



SMART INDIA HACKATHON 2020

Team name : Technothorn

Project name : Ultra-compact Personal Aerial Vehicle

ADMIN BLOCK
B.TECH.
MCA
Ph.D



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Approved By AICTE, Ministry of HRD, New Delhi & Govt. of Rajasthan, Affiliated to Rajasthan Technical University (RTU), Kota

TEAM TECHNOTHORN



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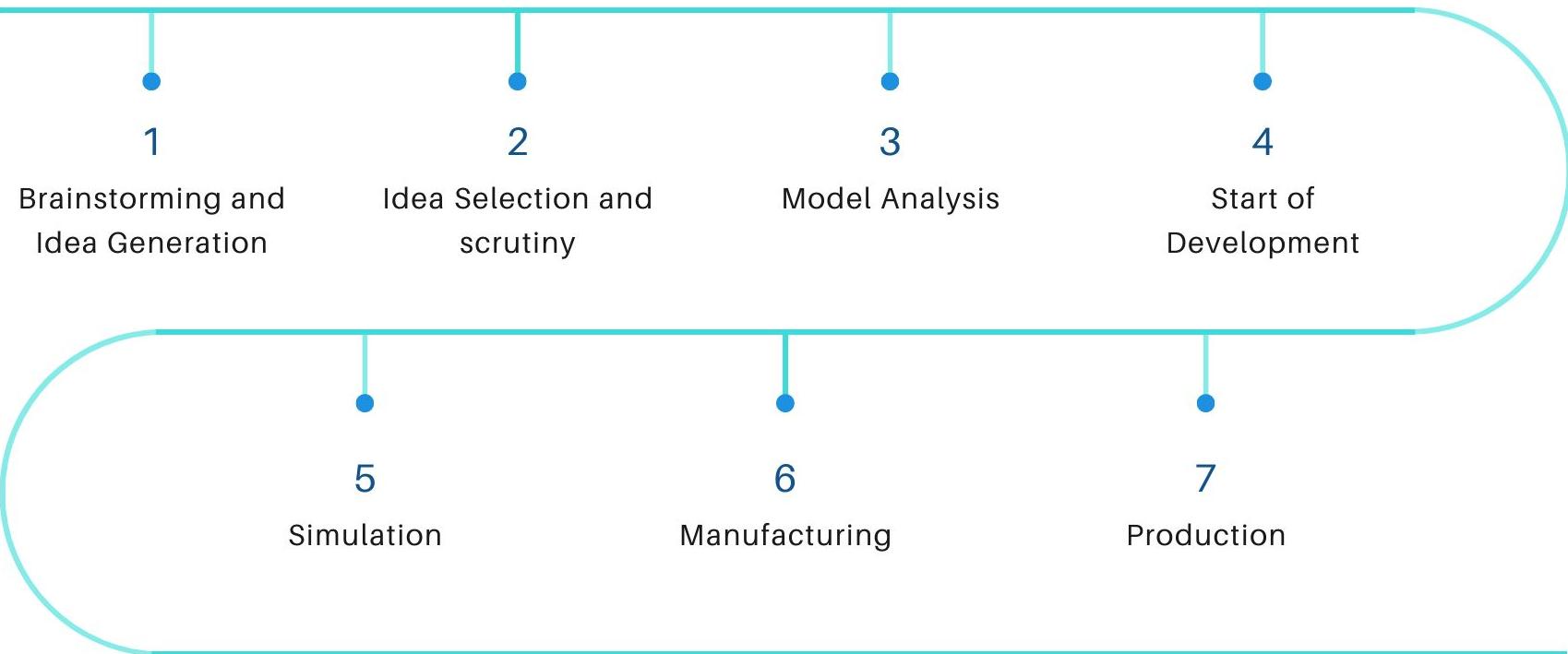


ADITI LOHOMI

Feature Builder

TECHNOTHORN - Ultra Compact Aerial Vehicle

Autodesk Project Timeline



**BY 2025 THE PAV MARKET WILL WITNESS A
RISE IN ITS CAGR(COMPUND ANNUAL GROWTH
RATE) BY**

15.5%

THE UAV MARKET ...

