

# ELECTRIC SUV STRATEGY

M&M ANALYST CONFERENCE SEP'22



# Customer Evolution



# Introducing Mahindra's Electric Brands



## Leveraging iconic brands

Honoring our legacy while embracing the future. For those who have the passion to live life beyond boundaries while making a difference. Authentic yet futuristic



## Creating all-new revolutionary brand

Opening spaces to a completely reimagined world. For those who want to define their life's journey and be who they want to be. Audacious and a trailblazer



DESIGN CAPABILITY

**MA  
DE**  
MAHINDRA  
ADVANCED  
DESIGN  
EUROPE

# MAHINDRA DESIGN GLOBAL NETWORK

The Best Locations for Design



*pininfarina*

**MI  
DS**  
MAHINDRA  
INDIA  
DESIGN  
STUDIO



- M.A.D.E is located at the global automotive and EV hub of Banbury, Oxfordshire. It forms part of the **Mahindra Global Design Network**
- Its purpose is to **conceive and create all future Mahindra EVs and advanced vehicle design concepts**
- M.A.D.E is equipped with **state-of-the-art design tools** to handle end-to-end design activities including **conceptualization, 3D digital and physical modelling, Human-Machine Interface (HMI) design, etc.**
- It incorporates a **complete digital visualization suite, clay modelling, VR digital modelling** and digital as well as physical presentation areas



# Designing Products on *HeartCore Philosophy...*

THAR  
ICONIC

IS ICONIC AND RARE,  
BUT WITH A HEART  
OF GOLD



BOLERO  
MONOLITHIC

IS MONOLITHIC AND  
SOLID, YET MAKES  
YOUR HEART MELT



SCORPIO  
MUSCULAR

IS ALL MUSCLE,  
THAT MAKES YOUR  
HEART POUND  
FASTER



XUV  
ATHLETIC

MAKES YOUR HEART  
BEAT WHILST  
STANDING STILL,  
YET LEAVES OTHERS  
STANDING IN A HEART  
BEAT



<ELECTRIC>  
ELECTRIFYING

IS ELECTRIC,  
AND SHOCKINGLY  
BEAUTIFUL  
TO MAKE YOUR PULSE  
RACE



..to create Exquisite Designs that deliver Unmissable Presence





Born Electric AV

# Human Machine Interface AV



FUTURISTIC TECHNOLOGY

# InGlo – Mahindra's Next Generation Platform

INTUITIVE

INTELLIGENT

IMMERSIVE

A revolutionary platform that is the basis of everything that follows. Purpose-built and ground up, the INGLO platform outperforms on every level - speed, efficiency, safety, and adaptability



## Thrill on Tap



Up to 250 kW power in All-Wheel Drive intending to take you from **0-100 km/h in 5-6 seconds.**

## Endless Modularity



**Variable lengths, widths, wheelbases and overhangs** create an SUV that fits your lifestyle perfectly.

## Incredible Fast Charging



Next-generation battery science **charging up to 80% in less than 30 minutes.**

## World Class Safety



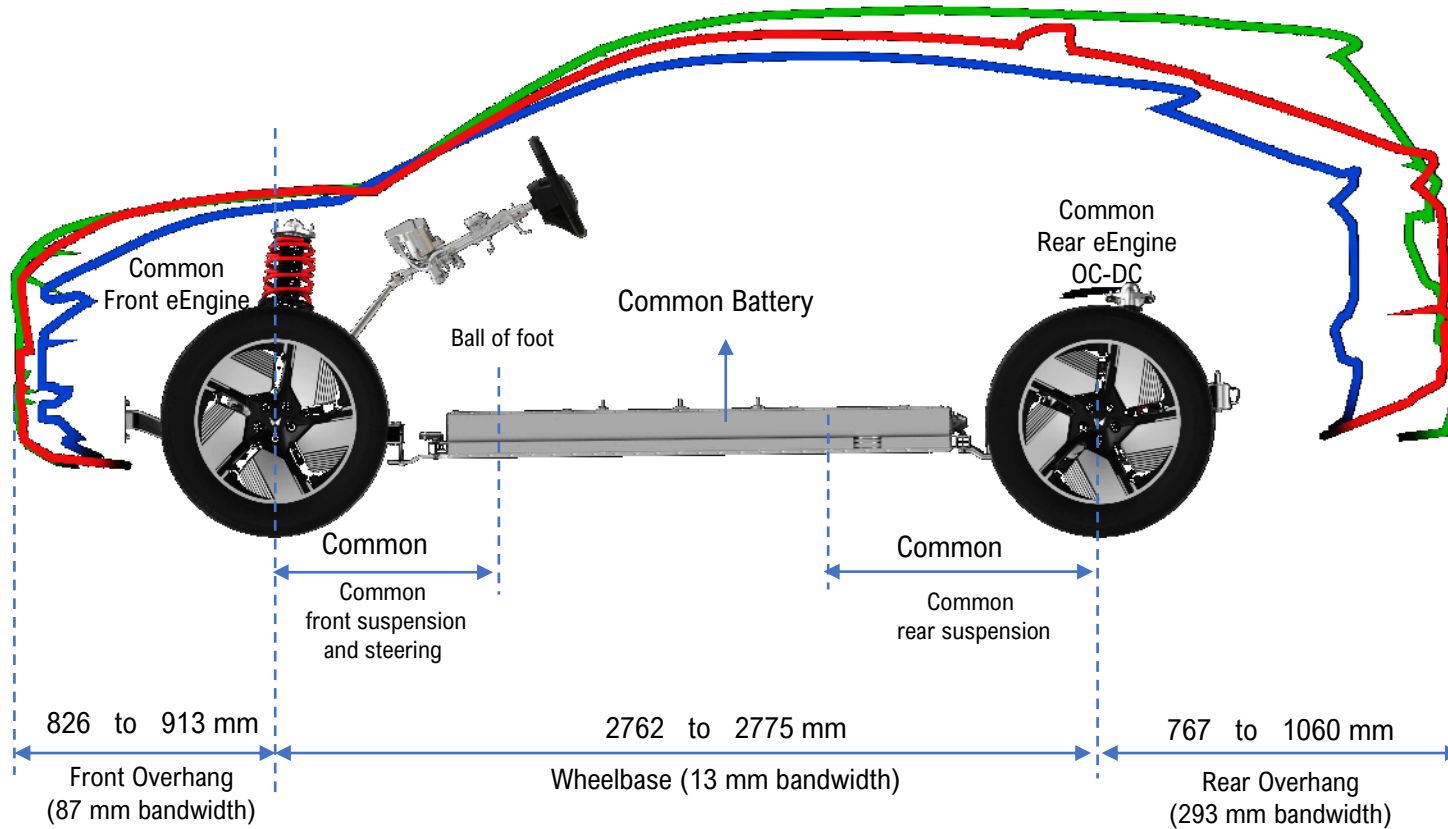
Building for **5 Star Global NCAP ratings** with Ultra-strong protection for the passenger cabin and battery tray.

