

REFERENCED CASE STUDIES

HEXO HELMETS

Overview

From research into mechanical engineering, the founding team of Hexo Helmets explored methods of how technology could increase safety on the road for cyclists. They blended disciplines from across artificial intelligence, computer vision and material science to create a helmet that is significantly safer than foam helmets.

I.P Capabilities

- Use of hexagonal shapes in engineering methods for strength, weight reduction lower product cost and more even distribution of impact
- Use of 3D scanning and artificial vision technology to accurately map and measure the human head using existing hardware available in the market

Commercialisation Model

Spin out. The founding team had a passion to see the technology through to the end consumer, meaning they reduced commitments towards academic scientific efforts and dedicated time to creating an independent commercial vehicle. A clear business case could be made for launching to consumers in the cycling market. They had the breadth of skills to cover aspects of engineering, design, development, business and marketing.

Roadmap

- Launched in October 2017
- Raised seed funding of over £1m
- Exploring partnership with high-end fashion and cycling brands as a route to market
- Developing their technology and capability whilst placing high focus on creating a prestigious
- Employs 10 people in under 12 months

Current Status

Active and generating revenue by accepting early orders. No products launched to market yet.

www.hexohelmets.com

Additional Reading

<https://rouleur.cc/editorial/head-space-how-time-in-the-saddle-sparked-helmet-start-up-hexo/>

IMMUNE SYSTEM THERAPEUTICS

Overview

Immune System Therapeutics develops monoclonal antibody technologies for the treatment of blood cancers and other blood disorders. They launched in Sydney Australia with a vision to make treating cancer less painful and traumatic to the patient. The venture was a result of the founder having suffered from cancer. They explored new antibodies and discovered a new protein that had greater effectiveness with minimal negative side effects compared to existing treatments on the market.

Immune System Therapeutics launched as an independent research company and licenced it's research to pharmaceutical companies in sectors where there was a clear growth in spend, need and clear commercial viability. They were later acquired by Haemalogix Ltd.

I.P Capabilities

- Antibody technology for the treatment of blood cancers and other blood disorders

Commercialisation Model

Licencing via a spin out company. Research at an institution led to the creation of an independent research company. The founding team had a clear view to maximise the financial benefit of their work but maintain their hands on scientific research. They therefore launched a research company.

Roadmap

- Registered in 2001
- Raised \$700K AUD in early stage funding
- Raising additional funding of undisclosed amounts
- Exited through acquisition for an undisclosed (but clearly HUGE amount)

Current Status

Acquired by Haemalogix Ltd.

<http://www.haemalogix.com/>

CORTEXICA VISUAL SEARCH

Overview

In 2006, from research into Bioengineering at Imperial College London, the team set out to create a computer vision system that was as robust as a human being. This means that a computer could distinguish between photographs, drawings and real imagery of everything from faces, objects and landscape scenery. The theoretical uses of this system had multiple applications. After exploring commercialisation options, the team created Cortexica Visual Search – with the purpose of bringing visual search as a mainstream tool for consumers.

I.P Capabilities

- A model of 'visual neurons' in Graphics Processing Units that worked in real time, mimicking human vision at a revolutionary degree of accuracy.

Commercialisation Model

Solution as a Service. Cortexica work with brands to solve visual search problems for both consumers and industry, using computer vision and machine learning. They have created applications from identifying and sorting wine to recognising cars without identifiers such as registration numbers. Their biggest win was in fashion and clothing recognition, working with large brands such as Net-A-Porter and John Lewis.

Roadmap

- Research began in 2006 with a patent filed shortly after
- Two years of exploring commercialisation possibilities and opportunities
- Registered Cortexica Visual Search in 2008
- Raised £473K in early stage seed funding in 2009
- Raised £1.5M, £3.5M, £2M in funding rounds between 2009 and 2017
- Hired high profile executive management team in 2011 to scale the business
- Worked with multiple brands from food and beverage, automotive through to fashion.
- Now working on newer industrial applications in sectors such as oil and gas (e.g. identifying whether staff are wearing the correct safety gear)

Current Status

Active and creating solutions for industry.

Successfully applying technology in new settings by exploring opportunities in multiple sectors

www.coretexica.com

IMPERIAL COLLEGE & TOKOMAK ENERGY

Overview

Imperial College researchers at the Department of Materials embarked on a research project to provide safe, carbon-free energy. Naturally, their efforts turned to nuclear energy, where the complex procedure fusion provides the potential for this. One of the aspects they tackled was how the reactor could be made safer in case of a breach. In such an incident, the lining inside the reactor could form harmful substances if exposed to the outside environment. In 2014 they were ready to join industry and working with Tokomak Energy, the team created a tungsten based lining that if applied as a coating inside of reactors, could prevent the release of these substances at temperatures of up to 1200 degrees celsius.

