

ALLEN & OVERY

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FAST FORWARD

Hyperloop promises to change society as fundamentally as railways, the car, broadband and smartphones. But how do you turn the promise of a revolutionary transportation technology into reality? Marvin Ammori, Hyperloop One's General Counsel, offers a personal view of the way ahead.

ALL CHANGE, PLEASE!

IT ALL STARTED WITH SOME EXTRAORDINARY future gazing by Elon Musk, the technologist and entrepreneur behind Tesla Motors.

In August 2013, he published a paper describing a revolutionary transportation system that could move people and cargo between San Francisco and LA at the speed of sound, cutting the frustratingly long journey time from hours to minutes.

That was then...

Now Hyperloop One is making that vision real, bringing this technology to life for the global market at a realistic cost.

To understand the significance of this technology, think back to other breakthroughs that have connected vast numbers of people and created huge social change and extraordinary economic value – railways, cars, broadband and smartphones.

Hyperloop is like those.

Existing modes of transport are congested, unreliable and inefficient. Hyperloop One moves passengers and cargo faster, more seamlessly and at a moment's notice, all at a lower cost and with a much better energy profile.

A Hyperloop One passenger system significantly reduces time and distance – potentially linking Stockholm to Helsinki in 28 minutes, and Dubai to Abu Dhabi in just 20. In the process, it turns cities into metro stops.

And a Hyperloop One cargo system can transform logistics, offering the sort of reliability that can enable new on-demand business models. By using Hyperloop to shuttle freight to inland distribution centres, congested port areas can take in more goods with no added road traffic.

LIBERATING, SAFER AND EMISSION-FREE

I'm clear that the environmental and social benefits offered by Hyperloop One will be really significant, too.

For one thing, Hyperloop One helps us to eliminate direct emissions; propulsion is electric. If fed by a renewable energy source, the entire system is emission-free.

Building our networks does not mean huge disruption. We can tunnel or fit into narrow rights of way, alongside existing highways or railway tracks.

But, I'd say the two most important social benefits of the Hyperloop One system are safety and productivity.

The system is designed to travel above ground on supporting columns, or below ground through tunnels. The pods are autonomous, and you don't get any bad weather in tubes. By removing driver error, weather, and hazards like rail crossings, we eliminate nearly 90% of train or automobile fatalities.

Many governments are starting to assess infrastructure projects based on their ability to give people more time. Hyperloop One scores well on that one, too. People can go from city centre to city centre faster than they can drink a coffee, with departures every 3-5 minutes. This is a technology that can give people back their freedom.

AMBITIOUS TARGETS

This could all be a reality soon. We've set ourselves the goal of moving freight by 2019 and people by 2021 and, admittedly, some commentators have called these deadlines far-fetched.

Well, they are demanding targets, for sure. But we are confident that we can have a proof-of-operation facility completed, somewhere in the world, for a Hyperloop One cargo system in that time frame. Speed and agility are extremely important to us as a company and I'll give you an example.

We needed a new electric propulsion motor and went to the market. They quoted us USD80m and said we could have it in two years. In less than six months we had built our own custom propulsion system – for a tenth of that price. Our team members are hand-picked for their ability to solve problems with their hands and their minds. Our motto, 'Time is more valuable than money', means that we strive to go from design to full-scale prototypes as quickly as possible. And the truth is you learn more if you build at scale, rather than messing around with small prototypes and computer models for too long.

PARTNERSHIP PAYS

We're confident too because we have a handful of commercial partners in different markets eager to help us move quickly through the regulatory process and safety certification to get this done.

Partnerships have been a strategic imperative for us from day one. The global transportation and infrastructure business is a complex one and we are trying to create the first new mode of transportation in more than 100 years.

Our private and public sector partners include AECOM, Arup, SNCF/Systra, Amberg Loglay and GE, among others. Our partnership programme is designed to cover the complete spectrum of infrastructure needs, including construction and design, financing, regulatory reform and safety certification. We're now exploring projects in a number of markets. For instance, we've signed an agreement with the City of Moscow, which promises wider opportunities in Russia. The greater Moscow region is home to 16 million people, and renowned for traffic congestion. Inner city rents are also out of reach for many people. A Hyperloop One commuter network would allow the City of Moscow to fulfil its goal of developing affordable communities further afield, but still only minutes away from the city centre.

