Education & Public Outreach

Lars Perkins

Vice Chairman

Education and Public Outreach Committee

NASA Advisory Council

5 May 2011

Topics

- What We've Done
- Education
- Public Outreach
- Moving Forward

Richard Garriott

Dwayne McCay

Michael Bostick

Debbie Myers

Leslie Fenwick

Erika Vick

Peter Shankman

Iannis Miaoulis

WHO ARE WE?

Scott Parazynski

Doug King

Lars Perkins

What Have We Done?

- **FEB**: SBIR Visit
- **APR**: Participated on ISS panel at CSE meeting, Colorado
  - What will replace the shuttle “story”?
- **MAY**: EPO Meeting at FIRST Championship, St. Louis
- **MAY**: Presentation to ECC
- (Aeronautics, Tech & Innovation Cmte)

MAY EPO Meeting …

- **FIRST**
  - **Dave Lavery**, Program Executive for Solar System Exploration, OSS, HQ
  - **Lucien Junken**, Engineering Design Lead, Rover, KSC
  - **Katie Wallace**, Elementary and Secondary Education Programs Officer, Stennis
  - **Karen Kelly**, MSFC
  - **Rob Shate**, GSFC

FIRST

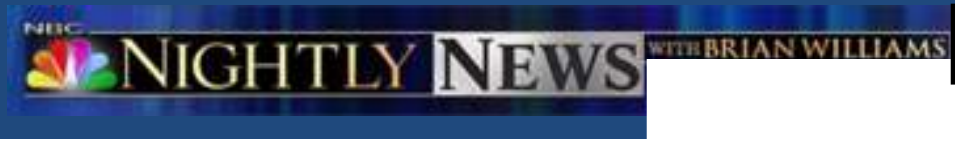
- “Inspiration”, not “Education”
- 20 year anniversary
- Dean Kamen, Woody Benson
- ~30 mm budget, $15 mm from donations
- FRC, FTC, FLL, FLL, Jr. FLL
- Ages 6-18

