

## Software-Driven Vehicle is the answer to the challenging demand for Digitization of the Automotive Industry, says Auto2x

Auto2x publishes new report "Software-Defined Vehicles: Software is driving disruption for Digital Autos"

LONDON, UNITED KINGDOM, May 10, 2023 /EINPresswire.com/ -- Auto2x unveils the big opportunities in Software-Defined vehicles, from the promising technologies and top innovation clusters to leading players and favourable markets.

Software-Defined Vehicles (SDV) is the automotive industry's term to describe a new generation of vehicles which



feature advanced technologies that can be continuously updated on demand and enable true connected and automated driving.

## "

Software-Defined Vehicles (SDV) is the automotive industry's term for a new generation of vehicles capable of continuously updating their capabilities on demand, truly connected and fully-automated." *Auto2x*  Software is the answer to the Digitization of Automotive Industry but delivery is still challenging.

Electrification, automated driving, shared mobility and connectivity push for more dedicated software development, while a large part of hardware-oriented systems becomes more standardized and commoditized.

Software & AI represent new value pools. Major Tier-1 Suppliers are already monetizing the growth. For example, Bosch has already been building Vehicle super-computers for ADAS & Automated driving and received more than

€2.5 Billion worth of orders in this domain in 2020. They expect the market to be worth €20 Billion by 2030. Renault creates a new mobility unit and expects that it will account for 20% of

their revenues by 2030.

The digitization of the Automotive Industry demands a shift to SDVs, but challenges remain.

Learn about top innovation clusters across major technological building blocks of SDVs:

- EE Architectures: Assess the

roadmaps of leading carmakers and

suppliers in the development of centralized architectures and their partnerships;

- CarOS: Learn about the rising adoption of Google's Android Automotive OS and the competitive offerings from MBUX and other players;

- Open-source software development: In May 2023, General Motors joined the Eclipse Foundation, an open source software foundation, and announced its own software protocol called "uProtocol" to streamline software creation

- Cloud: the emergence of automotive cloud as a key enabler for cloud-based ADAS development, development of offerings from carmakers and the role of Microsoft, Amazon among others;

- Over-the-Air-updates (OTA), and the opportunities for features-on-demand;

- Digital Twin

- Understand the progress of regulation and how to overcome the challenges of continuous homologation and certification of new vehicle features through OTA updates;

- Assess the strategies and capabilities of leading carmakers, suppliers and emerging start-ups;

- Discover forecasts of adoption and scenarios for the evolution of competition.

Cars are becoming Software-Centric which creates opportunities and challenges in development cost, complexity, security and monetization.

One of the biggest challenges facing today's vehicle networks is the vast amount of data that is produced—and will exponentially increase as vehicles become increasingly autonomous and connected and are required to process vehicle-to-vehicle and vehicle-to-infrastructure communications.

SDV create new opportunities to reduce the complexity from the rise of features and variants, accelerate feature development time, streamline costs and enable SOTA updates on demand.

Lower software development cost is key for faster and more efficient automotive development. Re-usable software platforms are needed to lower development costs.

Finally, Android Automotive OS will become the mainstream operating system enabling



Automotive Intelligence Consulting

Auto2x logo

carmakers to offer intuitive HMI and 3rd parties to integrate connected services.

SDVs will unlock the potential of Cloud-centric development and lifecycle.

The benefit of cloud-centric development is the virtual development of ADAS features, virtual Validation, as well as Cloud-streaming content for infotainment, such as game-streaming.

But players face challenges with Cloud integration.

"VW's AC is expected to handle data from millions of vehicles per day, with the goal of delivering connected experiences to customers around the globe starting in 2022 – a key part of the Volkswagen Group strategy to become a leading automotive software innovator", said the company in a Press Release.

Built in-house software systems for in-car and vehicle-related services to develop differentiating software parts.

In an effort to replicate Tesla's successful model of developing in-house SW systems, traditional car makers like VW, opt to develop their one in-house SW platform. This approach promotes harmonized integration of future embedded hardware and software systems but needs a large number of vehicles in order to mitigate the increasing per/unit development cost.