One of our investors and partners in Russia is the Summa Group. They see a potentially far bigger opportunity to build long-distance freight Hyperloop networks, integrating the Eurasian Economic Union with China's 'One Belt, One Road' initiative, often called the New Silk Road. Such a project could slash billions from supply chain costs.

The Russian transportation minister has also suggested working with us on building an initial 70km Hyperloop One run between China's mineral and manufacturing-heavy Jilin province and Zarubino, a port on Russia's Far Eastern coast. Fifteen years from now, Zarubino could be a bustling Hyperloop One terminal – free of truck pollution – for goods from Jilin.

In Scandinavia, we are working with FS Links to study a route linking Helsinki and Stockholm in less than 30 minutes, as part of a network carrying 40 million passengers per year. FS Links' ambition is to create a Nordic super-region, with Hyperloop technology at its heart.

Interest has been huge elsewhere too, thanks, in part, to our Hyperloop One Global Challenge – an open competition to identify locations around the world in which we can develop the first Hyperloop networks.

We've asked teams to make their best case based on commercial, transportation, economic and policy analyses of their markets. So far we have had more than 600 registrants in more than 90 countries, everywhere from the U.S. to Australia, Estonia and Lebanon. We think we can get at least a few dozen highly detailed final entries. Our judges will then pick the best three and plug them into our partner network to begin the early stages of commercial development.

THE KEY CHALLENGES

When it comes to funding and project financing, there are clear recipes and playbooks for how to finance an ambitious transportation infrastructure project. Here, our low-cost structure and the outsized benefits we offer investors work in our favour. The real key will be picking the right partners and crafting the appropriate terms.

We anticipate facing some significant regulatory hurdles and challenges over rights of way and safety certification. Indeed, our engineers tell me that they fear the legal and regulatory challenges far outweigh the engineering ones. Our legal team and outside counsel are working hard to make sure that isn't true.

We believe that we can address such challenges through hard work and by partnering with forward-thinking nations and organisations.

We understand that we have to be regulated, but regulation should be appropriate.

LEGAL INNOVATION

Lawyers are absolutely essential to achieving our ambition.

This area of law reminds me of the early days of ‘cyberlaw’, when lawyers had to determine new frameworks for the Internet, borrowing from and adapting existing law. I believe this area of law – what I jokingly call Hyperlaw – will similarly require adaption, tailoring, creativity and analysis.

Achieving our vision requires legal advice across many domains – regulatory, project finance, transportation and technology. Everyone on our in-house legal team feels that we can be part of changing the world through the legal work we do at Hyperloop One, and many of our outside lawyers have expressed a similar feeling.

THE WAY AHEAD

So how do I see things shaping up in ten and 50 years’ time?

Assuming that all goes according to plan, in a decade’s time there should be a handful of Hyperloop One passenger or cargo systems in operation, proving how this technology can transform lives in different settings around the world.

But in 50 years’ time, Hyperloop One will, I think, have redefined our concept of time and distance. Children will have grown up taking the benefits of Hyperloop One transportation for granted – knowing they can oversleep in Stockholm, but still be in Helsinki before their meeting is over.

And our greatest success could be in the developing world.

Just as 3G mobile phone networks have allowed nations to leapfrog the era of landline telecommunications, Hyperloop One could enable people in remote rural locations – who currently don’t have access to a decent road – to connect to urban-quality healthcare and education.

MARVIN AMMORI

General Counsel, Hyperloop One

“I’m clear that the environmental and social benefits offered by Hyperloop One will be really significant.”

INVESTING IN BREAKTHROUGH

Sustaining a market-leading Projects practice means having the courage to move quickly to invest in breakthrough technologies – ones that are as yet unproven, but which could change the world. Hyperloop One fits that bill exactly, say Roger Lui and Gareth Price.

IT'S BASICALLY AN 800MPH METRO – a futuristic transport system moving freight and people through vacuum-filled tubes at the speed of sound.

So it's fitting, perhaps, that A&O's involvement with Hyperloop One came at high speed and somewhat out of the blue when former colleagues of two of our partners coincidentally joined the Silicon Valley company as it was about to start rolling out projects in diverse jurisdictions across the world.

