# HIGH SPEED FLIGHT BULLETIN

## Quarter 4 - 2023

**From the Chairman's Desk and Cockpit:**

Dear HSAT Friends and Colleagues:

Welcome back Onboard. This is our year end and post HSAT 6th Edition Bulletin, so we will highlight some of the main takeaway and actions derived from the workshop. Most of the conclusions, observations, findings and recommendations will lead to concrete and tangible actions benefiting the high-speed-flight industry. We will report the latest actions and results at our annual state of the HSAT industry Q1 call on March 8th, 2024, stay tuned and **RSVP here.**


As 2023 ended on several high notes for the HSF industry, 2024 looms large with significant progress in the dynamic high speed flight world. As we prepare for the New Year, my personal wishlist includes the harvesting of more DOD and military-defense high speed flight technology (unclassified of course), R&D and IP industry from military and defense complexes to the civil and commercial industries and activities.

Let me open this Bulletin with an important fact; even though 10 X more taxpayer funding (~$4B per year with ~20+CAGR growth) goes to high speed flight R&D, T&E has flowed to the DOD since 2015, only 10% of that  or ~$500B has flowed to industry and public (a.k.a taxpayers) in the whole period 2015-2023. Our groups HSAT, FastForward and High Speed Flight intend to influence that such a 90-10 military to civil-commercial allocation ratio shifts to a more favorable 60-40%, which would enable the 10's of $Billions required for R&D, T&E to enable commercial, safe reliable and sustainable, economic airframes and powerplants well within this decade (emphasis added). We discussed this issue at length at HSAT, and we will lead funding requests to Congress, Government Agencies and PPP entities in messaging and informational campaigns in 2024.

Let us start with a briefing on HSAT's 6th edition, held in Mid-November 2023, which was a resounding success. It was the best attended and most energetic edition to date; and surely it was the edition that took our group to the commitment to lead and promote the HSF industry by decidedly messaging to the public at large that HSF is not only possible, but safe, economic, and sustainable. We want to galvanize our group and to move the public to clamor for HSF and thus move from Industry Push to Market Pull for funding, R&D, and policy developments.

We are strategically planning to advance HSF and enable demonstrations of supersonic, hypersonic, and orbital point to point high speed flight by the end of the 2030's decade. We thank IDEAS for their participation and incisive approach to leading the conversation and public enrollment at the workshop, and we will engage their expertise and storytelling creativity to make 2024 the year when the public "shouts-politely" to all who would listen: "how dare you, fly me around the world so slowly!!!..."


My friend and fellow HSAT Chair, Dr. George Nield and I summarized our views of the workshop highlights, some of our aftermath and thank you letter to participants. Our letter is attached as an Appendix to this Bulletin. You can see the Workshop thesis and supporting materials at our **HSAT Portal and Website**, including our most recent HSAT Thesis as we shared it with the USDOT, FAA, COMSTAC and other agencies, trade organizations, standards development organizations and think-tanks.

The quarter brought us great progress led by the Bombardier's Global 8000 (fastest commercial aircraft program, at Mach .94, and flight tested at Mach 1.07 what we call High Speed Transonics.

Before the HSAT, I enjoyed interacting with the Global 8000 program and commercial executives, and in delivering the presentation on this amazing (and already best-selling fast jet program). It is also important to report that the NBAA-Business Aviation Conference and

Expo in October once more forecasted the highest grows revenues for business and corporate (aka special mission, economic development, enablers) jets, to…you guessed it right, the fastest longest range available to the market today; G-650-700-800, Global 7000-8000 and Dassault 8X-10X aircraft. Speed matters, times matters, and the market is asking for it and paying for it. Much more to follow on this subject.


*(Oscar Garcia & Dr. George Nield at HSAT: Photo Credit: InterFlight Global)*

Decidedly, private, business, and corporate aviation make the world better, richer, cleaner, and more stable. Contact me to discuss further, and yes, I will take a call from Greta Thunberg if she "dares" to contact me.

