

assumption that tooth whitening was a service provided exclusively by dentists and not by oral care consumer-product companies. Consequently, oral care companies, until relatively recently, never looked at the needs of these noncustomers. When they did, they found an ocean of latent demand waiting to be tapped; they also found that they had the capability to deliver safe, high-quality, low-cost tooth whitening solutions, and the market exploded.

This potential applies to most industries. Consider the US defense aerospace industry. It has been argued that the inability to control aircraft costs is a key vulnerability in the long-term military strength of the United States.³ Soaring costs combined with shrinking budgets, concluded a 1993 Pentagon report, left the military without a viable plan to replace its aging fleet of fighter aircraft.⁴ If the military couldn't find a way to build aircraft differently, military leaders worried, the United States would not have enough airplanes to properly defend its interests.

Traditionally, the Navy, Marines, and Air Force differed in their conceptions of the ideal fighter plane and hence each branch designed and built its own aircraft independently. The Navy argued for a durable aircraft that would survive the stress of landing on carrier decks. The Marines wanted an expeditionary aircraft capable of short takeoffs and landings. The Air Force wanted the fastest and most sophisticated aircraft.

Historically, these differences among the independent branches were taken for granted, and the defense aerospace industry was regarded as having three distinct and separate segments. The Joint Strike Fighter (JSF) program aimed to challenge this industry practice.⁵ It looked to all three segments as potentially unexplored noncustomers that could be aggregated into a new market of higher-performing, lower-cost fighter planes. Rather than accept the existing segmentation and develop products according to the differences in specifications and features demanded by each branch of the military, the JSF program set out to question these differences. It searched for the key commonalities across the three branches that had previously disregarded one another.

This process revealed that the highest-cost components of the three branches' aircraft were the same: avionics (software), engines, and major airframe structural components. The shared use and production of these components held the promise of enormous cost reductions. Moreover, even though each branch had a long list of highly customized requirements, most aircraft across branches performed the same missions.

The JSF team looked to understand how many of these highly customized features decisively influenced the branches' purchase decision. Interestingly, the Navy's answer did not hinge on a wide range of factors. Instead, it boiled down to two predominant factors: durability and maintainability. With aircraft stationed on aircraft carriers thousands of miles away from the nearest maintenance hangar, the Navy wants a fighter that is easy to maintain and yet durable as a Mack truck so that it can absorb the shock of carrier landings and constant exposure to salt air. Fearing that these two essential qualities would be compromised with the requirements of the Marines and the Air Force, the Navy bought its aircraft separately.

The Marines had many differences in requirements from those of the other branches, but again only two kept them from decisively avoiding joint aircraft purchases: the need for short takeoff vertical landing (STOVL) and robust countermeasures. To support troops in remote and hostile conditions the Marines need an aircraft that performs as a jet fighter and yet hovers like a helicopter. And given the low-altitude, expeditionary nature of their missions, the Marines want an aircraft equipped with various countermeasures—flares, electronic jamming devices—to evade enemy ground-to-air missiles because their planes are relatively easier targets given their short air-to-ground range.

Tasked with maintaining global air superiority, the Air Force demands the fastest aircraft and superior tactical agility—the ability to outmaneuver all current and future enemy aircraft—and one equipped with stealth technology: radar-absorbing materials and structures to make it less visible to radar and therefore