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Technical Paper Session I-B - Professional Development Key Success Factors for New Generation Employees in Support of the Moon, Mars and Beyond Mission

Marilyn Lutz
Barry University

Jason O. Breitfeller
BreitIdeas Incorporated

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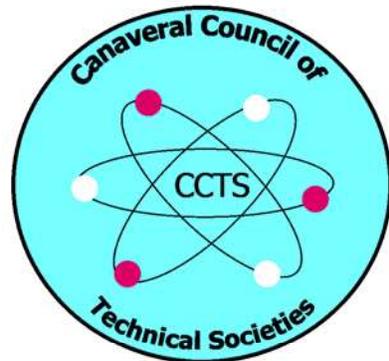
SPACE VISIONS CONGRESS 2007

TECHNICAL PAPER

SESSION 1B

**“PROFESSIONAL DEVELOPMENT KEY SUCCESS
FACTORS FOR NEW GENERATION EMPLOYEES IN
SUPPORT OF THE MOON, MARS AND BEYOND
MISSION”**

**DR. MARILYN LUTZ &
JASON O. BREITFELLER , PMP**



Professional Development Key Success Factors for New Generation Employees in Support of the Moon, Mars and Beyond Mission

Dr. Marilyn Lutz
Barry University
mlutz@mail.barry.edu

Jason O. Breitfeller, PMP
BreitIdeas Incorporated
jbreitfeller@breitideas.biz

Abstract

Future Space Programs will rely on young professionals. Our task is to solve the challenges associated with supporting space exploration while successfully breaking down generational barriers.

In 2004, President Bush put forth a challenge reminiscent of a speech given by President Kennedy in 1961. President Bush declared a goal “to return to the moon by 2020 as the launching point for missions beyond”. It is the human mind that imagines and implements the designs for the machines that will take us to the moon and beyond.

The objectives of Presidents Bush and Kennedy appear identical. The approach is completely different. President Kennedy had more money than time; President Bush specified that budgets and schedules will rule. Budgets and schedules pale in comparison with the human resource issue.

The challenges have not changed, but the people have. This paper compares and contrasts work force demographics of the 1960s, today, and beyond.

1. Introduction: The Space Program and Workforce Demographics

As our population ages and the Baby Boomers begin to retire, we realize that young professionals play an increasingly important role in the future of our Space Program. In 2005, the U.S. Government sponsored an Excellence in Government Conference in Washington, D.C. One of the focus areas of the conference was to understand which factors draw young professionals to a career in public service and also what it will take to keep them engaged. A summarization of the conference notes that led to a common understanding

was developed by Adrienne Spahr in her article “Growing Tomorrow’s Government Leaders.”

Those that seek careers in public service have to be idealists to an extent. We need to believe that we are making a difference so that the value we get from our jobs – by contributing to that “something” larger – overshadows the bureaucracy and lower salaries that we receive compared with those of many private sector jobs (Spahr, 2005, p. 57).

1.1 Introduction to the Space Program

The intricate details of the Space Program are made up of such a complex set of activities that most individuals do not care to try to understand. Therefore, in order to rally public support behind the Space Program, it is necessary to simplify the mission into a single, clear concept.

Two studies (termed “market studies by those conducting the studies) indicated that young Americans are minimally aware of what is happening in space exploration, and, if they are aware of what is happening, they are removed from it (Dittmar, 2006). Since the younger generations will be those charged with accomplishing and paying for the goals of the space program, it is evident that creating enthusiasm and motivation is essential. To engage these individuals, NASA must change its image into something relevant to these folks.

The actions required to accomplish some of the Space Program’s seemingly impossible feats can only be accomplished when attacked with an undying dedication and laser-like focus on the part of the participants. There are enough distractions in the activity of defying physics without constant organizational questions with regard to the mission objective. The participants must only be concerned

with the overall task and not the politics of the Space Program in order to achieve mission success.

1.1.1 The Space Program as a Theory

In 1961, in front of a Joint Session of Congress, President Kennedy made the Space Program a very simple mission to understand. The mission was simply “this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth” (Kennedy, 1961, p. 69). The simplicity of this mission statement made it easy for every man, woman and child to understand the objective. In 2004, President Bush put forth a vision for the Space Program. Instead of standing before a Joint Session of Congress to deliver his vision, President Bush gave his speech at the NASA Headquarters in Washington, D.C. However, his vision was more verbose and lacked the clarity of Kennedy’s words spoken more than 40 years earlier. President Bush (2004, p. 69) said the following:

Today I announce a new plan to explore space and extend a human presence across our solar system. We will begin the effort quickly, using existing programs and personnel. We'll make steady progress -- one mission, one voyage, one landing at a time.

