

The image shows three people in a modern office environment. A man in a blue shirt is leaning over a table, pointing at a laptop. A woman in a dark blue blazer is sitting at the table, looking at the laptop. Another man in a light blue shirt is sitting at the table, looking at the laptop. The office has large windows and modern furniture. The Brillio logo is overlaid on the left side of the image.

brillio

Powering innovation in product engineering with GenAI

Generative AI can bridge the gap between great product ideas and their actualization, facilitating faster progress and growth.

Emerging trends in product engineering

As market disruption continues to be the norm, trends in product engineering will increasingly focus on innovation, agility, and sustainability. The global product engineering services market will grow at a CAGR of 7.5%, reaching a value of \$1.8 billion by 2030. To fully leverage the evolving product engineering landscape, enterprises must understand the key trends that will shape future innovation, including focusing on sustainability and circular design to reduce environmental impact. Additionally, it involves adopting a customer-centric approach, enhancing user experience through design thinking, and integrating GenAI and virtual prototyping to develop more innovative products. Finally, automation and robotics, alongside sustainable practices, promise to revolutionize product development.

Today, product engineers face various challenges in developing and releasing new products:

- **Complexity and integration:** Increasing product complexity and system integration in managing seamless interaction between components is challenging.
- **Time-to-market:** Pressure from competitors can lead to a premature product release through shorter software lifecycles.
- **Cost, quality, and sustainability:** Striving for high-quality, competitively priced products with minimal environmental impact is challenging for product engineers.
- **Regulatory compliance and evolving standards:** Strict regulatory hurdles and developing standards to build safe, compliant products make it challenging to innovate products.

GenAI transforms the product engineering landscape with advanced design optimization, prototyping, and decision-making capabilities. By generating and exploring numerous design alternatives, GenAI accelerates the iterative design process, resulting in more efficient solutions. It also facilitates predictive modeling, enabling engineers to pre-empt performance issues and refine designs pre-emptively. Gartner says more than 80% of enterprises will have used GenAI APIs or deployed GenAI-enabled applications by 2026.

How GenAI reshapes the software development lifecycle (SDLC)

GenAI benefits the SDLC and will become even more reliable and accurate as it matures.

- **Product innovation:** GenAI can generate boilerplate code, write documentation, and test software, freeing developers to focus on more creative and complex tasks, such as designing new features and solving problems.
- **Customer experience:** GenAI can improve software quality, performance, and security by finding and fixing bugs, enhancing the user experience, and reducing software development costs.
- **Faster product development:** GenAI is also used to accelerate the SDLC, automate tasks, and improve quality. For example, GenAI can build prototypes of new software, helping developers get feedback from users early in the development process. Quickly generating robust software prototypes will lead to faster time to market and a better understanding of what users want.

GenAI is being increasingly integrated into the development process to improve efficiency, accuracy, and quality. Let's look at how GenAI presents essential opportunities to refine and accelerate every stage of the development process.

Stage 1: Requirements

GenAI undertakes essential tasks, including creating user stories, designing UX templates, wireframes, and prototypes, and generating project requirements. Project requirement generation compiles all necessary specifications and features, ensuring alignment with stakeholder expectations and project goals.

Stage 2: Solution architecture

GenAI can recommend and validate architecture designs that best address the project requirements and constraints. Architecture recommendations outline the solution's structure, components, and interactions. Subsequently, architecture validation ensures that the proposed architecture aligns with the project's goals and technical standards. This process involves reviewing the design against requirements, conducting feasibility studies, and prototyping or testing architecture elements.

Stage 3: Development

GenAI creates several critical activities to ensure the development of a resilient and effective software solution. Utilizing a project template provides a structured framework for development activities. Code scaffolding generates the codebase's basic structure, which speeds up development. Code review and correction ensure high-quality and maintainable code. Resilient code development focuses on creating software that withstands failures and unexpected events. Reverse engineering can be used to understand existing systems or third-party components. Additionally, utilize application modernization techniques with GenAI to update legacy applications with modern features and technologies, ensuring they remain relevant and efficient.