# Partnership with Volkswagen



- Term sheet for supply of **VW's MEB Electric Components** for **M&M's INGLO** platform covering all major commercial and technical terms with path to potential localization of battery system
- Explore opportunities for collaboration in India in the field of **e-mobility, Vehicle Projects, Charging and Energy Solutions and Cell Manufacturing**
- Intended volumes of > 1 million EV over lifetime and includes the equipment of five all-electric SUVs with MEB components
- Explore further opportunities for collaboration towards broader strategic alliance to accelerate the electrification of the Indian automotive market

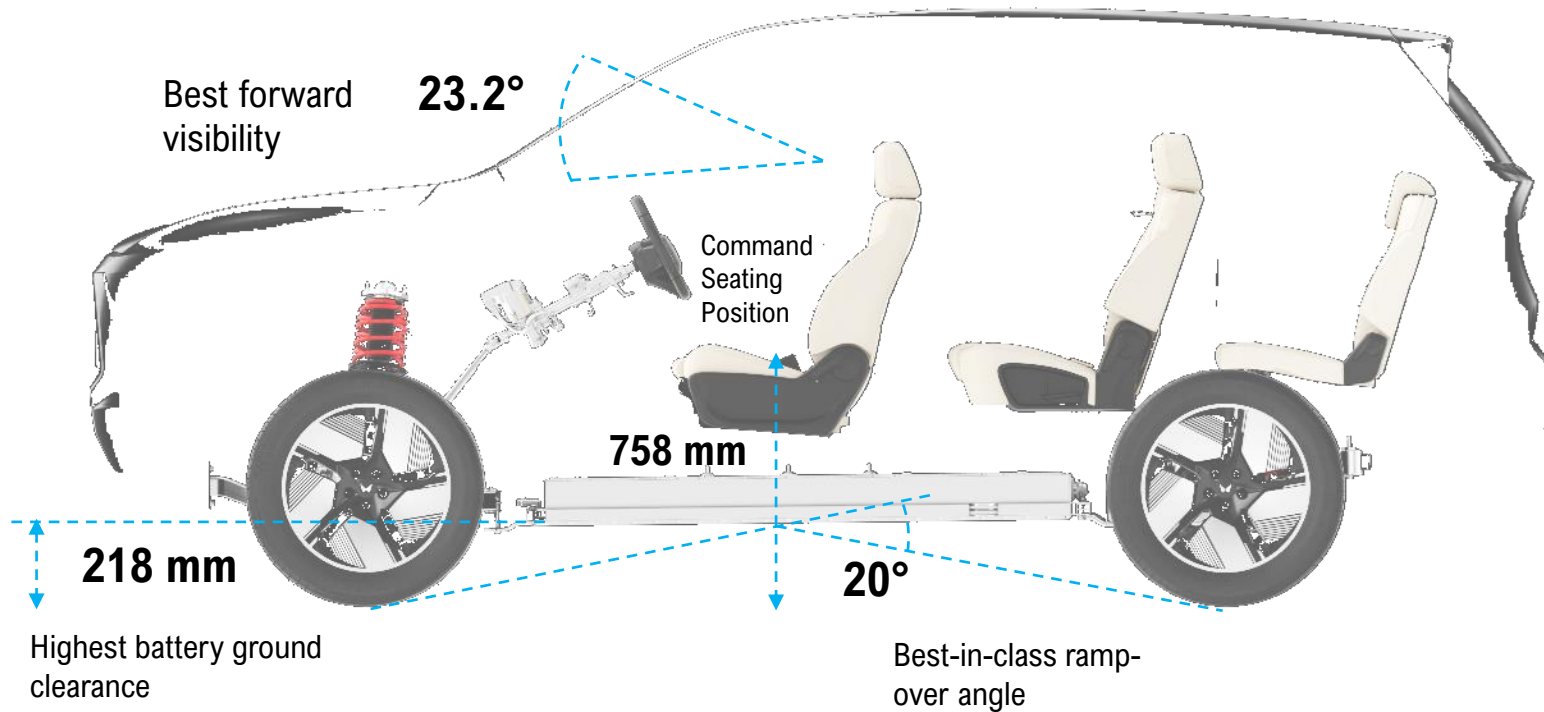
# SUV Modular Platform Architecture



## 60% VOB (Vendor On Board) of EV components closed

- Overall length : 4368 to 4735 mm
- Lightest 7-seater skateboard
- Best-in-class global bending & torsional stiffness
- Safety Standards : EuroNCAP, GNCAP, BNCAP
- Wheelbase : A fine balancing of
  - Space for 80 kWh LFP
  - Best-in-class TCD
  - Vehicle dynamics (CoG location)
- Rear wheel drive, All wheel drive

# SUV Modular Platform Architecture



## Battery Ground Clearance

- **Benchmark Range** : 150 - 190 mm
- **INGLO** : 218 mm

## Command Seating Position

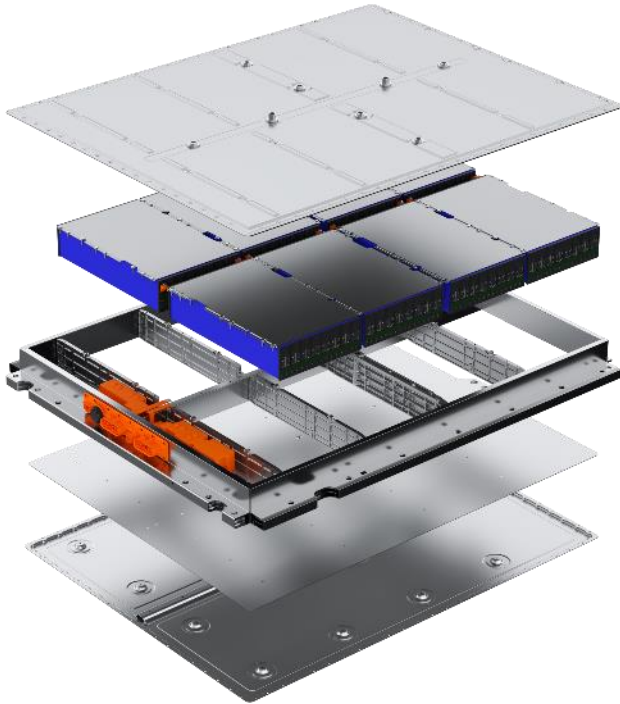
- **Benchmark Range** : 600 - 631 mm
- **INGLO** : 758 mm

## Forward Visibility

- **Benchmark** : 22.6 deg
- **INGLO** : 23.2 deg



# Performance: High Energy Density Battery



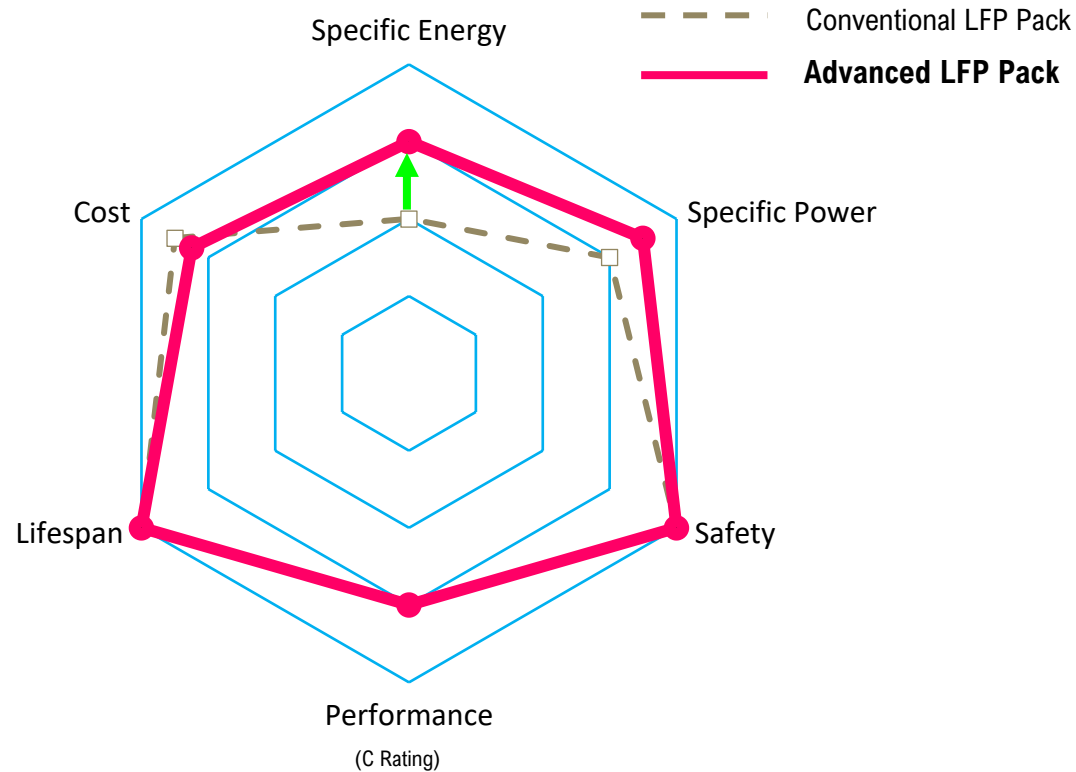
## Battery

- **Energy** : 60 to 80 kWh
- **Cell Chemistry** : LFP, NMC
- **Cell type** : Blade, Prismatic
- **Pack design** : Cell to Pack
- **Highest cell integration efficiency** : 73% (benchmark range 60 % to 72 %)
- **Highest Energy density - LFP** : 142 Wh/kg

## Charging

- **DC Charging Power** : 175 kW
- **Charging time** : 5% - 80% charging in 30 min.

