



# STARTUP STORIES

NOTES FROM FOUNDERS

---

## THE ALCHEMISTS

Issue 02 Vol. 02

# THE ALCHEMISTS

There's no magic formula for creating a successful business, but a lot can be learned from the founders you're about to meet. From conjuring a global brand out of thin air, to taking sci-fi from abstract to reality, they're applying fresh thinking that's never short of a few surprises.

## 01 | Shipamax

Read how one founder left a career in commodities trading to start a business out of her living room that's now transforming the bulk shipping industry.



## 02 | SMALL GIANT

Find out why it was third-time lucky for a Finnish games startup, whose global hit has been downloaded over 10 million times.



## 03 | XAIN.

Learn how this founder took a university project, and grew it into an award-winning business that helps companies automate financial auditing workflows.



## 04 | CUSTOS

Be inspired by a former university professor who's using cryptocurrency to help customers fight intellectual property piracy.



## 05 | nauya be fluid

Discover how this French startup is disrupting legacy transportation systems by ushering in a new era of autonomous vehicles.



# Shipamax

After learning the ropes at London-based startups Adzuna and GoCardless, Jenna Brown teamed up with former colleague Fabian Blaicher to launch Shipamax. Jenna lives in north London and on rare days off, can be found scaling the walls at the nearby Castle Climbing Center.



## Jenna Brown

Co-founder of Shipamax

## MAKING WAVES IN SHIPPING

Jenna Brown and Fabian Blaicher founded Shipamax in March 2016 with one main aim – to transform the bulk shipping industry through technology. The pair graduated from the Y Combinator startup accelerator a year later, securing a funding round of \$2.5 million to create cutting-edge machine learning technology for the shipping industry.

Shipamax reduces manual administration, by extracting and organizing key data from the thousands of emails and files supply chain companies receive each day. The startup has 10 staff and is headquartered in London.

### 'My first business was a failed university project'

For most of my life, I've wanted to start a company, and I had my first attempt while I was at the University of Bath. Four of us created a website for people to meet language exchange partners. Unfortunately, we were pretty clueless about technology and didn't have any idea about what we were doing, so the site was pretty crap. It ended up being a typical university project that never really took off.

I REALIZED THIS WAS SOMETHING  
I'D GIVE UP A SECURE JOB FOR

### 'Working for other startups gave me crucial experience'

I was born in Bolton, in the north of England, but moved near London with my family when I was four, so that's where I call home. I worked for the commodities firm RWE Supply & Trading for a while, but I found the London tech startup scene so exciting and wanted to be a part of it. I left RWE to work for Adzuna (a job search portal), and then GoCardless, which is now huge. Spending time at those startups was like learning by osmosis, as I got to see how everything fit together and learned about all the functions of a small business.

### 'I'd never seen anything that made me want to quit my job'

I've always been the kind of person who brainstorms new ideas, but there was never anything that really made me want to quit my career and jump in the deep end until Shipamax. I'd met Fabian Blaicher at RWE and we'd kept in touch. He came to me with this idea for a tech company that could revolutionize the logistics industry. We did some research into bulk shipping and container shipping, and I realized this was something I'd give up a secure job for.

### 'It wasn't about having an idea and charging in'

At first, we had conflicting ideas about which markets to focus on. I thought we should target the container market, because the companies were smaller and it'd be easier to get in the door. Fabian thought we should focus on the

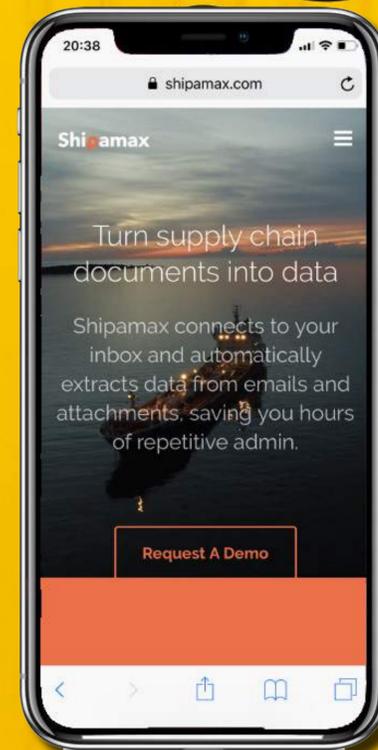
bulk market. When we looked into it properly, the container market was super-competitive and low-margin. There were no real tech players in the bulk market and the margins are larger on every deal, so it was the right direction to go. Having that insight was crucial. It wasn't a case of having an idea and just charging in head first – we did our homework, sought advice and kept talking things over until everything made sense.

### 'My parents thought I was crazy'

It was a market that none of our friends knew anything about and our families weren't exactly happy about the idea of us quitting good jobs to launch a startup. Mine were like: 'What are you doing?'

### 'Joining Y Combinator changed everything'

We launched the company in 2016. We were working out of our living rooms and it was a case of: wake up, work, go to bed. Not fun. Things changed for us when we went over to the US to take part in Y Combinator in early 2017. We almost didn't go though. I'd been to a conference hosted by Y Combinator and filled in the application form, but we weren't sure the program would be right for us. We wanted to be UK-focused, and I was worried the incubator would be too US-centric. But we spoke to people who'd been through the program and they were so overwhelmingly positive about it, fanatical even, that we changed our minds. It ended up being a lot of fun.



SPENDING TIME AT OTHER  
STARTUPS WAS LIKE  
LEARNING VIA OSMOSIS

**'Speak to people who've gone through what you're going through'**

I definitely drank the Kool Aid at Y Combinator. The best thing about it is meeting people who've been through what you're going through. Their advice is authentic. In business, you seem to get a lot of advice from people who haven't started something from nothing themselves. It's very different running sales and marketing at a company that already has a great product. When you're starting from the bottom, sometimes you need guidance from people who've been there and come out the other side. We came back to London so much more energized.

**'We had to change our business model'**

When we first started Shipamax, we wanted to be a brokerage house that helped firms book ships and use technology to take care of the transactions. It took a while to realize

some of the assumptions we had about the market were wrong, and a lot of the actions we thought could be automated, couldn't. It's so important to understand and question your assumptions.

That was a really difficult time. We'd raised a bit of money, which kept the lights on, but it wasn't easy. We only had enough money to keep going for another five months or so – there wasn't a lot of runway left. We knew the business wasn't working and we needed to get a return for our investors. You can either keep going on the same path and run out of cash, or you can make a change.

We ended up changing our business model completely and moved from being a broker to a pure software company. We knew our new idea had a shot, so we went full force into making the change. We didn't know if the new thing would work, only that the old thing wasn't going to.

**'It took us a year to get our first paying client'**

Shipamax was a slow burner. Our first employee came onboard three months after we launched, but it was almost another year until we could hire anyone else. And it seemed an age until our first paying client arrived in mid-2017.

Even though we didn't secure revenue during the first year, there were people using the product, so we had feedback on what we needed to do to get people to buy it. So those 12 months certainly weren't wasted. We could see we were building something there was a genuine need for.

**'Listen to your customers'**

You have to adapt to your market. It's very easy when you have an idea, or when things are going well, to just keep going blindly in that direction. We learned from customer feedback and have made a fundamentally better product.

WHEN YOU'RE STARTING FROM THE  
BOTTOM, YOU NEED ADVICE  
FROM PEOPLE WHO'VE BEEN  
THERE AND COME OUT  
THE OTHER SIDE



### 'We were ignoring what became our core selling point'

In 2018, we realized the main value people were getting from our software was the ability to extract and restructure the data from their emails. Shipping companies get up to 5,000 emails each day. We provide an API that extracts the data from emails, structures it and feeds it into whatever system the company uses. It removes the need for repetitive data entry tasks. We'd pretty much been burying that automation service, but realized we could scale much faster if we put it at the center of our proposition.

### 'We had a lot of tech problems so switched to AWS and never looked back'

AWS has been vital to our success. We initially used another provider, but we had so many problems, including a lot of downtime. We also wanted to use a database they didn't support. We needed

to switch in order to scale rapidly, and with AWS, suddenly everything we needed was there.

Our clients are huge logistics companies. They don't really care what the technology is – they just want it to work! For some parts of the system, we use complex, state-of-the-art machine learning technology, but for other bits, the tech is simpler. It's all about picking the right tool for the job.