Stage 4: Testing

During the final phase, GenAI performs critical tasks such as generating unit and functional test cases and managing synthetic data. Unit test case generation involves creating test cases to verify the functionality of individual components or units of the software. Synthetic data management consists of generating and managing artificial data sets to simulate real-world scenarios for testing purposes. Together, these activities ensure comprehensive testing coverage and help identify and address potential issues before deployment, enhancing the reliability and quality of the software product.

Key considerations for product teams

- **Strategic consideration:** On-prem GenAI solutions will ensure IP protection and governance and check if they use open-source libraries or infrastructure while accessing third-party pair programming tools.
- **Data governance:** Collect and use zero or first-party data in the training process. Govern the use of intellectual source code in training GenAI models, as the models will use the data to create responses to prompts.
- **Accuracy and bias decisions:** Training of GenAI models must be done with a representative sampling to balance accuracy, precision, recall, continuous feedback, and model-tuning, which is crucial to deploying a robust GenAI application.
- **Economics:** Tracking and managing the engineering team's productivity metrics post-deployment of GenAI solutions and comparing the code coverage and security vulnerabilities within source code highlights the economic outcome of GenAI solutions.
- **Change management:** Ensure democratization of knowledge through training to all engineering teams and empower leaders and subject matter experts to assist engineering teams in using GenAI solutions.

Overall, GenAI has a significant impact on the software development lifecycle. It automates tasks, improves quality, and accelerates the development process. GenAI can be applied across various stages of the SDLC, increasing efficiency and reducing time and effort by 20–45%.

Shape the future of product engineering with GenAI

Our solutions are characterized by a complete focus on GenAI, reflecting our dedication to cutting-edge technologies. We are heavily invested in this field to ensure our offerings remain at the forefront of innovation. Our commitment to innovation and client-centric approach ensures that our offerings align seamlessly with business objectives, driving transformative outcomes and facilitating sustainable business success in an ever-evolving digital landscape. We collaborate with businesses to create unparalleled products through Brillio's innovative strategies. Incorporating GenAI into our lean product engineering methodology empowers enterprises to develop digital products with superior product-market alignment and accelerated time-to-market.