Our first goal is to complete the International Space Station by 2010. We will finish what we have started, we will meet our obligations to our 15 international partners on this project. We will focus our future research aboard the station on the long-term effects of space travel on human biology. The environment of space is hostile to human beings. Radiation and weightlessness pose dangers to human health, and we have much to learn about their long-term effects before human crews can venture through the vast voids of space for months at a time. Research on board the station and here on Earth will help us better understand and overcome the obstacles that limit exploration. Through these efforts we will develop the skills and techniques necessary to sustain further space exploration.

To meet this goal, we will return the Space Shuttle to flight as soon as possible, consistent with safety concerns and the recommendations of the Columbia Accident Investigation Board. The Shuttle's chief purpose over the next several years will be to help finish assembly of the International Space Station. In 2010, the Space Shuttle --

after nearly 30 years of duty -- will be retired from service.

Our second goal is to develop and test a new spacecraft, the Crew Exploration Vehicle, by 2008, and to conduct the first manned mission no later than 2014. The Crew Exploration Vehicle will be capable of ferrying astronauts and scientists to the Space Station after the shuttle is retired. But the main purpose of this spacecraft will be to carry astronauts beyond our orbit to other worlds. This will be the first spacecraft of its kind since the Apollo Command Module.

Our third goal is to return to the moon by 2020, as the launching point for missions beyond. Beginning no later than 2008, we will send a series of robotic missions to the lunar surface to research and prepare for future human exploration. Using the Crew Exploration Vehicle, we will undertake extended human missions to the moon as early as 2015, with the goal of living and working there for increasingly extended periods. Eugene Cernan, who is with us today -the last man to set foot on the lunar surface-said this as he left: "We leave as we came, and God willing as we shall return, with peace and hope for all mankind." America will make those words come true.

President Bush not only outlined what will be accomplished, how it will be accomplished, but also the difficulties and reasoning behind each goal. America had not even put a man in space at the time when President Kennedy shared his vision. He merely set forth an objective to be accomplished and told the people that money would be made available to satisfy the mission. President Bush, on the other hand, has laid out a path for the types of missions and the types of spacecraft that will be utilized to fulfill those missions. It is this level of detail that significantly threatens the freedom to innovate. When the basic plan of how something will be accomplished has been stated, it creates a dam for all creative thought instead of allowing the brilliant minds at NASA to arrive at their own conclusions.

1.1.2 The Space Program Assessment

For such a detailed explanation of the mission, fewer and fewer people understand the overall objective of the space program. Former Astronaut Walter Cunningham explains that “the mission has changed from cutting-edge exploration to being more operational, as the shuttle program became institutionalized” (Dunham, 2003, p. B1). NASA

Administrator Michael Griffin describes the mission as six specific points that are “consistent with the President’s Vision for Space Exploration” (Griffin, 2006, p. 72). In the same speech, Administrator Griffin also quotes a supporting document that has been released by the White House providing more detail with regard to the earlier comments of President Bush. “The fundamental goal of this vision is to advance U.S. scientific, economic and security interests through a robust space exploration program” (Griffin, 2006, p. 73).

Each one of the additional clarifying statements provided by the President, the White House and the NASA Administrator serve only to complicate an already complex issue. Is it any wonder that the men and women working in the Space Program have conflicting views of the objectives of their organization? There is no single, easily understood direction that the entire team can relate to and make a part of their professional lifestyle. Gone are the times when everyone with a NASA badge, sub-contract or even a clear view of the stars at night knew what the Space Program was trying to accomplish.

1.1.3 The Space Program Clarity of Vision

The biggest limitation facing the Space Program today is the lack of a clear understanding of the mission by everyone involved. Bojinka Bishop performed a research project with the goal of converging communication theory with corporate practice. Her research is summarized by the following excerpt. “As professionals seek to answer the question, ‘what is the best way to communicate this?’ the answer generated by this study is: be – clear, relevant, timely, truthful, fundamental, comprehensive, consistent, accessible, caring, and responsive to feedback” (Bishop, 2006, p. 215). The limitation of Bishop’s study is that it assumed two-way communication was feasible. In the case of the President of the United States of America trying to give clear direction, there is little feasibility for incorporating the expectation of giving and receiving feedback. The two-way communication is completed prior to the delivery of the speech. However, Bishop does refer to the “clarity” of the communication as being extremely important.

