

AIRIFY COMMUNICATIONS

WIRELESS SEMICONDUCTOR IP CASE STUDY

A seed-stage wireless chipset company filed early, sold to Intel — and the claims were still generating value twenty years later

INTRODUCTION

At the end of 2000, with the dot-com market collapsing around him, a Stanford doctoral student named Dominik Schmidt started a company on a single unfashionable premise: that the radio in a mobile device should be software, not silicon dedicated to one standard. Airify Communications set out to build a re-configurable baseband processor that could speak 802.11a, 802.11b, GPRS and Bluetooth from one die and hand a live connection between them in milliseconds, without the user losing the session.

The idea was correct and roughly a decade early. Airify raised five point two million dollars in January 2001 from Invemed Associates, Intellect Partners and Asset Management Company, grew to about thirty people — two thirds Stanford and Berkeley graduates, nearly a third holding doctorates — and taped out at TSMC as a fabless designer. It never had the balance sheet to outlast the standards war it was trying to end. What it did have was a patent estate.

Intel acquired Airify in 2004. Dominik Schmidt joined Intel as Senior Director of Wireless Engineering and went on to become Chief Technology Officer of Intel's Foundry business. Bao Tran, now the founder of PatentPC, was the attorney behind the Airify portfolio, and Ben Dubin — co-founder and managing partner of Asset Management Ventures, whose firm was an investor in the company's first round — assisted on the transaction with Intel.

BACKGROUND

What makes Airify worth studying is not the exit. It is what the filings did after the exit.

The company filed hard and it filed early. Thirty-four United States patents and reissues from the Airify programme name Dominik J. Schmidt as an inventor, with the core applications going in during 2001 and 2002 — while the chip was still in development and the second round had not closed. They covered the architecture rather than the product: channel interference reduction, cellular channel bonding for improved data transmission, single-chip wireless communication integrated circuits, a dynamically configured antenna for multiple frequencies and bandwidths, RF chipset architecture, ring-oscillator auto-calibration, on-chip capacitors, systems for testing wireless devices, and wireless security.

That distinction is the whole lesson. A patent drafted to the product would have expired commercially the moment Airify stopped shipping. A patent drafted to the architecture reads on whatever the industry builds next. Multi-radio devices handing sessions between cellular and Wi-Fi — the thing Airify could not quite manufacture in 2002 — became the default configuration of every phone, laptop and fleet telematics gateway sold after about 2010.

None of that was luck. A company that ran out of runway in the mid-2000s produced an asset that was still being licensed and enforced two decades after the applications were written, and it happened for one reason: the applications were written to survive the company.

“We were a thirty-person fabless startup in the worst funding market in twenty years. Filing properly was the one decision that kept paying after everything else stopped.”

[QUOTE TO BE APPROVED — DR. DOMINIK J. SCHMIDT, FOUNDER AND CEO, AIRIFY COMMUNICATIONS]

LEADERSHIP



DR. DOMINIK J. SCHMIDT

Founder and CEO, Airify Communications — later Senior Director, Intel Corporation

Dominik Schmidt founded Airify at the end of 2000 while completing a doctorate in electrical engineering at Stanford. He had already helped bring the CMOS imaging company Pixel Devices to revenue before its sale to Agilent, served as its vice president of manufacturing, and spent eight years at Altera developing transistor technologies and memory architectures. He holds a bachelor's degree from UC Berkeley and four advanced degrees from Stanford including a PhD, and a California professional engineer licence.

After Intel acquired Airify he joined the company as Senior Director of Wireless Engineering and later became Chief Technology Officer of Intel's Foundry business. He is today chief executive of Translarity and leads technology investments for QVT Financial from Palo Alto. He has authored more than seventy technical papers, holds more than ninety patents, and has taught at UC Berkeley and Tsinghua University.

Ben Dubin advised on the sale to Intel. A co-founder and managing partner of Asset Management Ventures for more than fifteen years, he invested over one hundred million dollars across hundreds of early-stage information technology and life science companies and sat on the boards of most of them. Before becoming an investor he spent sixteen years as a working technologist: hardware and software engineering at Lockheed Martin building the first Sun-workstation tools for designing and simulating custom semiconductors, then Sun Microsystems, where he worked for Eric Schmidt on a stealth parallel development platform and later ran product management for enterprise Java. He co-founded Los Altos Technologies and Full Source Software, holds bachelor's degrees in electrical engineering and computer engineering from Michigan and an MBA from Harvard, and is now launching FuncMed Ventures.

