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# Microservices infrastructure architecture for the cloud-based multi-agent group decision support systems for autonomous cyberphysical systems

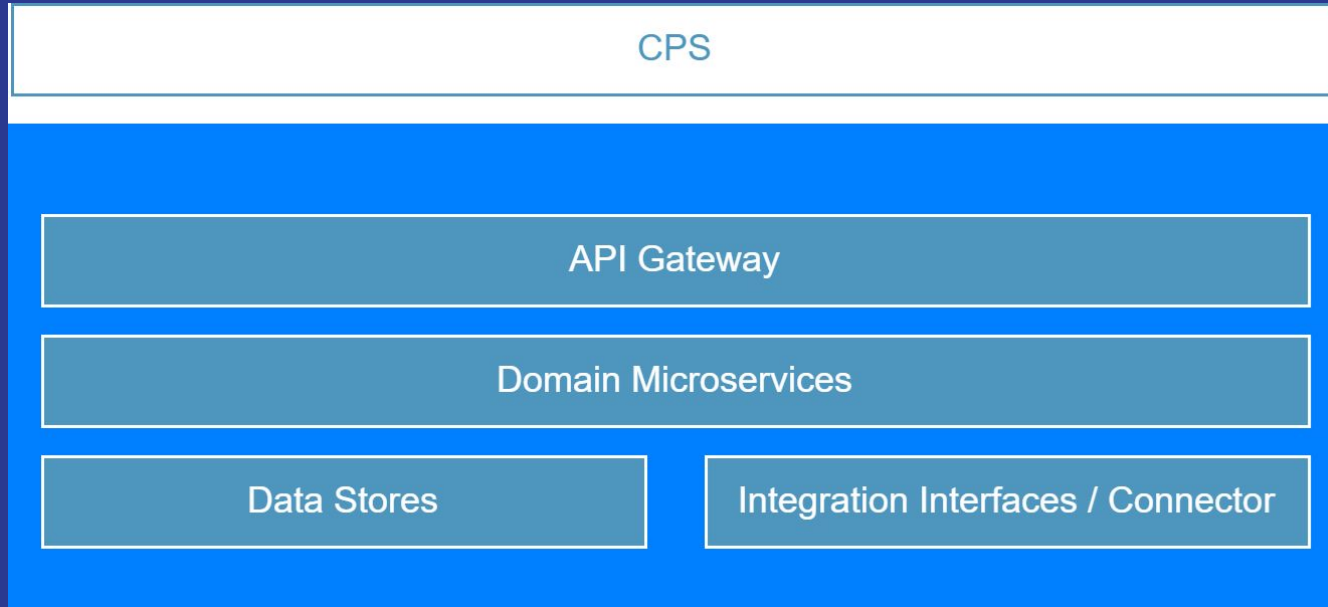
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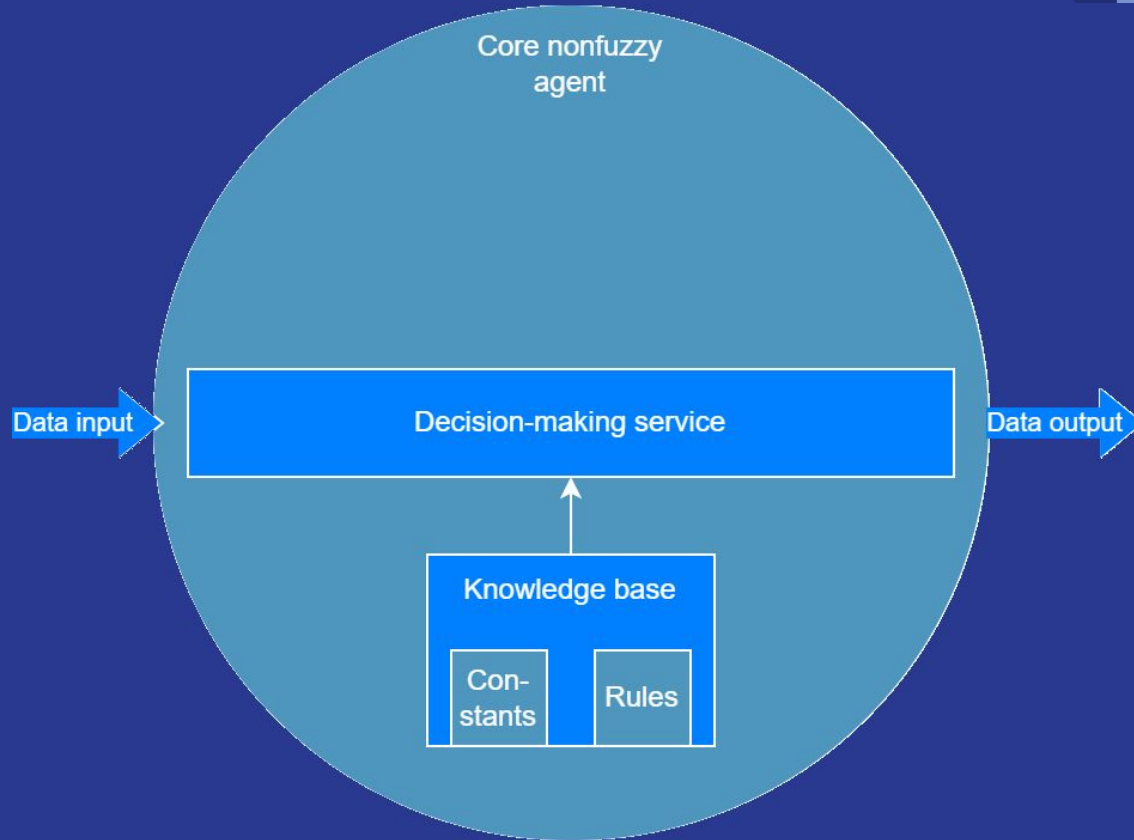
# CPS, Decision-making, and GDSS

