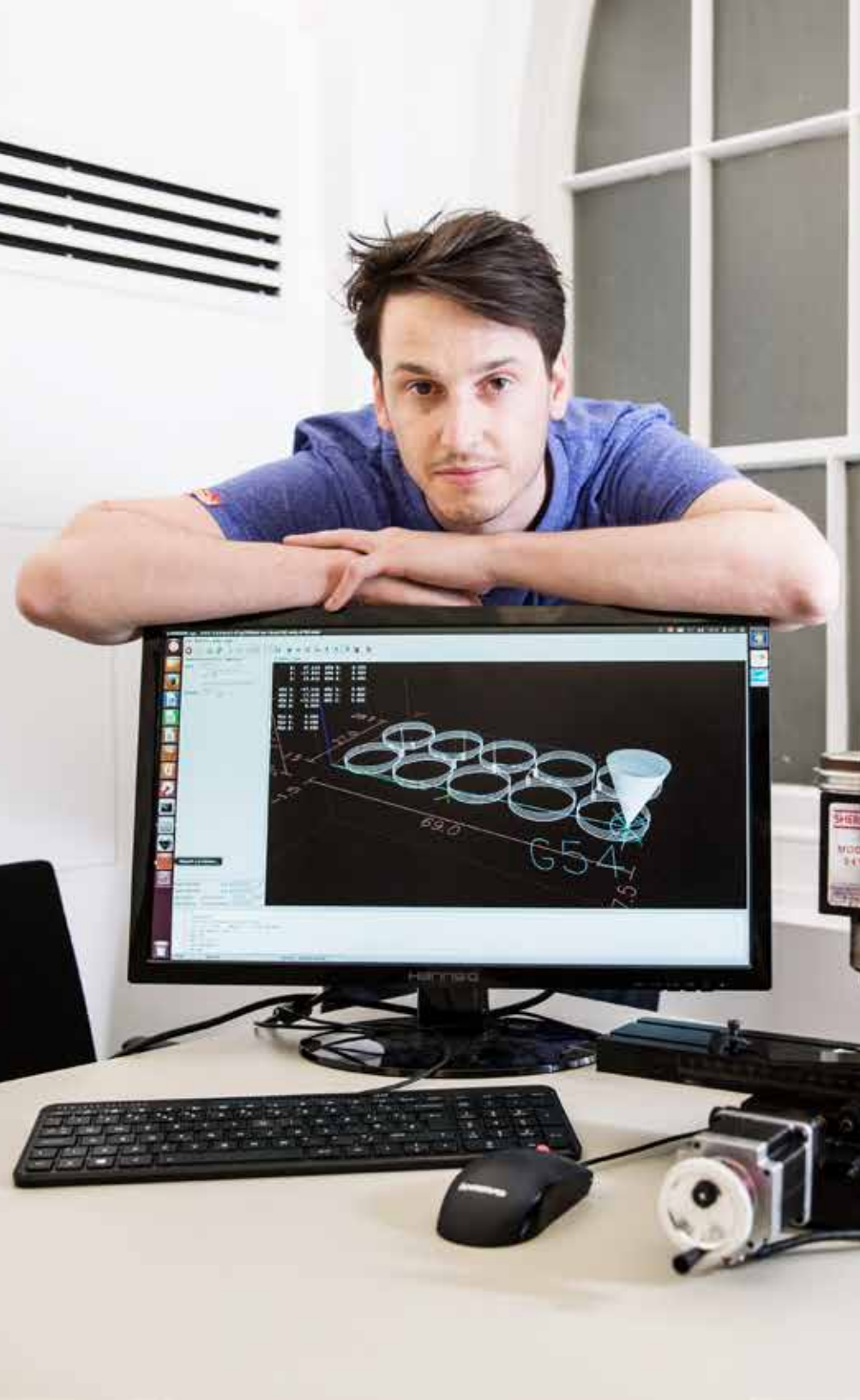


MASSLESS

PRESS KIT 2017



“We are on a journey from a flat world of percussive 2D devices to an entirely new universe of 3D spatial interaction engineered for precision.”