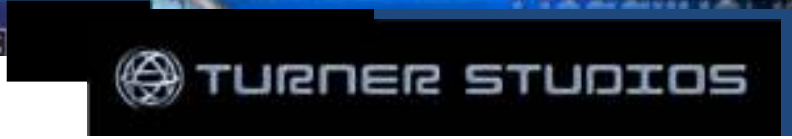
FIRST Impact

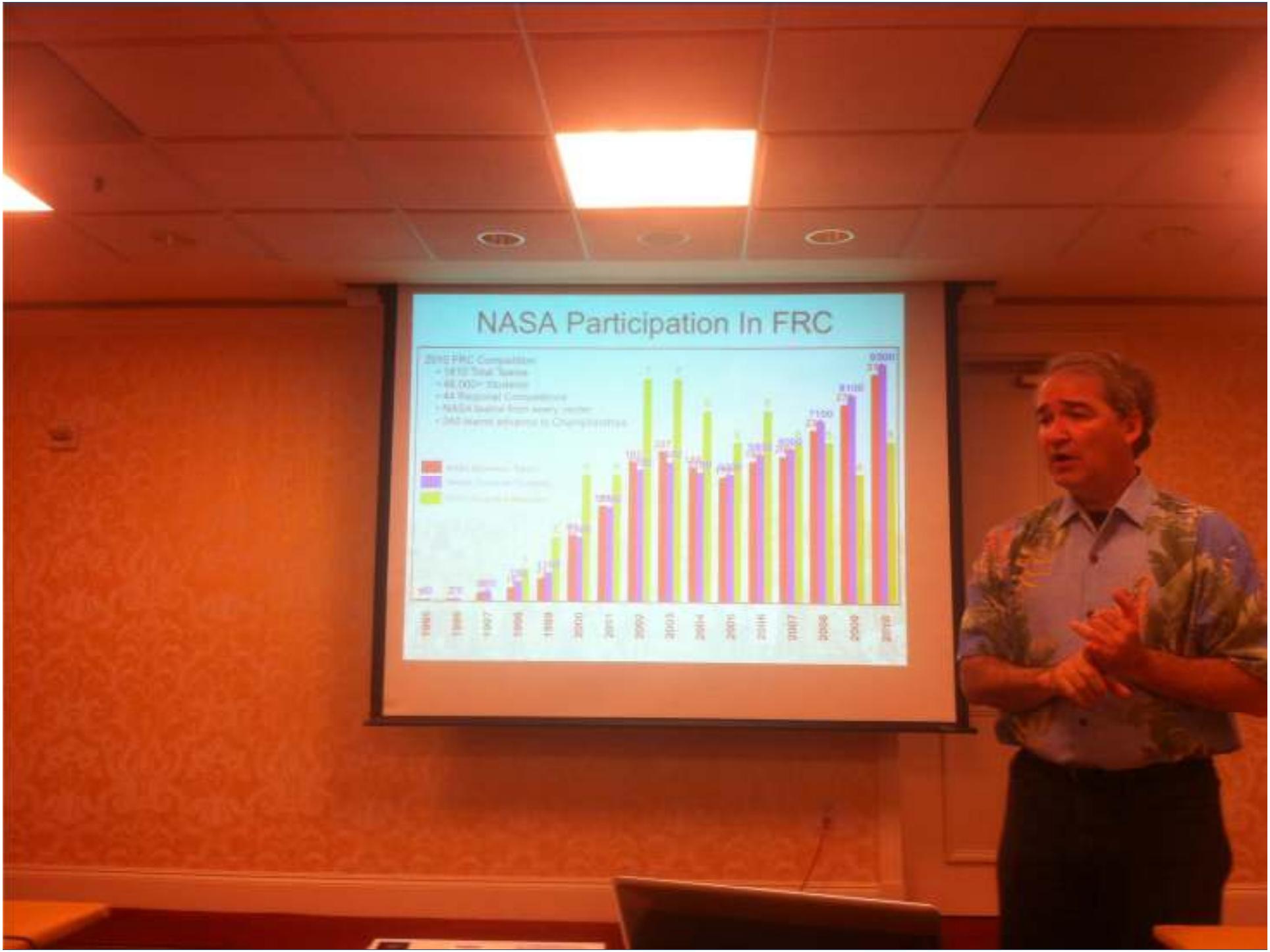
- 1810 teams
- 44 Regional Competition
- Touch 250,000 kids
  - 48,000 in FIRST Robotics
- 73,000 Mentors
- > $15mm in scholarships

