Remarks of NASA Administrator
Daniel S. Goldin
Space Frontier Foundation Conference
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Thank you for your kind introduction.

Good morning. Thank you for being here.

I'd like to take this opportunity to thank Rick Tumlinson for the incredible job he does as President of the Space Frontier Foundation.

I also want to thank everyone who worked so hard to put this year's conference together.

I am honored you invited me to speak at this important meeting, because we share a vision for humanity's future in space-we want as many people as possible to have access to space.

The way we will get there is with a revolution in both technology and business approach. That's what will open new frontiers to humanity, in much the same way as the first mass-produced translations of the Bible revolutionized the Christian church.

Where William Tyndale and his contemporaries brought the word of God to every literate person, our efforts ultimately could bring the possibility for every person to peer into the depths of God's handiwork through open access to space.

I just hope you'll hear me out before you call me a heretic.

As you know, we have had many amazing accomplishments in the space program recently. The Space Shuttle has been a platform for incredible experiments and amazing discoveries. Our Great Observatories are seeing into the past, all the way back to the origins of the universe.

We are searching for signs of life throughout the universe too. From searching for water under Europa's ice caps to gathering preliminary data on other planets orbiting nearby stars, NASA is helping to set the stage for a permanent human presence in space.

But NASA has reached a critical point. We've done a lot of things and we've done them well.

In the next decade or so, we should be completing our work in earth orbit and getting ready to explore our solar system and beyond. We can't afford solar system exploration until we responsibly turn these earth orbit activities to a cutting edge private sector. The reality is that Federal spending constraints will not allow NASA to both stay in earth orbit and explore beyond. And things will probably not improve in the foreseeable future.

Strategic public-private partnerships between groups like NASA and the Space Frontier Foundation are the only way we will make the new millennium the space millennium. These alliances will let NASA concentrate on its strengths, while allowing the innovative and creative commercial forces to do what they do best.

As I said earlier, we need a combination of technological and business revolutions to make this vision a reality. We will leave the business revolution to you. I know that there are many interesting business possibilities associated with today's first generation entrepreneurial launch systems under development. But to move to second and third generation systems, we need major technological revolution. This is NASA's sweet meat.

If we settle for tiny improvements in technology, we may never get out of the sand box. We need giant leaps to cross the chasm between R&D and commercialization. We need new customers and suppliers to start the tornado that would translate passion to business. We are talking about creating new markets and industries that will in turn advance technology and enhance the security and the economic welfare of this Nation.

The best way to foster a technological revolution is to increase and accelerate commercialization where we can.

Now just about every time I discuss commercialization, I receive spirited feedback from NASA employees and potential partners like you.

In fact, you already heard Rick talk about some of the same things I hear. He called it the difference between old space-run predominantly by the government-and new

space-fueled by the entrepreneurial spirit.

We are doing everything we can at NASA to usher in that era of new space. Let me give you an example. After we heard your concerns about doing business with us and after we found ways to address them, we went to the Administration for support. They stood behind us 100 percent.

And then we went to Congress for support. The result is an important piece of legislation now before Congress. And it needs your support.

The bill would allow NASA five years to demonstrate the viability of establishing market prices for commercial use on the Space Station. It gives NASA the flexibility to charge below margin cost to stimulate early demand, while at the same time provide a mechanism to allow NASA to receive and keep above cost revenue later if the business that we help create is successful. The bill mandates that these revenues be reinvested into additional Space Station commercialization efforts.

Think of it as return on investment. Think of it as win-win government-industry partnering.

Combining this bill with Congressman Sensenbrenner's 1998 Commercial Space Act will really get things moving in the commercialization arena as we kick start the process by spinning up demand.

This morning, I will not get into the detailed listing of all the commercialization initiatives we have at NASA. Instead, I'd like to focus on establishing where we collectively want to go.

I want to draw your attention to four key areas NASA believes will help drive commercialization: space transportation, the International Space Station, remote sensing, and space operations. Details can be left for Q&A at the end of my talk.

You know that when we talk about open access to space, we're really talking about SCATS-SAFE AND CHEAP ACCESS TO SPACE.

Some may argue that NASA is not always the easiest customer or supplier. Yet we are extremely proud that our reliability record for expendable launches is significantly

better than that of the commercial spacecraft industry over the past decade. The Shuttle reliability is even better. This is due in part to the very stringent requirements we have to protect our unique assets.