In Q4, BOOM made significant strides with its XB-1 Baby Boom preflight, high-speed taxi and preparation tests, and importantly, great developments on its Symphony engine and mega factory building. Soon the three pieces will coalesce and the full funding for the R&D required for both airframe and powerplant programs will be there. We are all hands-on deck supporting BOOM as industry advocates, public galvanizers and thought leaders.

HSAT highlights include the outstanding presentations by NASA X-59 QueSST Mission manager, Peter Coen, sharing parameters and desired outcomes of the mission that, in my opinion, could open the high-speed flight world forever, as an overland sonic boom performance standard emerges from it. HSAT also aligned NASA's supersonic and hypersonic technology programs via the Boeing R&T leadership (Dr. Kevin Bowcutt and Todd Magee) facilitating and sharing about both the NASA HSCT studies and AIAA HSF Task Forces. The practical integration of future hypersonic designs, and importantly, the development of aero-derivates (aka technologies to integrate high speed flight vehicles) are key make X-Planes and future vehicles, safe, practical, reliable, economic, and sustainable. IFG and our HSF group, is privileged and honored to be subcontractors, and members on these initiatives and task forces. Join our conversations and add to the insights' exchanges **here.**


*(Dr. Kevin Bowcutt, Oscar Garcia and Todd Magee at HSAT: Photo Credit: InterFlight Global)*

Shortly after HSAT, Boeing-NASA's HSCT Workshop took place at Georgia Tech, in Atlanta, aligning the work of the Boeing team conceptualizing a Mach 2-4 design, as one of the two contractors of the NASA Hypersonic Commercial Transport Airplane. The other team, Northrop Grumman, and its partners is showing great and promising progress. We hope to report on both deliverables (public releases on our September Q3 call, and the HSAT 7th Edition). Follow us!.... and stay tuned, much more to follow.

At HSAT, we reported on Virgin Galactic's 5-6th missions, and increase cadence of proposed flights for 2024. As a public company VG has released figures and data that give us optimism about the financial solvency of the company, and its future. We are bullish that space tourism will soon leap into point to point, and our group and its leadership are ready to assist, support, promote and even fund such initiatives.

We are also delighted that Blue Origin's New Sheppard rocket returned to flight in December, and we give kudos to the flight operations team, Audrey Powers et al, for flying before the end of the year. Even though Blue's New Sheppard is a suborbital vehicle with virtually no cross range, we keep an eye and report on it for multiple reasons, including, first, when Jeff Bezos is ready to go point to point, we are ready to help, second, because every human capable suborbital flight is another step in the point to point future direction, and three, because success in the suborbital flight industry anywhere, means success for the suborbital flight industry everywhere. Much more to follow on this.

At HSAT, we missed our collaborators, friends and admired SpaceX Starship leaders, Ryan Parino and George Sondecker. But we missed them for a good reason, Starship point to point Texas to Hawaii the long way around mission, launched a day after HSAT, and the team was readying the spacecraft. I have been very vocal about my belief that the Starship point to point demonstration changes "everything" when the world realizes anywhere to anywhere on earth can be flown in 90 minutes. The flight took place, gave us a lot of thinking about space traffic management, altitudes for debris mitigation, and integrity of the terminals (departure

and arrival pads), and much more. In the end the flight took place, reached orbit, and was terminated. Progress from the first flight, pad integrity, and surrounding effect mitigate, yet, like Elon says, “no cigar.” We are staunch supporters, and we would like to say to the Starship team…Three is a Charm, Godspeed Starship!

*(Oscar Garcia, Yvette Garcia, Dr. George Nield, Dr. Kerry Buckley, Prakash Subramanian: Photo Credit: Julie Donnelly)*

To wrap all of this up, MITRE Corporation was a star at HSAT and delivered a framework for enabling airspace from Class A through Class E-Upper Class E to Space-orbital integration at all levels. Indeed, HSF will require ATM and STM, seamless and frictionless, if anyone can deliver R&D, T&E and implementation strategies, MITRE is it. We have the honor and privilege to have MITRE’s Vice President for the Center of Integrated Transportation Dr. Kerry Buckley, and her outstanding team, including Sr. Strategist Prakash Subramanian, Executive Leader Dennis Sawyer, Technologists, Tim Gruber, Andrew Anderegg, together with our favorite HSF airspace development long time advocate, and MITRE engineer  Elizabeth McQueen, who has been a staunch leader for the development of high speed corridors for many, many years. Stay close to us, as you will hear amazing progress for the HSAT and MITRE collaboration, surprisingly, in West Texas, where the Nation’s newest, largest, and most commercial 24-7-365 high speed flight corridor is being readied in close collaboration with the White Sands Missile Range (WSMR).

