CCS technologies

Case Study

AI-Assisted Application Modernization: Transforming a Legacy E-commerce Platform with a Hybrid Engineering POD



About Client

Client : A US-based e-commerce company specializing in building materials and construction supplies

Industry : E-commerce / Building Materials and Construction Supplies

Products/Services : Multi-year product development and application modernization, delivered through a dedicated Hybrid Engineering POD

Geography : United States

Customers : Customers purchasing building materials and construction supplies online

Business Requirement

How CCS Technologies combined AI-assisted engineering, deep product knowledge and human expertise to modernize critical components of a decade-old application for a US-based client.

Modernizing Legacy Applications Without Disrupting Business Continuity

Legacy applications often support some of an organization’s most critical business operations. However, as these applications evolve over time, maintaining and extending them becomes increasingly challenging. Undocumented business logic, aging technology stacks, growing technical debt and limited availability of legacy technology expertise can slow innovation and increase maintenance costs.

For a US-based e-commerce company specializing in building materials and construction supplies, modernizing its established application platform presented exactly this challenge. The platform had been under continuous development for several years, with key components originally built in 2012. Its administrative application and customer-facing Storefront supported essential business operations, including product management, order processing, invoicing, pricing and reporting. Although these modules continued to serve the business, their underlying legacy code made enhancements increasingly difficult and time-consuming.

The Challenge: Modernizing a Decade-Old Application

Over the years, the application had accumulated considerable business logic and functionality. Much of this logic was embedded in legacy code, with limited documentation of underlying processes and dependencies. The key challenges included:

- **Undocumented business logic:** Critical business rules and application behavior were embedded in aging code, making analysis and modification difficult.
- **Increasing maintenance complexity:** Introducing new functionality without affecting existing application behavior required considerable engineering effort.
- **Legacy technology dependency:** Finding and retaining engineers familiar with the older technology stack was becoming increasingly challenging.
- **Slower enhancement cycles:** The client expected faster delivery of new features and improvements without compromising application stability.

A conventional modernization exercise involving a complete rewrite would have required substantial time and investment. More importantly, rediscovering and reproducing years of accumulated business logic would have introduced significant functional and operational risks. The challenge was therefore not simply to replace old code. It was to modernize the application while preserving the business capabilities that the client depended on.

CCS Solution

Rather than undertake a costly, ground-up rewrite, CCS Technologies adopted a **Hybrid Engineering POD model**, bringing together experienced engineers and AI-assisted development capabilities using Claude. The approach combined two complementary strengths:

- **AI's ability** to analyze large volumes of code, explain existing functionality, generate implementation suggestions and accelerate development activities.
- **Engineers' understanding** of the product, business context, application architecture and client-specific requirements.

The objective was to use AI to accelerate engineering work while ensuring that every modernization decision remained guided by human expertise.

How AI Assisted the Modernization Process

- **Legacy code analysis:** Assisting in understanding existing code, identifying functionality and explaining undocumented application behavior.
- **Code modernization:** Supporting the design and implementation of modernized versions of selected features.
- **Documentation:** Helping generate and improve technical documentation for existing and modified components.
- **Test preparation:** Assisting in drafting test scenarios and identifying potential edge cases.
- **Faster iteration:** Enabling engineers to explore implementation alternatives and accelerate development cycles.

These capabilities helped reduce the time spent understanding legacy code and allowed the team to focus more on implementation, validation and improving application functionality.

The Role of Human Engineers

AI capabilities were complemented by the engineering team's accumulated product knowledge and technical expertise. The engineers remained responsible for:

- Understanding and validating the client's business requirements and existing application behavior.
- Making architectural and implementation decisions.
- Reviewing AI-generated code and identifying potential issues.
- Validating changes against actual business scenarios and edge cases.
- Ensuring code quality, security and application integrity.
- Retaining ownership of testing, release decisions and delivery outcomes.

> **AI accelerates engineering. Human expertise provides context, judgment and accountability.**

No AI-generated change was considered ready for client delivery without appropriate engineering review and validation.