### 'If I could rewind the clock...'

If I was to start the company again, there are a few things I would do differently. First, I'd hire more experienced people earlier on, as that experience really comes through in the quality of the work. Second, I'd speak to investors only when we were definitely ready to raise money, so we weren't wasting our time. Finally, I'd look really critically at the assumptions we made. We could have improved our model

much earlier if we'd really examined how close our assumptions were to the truth.

### 'I'm always learning how to be a better boss'

We've just entered a new market, freight forwarding, and are increasing the size of our data team. We started with two of us in a living room and now there are 10 of us in an actual office in London.

I'm still trying to navigate how to be a manager and how to communicate exactly what we're doing so all this info sitting in my head is understood by the team. It's important to be really clear about your expectations, so your staff know where they need to get to and how to get there. We work very hard as a team, there are no big egos and we're enormously positive about what the future will bring for us.



HIRE EXPERIENCED  
PEOPLE EARLY ON

I don't get much time off, but when I do, I go climbing. I don't always know how I'm going to get down, but I know I'll be OK. It takes my mind off things.

## AT A GLANCE



Shipamax was formed in 2016 by Jenna Brown and Fabian Blaicher.



The company is based in London and has 10 employees.



In 2017, Jenna and Fabian raised \$2.5 million in seed funding.



The pair graduated from the 2017 Y Combinator accelerator in Mountain View.



Shipamax uses [Amazon Redshift](#) and [AWS Lambda](#) for data warehousing and coding.



[www.shipamax.com](http://www.shipamax.com)

## FOUNDER STORIES PLAYLIST



Founder Stories



CONCENTRATE



Falling  
Haim

GET PUMPED



Hello  
Martin Solveig  
& Dragonette

CHILL-OUT



22  
Taylor Swift

Spotify account & internet connection required

# CREATING MOBILE GAMES THAT REACH MILLIONS

By combining great playability with a solid acquisition strategy, Small Giant Games has achieved a rare feat – a mobile game that’s as profitable, as it is popular. The company’s smash-hit success, ‘Empires and Puzzles’, has been downloaded more than 10 million times.

Small Giant Games was founded in 2013 by Markus Halttunen, Otto Nieminen, Timo Soininen, Tommi Vallisto, and Ilkka Juopperi. The Finnish company was acquired by social game developer Zynga in January 2019 for an implied total valuation of approximately \$700 million.

## ‘I knew at 10 years old that I wanted to create computer games’

A long, long time ago, I played my first game on my father’s work computer. He had some top games of the 1980s, like ‘Alley Cat’ and ‘Paratrooper’. But it was only when I got my hands on my own Commodore 128, a gift from my parents, that I became hooked. I was about 10 years old. It was then that I knew I wanted to program games myself.

‘It was too good an opportunity to miss’ I worked at Sulake – the Finnish company behind the social game ‘Habbo Hotel’. The first few years were great, but towards the end of my tenure, the company experienced some very challenging times. I was in the management team and had to lay off a lot of people. Some of my colleagues suggested founding our own gaming company and I figured it was just too good an opportunity to miss. Over the years, we’ve brought over some of the most talented people I’ve ever worked with.



WHEN I GOT MY HANDS ON A  
COMMODORE 128 AT 10 YEARS OLD,  
I WAS HOOKED

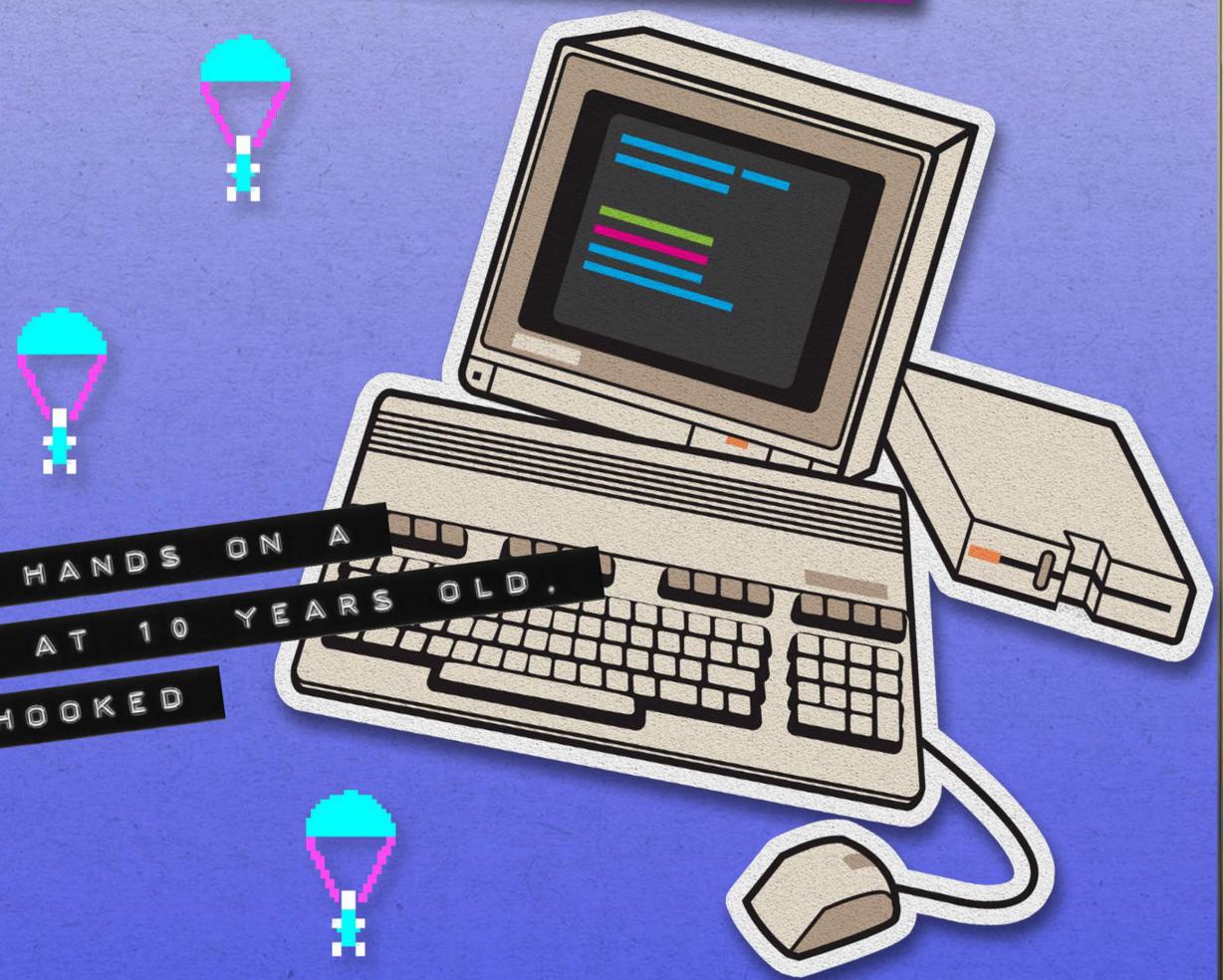


It was a case of third-time lucky for CTO Markus Halttunen, co-founder of Small Giant Games. After releasing two underperforming games, Markus and the team implemented past lessons to create the incredibly successful role-playing mobile game – ‘Empires and Puzzles’. Markus lives in Helsinki, Finland with his wife and two children.



**Markus Halttunen**

Co-founder of Small Giant Games



OUR STUDIO WAS FOUNDED ON THE IDEA THAT SMALL  
TALENTED TEAMS CAN ACCOMPLISH GIANT THINGS



Oddwings  
ESCAPE



EXCELLENT TECHNOLOGY IS  
NOTHING WITHOUT A GREAT CONCEPT

### 'Sometimes you have to change direction'

Our studio was founded on the idea that small, talented teams can accomplish giant things. I wouldn't call our first two games a success though. 'Oddwings Escape' was a beautiful flying game and it got a lot of publicity, but the numbers weren't there. Looking back, it took us far too long to get it out to market. We developed it for almost two years. We should have gone to market at least half a year earlier and gotten feedback from the players to see if it resonated. Basically, we should have developed it with the community rather than in a vacuum.

Our next game, 'Rope Racers', performed better on all the metrics as it took on our learnings, but I still wouldn't call it a runaway success.

### 'It was a humbling experience'

One of the most challenging things in my career has been the realization that excellent technology is nothing without a great concept. If you can't acquire users profitably, then it doesn't matter how beautiful your code is or how scalable your architecture is. It was a pretty humbling experience for me personally.