In conclusion, in review of 2023 and in foresight into 2024, this is decade to make high speed flight happen; supersonic, hypersonic, and suborbital, not because it is easy, but because it is hard. Not only to make good business, but because it is the right thing to do. The world wants to connect people and goods faster, the world will be a better place with high-speed flight.

Enjoy the 2023 Q4 Bulletin and as always, Fly Fast, Fly Safe!

Oscar S. Garcia, Chairman
High Speed Flight
www.highspeedflight.com

*Footnote: To capture all relevant events in the quarter, we wrap up our Bulletins halfway into the month following the end of the quarter. This time, the rollout of NASA's QueSST X-59 took place as we went to press. We must report on this event, as it is the beginning of reality on a path to make supersonic flight over land possible and ubiquitous around the world, here is the link to the* ***rollout.*** *Be assured that we will report on X-59 in more detail in our 2024 HSAT Q1 Bulletin. Stay tuned)*

## Register for the HSAT Workshop here!


***(Image credit: InterFlight Global)***

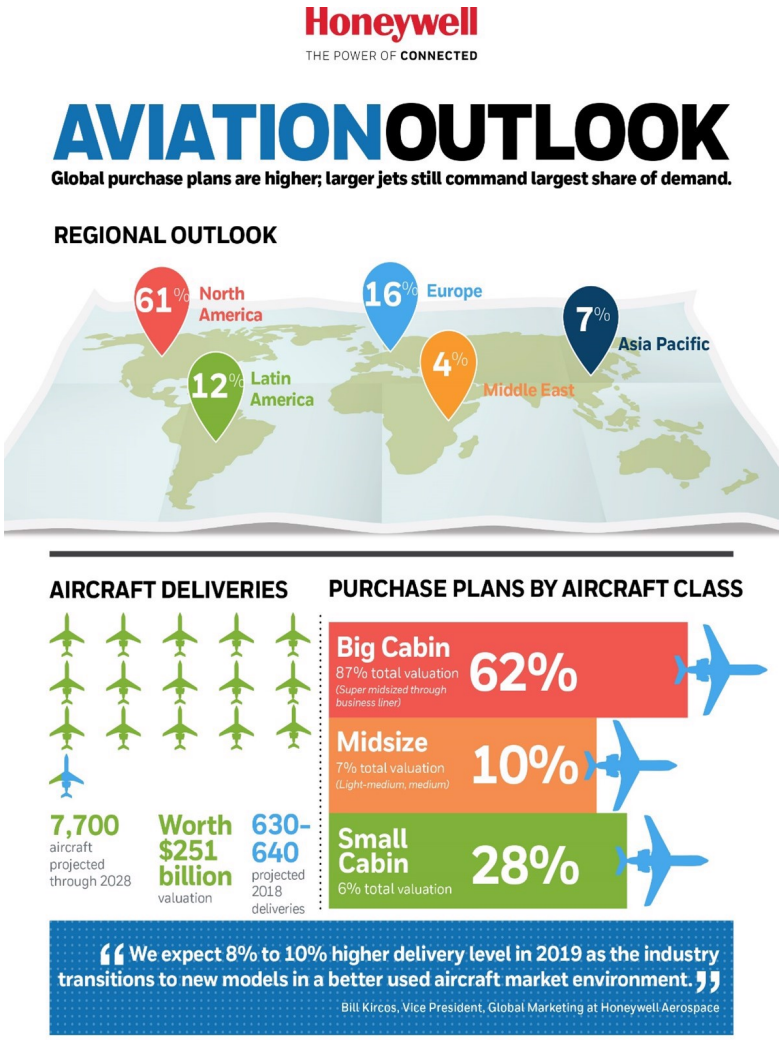
### Transonics

The 32nd annual Honeywell report for the market for long range large very fast commercial and corporate jets market continues to show tailwinds and a robust demand for such aircraft, circa $195 billion in the next 10 years (2023-2034).

