

**Remarks by the Honorable Sean O'Keefe
NASA Administrator
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Thank you Dr. Chin (Dr. Shiu-Kay Chin, Director Syracuse Case Center for Computer Applications and Software Engineering) for that very gracious introduction.

It's a real pleasure to be back in my old stomping grounds for this prestigious conference and an honor to be introduced by a distinguished technology leader from a university that is very near and dear to my heart.

I would also like to extend my appreciation to the Oneida Indian Nation for sponsoring this event.

Let me tell you that one of my happiest moments as Administrator was being at the Kennedy Space

Center in November 2002 for the launch on the Space Shuttle Endeavour of our country's first Native American astronaut, John Herrington.

John is a proud member of the Chickasaw Nation and we had on hand to help us celebrate his historic flight several tribal leaders from across the countries, as well as musicians and dancers representing the rich cultures of our Native American peoples. It was just an incredible, prideful evening when John and his STS-113 crewmembers roared into the heavens on a beautiful starlit night.

This morning, I am extremely honored that you have asked me to be your speaker. Obviously technology development and manufacturing is a subject that is close to my heart, and I applaud the efforts of the Technology Development Organization, the Case Center and your partner organizations to promote economic growth and prosperity in the greater Syracuse area.

There are many engines that help to propel us into the future, and one to be certain, is our nation's investment in a forward looking, dynamic space program.

So I look forward to talking to you this morning about NASA's new vision for space exploration, and what it will mean for the future of American innovation and technology development.

There is one thing about working at NASA I can guarantee you. With the help of people like those of you in this room who are constantly pushing the technology envelope, we certainly go to some interesting places.

At this very moment our exploration rovers, Spirit and Opportunity are scouring around the Martian surface, building on their already incredible scientific return.

When we sent these two rovers to the red planet, we kept our fingers crossed that just one of them

might make it all the way to the surface intact and produce legitimate scientific results. As many of you who have followed the space program know, Mars is a hard place to explore. It swallows up spacecraft.

To say the least, these little rovers that could--both of them are the size of a standard golf cart--have vastly exceeded our wildest expectations.

Opportunity, which is exploring an area called Meridiani Planum has really hit the scientific jackpot. It has discovered clear evidence that the landing site was once on the shoreline of a salty sea. This site may have been suitable as a habitat for life in Mars' past, although no signs of life have yet been detected.

There may be only one way to make a definitive determination as to whether there was once life on Mars. And that will be to send life from Earth, in the form of our intrepid astronauts, to investigate the planet in greater detail.

I like to point out that for all the productive work these robots have performed on the Martian surface these past four months, and will continue to perform as we extend their missions hopefully into October, a human explorer would be able to collect the same amount of material as Spirit and Opportunity have collected in a single eight-hour work shift.

Further, using his or her cognitive skills, our Mars explorer would be able to quickly spot those areas of the surface that are most promising for investigation and inquiry, such as the El Capitan outcropping where Opportunity was able to find evidence of ancient water on Mars' surface.

I should add that Mars is not the only place in the solar system that is drawing NASA's attention these days. This summer, our Cassini spacecraft will enter into orbit around Saturn and send the European Space Agency's Huygens (Hoy-gens) probe hurtling

into the liquid atmosphere of Saturn's mysterious moon Titan.

Also this summer, we will launch the Messenger spacecraft to map the surface of Mercury.

Of course, our human crews will also continue to advance an ambitious research agenda on the International Space Station aimed at better enabling human explorers to extend our exploration reach throughout the solar system.

This football-field sized research facility is now orbiting 250 miles over our heads with our ninth expedition crew, astronaut Michael Fincke and cosmonaut Gennady Padalka. The Space Station has now been permanently occupied nearly three and a half years, and I was just in Moscow for the return of our outstanding Expedition Eight crewmembers, Mike Foale and Sasha Kaleri, who performed magnificently on their sixth month mission. On this mission they conducted history's first spacewalk with

no crewmembers inside a spacecraft, thus demonstrating that as we gain more experience in spaceflight, we can conduct more sophisticated operations.

While we are a relatively small institution as federal government agencies go, with the support of the American people, NASA never stands pat, and is always striving to find new ways to pioneer the future, and in the process develop cutting-edge technologies that benefit all of us here on Earth.

And as these examples demonstrate, NASA is already hard at work implementing a vision President Bush set out four months ago for America's space program to extend our exploration reach from the Earth to the Moon, to Mars and beyond.

We are tremendously excited about the new exploration challenge that President Bush has given us. The President has provided us with a new set of

compelling, achievable and responsible goals for the space program.

I'd like to show you now a brief video that highlights the space exploration vision and what NASA will do to implement it.

