A&M | TECHNOLOGY INDUSTRY GROUP

Navigating the Tech Terrain: GenAI-Powered Product Management and SDLC Case Study

The integration of artificial intelligence (AI), particularly Generative AI (GenAI), into the overall product development process is a paradigm shift for private equity- (PE) backed portfolio companies. It moves engineering teams away from manual, sequential processes to automated, predictive, and highly efficient SDLC operating models.

In contrast, the traditional product and software development life cycle (SDLC), as executed in many companies, is increasingly misaligned with the speed, predictability, and capital efficiency required to deliver competitive value within compressed hold periods.

For PE firms, integrating AI isn't just an operational upgrade. It also serves as a direct lever for accelerating time-to-market, enhancing product quality, reducing operational expenditures, and ultimately maximizing exit valuations.

By embedding AI across the development lifecycle, from ideation and high-level design to code generation and automated testing throughout deployment, portfolio companies can achieve significant upstream product development. It also improves implementation, heightens developer efficiency, reduces defect resolution time, and provides quicker release cycles. However, to solve existing business problems, the implementation of AI across research and development organizations must be done practically rather than by injecting unforeseen complexity.

This case study highlights how the pragmatic application of GenAI can unlock meaningful value, not by replacing engineers or accelerating coding in isolation, but by compressing knowledge and reducing delivery friction across the SDLC.

THE BACKGROUND

Situation:

A PE-backed healthcare technology platform was undergoing a critical growth and modernization phase while relying on a largely offshore engineering organization. Despite a strong margin profile and market positioning, the company faced persistent challenges across product management, software development, and delivery execution, including:

- Slow progression of initiatives from ideation into design and development
- Limited and inconsistent technical documentation across a mature codebase
- Heavy reliance on tribal knowledge held by a small number of senior engineers
- Elevated onboarding time for new developers due to system and organization complexity
- Prolonged defect investigation and resolution cycles that negatively affected release stability

These constraints limited the organization's ability to scale delivery throughput and confidently execute its product roadmap.

Complications Leading to Situation:

- High engineer turnover within offshore teams resulted in the repeated loss of system context
- Documentation gaps increased dependency on informal knowledge transfer and ad-hoc support
- Product initiatives frequently stalled during high-level design due to unclear technical understanding and a lack of prioritization
- Existing tools captured activity, but not flow efficiency or operational reliability
- Collectively, these factors created friction across the organization's SDLC, slowing execution and decreasing software updates and releases.

THE CHALLENGE & OUR APPROACH

A&M was engaged to assess and improve product development and SDLC performance to accelerate delivery without introducing incremental execution risk. To best meet the client's needs, A&M implemented a targeted, GenAI-enabled initiative leveraging the OpenAI application programming interface (API) platform, which was focused on improving codebase documentation and overall Model-View-Controller (MVC) architecture comprehension while enabling future-state design clarity and cohesion. Specifically, A&M:

> **A&M implemented a targeted, GenAI-enabled initiative leveraging the OpenAI API platform.**

- Evaluated GenAI tooling options and selected a private, API-based deployment model via the OpenAI API platform to mitigate intellectual property and data-handling risks
- Developed lightweight Ruby and Python scripts to ingest source code files and generate structured documentation via the OpenAI API platform, leveraging token-based pricing to process approximately 500 files at a variable cost of under 3 cents per file
- Executed automated documentation generation, including script development, model execution and engineer review, across the full codebase in under two weeks, an effort that would otherwise have required an estimated 16-20 engineer weeks and typically spans two roadmap quarters when completed manually alongside active product development
- Applied human-in-the-loop governance, reducing overly verbose outputs and preserving architectural intent and clarity
- Integrated documentation directly into the development workflow, embedding outputs into the primary code branch and Confluence rather than siloed repositories
- Connected the product management and software development processes
- Instrumented success metrics across project management tools Jira Product Discovery and Jira Software to track impacts on product development flow, requirements decomposition into user stories and tasks, and overall operational performance

RESULTS DELIVERED

Within several sprints, the organization observed measurable improvements across both product development flow and operational reliability:

- **Expedited progression from ideation into execution**
  Initiatives documented in Jira Product Discovery moved more quickly through high-level technical and UX design and into active development, resulting in an estimated 25% reduction in average implementation cycle time.

30% Improvement in MTTD, MTTI, and MTTR

- **Improved defect detection and resolution performance**
  While overall defect volume declined modestly, the most significant gains were realized in operational response. Mean Time to Detect (MTTD), Mean Time to Investigate (MTTI), and Mean Time to Repair (MTTR) improved by approximately 30%, as tracked through Jira Software.
- **Reduced onboarding friction and dependency on tribal knowledge**
  New and offshore engineers achieved system comprehension more quickly, reducing reliance on senior engineers for routine clarification and support.
- **Improved delivery predictability and release confidence**
  Clearer documentation and a shared understanding of system behavior improved coordination across the development and operations teams, supporting more stable and predictable releases.
- **Unlocked operational efficiency without sacrificing the human element**
  Rather than replacing people with technology, GenAI was used to enhance the capabilities of the organization's engineers. The efficiency gains from the OpenAI API allowed the research and development team to shift focus from reading existing code to more value-added activities.

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CONTACT US

Ian Ross
Senior Director
iross@alvarezandmarsal.com

Alex Lee
Senior Director
alex.s.lee@alvarezandmarsal.com

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