**Is estimated at USD 19.3 billion
in 2019 and is projected to
reach USD 45.8 billion by 2025**



PROJECT DESCRIPTION

EASE OF TRAVEL

- We came across the idea of creating an ultra compact aerial vehicle to meet the current demands and so people could travel on both air and road.

MODEL- SAR2

- Strong Body
- Light exterior material (carbon steel) and internal hard metal skeletal framing.
- Aerodynamic structure and secured landing mechanism.

AI FEATURES

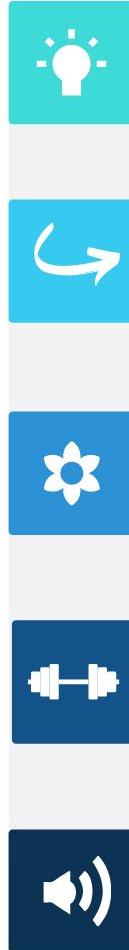
- Embedded latest AI features into our PAV-
- JARVIS/FRIDAY AI mechanism.
- GPS Tracker and shortest path finder.
- Real time object detection system
- Lane trafficlight detection system.

SECURITY MECHANISM

- Driver safety mechanism and an alert system.
- Pilot/Passenger ejection and parachute system.
- Temperature, Pressure, force and other interior criteria prediction mechanism

CHALLENGES

Faced by SAR2



POWER

Electricity consumption reduction potential of electric motors.

THE DRAG FORCE

Damaging winds exceeding 50-60 mph.

THERMAL MANAGEMENT

Excessive voltage supply or overwork by drawing more current may heat it up.

A DELICATE BALANCE

Impact on the vehicle on increasing weight.

NOISE

Limiting factor for public acceptability

OBJECTIVES

OUR MODEL - SAR2

We envision to obtain our idea as a tangential product.

- Enable safe, autonomous and eco-friendly air mobility for everyone.
- Hardware Safety - Redundancy backup for all major flight components.
- Flight Safety - Built in fail-safe system to control health conditions in real time.
- Provide the affected people with immediate medical support.
- Our vision is to provide everyone an experience of flight in an aerial vehicle.
- Contingency Safety - In case of emergency, the command and control center will step in to ensure safety of the passenger and aircraft to the greatest extent



