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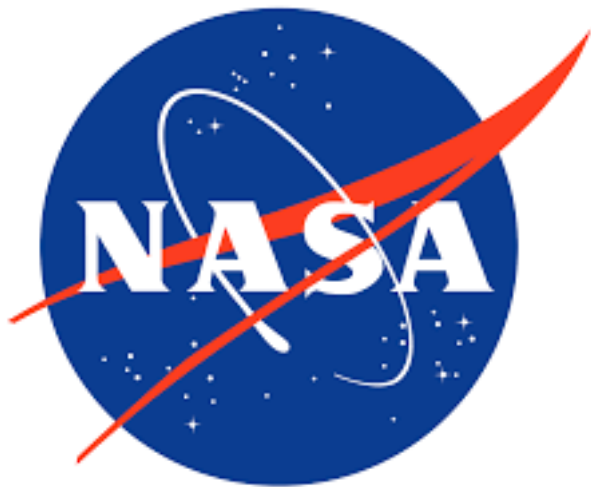
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NASA or No?

by Caleb Swafford, Mechanical Engineering Junior

Have you ever heard of NASA? Chances are, you have. In fact, most people would be surprised if you hadn't heard about NASA. Have you heard about SpaceX? Chances are still pretty high that you have. You probably know them as a popular and privately-owned aerospace manufacturer. But, five years ago, you likely would not have known that a company by that name existed. This highlights the growing involvement of the private sector in space travel and space exploration. Private aeronautics companies are now performing a larger role in space than ever before. This fact raises many questions about the role that the private sector should play in space. Should the government regulate and run space exploration, or should that effort be left to private companies?

For many years, NASA stood as the biggest entity in space exploration. Today, NASA is still seen by many as the leader in space exploration and research, but it is no longer the only major contributor to the fields. The space program of the United States, more than any other country, has a thriving private-sector component. It is a component that is well-established and rapidly growing, and many people think that in the future the private sector will outstrip even such giants as NASA. The private sector in the United States has a long history of producing products for NASA and aiding the administration with technology development; some people see it as the next step for the private sector to become the leader in space.

Economically speaking, it has been extremely lucrative for private companies such as Boeing and SpaceX to contract with NASA. Since 2010 NASA invested over \$300 million in the private sector for a program to develop a new space shuttle. NASA also awarded more than \$8.2 billion in contracts and in Space Act Agreements (SAA). SAAs are legal

agreements that NASA enters with partners to advance NASA mission and program objectives. Yet as much as NASA and the private sector aided one another, some suggest that private companies work best on their own.

In an article entitled "Capitalism in Space" Robert Zimmerman lists the motivations of government space programs as military strength, natural resources, economic growth and national prestige. Private, independent companies, Zimmerman says, do not have these concepts as their motivations. "Instead, these private entities have been driven by profit, competition, and in some cases the ideas of the visionary individuals running the companies, resulting in some remarkable success, achieved with relatively little money and in an astonishingly short period of time."

Mark Rober, a mechanical engineer with a popular YouTube channel, and a former NASA employee, presents the other side of the argument: "[private companies are] incentivized to pursue technologies that will give them a return on investment like space tourism or asteroid mining or launching satellites for other organizations. There's just no incentive for a private company to invest in tracking and deflecting asteroids or investing in earth science missions...and then making the data available for free to anyone who needs it." Those programs he mentions, deflecting asteroids or making experimental data from research available for free, are both things that NASA does, along with a host of other projects and programs that aim at improving and protecting earth.

So what's the answer to the question? Should space exploration depend on government funding, or private funding? The answer isn't clear yet, but it likely does not fall clearly on one side or the other. Rather, it is likely somewhere in the middle, involving compromise and working together. As events unfold and we delve deeper into space, our greatest achievement will be that we are grounded in solidarity and a common desire to learn and improve our world.

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