The legal brief was clear. They needed advisors who could combine first class project financing skills, the ability to convince wary investors to back a breakthrough technology and deep knowledge of the knotty transport challenges faced by planners in very different local markets.

TWO PLUS TWO

"We knew we could tick the box for best global projects practice, but we needed to quickly assemble exactly the right team to meet Hyperloop One's exacting needs," says Roger Lui, a partner in Hong Kong.

"And it looked like an exciting opportunity worth seizing quickly," he says. "This is about us going in to build things with them, an opportunity for us to bring innovation in legal technology in the same way they are bringing innovation in engineering technology to their projects in different countries."

A small team of A&O partners – Jon Bevan, Bimal Desai, Anton Konnov, Roger and Gareth – came together swiftly to prepare a pitch and present it to Hyperloop One.

"In the space of 72 hours we got partners from Dubai, Hong Kong, London and Moscow on to planes and into LA having all researched the business and prepared a presentation. We were all on the ground for less than 23 hours – in and out in a day," says Gareth Price, global head of the Projects group.

"It's a great example of collaboration within the firm – that collective strength that we have where we all know we bring something to the party but we also know that, together, two plus two can equal five."

MONETISING TECHNOLOGY – A DIFFERENT TAKE

Hyperloop One had already successfully raised R&D finance. The challenge now is to attract investors across the world to help fund the roll-out of projects in different jurisdictions.

Here the A&O team was able to offer two advantages – deep local knowledge of different markets to help the company broker development deals with governments, public authorities and local partners, and an ability to look at the issue of raising investment from a different, lower-risk angle.

Gareth again: "Tech companies like to say they have invented things. What we told them was – sure you've invented something, but actually what you've done is put together proven, stable technologies in an innovative way, so the risk is lower than it would seem at first sight with a technology that is expected to transport people and goods 800mph in a vacuum through a tube." The conversation started with project finance but quickly turned into a debate about business models and the challenge of monetising the company's technology in different markets so that the company can remain nimble enough to meet very different local needs.

Hyperloop One's needs are broad. It needs help in establishing a presence in new markets, negotiating joint venture agreements, fitting its technology into different and often complex existing infrastructures, protecting and monetising IP, and assistance in raising finance in innovative ways. We are now involving partners from A&O's wider network beyond the lead client team as the wider firm begins to swing behind the client.

PLANNING AND ENVIRONMENTAL BENEFITS

Gareth is clear that Hyperloop One could, if successful, play an important role in revolutionising city and intercity planning and in decarbonising transportation. “To truly decarbonise you need this kind of modal shift in transportation away from burning hydrocarbons,” he says.

And he paints an intriguing picture of how the technology might not only rewrite the economics of logistics, but may also transform our whole idea of the relationship between people, their work, leisure and transport needs.

“Take, for example, the possibility of a Hyperloop One from LA to Las Vegas,” he says. “That would turn Vegas into an evening destination for people in LA – it’s a 15-minute ride. So all of a sudden you’re starting to connect communities in very different ways but with the added benefit of a low-carbon transition.

“And that’s before you get to the conurbation benefit within and around cities. If you can connect employment and leisure with housing on a more remote basis but without increasing commuting times, it starts to be very, very exciting,” he says.

TAKING THE RISK

Roger admits it can be difficult to assess the likely risks of a technology that remains largely unproven, but says it is important to be bold.

“It’s about entrepreneurship and having the confidence in what we know, recognising that we will add value at some point to something quite big. That’s what Silicon Valley was built on and we need to show that we have the same attitude and commitment, particularly with this client.” Gareth agrees. “We’ve been global number one in the projects marketplace for a long time and what we try to do is to look all the time for the ‘next thing’. But we do that knowing that we have a solid platform of deals and the reputation that allows us to make this sort of investment of time in creativity.

“Do we know this breakthrough technology – with all the potential transport and environmental benefits it may offer – is going to work? No we don’t. But do we know that, by being brave and by looking to new technologies and new clients, we stand the best chance of staying number one? Yes we do.”

GARETH PRICE

Partner, Allen & Overy

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