

WHITE PAPER

Companies Need to Leverage Ecosystems to Deploy Generative AI

May 2023

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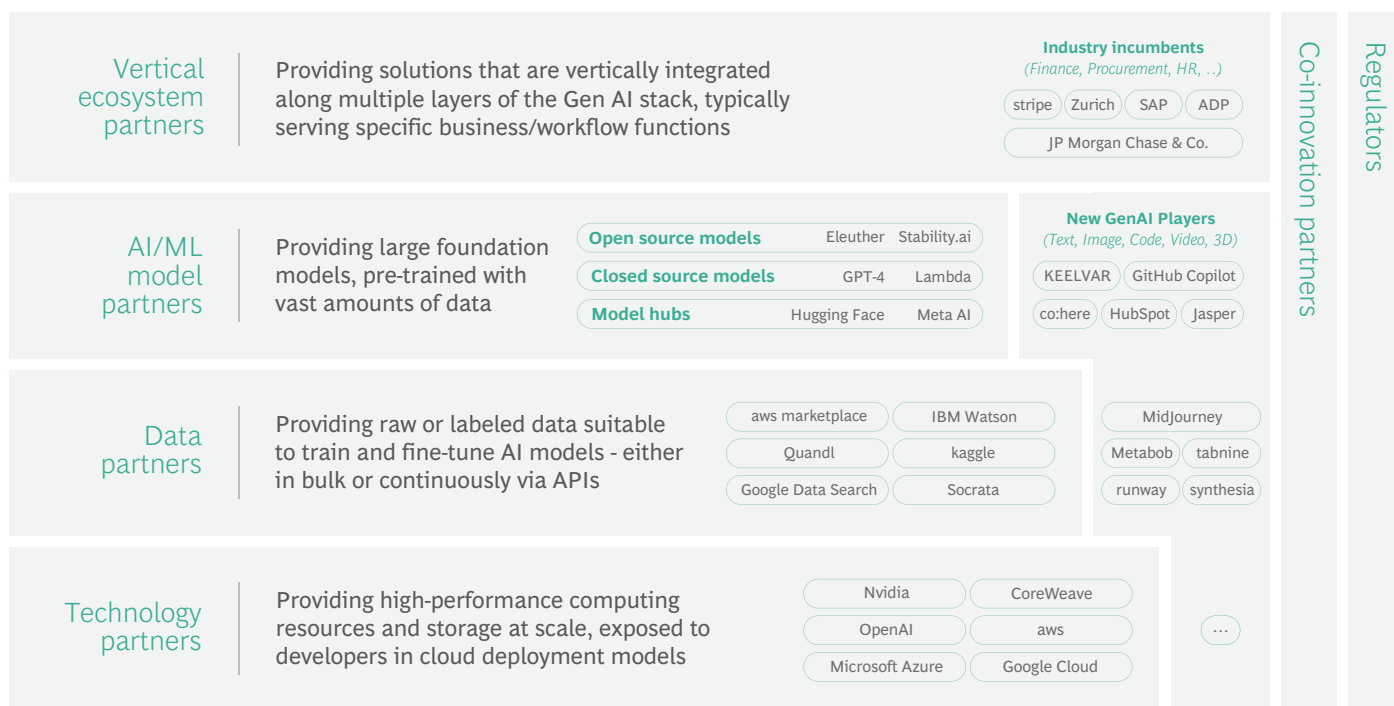
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“The most focused of business models... can be blown to bits by new information technology.”¹ This prediction is more relevant than ever, as many clear use cases of Generative AI have revolutionized functions and industries. Companies are deploying Generative AI to address specific market needs across a wide range of industries, from Airbus using Generative AI to design aircraft parts with an estimated 40% reduction in weight and drag, to chatbot assistants that cut customer service costs by an estimated 30%, to stress testing proposed trading strategies.² The latest research shows the generative AI market is expected to hit \$60 billion of the total addressable market by 2025³, accounting for 10% of all data generated.⁴

Few companies, however, have yet embedded Generative AI across their full matrix through a strategic bottom-up approach. This would require thinking exhaustively through the outcomes and use cases, the technology and data to enable the use cases, and the human resources required for implementation and execution. It would also require companies that seek to leverage Generative AI to lean on an ecosystem of partners to deploy Generative AI cohesively.

