

# News Release

## Hyundai Motor Group Unveils TIGER Uncrewed Ultimate Mobility Vehicle Concept

- Hyundai's first uncrewed ultimate mobility vehicle (UMV) concept is revealed today as TIGER, which stands for transforming intelligent ground excursion robot.
- TIGER is intended to carry payloads over remote and inaccessible terrain and designed to operate as a four-wheel drive vehicle or a four-legged walking machine.
- The vehicle is being developed by Hyundai Motor Group's New Horizons Studio in partnership with Autodesk and Sundberg-Ferar.
- New Horizons Studio is developing multiple technologies for innovative vehicle platforms.

**SEOUL / MOUNTAIN VIEW, Calif., February 10, 2021** – Hyundai Motor Group has revealed TIGER (Transforming Intelligent Ground Excursion Robot), the company's second Ultimate Mobility Vehicle (UMV) and the first designed to be uncrewed. The transforming intelligent ground excursion robot is designed to carry various types of payload while traveling over challenging terrain.

TIGER is being developed by Hyundai Motor Group's New Horizons Studio, headquartered in Mountain View, California. The studio was established in late 2020 to develop UMVs drawing on research and innovation leadership from Silicon Valley and other innovation hubs.

"Vehicles like TIGER, and the technologies underpinning it, give us an opportunity to push our imaginations," said Dr. John Suh, Head of New Horizons Studio. "We are constantly looking at ways to rethink vehicle design and development and re-define the future of transportation and mobility."

### **Concept vehicle showcases capability across remote and inaccessible terrain**

TIGER's exceptional capabilities are designed to function as a mobile scientific exploration platform in extreme, remote locations. Based on a modular platform architecture, its features include a sophisticated leg and wheel locomotion system, 360-degree directional control, and a range of sensors for remote observation. It is also intended to connect to unmanned aerial vehicles (UAVs), which can fully charge and deliver TIGER to inaccessible locations.

A large load bay housed within its body means TIGER can carry goods for delivery, or be deployed to deliver aid packages in emergency situations. Leg-wheel articulation enables TIGER to tackle a range of extreme situations while keeping payloads more level than a typical ground vehicle.

With its legs retracted, TIGER drives like an all-wheel drive vehicle and is in its most efficient mode because it moves by rolling traction. But when the vehicle gets stuck or needs to travel over terrain that is difficult or impassable for wheels alone, it uses its walking ability to get unstuck or more easily travel over that terrain. This was a feature previously seen in Elevate, Hyundai Motor Group's first-ever UMV concept with moveable legs, which debuted at the 2019 Consumer Electronic Show (CES).

Like Elevate, Hyundai's other transforming four leg-wheel ground vehicle, TIGER shares similar characteristics such as its legs and wheels. The difference between Elevate and TIGER is that, while the former can carry passengers, the latter is uncrewed. Both TIGER and Elevate blend robotic and wheeled locomotion technologies, allowing them to traverse terrain beyond the limitations of even the most capable off-road vehicle.

### **First version designed in Silicon Valley with global development partnerships**

The first version of TIGER is X-1 (the X stands for experimental) and brings together a wide-range of technological and design expertise. The project is being led by Hyundai Motor Group's New Horizons Studio, while working in close partnership with Autodesk, a leading engineering design software company.

"Working closely with the team at Hyundai on the TIGER X-1 vehicle, using advanced technology such as generative design to push the boundaries of increasing strength while reducing weight in transportation, is exactly what we mean when we talk about creating the new possible," said Srinath Jonnalagadda, Vice President of Business Strategy for Design and Manufacturing at Autodesk. "New design, engineering and manufacturing techniques enabled by Autodesk Fusion 360 help today's modern, collaborative teams get to production faster and more efficiently."

TIGER X-1 fuses Autodesk's generative design capabilities with Hyundai's growing R&D capabilities in mobility. The teams have been working together to create a lightweight but incredibly strong structure, with the legs and certain chassis elements created using carbon fiber composite additive printing.

