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### The Rise of Agent-Based Systems and Their Organizational Impact

Agent-based systems (ABS) have gained prominence due to advancements in AI, increased computational power, and the need for decentralized decision-making in complex environments. These systems consist of autonomous agents capable of interacting and collaborating to solve problems—an approach rooted in multi-agent systems and machine learning (Wooldridge, 2009).

One key advantage of ABS is their ability to support real-time, adaptive decision-making. In areas like supply chain management, agents can dynamically respond to changes, optimizing logistics and reducing costs (Wooldridge & Jennings, 1995). Additionally, ABS offer fault tolerance—if one agent fails, others can compensate—making them valuable in critical infrastructure such as energy systems (Jennings et al., 1998).

Beyond operations, ABS also enable innovation. In public health, agent-based models have been used to simulate disease spread and support policy planning. Macal and North (2010) demonstrated how such models improve resource allocation during flu outbreaks.

In summary, agent-based systems are reshaping how organizations respond to complexity, offering flexibility, resilience, and actionable insights. Their role will likely continue to expand as AI technologies evolve.

#### References:

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