



**The Future of NASA: Perspectives on Strategic Vision
For America's Space Program**

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Chairman Hall, Ranking Member Johnson and distinguished Members of the Committee, when as Chair of this committee, I authorized the installation of the plaques behind you, the timeless words on the plaques were meant for hearings such as this. If you believe as I do that humankind's destiny lies in the stars, and if you believe as I do that NASA should be an instrument in the fulfillment of that destiny, then the work of preparing NASA for the daunting challenges of strategy, budget and relevance in the 21st Century is truly the work of shaping the future.

The recently released report by the National Research Council does a comprehensive job of detailing the challenges that today's NASA faces—lack of agreed upon direction, lack of adequate resources to do all that is asked of the agency, aging infrastructure, the emergence of other space-capable nations, the collapse of some international partnerships, the rapid pace of new technology development and the increasing irrelevance of the aeronautical research program. Much of this landscape cannot be laid wholly at NASA's doorstep, but its culture based on the successes of fifty years ago contributes to these problems.

NRC provided four options for addressing an uncertain future. I chose Option 2: "Engage in and commit for the long term to more cost-sharing partnerships with other U.S. government agencies, private sector industries and international partners." Within that option, I will emphasize the public-private partnerships because I believe them to be the best way to obtain the resources so vitally needed to make NASA's missions achievable. I say that mindful of the fact that one of the most important cost-saving measures that could be implemented in our space program would be to use the totality of U.S. assets for U.S. purposes. It makes no sense for NASA to spend billions on development of technology which is already available or under development by other sectors of the government or private industry. Some available technology may have to be modified to meet specific NASA objectives, but the bulk of the costs can be shared. NASA's basic role must be to do projects that push the envelope of what we know. High risk will lead to new technologies. That combination of risk and reward will underpin the next generation of space knowledge and products.

Science and technology leadership requires a much broader view of the space community than has been traditional. If NASA is to have the resources it needs to maintain a preeminent world role, it must expand its funding base by reaching beyond a narrow aerospace focus and beyond the authorization and appropriation process on Capitol Hill. I say that latter point with all due respect, but the reality is that no Federal budget in the foreseeable future is going to provide NASA with the money it needs to do everything we want it to do. NASA must see entrepreneurship and enablement as key components of its science, technology and exploration programs. NASA can extend its reach and find new financial resources by opening its doors wide to collaborative programs that allow any and all American space entrepreneurs, willing to pay for it, access to NASA expertise.

There are some positive signs that NASA sees merit in this approach. The commercial cargo and crew programs are encouraging. The use of NASA infrastructure by private sector participants is welcome. But Congress needs to expand the authority to move even more aggressively in this new direction. Too often the steps taken, thus far, have been grudging because they really do represent a significant cultural shift.

But that shift has been endorsed by several recent commissions that looked at NASA's future and became concerned. A commission I chaired in 2002, one that Pete Aldridge chaired in 2004 and one chaired by Norm Augustine in 2009 all reached the conclusion that commercial activity in the form of public-private partnerships is a key to space leadership. The Aldridge Commission in particular called for

broadening the space related community and restructuring NASA to interact with that community. In turn, it was believed that NASA could benefit directly from that expanded community as it attracted outside investment in its activities and used its people and facilities to enable progress on many space fronts.

A larger network of people and industries with a direct tie to NASA has to be a part of a strategic plan. It begins with buying available services from non-traditional sources. It evolves to a NASA prepared to see multiple, non-traditional opportunities for new funding for its programs and activities. We already know there is interest. New companies have been created to provide services to NASA and pursue business beyond NASA. Those companies should not be seen as rivals or detriments to NASA. They are instead the outgrowth of past NASA successes prepared to learn from what NASA has achieved and poised to grow the U.S. presence in the world space enterprise.

Moreover, thinking in non-traditional, entrepreneurial ways potentially can access \$10s of millions, perhaps \$100s of millions, of private investment in NASA activities. If NASA programs and centers were restructured to take advantage of a flow of private capital, there is no end to the potential collaborations. For example, sports teams in this country reap 100s of millions of dollars in sponsorships without impact on their basic mission. Would anything in the science, aeronautics or exploration missions be harmed if the names attached to particular projects were sponsored? I can't imagine why. These sponsorship dollars could be structured to remain outside the appropriations process increasing the amounts of money available to NASA and at the same time avoiding, to some extent, the vagaries of the annual appropriations cycle. And what kind of money is conceivably available? To pick a high tech example, Formula 1 racing, sponsorships pay for operations costing \$200 to \$300 million a year. That's enough for a whole space flight.

NASA as an entrepreneur and NASA as a space enabler for a growing U.S. space enterprise is how we address resource problems and assure that the NASA of the future is wholly relevant to our nation's economy. Congress will have to be willing to make the adjustments necessary to access that kind of future. But when the Go Daddy rover is traversing Martian terrain, we will be more solidly on our way to fulfilling our destiny in the stars. Moreover, we will have assured that destiny by leveraging our greatest economic asset, the inventiveness of a free market.