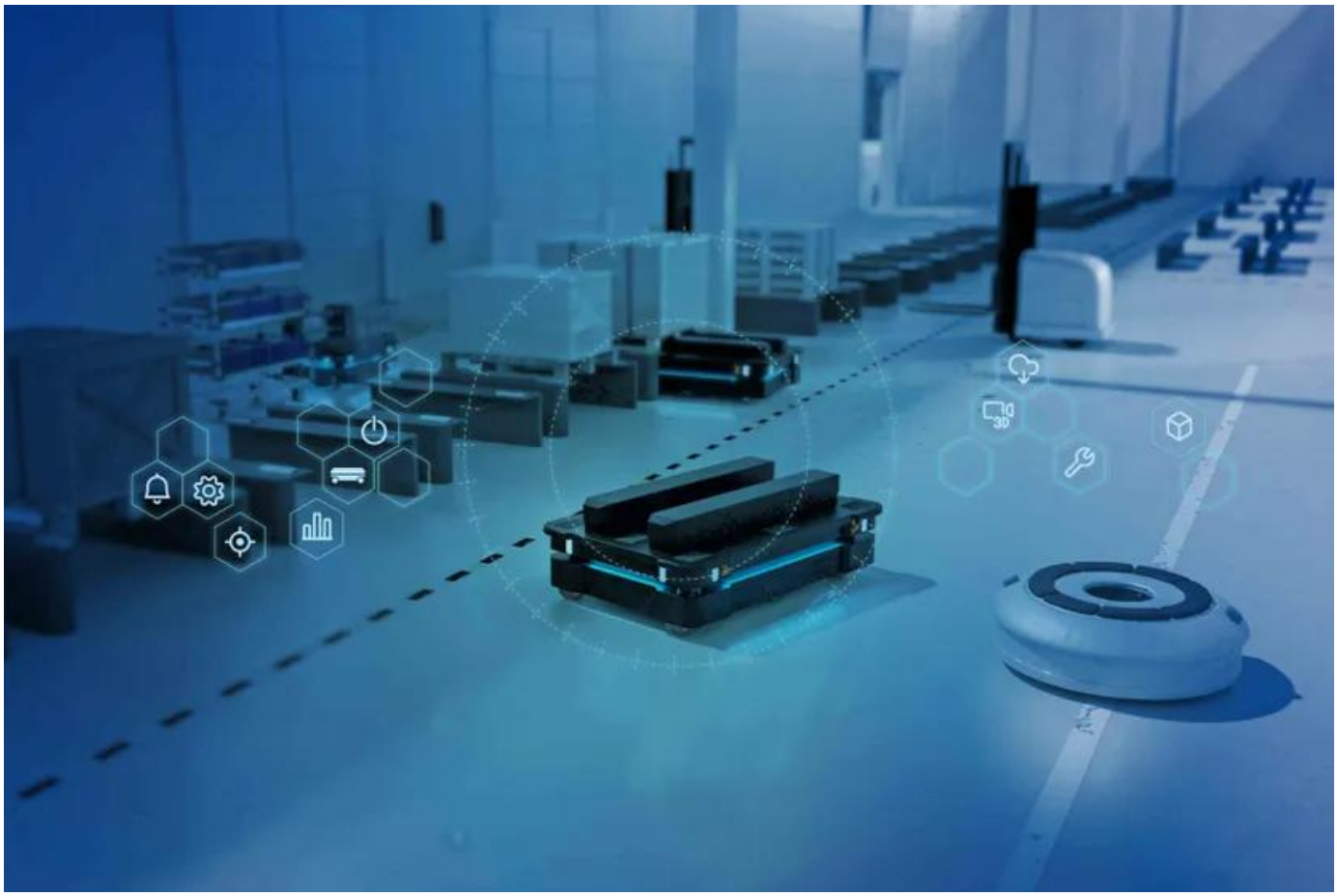

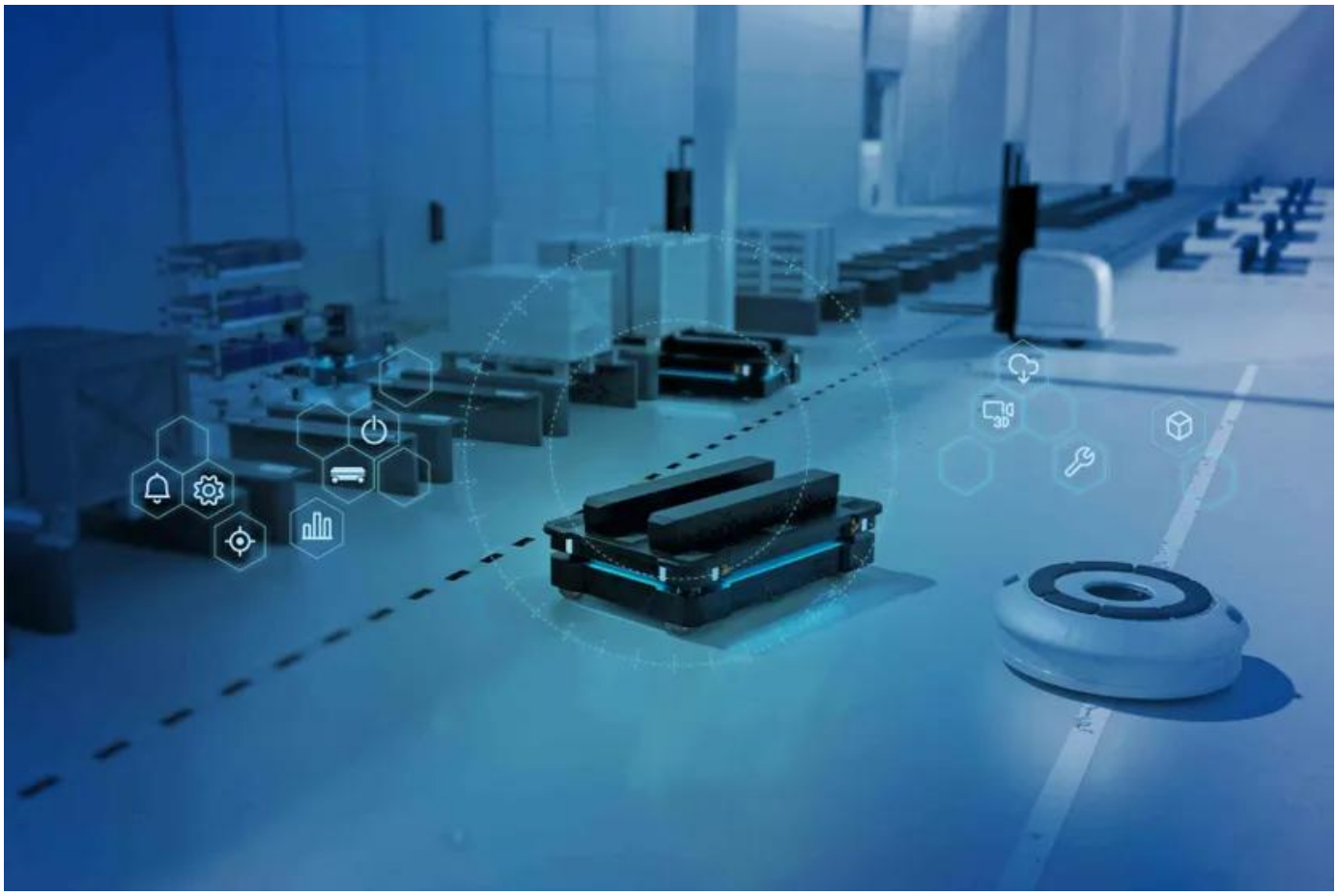

Interoperability, the VDA5050 standard and MiR's approach

Learn about interoperability

Manufacturers and warehousing service providers across industries are constantly looking to optimize processes to meet challenges such as labor shortages, increased competition, and the need for agile production and fast delivery. Autonomous mobile robots (AMRs) have emerged as a highly effective solution for automating internal transportation tasks around the world. As mobile automation solutions become more popular, more use cases are emerging for manufacturers, warehouses, and distribution facilities that require different types of robots. These requirements include both ordinary AMRs and specialized vehicles such as forklifts and high-lift trucks, all with the goal of improving the speed and accuracy of receiving, storing, moving, and transporting items.

Given the wide variety of solutions needed to address all material movement workflows, it is likely that multiple different automation solutions from different suppliers must operate in the same space, each with unique operating standards and control systems. This diversity can lead to complex traffic situations and present challenges for users who want to provide unified control and support mechanisms for an entire fleet of autonomous vehicles. As a result, efficient interoperability of these autonomous driving solutions is becoming increasingly important, sometimes requiring a central management system that communicates and coordinates with different vendor products using a single source of control and interface. Such interoperability solutions can simplify the operation of mixed-brand fleets and lower the barrier to further adoption of mobile robots.

What is VDA5050?

