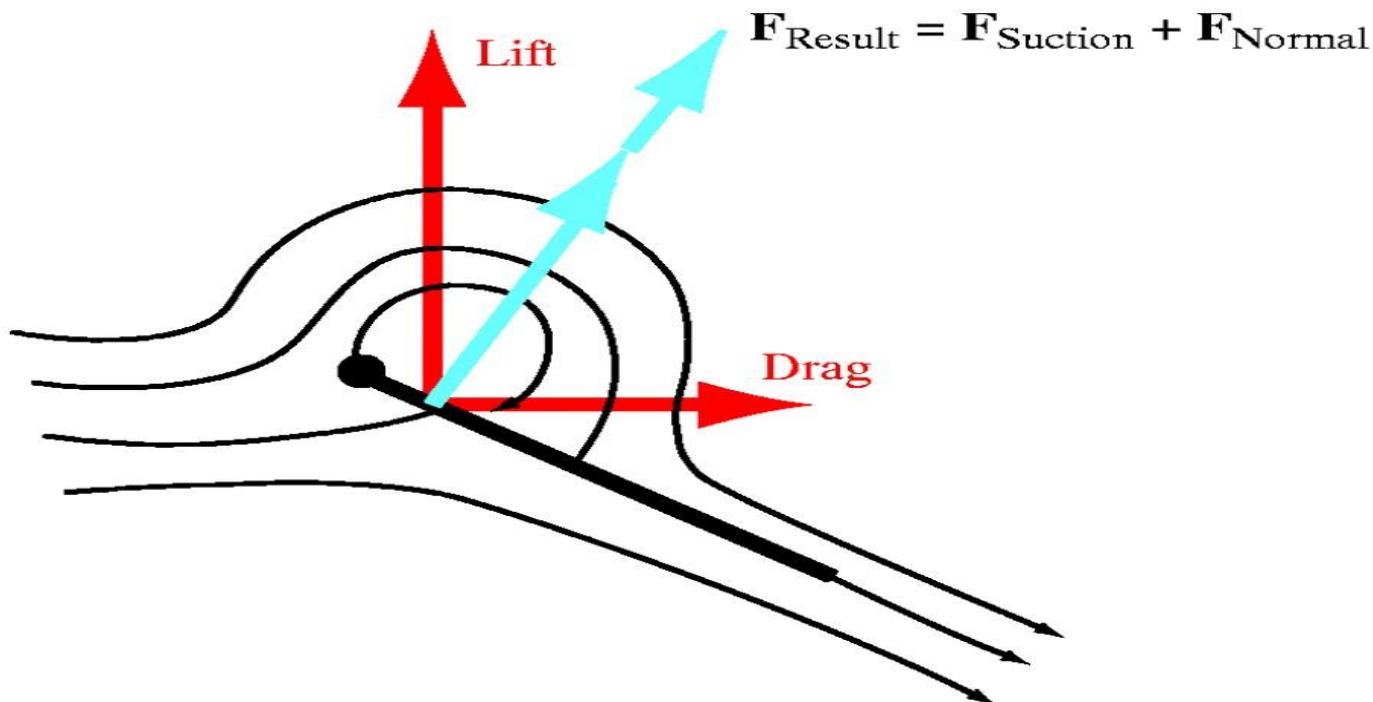
Dat file

GM15 (smoothed)		
1.00000	0.00006	^
0.99754	0.00114	
0.99070	0.00356	
0.98037	0.00616	
0.96698	0.00865	▼

Parser

No parser warnings

[Send to airfoil plotter](#)
[Add to comparison](#)
[Lednicker format dat file](#)
[Selig format dat file](#)

