

The logo features a stylized yellow and blue swoosh that forms a partial circle around a white and blue arrow pointing upwards and to the right.

HIGH SPEED FLIGHT BULLETIN

May/June 2022

From the Chairman's Desk and Cockpit:

Dear Friends and Colleagues:

Welcome onboard the third 2022 High-Speed Flight-FastForward Bulletin.

This second quarter of the year has delivered some important developments to our High-Speed Aerospace Transportation (HSAT) world.

The European Business Aviation Conference & Expo was held in Geneva for the first time since 2019, reflecting the unstoppable impetus of the general aviation transportation industry to deliver sustainable and fast transportation “direct-to” the places where business and industry exist. From all of EBACE 2022 great highlights, I would like to emphasize the one announcement that is very relevant to our group of HSAT leaders: the announcement of the launch of the Bombardier Global 8000 program. The Global 800, with a top speed of M .94, will become the fastest commercial aircraft in existence since Concorde. And with a range of 8,000 nautical miles, the fastest-longest range general aviation aircraft in the market. The appetite for long range high speed is only increasing, and the backlogs for such aircraft are also growing by the quarter. These aircraft, at circa US\$80 million each, seem to have a loyal clientele who keeps asking Bombardier and the other Mach .92-.93 “fast jet” manufacturers (Gulfstream, Dassault, and Textron) to go faster and further while maintaining safety and sustainability.



All of us in the supersonic, hypersonic, and sub/orbital high-speed flight world take note and are expecting that sooner rather than later, the first demos defeating the Mach 1.0 tyranny of noise, fuel consumption, and emissions will take place mid-decade. We highlight some important developments in this Bulletin, showing that our friends at NASA are continuing the hypersonic business and market case studies to assess specific vehicles that could cater for Long and Ultra-Long range market demands in the sub-100 seat markets. We are glad

that John Olds and his esteemed team of HSAT analysts are taking on this task, and we are sure they will deliver to NASA objective, informed, and insightful results.

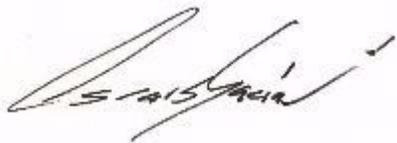
Also, at the end of June, we will attend NASA's Workshop on high-speed aerospace vehicles as an AIAA Aviation Forum peripheral event. We believe this invitation-only activity will be valuable, content rich, and could very well provide foundational technology, design, and engineering data points for many stakeholders in the HSAT world. We will report more in the next Bulletins, quarterly call, and our own HSAT workshop on December 8-9th.

I would like to end this opening statement by sharing with you that last month, I had the privilege of testing once more my Boeing 747-400 piloting and captain skills in the flight simulator, receiving training from two top Senior Captains who fly the 747 fleet for two of the best airlines in the world. The experience allowed me once more to reflect on the amazing proficiency, safety, reliability, and, indeed, environmental considerations that flight crews display every day in our Nation and across the board to provide the world with the safest mode of transportation known to humanity.

All of us in the HSAT world should aspire to one day, after successfully experimenting and maturing high-speed flight technologies and protocols, deliver supersonic, hypersonic, and orbital transportation of people and goods across our planet with the same safety and efficiency standards that our subsonic air transportation colleagues do day in and day out. And our colleagues include the outstanding professionals who deliver air traffic management to the pilots operating the aircraft.

In conclusion, we are as always bullish on the demand signal from the market asking for safe, reliable, and FAST air transportation. We will keep working with innovators, investors, regulators, legislators, and all stakeholders on making the world "smaller" and, as a result, better and happier.

We are only a phone call or email away,
Fly Fast, Fly Safe,...Fly Free!