The development of a clear and concise mission statement will allow for greater program interest and increased public support. Similar U.S. Government missions include the Cold War, the Iraq War and the War on Terrorism. During the Cold War the mission was simply to defeat the Russians. Not everyone understood the terminology of “Cold War,” but everyone understood the fact that we needed to

protect ourselves from the Russians. Once the Cold War ended and the mission of the Defense Department became more convoluted, public support and in turn Congressional funding decreased significantly. In the 1990’s the U.S. went to war with Iraq. The general population knew we were fighting Saddam Hussein. The belief was that we were fighting him because he was evil. In reality, would we actually send the most powerful army in the world to fight a single person? Of course not, but that was a simplified view that people could easily understand. The current war on terrorism has begun to lose support because it also has become more intricate and difficult to comprehend. In the beginning of the Global War on Terrorism (GWOT), Americans were able to put a single name on the effort, Osama bin Laden. When someone asked why we were spending resources in the Middle East, the answer was bin Laden and everyone understood. Today, the Department of Homeland Security and the Department of Defense are funding GWOT. People cannot relate to the complexity and intricacy of this effort and funding is once again being reduced because public support has waned. The vision has become so complex that the Administration has posted a document to explain the GWOT strategy. President Bush (2004), at the five year anniversary of 9/11 stated:

“Today we’re releasing a document called the “National Strategy for Combating Terrorism.” This is an unclassified version of the strategy we’ve been pursuing since September the 11th, 2001. This strategy was first released in February 2003; it’s been updated to take into account the changing nature of this enemy. This strategy document is posted on the White House Web site-whitehouse.gov. And I urge all Americans to read it.

Clarity in a vision statement is not a partisan issue. The administration has remained the same throughout the modern-day War on Terrorism. The vision was crystal clear in the beginning. Clarity of vision is important no matter what the issue. However, it is an especially powerful tool for leaders so that they can garner the support of the general population and secure funding and resources to enact the vision.

The vision of the new Space Program would benefit tremendously from a clear mission statement that would get the creative juices flowing and allow each individual the freedom to imagine the success of the vision within their own mind.

1.2 Introduction to Work Force Demographics

Though the pronouns may change occasionally depending upon the person discussing Workforce Demographics, it is generally agreed that there are currently five generations working side-by-side in the current workforce. “The technical, social, and economic changes of the twentieth century gave birth to five generations” (Wood, 2005, p. 86).

1. Generation GI (Born 1901-1922)
2. Silent Generation (Born 1923-1942)
3. Baby Boomers (Born 1943-1964)
4. Gen Xer’s (Born 1965-1981)
5. Millennial or Generation Y (Born 1982-2003)

Other common categorical groupings of workforce demographics that are extremely applicable to the Space Program are BC and AC. BC are all of the individuals that became managers “Before Computers.” AC defines all of the workers that became managers “After Computers.” “Credibility is the first thing that suffers when BC and AC managers interact if both groups are not on the same level technologically” (McManus, 2003, p. 35).

Regardless of the title given to individual demographics, the fact remains that this diverse group of people must all learn to work in harmony if the Space Program has any hope of achieving the technical, schedule and cost goals laid out in President’s Bush Vision for Space.

1.2.1 Work Force Demographics as a Theory

In her article, Workforce Diversity, Stephanie Wood describes how the demographic issues came to light for much of the American Workforce. “One day, without warning, the United States woke up and multiple generations were populating every rung of the corporate ladder” (Wood, 2005, p. 87). These multiple generations have neither the same intrinsic or extrinsic motivations. The job of motivating a workforce has now become five separate jobs. Older managers need to understand younger workers, and younger managers need to understand older workers. Each group resents the other for various reasons.