### 'Cherry pick the stuff that works'

We realized we needed to change the focus of the company and decided to think big – we'd create games that players could enjoy for years. So we built a completely different game – the role-play smash-hit 'Empires and Puzzles'. We were able to take all the technology that we'd implemented for the previous games, cherry pick the stuff that worked and get rid of the things we weren't happy with.





# EMPIRES & PUZZLES

**'He's intuition-driven; I'm data-driven'**  
To create the best products, you need to bring together different kinds of people. I'm a great software developer, but not a great game designer. Thankfully, we were able to hire a new designer for 'Empires and Puzzles'. He's a lot more intuitive than I am and very creative, whereas I'm more data-driven. With 'Oddwings Escape', it was always a little bit unclear what kind of game we were trying to make; with 'Empires and Puzzles', we had a much clearer vision, and the designer knew what we were building right from the start.

**'A great product is only half the story'**  
Having a great product really is only half the story. You also need to be good at user acquisition, analytics, and community management. You can't rely on Apple or Google featuring your game and even if they do, that moment in the spotlight won't last long. Therefore, you need a strategy for acquiring users and the right social gameplay to engage them. Analytics are crucial; you need to know which advertising channels will attract users who will enjoy the game and be willing to spend money on it.

**'A cloud-based platform is a no-brainer'**

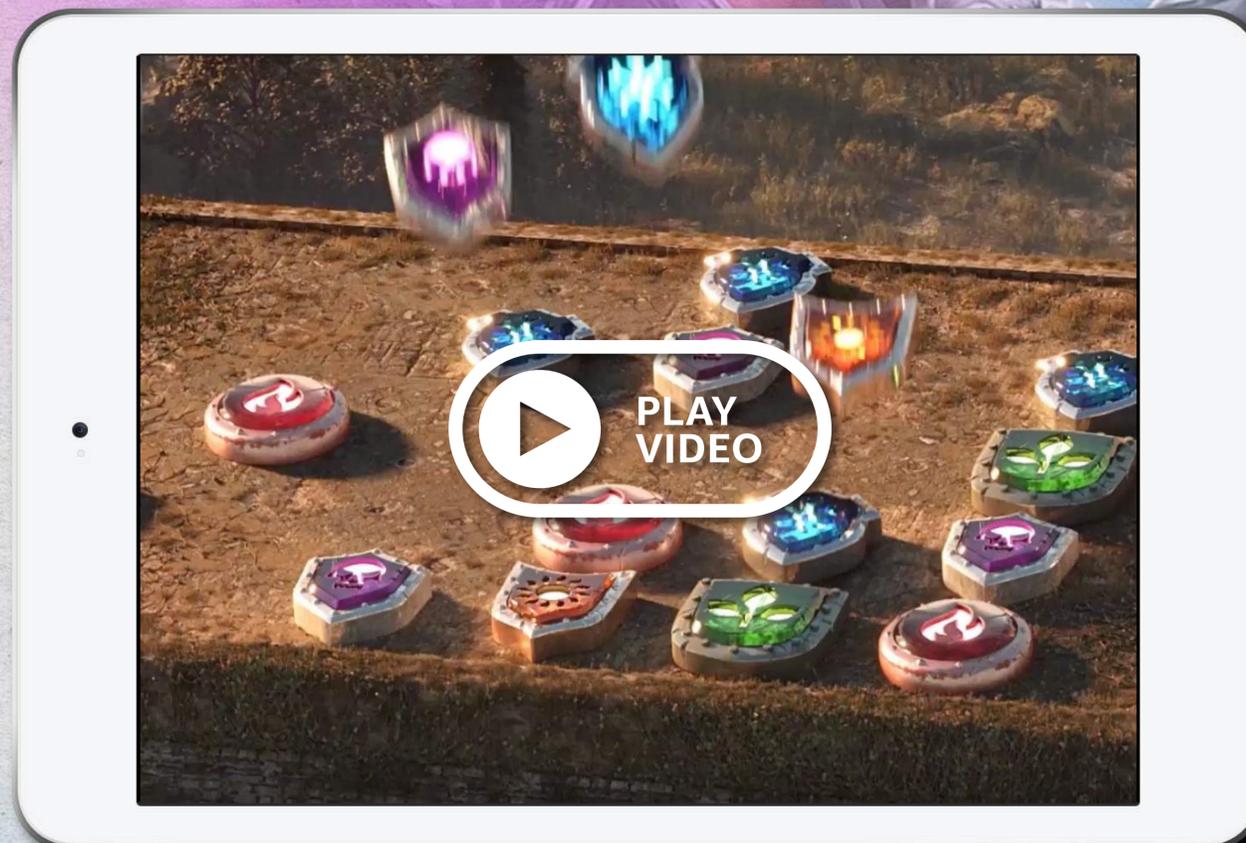
A cloud-based platform is a no-brainer for a startup. You have limited funds in the beginning and you never know if your game is going to work out or not, so you don't want to spend a lot of money on hardware. Plus, if your product actually succeeds as it did with 'Empires and Puzzles', you're going to have a real problem if you can't scale up quickly. A rapid increase in user numbers could break the game. With AWS, we're able to scale our games up at the press of a button.

**'I wanted to give up at times'**

It's hard being an entrepreneur. There were moments when I thought about giving up. When we did the first two games, we poured our hearts into them. You've got to believe in your products because if you don't believe, why are you making them? But then you start seeing from the metrics that they're not going to work and you're losing money, so you question yourself: 'Do we still have a chance to succeed?' I'm glad I made myself carry on. We took the learnings, rolled up our sleeves and started to work on the next game. I really appreciate how everybody in the team moved on from those two failures, looked to the future and tried again.

**'I'm very persistent'**

If I set myself to doing something, I actually get it done – I'm very persistent! As for my other strengths, I've been doing this stuff for quite a long time, so I know my technology. But at the same time, I'm good with the softer stuff, like hiring and leading teams.



WITH AWS, WE CAN SCALE THE  
GAME UP TO HANDLE A RAPID  
INCREASE IN PLAYERS





WHEN IT COMES TO HIRING,  
I LOOK FOR PEOPLE WHO CAN BE  
THEIR OWN MANAGERS



I ❤️ GAMING

### 'Our employees have power'

When it comes to hiring, I look for people who can be their own managers. We have almost zero hierarchy in the company. It's very flat and teams are the ones who make the decisions – not the CEO and not me. Our employees have great power and great responsibility, so they need to have initiative.

### 'You've got to think long-term and focus on what you do best'

We founded Small Giant Games because we love games and we wanted to build something of our own. But you've got to think long-term – what is your end-

game? Realistically, it's either going public or selling to another company. We've had four investment rounds, so we've been raising money throughout the lifetime of the company. We now operate as a separate studio within our parent company – Zynga. By leveraging Zynga's wider expertise and support, we can amplify our reach and focus on what we do best – making great games. We get to keep our identity, culture and creative independence, so from the perspective of our employees, almost nothing has changed.

### 'Software can make the world a better place'

It's rare that I get spare time between running Small Giant Games and spending time with my wife and children. But when I do, I like to work on other software development projects. I like the idea of using software to change the world and ultimately, make it a better place.



## AT A GLANCE



Small Giant Games was launched in 2013 by Markus Halttunen, Otto Nieminen, Timo Soininen, Tommi Vallisto, and Ilkka Juopperi.



Its mobile game, 'Empires and Puzzles', has been downloaded more than 10 million times.



The company has 48 employees and is based in Helsinki, Finland.



Small Giant Games was acquired for an implied total valuation of approximately \$700 million by social game developer Zynga in January 2019.



Small Giant Games uses AWS for scale and flexibility.



[www.smallgiantgames.com](http://www.smallgiantgames.com)

## FOUNDER STORIES PLAYLIST



### CONCENTRATE



Let There Be Light  
Mike Oldfield

### GET PUMPED



Don't Stop Me Now  
Queen

### CHILL-OUT



Faded  
Alan Walker

Spotify account & internet connection required



Leif-Nissen Lundbæk, 27, was a student at Oxford University when he realized his research project had potential beyond academia. Coming from a family of entrepreneurs, he wasted no time in teaming up with a co-founder, Felix Hahmann, to launch XAIN. On his days off, Leif enjoys painting and architecture, and is trying to recreate the essence of Oxford in the home he's building for himself in Berlin.



