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TRANSFORM DATA INTO ENGINEERING EXCELLENCE

From data overload to engineering intelligence, the success of AI depends on integration not implementation – and this will shape the future of vehicle development

The volume of data in product validation has increased massively in recent years. On the one hand, significantly more measurement data is being collected in simulations and physical tests. On the other hand, this data is increasingly being enriched and linked with information from PLM, ALM and ERP systems, enabling a more comprehensive view of product performance and lifecycle. This development promotes data-driven decision-making, but the growing complexity and sheer volume of information make it challenging. In many cases, it only becomes feasible through close collaboration between data scientists and test engineers.

With HyperTest Boost, Werum addresses these challenges of rising data volume and complexity through a web-based software solution that supports the entire test process. A key element of this approach is the integration of artificial intelligence. "By integrating our AI platform, Insightics AI Hub, into HyperTest Boost, we are paving the way toward an engineering intelligence platform that promotes democratization while enhancing both efficiency and quality," says Björn Hansen, business development manager at Werum.

However, the road to AI adoption remains challenging. The 29th *Global CEO Survey*, published by PwC in January 2026, revealed that at that time, only 12% of companies had been able to achieve cost advantages and revenue growth through the use of AI.

"Since the ChatGPT moment in November 2022, companies have been looking for ways to integrate AI into their processes," says Dr Stefan Unterschütz, who heads IT solutions for testing at Werum. "In many cases, a significant gap has become evident between the high expectations associated with AI and the currently limited realization of measurable economic benefits.

"At Werum, we believe that AI should be approached holistically. Simply deploying a cloud-hosted chatbot is not enough. Success comes from seamless integration into processes, existing tools, legacy systems, compliance requirements and organizational structures while keeping a strong focus on business objectives."

Need to know

- Deep integration of AI into engineering workflows is a game-changer
- A human-in-the-loop approach is vital to maximize results
- The Model Context Protocol and retrieval-augmented generation are the foundation of Werum's data management hub

With the close integration of Werum's Insightics AI Hub into HyperTest Boost, an important step has been taken. "We first wanted to focus on use cases that deliver the greatest benefit," explains Hansen. "This way, test requirements in unstructured form can be transferred directly into the system. Creating test bench connectors, such as those that convert measurement data from raw or standard formats, can now be added without programming knowledge. Searching and analyzing measurement data and metadata can be done through natural language. Whereas in the past only a fraction of the data was evaluated, sometimes as little as 5%, a deep integration of AI opens the possibility of easily generating significantly more knowledge from that data."

Although AI is technically capable of operating autonomously, Werum believes that the human factor remains essential in engineering environments. Within HyperTest Boost, all AI-generated outputs are fully transparent and can be edited by the user. This design principle is crucial for quality assurance, traceability, regulatory compliance and user acceptance.

"A good example of this is data analysis," says Hansen. "In HyperTest Boost, users can select measurement data and describe the analysis objective in natural language; for example, requesting anomaly detection, spectral analysis or other evaluation methods. The AI then automatically generates a Jupyter Notebook containing the complete analysis code and workflow. Engineers can review and modify the notebook before deployment. Once validated, the notebook can be reused as a template for future analyses, enabling repeatable and standardized data evaluations."

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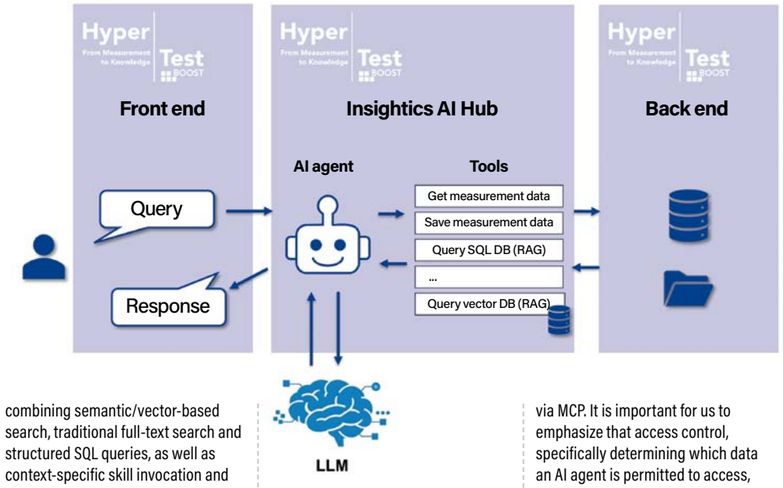
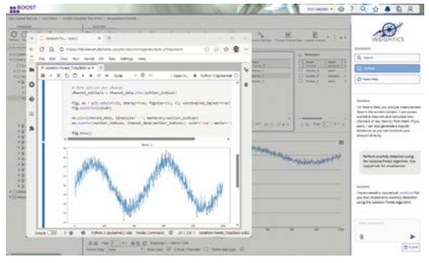