VW has recently announced that it will develop its own standard software platform and will boost the in-house share of software development, in order to achieve a 60 per cent in-house software production by 2025.

https://www.volkswagen-newsroom.com/en/stories/how-volkswagen-automotive-cloud-willhelp-shape-the-connected-car-of-tomorrow-6791

According to the Group's announcement, by 2025, all new Group vehicles will be equipped with VW's operating system "VW.OS" and will be connected to the Volkswagen Automotive Cloud. In order to confront production complexity issues, emerging especially from the SW-HW integration, VW plans to produce a smaller number of versions in which the individual configuration will no longer be set through the hardware when the vehicle is purchased; instead, desired functions will be available on-demand at any time using the in-vehicle digital ecosystem.

Toyota has recently established the Woven Planet Holdings Group, a company that focuses on the development of a more agile "software-first" in-vehicle ecosystem for future Toyota vehicles. The company has developed an Automated Mapping Platform (AWM), a connected crowdsourced software platform that supports the creation and distribution of HD maps.

In addition, Woven currently integrates Toyota's operating platform Arene OS; in order to enhance its ADAS, connectivity and cockpit capabilities.

## The current E/E automotive architecture has reached its scalability limits.

The requirements for autonomous driving, connected cars and electrification are pushing for new vehicle architectures to address flexibility, cost, speed, and compliance.

Players are moving towards a Domain or Zonal E/E architecture to support mass-electrification and connected cars.

With the move from domain-based architecture to zonal-based architecture, 10G+ links (typically redundant) between the electronic control units (ECU) will be required.

To enable SDVs, a Service Oriented Architecture (SOA) is created that hosts applications and services that communicate and exchange data. New functionality in SDV can be easily added if SOA is present.

Software-Defined Vehicles will open new monetization strategies with "Features-on-demand" (FoD).

Data monetization is a huge opportunity for carmakers, but it's hindered by currect architectures, connectivity and OTA. Automotive players need to identify the most suitable applications and guarantee owner / user privacy.

Tesla has already enabled FOD for its ADAS features. For the first time, Audi is offering its customers in Norway and Germany the possibility to book selected functions on demand, even after purchasing the vehicle. Customers can book functions in the areas of lighting, driver assistance, and infotainment flexibly and as required.

Domains such as vehicle or component repair, predictive maintenance, software over-the-air updates, and battery-as-a-service create new opportunities for players.

But compliance and regulatory challenges for continuous homologation need to be resolved.

Continuous compliance of OTA updates is still a challenge because standards are vague. What's more, the regulatory framework for SDV features is not harmonized across the world.

A streamlined regulatory approval of newly-added features using robust certification frameworks could fast-track adoption and remove the roadblocks autonomous driving is facing.

Table of contents

1) Executive Summary What this report delivers **Top Opportunities** Emerging start-ups to watch Favourable markets 2) Key Technology Trends driving Software-Defined Vehicles Role of Automotive Software Software development hurdles in the automobile sector Car OS **Open-source software** Cloud **OTA & mapping** In-vehicle Networking / Ethernet Cyber Security AI Evolution of E/E Architecture for SDV Different approaches to the evolution of EE Architecture for SDV **Outlook for EE** SOA (Service Oriented Architecture) Limited number of technology providers & high degree of dependency Variant optimization Uncertainty over Vehicle Networking Medium SDV-Feature economics & Monetization Evolution of SDV maintenance: repair, SW, OTA, Cyber, batteries SDV and Sustainability

3) Player strategies Amazon APTIV Bosch Continental Huawei BMW General Motors Mercedes-Benz Renault Stellantis SAIC Tesla VW Group Start-ups Connected Car: AiDEN Software-Defined Lidar: PreAct

Overview of key technological trends

Software for Project Management: Actify

4) Regulation for continuous homologatioRelevant regulations.Standards

5) Forecasts: Mass market commercialisation

For more information contact info@auto2xtech.com

Auto2x, Automotive Intelligence & Consulting Auto2x Ltd +44 7825 686532 email us here Visit us on social media: LinkedIn

This press release can be viewed online at: https://www.einpresswire.com/article/632759286

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information. © 1995-2023 Newsmatics Inc. All Right Reserved.