# Performance: Cell Chemistry and High-Power Electric Engines



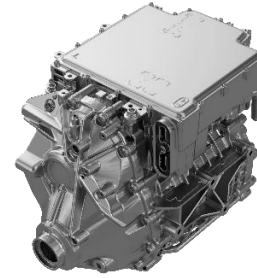
## LFP = $\text{LiFePO}_4$

- Long cycle life (Charge / discharge)
- 80 kWh with blade cell
- 60 kWh with prismatic cell
- Competitive price, free of Cobalt and Nickel

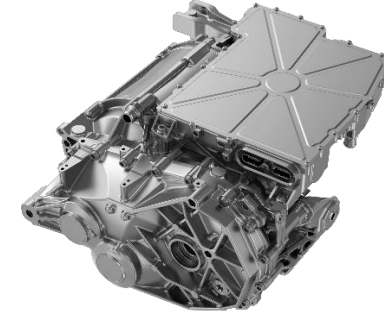
## Cell to Pack Technology

- Offers highest energy density
- Blade cell offers high energy & performance

## Front Motor



## Rear Motor



## Range - 80 kWh

- **WLTP** : 435 - 450 km
- **MIDC (Full)** : 565 - 585 km
- **MIDC (Part 1)** : 652 - 675 km

## Rear powertrain

- **Peak Torque** : 360 - 560 Nm
- **Peak Power** : 170 - 210 kW
- **High-efficiency PSM machine**

## Front powertrain

- **Peak Torque** : 135 Nm
- **Peak Power** : 80 kW

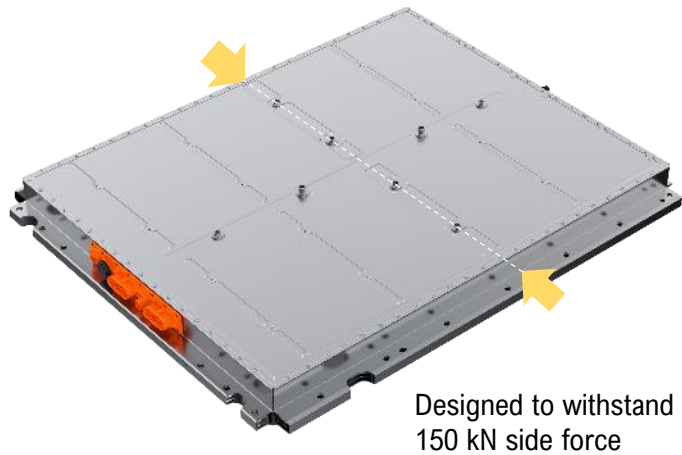
## All Wheel Drive

- **Total torque at wheel** : 6700 Nm (Benchmark : up to 6300 Nm)
- **0 to 100 kmph** : < 5.5 sec