Oscar S. Garcia
Chairman, HSAT - FastForward Project

[Register for FastForward Group Call](#)



(photo credit: Bombardier)

TRANSONIC

The Global 8000 program will be an 8,000NM range jet with the fastest top speed of any commercial aircraft in the world: Mach .94 or a cool 1,000km/h maximum cruise speed. It is worth looking at in detail; the speed, range, and efficiencies will be baselines for future HSAT vehicles in the supersonic, hypersonic, and sub/orbital speed regimes. The bar is set very, very high! See the Global 7500 break the sound barrier in flight testing (and burning Sustainable Aviation Fuel) and measure the Global 8000 exceptional performance on these videos by Bombardier. Is Bombardier teasing the market with a future supersonic iteration? Time will tell. We welcome Bombardier to HSAT-FastForward.

[Link to: Bombardier Global 8000](#)

[Link to article: "Bombardiers Flight Test Vehicle Breaks the Sound Barrier"](#)



(photo credit: BOOM/United)

SUPERSONIC

Quiet, efficient and clean. These are the three key elements of powerplants for supersonic aircraft coming into service at the end of this decade. We are delighted to read that United Airlines is planning a commercial entry into service for the BOOM Overture fleet of 15 aircraft plus options by 2029. All echoes for the winning powerplant come from Rolls-

Royce and its Liberty Works innovation facilities in the USA. Time will tell if there is more than one power plant provider. I was and still am a fan of the GE Affinity Mach 1.8+ initial concept for Aerion. As I share private and publicly, I believe we will see the Aerion proprietary technology come into the light again soon, and to date, I have no echoes of Aerion filing for any kind of Bankruptcy chapter. I am confident that the Assignment for the Benefit of the Creditors (ABC) announced for the end of 2021 will be revealed in due course. It is no secret that I am a fan of Mach 3 supersonics from Aerion AS-3 and Virgin (allowing for 2-3 round trips across the Atlantic a day). However, I think that given the voracious market appetite for G-650/600/700/800 and Global 6/7/8000 Mach .92-.94 aircraft in the US\$80 million segment, BOOM, and Spike's sub-Mach 2.0 designs will certainly have relevant portions of the market.

The keys that will open the door to the markets, both operators-users and financiers-investors, are held by lower noise-the supersonic overland rule change and decisive sustainability-the use of sustainable aviation fuels (SAF) on supersonic operations. On the noise front, we are watching NASA's X-59 QueSST program closely and its progress seems to be "on schedule," and we have approached NASA to give our group an initial briefing in 2022. We remain ready-willing-and able to support X-59's NASA, GE, and Lockheed Martin in any way we can. On the SAF use fronts, we are glad to see BOOM maintain their strong messaging leadership to the mainstream stakeholders with a very proactive (SAF) supersonic new era from the get-go. Well done, Blake and BOOM team! We recommend to all of you to read and follow BOOM's Sustainable Travel Forum events: [Link to: "BOOM supersonic launches forum to help build the future of sustainable travel"](#) and the [2021 Sustainability Report](#)

[Link to: "United plans supersonic passenger flights by 2029 By Chris Fox"](#)

Technology reporter

Published

5 June 2021



(photo credit: Adobe Via CSIS)