Exhibit 1 - Generative AI ecosystem view



1. Evans, P. and Wurster, T.S. (2000). Blown to bits: how the new economics of information transforms strategy. Boston, Mass.: Harvard Business School Press, C.
2. www.autodesk.de. (n.d.). Generatives Design bei Airbus | Kundenprojekte | Autodesk. [online] Available at: <https://www.autodesk.de/customer-stories/airbus> [Accessed 2 Mar. 2023]. www.ibm.com. (n.d.). IBM Watson Assistant - Customer Service Chatbot. [online] Available at: <https://www.ibm.com/products/watson-assistant/customer-service> [Accessed 2 Mar. 2023].
3. Generative AI (2023) BCG Global. Available at: <https://www.bcg.com/x/artificial-intelligence/generative-ai> (Accessed: March 17, 2023).
4. Nguyen, T., Casey, D., Goodness, E. and Woodward, A. (n.d.). Emerging Technologies and Trends Impact Radar: 2022 Research Excerpt. [online] Available at: <https://artillery.co/wp-content/uploads/2022/02/Emerging-Tech-and-Trends-2022.pdf> [Accessed 2 Mar. 2023]. www.deere.com. (n.d.). Deere adds seven companies to its 2022

Deploying Gen AI requires partners in six major areas:

- **Vertical Ecosystem Partners:** Multiple layers must be put together for successful application of Generative AI: underlying computing/hosting technologies, available training data, well-constructed foundational models that are trained and fine-tuned for the specific use case, and accessibility of these through either APIs or front-ends. Organizations deploying AI for mature, strategic use cases should consider building up internal capabilities to orchestrate technology, data and models, but orchestrating these layers may not always be possible within an organization, depending on the organization's maturity and the specific use case. Collaboration with vertical ecosystem partners that provide end-to-end packaged Generative AI solutions may be necessary. Standardized use cases (fields such as workplace/collaboration, procurement, payment, customer service) are typical candidates for the use of vertical ecosystem partners. This means either partnering with incumbents on Generative AI-powered services in finance, procurement, HR, etc., or leveraging emerging Generative AI players with vertically integrated solutions (e.g., Jasper, GitHub Copilot, Synthesia). Additionally, like industry-specific cloud solutions that have grown in popularity, industry-specific generative AI solutions are likely to gain traction going forward.
- **AI/ML Model Partners:** For clients looking for a more out-of-the-box solution, model partners can play a major role in reducing the heavy lifting and time-to-results. In these cases, the heavy ML development and data collection and training are already done, and the client needs to focus only on fine-tuning the model with enterprise domain data. Examples include the massive Foundation models of Open AI, Google's LaMDA, or Meta AI; open-source models like Stability.AI and GPT-neoX; accessible via model hubs like Hugging Face. The choice of and collaboration with model partners must weigh the benefits and risks of a vendor/model-specific vs. agnostic approach.
- **Data Partners:** A critical challenge in training Generative AI models is obtaining large amounts of high-quality data that includes training data – depending on the use case, also including auxiliary data such as labels, metadata, and conditioning variables. While there are significant opportunities to train models based on available internal data, obtaining external data can unlock specific use cases. Organizations can acquire this external data from data marketplaces such as Kaggle, AWS Data Marketplace, or Google Dataset Search for more broadly available data, or by building strategic partnerships with organizations that have access to the specific data the organization needs.
- **Technology Partners:** Companies must make significant investments in technology to deploy Generative AI successfully. Training Generative AI models requires superior processing power, where cloud providers have significant scale/cost advantages. Cloud partners also have either their own mature Generative AI offerings (Google, AWS) or close ties to Generative AI providers (e.g., Microsoft's share in OpenAI), allowing them to offer added services around the bare offerings (e.g., Azure providing a private GPT environment via APIs). Technology service partners such as managed service providers and/or software integrators are needed to build and maintain the various data pipelines required to ingest/extract the vast amounts of data to ensure appropriate deployment of the hardware and software within the cloud infrastructure.

