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Tech FutureSight: Intelligent Simulation Is the Ultimate Unfair Advantage

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Initiatives: Technologies and Markets

Product leaders who supercharge their solution development workflows with intelligent simulation won't just outpace competitors, they will render them obsolete, capturing dominant market share. This is the foundation for self-improving software and systems that will soon drive entirely autonomous, revenue-generating business models.

Overview

Key Findings

- High-tech C-level executives face a critical decision today: deploy intelligent simulation right now to aggressively seize first-mover advantage and become a leader within a projected \$1.2 trillion emerging market, or risk falling behind as competitors use advanced AI to capture unprecedented revenue lines.
- AI trained on yesterday's data is obsolete tomorrow. The future belongs to intelligent simulation, which continuously optimizes against real-time data to eliminate model drift and deliver true AI value at scale.
- Intelligent simulation cannot be bought off the shelf. Integrating it into legacy systems creates the ultimate moat — locking in a proprietary data advantage that competitors cannot replicate.
- Intelligent simulation is scaling rapidly beyond industrial manufacturing into healthcare, cybersecurity and finance. Winning these new markets requires deep domain expertise to transform raw simulation into advanced decision support and new revenue streams.

Recommendations

To capitalize on intelligent simulation, product and innovation leaders must:

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To capitalize on intelligent simulation, product and innovation leaders must:

- Map market-specific AI failures caused by static data and legacy data analytics workflows and position intelligent-simulation-based solutions as the only real-time cure for model drift.
- Embed intelligent simulation directly into user workflows from day one to automatically capture the proprietary real and synthetic data needed to power self-improving systems.
- Prioritize domain-specific expertise over generic technology development and use that expertise to differentiate via highly targeted vertical and use-case-specific products to overcome complex legacy integration barriers.
- Expand into healthcare, finance and cybersecurity markets through domain-specific expert alliances. Use these partnerships to contextualize intelligent simulation solution offerings and unlock new revenue streams.

Strategic Planning Assumption

By 2035, intelligent simulation will be a \$1.2 trillion market (up from \$51 billion in 2025), replacing traditional D&A and related software and services spend.

Analysis

Figure 1. Intelligent Simulation Replaces D&A, Driving Us Toward Autonomous Business Operations



Intelligent simulation is a combination design pattern implemented via a platform solution that integrates deep domain expertise with AI and use-case-specific technologies and services to provide greater accuracy, efficiency and predictive capabilities than traditional simulation tools at scale. It can iterate and optimize scenarios and automate decisions for physical or digital systems through autonomous ingestion, categorization and application of relevant data, and includes design patterns that range across operations, engineering and biological applications. Intelligent simulation is ultimately the missing architectural layer for scaling AI; without the dynamic 'what-if' feedback loops it provides, large-scale enterprise AI initiatives will inevitably collapse under the weight of static data and unpredictable physical-world variables.

Critical Insight: Intelligent simulation gives AI providers an unfair advantage over their competition.

Intelligent simulation is displacing “traditional” AI solutions by providing deeper and more actionable insights tailored to both the adopting organization and individual user. By fusing a provider’s deep domain expertise with a portfolio of use-case-specific technology and data, intelligent simulation significantly outperforms traditional tools in both accuracy, applicability and ability to address complex or ambiguous business processes.

Traditional AI models hit a ceiling because they rely on historical, manually cleaned data. As deployments scale, they cannot adapt to novel disruptions. Therefore, AI at scale will fail unless intelligent simulation is utilized to generate pre-curated, self-improving data that continuously trains the system. This critical functionality is what will allow intelligent simulation providers to leapfrog their competition in accuracy, efficiency and most importantly, depth of analysis.

The unparalleled analysis provided by intelligent simulation positions it as a significant disruptor that will displace a variety of solutions. While D&A and other AI products will be the most impacted, intelligent simulation will also make many stand-alone digital twin and automation products redundant. Intelligent simulation provides solutions that deliver insights into operations, predict disruptions, forecast results and in some cases autonomously take actions that continually drive businesses toward optimal outcomes. While intelligent simulation encompasses and is emerging out of a range of specialized solutions — such as AI-enhanced engineering — it should not be viewed solely as them. Rather, intelligent simulation should be viewed as a predictive, business solution that both executives and frontline workers can use to optimize assets, processes and critical decisions.

Despite being an emerging solution, demand for AI and automation technologies, coupled with a growing need to mitigate risk in a world increasingly shaken by disruption and change has spurred intelligent simulation development. Within a few short years, the technology has rapidly grown from experimental deployments in the industrial market, to purpose-built solutions across industries. Within a decade, all companies will leverage intelligent simulation in some form.

Near-Term Implications for Intelligent Simulation

Over the next several years, organizations will rapidly transition from today’s traditional AI solutions to highly integrated intelligent simulation systems capable of 24/7 simulation utilizing real-time and historical data, ultimately laying the foundation for future autonomous business. Gartner predicts that:

- Enterprises that attempt to reach autonomous operations using only foundational LLMs or static ML algorithms will see those projects fail to scale securely. Intelligent simulation is the mandatory proving ground for autonomous actions.
- By 2028, 25% of Fortune 1000 supply chain officers will have an intelligent simulation tool to simulate their operations and predict potential disruptions, achieving first-mover advantages.
- By 2032, intelligent simulation will underpin more than 25% of strategic business decisions, solidifying its role in automating and optimizing critical enterprise functions.

Though the expansion of intelligent simulation adoption will be rapid, it is paramount that providers developing solutions today take a narrow approach that foremost focuses on addressing their market's top mission-critical priorities. In the near term, market winners will be those who can distill the complexity of intelligent simulation messaging and technology into point solutions that deliver clear value by targeting easy-to-understand use cases, while highlighting future growth opportunities.