HYPERSONIC

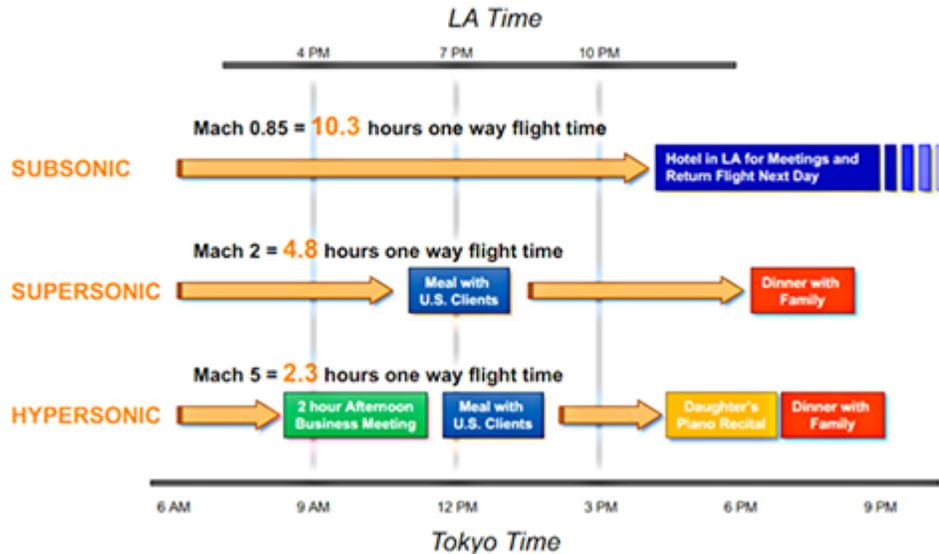
This speed realm is capturing the most momentum as the defense-commercial fusion delivers multi-lateral, Public-Private-Partnership capital and funding. On the commercial

side, NASA's sponsored Hypersonic Business and Market Cases independent studies (Deloitte-SEI and SAIC-Bryce, with IFG's and my personal collaboration as an SME [Link to: Deloitte Market Study](#)) were generally accepted by industry and other HSAT stakeholders. A NASA follow on study titled, "Assessment of Market for High-Speed Travel," is well in progress, and focuses on how fast of a Mach speed is optimal for the hypersonic vehicles' market. We will have firsthand feedback from John Olds and his SEI team as soon as the information is made public, ideally as a main track on the HSAT 5th Edition, December 8-9th at the Midland Air and Spaceport.

The study will examine a range of potential aircraft configurations that are representative of the systems currently planned for development by the aerospace industry. The effort will consider such key design drivers as flight speed, operational range, passenger count, fuel type, ticket price, and fleet size. This work will leverage recent NASA investments in obtaining elastic market trends and identification of the most promising high-traffic routes between cities around the world. The study, I believe, will greatly help NASA, industry, regulators, investors and, other stakeholders to gain further understanding of the potential public benefits that might exist here.

Overall, I am bullish that with the National defense and security hypersonic imperative, we will see the cross-development of commercial HSAT hypersonic vehicles demonstrations this decade and entry into service early next. We are well on track!

The Mach5 Value Proposition: Tokyo to Los Angeles Day Trip



Great circle route = 3950 statute miles. Assumes 20 minutes each for takeoff and landing.

[Register for the HSAT Workshop](#)

(schematic courtesy: Spaceworks Enterprises)

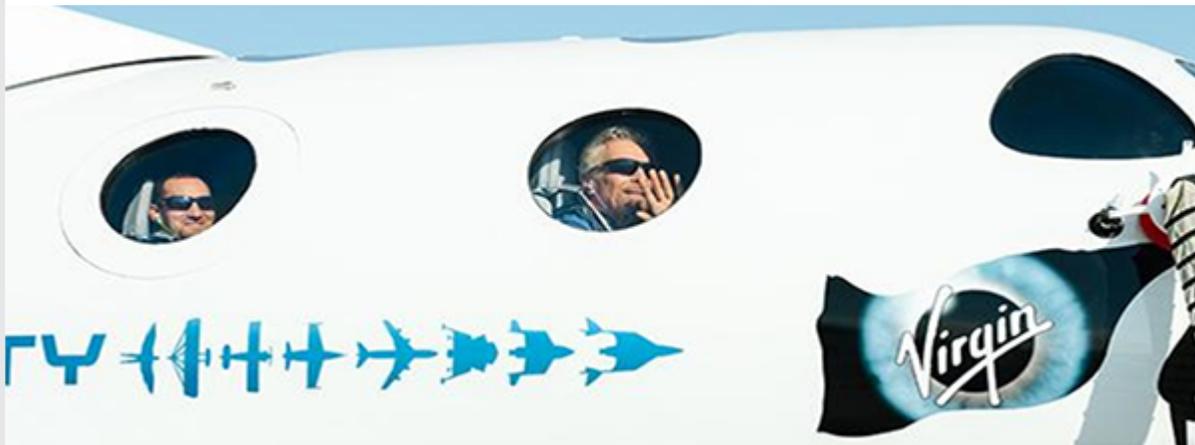
SPACE

I had the opportunity to visit NASA's Johnsons Space Center Mission Control room and facilities in Houston, Texas, right next door to Ellington Air and Spaceport. I have no