- Autonomous CPS: Systems capable of decisions and actions without human intervention
- Evolution of DSSs: From theoretical research in the 1950s to applications in CPSs
- Complexity in CPS: Need for scalable, maintainable DSSs leading to microservice architecture.

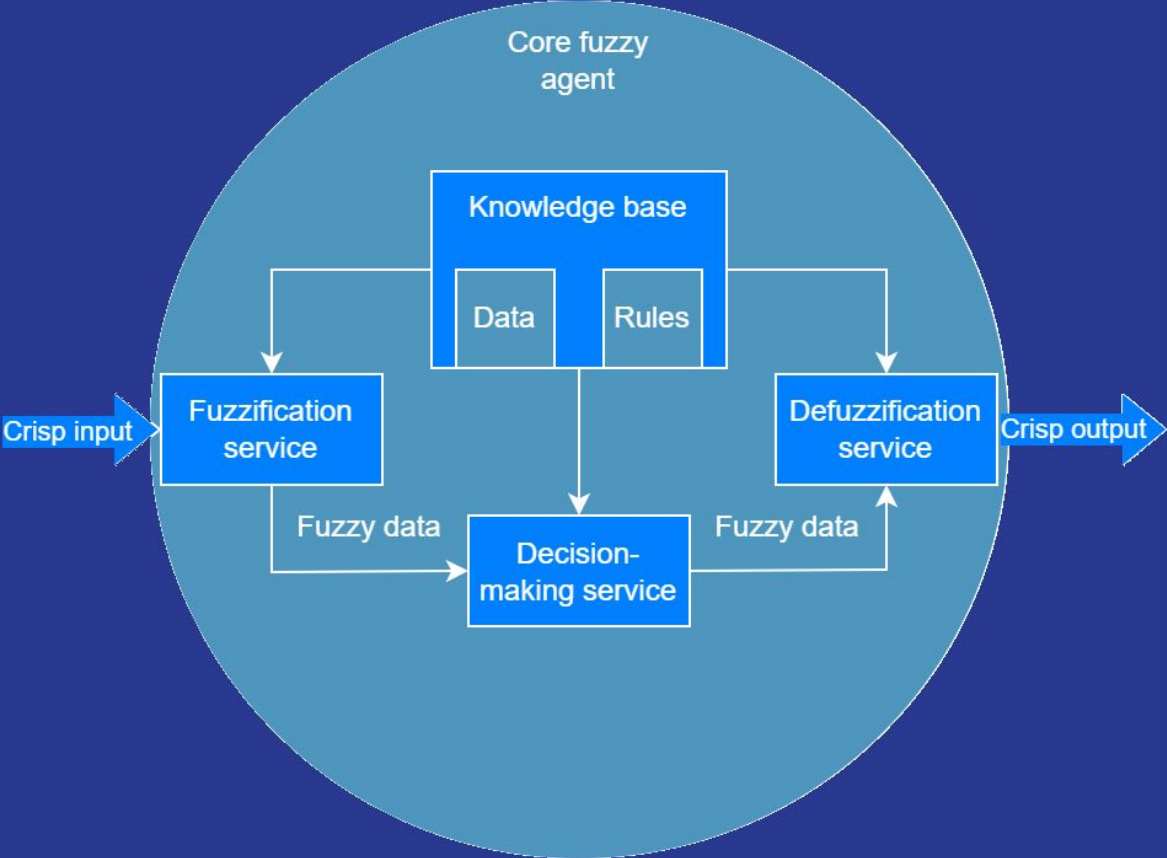
# Microservices architecture of the web-based application