1.2.2 The Silent Generation

The Silent Generation (SG) worked extremely hard to get to the positions that they have achieved. Most of the SG group did not receive college educations that prepared them for leadership positions. Their specific skills were learned through the long, arduous process of trial and error. They are less willing to hand over the reins that they earned,

without also imparting a few of the battle scars that they received themselves. Many of the powerful positions in private industry and public service are held by members of the SG. Savvy managers realize that there is an immense amount of knowledge maintained by these individuals; however, they are also the most resistant to organizational change. It is important to note, that it was the SG demographic that was responsible for the success of the Apollo program and putting a man on the moon in the 1960’s.

1.2.3 The Baby Boomers

Although they are now generally referred to as “workaholics,” the Baby Boomer generation went by many different names during their formative years. “Back then, many Boomers marched proudly under the banner of “sex, drugs, and rock n’ roll.” Weirdoes, freaks and dirty hippies were also popular terms of social endearment and esteem” (Grayson, 2005, p. 79). The Boomers are focused on doing what is right and proper. “Their intent is to make not only the United States, but the world, a better place” (Wood, 2005, p. 87). A Boomer’s idea of success is much different from both the SG and Gen Xer’s view of success. “For Boomers, success means unrelenting toil and sacrificing family time in order to secure a corner office filled with Lucite plaques” (Goodman, 2006, p. 1). We must keep in mind that the Baby Boomer generation was responsible for developing the Space Shuttle and making a “re-useable” spacecraft a reality.

1.2.4 Gen Xer

The Generation Xer’s are starting to populate more and more leadership positions. The Gen X group is going through the same tumultuous growing process that the Boomers experienced in the 1960’s and 1970’s. As an example, the Gen Xer’s have a larger number of derogatory names. “Characterized as self-centered, authority-adverse, motivated by personal gain, poor listeners, disloyal to the organization, and focused on having fun, Gen Xers have been denigrated and castigated ad nauseum” (Wood, 2005, p. 87).

Daboval conducted a study in 1998 and found that there were significant differences between Baby Boomers and Xers. However, in reality, Gen Xers may not be different; rather, they just view life through a different prism. The motivation of Gen Xers is not to put their heads down and toil endlessly into the darkness. “To motivate Xers, think short term. Most are not interested in long-term solutions or putting in overtime and waiting for rewards later.

Instead of giving them a bonus at the end of the year, a Xer would prefer this: ‘You’ve really worked hard this past week. Why don’t you take off half a day on Friday’” (Goodman, 2006, p. 1). To a Gen Xer, success means being able to have a comfortable work-life balance. The reality of the Gen Xer is that they are still looking to leave their mark on the world.

To further complicate the generational differences, a large percentage of Xers are children of divorce and many grew up in single-parent homes (Yrle, et al, 2005). As a result, these “latch-key” children grew up to be much more self-reliant and independent than other generations. According to Arsenault (2004), this generation also tends to be more negative about their future than the Yers (millennial generation).

The SG group had the Apollo spacecraft. The Boomers have the Space Shuttle. The Gen Xers have nothing noteworthy yet. Essentially, what NASA currently is telling them is that they will build something similar to what their SG grandparents did with the Apollo program. For a group of authority-adverse people that are focused on having fun, that sounds like an awfully boring adventure.

1.2.5 Millennial or Generation Y

The Millennial workforce is becoming more of a reality with each passing day. These individuals are in entry-level jobs and are beginning to gain some tenure with their employers. The millennials or Yers may be nicknamed the “lucky” generation as they have grown up in a time of prosperity and tremendous technological advancements (Bounds, 2000). This is a group who have grown up with great racial interaction and a renewed interest in social volunteerism (Sax, et al, 2001).

“Millennials have been hailed by sociologists as “the next great generation” and are expected to influence the world more significantly than Generation X. They are a generation that differs in many respects from their predecessors” (Anonymous, 2004, p. 14). The Millennials devour information from multiple sources. They are constantly trying to stay abreast of activities that are occurring around them. Not only are they interested in “what” is occurring, but “why” things are occurring. As stated in the Life Insurance International Journal, during a study to understand how to attract the Millennial generation:

This generation has grown up in the presence of the internet boom and has been instantly connected with the world around them for many years. Today the web is an enormously powerful channel, which Millennials are able to tap into to find, watch or listen to a vast

array of information in different formats. Millennials therefore are exceptionally computer-savvy and have an in-depth understanding of the latest electronic technologies. Being able to control the flow of information using the internet also gives a sense of empowerment, while the immediacy of information control, means most Millennials also like to live “in the moment” (Anonymous, 2005, p. 14).