The VDA5050 standard, initiated by the German Association of the Automotive Industry (VDA) and the German Mechanical Engineering Industry Association (VDMA) Material Handling and Intralogistics Association, is one of the industry's attempts to meet this challenge by standardizing communication between many different types of robots from different suppliers using a common control system. The purpose of developing this standard is to enable efficient traffic management and coordinated operations using different autonomous vehicles within a specific facility. VDA5050 requires robots to meet certain requirements in order to be included in third-party control systems.

While the benefits of coordinated control systems are clear, there is widespread industry consensus that standardized interoperability solutions may inhibit many value-added features and functions because they rely on the vendor's unique understanding of its own robotic solutions. Therefore, as interoperability standards such as VDA5050 become more widely adopted, it will be a very important balance for the industry to adopt the most beneficial elements of standard interoperability features while not limiting the value that robot manufacturers can provide.

MiR's attitude towards VDA5050 and future plans

MiR fully recognizes the need for interoperability between different mobile automation platforms. Currently, MiR provides open API interfaces for integration with third-party solutions. Some MiR partners have already adapted our open interfaces to include MiR robots in VDA-compliant solutions.

In addition to partners who have already developed VDA integrations, MiR plans to further expand our compatibility with VDA5050 by implementing a "starter kit" open adapter that connects the existing REST API with the MQTT protocol required by the VDA5050 standard. This approach converts REST API requests into VDA5050-compliant MQTT messages, simplifying integration efforts and facilitating the exchange of VDA messages between AMRs and third-party systems. We are working with several third-party fleet suppliers to complete this adapter and plan to make it available to the market by the end of this year.

互操作性、VDA5050 標準與 MiR 的應對方案

了解互操作性

來自各行各業的製造商和倉儲服務提供商，正不斷尋求優化流程，以應對勞動力短缺、競爭加劇以及需求靈活生產與快速交貨等挑戰。自主移動機器人（AMRs）已成為全球自動化內部運輸任務的高效解決方案。隨著移動自動化解決方案的普及，越來越多的應用場景出現在需要不同類型機器人的製造商、倉庫和配送設施中。這些需求包括常規 AMRs 以及專用車輛，如叉車和高升降車，所有這些的目標都是提高接收、儲存、搬運和運輸物品的速度與準確性。

由於需要解決各種物料搬運工作流程，因此很可能需要來自不同供應商的多種不同自動化解決方案共同運行，每種解決方案都有其獨特的運行標準和控制系統。這種多樣性可能會導致複雜的交通狀況，並給希望為整個自主車隊提供統一控制和支持機制的用戶帶來挑戰。因此，這些自主駕駛解決方案的高效互操作性變得越來越重要，有時需要一個中央管理系統，能夠與來自不同供應商的產品進行通信和協調，並使用單一控制源和界面進行管理。這樣的互操作性解決方案能夠簡化混合品牌車隊的運營，並降低進一步採用移動機器人的門檻。

VDA5050 是什麼？

VDA5050 標準由德國汽車工業協會（VDA）和德國機械工程工業協會（VDMA）物料處理與內部物流協會發起，是行業為解決這一挑戰而提出的嘗試，旨在通過使用共同的控制系統標準化來自不同供應商的多種類型機器人之間的通信。該標準的目的是實現不同自主車輛在特定設施內的高效交通管理和協調運營。VDA5050 要求機器人滿足某些條件，才能被納入第三方控制系統中。

儘管協調控制系統的好處顯而易見，但業界普遍認為，標準化的互操作性解決方案可能會抑制許多增值功能和特性，因為這些解決方案依賴於供應商對其自身機器人解決方案的獨特理解。因此，隨著像 VDA5050 這樣的互操作性標準的普及，對行業而言，一個非常重要的平衡是，在不限制機器人製造商所能提供的價值的情況下，採用標準互操作性特性中最具益處的元素。

MiR 對 VDA5050 的態度與未來計劃

MiR 完全認識到不同移動自動化平台之間互操作性的必要性。目前，MiR 提供開放的 API 接口，支持與第三方解決方案的集成。部分 MiR 合作夥伴已經將我們的開放接口調整為符合 VDA 標準的解決方案。

除了已經開發出 VDA 集成的合作夥伴，MiR 計劃通過實施一個“啟動包”開放適配器來進一步擴展與 VDA5050 的兼容性，該適配器將現有的 REST API 與 VDA5050 標準所要求的 MQTT 協議進行連接。這一方案將 REST API 請求轉換為符合 VDA5050 的 MQTT 消息，簡化了集成工作，並促進 AMRs 和第三方系統之間的 VDA 消息交換。我們正在與多家第三方車隊供應商合作完成此適配器，並計劃在今年年底之前將其推向市場。