aicas
Value. Delivered.

Realtime Analytics

Sometimes, things need to happen at a certain point. The right data need to be at the right point at the right time, in order for the system to show the correct decision or action. Reliability of the data flow is a key function for these critical mission systems. One of aicas' clients uses this function in a ventilator in order to transmit critical data for the functioning of the machine, which in this case ensures the survival of the patient. At the same time, the analysis of this data provides crucial insights for the continuous improvement of the machine and its function, as well as to learn from that data. Another client uses it to control very expensive microscopes. The positioning of the object to be examined without any time lag, and in the desired high resolution of the smallest objects is only possible with the help of realtime data. Other customers use the realtime data analytics capabilities of the Jamaica products in order to map safety-related data evaluation requiring immediate action.

Online orders are growing fast. At the same time, the logistical demands for the online retailers are growing too. Luckily, their packet distribution systems are equipped with aicas products. One of the world market-leaders for this kind of system uses Jamaica to enable high frequency sorting while the processes remain flexible. The system allows end customers, including some of the biggest online retailers on the planet, the intelligent, data-driven, high-speed execution of automated and adaptable processes. This provides these end customers with an optimized utilization with the ability to seamlessly adapt and expand, and provides valuable insights, for example for predictive analytics.

Telematics / Connectivity

The display of IoT, industry 4.0 and the autonomy of systems always requires for these systems to communicate with the outside world. This bears a lot of challenges. Safe communication between the data source and destination needs to be ensured. Be it that the source and the destination can be identified unequivocally, or that data transfers are end-to-end encrypted. Not to mention the connection of a large number of different sensors, actuators, or systems via different connections, such as 2-wire, serial, USB, WLAN, 5G, and many more. Different protocols are used for the data transfer (i.e. CAN, CANOpen, Profibus, Ethercat, etc.). Many of these applications aim at connecting to private and public cloud systems. Here again, standardized and individual solutions in the form of MQTT, OPC-UA, or even REST, are applied. Due to their high flexibility and simplest portability between the underlying platforms (HW and operating system), aicas' Jamaica products are used in millions of devices and vehicles. Various car manufacturers and their suppliers are using Jamaica products to swiftly display new products and adaptations. 5 of the 10 biggest automotive manufacturers rely on aicas. Other applications include material handling and the agricultural sector. Claas, one of the world's leading manufacturers of agricultural machinery and technology, use Jamaica products as part of their Electronic Machine Optimization System (CEMOS).

Jamaica is used in long-haul aircrafts to send the correct data, meaning the actually relevant data, immediately after landing to the ground crew in order to immediately identify potential issues, so the downtime of the machine is kept to a minimum, resulting in a competitive advantage.

As of late, aws, the world's biggest cloud provider, offers a system for sensor fusion. This system was created on the basis of Jamaica products. This facilitates transferring data acquired from vehicles to cloud systems, for example.

A market-leading forklift manufacturer relies on Jamaica products to map new business models. Especially as new, more flexible business models are deployed, the selection of data is crucial to their success. Particularly, since customers expect high flexibility in those cases when competitors are reacting swiftly. This manufacturer is using Jamaica to optimize data flows and offer forklifts as a service. The decisive factor here is that, on top of the usage data, the environmental data is provided as well. The price for using the forklift will change depending on whether it is used in a room temperature warehouse or a deep-freeze warehouse. The next step is to offer autonomous forklift solutions based on Jamaica products and the data they transmit.

aicas provides infrastructure that can be used by the customer. The benefits are determined by different elements and the infrastructure flexibly adjusts to the customer demands and the developments in the market since user demands are constantly changing