The Y generation is much different than preceding generations. Although they are higher-educated and have more technical know-how, they have a short attention span and require “entertaining” (Beaver & Hutchings, 2005). Dittmar (2006) suggests that it is imperative to use the new media to engage these individuals. This would include usage of such things as Podcasting, blogging, vblogging, Webcams, and so forth. Dittmar further states that these are action-oriented individuals who “feel the need for speed.”

Effective tactics for rewarding the Millennial generation remain undocumented. However, the ability to engage and retain the Millennial generation is reliant upon the ability to appeal to their sense of “self.” “They like to network and work in teams. They see work as an opportunity to develop as people, exercise their passions and make a difference. Work is about more than making money” Azaroff, 2006, p. 64). Millennials want to understand the mission. If someone can explain to them *why* we are going to Mars, they will work their hearts out to make sure that we get there.

2. Summary

Much research remains to be done in order to completely understand the motivational techniques that can be used to drive the new Space Program workforce. The NASA program has a wealth of resources available that can be used to identify workforce demographics, attrition and new hire statistics. NASA does not make available (or perhaps even track internally) information that explains the current management styles and techniques. Nor is much documented information available that talks about this information historically. Much of what is available about historical Space Program activities is anecdotal and story-like. Fortunately, many of the individuals that worked on the Space Program in the 1960’s and 1970’s are still alive today. This affords a researcher the opportunity to perform primary research

on the specific topic of managing the workforce during that time. The Millennial Generation is currently the topic of many management discussions throughout many different organizations. Unfortunately, although they are the topic of the discussion, none of the Millennials are present during the discussions. The marketing and advertising community has a pretty good understanding of how to appeal to the Millennial group. However, understanding their motivations towards the workplace is a completely different story. On a personal note, one of the authors of this paper consults with different companies on how to enhance organizational efficiency. Most senior managers remark that not too many millennial types are in positions yet where their impact on the organization is crucial. Most are viewed as “new-grads” or hourly labor. Unfortunately, they are being treated as a replaceable commodity. Fortunately, many of the Millennial workers are excited about the prospect of having someone ask their opinion. They are very willing to provide the type of feedback that will result in excellent primary research.

With the proper time and resources, a more comprehensive analysis on the new Space Program workplace can be adequately performed. This research would result in a better understanding of how America can replace an ageing workforce that has helped keep us on the forefront of technology. An article dated December 28, 2006 in the Orlando Sentinel described how one member of the Y Generation felt about the space program. This individual said “It’s not something that everybody is really into. It’s not interesting anymore. There’s nothing new that everybody can catch onto.” Keeping in mind that this generation will be responsible for our future space programs tells us that NASA must find a way to reach the media-saturated Yers. The exploration of our solar system and ultimately our Universe will only succeed if the human resources are ready, willing and able to perform the task. History seems to prove that the easiest place to start our endeavor is with the communication of a clear and concise expectation and vision.

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Space Visions Symposium April 27, 2007

Professional Development Key Success
Factors for New Generation Employees in
Support of the Moon, Mars, and Beyond
Mission

Dr. Marilyn Lutz
Jason Breitfeller, PMP

Growing Tomorrow's Government Leaders

- Idealists
- Feel they are make a difference
- Contributing to something larger
- Overshadows the bureaucracy and
- Lower salaries than compared to many private sector jobs

*Adrienne Spahr
Excellence in Government Seminar
2005*

Introduction to the Space Program

- Complex set of activities
- Simplify mission into single, clear concept
- Young generation unaware of what is happening in space
- NASA must change image to something relevant
- Concerned with overall task, not politics

The Space Program as a Theory

- 1961 – JFK
 - *"This nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to earth."*
- 2004 – GWB
 - *What*
 - *How*
 - *Difficulties & reasoning behind each goal*
 - *Level of detail threatens freedom to innovate*

The Space Program Assessment

- Fewer and fewer people understand the overall objective of the space program
- Each clarifying statement complicates already complex issue
- No single, easily understand direction that the entire team can relate to and make a part of their professional lifestyle

Space Program Clarity of Vision

- Biggest limitation unclear understanding of mission by all involved.
- Clear, relevant, timely, truthful, fundamental, comprehensive, consistent, accessible, caring and responsive to feedback
- Assumed 2-way communication feasible
 - Cold war – protect ourselves from Russians
 - Desert Storm – fighting evil Saddam Hussein
 - GWOT – vision no longer as clear

Vision of the New Space Program

- Benefit tremendously from a clear mission statement that would get the creative juices flowing and allow each individual to imagine the success of the vision within their own mind.

