

GlobalLogic, Jungo, and OpenSynergy Release an Integrated Virtual Driver Monitoring System (DMS)

New, Co-developed Solution Helps OEMs Deliver More Secure DMS Capabilities While Leveraging In-vehicle System Convergence via Cockpit Controller Integration

SAN JOSE (Calif.), Netanya (Israel), Berlin (Germany) —November 2, 2021—[GlobalLogic Inc.](#), [Jungo](#) and [OpenSynergy](#) announced today the product of a partnership agreement to co-develop an automotive virtual driver monitoring system (DMS) solution that delivers advanced security, convergence and ease of implementation. The new solution integrates a standalone DMS currently provided on a separate engine control unit (ECU) with an existing automotive cockpit controller. As a result, the DMS provides input to both the instrument cluster (e.g., drowsiness trigger) and in-vehicle infotainment systems (IVIs) (e.g. gesture control) while safely and securely isolating personal data from other functionalities. The virtual DMS allows original equipment manufacturers (OEMs) to define new use cases and reduce hardware costs, while protecting sensitive data against potential malicious attacks.

The Driver Monitoring System

Fatigue and lack of attention cause a high percentage of car accidents. A DMS is an established technology created to reduce such accidents. Thanks to a small camera and dedicated software, the DMS is able to precisely observe and evaluate the driver's behavior. The system analyses the position of the driver's head and eyes, using the collected data to determine which specific actions to take. The solution can recognize that the monitored person is not looking at the road perhaps because they are preoccupied with their smartphone or that they are beginning to fall asleep or lose consciousness. Once a hazardous situation is detected, the DMS can perform a number of actions to prevent a possible accident. These actions are, among others, intense light or sound signals and even an emergency stop procedure including a call for medical assistance.

"The automotive sector has always rapidly implemented new technologies that increase the safety and comfort of drivers, passengers and other road users. At the same time, it seeks to reduce the level of complexity of new car models while supporting their low-weight and slim designs. This presents many challenges. We are glad that GlobalLogic, in cooperation with our partners, was able to create something that perfectly fits the current needs of automotive manufacturers and allows them to take full advantage of an advanced driver monitoring system solution's potential," said Arvind Murthy, Vice President & Global Head (Automotive & Semiconductor BU) at GlobalLogic.

Convergence and Easy Implementation

Driver monitoring systems are currently offered as a standalone function on a separate ECU. This design configuration is not only costly but makes it difficult to share data with other functionalities to create new use cases. By virtualizing the DMS and converging it onto an existing System on Chip (SoC), OEMs can overcome such issues.

With the possibility of integrating the DMS with any in-vehicle infotainment systems or other system technologies, customized solutions for each car make or model are not necessary. It is easier and quicker to launch a vehicle equipped with specific systems into the market. [CoDriver](#), Jungo's driver and

occupant monitoring AI software, enables OEMs to comply with upcoming regulations regarding driver distraction, drowsiness and unattended children—maximizing in-cabin camera investments. As technologies of this kind are becoming mandatory, cost reduction and high integration are fast becoming necessities.

Data Protection

A virtualized DMS integrated on OpenSynergy’s automotive virtual platform [COQOS Hypervisor SDK](#) can run in parallel with other systems on the same SoC. For example, it can run in parallel to an Android™ OS as it provides each function with its own virtual machine (VM). Since the Android™ is connected to the Internet, it forms a gateway for unwanted access from outside. The DMS stores and protects personal data, making unauthorized access impossible.

This partitioning approach of the COQOS Hypervisor SDK also acts as a firewall protecting against external attacks. Such an architecture, in which the DMS is integrated separately into a virtual machine on a hypervisor and shielded from the outside, protects the user’s data in two ways: instead of being stored in a potentially insecure Android™ system, sensitive data are kept safe in a distinct area. From here, ‘anonymized’ vector data are reported to the IVI system (in a separate VM), which then works only with the anonymized data rather than real user information. This separation of the DMS solution from the infotainment system provides additional protection, ensuring efficient DMS operation even if the infotainment module itself is infected by malware.

“Consolidation offers fantastic potentials to save costs and create new exciting features. But there are legitimate concerns about data privacy. Nobody wants a hacker to access sensitive data. This is exactly what COQOS Hypervisor does. On one side, it supports new appealing use cases by allowing features to share information and, on the other, ensures that the sensitive data are protected, even in the case of a malicious breach. The DMS reference design proves exactly this point...innovation: yes! Compromise on security: no!,” said [Jonathan Siegel](#), Portfolio Manager at OpenSynergy.

The designed communication module allows collected data to be sent to a selected location. Example locations are the VM controlling the dashboard’s instrument cluster—which will display appropriate warning messages—or the car’s infotainment system—where user-specific settings such as display colors or music playlists are loaded. The communication module can also serve as an emergency module that will send calls for help to emergency services along with driver location details.

Collaboration That Brings Results

[GlobalLogic engineers](#) integrated the system designed by Jungo with the capabilities of the Hypervisor solution developed by OpenSynergy to help automotive manufacturers and software providers implement the technology in new car models. The use of the virtualization mechanism made it possible to keep energy consumption low and to minimize the need to expand the car’s internal systems with additional components. These advantages, in turn, translated into lower costs and easier implementation.

“We are delighted to work with OpenSynergy and GlobalLogic on demonstrating a secured DMS running on a hypervisor—separated from other non-critical applications but still leveraging the same SoC for cost reduction and better integration,” said [Ophir Herbst](#), Chairman at Jungo. “Such integrations are expected to be critical to OEMs so that they can consolidate multiple applications on top of single SoCs

and, at the same time, maintain secured isolation between safety and other applications. All while keeping the best experience at the lowest possible cost.”

About GlobalLogic

GlobalLogic (www.globallogic.com) is a leader in digital engineering. We help brands across the globe design and build innovative products, platforms, and digital experiences for the modern world. By integrating experience design, complex engineering, and data expertise — we help our clients imagine what’s possible and accelerate their transition into tomorrow’s digital businesses. Headquartered in Silicon Valley, GlobalLogic operates design studios and engineering centers around the world, extending our deep expertise to customers in the healthcare and life sciences, communications, financial services, automotive, technology, media and entertainment, manufacturing, and semiconductor industries. GlobalLogic is a Hitachi Group Company.

About OpenSynergy

OpenSynergy provides embedded software products for the next generation of vehicles. Its hypervisor and communication products pave the way for an integrated driving experience.

The automotive virtual platform COQOS Hypervisor SDK integrates a mix of real-time applications and open-source solutions on powerful domain controllers. It supports a large bundle of features corresponding to the virtualization standard VIRTIO™, creating maximum flexibility: guest operating systems can be used and reused on different Systems on Chips. OpenSynergy cooperates with the primary Operating System (OS) providers to ensure that Android™, AGL, AliOS, and other OS are entirely supported.

The automotive leading Bluetooth® stack Blue SDK is one of OpenSynergy’s communications platforms. It is the reference Bluetooth® implementation for many OEMs around the world.

OpenSynergy further provides complimentary Automotive-Grade software components tailored for the Android™ Open Source Project (AOSP) to boost Android™’s adoption in the automotive domain. OpenSynergy also provides engineering services to support the customization of its products. Read more on www.opensynergy.com.

About Jungo

Jungo is a global leader of in-cabin sensing AI software, offering CoDriver, an advanced driver monitoring and in-cabin monitoring software. Learn more at www.jungo.com.

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