SYNAOS

VDA 5050

A Standard for the Mobile Robot Industry

VDA 5050 – A Standard for the Mobile Robot Industry

What is it?

VDA 5050 is a defined interface for standardized communication between mobile robots – Automated Guided Vehicles (AGVs) and Autonomous Mobile Robots (AMRs) – and a supervisory control software. It was jointly developed by the German Association of the Automotive Industry (VDA) and the German Engineering Federation (VDMA). Designed as a fully centralized interface with a central fleet manager in mind, VDA 5050 enables the integration, control, and monitoring of heterogeneous or homogeneous mobile robot fleets of any size, providing maximum flexibility on the shop floor.

Why do I need it?

Companies often acquire AGVs and AMRs from different manufacturers for operations on their shop floors, each designed for specific tasks. However, each mobile robot is controlled by manufacturer-specific software. **Without** a communication standard like VDA 5050, the efficiency of a company's intralogistics suffers. **With** such a standard, companies benefit in several ways:

Easy commissioning

Personnel no longer need to deal with a patchwork of different software systems but can focus on a single system.

True interoperability

When mobile robots from different manufacturers cross paths or share the same elevator, complications are avoided.

Increased flexibility

Intralogistics can be tailored to the specific needs of the company. AGVs and AMRs don't have to operate in separate areas but can share the entire shop floor layout.

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What are the benefits?

- Our customers benefit from our extensive Mobile Robot Partner Network, the largest in the industry. This facilitates a swift integration process of supervisory control software like the SYNAOS IMP without long commissioning times.
- Any mobile robot from a provider that has implemented the VDA 5050 interface becomes compatible with a fleet management system in no time.
- The goal of the standard is to enable a "Plug & Play" solution.
- Thanks to VDA 5050, our customers can operate their intralogistics efficiently and achieve operational excellence, regardless of the mobile robots they use.

How secure is it?

SYNAOS IMP does not exchange safety-critical signals with transport vehicles but only control information through VDA 5050 between the supervisory control and the mobile robot. The information exchange occurs as specified in the standard using the MQTT protocol. Ongoing tests in production environments show no latency issues, especially when using the Cloud. Relatively small data packets are bidirectionally transmitted at infrequent intervals. The vehicles operate in a fail-safe manner.

SYNAOS IMP and VDA 5050 Multi-version Support

SYNAOS has been an early adopter of VDA 5050 and provides multi-version support for the standard interface. The SYNAOS IMP now supports not only VDA 5050 version 1.012 but also versions 1.1 and 2.0.0. The advantage: The customer doesn't have to choose which VDA 5050 version to use since SYNAOS IMP can simultaneously accommodate all supported VDA versions on the same shop floor. Each vehicle can freely choose its VDA version.

The benefits for companies are diverse:

VDA 5050 versions can be used and mixed as desired. There are no restrictions on using multiple different versions in one setup – or even for a single type of mobile robot. Future versions of VDA 5050 will increasingly consider the specific capabilities of AMRs. The SYNAOS IMP adapts to all fleet sizes and needs.

Record-breaking

VDA 5050 has proven to be a flexible and reliable foundation for controlling mobile robot fleets in challenging live environments. We currently deploy multiple VDA 5050 versions in many customer projects. **World record:** During the AGV Mesh-Up 2022, the SYNAOS IMP, as the central control center via VDA 5050, controlled AGVs and AMRs from seven different manufacturers simultaneously. In a showcase at Automatica 2023, a total of eight AGVs and AMRs mastered multi-stage production processes in a challenging process landscape. The driving force behind this success: VDA 5050. **Another world record:** In our largest customer scenario at Volkswagen Commercial Vehicles in Hanover, we control over 130 mobile robots and automated tugger trucks simultaneously, proving the practical readiness of VDA 5050.

Onboarding for Mobile Robot Partners

Our VDA 5050 onboarding is structured and straightforward. Throughout the process, we provide our partners with comprehensive documentation and support them with our knowledge from the VDA 5050 working group and successfully implemented onboarding and customer projects. Over the entire period, we offer our partners not only documentation but also a test instance of our SYNAOS IMP via the Cloud. This allows the partner to directly test their implementation of VDA 5050 against our software. To ensure basic compatibility, onboarding is supported by a Quality Agenda. After successfully passing our Quality Agenda, the partner establishes basic compatibility to realize successful customer projects.

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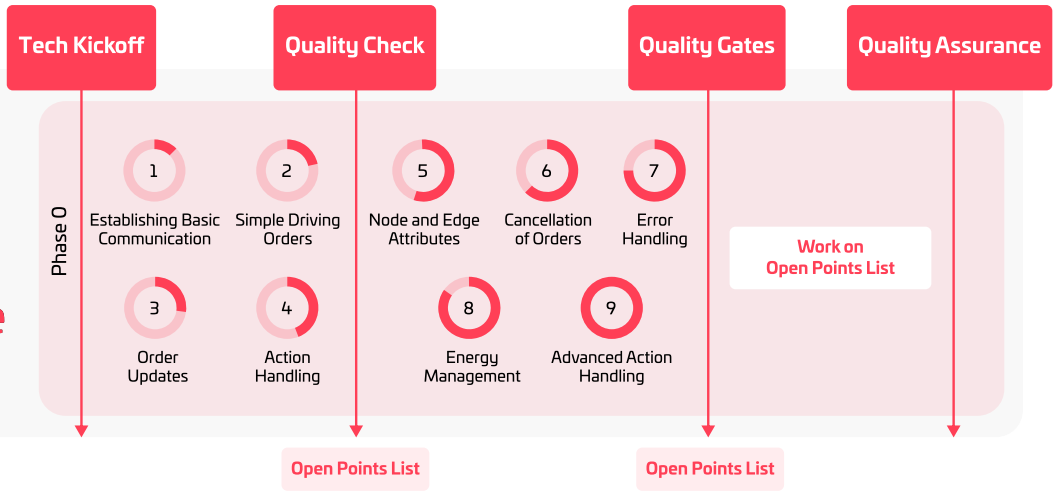
Onboarding Process - Timeline



Would you like to learn more about VDA 5050 and how your intralogistics can benefit from it? Talk to our experts; we are happy to advise you - whether your automation project is well under way or just getting started.

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