## Leif-Nissen Lundbaek

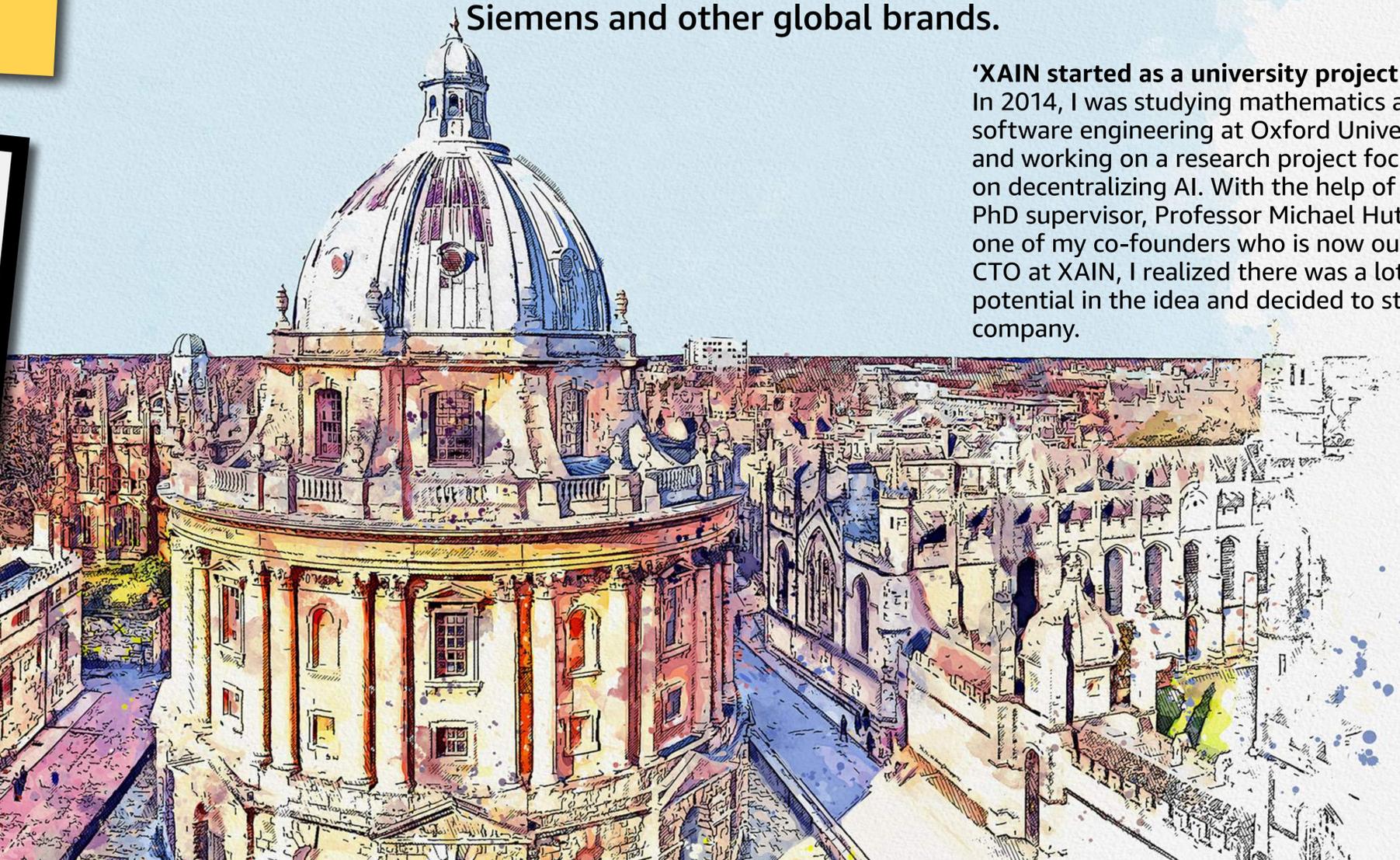
CEO & Co-founder of XAIN

# HELPING FIRMS SHARE KNOWLEDGE

Founded in 2017, XAIN specializes in federated machine learning that helps enterprises share knowledge while preserving data privacy. Its offices in Berlin, Stuttgart, and Oxford deliver services worldwide. The platform began as a university research project to develop a privacy-preserving network infrastructure for consolidating AI models, and still maintains a strong focus on research. In its first year, XAIN prevailed over 120 startups to win the Porsche Innovation Contest, which led to opportunities with Daimler, Infineon, Siemens and other global brands.

### 'XAIN started as a university project'

In 2014, I was studying mathematics and software engineering at Oxford University and working on a research project focused on decentralizing AI. With the help of my PhD supervisor, Professor Michael Huth, one of my co-founders who is now our CTO at XAIN, I realized there was a lot of potential in the idea and decided to start a company.



**'We help businesses save money, share knowledge, and reduce risk'**

Our network allows companies to exchange knowledge without exchanging private or sensitive information. In essence, we keep the data where it is, but consolidate the knowledge so multiple companies can profit from it. Our key product is an expandable AI network that companies can use for specific applications.

For our first industry vertical, we're automating the entire financial auditing process, starting with accounts payable. Traditional auditing is cumbersome and extremely labor intensive. There's also room for human error. With our network, all the internal financial transactions of a company are checked ad-hoc, rather than just once or a few times each year. The cost is very low compared to manual auditing and, of course, we can offer greater reliability in terms of ensuring compliance, reporting internal fraud, and identifying false information.

**'Winning a major startup competition was a game-changer'**

We founded the company with a small team of researchers and engineers in 2017. One of the first things we did was enter the Porsche Innovation Contest. We were competing against around 120

startups from all over the world, most of which were already quite big. We entered thinking: 'If nothing else, it's all good experience,' but were one of only five startups invited to pitch at Porsche's headquarters. To our complete surprise, we ended up winning the competition.

It was incredible and completely unexpected – this huge, global company understood our vision and believed we could build this thing. It was a complete game-changer and offered vital validation for what we were doing. Since then, we've developed a close relationship with Porsche and continue to work together.

**'Staying focused is the most important thing'**

We made one big mistake in the early days – we split our time and team to build technology to solve two different problems. In the end, we had to cut one of the products and the people working on it. Making that decision was a painful experience. My main piece of advice to small startups is to stay sharply focused and put all your resources into one thing at a time, as it makes it a lot easier to succeed.

**'Business isn't about what you think – it's about what your customer thinks'**

As an entrepreneur, you always have to be thinking about customers, even if you don't have them yet. Often, there's a huge difference between the problem a customer has and the problem you think they have, so it's crucial to talk directly to the people you're aiming to help. Otherwise, you risk creating something to solve a problem that you don't fully understand, and your product might not prove as helpful as you think. Build your product with one or two customers to get it right before you try scaling.

STAY SHARPLY FOCUSED  
ON SOLVING ONE PROBLEM  
AT A TIME

'I love Porsche Oldtimer and Mercedes-Benz SL cars from the 1960s. We work with Porsche now and I keep a model of a Porsche Oldtimer on my desk for inspiration.'



### 'We play 'good cop/bad cop' when raising funds'

My co-founder, Felix Hahmann, and I both bring passion and dedication to the company, but beyond that, we try to play to our individual strengths. When we had a seed round early last year, we pitched to a famous German fund called Earlybird Venture Capital. I talked about our story and tried to get them excited about investing in us, while Felix played more of the 'bad cop' role and went through all the nitty-gritty details. That's something I could never have done.

### 'You can end up with zero investment if one small detail isn't right'

As the level of funding you're looking for increases, the rounds become more challenging. You never truly know whether you're going to succeed at getting a deal until the paperwork is signed. You can go through so many discussions and negotiations, but end up at the finish line with zero investment because just one detail doesn't fit well with what the investor is looking for. It's hugely disappointing to work so hard on something for months and months, and not have anything to show for all those hours you've put in.

### 'Running a company opens your mind to new perspectives'

You take a lot of risks as a founder, and you have to be prepared to back the decisions you make, even when other people don't agree. I think it's critical to consider and understand the implications of your decisions from as many perspectives as possible. I'm much better at doing that now than I was at the beginning. You have to open your mind if you want to lead a company successfully. I've learned more over the past two years than at any other time in my life.