I.P Capabilities

- Tungsten based coating that if applied inside reactors, could prevent oxidisation at high temperatures

Commercialisation Model

Licensing. The I.P has a narrow focus and limited applicability beyond it's researched purpose, so there was no business case for any other form of model. The scientists behind the project could continue their work in parallel areas whilst monetizing this discovery. Working with Tokomak from the start meant they had a licensee ready to partner with to launch their I.P as innovation in the industry

Roadmap

- Partnership between Imperial and Tokomak announced in 2014
- Tokomak Energy holds priority licence the use of the coating

Current Status

In market development via Tokomak Energy. Researchers are collaborating with Tokomak but their prime focus remains in academia / research.

<https://www.tokamakenergy.co.uk>

EMERGE MACHINE LEARNING

Overview

The founders of Emerge Machine Learning developed a proprietary actuarial machine-learning algorithm that was able to 'crunch' unstructured and structured data, find trends and patterns in a method that 1) reduced human intervention to define the models, 2) significantly reduced the end-to-end time frames and 3) had higher accuracy and prediction rates than anything on the market. In addition, the machine learning meant that prediction rates improved in accuracy and speed over time.

I.P Capabilities

- The IP lies in the proprietary algorithm and machine learning

Commercialisation Model

Spin off. Emerge ML developed a consultancy that would enable retailers, banks, insurance, Healthcare (anyone with data) to share their data with Emerge ML. Emerge ML consults on what they want to extrapolate from the data, and are now moving into a licensed SaaS model whereby corporates pay for access to the algorithm via a front-end web portal. They charge either on access to the algorithm (SaaS) or on a value-based model.

Roadmap

- Early-on decided to remain self-funded
- Developed technology in the lab with small team of researchers and developers
- PoC / Pilots with limited corporate partners to gain access to data and refine model
- Joined Insurtech accelerator programme to develop Insurance proposition and launch in Europe

Current Status

Partnered with PWC and Deloitte, have global partnership programme and developing new spin-off applications.

www.emergeml.com

THERANOS

Overview

Theranos was founded by the enigmatic Elizabeth Holmes, a straight-A student who dropped out of Stanford to start Theranos, becoming the youngest female self-made billionaire. Based on her phobia of needles, she created a mini-testing lab - the 'Edison' which enabled people to test a miniscule droplet of blood for a multitude of medical conditions, from cancer and high cholesterol to diabetes. It was so simple it could be used by patients themselves, and was so cheap it undercut private medical tests and medicare costs in the States. Self-styled on Steve Jobs, Elizabeth Holmes became the darling of Silicon Valley, appearing on magazine covers, attracting an A-List board (including Henry Kissinger and Oracle founder Larry Ellison) and pulling in investment.

She raised over \$700m in funding from experienced, hardened VCs and private investors, but kept conditions that she wouldn't reveal how the technology worked. Walgreens banked on the technology giving them the competitive edge and commissioned hundreds of 'wellness' rooms to be built and installed nationally to house Theranos machines for their customers to pop in and test themselves.

However.... there was a problem. The technology simply didn't work. And even worse, it has been reported it could never work. Demonstrations were rigged, the tests proved wildly inaccurate, the FDA wouldn't license them. After a multitude of investigations, and as more and more leaks started to escape the company, Elizabeth Holmes and her co-founder were charged with fraud and Theranos, once a \$9billion company, is closing its doors, worthless.

So what went wrong?

Where to start. Much has been written about the downfall (and Jennifer Lawrence is soon to play Elizabeth in an upcoming movie), but broadly;

- The technology wasn't ready and the technology teams were put under pressure to deliver to arbitrary deadlines, meaning quality control was cut. Elizabeth continually oversold the capability of the machine, over-promised what it could do, and then forced the technologists and Labs to make it happen
- Investors bought into the story, and delivering good news to the investors took precedence over development of the technology and product
- They had product-market fit. Walgreens commissioned \$140m worth of wellness rooms, investors jumped over themselves to invest, they undertook hundreds of thousands of tests (many had to be recalled)
- Simply, they lied. They lied about the technology. They lied to their staff and investors. They reported revenues of \$100m in 2014 when they took less than a thousandth of it