# Safety: Robust Cell Chemistry & Mechanical Structure

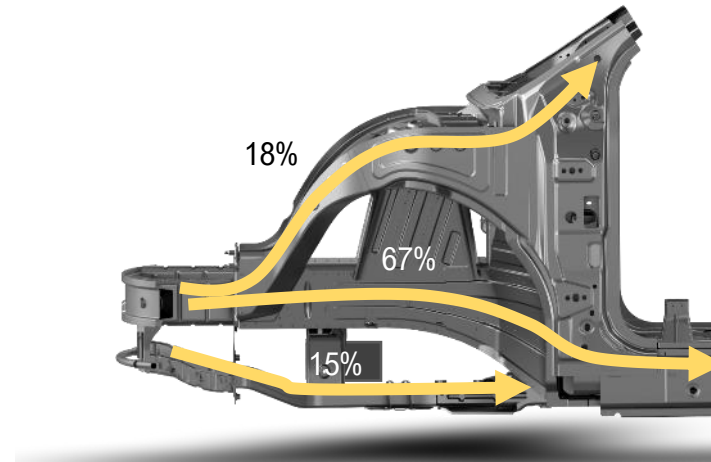
## Robust Cell Chemistry – LFP

- Best thermal and chemical stability
- Stop Thermal Propagation - STP



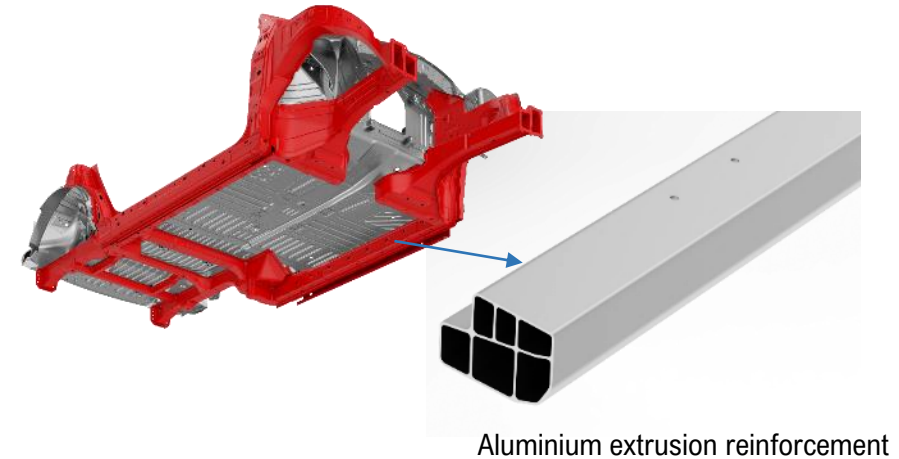
## Frontal Crash

- Optimized front-end structure
- Additional 3<sup>rd</sup> load path

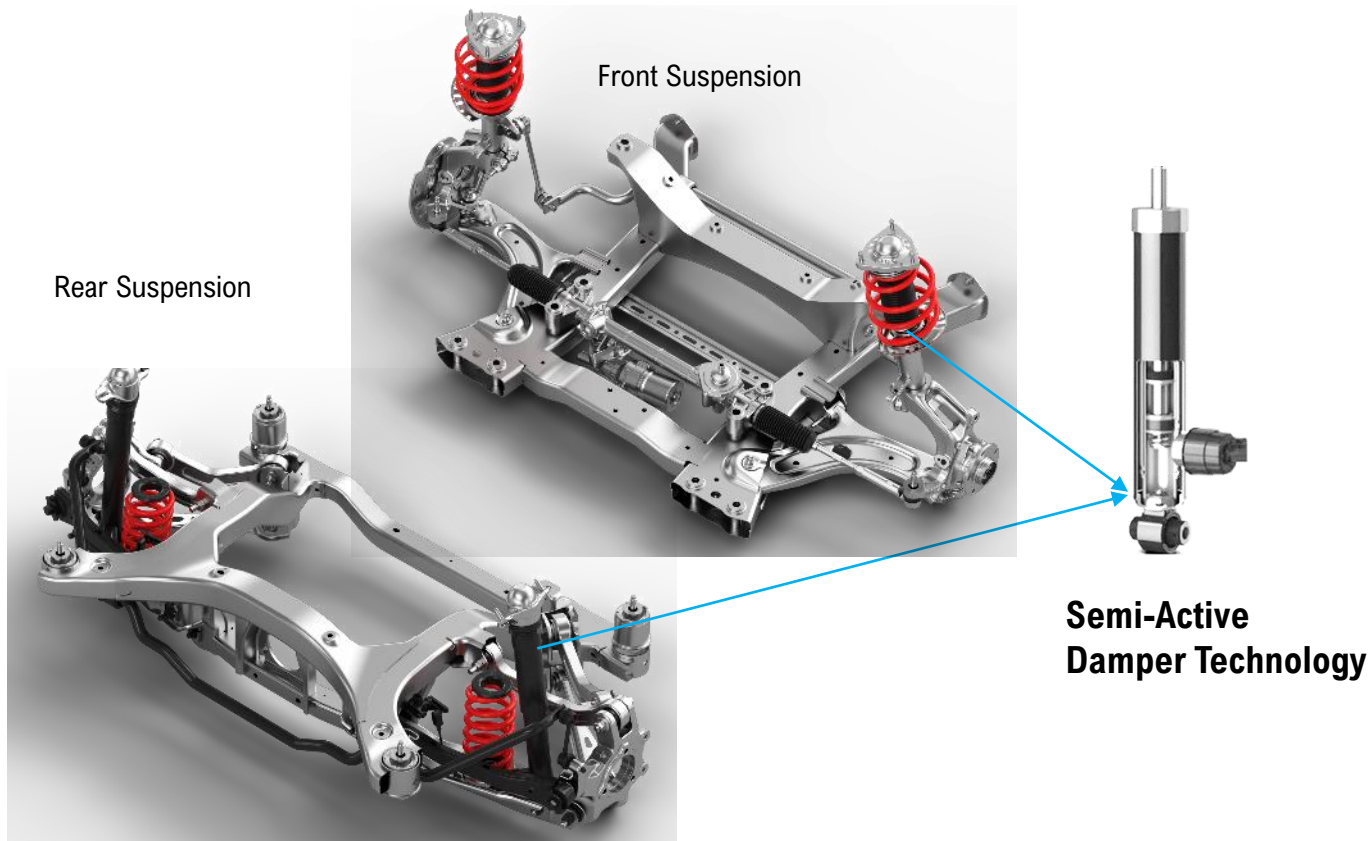


## Side Crash

- Designed to withstand 900 kN force
- Hot-formed sill section



# Dynamics, Ride & Handling, Comfort



## Front Suspension

- McPherson Strut with improved ride comfort
- Reduced TCD < 10.5 m

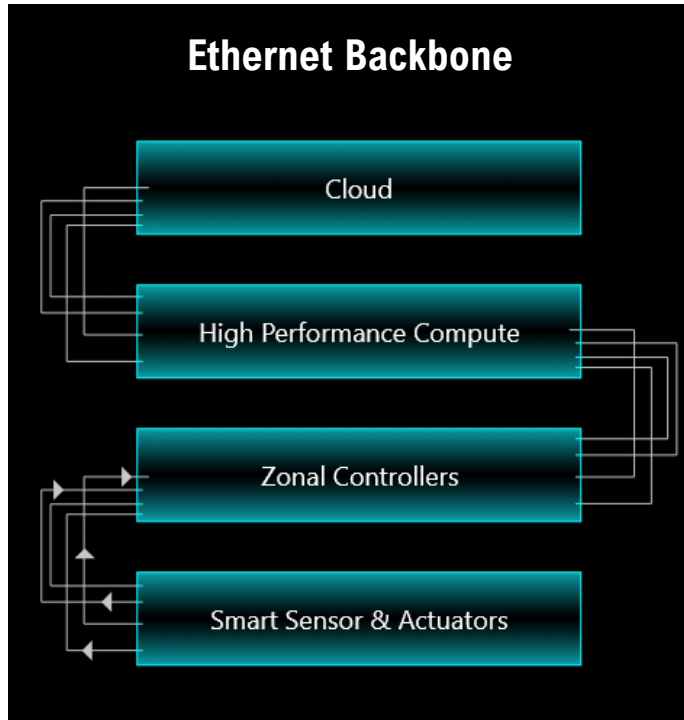
## Rear Suspension

- 5-link suspension architecture
- Best-in-class suspension travel

## Steering

- Dual Pinion Rack Assist, 125 A motor capacity
- Variable Gear Ratio (VGR) technology