- **Co-Innovation Partners:** Working closely with co-innovation partners with shared IP can often accelerate value creation. A diversified think tank can help unlock a plethora of creative applications for new technologies. Through its Startup Collaborator program, John Deere leveraged an ecosystem of several companies to co-innovate new technologies around smart farming, including robotic harvesting and analytics for high-value crops.⁵
- **Regulators:** Participants at the World Economic Forum in Davos this year underscored the need to regulate AI, especially in the light of the upcoming EU AI Act,⁶ which is expected to set the global standard for AI technologies. The European Commission’s impact assessment on the EU AI proposal forecast a 17% overhead increase for businesses on AI investment, while the act itself proposes significant fines for noncompliance.⁷ Besides responsible AI, issues around data IP and “data-laundering” need to be managed. Companies must proactively build the right mechanisms to comply with upcoming regulations, through a network of partners that can deliver cross-industry insight and precedent while maintaining impartial governance. SAP, for example, has commissioned an internal AI ethics steering committee composed of senior leaders, as well as an external AI ethics advisory panel with “experts from academia, politics, and business whose specialisms are at the interface between ethics and technology—AI in particular.”⁸

The barriers to building a digital ecosystem to effectively address Generative AI

Companies typically face several obstacles in pulling together the ecosystem needed to truly embed Generative AI into their business.

- **Early stages**

Generative AI ecosystems are still at an early stage of development, and the landscape of players is evolving rapidly. While large players such as Google and Microsoft have made early moves, there needs to be a lot more investment in the ecosystem before Generative AI can be widely adopted.

Businesses want to make sure that they select the right ecosystem partners before they commit to significant investments in adopting Generative AI. At the same time, ecosystem participants often want to see demand before they invest in product development. This “chicken or egg” situation can slow down value creation through ecosystem development.

- **Modularity**

Businesses want to build modularity into their Generative AI architecture to avoid over-reliance on critical partners or build redundancy through a multi-partner setup. This may not always be possible, however, due to critical partners offering unique solutions, binding

5. [www.deere.com](https://www.deere.com/en/news/all-news/2022-startup-collaborator-program/). (n.d.). Deere adds seven companies to its 2022 Startup Collaborator program. [online] Available at: <https://www.deere.com/en/news/all-news/2022-startup-collaborator-program/>.

6. World Economic Forum. (n.d.). These were the biggest AI developments in 2022. Now we must decide how to use them. [online] Available at: <https://www.weforum.org/agenda/2023/01/davos23-biggest-ai-developments-how-to-use-them/> [Accessed 2 Mar. 2023].

7. Mueller, B. (2021). How Much Will The Artificial Intelligence Act Cost Europe? [online] [datainnovation.org](https://www2.datainnovation.org/2021-aia-costs.pdf). Center for Data Innovation. Available at: <https://www2.datainnovation.org/2021-aia-costs.pdf>.

8. SAP News Center. (2018). SAP’s Guiding Principles for Artificial Intelligence. [online] Available at: <https://news.sap.com/2018/09/sap-guiding-principles-for-artificial-intelligence/>.

contractual commitments around term and exclusivity, and sometimes even the high costs of integration. This can be compared to the selection of cloud partners several years ago, when specific functionalities required vendor-specific approaches, while today the commonalities and integrability across hyperscalers shift toward agnostic approaches.

- **Value creation vs. value sharing**

While ecosystem functions such as data-sharing and co-innovation can create outsized value, how the value is distributed amongst partners remains the proverbial million-dollar question. Ecosystem orchestrators that bring the participants together often define the value sharing terms. However, uniquely valuable participants and enablers can independently seek value-based pricing for their contributions. For instance, while Microsoft is an established ecosystem orchestrator that is deploying Open AI's models across its consumer and enterprise products, Open AI is bringing the core Generative AI capability and is therefore able to command sizable investments from Microsoft.

- **Data sharing, protection, and sourcing**

Data is a critical ingredient for training Generative AI tools, but companies that sit on valuable piles of data are often either unsure of how a partner would use shared data or concerned about giving away too much value in the absence of a clear valuation methodology. Value-based pricing for data is inherently hard, as companies often lack visibility into how partners are using their data to generate value.