TO GET A SPECIAL  
PRODUCT, YOU NEED  
A SPECIAL TEAM



### 'We hire fearless, passionate people who think for themselves'

To get a special product, you need a special team that consists of distinct individuals rather than carbon copies. We look to hire highly intelligent people who aren't afraid to think for themselves and share their opinions. They need to be able to make decisions fast and act fast, so I can be confident delegating tasks and responsibilities. They also need to have a passion for both the technology and the business side. We want people who truly love what they do and don't see it as 'work'. Teamwork is one of our biggest strength – except when it comes to a round of Mario Kart after lunch!

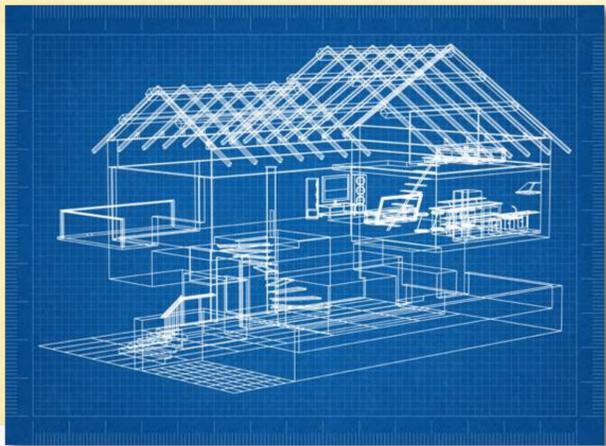
### 'I'm from a family of entrepreneurs'

I think it was inevitable that I would start a company at some point, because everyone in my family is an entrepreneur, but it happened a little quicker than planned. I grew up watching my parents and grandparents build and run their businesses, and saw the challenges they had to overcome. I'm fortunate to have people in my personal life who I can turn to for support and guidance whenever I need it. Believe me, you learn to appreciate free advice quickly when you're running a startup!

YOU CAN END UP AT THE FINISH  
LINE WITH ZERO INVESTMENT  
BECAUSE JUST ONE DETAIL  
DOESNT FIT WITH WHAT THE  
INVESTOR IS LOOKING FOR



WHEN I'M NOT  
WORKING, I LIKE  
PAINTING AND  
CHATTING WITH  
MY GRANDMOTHER



## AT A GLANCE



Leif-Nissen Lundbæk, Felix Hahmann, and Michael Huth incorporated XAIN in 2017.



XAIN utilizes federated machine learning to help enterprises share knowledge while preserving data privacy.



The company has raised €6 million (\$6.8 million) so far.



XAIN won the inaugural Porsche Innovation Contest in 2017.



XAIN uses [Amazon ECS](#) and [Amazon RDS](#), amongst other services.



[www.xain.io](http://www.xain.io)

### 'AWS was a natural choice for us'

AWS infrastructure is state-of-the-art. It's extremely secure, flexible, and reliable, and the performance and customer service is incredible. We chose AWS because it's one of the largest networks out there. We're working closely with Porsche and Volkswagen, and they use AWS for a lot of their IT, so it helps to be on the same infrastructure.

The service that's helped us most with scaling quickly is [Amazon Elastic Container Service \(Amazon ECS\)](#). We use it to deploy containerized applications quickly and reliably using the open-source system Kubernetes. Reliability is so important, whether we're doing deployments for customers or ourselves. A decade ago, we just couldn't have built the same company as rapidly, partly because we wouldn't have had access to the AWS cloud.

### 'I relax by spending time with my grandmother'

Finding the time and space to relax without thinking about work is really important. My grandmother is a professional painter with her own gallery, so when I'm not working, I like painting and chatting with her about completely different things to technology. My time at Oxford inspired my love of architecture. I'm currently building a house that I designed, trying to bring something from the time I spent in the UK back to Germany.

### 'One day, I'll move abroad and have a vineyard'

I lived in New Zealand for a while and I loved the hikes, the landscape, and the vineyards – I dream about moving there to start my own vineyard one day. I'm afraid of flying though, which is quite inconvenient when I live so far away from my favorite country!

AWS IS EXTREMELY  
SECURE, FLEXIBLE  
AND RELIABLE, AND  
THE PERFORMANCE AND  
CUSTOMER SERVICE  
IS INCREDIBLE

## FOUNDER STORIES PLAYLIST



### CONCENTRATE



Howling  
Around My  
Happy Home  
Daniel Norgren

### GET PUMPED



Leave A Trace  
CVRCHES

### CHILL-OUT



Trans Europe  
Express (2009  
Remastered  
Version)  
Kraftwerk

Spotify account & internet connection required

# CUSTOS

Gert-Jan van Rooyen (G-J) was entrenched in academic life as an associate professor in South Africa's Stellenbosch University when inspiration struck. He quit the classroom to launch Custos with a research student and a colleague. G-J now splits his time between home in South Africa, where he enjoys hiking the mountains of Helderberg, and Los Angeles, where he's often found in The Last Bookstore.



## Gert-Jan van Rooyen

Founder of Custos

WE HAD OUR EUREKA MOMENT  
AND FILED THE PATENT  
THE SAME DAY

## TAKING ON THE PIRATES

Launched in 2013, Custos uses cryptocurrency technology to fight the piracy of movies, ebooks and confidential documents. Custos embeds a bitcoin 'bounty' of around \$5-10 directly into content, providing an incentive to discover leaked media and report it. When the reward is claimed, content owners are notified and given the identity of the person or organization responsible for the leak. The 11-strong team is based at LaunchLab – Stellenbosch University's startup incubator in South Africa.

**'My life in academia was pretty set, but everything changed'**

I was always an academic. I did an electronic engineering degree at Stellenbosch University, then a PhD and finally ended up lecturing there. My life was based around the university. But one day, some colleagues and I stumbled across a new invention that had commercial value and I decided to hang up my mortar board and go into business.

**'As we stood around drinking coffee, throwing ideas out, inspiration struck'**

That eureka moment came in October 2013. I was standing at the coffee machine with the two guys who would become my co-founders – Fred Lutz, a student in our research lab, and Herman Engelbrecht, another professor. We were musing on how to combine our research with these new hot topics everyone was buzzing about – cryptocurrency and blockchain. Suddenly, we realized cryptocurrency and private keys could be used to protect media, which is almost the opposite of what they were intended for.

We wrote up a patent disclosure the same day and sat down with the patent lawyers a few days later. The next thing we knew, we were in business.



**'Universities are naturally entrepreneurial breeding grounds'**

The seeds of Custos were planted at the university. Academia tends to be quite an entrepreneurial environment – you have to rally troops to get research groups going and you're always working towards a goal, researching and refining until you find something useful.

**'I said if we could get funding for a year, I'd quit my job for the business'**

We secured a government grant a month or so after filing the patent. It allowed us to get the first engineer on the payroll – employee number one. It also allowed Fred and I to attend an anti-piracy summit in LA and get to know the film industry. My deal was that I would go full-time if we got enough funding to carry the company for a year. I needed a bit of a safety net to care for my family.

**'The university realized it could build a tech hub'**

Stellenbosch and the Western Cape wanted to become an entrepreneurial hub, but there was a missing link in the pipeline that would enable companies to use the research and ideas coming out of the university. Luckily, the university received a large donation from a South African bank to build a startup incubator. The government also pitched in and we found ourselves one of the first resident companies in a very nice, very large accelerator on the university campus. It's an old part of the university that was retrofitted into a co-working space called LaunchLab, and we're still there today.

It's an absolutely amazing environment to work in – a brilliant hub for entrepreneurial activity. You're close to the university and so close to talent. Potential team members and other entrepreneurs are right on your doorstep. We even met our angel investor here.

**'The COO and I have different, complementary skills'**

I thrive in difficult or challenging environments. I really enjoy motivating people and solving problems. My co-founder Fred, our COO, is operationally much stronger than I am; he keeps everything together day-to-day in the company, and makes us a well-oiled machine. These two complementary approaches work well for Custos.

A UNIVERSITY INCUBATOR IS  
A FANTASTIC PLACE TO BE BASED  
BECAUSE TALENT IS RIGHT  
ON YOUR DOORSTEP. WE EVEN  
MET OUR ANGEL INVESTOR HERE



AWS BRINGS THE COST OF  
STARTING A TECHNOLOGY BUSINESS  
RIGHT DOWN



#### 'It's just a hypothesis until you test it'

Cryptocurrency and blockchain are complex concepts that haven't always attracted positive press coverage. It was vital that we tested our ideas first, because we had such scant resources. Many failed blockchain firms ignored this principle.