The NBAA-BACE show in Las Vegas, reflected such a trend with fast jets representing circa 70% of the new aircraft orders. The backlogs for Mach .90+ capable Gulfstream G-700/800, Bombardier Global 7000-8000, and Dassault-Falcon Jet 8-10X are pegged at more than four years, and we estimate the value is more than $20+ billion.

The tailwinds, however, persist as we discussed at HSAT, sustainability and environmental criticism, and CO2 reduction planning, mainly in Europe, and the USA secondly, address "slower cruising speeds" as the second most mentioned initiative to reduce the carbon footprint of corporate, business, and private aviation. The tables and pictures to the right, were excerpts from my HSAT Workshop briefing on high-speed transonic.

(Image Credit: ***Honeywell - 2023 Report***)




For more discussion and action to take in 2024 to effectively "message" high-speed flight to the mainstream public, please **RSVP** for my 2024 State of the High-Speed Flight industry address on March 8th.

The Bombardier Global 8000, Mach .94 aircraft program, makes it the fastest commercial certified aircraft in existence. The aircraft, as its Global 7500 sibling will be certified through flight tests exceeding Mach 1.07, indeed, supersonic flight. Enjoy the **VIDEO** here.


Messaging is everything, and as we move from Industry Push to Market Pull, we would like to express our support to Gulfstream Aerospace regarding the unfortunate incidents at EBACE-EBAA in May, as environmentalists' protesters disrupted the aircraft static display in Europe. Even though there was no physical damage to planes or people, the psychological and brand impact was noticeable. Was it a coincidence that Gulfstream Aerospace did not display their family of aircraft, mostly Mach .90+ machines? Time will tell. In the meantime, as we discussed and presented at HSAT, we advise everyone and anyone to ask their airlines, congressmen, and community leaders…" *How dare you keep the world flying as slow as we have been flying since the 1960's!!"*

