

THE FUTURE OF THE COMMERCIAL SPACE INDUSTRY
Remarks by NASA Administrator Charles F. Bolden Jr.
Space Entrepreneurship Forum
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Thank you so much for that introduction, and my thanks as well to Representatives Donna Edwards and Eddie Bernice Johnson for inviting me to participate in this forum today.

When I was selected for NASA's astronaut program in 1980, there was only one way to get humans into space – you had to launch on a Soviet Soyuz spacecraft since the U.S. had abandoned our Apollo program and the Space Shuttle had not yet been flown. If you were an American engineer or a scientist, it probably meant you worked for one of the traditional aerospace contractors, like Rockwell, Boeing, Grumman, or Lockheed. From the time you left school, your career was pretty much laid out for you. It was a predictable, established path, one followed by many previous generations of engineers, scientists and technicians before you.

In 1981, we successfully launched the Space Shuttle and put the United States back in the lead technologically as a human space flight power. Today, however, we are seeing these patterns change as entrepreneurs, risk takers, investors of every stripe have decided they don't want to wait for a government ride into space - they are designing, building and preparing to launch their own vehicles, hoping to blaze their own trails. As I have been telling our NASA senior leadership, this isn't your father's space program. Aggressive new ideas are

emerging about non-government access to space and about human space flight and our challenge is to find new and creative ways to harness this spirit, facilitate their success without putting the American space program at undo risk, forging partnerships with these new entrepreneurs, and above all listening -listening and being open to these new approaches. The new capital in this conversation is ideas. And we at NASA are listening. The question is: how will you find your place on that frontier? Are you ready for that challenge?

At NASA, the commercial space project with the highest visibility is our Commercial Orbital Transportation System or COTS. NASA's COTS is applying funds to stimulate efforts to develop the ability of private companies to fly cargo and potentially crew to the International Space Station as well as future low Earth orbit destinations. It is our hope that this initiative will grow jobs in engineering, design, and research, and to spur economic growth as capabilities for new markets are created. We believe that competition for a new wave of space systems, designed and built by a new generation of space entrepreneurs, can strengthen America and grow jobs for the nation. There is no reason that African-Americans can't find their place in that new competition as well.

It is my hope that a space tourism industry really takes off in the years ahead, when and if it does, NASA will take advantage of these opportunities. Space tourism can evolve to space passenger services. Scientists and researchers are preparing experiments for the opportunities aboard these new generations of suborbital spacecraft. These are opportunities for in-flight space research from which NASA may benefit.

COTS is but one such commercial initiative at NASA. There are many others. We are using the incentive of prizes to stimulate innovative new approaches to technology development. Named in honor of the Centennial of Flight, NASA's Centennial Challenges program seeks to drive progress in aerospace technologies of use in NASA's missions. We hope to encourage participation of independent teams, individual inventors, student groups and even private businesses of all types and sizes fostering research and development. We think we can find the most innovative solutions to some of our most difficult and challenging problems through competition and innovation.

This is pretty exciting stuff. One set of teams, the Power Beaming Challenge, is aimed at developing technologies for wireless power transmission using lasers. This could someday develop the capability of robotic power systems aboard lighter than air vehicles, or power drones parked above our cities, or transmitting between spacecraft. Another is the Lunar Lander Challenge, with teams building really revolutionary designs of spacecraft that can fly to the Moon's surface. We had one team – Armadillo Aerospace – have a success in their efforts just a few days ago. Another group of teams is pursuing the Astronaut Glove Challenge - designing a whole new generation of gloves for future astronaut spacesuits. We may need to dig into the surface of the Moon, Mars, or even an asteroid someday to erect buildings or make shelters. One set of teams is racing to develop ways of doing just that, in the Regolith Excavation Challenge. And there are others, such as the Green Flight Challenge and the

space tether challenge. But what other ideas do you have that we haven't even thought of? NASA is open, and listening.

We are pioneering small business relationships in other ways, too. NASA's Innovative Partnerships Program has an Innovation Incubator website. The program is engaging private citizens in space technology development, bringing fresh ideas into NASA and helping to bring emerging technologies to maturity - from the lab to space - or to your hospital, fire station or clinic. By promoting the growth of a competitive space industry, we also find practical benefits we can use here on Earth.

These are but a few of the ways NASA engages small businesses. But businesses big and small - and those owned and operated by African-American entrepreneurs - must know about these initiatives if they are to play a part in them. One of our challenges is to improve the ways we communicate these different commercial programs, and especially how we can make sure African-American small businesses and business owners know what opportunities exist. The playing field is only level if everybody knows what's on it. I pledge to work on that from our end.

We remember not that long ago there was a "digital divide" that separated our community from those who were readily able to take advantage of the new capabilities of the Internet. We must avoid a "space divide" that could limit our ability to enjoy the advantages that commercial space can offer our small businesses and young people. Openness, transparency, agile and innovative

partnerships, use of creative tools like Space Act Agreements, all of these can help break down that “divide”.

We believe that the development of commercial space is a great future frontier of American economic growth. It offers to African-American risk takers, men and women with ideas and the courage to pursue them, a place at the table not just at NASA, but also on the space frontier. One of my jobs as Administrator is to welcome these new ideas and find ways to take advantage of this entrepreneurial spirit. That spirit - of risk bringing rewards; of creativity and innovation - is the spirit that America will need now more than ever to strengthen our economy and remain competitive in the global marketplace.

But this is not just about selling to NASA - actually it's not even about NASA. It is about finding your place in this industry, whether inside the government or out. I was fortunate to be an astronaut. And I hope some of you young people here will want to be astronauts someday. I believe some of you will! But there will also be a place at the table for African-American engineers, and scientists, and builders and makers of things we can't even imagine today. Every NASA facility, every private spaceport, will need architects, service providers, stores and shopkeepers. Private spaceships will need equipment, parts, new spacesuits, refueling stations, and even new space shoes - have you thought of that? What young African-American will have the spark of an idea that one of these companies developing space will need to use? Hey, there may even be a need for a McDonald's in space! What about sports in zero gravity? I know

it sounds crazy, but if there is one thing I've learned from being at NASA, it's there's no such thing as a crazy idea.

If you have the ideas, the courage, the hard work, nothing in space is out of reach. Don't ever give up on yourself or your dreams. Don't listen to people that tell you what you can't do! If you can dream it, you can do it! I am living proof of that. African-American entrepreneurs have always been a vital part of our nation's economy. In the twenty first century, your hands and your hearts may find the next great iPod, or the next cure for crippling diseases, or the next innovation in aviation safety. Our community struggles every day with chronic illnesses like Diabetes, sickle cell and kidney disease – some at epidemic proportions. How would you like to be the person who uses the research space aboard the International Space Station to find cures? How would you like to be the one who creates the first truly artificial kidney? Or finds clean energy solutions for our economy? How would you like to be the entrepreneur whose idea changes the course of history and saves millions of lives all over the world? That is the promise of space in our time: opening up a vast new frontier and at the same time giving something back to every family in America.

It is an exciting time to be in the space business! The doors of opportunity are open to you all. The only question is: are you willing to step through those doors? Are you willing to stand up for yourselves? Do you have what it takes to follow your dreams wherever they may lead?

I hope they lead to space.

Let the competition continue!

