

**Thesis Project Portfolio**

**Code Ownership and Quality: Building a “Component Health Service”  
at Appian Corporation**

(Technical Report)

**Code Ownership in Organizations: Policy, Practice, and Common Problems**

(STS Research Paper)

An Undergraduate Thesis

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## **Sociotechnical Synthesis**

### **Introduction**

My technical and STS research are closely coupled, both examining the relationship between code quality and code ownership in organizations. Between June and August of 2022, as a software engineering intern at Appian Corporation, I helped to develop an application that tracked and assessed both code ownership and code quality across the company's codebase. This work inspired my STS research, which examined different code ownership strategies, their benefits, and their drawbacks. Having only observed code ownership practices at a single company, I was curious to see how code ownership policies differed in other organizations.

### **Project Summaries**

The technical portion of my capstone project produced a cloud-based service for tracking code contributions and code health across Appian Corporation's infrastructure. Working with a team of five full-time engineers and one other intern, I developed a Python application, deployed on a Kubernetes cluster, which fetched, parsed, aggregated, and stored metrics related to test coverage, code quality, code contributions, and more, for each of the company's code repositories. Our aim was to provide company leadership with insight into which components were being actively maintained, by whom, and to what extent best practices were being employed by the company's engineers. During my time at the company, I could not see the completion of the service. However, a bare-bones backend was built out, establishing a strong base from which to develop a complete application, including a front-end interface. Throughout the design process for the application, I observed certain challenges around assigning and maintaining code owners for Appian's software components. These observations motivated me to investigate code ownership strategies and methodologies at other companies.

In my STS research, I examined how code ownership is handled at a variety of software companies and attempted to weigh the benefits and drawbacks of different approaches to code ownership. Through a survey of existing research, I concluded that a smaller number of code contributors usually correlates with high code quality. However, I found that relatively little research had offered insight into how companies should structure their code ownership policies in order to ensure positive outcomes. I conducted interviews with five software engineers with experience at a total of eight software companies. I asked my interviewees to speak on their experiences with code ownership, the code ownership systems used at their company or companies, and their own subjective opinions on the benefits and drawbacks of these different systems. I concluded that code ownership policy should ensure that developers contribute only to areas of a codebase with which they are highly familiar, but that this goal is achievable through multiple means. Both “strict” and “loose” code ownership models may be successful in the right context.

## **Conclusion**

My STS research and technical work complemented each other well. My STS research was inspired by my work at Appian Corporation and the challenges I encountered during my time there. Were it not for my time at Appian I never would have put significant thought into the issue of code ownership or its ramifications. Furthermore, as I return to Appian as a full-time engineer next fall, my knowledge of healthy code ownership policy, gained through my STS research, will allow me to contribute to a healthy, collaborative, work culture. Ultimately, by thinking about code ownership and its ramifications, it may be possible to improve the quality of code being written and deployed worldwide.