doubts that human point-to-point spaceflight space traffic management and control can be achieved as a direct derivative of the capabilities, know-how, and experience that exists today at NASA. The secret sauce could be mixing NASA's spaceflight mission control experience with the airlines Operating Control Centers (OCC's) and the FAA ATC-to-Cockpits day-to-day Instrument Flight Rules (IFR) aircraft separation standards. Now is the time to double down on the Spaceport and Airspace development efforts from all leading commercial space transportation groups such as the Commercial Spaceflight Federations (spaceports Sub Committee), Global Spaceport Alliance (Point-to-Point Working Group), ASTM F 47 Commercial SpaceFlight Federation-Spaceports Sub-Committee, FAA-AST, et al.

As we all know, the Midland International Air and Spaceport in West Texas is the first to be licensed as an FAR 139 active scheduled carrier airport and FAR Part 420 horizontal launch Spaceport. This year, Huntsville International Airport, became the second Spaceport to be collocated with an active scheduled airlines airport. We expect many more to follow, and this is a welcome development for future space HSAT. Here is a press-release from Flying Magazine, which I selected, as this is how the aviation community received the news. We must be proactive and vigilant on the reactions from all stakeholders, particularly those not involved in the commercial space transportation industries; let me know your views:

[Link to: Flying Magazine: "FAA Approves New Spaceport in Huntsville Alabama"](#)



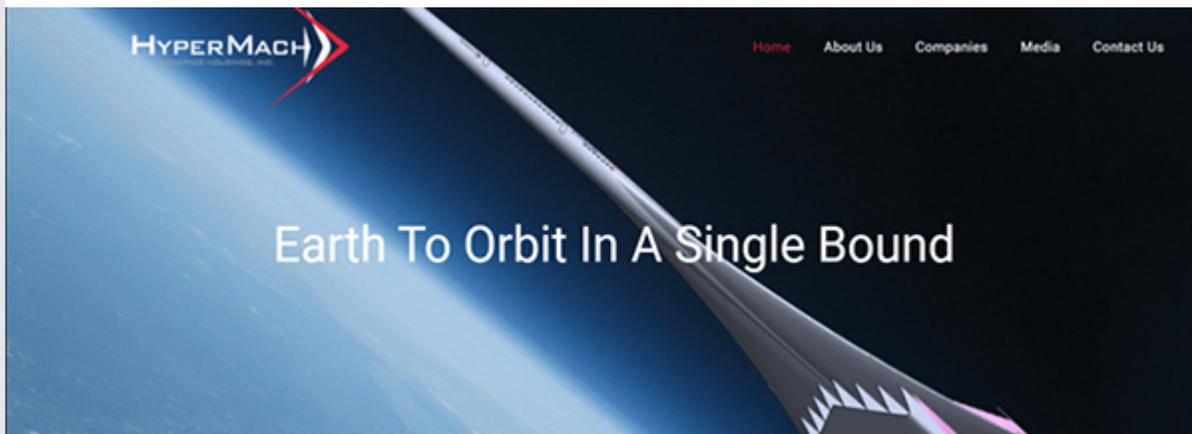
(photo credit: Virgin Galactic)

SUBORBITAL

We follow closely the space tourism commercial flights as they are clear precursors to the future point-to-point operations. Blue Origin is charging ahead with safe, reliable, and precise missions with six flight participants. The last mission on June 4th, NS-21 is interesting, as one of the participants is a friend of HSAT-FastForward, Captain Hamish Harding, who holds the world record flying around the world's two Poles in a G-650ER, in roughly 44 hours. Hamish's appetite for point-to-point high speed flight is known all over the world, and with his first space flight up-and-down, it is a matter of time before he wants to go up-cross range-down, or point-to-point.

