Special Notice

Information Innovation Office

Future Program: Decentralized Artificial Intelligence through Controlled Emergence (DICE)

DARPA-SN-26-65

April 21, 2026

PROGRAM ANNOUNCEMENT

The purpose of this Special Notice is to provide public notification of additional research areas of interest to the Defense Advanced Research Projects Agency (DARPA) Information Innovation Office (I2O), specifically for the forthcoming Decentralized Artificial Intelligence through Controlled Emergence (DICE) program by I2O Program Manager, Susmit Jha.

If released, the solicitation will be made available at https://SAM.gov.

PROGRAM BACKGROUND AND OBJECTIVES

Future conflicts will unfold at machine speed in highly dynamic and contested environments. This will require autonomous, multi-agent artificial intelligence (AI) systems to create an asymmetric battlespace advantage and reduce risk to warfighters.

The DICE program seeks to develop the theory and algorithms for decentralized coordination and local inference control to enable a scalable, adaptive, and resilient collective of heterogeneous AI agents that can autonomously execute sustained long-time-horizon missions in contested environments while remaining under our control. In contrast to small-scale, rigid, and fragile centralized orchestration or the high-risk unpredictable nature of ad hoc compositions of AI agents, DICE aims to harness the scalability and adaptability of self-organizing systems while minimizing risks and ensuring that the collective behavior remains predictable and aligned with intended outcomes. This approach mirrors the principles of decentralized self-organization that underpin the internet's own scalability and resilience, where robust global behavior emerges from simple, local rules.

DICE aims to develop a decentralized AI architecture suitable for rapidly evolving, unpredictable, and contested environments. With this architecture, AI agents can dynamically form teams using peer-to-peer coordination to execute complex missions. This coordination will be robust to failure or compromise of individual agents, as well as to "rogue" AI agents that might develop misaligned instrumental goals. The local inference control on each AI agent will ensure role coherence of individual agents and constrain the emergent behavior of the collective to maintain alignment with commander's intent over the long term, even across multiple inference steps. DICE will seek to expand and leverage the theory of self-organizing systems and distributed consensus algorithms, together with recent breakthroughs in controlling the internal reasoning and inference of AI foundation models at inference-time.

DICE aims to advance AI beyond individual agent capabilities by fostering system-level capability that emerges from the interactions between agents. This controlled emergence ensures DICE AI agents remain on mission, maintain doctrine, suppress misbehaviors, and remain resilient to agent loss or compromise. The program's scope does not include the development and deployment of autonomous systems in the real world. The program will use simulation environments to demonstrate DICE architectures in Department of War-relevant use-cases, targeting measurable gains in scalability, adaptability, and resilience against both benign failures and adversarial attacks.

DARPACONNECT

DARPAConnect offers free resources to potential performers to help them navigate DARPA, including "Understanding DARPA Award Vehicles and Solicitations," "Making the Most of

Proposers Days," and "Tips for DARPA Proposal Success." Join DARPAConnect at www.DARPAConnect.us to leverage on-demand learning and networking resources.

NOTE: This Special Notice does not constitute a formal solicitation for proposals. This notice is issued solely for information and program planning purposes and is not a Request for Information (RFI). DARPA will not accept any submissions against this notice. Interested parties to this notice are cautioned that nothing herein obligates DARPA to issue a solicitation.

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