



CRuSR Program

Commercial Reusable Suborbital Research

CRuSR, STEM & Inspiration

Some Ideas to Share and Discuss

National Space Grant Directors Meeting

5 March 2010

Charles Miller

Senior Advisor for Commercial Space

CRuSR Program Executive

Office of Chief Technologist

CRuSR Program

NASA Administrator Policy Guidance

- “NASA’s founding legislation states that we will ‘seek and encourage, to the maximum extent possible, the fullest commercial use of space.’ NASA must determine efficient and effective ways to leverage the power and innovation of American industry and the American entrepreneur.”
- “As the NASA Administrator one of my greatest challenges — the job I was given by the President — is to lead our NASA team in inspiring the next generation of Americans to once again seek become interested in math, science, engineering, and technology so that our nation can maintain its technological leadership in the world.”



*Remarks by NASA Administrator Charles Bolden
at the National Association of Investment
Companies Washington, DC; 20 Oct 2009*

CRuSR Program

Administrator Bolden Announces CRuSR Speech to Nat'l Assoc. of Investment Companies, Oct. 20, 2009*

- What if you were a seventh grader and you knew that if you buckled down, and studied hard at math and science, that you could go to space? Not because you would be the one of the very few who might become a NASA astronaut, as I was so privileged, but because you saw hundreds of people of all nations traveling into space each and every year, and knew in your bones that you could soon be one of them?
- What if you were a college student, and you knew that you could build real hardware in a semester engineering class, and that before the end of the semester your experiment would fly in space, and that you would get the results back from space before you got your grades?
- This day could come soon.*

http://www.nasa.gov/pdf/395165main_Bolden_NAIC_Speech.pdf

CRuSR Program

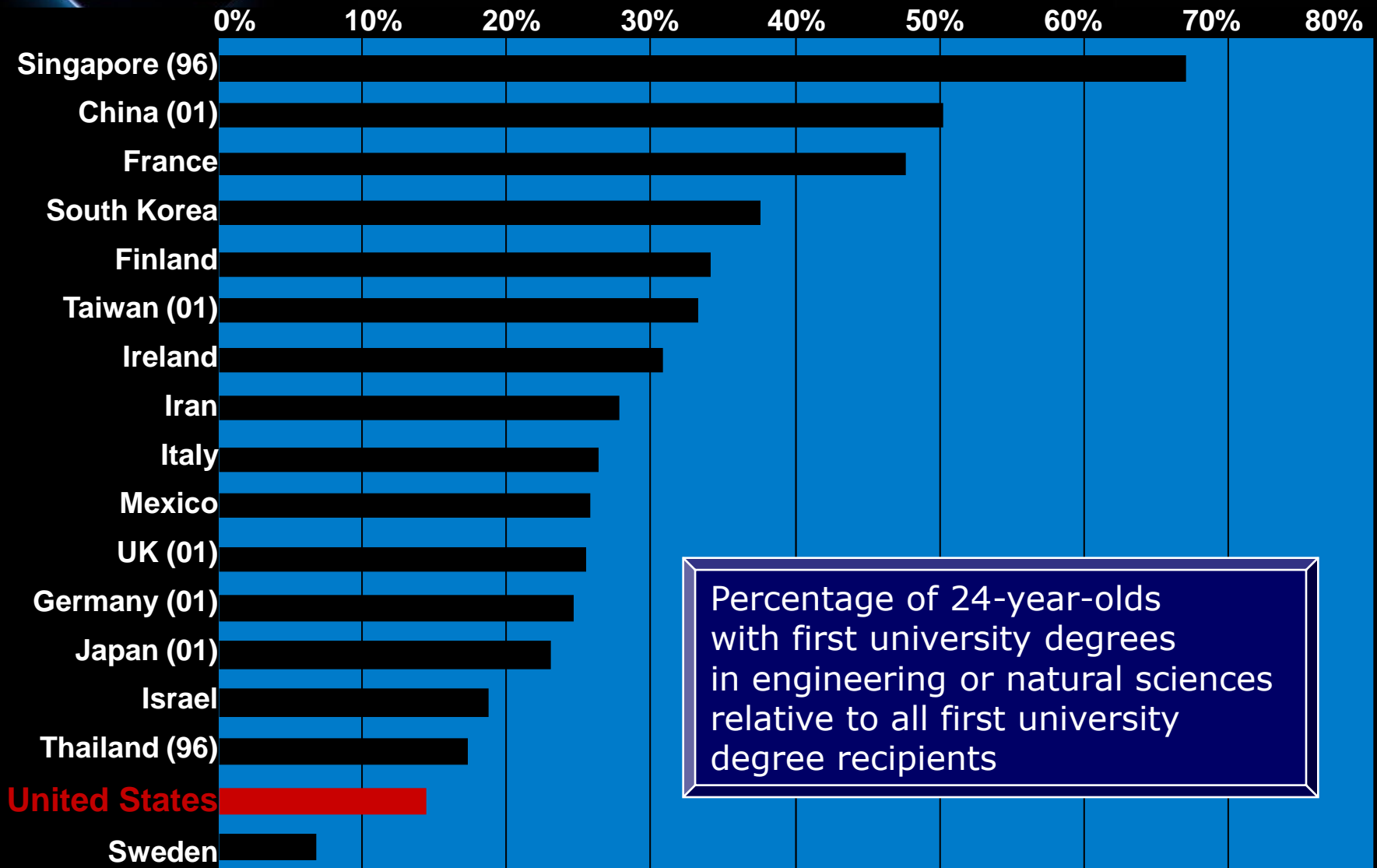
PROBLEM:

Losing student interest in middle school

- “...in 1980 when I would ask kids if they wanted to be astronauts, nearly every hand would go up. Kids were inspired by astronauts. But in recent years that has changed. Today, in comparison, I have noticed that fewer hands go up.”
- “This problem is not in our youngest. I still get a highly positive reaction from kindergarteners, first and second graders.”
- “Study after study shows we are losing them in the middle grade school years – sometimes as early as third grade for young black boys.”

http://www.nasa.gov/pdf/395165main_Bolden_NAIC_Speech.pdf

CRuSR Program



Source: National Science Board Science and Engineering Indicators 2004
All data gathered in 2002 except as noted in parentheses

CRuSR Program

Reusable Suborbital Developers

Are Planning to Develop Orbital RLVs for Low-cost Access to Space

Some will fly suborbitally in 2010 – we will be flying on them



Virgin Galactic



Blue Origin



XCOR



Armadillo Aerospace



Masten Space Systems

- Horizontal & vertical launch & recovery options
- From 0-6 passengers
- From 0-3 crew
- First full-up test flights in 2010

CRuSR Program

SOLUTION?

Personal Space Travel is a Unique and Powerful Motivator

■ CRuSR could:

- ◆ Communicate and enable a future where millions of American school children can credibly believe living, working and playing in space is part of their future

■ What IF CRuSR:

- ◆ Provided a hands-on spaceflight experience for tens-of-thousands of American middle and high school students each year?
- ◆ By flying 500 middle & 500 high school payloads/year to space?
- ◆ Each and every class participated from design, launch, recovery & publication

CRuSR Program

Some of the Challenges

- Must inform many thousands of schools across the country
- Must review/process many thousands of proposals
- Must design a new curriculum to achieve the purpose, which includes
 - Communicating a future where millions of American school children can credibly believe living, working and playing in space is part of their future
- Train a thousand teachers from 50 states on CRuSR curriculum
- Host and manage thousands of students at launch sites
- Multiple launch sites across the geographic United States?

CRuSR Program

Discussion (Thoughts, Feedback, Ideas)