Ashok Leyland Hackathon Document

Dear Innovators,

Welcome to the Ashok Leyland Hackathon! We are excited to introduce a platform for you to showcase your skills and creativity in the field of automotive innovation. The Ashok Leyland Hackathon is a unique opportunity to make a difference in the world of commercial vehicles.

Hackathon Details:

- Prize Pool: 50,000 INR

- The entire event will be conducted online.

- Registration opens on October 25, 2023, and closes on November 25, 2023.

- Results will be announced by December 20, 2023.

- The event has a single stage, and teams of 1-2 people are welcome.

- There is no age-specific requirement.

Problem Statement:

The Newton Truck Concept

The global automotive industry is fiercely competing to innovate in the realm of future mobility. This competition is especially fierce in the commercial vehicle space, where advancements in fuel efficiency, cost, smart systems, and safety are desperately needed. Take battery electric commercial vehicles as an example, where fuel efficiency and cost are paramount, directly affecting profitability. While extensive research and development are underway worldwide to create better batteries, motors, and electronics, Ashok Leyland is fundamentally reimagining moving objects' energy consumption.

The Newton Truck is an inspirational concept rooted in Newton's second law, a basic equation describing the physics of motion: F=ma (Force equals mass times acceleration). Newton's brilliance lies in realising that, in terms of energy consumption and fuel efficiency, it's not the speed or total distance travelled that matters, but speed changes (captured by "a") and the weight of the vehicle. In ideal conditions, once a vehicle reaches a constant speed, it requires zero acceleration, thus zero force, and zero energy consumption, even on a long journey.

Transmission loss, air resistance, tire losses, auxiliary loads, and braking losses hinder us from achieving Newton's law. For instance, tire losses could account for 30-40% of wasted energy in electric vehicles without engine losses, and transmission losses could be 15-20%. These loss mechanisms are like knobs that can be adjusted to enhance fuel efficiency. Instead of relying solely on larger batteries for longer ranges, we can achieve significantly better results by working on these loss mechanisms.

The Newton Truck program envisions an ecosystem involving Ashok Leyland, group companies, component and aggregate manufacturers, university partners, and potentially the government. We aim to create an electric vehicle that aligns with nature's principles. These principles emphasise that the fuel or battery should be just a small variable, if at all, in the mileage equation. We believe we can make significant strides in electric mobility by rethinking the fundamentals and offering a more effective alternative to battery research.

This is your opportunity to contribute to the future of commercial vehicles by participating in the Ashok Leyland Hackathon. Join us in this exciting endeavour!

Timeline:

- Registration opens: October 25, 2023

- Registration closes: November 25, 2023

- Results announcement: December 20, 2023

Eligibility:

- The event is open to all, with teams of 1-2 people.

Prizes:

- The top three winners will be awarded a total prize pool of 50,000 INR.

After registration, participants will be invited to an online webinar with Team Ashok Leyland to delve deeper into this groundbreaking concept. We encourage innovation and creativity, so no specific algorithm is required.

Thank you for being so interested in the Ashok Leyland Hackathon, and we look forward to your participation in this transformative event!