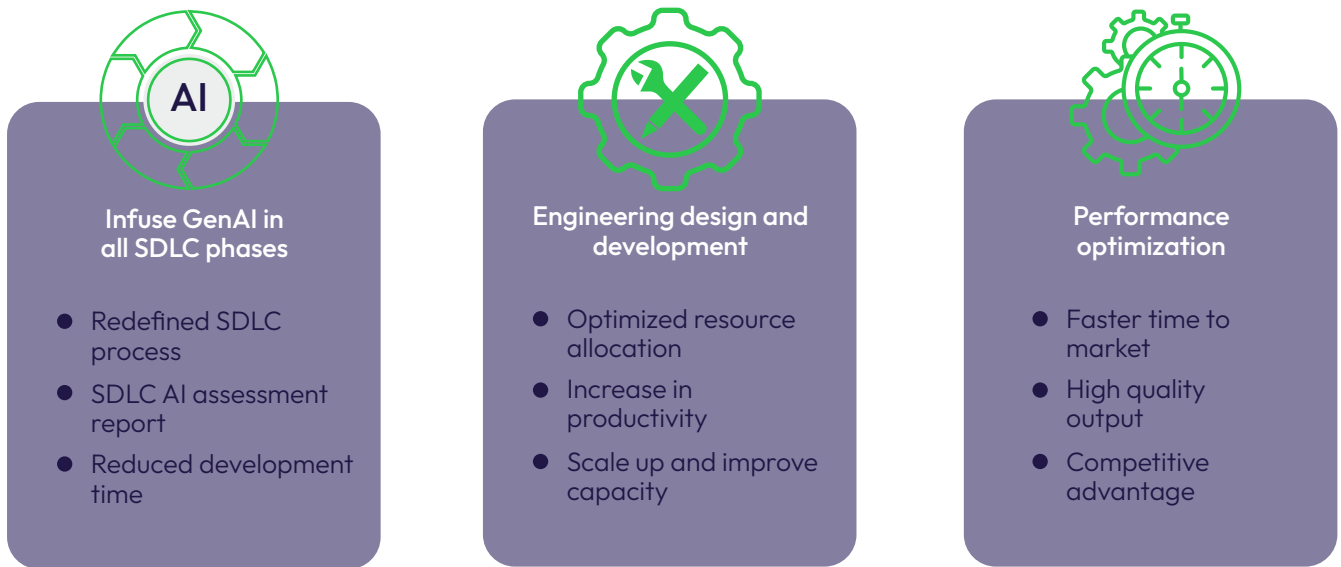
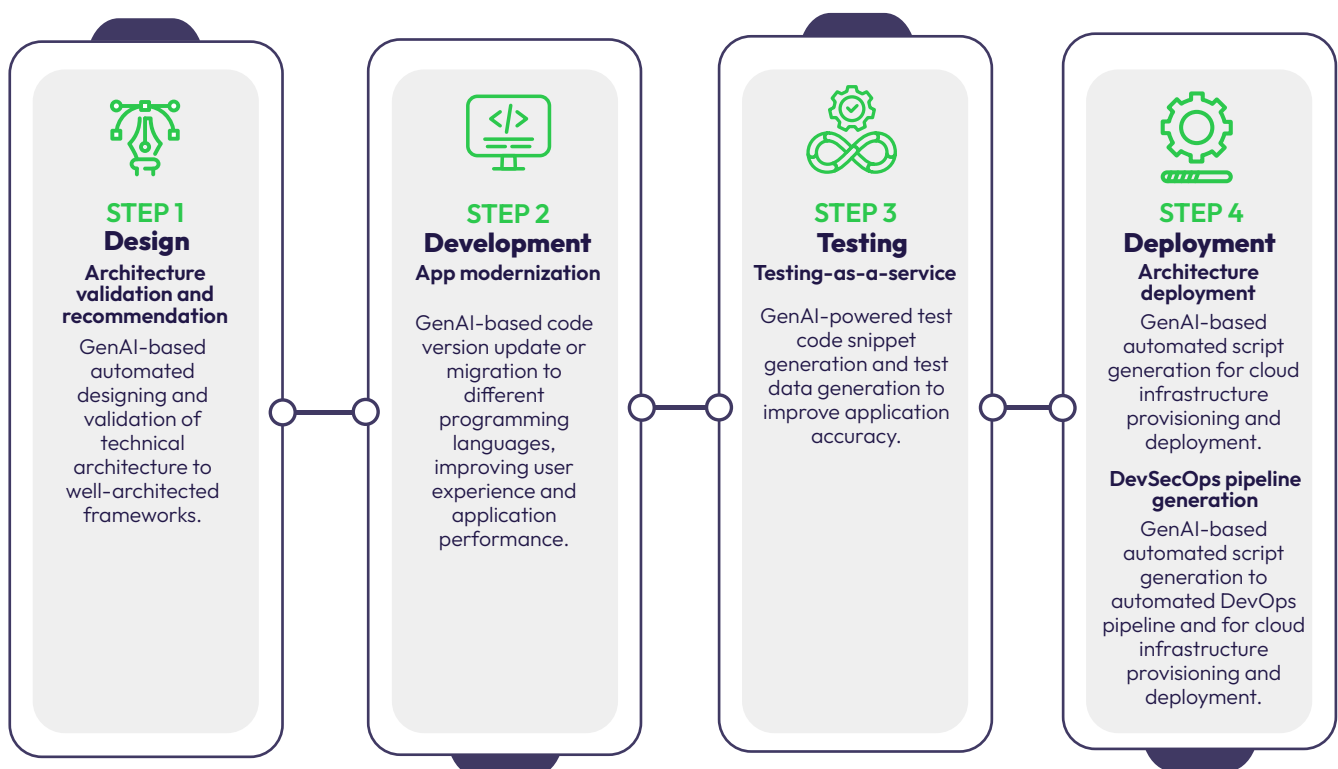


Figure 1

Our GenAI solutions exemplify a holistic approach to product engineering, seamlessly integrating AI technologies at every lifecycle stage. From ideation and design to development, testing, and deployment, our solutions optimize processes, enhance efficiency, and drive unparalleled outcomes in product development.