"It's the only school sport you can play where everyone can turn pro"

National Media Coverage






NASA Participation In FRC

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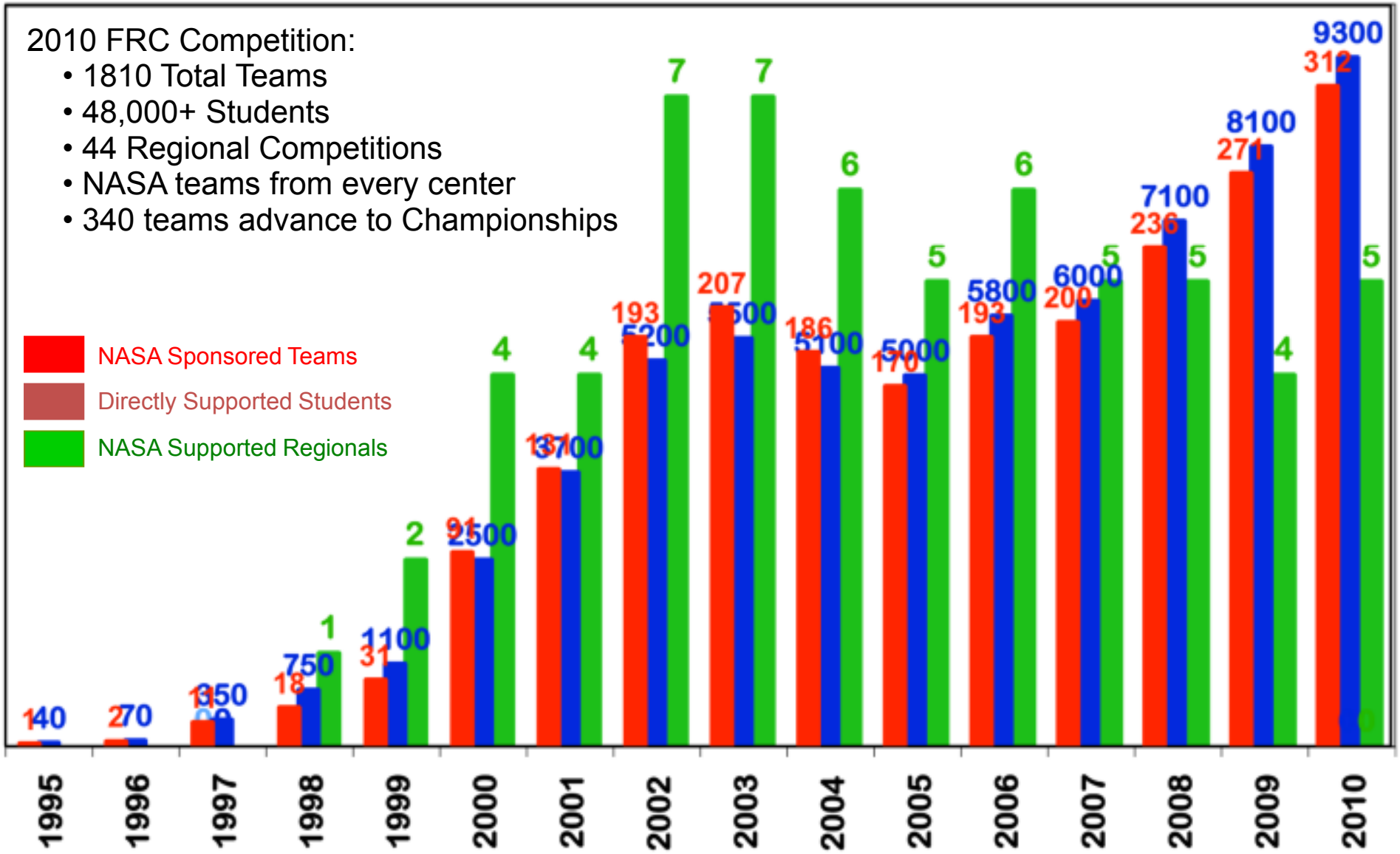