**REGISTER FOR HSAT HERE!**

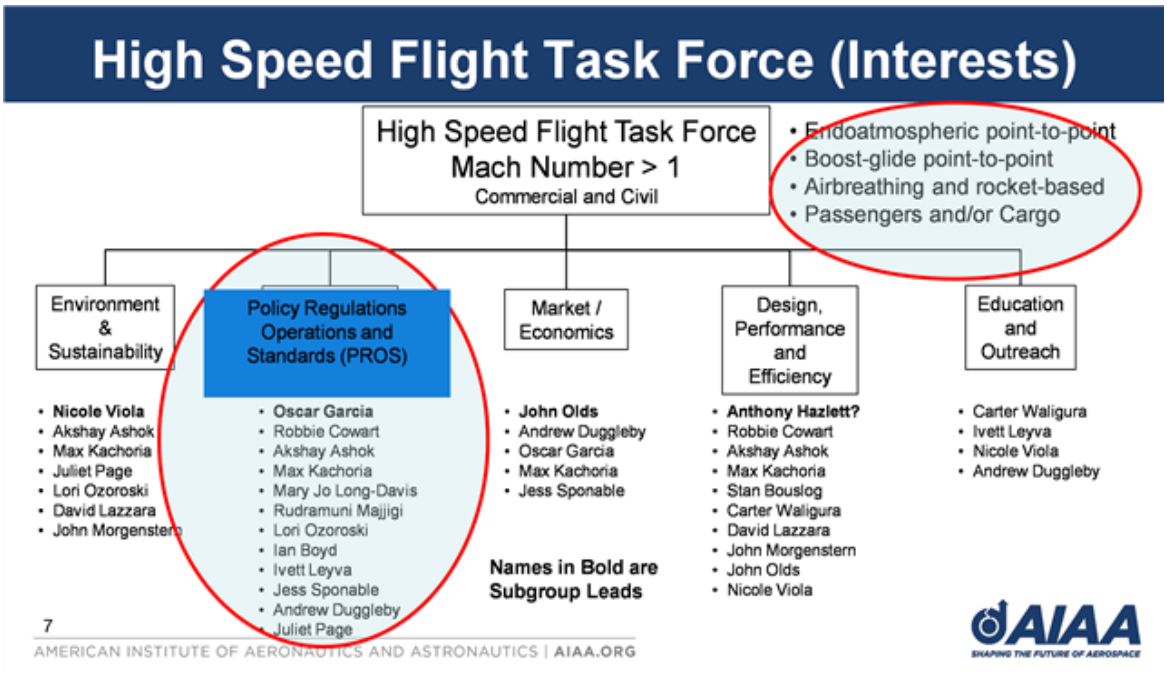
**Supersonics**

An HSAT Workshop highlight was to have **NASA's QueSST X-59** Mission Manager, Peter Coen present the program progress as well as its envisioned performance standards setting activities 2024-2028. QueSST is the undisputed path to removing supersonic bans over land in the USA and across the world. Success looks ever closer with NASA's X-59 QueSST program.

For supersonic OEM's, flight R&D corridors and ranges are essential tools for program development, at HSAT we presented and will continue to make the West Texas-Easter New Mexico massive airspace-range along with the White Sands Missile Range as test grounds for the program. We encourage OEMs to send us feedback on the effectiveness and use of the FAA's Final rule for Authorizations to Exceed Mach 1 (91.817), effective February 16th, 2021. **Link here.**

We remain very bullish on the entry into service of Boom's Supersonic airliners by the end of the decade. We have been collaborating with BOOM's engineers and technical leadership at the **SAE's Supersonic Steering Committee**, led by Judith Ritchie and Robbie Cowart, and a cadre of aerospace experts. In addition, we recommend to all HSAT, High Speed Flight and FastForward Group members to contact me, Robbie or Judith to add bandwidth to the steering committee.

Also, kudos to **AIAA's High Speed Flight Task Force** leaders Dr. Rodney Bowersox (Texas A&M) and Todd Magee (Boeing) for kicking off and enhancing the group's activities in Q4 with 5 Sub Working Groups as per the schematic below. This is a terrific opportunity for any of our HSF-FF-AIAA members to reach out if you would like to be considered for inclusion in the task force. I am proud and honored to lead the recently renamed Policy Regulations Operations and Standards (PROS) Subgroup, with a distinguished group of thirteen aerospace industry leaders.




It is worth mentioning that I am very glad to see Spike's Supersonic Founder and CEO, Max Kachoria actively involved In supersonic standards, technology and regulatory working groups and related activities. I have always been a fan of the Spike S-512 and its innovative enabling technologies, including the Multiplex digital cabin. Blue skies ahead for **Spike**.


*Photo Credit: Spike Aerospace*

*Photo Credit: Spike Aerospace*

Finally, we are following closely, and delighted to see the **Exosonic** Mach 1.8 quiet supersonic aircraft concept, which seems to have many of the X-59's aerodynamic attributes. We believe this design is on the right track, and prone to comply with the performance standard that will come out of the QueSST mission in circa 2028.



*(Photo Credit: Exosonic)*

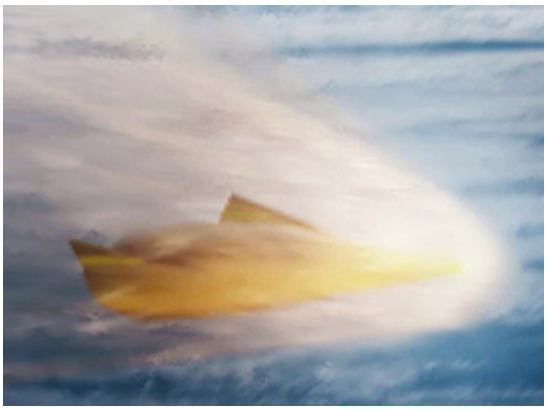

**Hypersonics**

The quest for  a Mach 4-5 Hypersonic Commercial Aircraft (HCA) continues. NASA has tasked Industry to further explore the idea. At **InterFlight Global (IFG)**, we are proud and glad to be of service to NASA, as a Boeing Research and Technology subcontractor for the Hypersonic Technology Roadmap project 12-month contract. The Boeing team includes GE Aerospace, Georgia Tech Aerospace Systems Design Labs, Roll Royce North American Technologies, Reaction Engines and others.