- **DR. JACK A. COHEN**

MASSLESS was founded in 2015 by Dr. Jack A. Cohen in order to solve the problem of precise 3D interaction, focusing first on design and engineering.

Today, MASSLESS is a collection of pioneering engineers, scientists, and designers working to rethink how computers are used from the ground up by making use of the third dimension that has been missing. We create spatial software and precision input tools for the world’s greatest 3D designers and engineers.

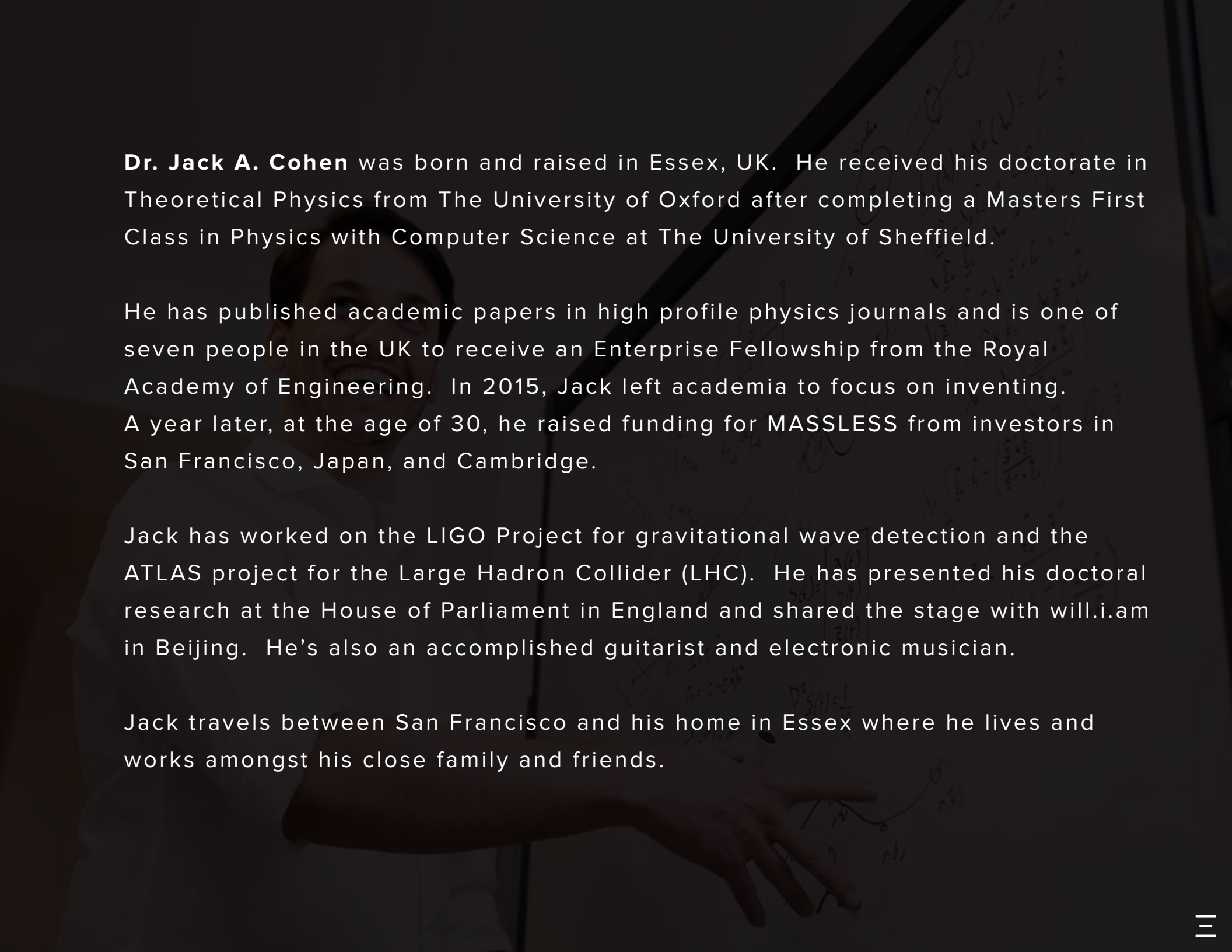
The goal is to provide Sci-fi-level spatial computing to commercial and home offices around the world. When you see computing devices like those featured in Minority Report or Iron Man, think MASSLESS.