Learnings

- Be honest, transparent, and manage expectations
- Do one thing amazingly; don't overstretch
- Don't over inflate what your technology can do - be nice to your future self
- Make sure you are ready for corporate partnerships

Further reading



**Growth
Studio.**

John Carryrou's excellent book (he broke the story and was instrumental in their uncovering and downfall)

https://www.amazon.co.uk/Bad-Blood-Secrets-Silicon-Startup-ebook/dp/B07BW911F7/ref=sr_1_1?ie=UTF8&qid=1546691963&sr=8-1&keywords=bad+blood

How Theranos pulled off a \$9bn scandal

<https://www.youtube.com/watch?v=-kbia1E1kQ>

Overview

<https://en.wikipedia.org/wiki/Theranos>

www.GrowthStudio.com

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GOOGLE'S GLASS

Overview

Google Glass was part of Google's vision to natively bridge the gap between the digital world and reality and one of their earliest ventures into hardware. With the development of augmented reality technology and the ubiquity of 3G connectivity, Google Glass promised to be cool, functional, technologically ground breaking and culturally relevant (given the world was familiar with the technology though science fiction).

Following promising pre-sales from early adopters Google's public launch of Glass was a monumental disaster. Customer simply didn't buy the \$1000 device.

Rather than continue development and address the challenge of low sales, Google abandoned the project in it's entirety. Clearly - they realised a fundamental flaw that couldn't be fixed - but only realised it too late.

So what went wrong?

Google glass failed to help consumers understand what they needed such a device for. Consumers simply didn't know what problem Google Glass was solving for them - and that's because Google didn't know themselves either.

Even those that did purchase GLASS abandoned it's use after finding there was no purpose or 'Use Case' for it in everyday life. Whatsmore - the battery life was dismal - with it only lasting a matter of hours per full, charge,

One of Steve Job's infamous quotes after the launch of the iPod; "People don't know what they want until you show it to them" may (or may not) be true, but what Google glass simply didn't solve a problem except for being 'cool'.

And unfortunately it wasn't that either - and this was the most fundamental flaw. Despite it's technology limitations (battery, features etc), the reason Google Glass failed was NOT the technology, but because people simply felt silly wearing it. Google Glass failed because it didn't address the most basic emotional need of it's customer.

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Learnings

- Be cautious about what you announce to the world. Don't overpromise.
- Have a clear use case from which to build your value proposition
- Test your value proposition in order to make sure you're solving a problem.
- Make sure you solve a real problem
- Validate as you go - Google could have saved a LOT of money if they realised their errors earlier.
- Make sure you can deliver on your promised capability and the technology is viable.

BETTER PLACE

Overview

Better place was the 'Darling' of the Green tech world by promising a business model that could scale fully electric vehicles into the mainstream, with a combination of Renault cars, battery backs and roadside 'batter swapping' stations.

They worked with Renault to launch an electronic vehicle model into the market via their existing sales channels, but with a new and potentially disruptive business model. For about \$350 a month customers would be able to access roadside charging stations around the country and replace their dead batteries for new ones to continue their onward journey.

Investors bought into the idea, municipalities bought into the idea, Renault bought into the idea and the Green Tech industry bought into the idea.

So what went wrong?

The founding team believed their own hype. They believe the concept worked and therefore could see no reason why customers would see otherwise.

The team didn't de-risk the buying decision. This is a new concept and a new piece of technology - and that comes with risk. They didn't account for the fact that high risk innovations are slower to market

The business model was too disruptive. Instead, they should have considered giving people an easier choice that they could better relate to. They didn't launch a new car - they launched a new business model.

The market didn't exist yet and therefore launching a huge new proposition was too early for the market to comprehend or handle.

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Learnings

- Be open minded. Just because you are sure your solution works - it doesn't mean it will.
- Work with your target market to identify the right business model. Disruption fails more often than we're told about.
- A big vision is a good thing but launching it all at once on the assumption that the marketing will respond how you believe it will is unlikely - the world has seen it time and time again.
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Resources

Workshop 1: Innovation Fast Track Method to Commercialisation

The ultimate startup failure rate Infographic (2018)

<https://www.failory.com/blog/startup-failure-rate>

7 Reasons why academic scientists fail at commercialisation

<https://www.asianscientist.com/2011/05/features/7-reasons-academic-scientists-fail-commercialization/>

