



Origin Story

It sounds like the stereotype for every game-changing Silicon Valley tech company: Locus Technologies started in some guy's garage. But not by computer engineers; Locus was founded by civil and environmental engineers and scientists who wound up spearheading the EHS&S movement as it's known today. The company's origin story centers around the serendipitous convergence of three forces: market opportunity, work experience, and a vanguard prototype.

Once Upon a Time in Silicon Valley



The **Santa Clara Valley of California** was a lovely, fruit-growing region and home to Stanford University. Bright minds gathered to learn about the emerging field of “electron-ics” and to incubate new ideas. The orchards evolved from bearing fruit to fostering household names like Apple and Hewlett-Packard. But one unfamiliar brand was the granddaddy of them all: **Fairchild Semiconductor**.

Founded in 1957, Fairchild Semiconductor was the most impactful chip manufacturer in the world, and **Locus Technologies' first customer.** Fairchild's brilliant founders also built next-generation electronics companies like Intel, Raytheon, Varian, and AMD that manufacture(d) their wares in the Valley. In the 1960s and 70s, semiconductors became the beating heart of the area's innovations—

for everything from satellites to the precursors of smartphones. In 1971, the area was dubbed “Silicon Valley” in an Electronics Magazine article about the burgeoning use of silicon among emerging chip manufacturers. Today, 92 publicly traded tech companies trace their roots to Fairchild, and many of these “Fairchildren” continue to leave their marks on the Valley and the world with expansive facilities.



Appearances Can Be Deceiving

On the surface, semiconductor chips appeared to be a relatively clean industry--no dangerous assembly lines, belching smokestacks, or rivers discolored by contaminants. Production involved pulling a seed crystal of pure sand through molten silicon until it formed a thick, multilayered ingot that could be shaved into

thin wafers and polished with several chemicals. Then, with the help of degreasers and solvents, the transistors were imprinted on wafers to become chips.

Fairchild had initially stored its chemicals, including trichloroethylene (TCE), in the same type of underground storage tanks used by gasoline companies—not realizing that the steel tanks were being corroded by the powerful chemicals. From the 60s to the early 90s, Fairchild and its children were slowly and unknowingly leaking Volatile Organic Compounds (VOCs) into the soil around Mountain View, CA. At the time, the only data point was the cost to replenish the dwindling supply of chemicals, but since business was booming, nobody was inclined to investigate those frequent expenses. Hindsight is 20/20.

Two Steps Forward, Ten Steps Back

While Fairchild's production-line fueled sky-high growth in technology, it was wreaking havoc underground. In the 80s, increased cancer rates in the Valley prompted investigations. A few years later, TCE was found in the subsurface soils and groundwater around Silicon Valley after leaks from dozens of manufacturing sites, including Fairchild (later acquired by Schlumberger), Intel, and IBM. The aftermath was an incredibly massive environmental mess spanning multiple sites, entangled plumes, overlapping sources, and comingled contaminants. (In 2005, TCE was classified as a carcinogen by the EPA).

The EPA demanded remediation, but compliance was no small feat. It required extensive site investigation, soil borings, sampling, and mapping of the chemicals and their flow patterns – again and again and again. Since the leaked substances

had spread beyond property boundaries, the parties all pointed fingers at one another. Remediation was an expensive and eye-opening endeavor for everyone in the area – especially for the companies facing liability. Regulatory and legal actions ensued, and 23 new Superfund sites were identified. [Side Note: The Silicon Valley campuses for Google and NASA are both on EPA Superfund sites.]

EPA pressure mounted. As the agency mandated the creation of treatment facilities, monitoring systems, and reporting programs, the stakeholder companies sought help from outside experts, mainly consulting firms.

There's No Substitute for Relevant Experience

Meanwhile, the future founder and CEO of Locus Technologies, Neno Duplan, had been working as a civil engineer at multiple complex engineering projects, including foundation design for nuclear power plants and oil drilling platforms, and environmental cleanup related to many Superfund and Resource Conservation and Recovery Act (RCRA) sites.

Between completing his master's degree in civil engineering from Carnegie Mellon, and later his PhD from the University of Zagreb, Dr. Duplan also invented a software prototype for environmental information management. The prototype, dubbed "ITEMS", was inspired by Duplan's experience at nuclear and drilling facilities and his predictions for the decades to come. He foreshadowed tremendous pressure placed upon companies to collect, validate, analyze, and share important data with various types of stakeholders across multiple sites. He knew that spreadsheets had a limited shelf-life for the volume of disparate data,

the complexity of calculations, and the gravity of things like nuclear risk and water quality. ITEMS was on to something.

