

SMART PARKING: TINYNODE INTRODUCES AN INNOVATIVE GENERATION OF WIRELESS SENSORS FOR VEHICLE DETECTION

NEW PRODUCT RANGE TO BE SHOWCASED AT INTERTRAFFIC AMSTERDAM 2016 – STAND 02.211

Novazzano (Switzerland), February 2nd 2016 – Tinynode SA, the Swiss company specialized in wireless vehicle detection systems, now a Paradox Engineering company, has introduced a new generation of vehicle detection sensors providing customers with greater value, stability and business continuity. By taking advantage of Paradox Engineering's and parent group Minebea Co. Ltd.'s innovation capabilities, Tinynode's R&D department succeeded in achieving significant technological improvements and increasing detection accuracy, communication performance and product robustness.

The innovative sensor technology – called Series 4 second generation (S4-gen2) – is being integrated in Tinynode A4 and B4 car detection devices, as well as in A4-H and B4-H truck detection devices. The new product range will be presented at Intertraffic Amsterdam 2016, the prominent event about mobility and traffic taking place from April 5th to 8th 2016 at RAI Amsterdam.

Tinynode solutions provide a simple, cost-effective and reliable way to detect if a parking lot is free or occupied by a vehicle, offering data reliability exceeding 98%. Installed above or flush with the ground, Tinynode products rely on a patented, lowest-power, multi-hop, self-configuring radio communication protocol to build effective and secure wireless networks enabling a number of applications for car parking (ie. street level parking, multi-storey car parks, time-limited parking lots, electric vehicle recharge stations, etc.) and heavy goods vehicles parking areas (ie. rest areas on highways, out-of-town service areas, etc.). By smoothly integrating Tinynode solutions with panels and displays, mobile apps, and mobile payment systems, drivers can be offered a better mobility experience and reduce time spent randomly looking for an available parking space.

First developed in 2004, the sensor technology integrated in Tinynode products was constantly improved in mechanics, electronics and software over time. New S4-gen2 capitalizes Tinynode's and Paradox Engineering's technological excellence and offers relevant achievements in algorithm, hardware, software and firmware, while at the same enhancing manufacturing, supply chain and customer support. In order to perfect the detection and analysis algorithm, the R&D department leveraged data scientist expertise and used machine learning methods to further improve sensor accuracy and reliability.

The S4-gen2 sensor technology offers an increased detection rate thanks to the optimized layout of electronic components and the improved stability of the detection technology granting higher performance. New Tinynode devices are engineered to provide superior communication performance, an increased protection against interferences, and an improved precision of the external clock.

Thanks to the enhanced manufacturing and further optimization of the PCB layout of S4-gen2 technology, Tinynode products are now more robust and feature an extra electrical tracks protection. As a result, they can better stand temperature variations, humidity and vibrations, as well as high



mechanical constraints or possible short circuits, so they can be successfully implemented in any outdoor environment and harsh condition. Aging effect has been counterbalanced by equipping each node with a new top-class battery, thus ensuring a longer product life.

Anticipating future developments at Intertraffic Amsterdam 2016

New Tinynode A4 and B4 car detection devices, A4-H and B4-H truck detection devices will be presented at **Intertraffic Amsterdam 2016 – stand 02.211**, where the company will also showcase the other components of its wireless vehicle detection solutions, including R4 repeaters, SR4 super repeaters and G4 gateways.

Visitors will be invited to discover more about benefits of Tinynode and Paradox Engineering integration, which already offers customers the opportunity to build integrated solutions for smart urban environments. The Series 4 second generation sensor technology represents a step of the product development roadmap which is expected to find a major accomplishment in **Series 5**. To be unveiled by the end of 2016, Series 5 will lead to the full integration of Tinynode's vehicle detection system into PE.AMI platform by Paradox Engineering, thus extending its potentiality from Smart Parking to broader Smart City solutions to support any kind of urban service, from mobility to public lighting, advanced meter reading, video surveillance, solid waste collection, and many more.

Exploring potential value of most advanced wireless standards, including also long range/low power protocols, Tinynode's Series 5 products and PE.AMI will shape future proof Internet of Things ready network communication platforms to manage multiple different urban objects within a broader, coherent frame of smart interconnected services and applications, thus contributing to improve livability, sustainability and local economy of present and future Cities.

ABOUT TINYNODE SA

Tinynode provides high-accuracy outdoor vehicle detection systems for parking-related applications, based on purpose-built, lowest-power electronics and a multi-hop, self-configuring, self-healing mesh, patented radio protocol.

Tinynode SA was created in 2012 as a spin-off of Shockfish SA. In the early 2000's Shockfish had built strong expertise in low power electronics and radio protocols by developing a device used in event management (SpotMe). Based on this experience, Shockfish began working on wireless vehicle detection in 2004, starting with a European research project on developing smarter highways. Eight years later, the business unit was transformed into a subsidiary, Tinynode SA, which entered Paradox Engineering's ecosystem in 2015.

Tinynode's mission is to design and sell wireless vehicle detection systems. Tinynode aims at contributing to a smarter, safer, easier and more comfortable driving world. Tinynode's products are reliable, high-performing, cost-effective and long-lasting, and they easily integrate with other technologies.

For more information, please visit www.tinynode.com



ABOUT PARADOX ENGINEERING SA

Paradox Engineering SA is a technology company that designs and markets solutions and services to unlock the value of data for smart industrial and urban networks in the Internet of Things (IoT) age. Unique competences in radio design, network design and management, low power consumption and data collection at the heart of Paradox Engineering's technological leadership. The Company conceives and provides open standard wireless sensor network solutions for smart environments, global virtual networks and OEM versions of its core network technologies.

Established in 2005 and headquartered in Switzerland, the Company is part of the Japanese Group Minebea Co. Ltd., the world's leading comprehensive manufacturer of high-precision components, which acquired full capital and assets of Paradox Engineering SA in July 2015. Minebea is capitalizing on Paradox Engineering's vision, know-how and technologies to accelerate the success of the Group in the IoT and Smart markets, develop cutting edge technologies and transform Minebea's products to be full IoT ready.

For more information, please visit www.pdxeng.ch and www.pe-stone.com

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