

Customer Use Case: Translating Code Health into Economic Indicators



Abstract: A camera company was struggling to ship software releases on-time and within budget. Management blamed poor developer performance, but developers felt their delays were due to working in a technical debt-ridden codebase and began refactoring. Unable to convince the CFO that they were making progress refactoring or that this would yield a significant ROI, the CFO refused to invest further. Using the CodeMRI® Platform, Silverthread confirmed the developers' suspicion, translated these findings into metrics management could understand, and provided developers with a strategic refactoring plan to restore technical health efficiently.

Result: The company got projects back on schedule, securing millions in revenue and their leadership position in the market.

Problem

A camera company specializing in vision systems had historically been the market leader for 15 years, but was quickly losing market share due to missed software release dates. Feature releases for a crucial product - representing more than 45% of overall revenues - were over 15 months overdue, and schedule estimates were repeatedly off by more than 50%. The company was losing millions of dollars to new competitors who were shipping better products faster.

The software developers were spending an overwhelming amount of time fixing bugs instead of creating features, and suspected that the codebase needed to be refactored. They presented this information to the CFO in an attempt to get funding for a refactoring effort. However, the developers were unable to estimate how long refactoring would take, how much it would cost, or explain the exact benefits in a way that their CFO could understand. Feeling unconvinced and unsure of how to monitor this investment, the CFO refused to sign off on a refactoring effort.

CodeMRI® Diagnostics Assessment

Determined to translate their suspicion into metrics the CFO could understand, the developers brought in Silverthread. Silverthread's CodeMRI® Diagnostics assessment determined that the schedule delays and budget overruns were, as the developers suspected, due to poor design quality. Silverthread identified multiple 'Cores' – a group of files breaking traditional code structure hierarchy, leading to cyclical demands and eventual gridlock. The software developers immediately recognized the files in these Cores as their personal pain-points and where they spent most of their time fixing bugs.

The codebase was determined to be an excellent candidate for refactoring - being both technically feasible and generating a high ROI from Silverthread's ROI estimation tool.

Solution: Buy-in from Management

Silverthread did an economic debrief with the CFO and management to explain how these design quality problems correspond to economic losses such as time spent fixing bugs, scheduling delays, and going over budget. Based on Silverthread's ROI estimation tool, the investment in refactoring the codebase would result in improved developer capabilities, reduced costs, and ultimately lead projects to be on-schedule, increasing revenues.

Presented with a compelling business case *and* with metrics to monitor progress, the CFO signed off on refactoring.

"For the very first time, you are giving us the same level of control and visibility on the software side that we have on the hardware side." - Management

Solution: Strategically Refactor Codebase

The insight into the code from the CodeMRI® Diagnostics assessment combined with Silverthread's Technical Health Improvement Plan enabled the development team to determine the best course of action needed to finish the refactoring effort. This proposed an order to the refactoring process, but the engineers were still free to pick and choose which steps they wanted to work on first. Proposed steps that seemed especially difficult were skipped, and those deemed low-risk were done first, enabling developers to make continuous, rapid progress.

Outcomes: Projects on Schedule - Generating Revenue

Improving the codebase enabled the company to get projects back on-schedule, securing **millions of dollars in revenue** and their position as market leader. Other outcomes included:

- **Improved developer capabilities** – more agile, more time spent on features
- **Reduced costs** – less spend on fixing bugs, and
- **Increased Revenues** – shipping more products faster

About Silverthread

Silverthread is the market leader in software economics – helping executives take financial control over complex software assets. Based on 15 years of applied research at MIT and Harvard Business School, the CodeMRI® platform of tools allows organizations to translate software architectural health metrics into quantifiable business impacts. We have helped over 100 global commercial and government institutions and programs gain visibility into their software asset health, and dramatically improve operational and financial outcomes.