A**B**

Types of Wings

Anhedral



Dihedral



Winglets



Wing Positions

Shoulder Wings



Mid Wings



Bottom Wing



Vortices

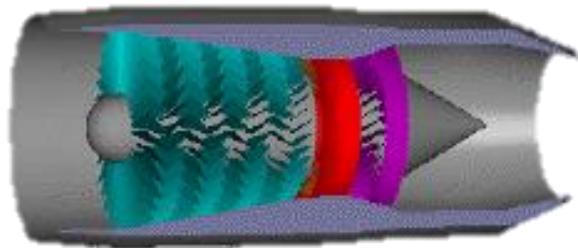




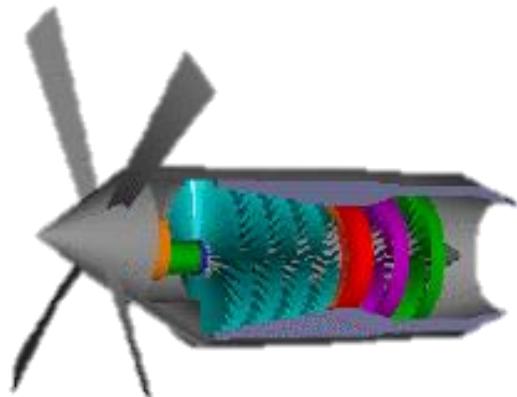
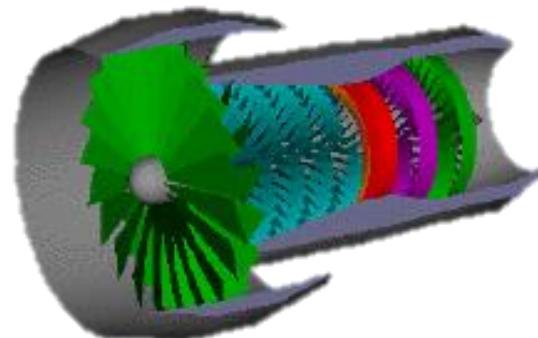
Engine



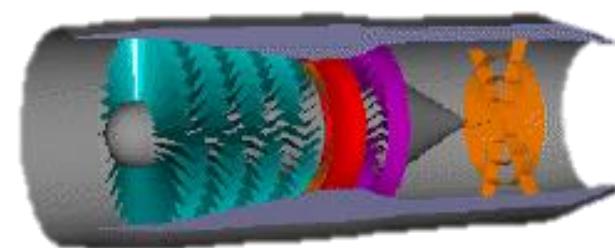
Turbojet



Turbofan



Turboprop



Turbojet with after burner

Maneuverability



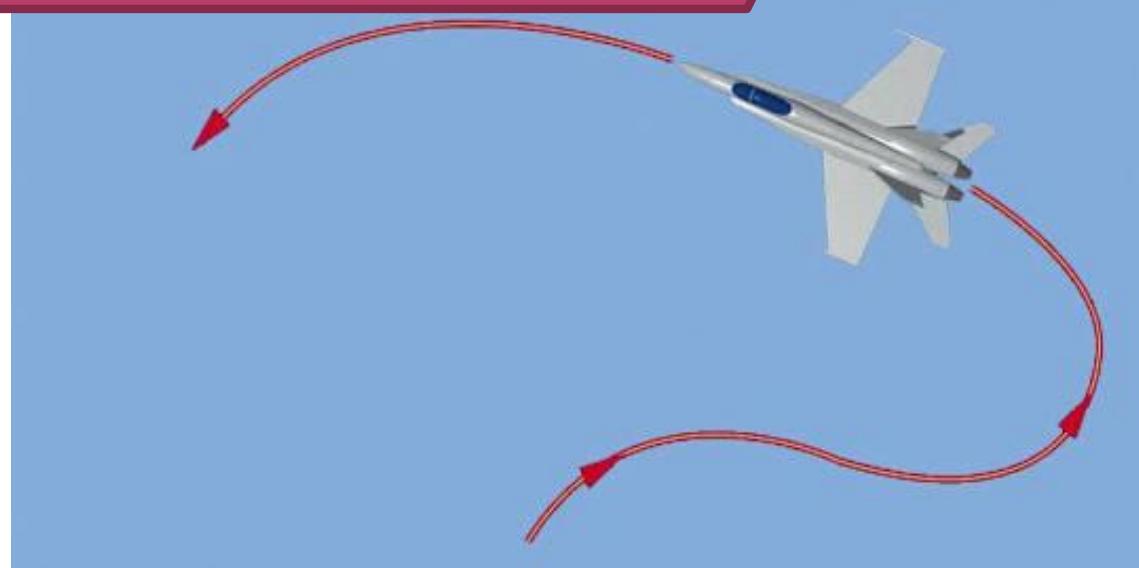
Controllability

Controllability refers to how easily the aircraft is disrupted from its current state by pilot control inputs. The **more STABLE** the aircraft is, the **less CONTROLLABLE** it is. Think of an F-16 which sacrifices **STABILITY** for **CONTROLLABILITY**.

Maneuverability on the other hand is a design consideration. It refers to how easily the aircraft can withstand conditions imparted on it, such as G loading, weight breaking apart or becoming uncontrollable. The **F-16** is much **more maneuverable and controllable than a Cessna**, but the **Cessna is many times more stable**.

In short, Controllability is linked directly to stability and Maneuverability is linked to the performance limitations of the aircraft.

Maneuverability



Controllability



Materials

- The basic features are strength and light weight of the aircraft.

**“The lighter we build,
the better it’ll fly”.**

Balsa



Coroplast



Aero Ply



Alphaboard



Electronics

Brushless Motor



LIPO Battery



Servo Motor



ESC



Other Accessories

Propellers



Control Horns



Cable Ties



Transmitter & Receiver



RC Plane



RC Plane





jaintayush717@gmail.com



31/07/2017

31

RC Plane



Final Flight



Final Flight



“Get high the Wright way”



AERO CLUB
IIT MADRAS



Thank You!