But NASA ultimately wants all launch vehicles to have the same level of safety and reliability as today's long-haul jet aircraft have. It's a challenge we've faced for a number of years, and it's one that we think the entrepreneurial community is particularly well-qualified to help us solve.

However, the progress has been painfully if not unacceptably slow. In a quest to find out why, I recently held an extended meeting with the CEOs of emerging launch vehicle companies.

During the course of a rather frank discussion, I asked the business owners, "Is NASA doing anything to hurt your ability to raise money or conduct business?"

Several people expressed the belief that NASA already has decided that the Venture Star vehicle is the prototype for a post-shuttle launch vehicle.

Like the Israelites, we have wandered the desert for 40 years in the search for new launch technologies. However, no one that I know of has gone to the top of the mountain and brought back anything carved in stone.

Let me be perfectly clear here. Venture Star has not been anointed as the only way to second generation reusable launch. Without taking anything away from the great job Lockheed Martin is doing, let me say that Venture Star is an option for our future, but it is not the only option. We will continue to support the competitively won X33 activities while we start up other critical competing approaches.

If possible, NASA wants a market-driven solution for second generation launch vehicles for our unique space exploration needs.

NASA is perfectly willing to be a catalyst for getting Safe and Cheap Access to Space for Low Earth Orbit operations, but we will not be the sole cause. We hope that's what private capital and the pull of the marketplace might do. However, if there is not enough of a commercial market to

envelope our needs, we will go in other directions. While we will not enter or compete in the spacecraft launch business, we must protect the Nation's interest by assuring safe and reliable space transportation and operation for humans to, from, and in space. We must continue to explore and extend that next frontier, with human presence.

Here is the vision I have for our launch vehicles. By the end of the next decade, launch vehicles will have a reliability in excess of .999, while launch costs are reduced well below $1,000 per pound.

And over the next 20-30 years, launch vehicle reliability will rise to .999999 and launch cost will fall to below $100 per pound.

If we ever hope to open up access to space, then we must make radical improvements in our launch technology. And while we at NASA want to drive that technology, we certainly can't do it by ourselves, and we certainly can't be the sole customer for such advances.

We will be pleased to work with you to help increase the probability of success for the emerging commercial space launch business. We need continuing technology development in space transportation. That combined with the entrepreneurial expertise of the commercial sector is where we can expect bold advances in the market place, crossing the chasm, into the eye of the tornado. Taking technology out of the laboratories and into Main Street and Wall Street.

NASA and USA held a Space Shuttle Development Conference at the Ames Research Center in Sunnyvale in July and it attracted over 750 people. It did not go over 1000 only because they were turning people away at the door. But the more significant point is that lots of the people in attendance were from commercial high tech or financial companies, not the traditional aerospace government contractors. That was a very promising start.

Now, beyond space transportation, we are interested in exploring the commercialization opportunities the International Space Station provides.

NASA is dedicated to doing everything we can to increase the capacity and capability of the Station to help both the public and private sectors.

Right now, about 30 percent of US research resources on the International Space Station are dedicated to potential commercial ventures. If demand increases, we will look to expand that number upward. To date we have not yet signed our first commercial customer. That is why I am here today. The future is up to you.

Keep in mind we are not interested in people who want contracts with us just so they can make money mainly from the US government. True commercialization only occurs when people are willing to commit their own resources, when they are willing to share both the risks and the rewards to bring in private capital as the dominating force. This is putting private skins in the game.

We believe there are some real opportunities for companies to grow through products, processes, and services they develop on and from the Station. Further, we believe that the research carried on during the early years of the Station may open up possibilities we can't even imagine today.

Maybe the Station could even be a test bed for the new space communications systems we need.

We believe that the pending legislation I discussed earlier will be a good first step to start filling the 30 percent capacity goal. But beyond the next five to ten years, when Station is in a steady operational phase, our hope is to turn the keys to the Station over to an entrepreneur if the private sector sees an opportunity. If this occurs, the government will become just one of the many tenants and users of the Station. The entrepreneurs could make money as we wave goodbye to low earth orbit on our way to explore the far frontier.

