Initial Post

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As multi-agent systems (MAS) evolve, effective communication between autonomous agents has become essential. Agents must do more than exchange data—they need to convey intentions and goals. Agent Communication Languages (ACLs), such as the Knowledge Query and Manipulation Language (KQML), were developed to meet this need and are based on speech act theory, which focuses on the meaning behind interactions rather than just syntax (Warstadt & Bowman, 2022).

A major benefit of ACLs is their ability to enable interaction across heterogeneous systems. Even if agents are built using different platforms, they can communicate as long as they share the same ACL standard (Kim et al., 2024). These languages also support rich, semantic communication through performatives like "inform" or "request," which express the agent's intent (Zhang et al., 2024).

However, ACLs require complex reasoning and a shared ontology, increasing computational demands and limiting real-time use (Belda-Medina & Calvo-Ferrer, 2022). While traditional APIs or method calls are faster and more efficient in tightly coupled systems, ACLs are better suited for open, dynamic environments where agents must act autonomously (Liu et al., 2024).

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