



**KITCH**  
KI für **Taktik Chat**

# KITCH

## GenAI-driven Tactical Chat and Simulation for Decision Support

The study "Artificial Intelligence for Tactical Chat in Simulation Systems" (KITCH) explores the use of Generative Artificial Intelligence (GenAI) systems for the German Armed Forces. Airbus Defence and Space has been entrusted with conducting this in-depth research, focusing on the application of large language models (LLM), such as ChatGPT, in military contexts. The primary objective is to assess the potential of GenAI to enhance the operational planning process.

### RAG-System

The objective of the study is to examine the potential advantages of GenAI systems in enhancing tactical training and mission planning within the military command process. The system trained using extensive German Armed Forces and NATO regulatory frameworks, as well as tactical training materials. The primary objective is to ensure high reliability and minimize the risk of AI hallucinations. To achieve this, technologies such

as Retriever-Augmented Generation (RAG) are employed to enhance the accuracy and reliability.

*"KITCH is developed to support military operators through a chat function, leveraging its expertise to address military-related inquiries, assess situations, and offer tactical guidance"*

as stated by LTC Thomas Manfred Doll, KITCH study officer from the Bundeswehr Support Command.

### Combat Simulation Integration

Integration with a combat simulation system enables for practical testing and interaction in specific military scenarios. The simulation also serves as a resource for the GenAI system, enabling it to access situation-dependent information. For example, the AI can use the simulation to retrieve real-time situational data and forecasts generated by reinforcement learning-based AI agents within the simulation.

This capability enhances the AI's abil-

ity to provide accurate and contextually relevant information, improving its support for decision-making. By leveraging these advanced features, the AI system delivers deeper insights and more precise recommendations, ultimately strengthening strategic and tactical planning of military operations.

### Utilizing Simulation as a Tool

The KITCH study is an expansion of the success of the predecessor study, "Reinforcement Learning for Complex Combat Situations (ReLeGs)." ReLeGs introduced an AI-based simulation environment ReLeGSim designed to model various combat situations. Within this environment, military strategies are developed using deep reinforcement learning. The simulation includes troop movements, enemy positions, and environmental conditions. The LLM can process this information and offer immediate tactical guidance, helping commanders make informed decisions on the spot.

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### Collaboration with Deepset

The integrated feasibility study involves establishing an orchestration framework to manage the various components of the KITCH model. To achieve this, Airbus Defence and Space has partnered with the Berlin-based AI startup Deepset. Deepset specializes in developing and hosting LLM-based agents and applications for business clients and provides the open-source end-to-end LLM framework Haystack.



The Haystack framework, in combination with Deepset's proficiency in Retrieval-Augmented Generation (RAG) and agentic AI systems, positions the startup as a valuable asset to the KITCH study.

The agentic RAG extension for LLMs enables the model to search its storage for specific documents, extract relevant content, retrieve important information, and cite the source in the response. An important feature of RAG systems is their ability to minimize hallucination instances where

the LLM generates irrelevant, fabricated, or inconsistent content. By leveraging Deepset's expertise in agentic RAG systems, the risk of producing inaccurate or misleading information is significantly reduced.

### Future Implications

The forward outlook for agentic GenAI systems envisions a future where LLMs are not just passive tools, but active participants in the decision-making process. By integrating simulations and other advanced tools, these models can reason and adapt, offering more accurate and contextually relevant insights. This has significant implications for military applications, where effective reasoning under complex and dynamic conditions is crucial. As technology continues to evolve, the KITCH study and the concept of agentic GenAI systems highlight the Bundeswehr's commitment to remaining at the forefront of the innovation.

In the context of multi-agent LLMs, these systems can be designed to work collaboratively. Each agent specializes in different aspects of military

strategy, logistics, and tactics. This approach enhances the overall effectiveness of GenAI systems and ensures that multiple perspectives are considered in decision-making. The result is more robust and reliable outcomes.

The study results hold significant potential for future integration into operational military command and control systems. In summary, the integration of simulations and other advanced tools with LLMs marks a significant advancement in the development of agentic GenAI systems. By minimizing hallucination through RAG systems, these models can provide more valuable and reliable insights, making them an invaluable tool for military applications.

The KITCH study shows that customized AI solutions are vital for operations that are mission-critical. By providing exact, context-aware insights, the system enables faster and more informed decision-making in high-stakes situations where trust and accuracy are paramount.



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