The flexibility that AWS gives us, means we can easily hurdle technological barriers and stay true to our core academic ethos – we may think something is a good idea, but until we can test it and confirm it works, it's just a hypothesis.

#### 'AWS has been there since day one'

Right from the outset, even from the beginning of my academic career, AWS infrastructure has been central to the dream. It brings the cost of starting a technology business right down. It cost us practically nothing to get our first watermarking service, blockchain management service, and customer front-end platform up on the cloud – meaning we could test with clients anywhere in the world.

#### 'If what you build works, you need to be able to scale rapidly'

There was the nice risk that if our idea actually worked, we'd need to be able to scale quickly. AWS removed any worry about scaling from day one. We were able to keep costs down and handle the need to scale in an elastic way with [Amazon Elastic Compute Cloud \(Amazon EC2\)](#) and [Amazon Simple Storage Service \(Amazon S3\)](#). Plus, when you switch on transfer acceleration, S3 performs wonderfully as a way to transmit high-quality content from one part of the globe to another.

#### 'We needed to hide the bounty'

With fairly few headaches, we went from an early prototype to seeing a customer uploading a huge job. The hardest part of our video protection service is the watermarking aspect. Watermarking a feature film requires a lot of processing

and you need to find a place to hide the bounty – the bitcoin reward that will sniff out the pirate.

#### 'Find a market segment and own it'

Another early decision was choosing the right market segment. As a startup, we needed to choose one particular niche and own it. The music industry had its 'Napster moment' 18 years ago, so there was no point in us trying to sell into that sector. There was real angst around movie security at the time – everything was moving to digital and Ultra High-Definition content was being leaked very early on in the lifetime of a film, meaning pirate copies of cinematic quality movies were everywhere. Film studios actively wanted new ways to protect their content. We'd found our market.



GET OUT AND SPEAK TO PEOPLE  
AS SOON AS POSSIBLE

**'I met a Hollywood producer also into crypto, who opened doors'**

I went to a conference in Amsterdam in 2014, when the cryptocurrency scene was still in the era of hackers and crypto-anarchists, and met Brock Pierce, a luminary in the Bitcoin ecosystem who's well known in Hollywood. He was a former child actor, but is now involved in production. Brock had the connections we needed and introduced us to the major studios.

**'I kept the Hollywood passes as mementos'**

We were fortunate that our government grant meant we could get on a plane, go to LA and speak to the market. We met with all the major studios in Hollywood. As you can imagine, there is such a rigmarole around getting the badges that allow you into a studio lot. Some studios have these huge, colorful printed cards that say: 'G-J has been invited to meet with 'X' on the lot. Please allow him to pass through the gates.' I kept all the passes; the memories of those visits inspire me.

**'It's a mistake to build first and hope there is a market later'**

While testing is crucial, it's a mistake to build things first and then try to sell them without making sure people are going to want to buy. My advice to new founders is to get out of the door and speak to people as early as possible. Make sure you understand their problems, so you can build your product around actual customer needs.

BUILD YOUR PRODUCT AROUND  
ACTUAL CUSTOMER NEEDS

**'We have a spreadsheet of things that can kill the company'**

From day one, we've maintained something we call the 'Risk Register'. It's a spreadsheet of things that could kill the company, with risks in one column and the potential effects those risks could have in another. Would it be a minor hiccup or an existential threat that could send the company under? Issues around cryptocurrency, especially in the early days, were at the top of the risk register.

**'We're still grounded and have a startup mentality'**

I now spend a lot of time in Los Angeles, as it's the hub for media technology. LA is a world away from where we started, but we're still grounded. We now have clients in various niches in entertainment and education, and deal with films, ebooks and confidential document protection. By a certain definition of success – having a product in the market and solving client problems – we're successful. In terms of big commercial success though, we're not quite there yet.

THE  
LAST  
BOOK  
STORE

'In LA, my go-to place is The Last Bookstore. I spend hours there. It's a beautifully curated selection of books from every genre and every period in history'



HOLLYWOOD

### 'Hindsight is easy, but you learn through trial and error'

It's a wicked thing that you really only start to understand a problem once you begin to solve it. It's perhaps easy to say in hindsight that we should have tried, for example, confidential document security before we tried film protection. But the only reason we know and understand both markets now, is because we've worked with them, trying to solve their problems and therefore winning clients.

### 'We can change the media industry'

Long term, I see Custos as the top company for understanding how bitcoin, blockchain, and media intersect, beyond just piracy tracking. We've identified an opportunity to help media companies run more efficiently and provide better content. That arena is where we want to succeed in the next decade. So watch this space...

YOU ONLY TRULY UNDERSTAND  
A PROBLEM ONCE YOU ATTEMPT  
TO SOLVE IT



## AT A GLANCE



CEO of Custos, G-J van Rooyen, is a former university lecturer from Durbanville, South Africa.



G-J founded Custos in 2013 with a research student, Fred Lotz, and colleague, Herman Engelbrecht.



In 2018, Custos won the Apps Africa award for Best Blockchain Solution.



Custos uses [Amazon EC2](#) and [Amazon S3](#) to help fight online piracy.



[www.custotech.com](http://www.custotech.com)

## FOUNDER STORIES PLAYLIST



Founder Stories



CONCENTRATE



Free To Do  
Whatever  
They Say  
Virginmarys

GET PUMPED



Get Pumped  
Playlist  
AWS

CHILL-OUT



Wish You  
Were Here  
Pink Floyd

Spotify account & internet connection required

**NAVYA**  
be fluid

As a child, Pascal Lecuyot wanted to save the planet. Now aged 30, he's stayed true to his vision. In 2014, the Parisian and three colleagues overcame a series of struggles to launch NAVYA, which manufactures and commercializes autonomous electric vehicles in the US and France. Pascal lives in Paris with his family, who no longer think he's crazy for pursuing his dream.



**Pascal Lecuyot**

Chief Technology Officer of NAVYA

## DRIVING THE FUTURE OF AUTONOMOUS VEHICLES

Driverless cars were once seen as the preserve of science-fiction – technology better suited to Hollywood blockbusters than city streets. NAVYA is helping change that with an array of smart, shared mobility solutions.

NAVYA develops, manufactures and sells autonomous electric vehicles that combine cutting-edge robotic, digital, and driving technologies. Founded in 2014 with a team of just four developers, NAVYA now boasts 250 employees across offices in Paris, Lyon and Saline, Michigan.

**'Driverless cars offer an entirely new experience'**

NAVYA is disrupting transport services, but hopefully in a way that people will accept because we're cutting pollution and congestion, and reducing accidents. Our autonomous shuttles can carry up to 15 passengers, and the cabs carry up to six. They offer an entirely new experience for travelers. There's full connectivity for example, so you can work on your way to the office or have an interactive guided tour of the city. I don't think everyone is going to just dump their own cars and get into driverless ones, but the public is slowly starting to come around to the idea of how these vehicles fit into society.

**'Driverless cars are like Amazon Echo – once people see how they work, the scepticism vanishes'**

We're a generation that's naturally sceptical and used to dealing with fake information, but we're also willing to change our minds quickly. It's like with voice technology and Amazon Echo; people need to experience our vehicles because when they do, their scepticism vanishes. The novelty and fear factor wears off quickly and within minutes of getting in a driverless car, passengers are using their phones and talking about the weather.



My first car was a Peugeot 407. I still have it.

THINK  
OUTSIDE  
THE BOX

crazy ideas



**'My family thought I was insane'**

When I first starting working on autonomous technology, my family didn't really understand what I was doing; they thought I was just having fun. After all, this was 10 years ago and the idea of driverless cars seemed completely crazy. But it's not science fiction, it's reality and it's coming soon. My family and friends can finally see the benefits of the technology and they know I'm serious about what I'm doing.

**'Our technology will change how people move around cities'**

In many French cities, transport systems are really poor. It can be difficult to even get to a train station if you don't have a car. The gilets jaunes (yellow vest) protests in France started because of gasoline prices; people were spending more money to get to work than they were earning and they were angry.

I absolutely believe we can solve transport issues everywhere with what we're doing at NAVYA. We envision our shuttles

changing the way people move around cities, as these vehicles are effective, clean, and intelligent. They can ease road congestion in urban centers, as you need fewer cars on the road and autonomous vehicles can move closer together.