All the above solutions are critical which help improve productivity and quality of development, testing and deployment

Figure 2

Our solutions have delivered quantifiable benefits, including a 30% reduction in development effort, a 20% increase in productivity, and a two-fold acceleration in time to market. These results underscore the efficacy of our offerings in enhancing efficiency, productivity, and competitiveness for our clients.

How Brillio gears customers for GenAI success

The transformative potential of GenAI offers immense opportunities for organizations and clients alike. Yet bridging the gap between innovation and successful integration demands thorough preparation. At Brillio, our GenAI approach fosters a member-first and human-centric culture that prioritizes collaboration. By establishing cross-functional product teams comprising diverse expertise, including members, customers, and GenAI specialists, we tailor solutions to specific needs and ensure seamless adoption. Open communication channels facilitate understanding of GenAI capabilities and gather valuable feedback, building trust and confidence for active participation.

Beyond fostering a collaborative culture, it is crucial to recognize the importance of equipping users with the necessary skills. Comprehensive training programs provide members and customers with the knowledge and skills to effectively utilize GenAI tools. Emphasize clear communication, critical thinking, and adaptability, enabling users to confidently navigate the evolving GenAI landscape.

Paving the way for transformative trends

As we progress into the next era, several vital developments will influence how developers conceive, create, and deploy software applications. GenAI's transformative powers are just beginning to unfold in the software and product development sphere. We can expect to see some promising trends as follows:

- **Personalized coding assistance:** Forget generic code completion. GenAI can adapt to individual developer styles and preferences, offering contextually relevant suggestions and code snippets, accelerating development speeds, and fostering creativity.
- **Citizen developers and the democratization of software creation:** By simplifying the coding process through natural language interfaces and AI-powered tools, GenAI has the potential to empower non-programmers to build basic applications, democratizing software creation and unlocking a new wave of innovation.

- **Automated bug fixing:** Imagine GenAI not just identifying bugs but automatically suggesting and implementing fixes based on its code analysis and knowledge base, dramatically reducing debugging time and improving software quality.
- **Enhanced security threat detection:** GenAI can learn from past vulnerabilities and real-time data streams to predict and pre-empt security threats with unparalleled accuracy. This proactive approach could revolutionize cybersecurity in software development.
- **The human-AI collaboration paradigm:** The long-term vision is not about GenAI replacing developers but a synergistic partnership. Developers will act as strategic guides, utilizing GenAI's automation and augmentation capabilities to achieve unprecedented levels of productivity and innovation.

While challenges persist, the promise of increased efficiency, creativity, and adaptability fuels an optimistic outlook. As this technology advances, developers will have the opportunity to fully utilize the potential of GenAI, placing them at the front of a dynamic period with endless possibilities for innovation in the software development space.

About Brillio

Brillio is one of the fastest growing digital technology service providers and the partner of choice for many Fortune 1000 companies seeking to turn disruptions into competitive advantages through innovative digital adoption. We help clients harness the transformative potential of the four superpowers of technology: cloud computing, Internet of Things (IoT), artificial intelligence (AI) and mobility. Born digital in 2014, we apply our expertise in customer experience solutions, data analytics and AI, digital infrastructure and security, and platform and product engineering to help clients quickly innovate for growth, create digital products, build service platforms, and drive smarter, data-driven performance. With 17 locations across the US, the UK, Romania, Canada, Mexico, and India, our growing global workforce of nearly 6,000 Brillians blends the latest technology and design thinking with digital fluency to solve complex business problems and drive competitive differentiation for our clients. Brillio was certified by Great Place to Work in 2021, 2022 and 2023.



Learn more at www.Brillio.com

Follow Us: @BrillioGlobal

