Altera Corp

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Introduction

The story of Altera Corporation is more than just the chronicle of a business; it is the journey of American ingenuity, endurance, and reinvention at the heart of the global technology industry. For over forty years, Altera has exemplified the spirit of innovation that defines Silicon Valley, playing a pivotal role in shaping how the world designs, builds, and connects electronic systems. From its modest beginnings as a startup founded by a handful of semiconductor veterans, Altera evolved into a recognized leader in programmable logic devices, powering breakthroughs that reached far beyond the boundaries of its laboratories in San Jose, California.

The company’s origins reflect the quintessential American startup narrative: visionaries working from the ground up in pursuit of a game-changing idea. Altera’s early focus on programmable logic signaled a critical shift in electronic design—a move away from inflexible, application-specific hardware toward devices that empowered engineers and manufacturers to adapt, experiment, and innovate in real time. This unique value proposition rapidly attracted customers, collaborators, and eventually, the interest of the investment community.

Altera’s relentless commitment to research and development placed it at the forefront of multiple technological waves, from the rise of the PC and the Information Age to the advances in telecommunications, networking, and, most recently, artificial intelligence and edge computing applications. Each chapter of the company’s history reveals a pattern of adapting to new challenges—whether through product expansion, strategic partnerships, acquisitions, or pioneering its own software and intellectual property solutions. Its rivalry with Xilinx sparked an era of intense competition, spurring unprecedented innovation in both the programmable logic and semiconductor sectors.

The crossing of paths with Intel in 2015 ushered in a new era, marked by both opportunity and complexity. As part of Intel’s Programmable Solutions Group, Altera gained access to industry-leading process technology, deeper integration with computation platforms, and a global operational reach. Yet, this corporate union also tested Altera’s agility and cultural tenacity, ultimately raising questions about the best environment to foster innovation in a rapidly evolving industry.

In the years that followed, Altera would again reinvent itself. Emerging as an independent entity with new leadership and financial backing, the company faced the twin challenges of legacy and reinvention, striving to maintain its technological edge while adapting to the needs of AI, 5G, and next-generation data infrastructure. Today, Altera stands as a testament to both the possibilities and the turbulence of technological entrepreneurship—an American company whose products underpin

some of the most critical systems of modern life.

This book reveals the full arc of Altera’s story: its people, products, and place in the wider world. By tracing the company’s steps—its breakthroughs and setbacks, its culture and competitive drive—we gain insight not only into a singular enterprise but also into the broader forces that have shaped, and continue to shape, the digital future.

CHAPTER ONE: The Origins of Altera: Founders and Vision

The year 1983 was a vibrant time in Silicon Valley, a period ripe with technological ambition and entrepreneurial spirit. Amidst this ferment, Altera Corporation was born in June, a venture conceived by four semiconductor veterans: Robert Hartmann, Paul Newhagen, James Sansbury, and Michael Magranet. These individuals brought with them a wealth of experience from established industry players like Fairchild Semiconductor and Hewlett-Packard, and they shared a common vision that would redefine a crucial segment of the electronics landscape.

The decision to embark on this journey wasn't made on a whim. Robert Hartmann, a University of Minnesota electrical engineering graduate, had already built a career spanning various facets of chip design and manufacturing. His early professional life even included a stint as a roustabout in California’s oil fields before he fully immersed himself in the world of integrated circuits at North American Rockwell and Electronic Arrays. It was at Fairchild Semiconductor, a pivotal hub of innovation in the Valley, where he crossed paths with future co-founders.

Hartmann, along with Paul Newhagen, had previously co-founded a consulting firm called Source III in 1981. This venture connected them with various gate-array vendors and provided a close look at the challenges and opportunities in custom chip design. Their work at Source III involved helping companies develop and utilize gate arrays, which were a type of semi-custom integrated circuit. Through this experience, Hartmann and Newhagen came to understand the inherent limitations of these traditional approaches, particularly the lengthy design cycles and the need for expensive revisions.

Michael Magranet, also from Fairchild, joined Source III, further strengthening the team's expertise in gate array test program development. The trio’s insights were further deepened by their collaboration on a book titled "Gate Arrays: Implementing LSI Technology," published in 1982. This comprehensive survey of the gate array market revealed a crowded field with little room for yet another conventional gate array supplier. The conclusion was clear: the industry needed something fundamentally different.

This realization sparked the core idea behind Altera: the creation of a *user-programmable* gate array. The founders envisioned a chip that designers could configure and reconfigure themselves, directly addressing the pain points of long lead times and costly design iterations associated with custom logic chips. This concept of

"alterable" chips would eventually give the company its name, a clever play on the very nature of their groundbreaking technology.

James Sansbury, the fourth co-founder, completed the initial quartet. Sansbury, whom Hartmann had met at Fairchild, brought critical expertise in MOS processing technology and wafer fabrication management from his time at Hewlett-Packard. His presence initially suggested the possibility of Altera building its own fabrication facility, a common practice for semiconductor startups at the time due to the relatively lower cost of setting up a fab. However, a pivotal decision would soon shift Altera's course.

With the foundational team in place and a clear technological direction, the founders secured $1.3 million in seed money to launch Altera in June 1983. This initial funding was crucial, providing the necessary capital to transform their innovative concept into tangible products. At this nascent stage, a critical leadership gap remained: none of the four technical founders felt they possessed the ideal background to serve as the new company's Chief Executive Officer. Their search for a CEO was thorough, involving interviews with approximately 15 candidates.

The individual chosen to lead Altera was Rodney Smith, a British applications engineer and manager from Fairchild Semiconductor. Smith joined Altera a few months after its founding, quickly assuming the roles of chairman and CEO. His appointment proved to be a defining moment for the fledgling company. Smith was known for his decisive, competitive, and detail-oriented approach to management. He possessed a keen strategic mind and was not afraid to challenge conventional wisdom.

One of Smith’s immediate and impactful decisions upon joining was to steer Altera away from the idea of building its own chip fabrication facility. At a time when owning a fab was the norm for semiconductor companies, Smith argued that it was not Altera’s core strength. This bold move positioned Altera as one of the very first "fabless" semiconductor companies, a strategic decision that allowed them to focus resources on design and innovation while leveraging external manufacturing partners. This model, initially seen as risky, would later become a widespread and successful approach in the semiconductor industry.

Another strategic insight attributed to Smith was the focus on the IBM PC as the platform for developing programmable logic devices. While other engineering circles leaned towards more expensive workstations, Smith recognized the burgeoning market for standard programmable parts that could serve the rapidly expanding personal computer industry. This focus on inexpensive development tools for the PC market would enable a broader customer base to design and program their own custom logic circuits, fostering adaptability and quicker revisions compared to rigid, custom logic chips.

Thus, the stage was set. Altera, a name that perfectly captured its core innovation, was formed by a group of experienced engineers with a clear vision for "alterable" chips. With initial funding secured and a seasoned leader like Rodney Smith at the helm, the company was poised to introduce a new paradigm in electronic design, moving beyond the limitations of fixed-function chips and laying the groundwork for a revolution in programmable logic. The journey of Altera, the American company that would become synonymous with FPGAs, had truly begun.

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