After completing additional coursework at Stanford University and working for many years as an environmental consultant in Silicon Valley, Duplan saw that the volume of data and regulatory pressure generated by the environmental projects was growing exponentially, just as he'd predicted. Companies were endlessly collecting samples, analyzing results, and interpreting data, but information was siloed across spreadsheets, some in electronic form at the office, some in printed form on a clipboard, and none of it real-time. The volume of information snowballed, and companies were lost in their data – unable to adequately store it, digest it, interpret it, or share it in a timely manner. Data management became not only a new priority in environmental consulting engagements, but the linchpin to customers' ability to comply with evolving regulations. Home-built databases and custom solutions were deployed at many sites, but that was neither sustainable, nor particularly effective. But it was the only option at the time.

All of that changed in the mid-90s when some of Stanford's bright minds launched the first commercial web browsers. Duplan instantly saw an opportunity to merge his prototype with the web and fulfill his clients' goals to store, digest, interpret, and share environmental data in a timely manner. It was a pivotal moment: need meets perfectly on-point experience (and a readymade prototype). Locus officially launched on April 11, 1997, and Fairchild Semiconductor became its first customer.

The Pressure Cooker

The Silicon Valley situation changed everything. It revealed the new reality of environmental, health, and safety risk, and the need for broad and deep software to mitigate that risk. The chip makers discovered their blind spots and how environmental technology could have alerted them to leaks long before they became catastrophic and tarnished their brands. The companies experienced the heavy burden of investigative work and ongoing monitoring of all facets of information. The EPA faced unprecedented complexity that would shape how the agency would handle Superfund sites going forward. And Locus proved there was a market for a science-driven, web-based software product that could flex to the specialized requirements of the corporations and withstand the pressure imposed by regulators.

The complexity of Fairchild's data, operations, and sites offered the perfect focus group for Locus. While Locus was busy coding, Fairchild was facing very real challenges to accelerate cleanup, manage emissions data, share real-time data across stakeholders, enact a long-term verifiable monitoring and reporting program, and ensure environmental compliance. The two teams collaborated extensively to advance the prototype into a robust system built for the scale and scope of Silicon Valley. In 1999, Locus became the first cloud-based environmental data management and compliance software. The irony was lost on no one: Fairchild needed Locus software to achieve its environmental mission; Locus needed web servers powered by Fairchild's microchips to realize its vision.

The exchange of ideas between the two companies became so symbiotic that Fairchild executives invited the startup to operate from its Silicon Valley campus. The move demonstrated the goodwill between client and vendor and the veracity of the remediation and emissions data in Locus. Decades later, Locus is still headquartered at 299 Fairchild Drive, Mountain View, CA, and collaboration became a defining attribute of Locus' operating philosophy. Locus only builds what clients want rather than churning out superfluous features and padding prices to recoup the development costs.

Other companies that inherited Fairchild's environmental liabilities also became Locus customers: Raytheon, Intel, Schlumberger, and Phillips Semiconductors, to name a few. Armed with the experience gained at semiconductor manufacturing sites and with the Internet booming, Locus was perfectly poised to define environmental information management, emissions management, and EHS compliance and reporting. Locus quickly broadened its horizons beyond only reactive, clean-up situations to also support voluntary stewardship, proactive programs, and sustainability priorities for organizations of all sizes.

Environmental Credibility Takes Center Stage

In 2002, the Sarbanes-Oxley Act required corporations to accurately disclose their financial positions, including environmental issues that could affect stability. Corporate balance sheets suddenly included a line-item for Environmental Liability, and CEOs and CFOs became personally liable for the accuracy of their disclosures. These new pressures prompted a flood of inquiries from Fortune 500 companies that required a better handle on their environmental compliance

data. The emphasis on responsibility and public interest dovetailed perfectly with Locus' mission to equip every organization with the tools to be credible, accurate, and good stewards of the environment.

More environmental regulations and amendments were enacted – driving additional growth and opportunities to help organizations simplify compliance. Chevron and other big names from the Oil & Gas, Chemical, Aerospace, and Manufacturing industries sought out Locus, as did the organizations depicted in blockbuster hits like Erin Brockovich starring Julia Roberts, A Civil Action starring John Travolta, Dark Waters starring Mark Ruffalo, and the Oscar-winning Oppenheimer movie.