Control and coordination of PAV



Highly efficient and convenient in nature

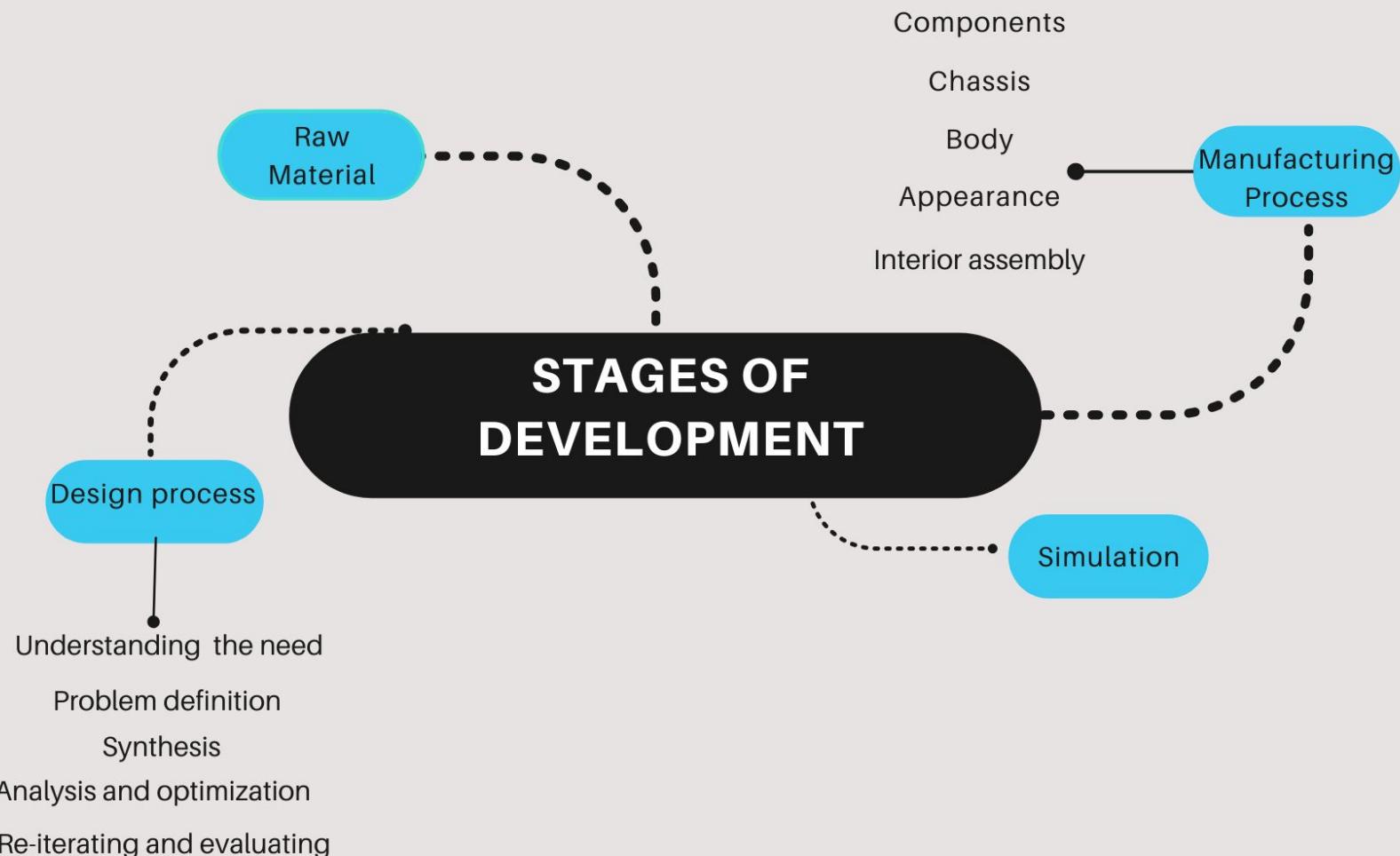


Absolute Safety by Design



Cost effective and light weight

GOALS TO ACCOMPLISH



Key Features - SAR2

FEATURE	VALUE
Vehicle Height	1.4 m
Vehicle width	4.4 m
Max weight carried by PAV	550 Kg
Total power supply	335.256 HP
Power(drag)	260.00 HP
Service ceiling	3281 ft(1000 m)
Motor speed	3000 rpm
PAV Speed	90-100 Km/hr (approx)
Battery type	Li-po battery
Seats	Two

Key Features - SAR2(cont.)

- Driver Safety Mechanism
- Comprehensive Management by the smart command and Control Center
- Radiator to regulate the heat generated inside the system
- Electrically powered to reduce environmental harm caused by emission
- Vertical take-off and landing(VTOL)

Sensors that make PAV work

- **ACCELEROMETERS** : Used to measure acceleration force.
- **INERTIA MEASUREMENT UNITS** : Measures and report a body's specific force, angular rate, and sometimes orientation of the body.
- **TILT SENSORS** : Enables the easy detection of orientation or inclination.
- **PARKING SENSOR** : Designed to alert the driver of obstacles while parking.
- **ULTRASONIC SENSORS**
- **CURRENT SENSOR**
- **TEMPERATURE SENSOR**

Metamorphosis

The evolution of our model at different stages.



SAR2 PRODUCT DESIGN

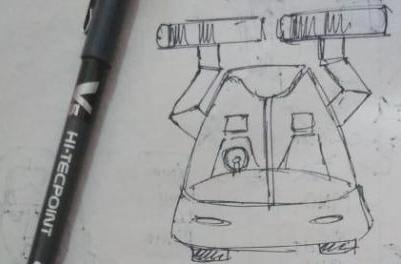


SAR2 PRODUCT DESIGN

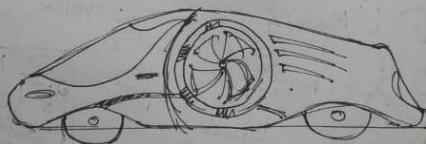
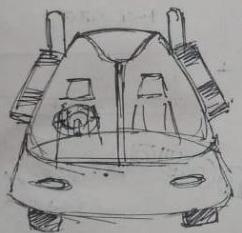