**'Human error causes so many fatalities. We want to end that'**

Helping people and the planet has been my vision for the entire 10 years I've been working on autonomous vehicle technology. I started as an engineering student in Paris, but it goes back further than that.

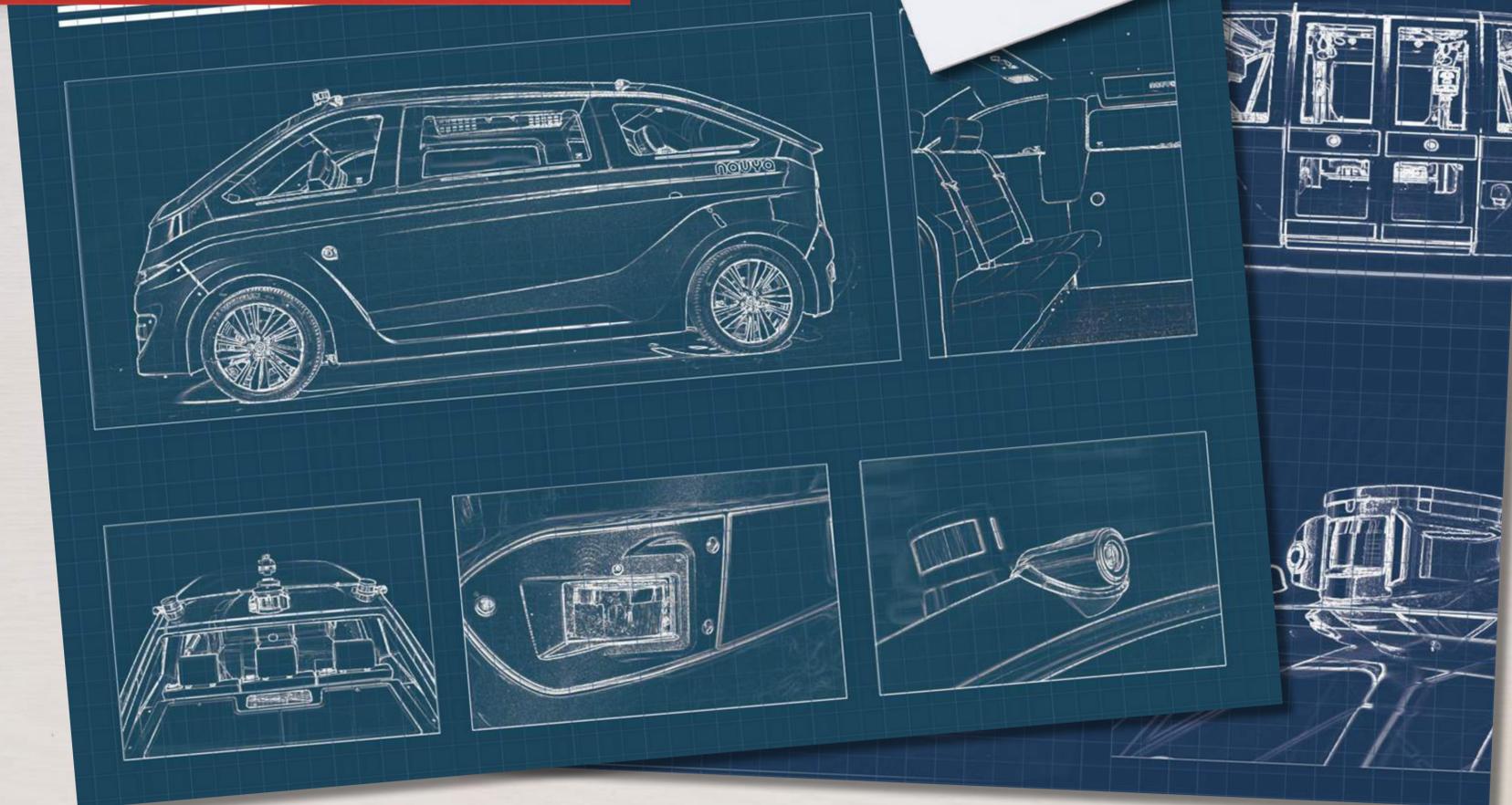
I wanted to work on renewable energy projects originally, but when I saw the potential of driverless cars, I knew this was what I wanted to do with my life and jumped in with both feet. Autonomous electric cars have safety benefits as well as environmental ones, because so many fatalities on the road are due to human error or behavior. Taking the driver out of the equation makes getting from A to B safer.



ADDING VALUE TO THE BUSINESS IS MORE

IMPORTANT THAN JUST HAVING FUN WORKING ON ONE

SPECIFIC TECHNOLOGY



**‘My work has made me a better driver’**  
You have to put safety first when you’re designing an autonomous vehicle. You need to think about braking distances and collision avoidance strategies. It’s actually made me a safer driver, as I have a better understanding of the risks of the road.

**‘I was confident in the technology, even when I thought the company would go bust’**

We worked on a similar project before NAVYA. We had lots of interest from prospective customers in the US, Europe, Asia, and the Middle East, but we were a small team and we struggled. I really thought the technology and the project

were more important than the fact our young business was suffering. Even when we knew the company would probably go bankrupt, we carried on working to achieve something. It almost wasn’t rational, but I was so confident the technology would survive no matter what, and thankfully it did.

In 2014, a new story began and NAVYA was born. The five of us wanted to create something entirely new, not just a new product. We wanted to work with the entire autonomous vehicle ecosystem in France.

**‘You grow up quickly in business’**  
It’s certainly not been easy for our team

over the years. We were a young team, working on a very complex technical project. We’ve had to grow up quickly. Personally, I had to learn that adding value to the business is more important than just having fun working on one specific technology. You have to think about the bigger picture.

**‘AWS helps us focus’**

Early on, we knew we wanted to share skills and began to look for partners. One of the first was AWS. [Amazon Elastic Container Service for Kubernetes \(Amazon EKS\)](#) allows us to scale rapidly with enormous flexibility, as it’s so easy to use. We also use [Amazon Elastic Container](#)

[Registry \(ECR\)](#) for databases and our application programming interface. AWS really helps us focus our resources on our core value proposition.

**‘We’re watching every company in this landscape, large or small’**

The largest car manufacturers, such as GM and Nissan, have the teams and funding to accelerate, so we have to watch closely when they make advances and learn from that. We also talk to very small companies attempting to achieve specific changes in driverless vehicles; we share ideas and look for partnerships in case their technology could help us.

Receipt

Address: 1234 Lorem I  
Phone: 123-456-7890  
Date: 01-01-2014

‘We survived late nights with coffee, tea, and mountains of sushi’

AMOUNT	84.80
Sub-total	76.80
Sales Tax	8.00
Balance	84.80

### 'Don't be afraid to ask for outside help early on'

From my earlier experiences - personally and within the business, it became clear that doing something alone or with four others is very different to coordinating 15 teams of engineers. I think if I'd asked for help earlier, I would have been able to change things faster. My advice to the next generation of innovators is to seek outside help early on and try to connect with people who have achieved what you want to achieve.

### 'My goal is to align business priorities and technologies'

I'm now in charge of multiple teams as Chief Technology Officer (CTO). My goal is to align business priorities and technologies. There are a lot of different teams working on various aspects of the technology, such as the battery, doors, braking system, etc. Some of these teams aren't in-house so I have to pull everyone together.

### 'Get your MVP out to market'

You won't get everything perfect at first, but you need a minimum viable product (MVP) - something with a limited set of features and functions that can be brought to market. It helps you grow and quickly achieve milestones, which gives customers confidence. Our strategy is based on rapid evolution through external feedback.



