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Why hypersonic flights may not take off in Asia, and the plane makers who hope to change that

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Jamie Carter

Hong Kong to Los Angeles in just two hours is what some supersonic prototype planes are promising, but with a price tag of US\$100 million, it may not be commercially viable

We live in the jet age. The global fleet of aircraft will double in the next 20 years, according to Airbus, and with the United Nations predicting that the world's population is expected to reach almost 10 billion by 2050, the aviation industry looks like it is in a good position for continued growth.

With such positive prospects on the horizon, why are aircraft going at the same speeds as when the jet age started back in the 1950s? Planes now fly further distances and for longer than ever before, but the speed-obsessed supersonic days of Concorde now appear as a footnote in history.

But, not so fast. There are now supersonic planes in the prototype stage that could travel from Hong Kong to Los Angeles in just two hours, or to Sydney in 2.5 hours, according to some of the manufacturers.

Some think it could revolutionise how we get from A to B, but there are technical and business reasons the supersonic age may yet elude us.

Supersonic means to go faster than the speed of sound – Mach 1 or 1,235km/h. It was first achieved in 1947 by American pilot Chuck Yeager in a Bell X-1 aircraft; however, there are now concept aircraft that could take passengers at speeds of more than twice the speed of sound, Mach 2.

Perhaps the most likely of those to fly commercially is the Aerion AS2. Designed by Nevada-based Aerion Corporation (in collaboration with Airbus), the AS2 supersonic business jet is expected to reach Mach 1.5 and can fit just 12 passengers.

[Billionaire's luxury jet to break the speed of sound with help from General Electric \[1\]](#)

So would a supersonic business jet like this find much of an audience in the Asia-Pacific region? "We have the resident billionaires in the region that have the inclination to own one," says Jeffrey C. Lowe, managing director of Hong Kong-based business aviation services company Asian Sky Group. "But if you take the AS2, its range is just 8,797km, so it will not be able to fly the Pacific non-stop, which limits its appeal to the region in my opinion."

The AS2 is the most advanced design concept at present. It began development in 2003. In May this year an engine deal was struck with General Electric, while Aerion found a customer – Flexjet – willing to [buy 20 supersonic planes](#) [2]. "Aerion is the furthest along, yet it still faces substantial design,

Flying Beijing to Hong Kong, a supersonic aircraft would have to get in line behind all the other commercial aircraft and chug along with them – so certainly not supersonic.

market and operational challenges,” says Lowe. Aerion expects the AS2 to fly by 2023.

However, there are a number of other supersonic planes in the prototype stage, and the finished versions of each could cost as much as US\$100

million. Boom Technology’s XB-1 Supersonic Demonstrator, nicknamed ‘Baby Boom’, promises New York to London in three hours, cruising at speeds of Mach 2.2 (2,335km/h). That’s faster than Concorde. It’s supported by The Spaceship Company, a Virgin Galactic spin-off, and by General Electric once again, and carries 45 passengers.

Other contenders include HyperStar, which may have a top speed of Mach 5 for 20-36 people, and the Spike S-512, which travels at Mach 1.6 and carries 22 passengers. “Boom, HyperStar and Spike are all promising a lot, but are still in the scale-model testing phase, and have a long way to go,” says Lowe. Spike Aerospace is planning to unveil a supersonic demonstrator in 2018 ahead of the final design for its S-512.



Jeffrey C. Lowe



There are journeys that would benefit massively from a supersonic surge. Even with a stop, the longest range routes, such as across the Pacific from the US to Asia and Australia, would make hugely significant time savings. Shorter journeys may not be so significant. “If you take China, the flight altitude for aircraft, their speed and flight corridor are all very limited and controlled, all of which will serve to box-in a supersonic aircraft,” says Lowe. “Flying Beijing to Hong Kong, a supersonic aircraft would have to get in line behind all the other commercial aircraft and chug along with them – so certainly not supersonic, and hardly even super.”

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However, there is another big problem with supersonic air travel; when an object travels through the air faster than the speed of sound, it creates immense sound energy as shock waves at the front of a supersonic plane. In its wake, those sound waves combine to produce an audible double boom on the ground. "This is the big issue, and the challenge is to overcome it," says Lowe. "All the manufacturers are taking different approaches." He says some are trying to "eliminate" the sound, some are trying to "minimise" it, while some are trying to "change the laws restricting it".

[When Concorde first landed in Hong Kong, in November 1976](#) [3]

It's the reason that Concorde only flew across the Atlantic Ocean, from London and Paris to New York, Washington and Barbados. Laws against supersonic flight by civil aircraft over land are now being reviewed, and though there's every chance that supersonic jets will be allowed to fly overland, it's likely that they will have to do so at less than supersonic speeds.



That's not put off Nasa, who, with aerospace manufacturer Lockheed Martin, is developing its Quiet Supersonic Technology Preliminary Design (QueSST) X-plane – a successor to Yeager's Bell X-1. Using software as well as altered wing shapes, it aims to reduce the sonic boom to a more palatable thump when it begins test flights in 2021.

[Proposed Airbus hypersonic jet could fly from London to New York in one hour \[4\]](#)

A bigger doubt is the commercial viability of supersonic jets. "We now have aircraft that can fly 18 or 19 hours non-stop, and I'm unsure whether people would want to pay a premium to fly say, London to New York in two hours or less," says Shukor Yusof from Malaysia-based aviation and economics research outfit Endau Analytics.

The development of super-quiet supersonic aircraft at last looks like it could create a new era of hypersonic travel – though it may remain a niche market for decades to come. "It's a fantastic proposition, but it's all about volume at the lowest fares these days – that is why AirAsia, Ryanair and easyJet are doing so well," says Yusof. "I don't know if the general public will buy into supersonic flights – we're doing quite well with existing aircraft."

Topics: Aviation

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[Supersonic jet backed by Branson aims to be next Concorde, offering 'affordable' flights at Mach 2.2 \[5\]](#)

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