A second team led by Northorp Grumman includes Blue Ridge Research, Boom Supersonic and Rolls Royce North American Technologies. We hope that this study takes us to an X-Airplane that takes flight shortly into the next decade. The good news, as we deliberated at HSAT, is that the quiet boom performance standards will be met and exceeded by hypersonic aircraft flying higher in the atmosphere at circa 80-120,000ft. Stay tuned! **Link: Is a Mach 4 Passenger Jet Possible**

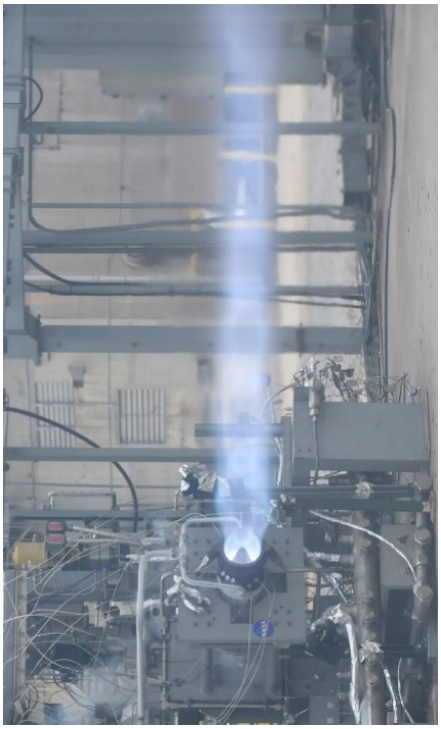
Hypersonic boost and glide concepts keep proliferating, and propulsion technologies, including Rotating Detonation Engines and (RDE) and Rocket Engines (RDRE) keep advancing. The OEM's engaged in this effort, GE, Venus Aerospace and others are closely

guarded about their developments besides what they share with specialized media, such as Aviation Week, Flight Global and DOD technology sharing outlets. The question we have and that we will address in 2024, is whether or not the Advanced Full



*(Photo Credit: Northrop Grumman)*

Range Engines (AFRE) technologies, in the works for over a decade, will incorporate RDE technology. Take a look at the end of 2023 successful tests of a 3-D printed 5,800 pounds of thrust  RDRE. We can unpack a lot of information and infer some of the commercial derivatives from it. Let's share more about RDE and RDRE in 2024.



Closing the year 2023, at HSAT, we shared three promising, yet incipient, new technologies that will bring propellant to powerplants in unconventional ways. Based on the timelines we have seen, all three could be at TRL 9 early next decade and in service mid-2035. Stay tuned, as these are game changing technologies, which happen to be extremely sustainable and compliant with emissions expectations by 2050.

- Beamed energy-ground to air - **Electric Sky**

- Superconducting electric turbines - **Hyper Space**

- Compact-Safe nuclear fusion - **Aero Fuse**

**HSAT Bulletin Archive (2022 and 2023)**

**Sub-Orbital**

The fourth quarter delivered the seventh commercial suborbital flights by Virgin Galactic in 2023. VG is our favorite launch vehicle operator to possibly demonstrate point to point flights in the near future. We are developing flight corridors for suborbital demonstrations in collaboration with the Midland Air and Spaceport and Spaceport America. We applaud VG CEO's move to develop and fly the first Delta-Class vehicles after Unity's 7th or 8th mission sometime in Q2 2024.

**Virgin Galactic 2023 flights at a glance**

**Number of flights:** 7 (Tourism: 3, Research: 1, Test: 2)
**Flight rate:** 40 days
**Total crew:** 32 (VG Staff: 20, Researchers: 3, Tourists: 9)
**Unique crew:** 21

Also, we were delighted and applaud Blue Origin for its return to a New Sheppard flight on December 19th, with an impressive apogee of 347, 208 ft, with a flawless **Postcards to Space** mission. Although not a likely point to point vehicle, the New Sheppard suborbital rocket adds human spaceflight capability, experience and data to make suborbital flying safer, more reliable and predictable. Kudos to VP Flight Operations, Audrey Powers and her team.