(Show Vision Video)

In the time I have left with you I'd like to give you NASA's perspective on what the vision will mean for our mission activities and what it may mean for the development of new technologies, and for the nurturing of a new generation of skilled scientists and engineers here in Syracuse and around the country.

It is important to note the vision builds upon work NASA already has undertaken with the support of our contractors to develop a long-term approach for space research and exploration.

When I came onboard as NASA Administrator just over two years ago our leadership team developed a statement of mission goals to help us

focus our resources and energies on the kinds of projects the American public expects NASA to undertake on their behalf.

Those goals are to understand and protect our home planet, explore the Universe and search for life, and inspire the next generation of explorers.

Let me briefly address our third mission objective, which is focused on the young budding scientists, engineers and astronauts who will help take us back to the Moon then on to Mars and beyond.

Incidentally, I know that some of them are in this audience. I am delighted that we have students here today from Syracuse, Mohawk Community College and Manlius Pebble Hill School.

To all of these students I hope the exciting potential of our space exploration initiative will motivate you and many students like you to help reverse a decade long trend of declining interest by

students in math, science and engineering fields, and help refresh NASA's talent pool and that of industry overall.

We're convinced it is absolutely vital for the future of our Agency, industry and indeed our country that we help steer talented students toward exciting careers in science, technology, engineering and mathematics.

From NASA's self-interested perspective, we are facing the graying of our workforce. One-fourth of our workforce will be eligible for retirement in the next five years. And while employment opportunities in science and engineering are expected to increase at a rate almost four times greater than for all other occupations throughout this decade, enrollment in science and engineering college courses has been in decline.

Our best and brightest are being drawn into other professions. A regeneration of our nation's

commitment to exploration and discovery may help reverse this trend.

As we move forward on our long-term exploration plans we're also putting a lot of effort in reaching out to our next generation of explorers.

For example, through our Agency's new Education Enterprise we are supporting innovative science and math programs in a number of our nation's K-12 schools.

Two weeks ago I visited the Clary Math and Science Magnet School in Syracuse, and I was just blown away by the school's commitment to inspiring its students to reach for the stars.

We think we can help make a world of difference in hundreds of schools like Clary, Manlius Pebble Hill and Fowler High School in Syracuse, whose students produced a wonderful ant farm experiment that flew onboard the Columbia STS-107 mission.

At the memorial service for the Columbia astronauts I mentioned this experiment and pledged that in the future students like those from Fowler High School will have similar opportunities to join our astronaut crews in these important learning adventures. I can tell you this. NASA will make good on that promise.

I should also mention that thanks to legislation supported by Congressman James Walsh, who is ably represented here today by Virginia Carmody from his district office, we will soon begin a new Scholarship for Service Program, which will provide financial assistance to promising students in exchange for a commitment to work for NASA. In this way, we intend to truly build up the bench strength of our agency.

Finally, another way we are reaching out to that next generation of explorers is through the recruitment of a new breed of educator astronauts. In

addition to performing astronaut duties on future Shuttle and Space Station missions, these educator astronauts will help inspire students throughout our country by taking their classrooms into space, and using their unique vantage point from low-Earth orbit, to present memorable lessons about the wonders of science. I'm very pleased that we will announce our first full class of Educator Astronauts in two days.

Now even as we pay attention to the these long-term human capital issues, we are also moving out on the nuts and bolts work that will enable us to extend the presence of human civilization into the cosmos.

Through our new strategic plan, which was developed prior to the President's announcement, we've already begun investing in the concept of a stepping stone approach to future space exploration activities.

Again, those stepping stones are: First, returning the Space Shuttles to flight. Second, completing the Space Station and using this research laboratory to test the long-term effects of space travel on human beings. Third, sending robotic probes and then human explorers on to the Moon to demonstrate technologies needed for Mars and beyond. And finally, to develop those capabilities that will allow humans to explore the far reaches of the solar system.

Our strategic plan and budget also provides NASA engineers and scientists direction to develop the enabling capabilities for a successful long-term space exploration program. We know that regular space access can only be achieved by improving safety, reliability and affordability. Talented NASA and contractor personnel are currently working quite hard to achieve this goal.

The development of a new Crew Exploration Vehicle, under Project Constellation, a major element

in the vision, will help us meet our second enabling goal of extending the duration and boundaries of human space flight. Our new Exploration Programs Enterprise, which is under the direction of retired Admiral Craig Steidle, is working diligently on defining concepts for Project Constellation.

The President's Commission on Implementation of the U.S. Space Exploration Policy, capably led by former Undersecretary of Defense and Secretary of the Air Force Pete Aldridge, with the support of top people from the business community and academia is also helping us plan for Project Constellation and other elements of our space exploration program.