MASSLESS launches 1st June 2017 at the Augmented World Expo in Santa Clara

DR. JACK A. COHEN

A man with dark hair and a beard is wearing a black VR headset. He is holding a black VR controller in his right hand, which is positioned near the headset. The background is a blurred indoor setting with wooden paneling.

**“I want
to change
the way
we create.”**



Dr. Jack A. Cohen was born and raised in Essex, UK. He received his doctorate in Theoretical Physics from The University of Oxford after completing a Masters First Class in Physics with Computer Science at The University of Sheffield.

He has published academic papers in high profile physics journals and is one of seven people in the UK to receive an Enterprise Fellowship from the Royal Academy of Engineering. In 2015, Jack left academia to focus on inventing. A year later, at the age of 30, he raised funding for MASSLESS from investors in San Francisco, Japan, and Cambridge.

Jack has worked on the LIGO Project for gravitational wave detection and the ATLAS project for the Large Hadron Collider (LHC). He has presented his doctoral research at the House of Parliament in England and shared the stage with will.i.am in Beijing. He's also an accomplished guitarist and electronic musician.

Jack travels between San Francisco and his home in Essex where he lives and works amongst his close family and friends.

THE MASSLESS PEN

A faster, more intuitive way of working in 3D - the MASSLESS Pen enables designers and engineers to intuitively develop, review, and manipulate large 3D models in real time from within the dataset.

The MASSLESS Pen removes the barrier to productivity and performance that normally limits 3D designers.

Incredible precision with no performance penalty - the MASSLESS Pen delivers 0.05 millimetre accuracy without sacrificing the performance required for high pressure deadlines. This is the most precise tool in VR.



Collaboration the way it should be - MASSLESS finally makes collaboration on large 3D designs work the way we expect - seamless, intuitive, and immersive. The MASSLESS Space enables design review, modification, and collaboration in real time across multiple locations. One party can review the design, give feedback to the designer and see the changes occur in real time while navigating within the dataset.

The best application areas for the MASSLESS Pen are 3D modelling for entertainment, mechanical CAD, and civil engineering.

THE MASSLESS PEN LAUNCHES ON JUNE 1, 2017



SKINNY FAQ

Q: What does MASSLESS mean?

All the things we perceive in the new spatial AR/VR digital workplace are like the objects around us in many ways, except they are an optical illusion - everything in this space is weightless; they are made only of logic and light. Everything is massless.

The greek letters in the name are a nod to physics, which underpins all great interaction and is also important to the founder's past.

Q: How does the MASSLESS Pen work?

A: A specially designed stereo camera called the MASSLESS Tracker precisely locates the position of the pen tip or one of the markers along the pen body. We then combine this information with onboard sensors to calculate its orientation. The MASSLESS Tracker can be attached to Oculus or Vive trackers to be used alongside their systems.

We use the dominant hand for precise input and the sub-dominant hand for controls and action. MASSLESS makes use of the native VR controller (like the Oculus Touch/Vive controller) in the sub dominant hand for option selection because the depression of buttons on the body of the pen adversely impacts the precision of the pen tip within the MASSLESS space.

Q: What are the hardware requirements?

A: A VR ready PC (Google will give you many options), 16GB RAM or better, Nvidia Geforce GTX 1060 graphics card or better, Intel Core i5 are minimum requirements.

If you wanted to start from scratch and buy everything you need to use the MASSLESS Pen then it will cost around \$2000 + MASSLESS pen cost.

Q: What can The MASSLESS Pen do that SpaceMouse can't?

A: One of the biggest problems with traditional CAD software is manipulating the view to see the part of the model you want to work with. The SpaceMouse solves this problem by giving you a controller in your sub-dominant hand that, with a bit of practice, allows you to quickly manipulate the view. The SpaceMouse is always used alongside other input devices like a keyboard and mouse.