# High Performance Compute System

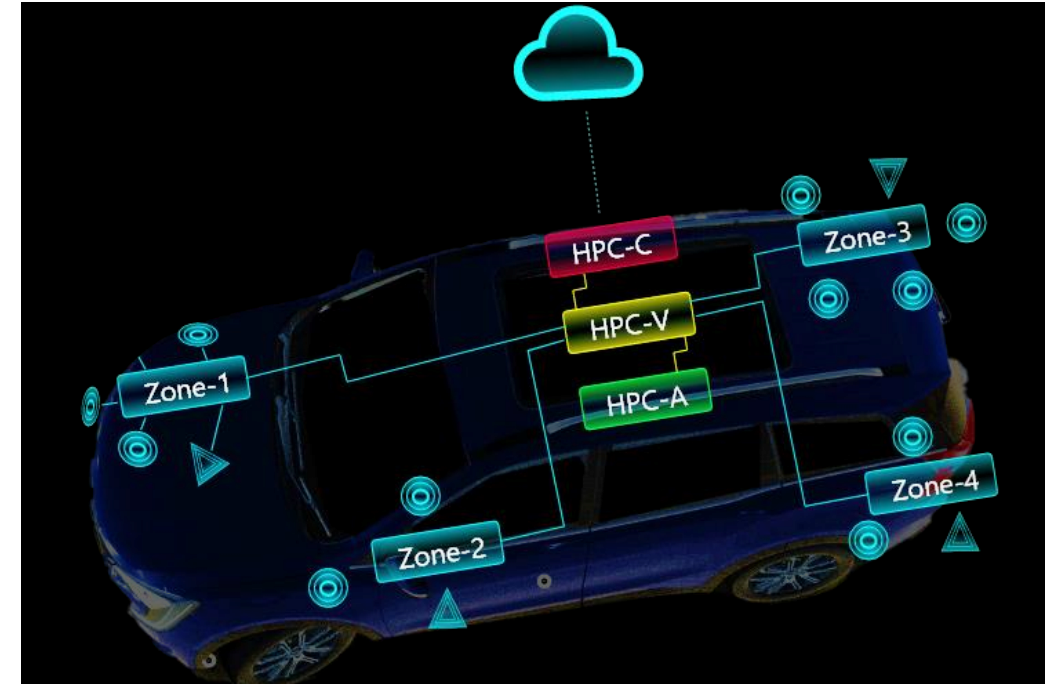


## High Performance Computers

- Cockpit Domain
- Autonomous
- Vehicle Dynamics

## Capable of delivering

- ADAS Level 2+
- FOTA, SOTA
- DMS, OMS
- Alexa
- Connected Car – 5G, V2X



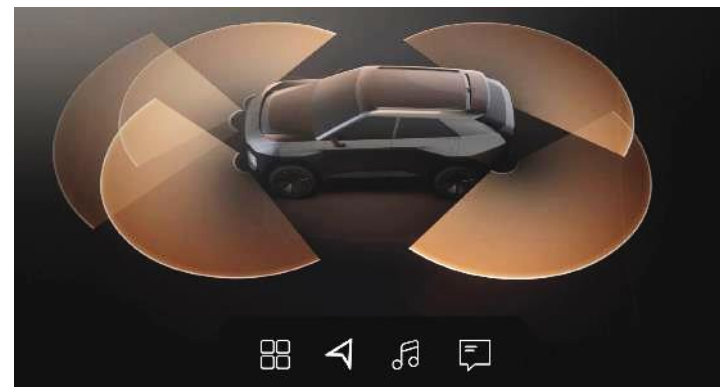
# Ultimate Human Machine Interface

## Panoramic Display



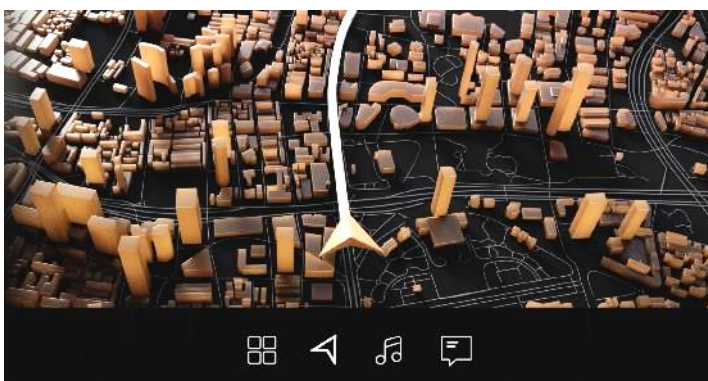
Edge-to-edge vista display with heads-up functionality creates an intuitive and immersive experience for both the driver and co-driver

## 360° Vision with AR HUD



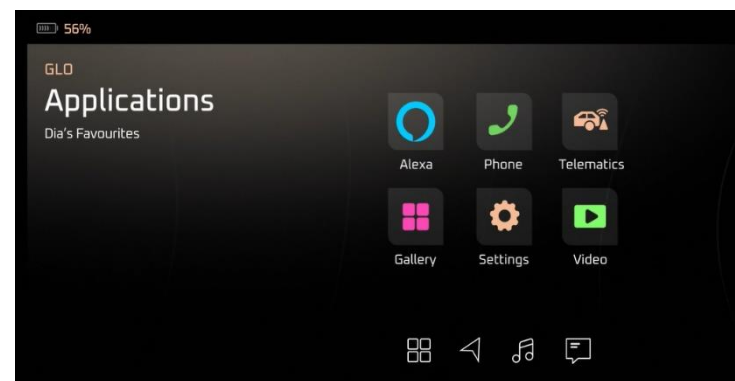
With 5 Radars-1 Vision technology, it's futureproofed for L2+ autonomous driving and ADAS, with Augmented Drive Assist

## Ultimate Connectivity



Embedded 5G network capability and Over The Air updates deliver a go-anywhere experience

## Plug and Play



Listen, watch, share - INGLO makes it effortless to interact with the world on your terms

# Upcoming EV Portfolio

BE.07

BE.05

BE.09

XUV.e9

XUV.e8

L x W x H: 4565 x 1900 x 1660 mm  
Wheelbase 2775 mm

L x W x H: 4370 x 1900 x 1635 mm  
Wheelbase 2775 mm

L x W x H: 4790 x 1905 x 1690 mm  
Wheelbase 2775 mm

L x W x H: 4740 x 1900 x 1760 mm  
Wheelbase 2762 mm



OCT'26

OCT'25

APR'25

DEC'24

A family space, to explore the places you love with the people you love. Grab your cam, it's time to make some memories. Designed to offer a first-class experience, with versatility, configurable profiles and curated multi-sensory experiences

A true standout, with a taste for life to explore the impossible. It is a Sports Electric Vehicle (SEV) in the truest sense, making it a category in itself. A race inspired design complemented by seamless multi-sensory experiences

A head turning SUV grand tourer with a chiseled design, dynamic roof and solid stance. Allowing passengers, a first-class experience

A fearlessly modern design with the strengths of an authentic SUV combined with the aerodynamic silhouette of a coupe. Intelligent interiors, with a view to indulge through its panoramic sky roof that warrants every bit of attention it demands

A combination of sheer performance, best-in-class technology and safety. The intelligent all-wheel drive system along with sophisticated cabin, offers supreme ride comfort both on and off the road



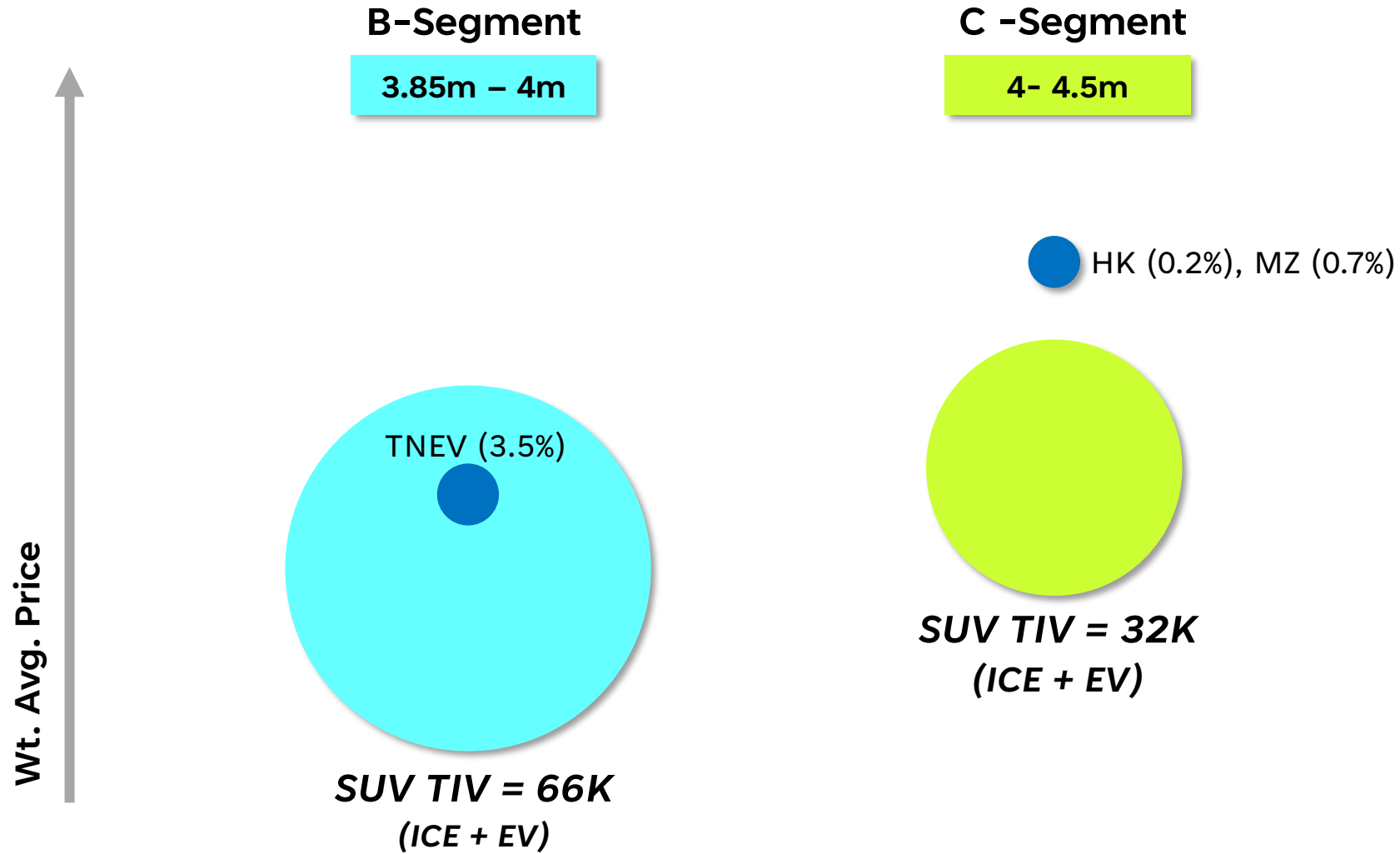
XUV400



THE FUTURE BEGINS NOW, AND IT'S ELECTRIC.



