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FORMULA E TEAM

**TECH**  
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# Partners in Speed

Mahindra Racing and Tech Mahindra's path towards victory with Rubicon

## Overview

### Introducing Mahindra Racing

Mahindra Racing is a trailblazer that combines advanced technologies, innovation, and the drive for sustainability. It is one of the founding members of the ABB FIA Formula E World Championship, the highest level of electric racing.

Success in the single seater, all-electric racing series is dependent on several factors. Energy and tyre management are the main features of Formula E, as well as a type of racing that often

pits 22 cars wheel-to-wheel out on track for the duration of each race, in front of more than 350 million viewers worldwide.

It's a championship where milliseconds make the difference. The acquisition and processing of data, followed by swift decision-making, can make or break the efforts of the entire team at any given moment.

Formula E is the world's most competitive motorsport championship. To achieve any degree of success requires precision, swift decision-making and a highly skilled team of individuals working towards a common objective. After a difficult start to GEN3, Mahindra Racing is now on a journey back to competing at the front, with two new, world-class drivers in Nyck de Vries and Edoardo Mortara, along with the assembly of several key appointments in our management and engineering teams to help develop our product, and improve our performance on-track. Our goal, ultimately, is to restore the team to the front of the grid, and it's important that we draw on every available resource in that mission.

### Frederic Bertrand

Mahindra Racing CEO and Team Principal

## The Objective

### Looking for a Turnaround

Over the past decade, Mahindra Racing has been among Formula E's most-successful teams, amassing five E-Prix victories, 24 podium finishes, and 11 pole positions.

Periodically, the championship updates the single-seater car with which all teams compete, in line with the development and implementation of new technologies, which are driven by eventual relevance to road-going electric vehicles.

At the last regulation change ("GEN3"), Mahindra Racing's performance levels dropped relative to the competition, taking the team from regular podium finishers to battling in the midfield.

The appointment of Frederic Bertrand as CEO and Team Principal in December 2022 marked the beginning of a five-year mission to restore Mahindra Racing to its previous status as championship contenders, and to expand the team's portfolio of long-term commercial partners in order to facilitate sustainable growth of its operations.

### The goals were to:



Provide insights and analysis to assist the Commercial team with the acquisition of long-term partnerships



Design and develop a data-driven solution to performance development, whilst also mitigating the risk of a competitor adopting the same strategy



Improve the team's performance on track in the ABB FIA Formula E World Championship, particularly around the optimization of the powertrain



## Our Partnership

### Across the Mahindra Universe

In the world of racing, every tenth of a second matters. And that's where it's really, really important to have a partner like Tech Mahindra, that can support in building out products, gathering data and then, using their expertise, give us feedback and performance insights that we can then apply to the car out on-track.

I think it's really important to highlight partnerships like this, where two brands come together to really push those boundaries of performance using their combined skills, knowledge and resources.

The fact that both these brands sit within the Mahindra Group is a real testament to the strength and breadth of the Group, and the organizations that sit within it.

#### Roanne Crouse

Head of Partnerships, Mahindra Racing



## Our Approach and Solution

### Tech Mahindra enables Rubicon application to Mahindra Racing's Data Solutions

Tech Mahindra proposed a multifaceted approach to assist Mahindra Racing. This involved integrating AI-based analytics, simulation modeling, and deep learning algorithms to provide actionable insights and facilitate data-driven decision-making. Our solution established a dedicated innovation team comprising experts from both Tech Mahindra and Mahindra Racing.

At the core lies Rubicon, a state-of-the-art strategy simulation tool designed to empower Mahindra Racing with capabilities to anticipate future trends and optimize race strategies in the Formula E circuit. Rubicon leverages historical data, real-time analytics, and predictive modeling to provide a holistic view.

Additionally, our solution incorporates AI-based analytics to provide actionable insights derived from vast amounts of race data, enabling Mahindra Racing to refine its approach for maximum performance. We also integrated simulation modeling to emulate car behavior under various race conditions, optimizing energy management and race strategies. To ensure successful implementation, we recommended establishing a dedicated innovation team and conducting periodic peer evaluations. Rubicon's modules like energy management, qualifying timer, engineer's page, local OCR for battery, and TPMS provide comprehensive insights for informed decision-making during races.

The cardinal function of software within Formula E, or any motor racing team, is to help gather information, then process it, refine it and provide it to the engineers, who will take decisions on the design and performance of the car, and during the race.

But we are, essentially, information gatherers, processors and presenters. Software in a motor racing team is an interesting endeavour because motor racing, by its very nature, is in many ways quite conservative. People are very set in their ways, because they know how to do things to the right standard.

The world of software and technology is much more fluid. So, we find ourselves at a crossroads between this new technology and conservative motorsport engineering, which makes it a very interesting exercise.

### **Dr. ir Ruggero Franich**

*Head of Software Engineering, Mahindra Racing*

AI is changing the landscape of enterprise and sports in a big way. Tech Mahindra with its AI competency is working with Mahindra Racing and the ecosystem to take this sport to the next level. Areas like simulation (Digital Twins), expertise in large language model to understand racing language are but some of those injunctions that Tech Mahindra is doing in collaboration with Mahindra Racing.

### **Nikhil Malhotra**

*Chief Innovation Officer,  
Tech Mahindra*

## **Wider Impact**

### **A Force for the World**

Much as Mahindra Racing seeks to build a greener automotive industry for the world through its involvement in Formula E, so too does Tech Mahindra across its portfolio of industries, taking the real-world application of the technology far beyond this sporting-focused collaboration.



By pioneering virtual platforms and leveraging advanced engineering services, we enhance performance management and promote environmental responsibility, setting new standards for sustainable business practices in the racing industry.



Our partnership serves as a catalyst for innovation, driving positive change and inspiring others to embrace emerging

technologies and sustainable practices in motorsports and beyond.



Through our collaboration, Mahindra Racing gains access to cutting-edge technologies and expertise, enabling the team to optimize performance and streamline operations in the highly competitive Formula E landscape.



Furthermore, our alliance fosters community engagement and promotes environmental sustainability, setting new standards for technological innovation and environmental responsibility in motorsports. Together, we are redefining industry standards and inspiring positive change both on and off the track.



We are committed to the business of sport by building digital products and focusing on customer experience and team performance.

Rubicon is a standout example where we are helping Mahindra Racing to Scale at Speed by transforming data as a product and building AI for superlative experience and performance.

**Manish Upadhyay**

*Sr. Vice President - Insurance (Europe) and Sports Tech, Tech Mahindra*



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