MVP

A+



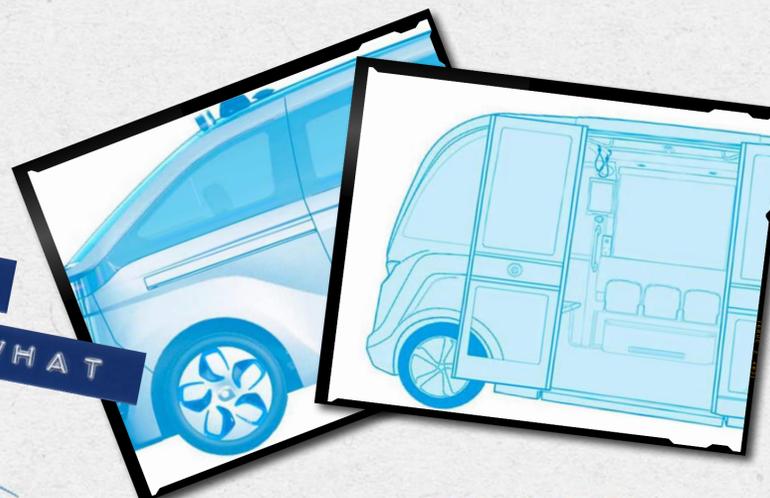
### 'Our first design was a driverless shuttle that moved 100 meters'

Our first prototype was a vehicle moving with a 100-meter trajectory. It would pick up passengers and move them to the next stop. It was just a demo, but showed us the technology could work and we knew a breakthrough would change lives by making our roads safer and our cities more accessible. Fast forward to today and we have more than 100 shuttles around the world and meet a lot of people who are passionate about autonomous vehicles. We're working hard to prove that driverless vehicles are safe to use within urban centers and developing new, innovative designs.

### 'Perceptions of success can change rapidly'

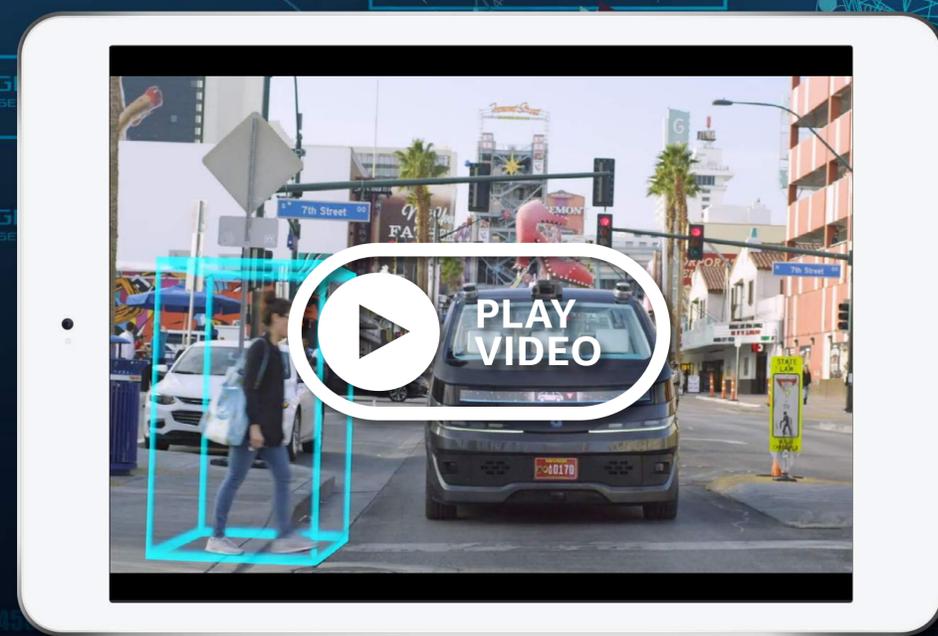
What counts as success for us has quickly evolved from working models to customer satisfaction. It's kind of like the difference between passing an exam and hitting the top grade for all your exams. It's no longer enough to just create something cool.

YOU NEED TO CONNECT WITH  
PEOPLE WHO HAVE ACHIEVED WHAT  
YOU WANT TO ACHIEVE





WE LIVE AND BREATHE THE TECHNOLOGY AND HIRE EMPLOYEES WHO DO THE SAME



'The technology is so exciting' There are some incredibly exciting things happening in driverless technology right now, especially around the capacity for vehicles to predict accurately what will happen. Guidance and detection systems, sensors, cameras, GPS, and odometry (the measurement of distance), all interact and are interpreted by deep learning programs. There are so many technologies at play, from artificial intelligence to LiDAR sensors that fire rapid pulses of laser light at a surface (some at up to 150,000 pulses per second), all to help guide where a vehicle with no driver or steering

wheel, should turn. Our vehicles can make decisions for themselves and that is hugely exciting. 'Passion is one of the top things we look for in staff' We live and breathe the technology, and that passion drives us all; it's definitely what we look for when we're hiring. We want enthusiastic people who like to chat about the technology during their coffee break. The driverless industry is moving so fast and we truly believe that shared, electric, autonomous vehicles are the answer to so many problems of modern city life.

'A 10-minute break is sometimes all it takes to see differently' I don't get much time off, as my wife knows and understands, but I take 10 minutes out to meditate when I can. It's not a huge amount, but when I'm faced with a tough decision, I use these periods to step back and think about things from a wider perspective, clear my head and stop letting my feelings cloud my judgement. Through meditation, I can think strategically.



AT A GLANCE

- NAVYA develops driverless vehicles to transport goods and people. The company was founded in 2014. It now has more than 250 employees in France and the United States. Prior to Navya, CTO Pascal Lecuyot oversaw the mapping and localization software for autonomous shuttles at European projects CATS and CityMobil2.

www.navya.tech

FOUNDER STORIES PLAYLIST



CONCENTRATE GET PUMPED CHILL-OUT. Includes album covers for 'Nocturnes No. 13 in C Minor' by Chopin, 'Pump It' by Black Eyed Peas, and 'Glory Box' by Portishead.

Spotify account & internet connection required

# FOLLOW THE ALCHEMISTS



**JENNA BROWN**

**SHIPAMAX**

Former commodities trader, Jenna Brown co-founded Shipamax in March 2016 as a means to solving the complex task of transforming the bulk shipping industry through smart technologies. Founded in London, Shipamax uses services such as [Amazon Redshift](#) and [AWS Lambda](#) to automate its clients' administration workloads.



**MARKUS HALTTUNEN**

**SMALL GIANT GAMES**

Co-founded by Markus Halttunen in 2013, Small Giant Games has achieved a rare feat – a mobile game that's as profitable as it is popular. The Helsinki-based startup uses AWS to scale up hit game 'Empires and Puzzles' – a game that's been downloaded by over 10 million players. Small Giant Games was acquired by social gaming behemoth Zynga in 2019, for an implied value of \$700 million.



**LEIF-NISSEN LUNDBAEK**

**XAIN**

While XAIN may trace its beginnings to a university project, it's grown into a successful startup, helping customers automate their financial auditing with the help of [Amazon ECS](#) and [Amazon RDS](#). The Berlin-based startup uses blockchain to help organizations share information with confidence. It was launched by Leif-Nissen Lundbæk and his co-founders in 2017, winning the Porsche Innovation Contest that same year.



**GERT-JAN VAN ROOYEN**

**CUSTOS**

Custos was founded in 2013 to apply emerging cryptocurrency and blockchain technologies to fight digital piracy. With ties to Stellenbosch University, associate professor turned co-founder Gert-Jan van Rooyen based Custos at the University's startup incubator, and uses [Amazon S3](#) and [Amazon EC2](#) for cloud storage and scaling. In 2018, Custos won the Apps Africa award for Best Blockchain Solution.



**PASCAL LECUYOT**

**NAVYA**

NAVYA is at the cutting edge of transit innovation, developing autonomous electric vehicles that combine next-generation robotics, digital and driving innovations. Since its 2014 launch in Paris, NAVYA has expanded to the US and grown its operations to over 250 employees. CTO Pascal Lecuyot chose [Amazon EKS](#) to scale at speed and [Amazon ECR](#) for its application programming interface.



# NEXT STEPS

## AWS ❤️s STARTUPS

Launching a successful startup takes more than building on the most flexible, reliable, and scalable infrastructure available today. To help get you started, we've put together some additional resources:

### STARTUPS ON AIR

Interviews with startup founders, CEOs, CTOs, and lead engineers are broadcast live on Periscope. Participating startups share some of their organization's engineering accomplishments and benefit from exposure to a large technical audience.

### AWS TWITCH TV

Twitch offers live streaming event content, live coding sessions, technical discussions, and demos to directly communicate with developers around the world. Catch up with all our content on the AWS channel.

### AWS USER GROUPS

User groups offer startups the chance to interact with each other, answer questions, share ideas, learn about new services, and exchange best practices. They're just one of the many ways our tech enthusiasts and practitioners connect members of the AWS community together.

### WEBINARS ON-DEMAND

Our collection of videos by AWS experts cover everything from transactional SQL and NoSQL databases, data warehouses, and data lakes to best practices for serverless architectures, and building applications using Amazon AI and machine learning.