With MASSLESS you simply look around the model by moving your head or by using the native controller in your sub dominant hand.

SpaceMouse is view control; MASSLESS is control and 2D or 3D input.

Q: What can The MASSLESS Pen do that Tilt Brush/Quill/Medium can't?

A: The quick answer is that these drawing applications are software where MASSLESS is hardware. For example, The MASSLESS Pen could be used inside these applications but the opposite is not true.

These drawing programs are great fun with the Oculus Touch or Vive controllers but they lack the precision The MASSLESS Pen can provide in both 2D or 3D. We are focusing on helping 3D content creators and engineers by creating a CAD solution tailored with precision needs in mind.

Q: What can The MASSLESS Pen do that other VR Controllers can't? (Oculus Touch/Vive)

A: The Touch/Vive can only perform 3D input tasks; The MASSLESS pen can perform both 2D and 3D input. However, the biggest difference is the advanced tracking system and ergonomic features of a pen that combine for precision input.

Anatomically speaking, there are two major ways you can hold an object. These are called the Power Grip and the Precision Grip. Power Grip is how you hold a baseball bat, a hammer, or one of the current VR controllers. Precision grip is how you hold a scalpel, tweezers, or The MASSLESS Pen.

Typically, when we are around 4-5 years old we develop the Tripod Grip to hold a Pencil. This is a type of Precision Grip where three digits support an object near the tip. This is the most precise way to hold an object. You simply cannot hold any existing VR controller in this way, so you will never be able to operate them with the precision that you can with The MASSLESS Pen. We have engineered the tracking system so it can very precisely and reliably reconstruct the tip position. This combination makes the MASSLESS Pen the most precise tool for VR.

Q: What can the MASSLESS Pen do that Professional Graphics Tablets can't?

A: The MASSLESS Pen can do almost everything a professional graphics tablet can - and more! With a graphics tablet you draw only on the tablet surface. With the MASSLESS Pen you can draw straight on the desk but then you can venture into three-dimensional space. The only feature we haven't included so far is pressure sensitivity in the tip, this is because that no longer makes sense when you are working in the air. We have some prototype designs with alternative solutions but we are going to test how important pressure sensitivity is with our early adopters.

In short, The MASSLESS Pen can be used in three dimensions, and a traditional graphics tablet only two. Why would you sell yourself short of a dimension?

Q: How is MASSLESS Space different from Facebook Spaces or Improbable's SpatialOS?

Facebook Spaces is for social interaction. Improbable's SpatialOS is for massive online games. The MASSLESS Space is for collaborative Design, Engineering and Compute.

Q: How did Jack come up with this idea?

“MASSLESS was born out of the frustration of current computer interaction. Right now I feel like using a computer is a bit like trying changing your clothes in a back of a car. You can do it but you can't do it comfortably. I was finishing my PhD in Oxford in 2013, spending 10hrs a day or more programming simulations of microscopic physics. This is after a decade of studying physics and two decades of programming. I could see much better ways of interacting and creating things in the digital world and I was serious about bringing them to life. I knew that a head mounted display would free us from the confines of a screen, but the cheapest I could find was ~\$1000 from Japan (Sony TMZ-H2) and it wasn't ideal. Then Oculus launched their Kickstarter and consumer VR was born - changing everything. I quickly focused my attention on interaction. I have been building interaction devices and software ever since, with a focus on technical disciplines like design, engineering, and analysis”

Q: Is it true that Jack...?

1. Once lost all his official documents in his excitement to pitch to investors and had to find somewhere to stay in San Francisco with no ID and borrowed cash?
2. Has hand made every part of the device in secret? PCB Design, Mechanical Design, Tracking Algorithms, Programming a Graphics Engine. Soldered the components, 3D printed the Pen, milled the plastic and packaging?
3. Was once compared to Jimi Hendrix in a review of a live guitar performance in Sheffield?

Yes.

**“The MASSLESS Pen is the most precise and intuitive tool for 3d modelling in vr”
- Dr. Jack A. Cohen**





CONTACTS
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Thank you