# C Segment – A Big Electric Opportunity



Note: Size of the bubble indicates average per month volume (SUV, for ICE+EV) with Price Clusters

# #LIVE FUNPLUGGED



# SUV Purpose

## BUILD A STRONG AND AUTHENTIC SUV BRAND

Life is an adventure; Live it Boldly while caring for our planet.  
Our Agile, Bold, and Collaborative people create Sophisticated and Authentic\* SUVs with sustainable, innovative technologies that inspire your spirit of exploration



*\*Authentic – Our Authentic SUVs will be true to our original story with Unmissable Presence and Adventure Capability*

# XUV400 – A Winning Combination

**Best-in-class  
ACCELERATION**



**Best-in-class  
RANGE**

**Best-in-class  
TECHNOLOGY**

**Best-in-class  
STYLE & SPACE**

**Best-in-class  
SAFETY**

# Global Engineering for Indian Roads



Just the right combination of fun and fast, for the trendsetter in you!

**Electrifying  
Presence**

**SUVness, Space &  
Comfort**

**Performance &  
Range**

**Safety**

**Fun | Fast | Electric**

# Unmissable Presence

## XUV400 vs C - Segment

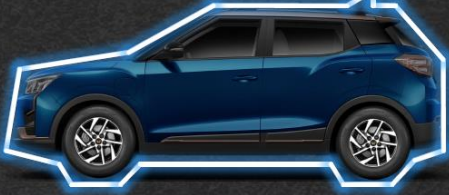
## XUV400 vs B - Segment

XUV 400 vs MZ      XUV 400 vs HK



Parameter*	XUV 400	MZ	HK
Overall Length	4200	4323	4180
Overall Height	1634	1649	1570
Overall Width	1821	1809	1800
Wheelbase (WB)	2600	2585	2600

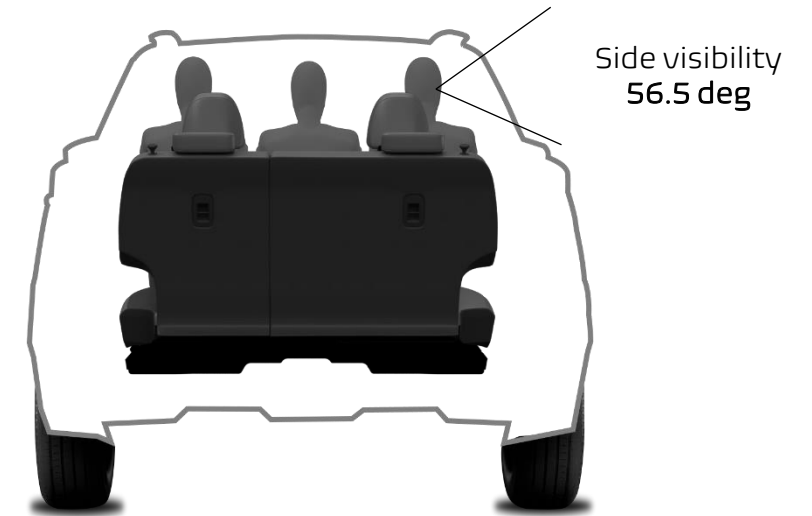
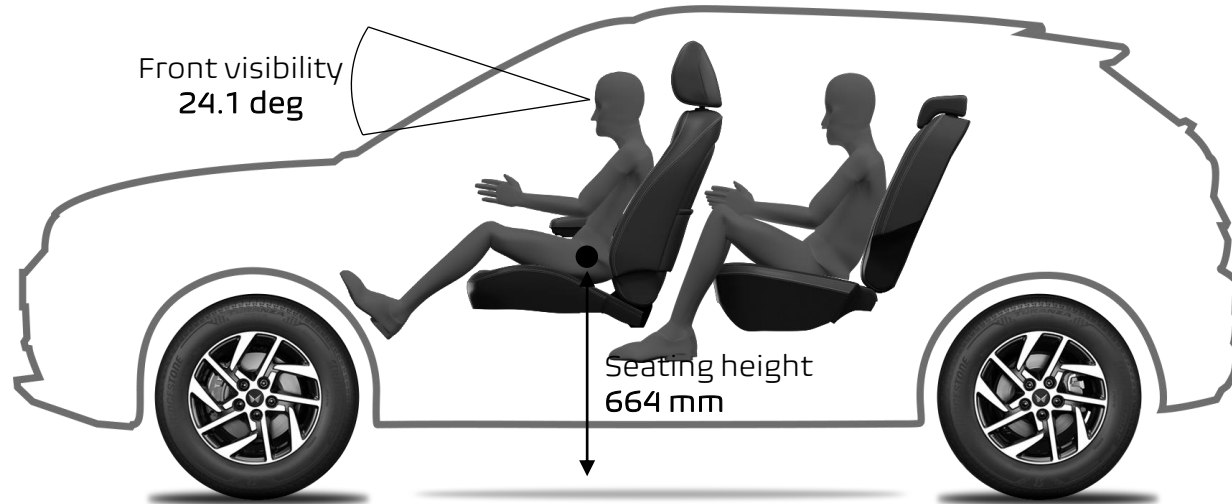
XUV 400 vs TN



Parameter*	XUV 400	TN
Overall Length	4200	3993
Overall Height	1634	1616
Overall Width	1821	1811
Wheelbase (WB)	2600	2498



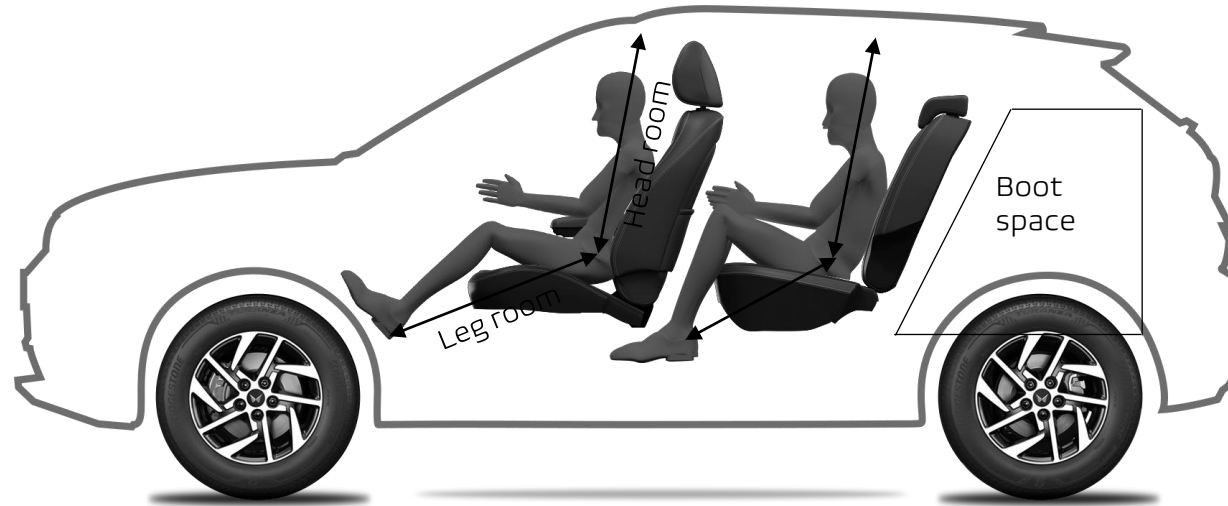
# SUVness, Space & Comfort – Forward and Side Visibility



