

## Omnicell: Firmware Process & Architecture Consulting

[Omnicell](#) is recognized as a leading provider of comprehensive, technologically advanced automation that enables health care facilities to acquire, manage, dispense, and deliver medications and supplies more effectively. Omnicell automation is used from the point of entry into the hospital through the central pharmacy, nursing units, operating room, procedural areas, and patient bedsides—as well as in long-term care sites.

### The Challenge

Omnicell faced a common problem. Their automated medication dispensing machine was succeeding in the market, and engineering management recognized that managing development costs and implementing a better firmware process and architecture would be important to sustaining the quality and advanced feature sets of the product. Like many embedded systems, the design of the automated medication dispensing machine had evolved organically. In its early stages, development began with a small team and modest processes. As the success of the product grew, it later needed an improved overall structure and architecture to sustain quality, reliability, and maintainability of the system.

### The Solution

To begin the improvement process, Barr Group completed a [process analysis and comprehensive code review](#). During this phase, a recommendation report was created for Omnicell's engineering management, including recommendations for architectural changes, coding standard enforcement, and process improvements. Barr Group then worked alongside Omnicell's own firmware development teams to refactor multiple firmware projects, utilizing Barr Group's popular [Embedded C Coding Standard](#) while migrating to a more reliable and maintainable architecture. Once the main refactoring stage was complete, Barr Group continued to provide technical assistance through ongoing coaching and code review support as Omnicell engineering teams further maintained and improved other firmware projects.

*“Barr Group’s experience in process, architecture, and coding standards was very important as Omnicell ventured to increase the maintainability and reliability of the embedded firmware in our medication dispensing systems. We were able to effectively utilize Barr Group’s team of engineers to rapidly refactor our embedded firmware.”*

- Chalapathi Rao,  
Vice President of  
Engineering, Omnicell

