aicas' Response to the Vast Increase in Vehicle Data Volume

Why is a Deep Understanding of Device and Vehicle Data so Important?

From engineers to product managers and marketing experts, the future of decision making is assisted by live data analytics. Especially for participants in the automotive supply chain, it will be critical to capture the value of data and leverage it across the enterprise to play a key role in shaping the transformation of the digital automotive industry.

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Vehicle data can be both powerful and vast. In the software-defined vehicle, access to the right data at the right time results in added value, but capturing too much data drives up cost and dilutes insights. Companies that understand their business data know what to capture to better understand their customers and to know how they use their products efficiently, enabling them to provide targeted services, specialized offers, and new sales opportunities:

Manufacturers know more about their products and can base internal decisions and monitoring on realtime data. They can identify critical problems before they impact customers, optimize products, reduce operating costs, and prioritize future feature releases.

Marketers can learn more about their customers and how they use their products to provide targeted services, offers, and sales opportunities. This not only improves the customer experience, but also generates more revenue in the long run.

Companies that have deep insight into their internal and external data have a competitive advantage by uncovering patterns, repetitions, trends, and causal relationships that can create new business opportunities and differentiate them from their competitors.

Leveraging the value of data in the form of **new product monetization** is also an advantage, by focusing on the ongoing monetization throughout the vehicle lifecycle. Companies may gain recurring revenue from monthly subscriptions, such as premium connectivity services and paid over-the-air (OTA) upgrades, which is one easy way to generate additional revenue for manufacturers.

It is not only the vehicle data that can contribute to **innovation in the transportation industry**, but also business-relevant data generated in the manufacturing process of the vehicles. The ever-increasing volumes of data pose a challenge to the intelligent selection of meaningful data analytics. To remain competitive in new product development, it is essential to unlock the value of vehicle data to support automotive engineering, data scientists, product managers, fleet operations, and mobility services, as well as marketing and other data-driven service disciplines.

In addition to the data use cases of manufacturers and marketers, which involve further processing of the internally collected data to gain useful insights into product usage and performance, there are other external users and participants in the mobile connected ecosystem to consider:

Vehicles use data from their own sensors, as well as high-resolution map data, and information from other vehicles and infrastructure, such as traffic signals, signs, cameras, etc., to improve safety and the overall driving experience. Especially in **Smart City environments** the collected data identifies traffic and safety patterns and provides contextual awareness. This realtime data can provide traffic and logistics recommendations, and quick actions, for example to emergency responders, etc.

Due to the large amount of live data and the need to make data-driven decisions in close to realtime and with low latency, the processing of the various data is increasingly being shifted to the edge devices embedded in vehicles and smart infrastructures.

Software-driven transformation requires strategic and technological software partnerships. aicas has a strong foothold in the automotive industry as a partner that delivers value across the automotive software value chain.

Vehicle Data is Critical to the Success of Future Product Development, Operations, and Business Models

Digitization and connectivity are driving one of the most profound changes to the automobile since its invention. If you look at the automotive industry today, there is often a dedicated control unit for every function in the car. A modern vehicle with multiple 4K cameras, a lidar system, and other on-board sensors can easily generate raw data on the order of 100 terabytes per day. This quickly becomes a massive amount of data for manufacturers producing millions of cars per year.

These large volumes of operational data are transferred from the original logs, aggregated, and analyzed to provide short- and long-term insights. Particularly for data-driven connected vehicles, the challenges range from access to vehicle-wide data, selection of the correct data, the ability to combine and process data within the vehicle and in the cloud, easy access to specific data from any remote location, and efficient selection and processing of data.

Automotive companies need to adapt to these new conditions and expand their core business as vehicle manufacturers to include a wide range of mobility services. This requires them to work with partners to create new digital business models and ecosystems to deliver value to customers.

Data Drives Value—How aicas Helps Customers Get the Most Value From Their Data

Vehicle data is extremely diverse, and the challenges range from selecting the right data, to easily accessing specific data from any remote location, to efficiently selecting and processing data without requiring programming skills. aicas' Device Management provides complete software configuration management.

Its data processing capabilities enable simple data flow management, modularity, upgradeability to installed fleets, openness, and interconnectivity: all without writing a single line of code. It delivers the right data to the right place at the right time, while ensuring full software lifecycle management: vehicle-to-cloud, vehicle-to-vehicle, and vehicle-to-x.