*(Photo Credit: SpaceX)*

Let me remind all of you, once more, that the **AIAA Technical Committee on Reusable Launch Vehicles** is a very effective task group to advance RLV's both orbital and suborbital in multiple areas including adaptive structures, structural dynamics, and multi-disciplinary design optimization that develops policy and white papers recommendations.

At HSAT, we had presentations by the US DOD-TRANSCOM and USSF-SFA Texas Chapter about the Rocket Cargo Point-to-Point (P2P) developments, that are moving forward quite well, and in synchrony with each other, as the program is managed by the Air Force Research Lab. The possibilities of future Collaborative Research and Development Agreements (CRADA's) with industry looks promising and each agreement will deliver progress without repetition or duplication of efforts.

At HSAT, we were in direct phone contact with Ryan Parino and George Sondecker, of SpaceX and confirmed the launch was proceeding as planned, with apogee predicted in the 750,000 ft range. The launch took place a day after our workshop, on Saturday December 20th. The workshop attendees discussed the threshold of orbital debris being a factor, and

indeed, Starship suborbital trajectories, even on antipodal distances of circa 20,000Km, will not reach the circa 1,200-400,000 ft or 400 Km where orbital debris might be a factor. Starship second stage blew up, yet, at the time of writing this bulletin, the cause was found to be a liquid oxygen leak due to fuel tank venting as the vehicle had no payload. Had it had a payload, the mission would have been completed successfully. We look forward to the February 2024 third try (a charm, hopefully), and a year of many Starships point to point demonstrations.

At the HSAT Workshop, and in the context of Starship, we opened the Spaceport to Spaceport (S2S) Airspace White Paper and agreed to produce a version 2.0 which will advance its contents to enable suborbital trajectories to include Collision Avoidance Analysis (COLA) required by the FAR 450, for flights above 450,000ft. We were very proud and excited to have the MITRE Corporation subject matter experts, strategic and senior leadership, who provided valuable inputs for further development of S2S airspace to include upper Class E airspace management.

At HSAT we enjoyed having Radian Aerospace's engineers, and listened with interest to Esther Deena's presentation, a young and up and coming space flight lead to our HSAT workshop and learned a lot about the innovative take off technologies, Thermal Protection Systems and what we consider one of the most capable and viable spaceplanes ever designed. We are very bullish on Radian, knowing the very capable team that leads it, **Radian Aerospace**. Its tagline says it all: Spaceflight with the ease of Air flight. Way to go Livingston, Jeff, Richard, et al.

RADIAN
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**Final Words**

As always, HSAT Bulletins, calls and interactions will cover the latest in the HSAT state-of-the-art key dimensions in the key areas including technology, best practices and standards, regulations and commercial drivers and key performance indicators.

This Bulletin includes two annexes. One is our Thank You to all HSAT attendees for participating and contributing to make point to point high speed flight a reality. And also, an invitation to attend the HSAT Workshop 7th Edition scheduled to be on November 14-15th, 2024. RSVP, the registrations are already coming in, and we will make a lot of great additions to our program, with groups such as SAE, AIAA High Speed Flight Task Groups, and many more. Register today and take advantage of the Early Bird Rates!

Lastly, our very own HSAT leadership, is always working on a possible suborbital HSAT point to point demonstration vehicle, which we hope to announce before, or at HSAT's 7th Edition Workshop in November, stay tuned. This demonstration flight could be a fulcrum for the world to tell us "fly-me-fast-now."

Finally, our Point to Point Working Group works in collaboration with our strategic partner, the Global Spaceport Alliance (GSA) and this year the SAE Supersonic and Hypersonic Steering Group, as well as the AIAA Reusable Hypersonic and Launch Vehicles and High-Speed Flight Task Groups.