Introduction to Work Force Demographics

- Generation GI – born 1901-1922
- Silent Generation – born 1923-1942
- Baby Boomers – born 1943 – 1964
- Gen Xer's – born 1965 – 1981
- Millennial or Generation Y – born 1982 ..
- BC – became managers "before computers"
- AC – became managers "after computers"

Workforce Demographics as a Theory

- "One day, without warning, the United States woke up and multiple generations were populating every rung of the corporate ladder."
» *Stephanie Wood (2005)*
- Older managers need to understand younger workers and younger managers need to understand older workers
- Each group resents the other for various reasons

The Silent Generation

- Worked hard to get where they are
- Many did not receive college educations
- Learned through trial and error
- Less willing to hand over the reins
- Immense amount of knowledge maintained by them
- Most resistant to organizational change
- Responsible for the success of the Apollo program and putting a man on the moon in the 1960s

The Baby Boomers

- Workaholics
- Formative years – sex, drugs, rock n roll
 - Weirdoes, freaks, and dirty hippies
- Focused now on doing what is right and proper
- Make the U.S. and the world a better place
- Success means sacrificing family time to secure a position
- Responsible for developing the Space Shuttle and making a “re-usable” spacecraft a reality

The Baby Boomers

- No hurry to retire – satisfied with their jobs
 - Will stay on new job anywhere from ten to fifteen years
- Look for security and stability in their jobs
- Freedom from supervision
- Greater emphasis on quality of life than Xers
- Not making room for GenXers in the hierarchy ladder

Gen Xer

- Larger number of derogatory names
 - Self-centered, authority adverse, motivated by personal gain, poor listeners, disloyal to the organization, and focused on having fun.
- View life through a different prism – to motivate them think short term.
- Not interested in long-term solutions or putting in overtime and waiting for rewards.
- Comfortable work/life balance
- Much more self-reliant and independent
- Negative view of their future
- Gen Xers have done nothing significant yet

Gen Xers

- Feel mismanaged and misunderstood
- Search for mentors
- Tendency to change jobs every 18 months
- High level of ambition to build skill variety
- Work that instills a sense of belongingness
- Look for autonomy, flexibility in work hours, entrepreneurship, performance-related feedback, and short-term rewards

Millennials or Generation Y

- The “lucky” generation – time of prosperity and technological achievements
- Great racial interaction and renewed interest in social volunteerism
- Expected to influence the world significantly
- Devour information from multiple sources
- Higher-education with more technical know-how
 - Short attention span and require entertaining
- Like to network and work in teams – want to understand the mission – explain *why* & they will work their hearts out to get there.

Nexters

- Prefer polite relationship with authority
- Like leaders who pull people together
- Believe in collective action

Hook the Gen Y Nexters

- Nexters have an apathy towards space program with the exception of the Mars rovers
- Motivate this generation by educational efforts such as:
 - Making strategy computer games for people to figure out all the things you have to do to get to Mars.
 - Get people involved with missions on the internet
 - Do internet interaction (with robots and people) on Mars
 - Use the internet to drive robots on the moon and Mars

Summary

- NASA has resources to identify workforce demographics, attrition, and new hire statistics.
- NASA does not make available (or perhaps track internally) information that explains current management styles and techniques.
- Talk to individuals who worked the Space Program in the 1960s and 1970s on this topic.
- Include the Millennials and get their opinions.

Orlando Sentinel Article December 28, 2006

- One member of Gen Y said about the Space Program, "It's not interesting anymore. There's nothing new that everybody can catch onto."
- Keep in mind that this generation will be responsible for our future space programs.
- NASA must reach the media-saturated Yers.

Orlando Sentinel Article April 12, 2007

- Trying to rekindle love affair with NASA
- Americans take the space program for granted.
- Ask any man, woman, or child who Tiger Woods is, and they can tell you. Ask any person to name any current astronaut and see what reply you get.

Conclusion

- Clear vision
- Articulated to motivate differing generations
- Environment that stimulates creativity and innovation