Why the Hybrid POD Approach Worked

- **Deep product knowledge and engineering continuity:** The dedicated POD had worked with the application over several years, giving it a strong understanding of the client's business processes, application dependencies, historical design decisions and functional requirements. That knowledge enabled engineers to assess AI-generated suggestions more effectively and make informed modernization decisions.
- **Incremental, feature-level modernization:** Instead of replacing the entire application, the team focused on selected features and modules, reducing the risks of a complete rewrite while delivering tangible results.
- **Human oversight and engineering accountability:** AI was used as an engineering accelerator, not as a substitute for experienced developers. Engineers retained responsibility for architecture, code reviews, functional validation, security and release readiness.
- **Demonstrable business value:** The team focused on delivering working functionality rather than limiting the exercise to technical assessments or proposals, helping the client understand and recognize the value of the approach.

Business Benefits

Using the Hybrid Engineering POD approach, the team successfully modernized selected features across the administrative application and other existing application modules.

- **Client-accepted modernization:** The modernized functionality was presented to the client, who reviewed and accepted the work, recognizing the improvements delivered.
- **Weeks of analysis avoided:** The approach helped the team avoid several weeks of preliminary discussions and analysis.
- **Significantly reduced redevelopment effort:** Effort was substantially lower than a conventional modernization exercise, which was estimated to require several months of additional work.
- **Engineering discipline retained:** The engagement showed how an established team can use AI to accelerate modernization without losing the product knowledge and engineering discipline that business-critical systems require.
- **Faster delivery:** AI-assisted code analysis, refactoring and automated test generation helped the Hybrid POD complete the modernization well ahead of a conventional approach, getting the new platform live sooner with minimal disruption to ongoing business operations.
- **Reduced development and maintenance costs:** Combining AI acceleration with a right-sized onshore and offshore POD lowered overall engineering effort, while retiring the legacy stack removed the high cost of patching and maintaining outdated code. The result is a leaner cost base for both the modernization and the platform’s ongoing upkeep.
- **Undocumented logic turned into lasting knowledge:** AI-assisted analysis surfaced business rules buried in code dating back to 2012 and converted them into clear technical documentation, giving the client a well-documented platform that is less dependent on individual memory and easier to onboard, audit and evolve.
- **Lower-risk modernization with a future-ready platform:** Feature-level modernization kept critical operations such as ordering, invoicing, pricing and reporting running throughout, avoiding the risks of a big-bang rewrite while leaving behind modernized modules that are easier to extend, so new features and integrations can be delivered faster.

- **Higher-quality, release-ready code:** AI-drafted test scenarios helped surface edge cases early, while engineers kept ownership of code reviews, functional validation and security checks, so every modernized feature reached production with greater confidence and fewer surprises.

What This Means for Enterprises

Many enterprises continue to depend on legacy applications that are difficult to maintain, extend or integrate with newer technologies. Replacing these applications entirely is not always practical, particularly when they support complex business processes and critical operations.

When combined with experienced engineering teams, AI can accelerate legacy code analysis, documentation, implementation and testing. This creates opportunities to modernize applications incrementally, reduce redevelopment effort and improve the speed at which new business capabilities can be introduced.

However, successful modernization requires more than AI-powered code generation. It demands a clear understanding of existing business logic, sound architectural decisions, rigorous validation and continued engineering accountability. This is where the Hybrid Engineering POD model offers value: combining AI capabilities with the continuity, expertise and ownership of a dedicated product engineering team.

What’s Next?

Building on this experience, CCS Technologies plans to extend the Hybrid Engineering POD approach to the remaining legacy modules and establish a repeatable AI-assisted application modernization practice across its Engineering PODs. The broader objective is to help organizations unlock greater value from their existing technology investments while accelerating their journey toward modern, scalable and maintainable applications.

Modernize Your Legacy Applications with CCS Technologies

Is your organization dealing with legacy applications that are becoming increasingly difficult to maintain, enhance or modernize? CCS Technologies combines experienced product engineering teams, AI-assisted development capabilities and a structured modernization approach to help organizations transform legacy applications while maintaining control over quality, business logic and application continuity.

Let’s explore how AI-assisted engineering can accelerate your application modernization journey.



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