Serious concerns also persist about the protection of the proprietary enterprise data that are fed into the models when used for training or prompting. Owners of the data would need assurances that the data will stay in a "controlled" environment and will not be used for purposes other than training or prompting the models.

On the other hand, Generative AI can present a solution to the data sharing barrier. Companies that are hesitant to share proprietary data with partners can use their data to train or fine-tune a foundation model and share only this trained model, commercializing their proprietary data without actually sharing it.

- **Accuracy and risk sharing**

While Generative AI is a powerful technology that can drive significant efficiencies, in some instances Generative AI not only fails to return results, but delivers incorrect or biased ones. This can prove very damaging to the company or the end user. A recruitment tool developed by Amazon, for example, posed challenges because the underlying model was trained to vet applicants through pattern detection in hiring over the last 10 years—which was historically skewed toward men.⁹ Concerns can also arise around how training data is obtained, and whether it can be used legally for commercial purposes.¹⁰

In these cases, the question of ultimate responsibility arises: would it lie with the company that leveraged Generative AI for a critical function, the organization that built the foundational model (typically non-profits that collect training data under the "fair use policy"), or the tech company that commercializes the model (e.g., Open AI or Google)?

9. Dastin, J. (2018). Insight - Amazon scraps secret AI recruiting tool that showed bias against women. Reuters. [online] 11 Oct. Available at: <https://www.reuters.com/article/amazon-com-jobs-automation/insight-amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idINKCN1MK0AH?edition-redirect=in>.

10. Brittain, B. (2023), OpenAI, Microsoft want court to toss lawsuit accusing them of abusing open-source code. [online] Available at: <https://www.reuters.com/legal/litigation/openai-microsoft-want-court-toss-lawsuit-accusing-them-abusing-open-source-code-2023-01-27/>

It can be expected that reputational risks will typically be borne by the companies that make the ultimate use of Generative AI, while tech/model companies will likely need to shield IP/copyright risks.

Recommendations for successfully leveraging an ecosystem of partners for Generative AI

- Start with mapping out the entire range of use cases for Generative AI, quantify impact of each use case, identify key dependencies and resourcing needs, and prioritize use cases based on impact and return on investment. Identify any gaps in technology, resources, and regulation before embarking on the Generative AI journey. Seek to “fund the journey” in phases by reinvesting the value captured from Generative AI adoption.
- Select partners that are willing to share the upside and risks from the partnership over the long term, as the Generative AI landscape evolves with new opportunities and challenges. Collaborate with technology partners to make strategic choices about whether to fine-tune existing LLMs or to train a custom model. Choose co-innovation partners whose interests are largely aligned, and can therefore accelerate learning through transparent creation and sharing of IP.
- Focus on value creation in initial partnerships, especially with co-innovation and data partners where value measurement is complicated. Start with pilots/proofs of concepts to prove and quantify value creation, align on value measurement methodology, and agree on principles of value sharing before making extensive efforts towards negotiating value sharing.
- Preserve agility in a quickly evolving Generative AI landscape by building modularity and vendor independence into the partner ecosystem and reduce overreliance on specific partners. This can also mitigate value gouging in future rounds of negotiations with partners. Both technology architecture and commercial agreements should be structured to support this modularity.
- Where privacy and data-protection issues arise with sharing data between partners, Generative AI models can be trained on partner data before being deployed in a business. This overcomes some of the complications around actual data sharing while still capturing many of its benefits.
- Even as the regulatory landscape on generative AI evolves, self-regulate and stay ahead of ethical issues around use of Generative AI, as well as issues around data sharing and “data laundering.” For businesses to mitigate risk and take greater accountability around AI, CEOs must champion the responsible AI agenda, aligning it to the mission statement and core values of their business. BCG’s Responsible AI (RAI) approach is designed to help business leaders take the right measures on the governance, strategy, and culture of AI use across their organizations.¹¹

11. Mills, S. et al. (n.d) Deliver Powerful Business Results with Responsible AI, BCG. Available at: <https://www.bcg.com/beyond-consulting/bcg-gamma/responsible-ai> (Accessed: March 17, 2023).

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