FIRST & NASA

- Part of NASA Robotics Alliance Project
- FIRST, BotBall, VEX
- $4.5mm (30%)
- 312 teams
- 9300 direct students
- 4 sponsored regionals

NASA-FIRST-Leland.wmv

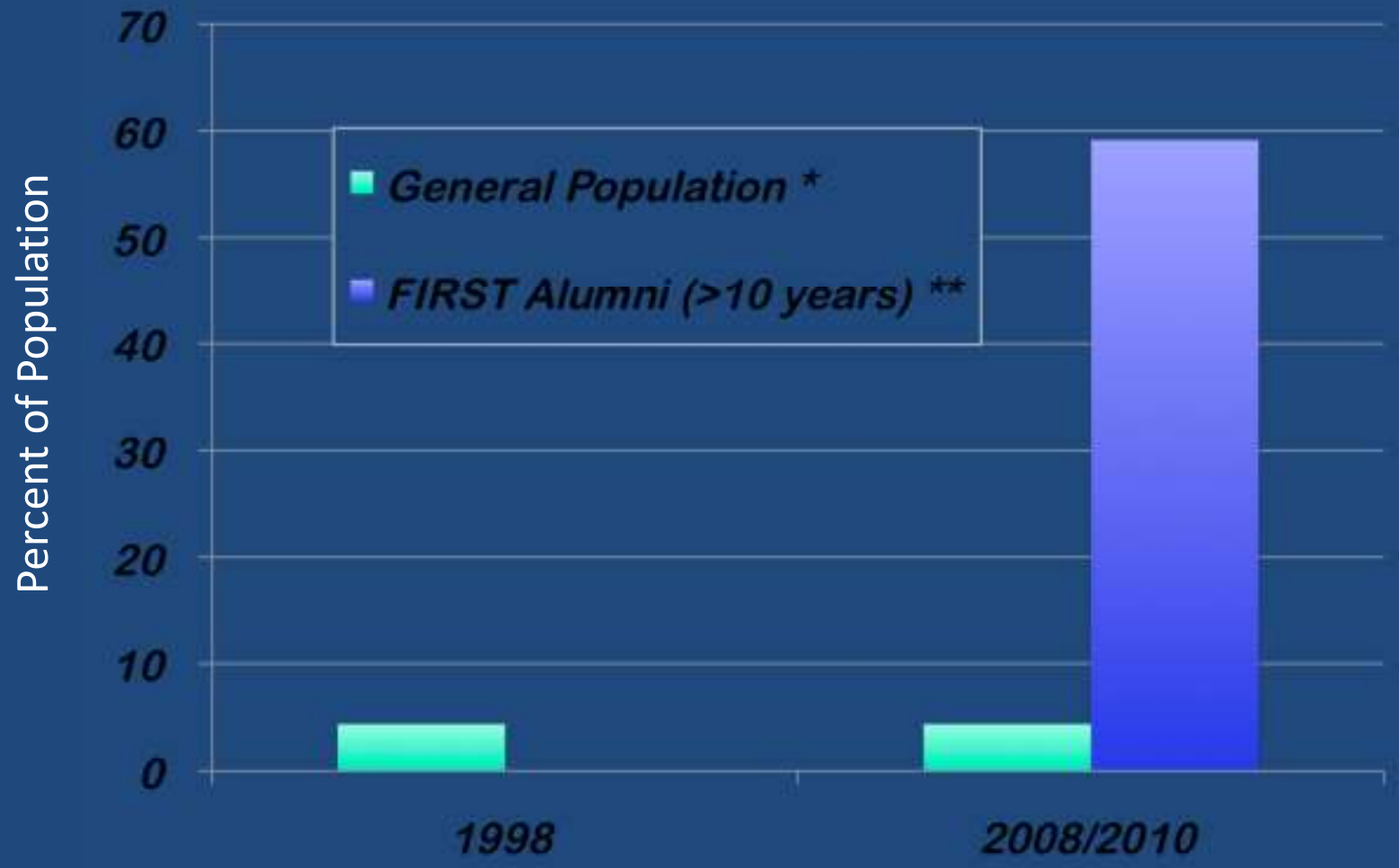
FIRST → NASA

- "FSU" – "First Standard Unit" - 6 weeks
- "Think you can be a manager? Run a FIRST team"
  - Too little money
  - Unreasonable schedule
  - Unknown resources
  - Lack of experience
  - Demonstrate you know "what matters"

College/University Participation

31% of Entering Freshman at MIT were FIRST graduates

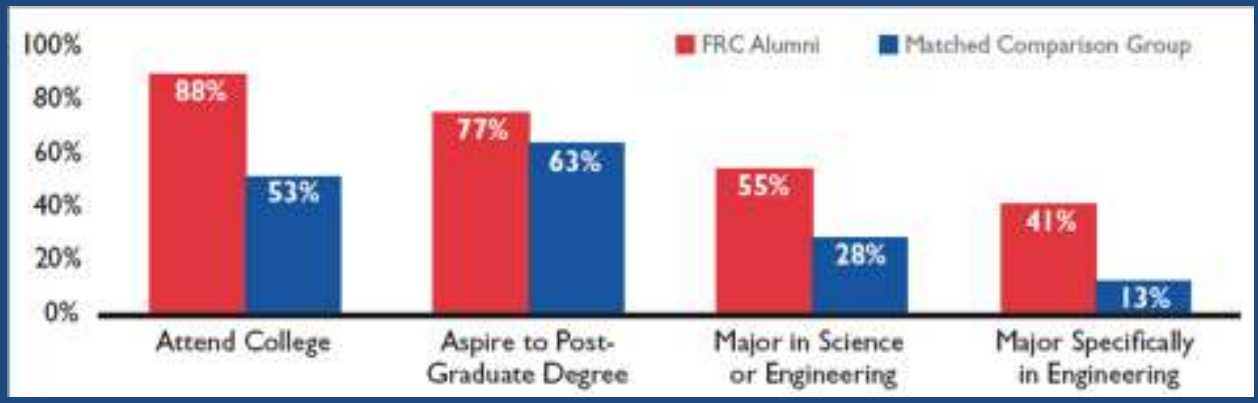
Population Fraction Employed In Engineering, Math, Science and Computer Careers



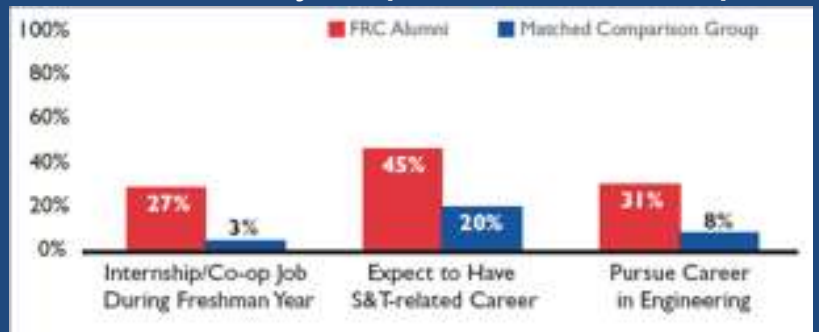
* Source: U.S. Bureau of Labor Statistics, May 2008 Databook
** Source: NASA House Teams Alumni Study, preliminary results