There are no guarantees this will happen. That is why after 10 years of operation, a national review will be made for the space station to see if it meets the research needs of NASA, the needs of our International Partners, and the commercial needs of the private sector. If so, operations will continue. If not, the Station will be shut down and de-orbited. Sunset clauses keep government honest.

NASA's Space Station commercialization plan calls for the agency, along with its stakeholders, to examine turning over the U.S. share of Space Station utilization and

operations to an NGO-non-governmental organization. I choose that term specifically, because I don't want to prejudge the form that a future Station operations entity would take. It could be an entrepreneur, an institute, or even a corporation.

This is not a decision NASA should make in a vacuum. We will be actively seeking input from organizations such as yours as we continue to move in this direction.

In the near term, we believe that the commercial habitation module offers unbelievable opportunities.

We held a conference in Houston last month to explore the commercial opportunities available to business investors through the development, deployment, and utilization of a multipurpose habitation module for the Space Station.

The boundary conditions we presented were minimal impact on Station schedule, no increase in government cost, and that they satisfy all current Station habitation needs. However, in our pursuit of a truly commercial space living quarters, we encouraged additional capabilities and capacities beyond those required by the government, thereby increasing opportunities for commercial utilization and therefore revenues.

The conference drew over 150 paying attendees representing more than 50 companies. The majority of the participating companies were non-aerospace non-government organizations. And we have received a number of very intriguing proposals. There is a good chance that if we go forward with a commercial habitation module, the provider could have significant private commercial participation, as equity partners and paying customers. This is a chance for the private sector to own a piece of the rock, and make money from it.

In the area of commercial remote sensing, NASA has a number of commercialization programs based out of the Stennis Space Center in Mississippi. These companies are helping create a new industry to collect and sell earth data to customers other than NASA. We have also adopted a policy of purchasing science data from commercial sources where they meet our research needs. These programs include areas such as technology verification, applications validation, and future missions. NASA would be happy not to build any more LandSat or other such spacecraft and instead buy the

information from you. The only stipulation is that you deliver the data we want, to the quality standards we specify and for significantly lower costs that our conventional satellite builds. This can only occur if you build a strong and broad commercial customer base outside the federal government and truly commercialize space.

The next area I want to address today is space operations.

As a major step toward consolidation and commercialization of space operations, NASA awarded the Consolidated Space Operations Contract (CSOC) to Lockheed-Martin in October 1998. The CSOC contract requires Lockheed-Martin to use commercial service providers whenever possible to provide space communications in support of NASA research and development missions. To the extent feasible, the CSOC provides also for the sale of available capacity on NASA's space and ground communications networks, as well as other supporting services to private sector users.

CSOC enables NASA to achieve further efficiencies and lower costs to the Government by consolidating multiple individual contracts into a single prime contract, reducing overlapping activities, eliminating redundant activities, and pulling civil servants out of what should be a routine commercial operation. The introduction of new commercial customers will offer additional savings to the government as the fixed cost of the systems will be shared by other users over a broader business base.

We expect savings in the fourth to 10th years of this contract to be in the $1 billion range. This saving should increase as we continue to commercialize space operations. However, due partly to laws and regulations governing frequency spectrum allocations, new legislation may be required before we fully realize the benefits of commercialization in this area.

NASA's commercialization program must be a win-win situation. You win by gaining new sources of revenue and a much broader range of options than ever before. We win by being able to focus our resources on the cutting edge research and development mission NASA is known for, and exit from operations.

But be mindful that there are no guarantees in life. We have seen how uncertain the NASA budget can be, witnessed by the $1 billion cut taken by the House Appropriation Committee.

And in the commercial world, it is even more volatile.

We all have this passion for space. We want to find ways to work together to make it happen. Yet let us go forward with our eyes wide open. As good as it is that you all have Space in your hearts, it will only work and last if you also have Money in your pockets. It is a business, and we must treat it like one in order to succeed.

As we set out on this ambitious course, we are a lot like William Tyndale and his colleagues. Some may say that commercializing portions of NASA's functions is heresy. Others may think we are taking a path that will "ruin" the wonders of space.

But I believe that when NASA can creatively partner with you, all of humankind will reap the benefits of open access to space.

It will truly revolutionize the way we live, the way we work, and the way we view ourselves in the grand scheme of things.

I want us to usher in that revolution together.

Thank you.