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Application Management

Characteristically, IoT devices and embedded systems are not located within their own network. This means, software updates and upgrades cannot be quickly and easily loaded to the target system. On top of that, there are high security requirements, particularly in the form of authentication of the target device, the new software version, and in some systems the exchange of functions up to the whole operating system during runtime. Various customers from the automotive and material handling sectors, as well as from the field of control systems, rely on aicas' solutions for their application management demands. These solutions allow for a quick and easy upgrade to the desired software status of main processes and functions, and also the functions of underlying microprocessors. Completely remote and just with a few buttons, single devices, any selection of devices – even according to specific requirements, such as location, language, etc. – up to millions of devices can perform upgrades, quick and simple. One automotive customer uses this, for example, to upload specific software to a stolen vehicle. The vehicle's location can not only be traced at any time, also certain vehicle functions can be turned on and off, and it allows to interact with the driver. If the vehicle stops at a red light, for example, the onward journey can be prevented.

This means that our product enables the head unit in the car to run a variety of applications at the same time and our software is also responsible for enabling users to install, pause, start, stop, in short: control applications.
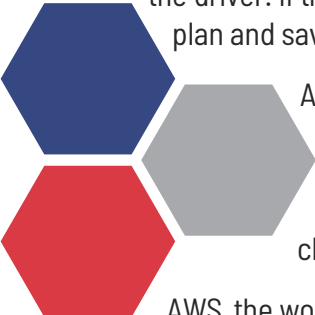
There are a few data points that can be useful for both carmakers and insurance companies with regards to what data can and should be collected.

Examples:
Speed, status of car parts, how much the driver is paying attention to the road (through cameras)

This data can be used to enhance user experience and providers' services.

As an insurance company, you will be able to provide prices that are a lot more personalized and tailored to the driver. If the insurer is a good, careful driver, the company could give him a more cost-effective plan and save him money.

Application management allows for the integration of an own app store as an intermediate level to the Google Play Store, for example. This helps facilitating the management of apps by using only those apps that are tested by the automotive manufacturers and that can be used with the system, as well as their own apps that do not need to be checked and released by Google.

AWS, the world's biggest cloud provider, relies on the power of Jamaica for their AWS IoT Greengrass 2.0 System. For this use case, aicas carried out a porting to RISC-V hardware with a Linux system within a minimum amount of time. The porting of AWS IoT Greengrass 2.0, was carried out by aicas engineering within less than two weeks.

Embedded Dashboard / HMI

We are entering a world in which systems and machines completely assume certain functions. Digitization and industry 4.0 entail the introduction of end-to-end processes, including embedded systems. Processes need to be monitored and controlled. Sometimes, this can be carried out from a central point by using dashboards. Sometimes, this interaction needs to be executed right at the machine. In some cases, of course, both are necessary. In a vehicle – an automobile or any other vehicle – the interaction with users is necessary, too. Many customers rely on Jamaica products particularly because of their real-time capability and updating them is so easy (over the air updates). On top of manufacturers of machines for the production of yarn or the world's leading manufacturer of machines for the production of mattresses, these include use cases in airplanes for military purposes. The real-time capability between the system's user interaction and the execution, i.e. when using a touch screen, is the reason why one of the biggest car manufacturers in the world is relying on Jamaica products.

Platform Porting

You have put a lot of effort into developing your embedded systems. After a few years in use, the hardware and the underlying software need renewing. Isn't it great that moving to the new platform is just an integration test and doesn't mean the complete rewriting of the whole software? This is what happened to a manufacturer of semiconductors and a manufacturer of video software. Both were using Jamaica products to have their intellectual property at hand on the new platform immediately. The broad support of hardware platforms by a wide range of manufacturers and many supported operating systems, the Jamaica product family is the first choice for porting your systems to new platforms.

Embedded Sandboxing

A manufacturer of ventilators uses artificial intelligence to monitor the functions of his machines. Since the lives of patients depend on this system, the software of the artificial intelligence has to be covered against the rest of the system. The customer, a large German manufacturer of medical technology, uses the virtualization capabilities of aicas' Jamaica VM. This ensures the basic software of the ventilator remains operable, even when the artificial intelligence wants to use more system resources as it should. The Jamaica product family prevents memory or CPU usage beyond defined limits, thus protecting the key functions of your applications.