

An online education provider cut legacy migration effort by 55–60% with AI-assisted modernization

Client

A Baltimore-based provider of affordable online college courses accepted for credit by partner institutions

Company Size

100+ employees

Location

HQ in Baltimore, MD, USA

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An online higher education provider depended on a legacy ColdFusion application that had no functional or technical documentation.

Maintenance effort was rising, ColdFusion expertise was scarce, and enhancements were taking longer to deliver. The client's leadership set out to modernize the application to Next.js with zero disruption to users and engaged Marlabs to accelerate the work with AI.

Two engineers and two QA specialists used Claude Code to decode the codebase and build 1,000+ automated tests. In 2.5 months, the client moved 7 of 17 features to user acceptance testing (UAT) with 0 database changes and cut effort per feature by 55–60%.



Application
Modernization



Generative AI



Quality
Engineering



Web & App
Development

The Challenge: An undocumented ColdFusion app slowed enhancements



Objective: The client wanted to modernize its legacy ColdFusion application to Next.js with zero disruption to users.



Existing Issues: No documentation existed, ColdFusion expertise was limited, maintenance effort was rising, and enhancement delivery was slowing.



Solution Needed: The client needed a governed way to understand undocumented code, plan the migration, and rebuild features quickly with automated testing.



Outcome: The client cut effort per feature by 55–60% and moved 7 of 17 features to UAT in 2.5 months.



The client relied on a legacy ColdFusion application with no functional or technical documentation. As ColdFusion expertise grew harder to find, maintenance effort rose and enhancement cycles slowed.

The Solution: A governed, AI-assisted migration

Marlabs paired two engineers and two QA specialists with Claude Code to rebuild the application feature by feature. A person approved the AI's output at every stage under the AI Fluency 4D Framework, and a manual feedback loop improved results over time.

Phase 1: Code Discovery & Documentation

We used Claude Code to interpret the undocumented ColdFusion codebase and create its documentation from zero.

Workstreams:

- Legacy code analysis
- Documentation creation
- Feature inventory

Phase 2: Migration Specs & Planning

The team generated AI-drafted migration specs and plans for each feature and then reviewed and approved them before the build began.

Workstreams:

- Migration spec generation
- Feature migration planning
- Human review & approval

Phase 3: Next.js Build & Test Automation

Our team rebuilt features in Next.js and created 1,000+ automated API, UI, unit, and Playwright end-to-end tests.

Workstreams:

- Next.js feature development
- API, UI, and unit testing
- Playwright end-to-end testing

Phase 4: Governed Rollout & Continuous Learning

Marlabs released features behind feature flags and fed reviewer corrections back to the AI to improve each iteration.

Workstreams:

- Feature-flag rollout
- AI feedback loop
- Reusable AI guardrails

Services and Technologies Used:

Services:

- Application Modernization
- Generative AI
- Quality Engineering
- Web & App Development

Technologies:

- Claude Code
- Next.js
- ColdFusion
- Playwright

The Results: Impact on the client organization

In 2.5 months, the client moved its first features onto a modern Next.js stack and cut per-feature effort by more than half. Human review at every stage kept people accountable for quality, and the guardrails the team built now form a repeatable model for future modernization.



Faster Delivery per Feature: The client cut effort from ~15–24 to ~7–11 person-days per feature, a 55–60% savings over traditional migration.



Documentation from Zero: The team created documentation from zero for an application that had no functional or technical records.



Rapid Progress to UAT: The team moved 7 of 17 features to UAT in 2.5 months with two engineers and two QA specialists.



Uninterrupted Business Operations: The client maintained business continuity through a feature-flag rollout that required 0 database changes.



Automated Test Coverage: The solution delivered 1,000+ automated API, UI, unit, and Playwright end-to-end tests.



Reusable Modernization Framework: Marlabs established reusable AI guardrails and a repeatable delivery model for the client's future modernizations.