Parameter*	XUV <sub>400</sub>	'C' Segment EV		'B' Segment EV
		HK	MZ	TN
Forward Visibility Angle	24.1	20.5	22	21.15
Side Visibility - 1st Row (deg)	56.5	55.1	57.1	52.5
Side Visibility - 2nd Row (deg)	52.1	47	49.2	36.5
Seating height (mm)	664	627	667	681

**Best-in-class forward and side visibility !**

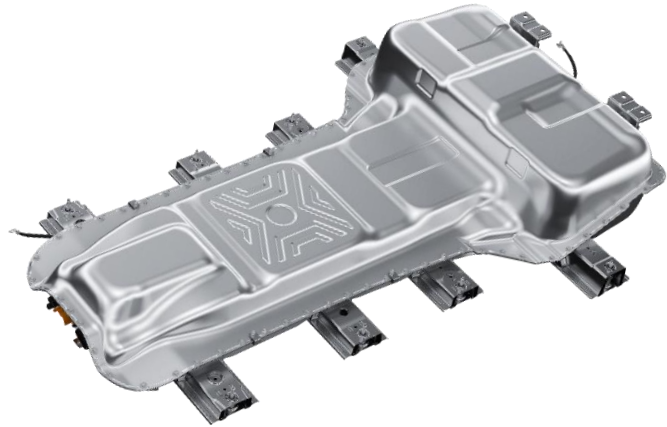
# SUVness, Space & Comfort – Cabin Roominess & Boot Space



Parameter	XUV400	'C' Segment EV		'B' Segment EV
		HK	MZ	TN
Headroom (1st/2nd) mm	1021 / 988	995 / 942	998 / 967	1005 / 963
Legroom (1st/2nd) mm	1051 / 861	1048 / 712	1050 / 844	1005 / 868
Boot space (lit)	378	288	359	350
Boot space - upto roof (lit)	418	313	398	370

**Best-in-class Cabin Roominess & Boot Space**

# Performance & Range – the Fastest C segment SUV



**Range = 456km** (ARAI tested)

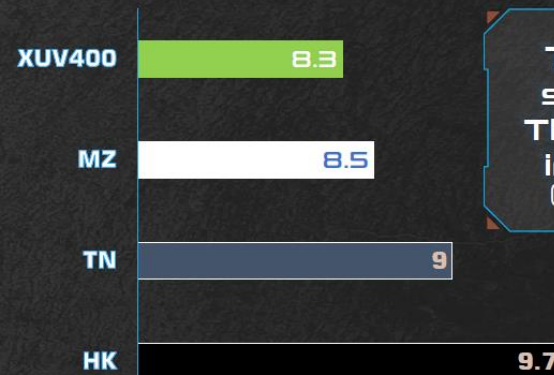


**Acceleration = 8.3 sec** (0-100kmph)

## Features

- + Best in class energy capacity : 39.5 kWh
- + Highest cell energy density : 237 Wh/kg, 155 Wh/lit
- + Dual vent pack design : Robust in all altitudes
- + Best in class cooling system : Chiller & Heater
- + DC Fast charging : 0 to 80 % in 50 mins
- + Ingres Protection: IP 67 Compliant

Acceleration : 0 100 kmph (s)



The fastest 'C' segment SUV !  
The fastest SUV in the country (< 50 lacs category) !

## Specification

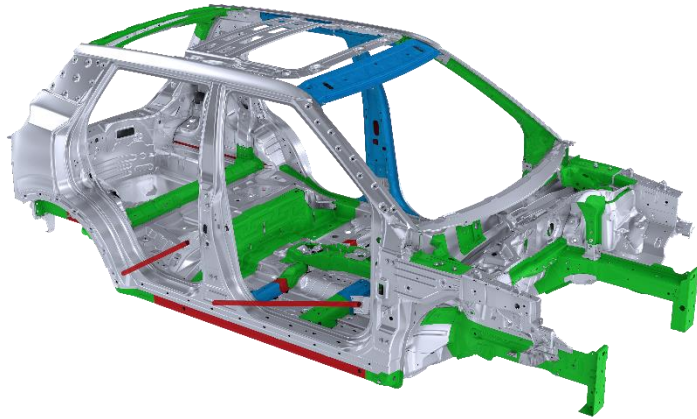
- + High efficiency PSM motor
- + Peak Power: 110 kW
- + Rated Torque : 310 Nm

## Acceleration

0 to 100 kmph : 8.3 sec

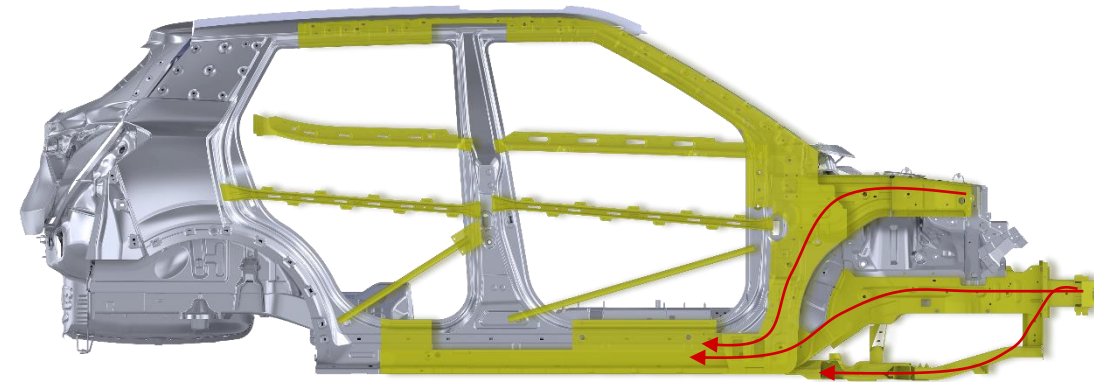
# Safety – Highest % of HSS (high strength steel) usage in the segment

## Extensive use of High Strength Steel



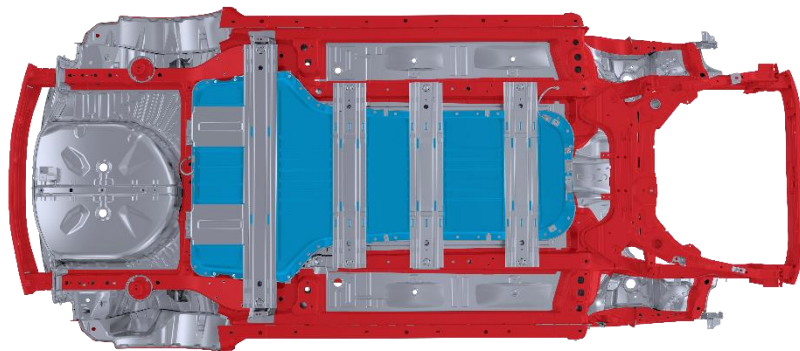
- UHSS (UTS > 1500 Mpa) : 10 %
- AHSS (UTS > 600 Mpa) : 5 %
- HSS (UTS > 400 Mpa) : 30 %

## Optimized frontal crash load path



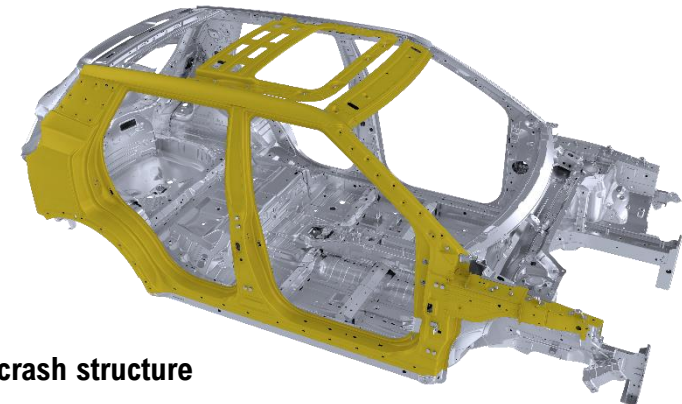
- 3<sup>rd</sup> load path through K frame
- Designed to protect against frontal crash energy : 286 kJ