HIGH SPEED.AERO SPACE TRANSPORTATION 6th EDITION WORKSHOP

Presented by:

IFG · HIGH SPEED FLIGHT · GLOBAL SPACEPORT ALLIANCE · MIDLAND DEVELOPMENT CORPORATION · Midland International Air & Space Port

**High Speed Aerospace Transportation (HSAT) Workshop 6th Annual Edition 2023**

**Thank You from the Workshop Chair and Co-Chair**

Dear HSAT Industry Colleagues and Friends:

Thank you for attending, participating and contributing to the 6th edition of the High Speed Aerospace Transportation (HSAT) Workshop. Dr. George Nield and I are honored to once more have collaborated with all of you in this workshop.

We believe that you are all key stakeholders and recognized leaders, enablers and experts in the HSAT industry in all its key disciplines.

At the workshop, we shared that the high-speed aerospace transportation (HSAT) potential market size and economic impact is forecast to possibly be in excess of four trillion dollars. We also identified many of the impact areas, societal, civic, political, defense, security and economic development, where the HSAT will very likely make historical positive differences.

This year's Workshop was extraordinary in terms of attendance, presentations, discussions, and most importantly, the valuable takeaway insights for further research, messaging and actions to take in 2024. The Point to Point (P2P) flight opportunities that the HSAT industry presents is clearer and more tangible than ever before. On the other hand, the challenges that we identified, such as the messaging to the mainstream public, will require focused effort from all of us to capitalize on the opportunities across all speed regimes: transonic, supersonic, hypersonic, and orbital.

A highlight of the 6th HSAT Edition was the briefing from NASA X-59 Quesst Mission Integration Manager, Mr. Peter Coen about the actions to produce a global standard to possibly enable supersonic, and hypersonic flight over land within the decade. We also

made further inroads in areas such as propulsion systems, sustainable propellants, sonic boom noise standards and airspace integration into the very mature and dense "subsonic" airspace system. We also advanced the analysis of economic, financial, markets and business cases in collaboration with leaders from the AIAA and Boeing's Hypersonic Reusable Vehicle Task Group , and many others.

This year we definitely turned a corner in terms of an action plan for the "messaging" that the stakeholders outside of the HSAT growing ecosystem need to receive in order to be excited and galvanized by the possibility of a world that can be crossed in an order of magnitude faster time. From hours to minutes. We thank our friends and professionals at the IDEAS group for making what last year we considered an "intangible" challenge into a clear roadmap with "tangible" measurable results. Successful messaging implies moving forward to create a "demand for flight speed" signal by the mainstream public to airlines, regulators, Congress and will be a center of gravity on its own in our next HSAT editions.

We further developed the comprehensive HSAT-P2P Issues-Work-Matrix that is built on 6 years of HSAT gatherings. The HSAT Matrix presents key conditions, frameworks, challenges, opportunities, and markets including ground and air infrastructure con-ops, design and engineering, economic, regulatory, and operational feasibility for commercial, military, government, and NGO's use.

Some of the HSAT very practical solutions and initiatives that we identified together will be summarized and presented to all of you in our Q4 HSAT Bulletin to be published in January 2024. Please, keep sending us your constructive inputs, and share with HSAT participants and relevant industry leaders and observers.

We will further discuss action plans and activities at the **Global Spaceport Alliance (GSA) Spaceport Summit in Orlando, Florida, on January 29th, 2024**.
and then at the **FastForward Project STATE OF THE HSAT INDUSTRY Quarterly Conference call on March 8th, 2024.**

Thank you once more for your leadership to enable the safe, efficient, profitable, and scalable future of high-speed aerospace transportation. Please complete the **HSAT Survey** here to ensure we improve year on year.

It has been our honor to chair this event together with our hosts and sponsors and we look forward to the **HSAT 7th Edition**, which is tentatively scheduled for **November 14th-15th, 2024**. The **RSVP** Window and content feedback links are open now!

Oscar S. Garcia, Chairman & CEO, InterFlight Global Corporation

& High Speed Flight - Fast Forward Group

Dr. George C. Nield, President, Commercial Space Technologies, LLC
& Chairman, Global Spaceport Alliance

**Register Today!**
**HSAT 2024 - 7th Edition**
**High Speed Aerospace Transportation (HSAT) Workshop at the Midland International Air & Spaceport, Texas, USA**
**November 14th & 15th, 2024**
**www.hsat.highspeedflight.com**

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