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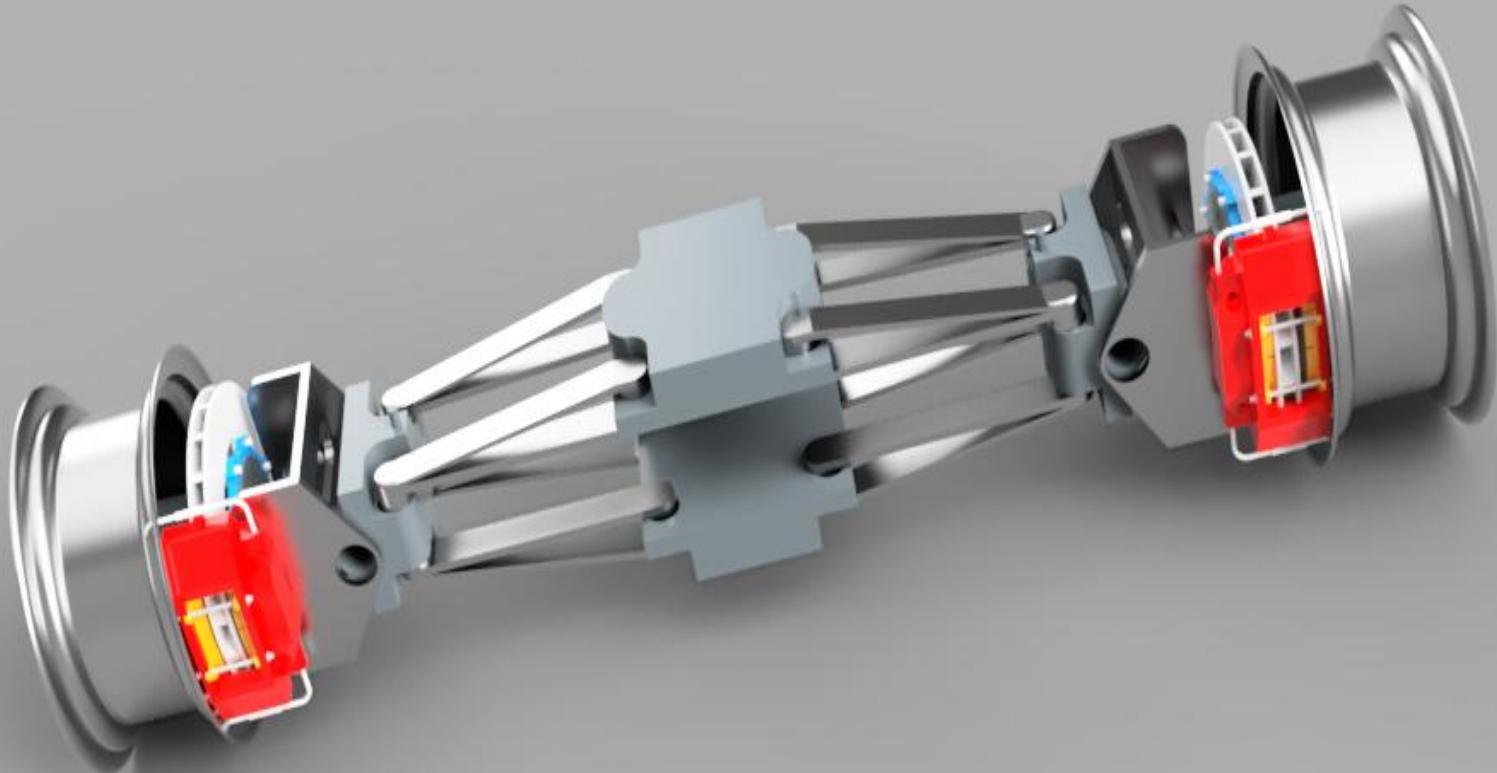




HI-TECPPOINT 0.5



WISHBONE SUSPENSION SYSTEM



MAIN MODEL PRODUCT ASSEMBLY





OPEN FOR SUGGESTIONS

Thank You

- TEAM TECHNOTHORN