## Optimized frontal crash load path




Reinforced sill structure for battery protection

## Reinforced Side Structure



- Reinforced side crash structure
- Designed to protect against side crash energy : 70 kJ

# Fun – Fast – Electric : Lively Mode with Intuitive HMI Features




## LIVELY Mode – 'Single Pedal Drive' Technology


- + One Pedal Driving™ feature that combines ease of driving with maximum regeneration
- + Start, accelerate, decelerate and stop using only the accelerator pedal
- + Makes driving simple, convenient and more engaging




## Elegant Blue theme Infotainment




## Embedded EV Statistics



Mono-stable Shifter




Intuitive User Controls



Drive Mode based Instrument Cluster

Drive modes



FUN FAST FEARLESS

# Fun – Fast – Electric : 60+ Connectivity Features

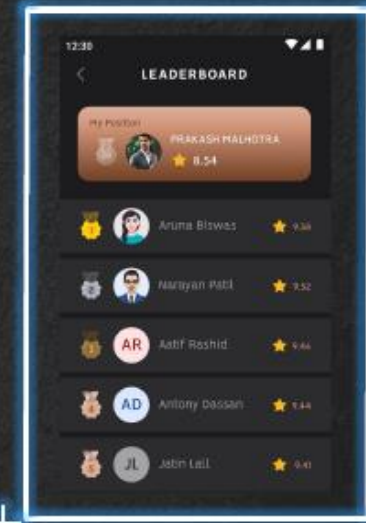
Know Your XUV



Remotely Control Your XUV



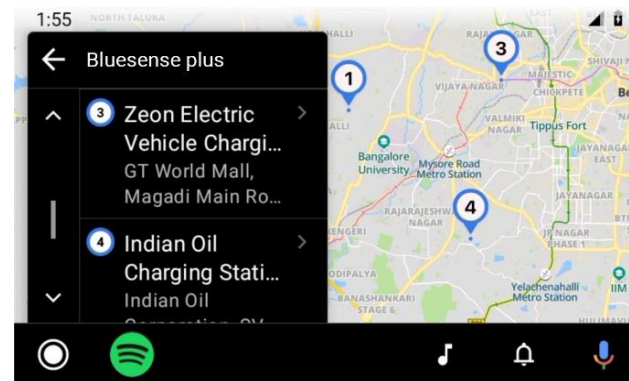
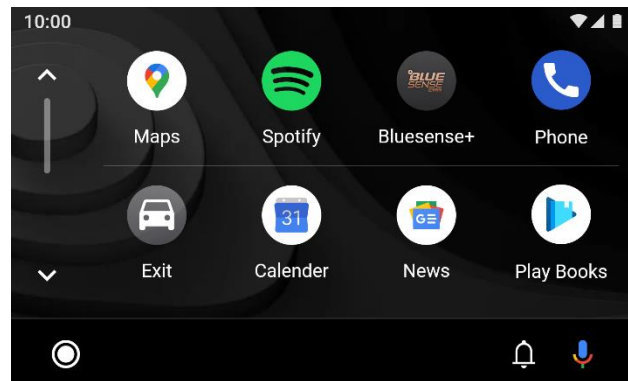
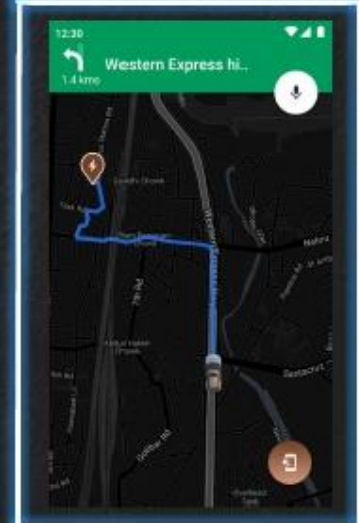
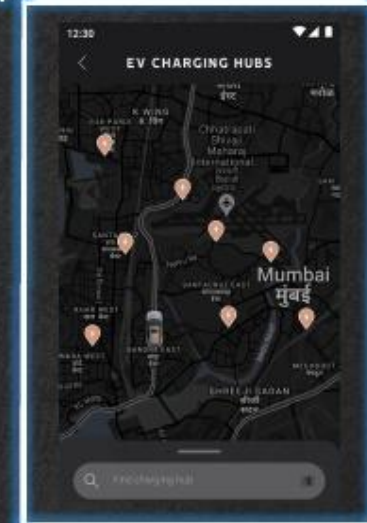
Compete & Achieve



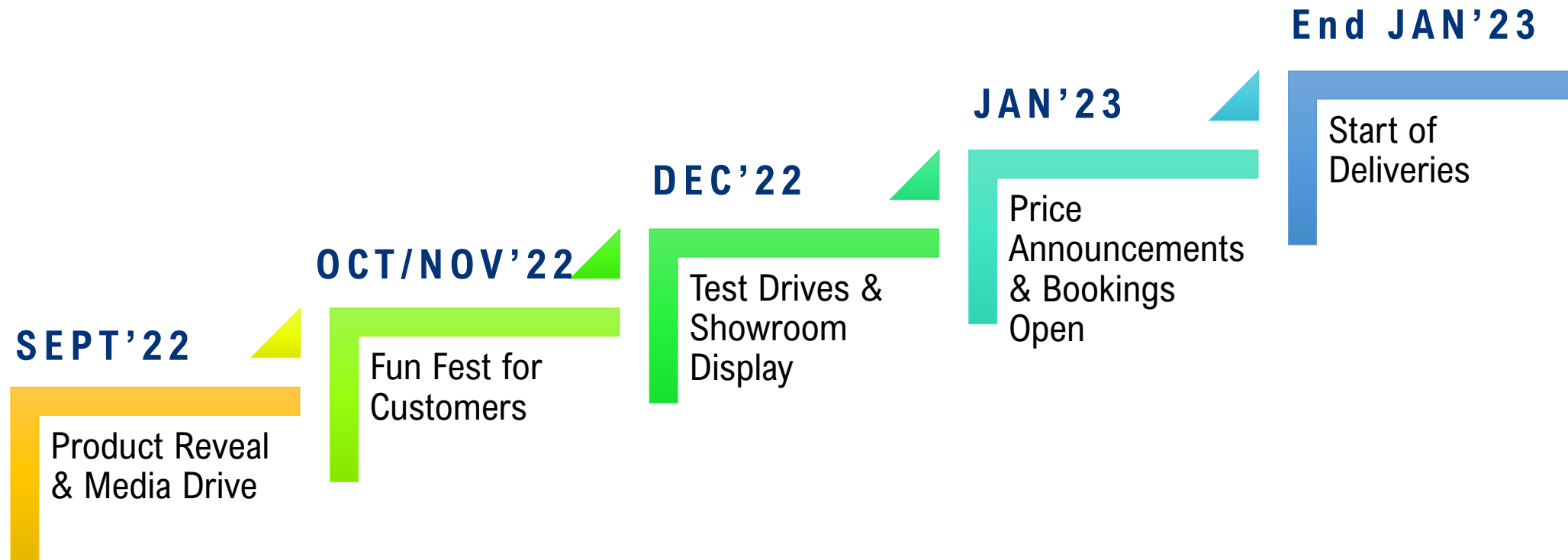
Plan Your Trips



Find, Navigate & Operate Chargers



Excitement coming up!



THANK YOU

mahindra<sup>Rise</sup>