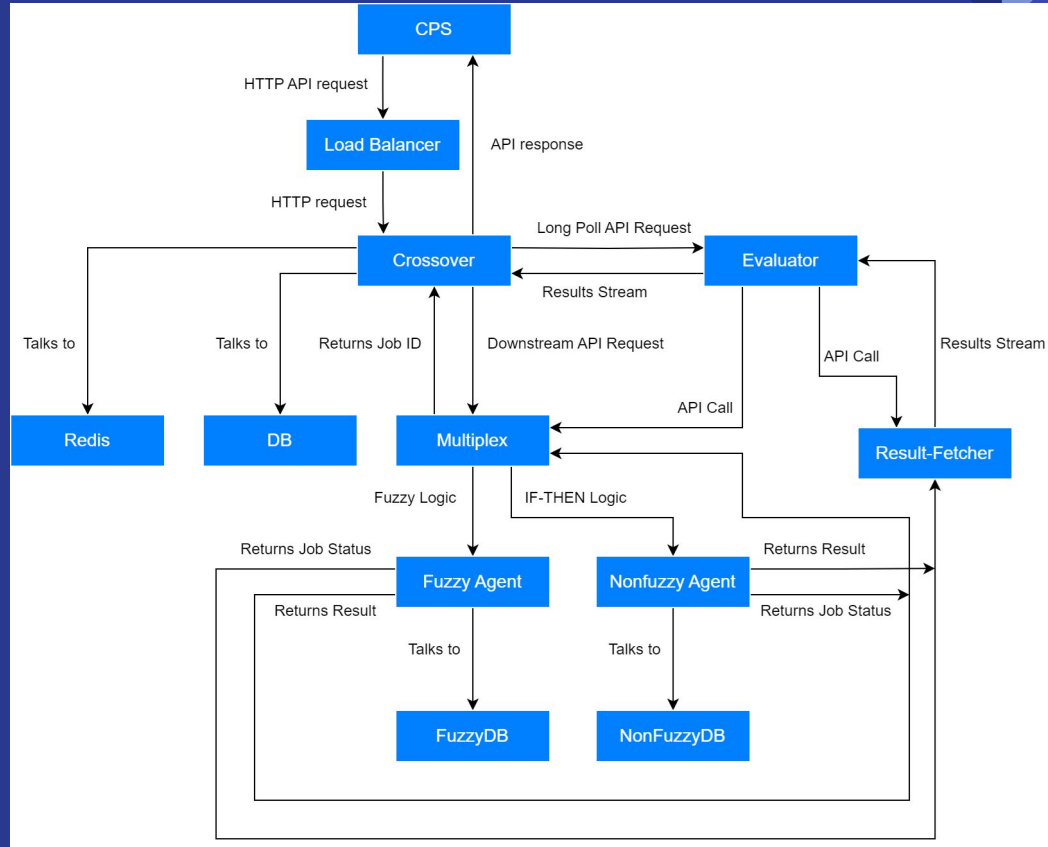
# Core Nonfuzzy Agent



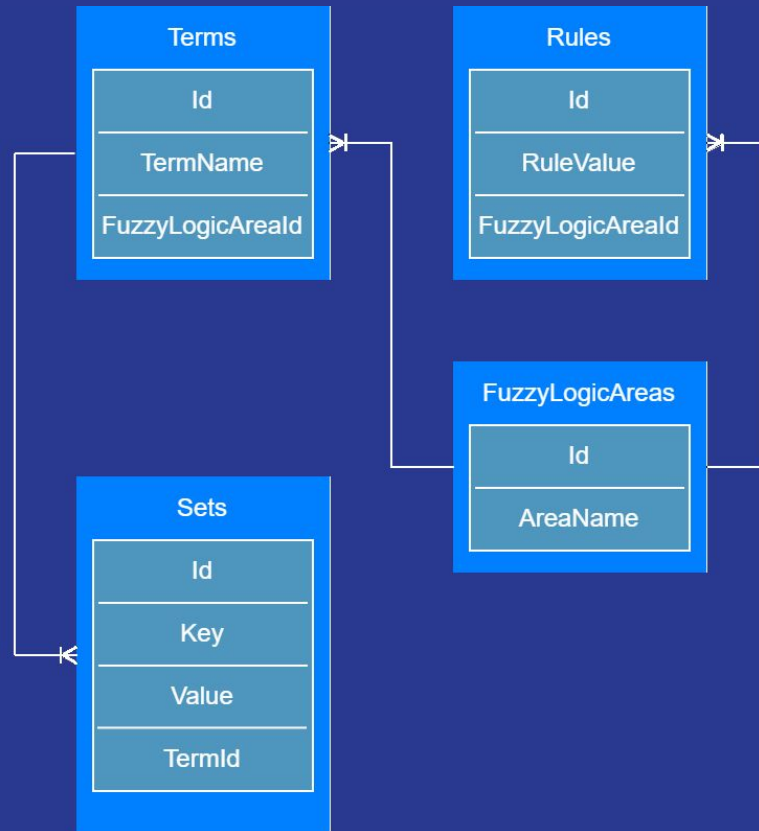
# Core Fuzzy Agent



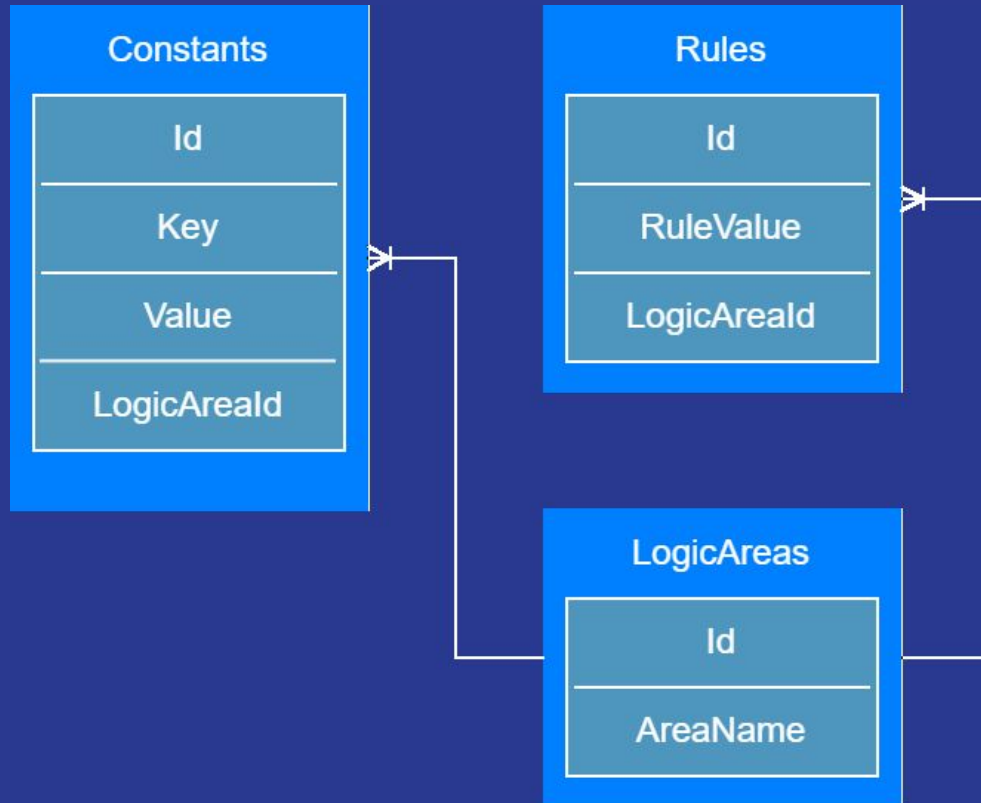
# Proposed System Architecture using Microsoft Azure



# Relational Database for the Fuzzy Agent



# Relational Database for the Nonfuzzy Agent





# Discussion

- Taking a trip down memory lane, early GDSSs had their struggles. Research by Watson, DeSanctis, and Poole in 1988 even found that GDSSs didn't offer clear benefits.
- Businesses today are hesitant. Without clear advantages and the high costs of facilitators, many wonder if GDSSs are worth the investment
- But there's hope on the horizon. With the rise of decentralized systems and dropping costs, GDSSs for CPSs could be the next big thing in research

# Conclusions and Future Work

- Integrated multi-agent system enhances GDSS operations
- Microservice architecture's complexity demands meticulous attention to data consistency and infrastructure management
- Future endeavors include refining the architecture for diverse use cases
- Comprehensive testing under real-world scenarios is paramount
- Seamless integration with existing IT infrastructures is a promising avenue



# THANK YOU !

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