

# Response to the 2025 National AI R&D Strategic Plan RFI<sup>1</sup>

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In the evolution of any technology, there comes a pivotal moment when it transitions from being purely solution-focused to becoming integrated into a discipline that bridges the gap to end users. Just as the Wright brothers didn't invent the airline industry, and software engineering emerged after the first software was deployed, Decision Intelligence (DI) is a crucial disciplinary evolution in the AI field.

## Role and Status of Decision Intelligence (DI)

DI serves as the bridge discipline that connects AI to end users by focusing first on desired business outcomes and only then — as a second priority — considering the technology needed to achieve those outcomes.

Since inventing DI in 2008, our team has delivered numerous DI solutions, acted as DI evangelists to promote the discipline worldwide, founded two DI companies ([www.cmodel.io](http://www.cmodel.io) and [www.quantellia.com](http://www.quantellia.com)), written two books on DI ([www.linkthebook.com](http://www.linkthebook.com) and [www.dihandbook.com](http://www.dihandbook.com)), authored about a half dozen journal articles, taught DI to hundreds of organizations worldwide (e.g. [www.gettingstartedwithdi.com](http://www.gettingstartedwithdi.com)), appeared on CSPAN and NPR, and founded [OpenDI.org](http://OpenDI.org), a Decision Intelligence interoperability standards organization.

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DI is today projected to grow to a \$50B industry by 2030. The Gartner Group named DI a “top technology”, predicts that over a third of large organizations will use DI, and will add a “Magic Quadrant” for DI tracking in 2025.

## Focusing on Business Outcomes

The primary advantage of DI is the ability for practitioners to transform AI from a *technology*-centric focus to a *business*-centric one. By starting with a clear understanding of the desired business outcomes and involving stakeholders in defining those outcomes, DI ensures that AI systems are directly aligned with business values and goals, thereby maximizing their impact and relevance.

## Shifting the Mindset: From Data-First to Business-First

Traditional AI decision-making often focuses on data-driven *intensional* decisions, where data is fed into a *model* to produce a conclusion.

DI, however, shifts the focus to a business-first approach—creating *extensional* (causal chain based) digital twins of real-world scenarios and modeling the outcomes of various choices.

This shift ensures that AI aligns with the how business leaders and decision makers think (their *mental models*), who are primarily concerned with achieving specific business outcomes. This approach has been validated by organizations and analytics teams worldwide, recognizing that a decision-focused, action-to-outcome framework is essential for aligning AI efforts with business strategy.

## DI as an Ethical Framework

A key advantage of DI is its ability to assist in aligning AI technology to stakeholder values and goals. By starting with a clear understanding of outcomes and involving stakeholders in defining those outcomes, DI ensures that the value and goals of the stakeholders are core design

criteria for any solution, not an afterthought. This approach naturally embeds ethical considerations into the AI development process, helping to mitigate unintended consequences and ensure transparency in how AI impacts decision-making.

This approach has been validated by organizations like the UK Olympics data team and other analytics professionals who recognize that a decision-focused, action-to-outcome framework is essential for bridging the gap between data teams and their customers: internal to their organization or external to it.

## The Challenge and Opportunity

**By pioneering a national focus on Decision Intelligence, the United States has a unique global leadership opportunity to ensure that AI not only advances technologically, but also that those advances serve as a powerful tool for achieving business objectives and driving economic growth while also benefiting society.**

We challenge the National Science Foundation and partnering agencies to move beyond the current data-first AI mindset toward an outcome- and complex systems-first DI-based understanding that places users, not data, as the focus.

This approach not only enhances business outcomes across a wide array of industries but also unlocks significantly more use cases for AI than currently realized. By focusing on defining outcomes and actions first and including humans in the decision-making loop, DI creates a comprehensive integration framework where AI models are effectively embedded to drive these outcomes.

We urge the administration to support efforts that advance this critical 21st-century AI-centric mindset, positioning the United States at the forefront of AI-driven innovation and economic leadership.

## Specific recommendations

- **Create and Support Research Programs in DI**

Fund and establish dedicated research initiatives focused on the development and application of Decision Intelligence to ensure it becomes a core component of AI strategy.

- **Create a national DI Strategy**

In recognition of the fact that DI can bridge the “last mile” between AI and many business use cases, a national DI strategy is critical for establishing the superiority of the US in this important emerging discipline, **and an exciting opportunity to “leapfrog” other countries in this regard.**

- **Foster Ecosystems and Partnerships:**

Develop ecosystems and collaborative platforms that integrate DI principles with AI development, encouraging public-private partnerships, academic collaborations, and an open exchange of DI technologies and solutions.

- **Support DI Education and Training:**

Invest in educational programs and training for DI to build a workforce skilled in bridging AI technology with real-world business and policy outcomes.

- **Prioritize Outcome-Focused Research:**

Emphasize research that focuses on outcome-driven frameworks, complex systems modeling, and the integration of AI within these frameworks to ensure practical and impactful applications.

- **Incentivize Interdisciplinary and Integration Research:**

Encourage and fund interdisciplinary and integration research that combines AI, DI, and domain expertise to solve complex real-world problems.

## Why Now?

There comes a pivotal moment in any emerging discipline when the integration of diverse technologies with each other, and with users, shifts from a technology focus to the outcome to be achieved, whether it is an organization's profits, a health system's outcomes, or a sports team winning the pennant.

Over the years, we have witnessed the divergence of fields such as econometrics, cybernetics, machine learning, large language models, systems modeling, and decision analysis. Scientific progress often encourages specialization into siloed disciplines like these.

However, to stay relevant and tackle the hardest problems of our time—including complex business decision making—science must embrace the *reintegration* of these specializations under a unified framework. Decision Intelligence is that umbrella, integrating these varied technologies into a cohesive whole, making them fit-for-purpose and capable of addressing the multifaceted challenges we face today. We strongly encourage the NSF and partners to rise to this important challenge.