**Problem Definition**

VTOL is a type of aircraft that can take off and land vertically and also perform forward flight like a fixed wing. This aircraft is developed to eliminate problems of the long runways of fixed-wing aircrafts and limited flight time problems of rotary-wings aircrafts. The aim of the project is design a fixed wing vtol which can perform transition from hover flight to forward flight by using tilt-rotor mechanism. The aircraft should also follow the functional requirements given below.

**Functional Requirements**

* Operating Conditions: VTOL is expected to operate in non-windy & clear weathers
* Semi-Autonomous Flight: The vehicle should be able follow a given flight path.
* Tilt Rotor: The aircraft should have at least one tilt-rotor
* Manufacturing Constrain: Mostly 3D printable fuselage and wings
* Engine: Electrical power BLDC motors
* Power: 51.8-88.8Wh / 4s 16,8V 4500-6000mAh battery []
* Wing-Span: 1000-1500mm []
* Take-off Weight: 1000-2000gr []
* Stall Speed: 8-10m/s []
* Cruise Speed: 10-13m/s []
* Radio Control Range: Minimum of 300m
* Landing Gears: Standing 3 leg Landing Gears allowing to vertical take-off/landing