Collaborating with external concept design experts Sundberg-Ferar, New Horizons Studio has been developing TIGER X-1 to deliver and retrieve critical payloads across rugged terrain. These capabilities make the concept vehicle ideal for 360-degree surface evaluation, in areas struck by natural disaster, while tackling challenging terrain, or even exploring the surface of another moon or planet.

“While developing TIGER with New Horizons Studio, the team at Sundberg-Ferar was looking to create a robot that maximized the efficiency of wheeled motion with the articulation of a quadruped to expand the possibility of reaching more remote locations,” said David Byron, Manager of Design and Innovation Strategy at Sundberg-Ferar. “TIGER is a modular platform design allowing different bodies to be attached to the chassis for unique applications such as cargo delivery or surveillance in locations not suitable for humans.”

### **New Horizons Studio - home to Hyundai Motor Group UMV development**

New Horizons Studio, headquartered in Mountain View, California, develops vehicles with unprecedented mobility. Products from the studio target users with a need for travel and mobility across unconventional and off-road terrains, including places that cannot be reached by conventional wheeled vehicles. UMVs developed by New Horizons Studio can be subject to more challenging applications and environments, and adaptable to changing conditions.

New Horizons Studio has been focused on developing technologies to enable concept vehicles such as TIGER. These technologies include wheel-leg locomotion, high-performance materials and structures, high-performance power systems, chassis and body systems, virtual development and evaluation systems, and human-centered design and systems. Each of these represents significant technical progress that can be applied to any vehicle and will speed the development of advanced mobility solutions.

New Horizons Studio furthers Hyundai Motor Group’s vision to shape the future of mobility and brings onboard forward-thinking, innovative leadership from Silicon Valley and other innovation hubs. UMV concepts in development do not rely solely on wheels and are expected to address challenging driving situations – for example, a car with robotic legs could save lives as the first responder in natural disasters; or people without access to a curb ramp could hail a car to walk up to their front door, level itself and allow wheelchairs to roll in.

Using a combination of robotics and wheeled locomotion technology, Elevate, TIGER and other vehicles by New Horizons Studio are expected to redefine vehicular mobility.

The showcase video of TIGER X-1 is available at [Group’s official YouTube channel](#).

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### **About Sundberg-Ferar**

Sundberg-Ferar, born in Detroit, in 1934 is a product innovation studio and we exist to help our customers uniquely differentiate their products, services and experiences increasing their profit margins, market share, and ultimately advancing strong and sustainable brands. Sundberg-Ferar’s innovation process cross-references multiple user experiences, cross pollinate multiple industry categories, study competitors’ vulnerabilities to reveal uncontested white market spaces for our clients in the consumer products,

commercial equipments and new-mobility domains. More details on [www.sundbergferar.com](http://www.sundbergferar.com) and to chat, drop a line at [hello@sundbergferar.com](mailto:hello@sundbergferar.com).

### **About Autodesk**

At Autodesk, we exist to turn ideas into new realities that shape a thriving future. Our software and services harness emerging technologies—such as additive manufacturing (3D printing), artificial intelligence, generative design, and robotics—that give companies and individuals the power to work more quickly, effectively, and sustainably throughout the entire project lifecycle. For more information visit [autodesk.com](http://autodesk.com) or follow [@autodesk](https://twitter.com/autodesk).

### **About New Horizons Studio**

New Horizons Studio builds vehicles to wander with unprecedented mobility, using a combination of robotics and wheeled locomotion technology. The products target customers who have a need for travel in unconventional and off-road terrain, including places where vehicles have never roamed before. These vehicles are subject to more challenging applications and environments, adaptable to changing conditions. New Horizons Studio furthers Hyundai Motor Group's vision to shape the future of mobility and onboard forward-thinking, innovative leadership from Silicon Valley and other innovation hubs.

### **About Hyundai Motor Group**

Hyundai Motor Group is a global enterprise that has created a value chain based on mobility, steel, and construction, as well as logistics, finance, IT, and service.

With about 250,000 employees worldwide, the Group's mobility brands include Hyundai, Kia, and Genesis. Armed with creative thinking, cooperative communication and the will to take on any challenges, we strive to create a better future for all.

More information about Hyundai Motor Group, please see: [www.hyundaimotorgroup.com](http://www.hyundaimotorgroup.com)

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