As the President directed, our next exploration steps will be logically aimed at the Moon, which will provide us the resources and proving ground to allow us to function in other, more challenging environments.

Finally, our strategic plan and the new vision anticipates the development of revolutionary capabilities through new technologies. One such technology is a laser communications system that will allow us to send large amounts of data across the solar system in a fraction of the time that it takes our spacecraft to now communicate with their controllers, which for our Mars rovers is over 10 minutes for 100 million miles away. We hope to demonstrate this new technology on a Mars mission later in this decade.

We're also working to develop new technologies to protect our astronaut crews from physiological challenges such as radiation hazards when they travel well beyond low-Earth orbit. We are currently using research onboard the International Space Station toward this end.

Needless to say, the kinds of research we are conducting on radiation, and also on mitigating the

long-term effects of spaceflight to our astronaut's bone and muscle mass, can have tremendous applications for medical research here on Earth, for example to help people who suffer from osteoporosis.

We are quite confident that the pursuit of this vision will spur other technological developments that will lead to new products and services and tangibly improve the lives of people throughout the world.

Just as the Apollo program led to important advances in computing and electronics, the potential spinoff benefits from this broad based exploration program could be considerable. Since that time, MRI's, cataract detection, and heart pumps are all examples of NASA technologies used to advance our exploration goals being applied to productive use in society.

We believe the technology development necessary to execute and implement the president's

vision will accelerate advances in robotics, autonomous and fault tolerant systems, human-machine interface, materials, life support systems and novel applications of nanotechnology and microdevices. And I'm delighted that you will hear a great deal more about Nanotechnology today from Jack Uldrich, a wonderful friend and colleague who I got to know when he worked for me as an intern in the Pentagon.

Let me add that as the President has stated, we intend to promote commercial participation in this bold exploration agenda to further U.S. scientific, security, and economic interests. Indeed, for every dollar spent on the space program, seven dollars flows through the economy.

While we will no doubt be working with the traditional aerospace industry as this journey unfolds, we also fully intend to reach out to a wide array of businesses to tap new ideas and concepts.

Many of you may very well play a meaningful role in helping make this great exploration adventure possible. With a little imagination there are multiple products or services that will contribute to our unfolding space exploration activities. In turn we believe the technologies we will develop might provide new business applications in numerous unanticipated ways.

Of course a necessary prerequisite for all this progress is support in Congress for moving forward with the space exploration vision. And while the vision has received by and large a fair hearing from members on both sides of the aisles, there is a strong push by some members of Congress to freeze discretionary spending accounts.

We do have a big challenge ahead on Capitol Hill. Although the Senate passed budget resolution incorporates the amount President Bush asked for NASA, the House budget resolution would freeze us

at Fiscal Year 2004 levels along with other domestic discretionary spending accounts. The difference will be worked out in conference committee in the days and weeks ahead.

Let me describe the impact to NASA's programs if a freeze on domestic discretionary spending were enacted. A spending freeze would force NASA to either cut back on, or more likely, take away funding from other exploration program areas.

As it stands, the President has proposed \$374 million in increased funding to safely return the Space Shuttle to flight and continue assembly and operations of the International Space Station. A spending freeze would also programmatically impact \$365 million in funding targeted for Space Station crew and cargo services as well as needed reserves. It would also drop from NASA's budget \$136 million targeted for investments in key technologies needed to support the exploration vision.

We should all recall that 200 years ago when President Jefferson requested congressional funding to support the Lewis and Clark Expedition, the Congress did not respond by saying, "Let's just wait. We can't afford to do this."

To be certain, whatever the outcome of this year's budget deliberations is we will not stint on our efforts to safely return the Shuttle's to flight and safely operate the International Space Station. Safety will always come first! But if we must find the funds to address these priorities, other important NASA projects might suffer.

Obviously, the same dynamics would apply to everything else the federal government does on the domestic side from NOAA's work to develop the next generation weather satellite, to the National Institutes of Health's research on disease to the management of our National Parks. Those are the stakes.

I am confident, though, in the final analysis our elected officials will understand that our efforts to pioneer the future are worth supporting.

I do know one other thing that gives me great hope. Young people like those in our audience today are absolutely thrilled human beings may soon be headed to the cosmos, and that they may be among the first to explore the surface of Mars. The President has described a promising vision for our future in space. As he has said, "Exploration is not an option we choose, it is a desire written in the human heart."

We are just at the beginning of this journey, and I look forward to working with all of you as it takes us to heights unimagined and into frontiers unknown.

Once again I thank you for the opportunity to speak this morning, I thank you for your contributions to the growth and development of this

wonderful Syracuse community, and I look forward to taking your questions.