Los Alamos National Laboratory (LANL), one of 16 Department of Energy (DoE) R&D sites and home of Oppenheimer's Manhattan Project, became a Locus client in 2011. LANL is one of the world's largest and most advanced scientific institutions where multiple Nobel Prize winners have hung their hats. Locus software is used to manage environmental compliance and monitoring activities for multiple stakeholders on a nearly 40-square-mile site where radioactive and chemical contamination occurred during decades of nuclear weapon production, research, and testing. It's one of the most extensive environmental monitoring programs on Earth, but all information is available in real-time to the public via Locus. The system now contains over 16 million records, including more than 32,000 locations and about 400,000 samples. These records include both recent and historical information about samples and laboratory analyses for air, soil, sediment, biota, and water. Building upon this highly specialized experience,

Locus software manages the data for more than one third of all nuclear reactors and plants in the U.S., plus dozens of other government organizations. Over time, three additional DoE research sites became Locus' customers: Stanford Linear Accelerator, Pacific Northwest National Laboratory, and Fermilab.

Having cut its teeth on meaty contamination projects involving mega organizations, Locus continued to expand its domain to water, air, soil, waste, emissions, site, and incident data within a configurable SaaS platform for risk mitigation and regulatory reporting. This broad, deep, agile, and flexible approach has made Locus the ideal choice for varied challenges and for organizations of all sizes. For example, San Jose Water Company (SJWC) uses Locus to manage drinking water and general environmental compliance data while Foster Farms uses Locus for everything from chicken headcount to greenhouse gas emissions tracking. Through its long-term engagements with the Port of Seattle and the Port Authority of New York and New Jersey, Locus has supported some of the most ambitious clean construction, carbon reduction, and scope 1-3 emissions, waste, and permitting programs coast-to-coast.

The Future of Sustainability is Here

The level and extent of environmental contamination left by Fairchild and other semiconductor manufacturers is regrettable. Yet out of the calamity was born a company that helps every organization have the technology to quickly measure its impact on the world and confidently take appropriate action. In more recent years, Locus' dual competencies in reactive and proactive environmental initiatives has made it the logical choice for clients' Environmental, Social, and

Governance (ESG) disclosures. The Locus model accelerates ESG reporting since the most scientific, specialized, and voluminous data is already in the EHS system -- ready for analysis alongside material social and governance data. Locus is now the cornerstone for broader business strategic planning, risk management initiatives, as well as EHS+S. Put simply: Locus turns environmental Big Data into actionable, real-time insight for a variety of purposes.

Over the years, Locus has entertained meetings with multiple venture capital firms – including some from nearby Sand Hill Road in Silicon Valley. So far, the investors have been driven purely by their own potential financial gains rather than the success of Locus' clients, much less by the hope of environmental gains. As a result, Locus has declined every overture, and the company remains independent and steadfast in its mission. While forgoing investors sounds like leaving money on the table, the company's stance has attracted new clients that only trust their sensitive environmental data to an independent company. Today, Locus is the only self-funded water, air, soil, biological, energy, and waste EHS software company that is still owned and managed by its founder. The company's comfort zone is "slow-burn startup mode" characterized by responsible growth that is in lockstep with its clients' wishes – just like the Fairchild days. Locus makes a point of only developing functionality its clients want and providing an innovative DIY kit for clients' in-house coders to expand the platform to spec.

The competitive landscape has become crowded with private equity-funded software companies, but most of those products lack the depth required for

science-driven objectives. Imagine an Uber driver designing NASA’s Lunar Module instead of an astronaut. While competing companies have impressive MBAs at the helm, Locus is led by a civil engineering PhD and multiple Stanford graduates with advanced degrees in environmental engineering and geology.

The brightest minds in environmental science, embodied carbon, CO₂ emissions, refrigerants, and PFAS gather in Silicon Valley and on Stanford’s stomping grounds, and they hang their hats at Locus. Every client-facing employee at Locus has an advanced degree in science or professional EHS experience, and they incubate new ideas every day – such as how machine learning, AI, blockchain, and the Internet of Things will up the ante for EHS, ESG, and sustainability. History repeats itself and Locus is again poised to help companies be sustainable – as only a sustainable company can.



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