Another NS-21 participant, Evan Dick, is also a pilot, and what is interesting is that he has flown twice; NS-19 and NS-21. He is, as far as I know, the only one to have flown twice to suborbital space commercially, and thus the first spaceflight frequent flier. He is also a volunteer for Starfighters Aerospace, one of our favorite companies. Rick Svetkoff is cracking the code of supersonic flight and is a great contributor to HSAT-FastForward [Link to: Starfighters](#). We hope that commercial space tourism frequent fliers quickly transition to point-to-point champions. We welcome them onboard HSAT-FastForward.

We cheer for Virgin Galactic developments and for their return to commercial flights on SpaceShip 2 sooner rather than later. We are big fans of horizontal-winged spacecraft and air-launched vehicles, as their architecture and configurations bode well for seamless integration with airspace corridors and spaceports. Stay tuned, we would be very glad to see a Spaceship 2 back in the air with commercial flight participants very soon.



(website: HyperMach)

ORBITAL

We remain very supportive and eagerly await SpaceX Starship's first orbital flight for several reasons. The most important is that it will be a point-to-point flight departing West Texas, Boca Chica and landing near the Hawaiian Islands coast. This flight demonstration is very meaningful, in our opinion, for the future of point-to-point orbital spaceflight.

[Link to: SpaceX](#)

In May, we had the opportunity to get together with the Founder and CEO of HyperMach Holdings, Richard Lugg. [Link to: Hypermach Aerospace](#). HyperMach is developing the Spacestar, a passenger and or cargo single-stage-to-orbit vehicle powered by an innovative and truly unique hybrid-multi-engine cycle propulsion system called Hyscram. The Spacestar is designed to fly through the atmosphere at Mach 15, and then continuing into space, achieving cruise speeds of up to Mach 25.0 and thus capable of flying 90-minute antipodal spaceport-to-spaceport missions.

The very recent announcement of Spaceport America becoming a Sierra Space Dreamchaser landing site adds to the capabilities of both the spaceport and the vehicle, and to the network-lattice of potential spaceport-to-spaceport (S2S) airspace corridors. We are fans of Dream Chaser, and we foresee possible future advanced derivatives that,

we hope, might include a S2S platform. [Link to: satnews: "Sierra Space + Spaceport America sign Dream Chaser spaceplane landing site agreement"](#)

(website: SpaceX)



EARTH TO EARTH TRANSPORTATION

With Starship and Super Heavy, most international long distance trips would be completed in 30 minutes or less. In addition to vastly increased speed, one great benefit to traveling in space outside of Earth's atmosphere is the lack of friction as well as turbulence and weather. Imagine most journeys taking less than 30 minutes with access to anywhere in the world in an hour or less.

LEARN MORE ABOUT STARSHIP



Intelligent Air & Space
Consulting & Advisory Solutions
Since 1992

Celebrating 1992 - 2022
30



ASTM INTERNATIONAL
Helping our world work better

Committee F47 on
Commercial Spaceflight



University Consortium for
Applied Hypersonics



INNER SPACE TRAINING

IGNITE YOUR MISSION - TRAIN LIKE AN ASTRONAUT

For More input on HSAT throughout this month and going forward, follow us on LinkedIn and Comment on the Postings



The HSAT-FF Groups are Non-Profit wholly owned subsidiaries of IFG, please support us by donating through Patreon today:



HSAT Advertising and Resources Page

For Advertising on HSAT and The Bulletin; Please Contact
yvettegarcia@fastforwardproject.com +1-305-904-5182

Donate to HSAT - FF