

Testimony before the
Subcommittee on Space and Aeronautics

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Mr. Demisch is an owner of Demisch Associates LLC, an aerospace financial consultancy. He has over 30 years experience as an analyst and banker in the Aerospace and Technology sectors. While a research analyst covering aerospace and computer technology, he frequently was ranked a leader in these fields by Institutional Investor Magazine. He later established and managed the US Equity Research department for UBS. He subsequently moved to the investment banking side of the business, where he helped implement transactions such as the 2002 purchase of GE Americom by Societe Europeenne des Satellites. He has served on the NASA Advisory Council and numerous NASA panels, including small satellite technology, space station alternatives and commercial uses of space. In 2003 he established Demisch Associates LLC to provide advisory services for investors considering acquisitions in the aerospace and technology sectors. A frequent guest on financial TV and speaker at industry meetings, he is a member of Wall Street Week with Louis Rukeyser's Hall of Fame. He has served on the Board of Directors of SAIC, an employee-owned professional services company, since 1991. He is a graduate of Princeton University and the Harvard Business School.

Mr. Chairman, members of the subcommittee, honored guests. Thank you very much for the opportunity to appear before you today. My name is Wolfgang Demisch, I am a principal in Demisch Associates LLC, a financial consultancy oriented towards the aerospace sector and I have been active in aerospace financial matters since the early 1970's.

You have asked me to address the outlook for the commercial space launch business, as well as to forecast when space would attract classic risk-reward investors to succeed the 'angel' investors we see today, investors such as Paul Allen, who funded the Spaceship 1 development. The goal is to help the Committee recommend what the Congress could or should do to encourage commercial space endeavors, as called for in the NASA charter.

Your hearings come at a challenging time for commercial space. While the benefits of commercial space are now so embedded in our economy that they are taken for granted by anyone who goes on a hike with a GPS, to give just one example, they have not been well rewarded in the financial arena. To highlight the problem, over the past four years, the bulk of the world's civil communications satellite fleet has changed hands, for an aggregate price roughly equal to one year's NASA budget. This represents a disappointing return to the industry sponsors; even without factoring in the additional losses on restructured projects such as Iridium or the costs of now quiescent launch ventures such as Beale or Kistler. The consolation, if any, is that the buyers, firms such as KKR, Carlyle and Apollo, are almost a roll call of the world's most astute investors. Their actions demonstrate that they see outstanding risk-reward value in commercial space, notably the communications segment, where substantial purchases could be made.

That commitment to space based communications however does not invalidate the painful reality that access to space remains too costly for most commercial endeavors. At present, the price per pound to low earth orbit is in the \$10,000/lb class, depending on the vehicle. It is not much changed, on an inflation adjusted basis, from the roughly \$1000/lb achieved by the Saturn V booster in the 1970's. Today's price translates readily into the \$20 million fare paid to Russia by the first space tourists, who arguably got a bargain, as their life support and training was included. NASA would have to charge several times as much to cover its costs, if the Congress were ever to encourage such a use of NASA's fleet.

Clearly space launch costs are on a much lower productivity track than the microelectronics or computing sectors. This is so despite Congress' solid support of cost reduction efforts, first with the reusable Space Shuttle, then with the commercially derived EELV, neither of which achieved the savings anticipated. Regrettably, I am unaware of any credible proposal to achieve the desired substantial cost reductions. The propulsion breakthrough, which would be a prerequisite for a much better cost performance, is not in sight. Hence it would seem prudent to set policy on the basis that no substantial launch cost reductions are to be expected.

Access to space will stay expensive until we can achieve something like the proposed space elevator that Arthur C Clarke among others has written about. This seems a plausible technology. Consequently, I enthusiastically applaud NASA's Centennial Challenge program, which will, I believe, help mobilize the needed talents to realize the materials and power technologies that underpin such a transformative capability. This effort, although still far from fruition, is worthy of your consideration in my view.

In the interim, perhaps for the next two or three decades, it will remain uneconomic to send anything other than information up into or back down from space. This suggests that absent some astonishingly serendipitous discovery, a cancer cure for instance, entry to space will grow about in line with the general economy, rather than some multiple thereof. It also suggests that there is not much to be gained from an effort to force feed the launch sector

A more promising approach to improving the economic efficiency of space flight, in my opinion, is to accept that space payload is hugely costly, 10 pounds per man-year at current engineering rates. At that price, it is worthwhile to invest to shrink the payload weight needed to perform the desired task. NASA has used this technique with considerable success to trim the mission cost of its interplanetary probes. While the approach has limitations, because of antenna size and power requirements, because of packaging constraints as well as because of people life support needs for manned systems, it is surprisingly powerful, especially when considering that several smaller spacecraft can cooperate to emulate the performance of a larger platform. There is plenty of scope for payload improvement, including better sensors, more efficient solar cells and batteries, lighter structures and more efficient communications. The product applications exists in the broader defense market as well as in space, plus such improvements eventually find application in the larger economy. While unglamorous, such initiatives are well suited to the NASA culture and likewise deserve your continued support.

Congress has been consistently supportive of commercial space. While it has thus far shied away from the kind of aggressive operating incentives that early in the last century helped bring the national air transport system into existence, Congress has been generous, even beyond the massive launch vehicle investments. For instance, Congress allowed duopoly positions for the satellite radio business, just as it blessed the enormous frequency allocation granted Teledesic to support their space based broadband project. Such in kind support, reminiscent of the land grants that financed the transcontinental railroads in the 19th century, remains an important component for commercial space ventures, but appears inadequate to catalyze major new industries of the scope and stability needed to transform commercial space into a risk-reward investor's area of interest. Commercial space enterprises are currently centered on the communications and broadcast sectors. While there have been new services brought into being here, most recently the direct radio broadcasters Sirius and XM Radio, others such as DirecTV have been acquired by larger media powerhouses. For these entities, space is a minor component of the overall investment thesis.

There may however be other drivers for commercial space, initiatives that respond to Congressional mandates regarding national security for instance. For example, there is not at present any effective surveillance of the millions of containers that flow across our borders. While the TSA and US Customs have begun to institute some monitoring, both at the point of origin as well as at the port of entry, there is no watch on these trailer sized structures while in transit or while in the US. Satellites offer the capability to maintain that watch worldwide, provided each container is equipped with a suitable black box that checks its status and reports intrusions. This type of self-assessment is of course readily extended to include measurements of commercial interest, such as temperature or vibration, which then facilitates better product quality control, as well as of course electronic documentation for faster and easier customs clearance.

Such monitoring will, in my view, be a matter of routine within the decade, because it responds to a more pressing security need. Other initiatives, for instance to shift much more of the air traffic control responsibility to satellite based navigation and communications links, will take longer to achieve broad acceptance. However, services such as these, providing critical infrastructure support, appear to be the kind of reliable revenue generators that risk-reward investors eagerly accept. They may begin the transition the committee asked about.

Thank you for your attention.