The technical foundation of Werum's Insightics AI Hub is based on core technologies including AI agents and the Model Context Protocol (MCP), which serves as the interface for operating the tool, and retrieval-augmented generation (RAG), which enriches the AI with data knowledge. The AI agent used is built on recent LLMs that can be freely chosen. "In addition to avoiding vendor lock-in for LLMs, we support fully sovereign, self-hosted operations," Unterschütz explains. "Protecting intellectual property is crucial for our customers. We are seeing a growing need to keep sensitive technical product details at a distance from large hyperscalers."

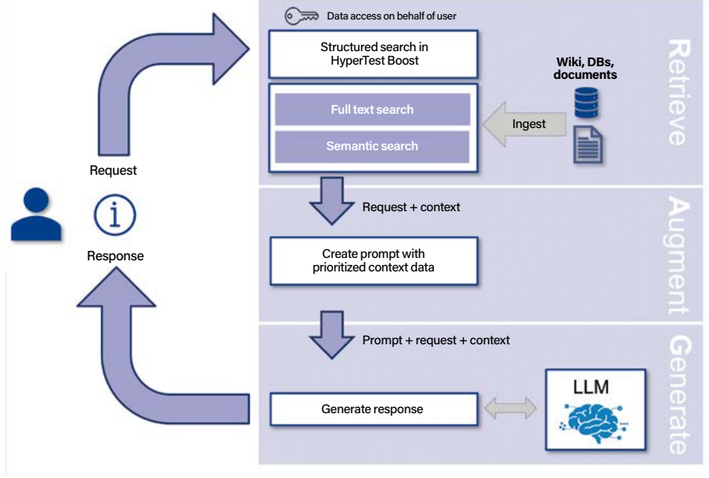
For data access by the AI agent, Werum relies on a self-developed RAG pipeline. "In HyperTest Boost, we store different information, such as resource specifications, calibrations, bookings or logbooks," Unterschütz says. "In the area of order management, we deal with requirements and scheduling information. In measurement data management, we handle key figures, time series data and other information. Furthermore, various datasets contain company-specific identifiers, and company-specific terminology is frequently used. There are no off-the-shelf solutions that can meaningfully channel this heterogeneous pool of data to an AI."

As a solution, Werum employs a hybrid strategy for data retrieval, combining semantic/vector-based search, traditional full-text search and structured SQL queries, as well as context-specific skill invocation and prompting to provide the AI agents with the necessary information.

"Alongside the deep integration of AI into our HyperTest Boost, interoperability is extremely important to us," reports Unterschütz. "We don't want to create an isolated data silo. In the past, we have developed interfaces, primarily REST APIs, that allow other systems to access all the data within our platform and, for example, build data meshes. We remain true to our principle of open interfaces, and provide external AI agents with access to our application via MCP. It is important for us to emphasize that access control, specifically determining which data an AI agent is permitted to access, can be managed with a high degree of granularity."



Werum plans to expand the functionality of its AI solutions into HyperTest Boost and other company products. The vision is to develop an engineering intelligence platform that functions like a personal assistant, guiding users through product validation. Nevertheless, to fully unlock the potential of AI, companies will need to invest in reskilling their workforce and developing new competencies. It should also be emphasized that, as with most digital transformation initiatives, a 'fire-and-forget' approach does not work for AI systems. Instead, AI-based platforms demand ongoing maintenance, monitoring and continuous improvement. ❮



TOP: Werum's Insightics AI Hub acts as the central connector for all AI services

MIDDLE: AI integration in HyperTest Boost enables measurement data analysis using natural language

LEFT: Company knowledge is incorporated to deliver context-aware responses to user queries

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