Critical Insight: Intelligent simulation complexity creates domain-specific opportunities.

Intelligent simulation solutions are complex, cutting-edge products composed of varying emerging technologies that are integrated within adopting organizations. By interfacing with relevant systems, intelligent simulation not only delivers more accurate and tailored outcomes than conventional AI products, but even autonomously curates data and uses it to help optimize business processes. For example, increasing the capabilities of an AI model traditionally requires the acquisition of new training data, which must be manually cleaned and categorized. In contrast, intelligent simulation generates its own pre-curated data by cataloging the day-to-day operations and outcomes of integrated systems, optimizing AI models to the enterprise's specific needs and operations. More complex intelligent simulation deployments can also generate their own synthetic training data using simulated what-if scenarios.

Though this complexity is what enables intelligent simulation's extreme value, it also directly contributes to the common barriers of its adoption. These include:

- *Integration with existing systems:* Every company's tech stack is unique and most lack the digital infrastructure to quickly deploy intelligent simulation — despite years of digitalization initiatives. Legacy systems, data silos and closed platforms from multiple providers all hold critical operational information. As intelligent simulation demands connections to all these data systems, implementation is often costly and time-consuming.
- *Provider prioritization of technology over domain expertise:* Today, intelligent simulation is mainly built by AI-first companies prioritizing technology capabilities. While these firms excel at innovation, their emphasis on technology development diminishes their ability to engage stakeholders on business value. This hinders product adoption, limits opportunities to scale and restricts access and ability to collect and curate vertical-specific data. Ultimately, by overprioritizing technology development, providers are not only limiting their solution's accuracy and range of addressable use cases, but increasing reliance on public and paid datasets available to competitors, lowering differentiation.
- *Adopter understanding of intelligent simulation:* Today's market lacks both awareness of intelligent simulation and of the technology necessary to support it. This issue is compounded by providers who focus on technical features or vague AI branding during the sales process, making it difficult for prospects to envision the solution's value and resulting in employee resistance to its adoption and use. Without clear value propositions, companies are less willing to invest and intelligent simulation is viewed as a limited solution instead of a scalable platform.

High-tech solution providers that can overcome these barriers, through key partnerships and alliances with domain-specific experts, can open up new opportunities and revenue streams.

Near-Term Implications for Intelligent Simulation

Success in the intelligent simulation market requires data and expertise in both industry-specific technologies and business needs. With many providers focused on product development, organizations willing to isolate to limited verticals where they have the greatest expertise, while enacting plans to expand their data collection and curation will be better positioned to deliver differentiated solutions. In the near term:

- Successful organizations will be those that develop a digital technology and talent roadmap that guides investments in supplementing critical knowledge gaps, while also continuing to expand their templates for more seamless product integration and deployment.

- Traditional “high quality” paid for proprietary datasets will no longer be enough to differentiate intelligent simulation solutions, forcing providers to utilize contractual language when possible to ensure access to anonymized adopter data for product and service refinement. Acquisitions and partnerships as a method for data acquisition will significantly increase in importance.
- “Business first” solutions that target distinct use cases will force tech-focused organizations out of the market, regardless of their product’s capabilities. Continued engagement with enterprise executives on business process change strategies along with partnerships with culture change experts will still be necessary to blunt end-user resistance, however.

Critical Insight: Intelligent simulation is expanding beyond industrial manufacturing into new vertical markets.

Current intelligent simulation adoption is heavily centered around industrial verticals that use it to improve operations. While each deployment is distinct, efficiency gains tied to optimization of time, resources and cost are the most common outcomes, with solutions addressing use cases such as:

- Optimizing factory layout for both humans and machines.
- Automating decision making around day-to-day operations and production.
- Predicting and mitigating supply chain disruptions.
- Forecasting optimal resource allocation.
- Preemptively addressing disruption-related predictive maintenance and employee scheduling.
- Improving product quality and worker safety.

Intelligent simulation’s industrial prominence is due to precursor products’ utilizing IoT-enabled devices to capture information for process simulation. While intelligent simulation solutions can be found across industries today, many lack the business goals, executive support and data infrastructure to provide demonstrable value. Despite this, the potential of intelligent simulation is driving interest and innovation and providers are developing new products, cultivating more relevant datasets and targeting new industry-specific use cases, setting intelligent simulation up for widespread growth.

Outside of industrial verticals, healthcare is currently positioned as a high-growth industry for intelligent simulation, where providers are constructing solutions on top of existing products for automated drug discovery, synthetic medical trials and personalized medicine. Early deployments in cybersecurity, marketing and finance also show significant promise; however, few providers are currently operating in these areas.

Near-Term Implications for Intelligent Simulation

The barrier for intelligent simulation's growth is not necessarily technical, but a lack of vision. Many providers (and adopters) try to extrapolate industrial use cases to other industries that lack the specific business models and technologies required. In the near term, current industry-focused entrants will lack the technical and implementation capabilities needed to deliver value to a broader range of nonindustrial customers. This will create business opportunities for new and existing players to identify the best or most strategic partners and enter new markets with an optimal domain expertise and technology portfolio.

Ultimately, providers who build solutions that take advantage of existing vertical-specific processes and infrastructure to target differentiated use cases will position themselves as leaders and establish a profitable foothold for the future. Once this happens, the high value of intelligent simulation will spur rapid growth in the market, reaching a \$1.2 trillion valuation by 2035, provided developers of such solutions take the steps necessary to clearly demonstrate the unique opportunity of their products at this early stage.

Recommended by the Authors

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[Emerging Tech: Top Use Cases in Intelligent Simulation](#)

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