



Unmanned **VTOL** Research Project

Intro

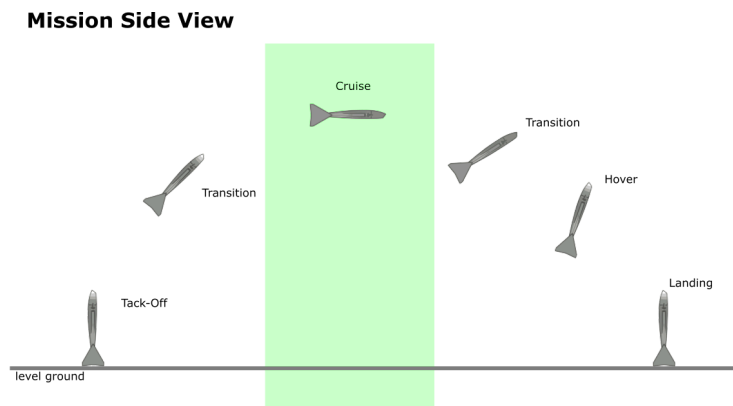
In the field of aviation **Airplanes** are known for their long flight time, the capability of traveling long distances and requiring large runways to operate, while **rotary-wing aircraft** are known for their capability of taking off and landing anywhere but with the expense of flight time due to the nature of their design, here where **Vertical Take-Off and Landing (VTOL)** aircraft come to combine the advantages of both Airplanes and rotary-wing aircraft without the disadvantages, but unfortunately such VTOL vehicles are **complicated** due to its different systems for takeoff, landing and cruise flight and **expensive** due to the research and development cost behind it, and that is what the project is trying to change.

Objective

The purpose is to expand the research in unmanned VTOL aircraft to highlight the technical and practical advantage of such vehicles, that is achieved by a **simple** and **inexpensive** vehicle design that uses the same aerodynamic surfaces for both phases of the flight to achieve efficient cruise and ability to operate without a runway.

Process

The research of this project is demonstrated and proven in the form of an unmanned VTOL vehicle that has been designed and built for this explicit research, that sits on its tail and tack-ff pointing up, then tilting to face the airstream in the cruise flight and tilting back pointing up before landing on its tail.



Conclusion and analysis

Designing an unmanned VTOL with systems that serve both phases of the flight appears to be more efficient and mobile, and by using: computer-aided design, the Iteration cycle, modeling engineering method the research was relatively inexpensive and demonstrated in a functional aircraft.