

A. ELLIOTT



## Embrace failure to start up success

An ambitious US programme aims to turn scientists into entrepreneurs. Go on, says **Steve Blank**, unleash your inner capitalist.

Facebook has a lot to answer for. Thanks largely to the massive success of the social-network company started in a university dormitory, today's image of an entrepreneur is a 20-something software developer who dropped out of college.

Yet Fairchild Semiconductor, the first silicon-chip company in what would become the entrepreneurial sprawl that is Silicon Valley, was founded in 1957 by researchers: three physicists, a metallurgist, a physical chemist and a trio of engineers — electrical, industrial and mechanical.

Unnoticed by those in mainstream commerce, scientists turned out to be great capitalists. For scientists do not fear failure. Silicon Valley took the approach that failure is an inevitable consequence of experimentation. Fairchild's founders built a company in which, when you hit a wall, you backed up and tried a different path.

Today's approach to entrepreneurialism is very different. Exceptional research teams still occasionally break into business from universities, but commercialization and venture-capital investment in the twenty-first century seems to focus on the Facebooks and Twitters of this world. Venture capitalists have brought MBAs in suits into start-up firms, who implement what they learned in business school. Scientists have largely gone back to their labs.

I am part of a National Science Foundation (NSF) project that is hoping to change this. The NSF has announced a new initiative called the Innovation Corps (I-Corps), to take the most promising research projects in US university laboratories and turn them into start-ups. The I-Corps project will train scientists for business by teaching them a process that gets them back to the roots of Silicon Valley, by embracing experimentation, learning and discovery. The NSF plans to give US\$50,000 each in seed funds to up to 100 science and engineering research projects each year, which it will select on the basis of the best science with the best potential for commercial success.

Common wisdom assumes that to become entrepreneurs, scientists and engineers must know about business. Instead, the I-Corps will teach them to approach business start-ups as research projects that they can solve through familiar scientific methods. The trial-and-error approach, which is natural to research but alien to business school, has distinct advantages. MBAs approaching a start-up typically want only to execute a pre-designed business model, based on standard principles about sales, marketing and customer reaction, which they regard as facts. By contrast, scientists recognize such variables as hypotheses. And so they tend to be happier than MBAs to test their business models with empirical data — the reactions of their prospective customers. It is a truth not always universally acknowledged that no business plan survives its first interaction

with customers. And, faced with such failure, it is scientists, not MBAs, who are most able to rethink their approach.

The NSF wants the I-Corps to solve two problems. First, support for entrepreneurs varies across the United States, from the deep experience in Silicon Valley and other high-tech clusters to much less in other areas. The I-Corps aims to spread 'best national practices' around the country. Second, the NSF wants to narrow the funding gap between the lab and venture capital. The I-Corps will move the best research forward to early-stage technology and customer development, at which point it can attract private investment.

Teams will participate in a three-month class, based on the Lean LaunchPad training our group developed in the Technology Ventures Program (<http://stvp.stanford.edu>) at Stanford University, California. I-Corps teams will build their products and get out of their labs to find potential customers and understand what they need. They'll learn how

to find a business model to turn their research into a commercial success. Ultimately, we hope that they will license their intellectual property or launch a new business, after securing funds from strategic partners, investors or NSF programmes for small businesses.

The response has been overwhelming. Open to any scientist who has received an NSF grant in the past five years, the I-Corps project has already received proposals ranging from medical sensors to terahertz field-effect transistors.

Scientists have a strong pedigree as entrepreneurs. Alongside Fairchild, the first three Silicon Valley companies to go public — Varian, Hewlett Packard and Ampex — were founded and run by scientists and engineers. They signalled that investment in technology companies could be very lucrative. In the following two

decades, venture capital invested in hardware, software and silicon, and eventually in the life sciences. Few MBAs were involved. Scientists and engineers taught themselves to become marketeers, sales people and chief executives. And venture capitalists became comfortable with funding them.

The I-Corps is an experiment in reviving this culture and exploiting what US science and Silicon Valley are great at. If it works, it will change the way we bring discoveries ripe for innovation out of the university lab and into the business world, and it will be a shining beacon for other national programmes. Success will lead to more start-ups, products we couldn't imagine, and more new jobs. And if it fails? Then we back up and try again. ■

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