**Goodyear Unveils the Eagle 360 Urban, a Concept Tire Powered by Artificial Intelligence**

**The tire of the future will be able to sense, decide, transform and interact**

Geneva, March 7th - Goodyear has revealed its long-term vision for future smart, connected tires. In an evolving mobility ecosystem defined by the transition to driverless vehicles and shared mobility in urban centers, Goodyear aims to revolutionize the interaction between tires, vehicles and their surroundings. Goodyear unveiled the ***Eagle 360 Urban***, its latest concept tire, at the Geneva International Motor Show. This 3-D printed sphere is the first concept tire to be powered by Artificial Intelligence and able to **sense, decide, transform and interact**.

“A revolution will take place at the intersection of autonomy, mobility and connectivity. As this unfolds, tire technology will be even more important than it is today. To safely navigate their surroundings, the autonomous vehicles of the future will need to learn to cope with the millions of possible unknowns we face in every day driving scenarios. To do so they will need access to data and the ability to learn and adapt,” said Jean-Claude Kihn, president of Goodyear Europe, Middle East and Africa.

**Last year**, with the Eagle 360 concept tire, Goodyear presented a unique, multi-directional sphere to match the demands of autonomous driving through increased levels of comfort, safety and maneuverability. The positive feedback received encouraged the manufacturer to take this concept even further.

**This year**, with the ***Eagle 360 Urban***, Goodyear is pushing the boundaries again, aiming to illustrate a vision of how the future could look. Powered by Artificial Intelligence, Goodyear is giving the concept tire a ‘brain’. Combined with a bionic skin and morphing tread, the Eagle 360 Urban has the ability to put knowledge into practice. The tire will become part of the vehicle’s ‘nervous system’ and the connected world of the Internet of Things. That way, it is ready to rapidly adapt to changing circumstances, as well as the evolving needs of *Mobility as a Service (MaaS)* for fleets and their users.

Goodyear’s ***Eagle 360 Urban*** features bionic skin with a sensor network that allows the concept tire to check on its own status and gather information on its environment, including the road surface. Via connectivity with other vehicles as well as infrastructure, traffic and mobility management systems, the ***Eagle 360 Urban*** also captures information on its surroundings in real-time.

By combining these sources of information and processing them instantaneously using neural networks trained with deep learning algorithms, the ***Eagle 360 Urban*** decides the most appropriate course of action. And, powered by Artificial Intelligence, the ***Eagle 360 Urban*** learns from previous actions how to optimize future responses.

Made of super-elastic polymer, the tire’s bionic skin has a flexibility similar to that of human skin, allowing it to expand and contract. This outer layer covers a foam-like material that is strong enough to remain flexible despite the weight of a vehicle. Thanks to this flexibility, actuator elements beneath the tire’s surface, which are components that change shape with an electrical input, working like human muscles, can re-shape the individual sections of the tire’s tread design, adding ‘dimples’ for wet conditions or smoothing the tread for dry conditions. A new tread with a safer contact patch is thus deployed.

Using this morphing tread, the ***Eagle 360 Urban*** transforms and adapts to changing road and weather conditions. The concept tire can then interact to share the information it has captured, the related action and its success with other vehicles and all of the elements making up the Internet of Things.

When the tire’s bionic skin is damaged, the sensors in the tread can locate the puncture. The tire then rotates to create a different contact patch. This reduces pressure on the puncture and allows the self-healing process to start. The self-healing works thanks to materials which are specifically designed to be able to flow towards the puncture. They react physically and chemically with each other to form new molecular bonds, closing the puncture.

This new generation of tires will create added value for OEM partners and the evolving providers of ***Mobility as a Service*** *(MaaS)* by maximizing uptime and providing proactive maintenance. For the everyday commuter they will offer an improved experience by adding a new dimension to the safety performance and learning capabilities of autonomous driving.  
  
This year Goodyear invited students from French design school [ISD RUBIKA](http://rubika-edu.com/) to envision and develop a concept vehicle tailor-made for the ***Eagle 360 Urban*** concept tire. Working closely together with Goodyear’s designers, the students created *Vision* UMOD, a vehicle for future cities and adapted to the needs of future mobility.

**KEY FEATURES AND BENEFITS**

* The **Artificial Intelligence** unit serves as the ‘brain’ of the tire and enables the tire to:
* Continuouslysense the road condition and the surrounding environment in real-time and check on its own status in real-time.
* Process the information it captures using neural networks trained with deep learning algorithms to decide what to do and learn for the future.
* Transform using its own morphing tread and tire/vehicle interface.
* Interactwith other vehicles and all of the elements making up the Internet of Things to share the information it has captured and lessons learned.
* The bionic skin’s **high-sensory capacity** tread, with its sensor network, captures information on road and weather conditions and transmits this input to:
  + the tire to optimize the morphing of the tread.
  + the vehicle’s ‘nervous system’ to improve the car’s braking, handling and efficiency.
  + all of the elements making up the Internet of Things to inform other tires and vehicles expected to take the same road.
* The **intelligent morphing tread** prepares the vehicle for the unexpected by proactively providing safety under all conditions. Depending on the road and weather conditions, the most appropriate tread pattern appears autonomously with the help of the bionic skin of the tire.
* The **bionic skin** allows self-healing repair. And, in combination with the Artificial Intelligence unit, it measures current and predicts future tire wear to allow automated tire management, enabling **predictive and proactive maintenance**. This maximizes uptime and safety, offering an improved mobility user experience at all times for *Mobility as a Service (MaaS)* providers.
* The **spherical shape** moves in all directions and contributes to comfort, safety and maneuverability to match the demands of autonomous mobility and mobility as a service. The shape also copes with space limitations in smart cities (smaller parking spaces, platoon driving, maneuvering, easy to replace...).

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 Goodyear ***Eagle 360 Urban*** and RUBIKA *Vision* UMOD video <https://youtu.be/KAdw09M-F-g>



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