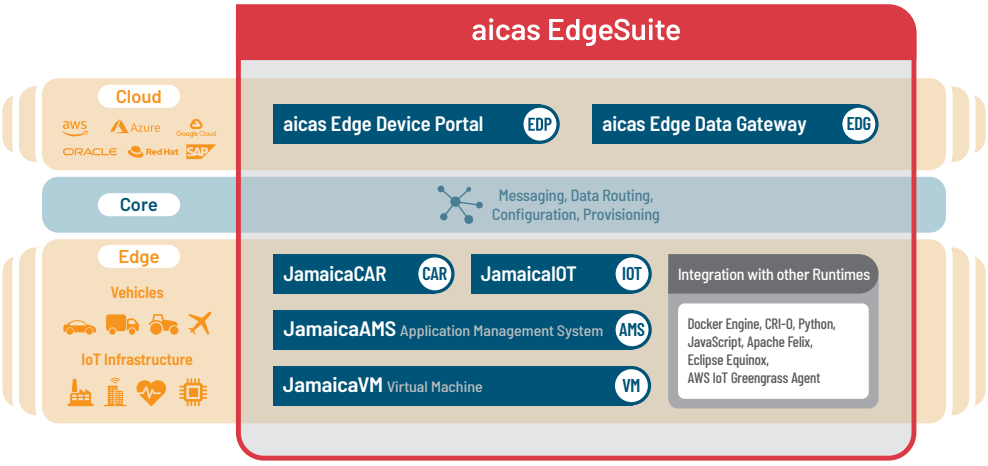
aicas helps streamline and accelerate the use of vehicle data for advanced vehicle monitoring, machine learning training, digital twins, and other data-driven automotive OEM operations. aicas' automotive software solutions bring intelligence to the vehicle edge, unlocking the value of live data from the growing in-car edge computing and telematics capabilities.

- **aicas provides easy access**
  By providing specialized libraries to access data from the most common automotive and manufacturing bus systems, aicas creates value by providing the relevant information in realtime, which saves money with better informed decisions, based on good data.
- **aicas enables data pre-processing**
  By applying coding, the user can control every bit of data. By using common building blocks in a code-free, flow-based approach, the user can easily construct complex data networks without coding. This saves money by reducing bandwidth only collecting what is necessary and not propagating noise.
- **No programming skills needed for full control and usability**
  With aicas EDG, it is possible to create data pipelines to aggregate or filter data without any programming knowledge. The user can react flexibly to situations without having to initiate a costly change process. To ensure high adaptivity, EDG supports a variety of communication protocols and scales together with the use case.
- **aicas reduces complexity by providing a single, standardized application**
  With Jamaica IoT and JamaicaCAR, aicas provides a single application that can pull data from a variety of vehicle architectures.
- **aicas enables data assembly and distribution without coding**
  aicas connects systems by providing multiple data distribution mechanisms from the edge to cloud servers, public and private, and from the aicas Edge Data Gateway (EDG) to other cloud providers. With an edge data gateway, aicas provides a data management system that can reside on a private server or in the cloud. This adds value by connecting additional business logic systems and aggregating information.
- **aicas enables data visualization**
  By providing a dashboard editor with a rich widget library, aicas enables users to create customized visualization. By creating flow diagrams to feed custom graphs representing complex data necessary to unlock value in the data, the conclusions to be drawn in these scenarios can be easily understood. This creates value by presenting focused information for users to view.
- **Full data control**
  aicas puts you in control of your data. By providing an edge data gateway, aicas offers a data management system that can reside on a private server or in the cloud. By being cloud provider agnostic, aicas gives its customers complete control and independence.

aicas is addressing the challenges of the future of automotive software, such as achieving cost efficiency in software development and deployment with secure over-the-air updates as well as providing a platform to scale and create value from vehicle data for monetization, often referred to as data-as-a-service. The complexity and diversity of in-vehicle software continues to grow exponentially. A good way to manage this is to limit complexity. Our aicas solutions are able to reduce complexity for a range of transportation and industry use cases.

Multifunctional Data Solutions for a Connected World

Whether automotive, industrial, or IoT, aicas' product portfolio provides a platform that can handle large volumes of data with fast response times.



The **aicas Edge Data Gateway (EDG)** creates value from device and vehicle data, unlocking savings and monetization potential. The cloud-based data management portal provides direct, unified, cross-application access to data from edge systems. It supports many different communication protocols and is scalable across heterogeneous fleets of devices and target systems. Custom dashboards visualize data and enable live data monitoring. The flow editor enables data to be filtered, aggregated, and routed to third-party applications. The entire suite can be used without programming knowledge or writing a single line of code.

Use case example: A large automotive OEM wanted to collect and examine data generated by its fleet of vehicles to derive useful information for theft tracking and maintenance scheduling. The fleet consisted of many different makes, models, systems, and configurations. By leveraging **JamaicaCAR** in the in-car telematics systems, the required data could be accessed, securely transported, and dynamically configured to respond to changing requirements. The application needed to be written only once and can now be ported from model to model with minimal effort. Stolen vehicles are successfully tracked and recovered, avoiding recalls. The aicas application could even be deployed to collect telematics data from IVI units already in the field running JamaicaCAR. Our website features more aicas use cases.

Benefits at a Glance

- Accelerate processes with data
- Reduce development time with data
- Faster response to market demands
- Full access and management of logic with reduced complexity

In summary, aicas combines broad automotive experience with deep technology expertise to deliver customized and sustainable edge computing solutions that are proven in the global automotive industry. aicas' automotive software solutions bring intelligence to edge devices and vehicles to unlock the value of their data. aicas will continue to improve the development of software integration that enables new digital use cases and data-driven solutions for the automotive industry and more.

Get in touch with us to learn more about our solutions!

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