

Hyundai Walking Car Concept is the Future of the First Responder Industry

- Innovative Hyundai 'Elevate' Walking Car Concept Creates a New Vehicle Category, the UMV, Ultimate Mobility Vehicle
- Walking Car Could Help in a Natural Disaster

In 2017, conflicts and disasters around the world left an estimated 201 million people in need of international humanitarian assistance in order to cope and survive according to the Global Humanitarian Assistance Report 2018.

One possible answer to delivering assistance after a disaster could be a car with moveable legs.

This vehicle, called Elevate, blends technology found in electric cars and robots to traverse terrain beyond the limitations of even the most capable off-road vehicle.

In theory, a car with legs could drive first responders to a location like any traditional vehicle, but then walk or climb over treacherous terrain to directly reach the injured or stranded. If the technology was applied to everyday vehicles it would change our view of vehicular mobility. Imagine if all the vehicles that end up stranded in a snow ditch just 10 yard off the highway could get up and crawl back to the road potentially saving stranded passengers from freezing to death. People living with disabilities worldwide that don't have access to an ADA ramp could hail an autonomous vehicle that could walk up to their front door, level itself, and allow their wheelchair to roll right in.

The Elevate concept is based on a modular EV platform with the capability to switch out different bodies for specific use-cases. The robotic leg architecture has five degrees of freedom plus a wheel hub propulsion motor and is enabled by the latest in electric actuator technology. This design is uniquely capable of both mammalian and reptilian walking gaits, allowing it to move in any direction. The legs also fold up into a stowed drive-mode, where power to the joints is cut, and the use of an integrated passive suspension system maximizes battery efficiency. This allows Elevate to drive at highway speeds just like any other vehicle. But no other can climb a five foot wall, step over a five foot gap, walk at three miles per hour over diverse terrain, and achieve a 15 foot wide wheelbase, all while keeping its body and passengers completely level.

- This integration of robotics and electric vehicles enabled creation of a new vehicle category, the Ultimate Mobility Vehicle (UMV), and will propel Hyundai to the forefront of automotive technology, said John Suh, Vice President and Founding Director of Hyundai CRADLE. - Through our interdisciplinary approach, we are able to make great strides in technological advancements and continue to push beyond existing barriers that limit innovation.

- By combining the power of robotics with Hyundai's latest EV technology, Elevate has the ability to take people where no car has been before, and redefine our perception of vehicular freedom, said David Byron, design manager, Sundberg-Ferar.

Inside the Elevate, passengers would experience a vehicle fully engineered to tackle the roughest terrain comfortably. Engineering enhancements include:

- Robotic legs with five degrees of freedom plus in-wheel propulsion
- Ability to walk in mammalian and reptilian style gaits for omnidirectional motion
- Capable of climbing a five foot vertical wall
- Step over a five foot gap
- Non-backdrivable motors enable the legs to lock in any position
- Modular electric vehicle platform