UK Parliament report – Improving commercialisation of research

<https://publications.parliament.uk/pa/cm201213/cmselect/cmsctech/348/348.pdf>

Ultimate Guide to licensing and licensing business models

<https://unicornomy.com/what-is-licensing-examples-licensing-business-model-types-of-licensing-agreement-template/>

Imperial College London – How we decide between spin outs or Licensing

<https://www.imperialinnovations.co.uk/staff/inventors-guide/how-we-decide-spinout-or-licence/>

Immune System Therapeutics Journey from I.P to Innovation (Video)

https://www.youtube.com/watch?v=v0-HKa_Tjjc

Three reasons you should let purpose guide your business

<https://www.inc.com/adam-fridman/three-reasons-you-should-let-purpose-drive-your-company.html>

The 10 most popular startup revenue models

<https://fi.co/insight/the-10-most-popular-startup-revenue-models>

Nine proven business models to consider

https://www.huffingtonpost.com/nina-tomaro/9-proven-business-models-_b_7949932.html

Workshop 2: Finding Market Opportunities

The challenges of commercialising DeepTech

<https://academy.smu.edu.sg/insights/challenges-commercialising-deep-tech-1796>

What DeepTech start-ups are doing right (and what they can learn from their predecessors)

<https://medium.com/lux-capital/what-deep-tech-startups-today-are-doing-right-and-what-they-can-learn-from-their-predecessors-64a639bdb3b7>

Finding product-market fit in DeepTech

<https://medium.com/saas-revolution/finding-product-market-fit-in-deep-tech-bfaad3bb3bf7>

Ecosystem mapping

<https://www.youtube.com/watch?v=0h6iaXJuEeA>

Fostering collaboration between corporations and DeepTech start-ups

<http://media-publications.bcg.com/from-tech-to-deep-tech.pdf>

Mapping your ecosystem

<https://partneringresources.com/wp-content/uploads/Tool-Ecosystem-Mapping-Short-Format.pdf>

Workshop 3: Creating and Articulating a Value Proposition

How to create a value proposition

<https://blog.hubspot.com/marketing/write-value-proposition>

Strategyzer's Value Proposition Canvas

<https://strategyzer.com/canvas/value-proposition-canvas>

Good Value Proposition examples

<https://www.wordstream.com/blog/ws/2016/04/27/value-proposition-examples>

Value Propositions 101

<https://www.slideshare.net/esaife/value-proposition-canvas-101>

Workshop 4: Entering Industry and Validating your Strategy

153 Of the biggest startup failures of all time

<https://www.cbinsights.com/research/biggest-startup-failures/>

Google Graveyard - Projects killed by Google

<https://killedbygoogle.com/>

Entrepreneurs Guide to Customer Development

https://www.u-cursos.cl/usuario/65cb0019312969dcc44fc854ecdb3419/mi_blog/r/Entrepreneurs_Guide_to_Customer_Development.pdf

How to validate your idea without spending any money

<https://www.startupgrind.com/blog/the-startup-framework-to-validate-your-idea-before-you-spend-1/>

Enfoundry's Validation Toolkit

<https://www.enfoundry.com/startup-toolkit/idea-validation-toolkit/>

How to truly validate your product with B2B Customer Development

<https://leanb2bbook.com/blog/how-to-truly-validate-product-in-b2b-customer-development/>

Session 1

THE INNOVATION FAST TRACK COMMERCIALISATION PLAN

Complete the following sentences with your strategic positions. These 20 pillars ladder up to your commercialisation strategy and serve as hypotheses ready to validate. This commercialisation plan also serves as a starting point for your strategic pitch.

GUIDING NOTES

1. THIS IS NOT A SALES OR MARKETING PITCH. This strategy should NOT need to read as such. This is your strategy – and an opportunity to understand the challenges without bias and plan your *actions* to tackle these for each of the 10 pillars.
2. That being said – ensure language used is articulate, simple and resonates with the commercially minded stakeholders you'll inevitably be working with.
3. Be sure you make INFORMED and WELL RESEARCHED conclusions from which you create your strategic positions.
4. As part of this exercise you will be able to identify gaps in your research and planning which you can prioritise accordingly.
5. Discuss, critique and agree on your strategic positions within your team. Everyone must share this vision with full commitment.
6. Use the attached guidance notes to help you define your strategic position.
7. For all pillars, consider ALL options before selecting one which you can justify.
8. Remember that your strategic position on one pillar will affect positions you can take on other pillars. Make sure all your positions align and make sense.
9. Use the *guiding articulation sentences* to help carve your strategic positions