THE PATENTPC APPROACH

What first set PatentPC apart was the breadth of technology it could take on and the degree to which the filing workflow itself is automated. Airify sat across mixed-signal RF design, baseband DSP and RISC architecture, protocol software for four incompatible wireless standards, antenna design, clock and oscillator

calibration, security, and semiconductor test. Most firms would have staffed that with three separate practice groups and billed the client for all of them learning the technology.

PatentPC handles filings in every United States jurisdiction and asks only a few minutes of the inventor's time to set a matter in motion. That matters most at the stage Airify was at — thirty people, roughly two million dollars in the bank, a tape-out deadline, and a chief executive who could not afford to spend a week per disclosure. Inventions get captured when capture is cheap in founder hours. They get lost when it is not.

PatentPC's culture is built on continuous improvement, which has produced automation efficiency at a level previously not thought possible — and those savings are passed through to clients. For a venture-backed company, that efficiency is what converts a filing programme from a line item the board questions into an asset the board can sell.

- Claim the architecture, not the product. Every core Airify application was drafted to the technical mechanism — how interference is reduced, how channels are bonded, how a radio reconfigures — rather than to the A1000 chip. That is why the claims outlived the chip by twenty years.
- File before the product ships. The 2001 and 2002 priority dates predate the multi-radio devices the claims eventually read on. Priority is the only part of a portfolio that cannot be bought back later.
- Build families, not singletons. The channel-interference and channel-bonding inventions each produced continuations that issued years apart, so the estate kept a live filing chain and kept its scope adjustable as the market revealed what mattered.
- Draft for a reader who is not the client. Airify's claims were ultimately read by an acquirer's diligence team, by an aggregator's valuation model, and by district court judges. Prosecution decisions were made on the assumption that all three would read the file.
- Keep the chain of title clean. The estate transferred through five successive owners over sixteen years without a defect that stopped a transaction. Clean recordation is unglamorous and it is what makes an exit close on schedule.
- An examiner interview on every office action, no exceptions and no extra charge — to raise allowance rates and to keep the written estoppel record as short as possible for whoever owns the patent next.

RESULTS

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US PATENTS IN THE AIRIFY FAMILY

2004

ACQUIRED BY INTEL

OUTCOME +

ASSET MANAGEMENT VENTURE FIRM
RECOUPED INVESTMENT FROM IP

Airify did not win the chipset market. It reached an acquisition by the largest semiconductor company in the world, placed its founder in Intel's wireless and foundry leadership, and produced an intellectual property estate that outlasted the operating business by two decades and passed through Intellectual Ventures on the way. For a company that raised a single five point two million dollar round in the worst financing market of a generation, that is the outcome the patents made possible.

The counterfactual is easy to describe. A startup in that position that files two or three defensive applications on its shipping product has nothing separable to sell when the product stalls. The acquirer buys a team and a tape-out and prices it accordingly. The difference between those two outcomes was made in 2001 and 2002, in decisions about what to claim, and it could not have been made later.

Airify saved in two directions at once. First, by working with experienced attorneys backed by a technology stack, it avoided paying outside counsel to learn mixed-signal RF and multi-protocol baseband design, and received applications with more technical depth on a far shorter cycle. Second, by making the change, it paid less while receiving more accurate and more efficient patent services — with claim drafting and strategic advice still owned by its patent attorneys.

“PatentPC has proven to us that it is indeed possible to receive a higher level of service with amazing quality – witness how these patents were relevant for the past 20 years.”

DR. DOMINIK J. SCHMIDT, FOUNDER AND CEO, AIRIFY COMMUNICATIONS

Build the asset that survives the company

Most venture-backed hardware companies do not exit on their product. They exit on what a buyer can separate, value and own. PatentPC drafts semiconductor and wireless applications to the architecture rather than the datasheet, keeps continuation chains live so scope stays adjustable, and maintains chain of title that closes a diligence review instead of extending one. Talk to us before your next tape-out.

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