When organizations create new strategy maps, key new processes are often identified. This is important for organizations to stay competitive in the global marketplace. This document describes the development, implementation, and validation of a framework that properly aligns and links an organization's strategy and new process development. The proposed framework integrates the Balanced Scorecard management system (BSC) and the Design for Six Sigma (DFSS) methodology, leveraging their strengths, overcoming weaknesses, and identifying lessons learned to help bridge the gap between strategy development and execution. The critical-to-quality conceptual model is used as an integrative component for the framework. Literature search has resulted in little or no research in the development of similar frameworks. To demonstrate and evaluate the effectiveness of the framework in a real-world environment, a case study is carried out and implemented successfully. As the case study progressed, cycle time as a performance indicator was monitored and showed progression towards the targeted strategic objective. The developed framework helps decision-makers seamlessly transit from a strategic position to process development linking strategic objectives to the critical-to-quality features. This comprehensive framework can help move organizations from where they currently are to where they want to be laying the background needed for customer satisfaction and breakthrough performance.