Effectiveness

- Participating students seek education in science & technology
  - Twice as likely to major in science or engineering (vs. comparison group)
  - More than three times as likely to major specifically in engineering

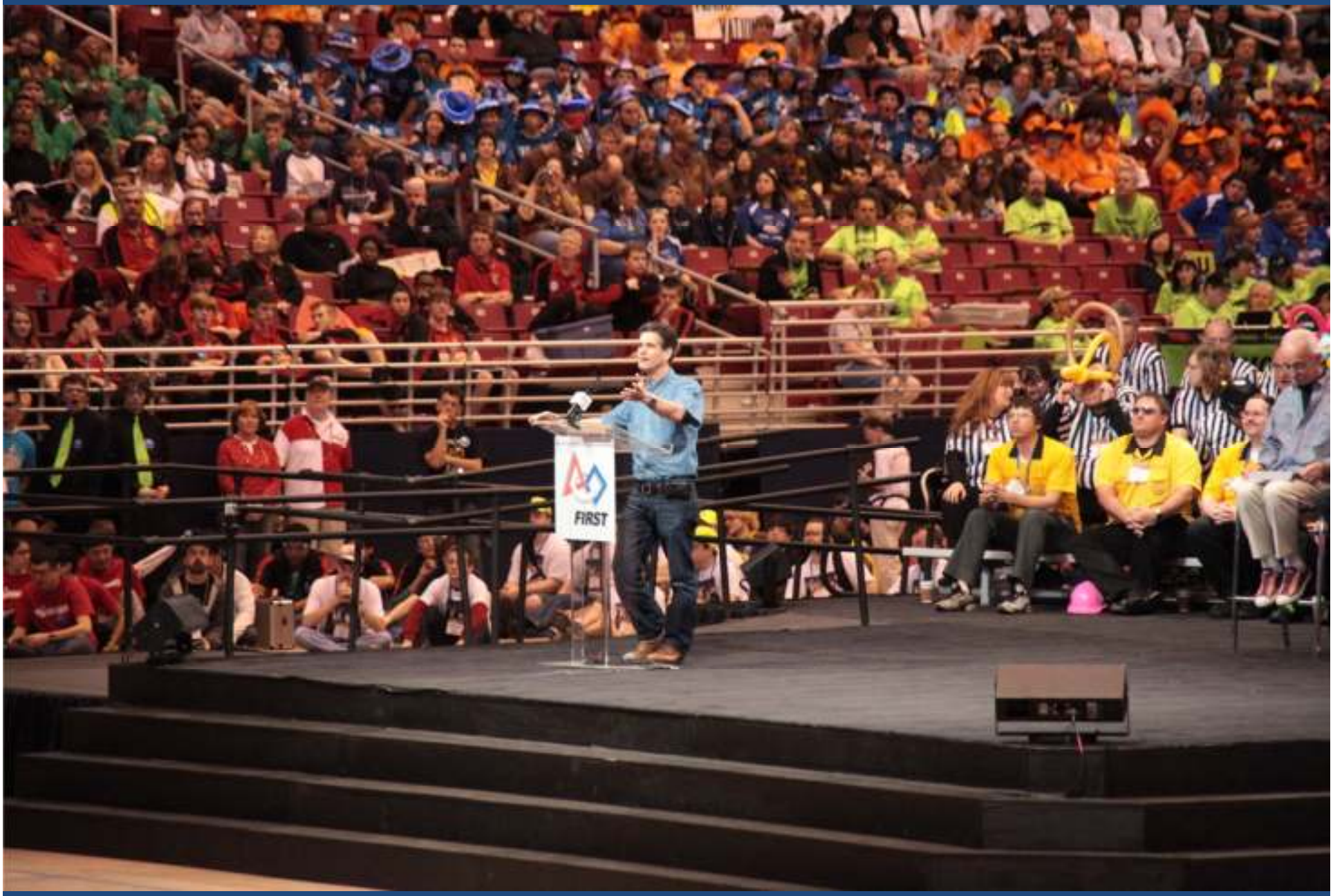


- Participating students earn Career Opportunities:
  - Almost ten times more likely to have internship
- Participating students are expected to Pursue Science & Technology Careers:
  - More than twice as likely to pursue S&T career
  - Nearly four times as likely to pursue career specifically in engineering

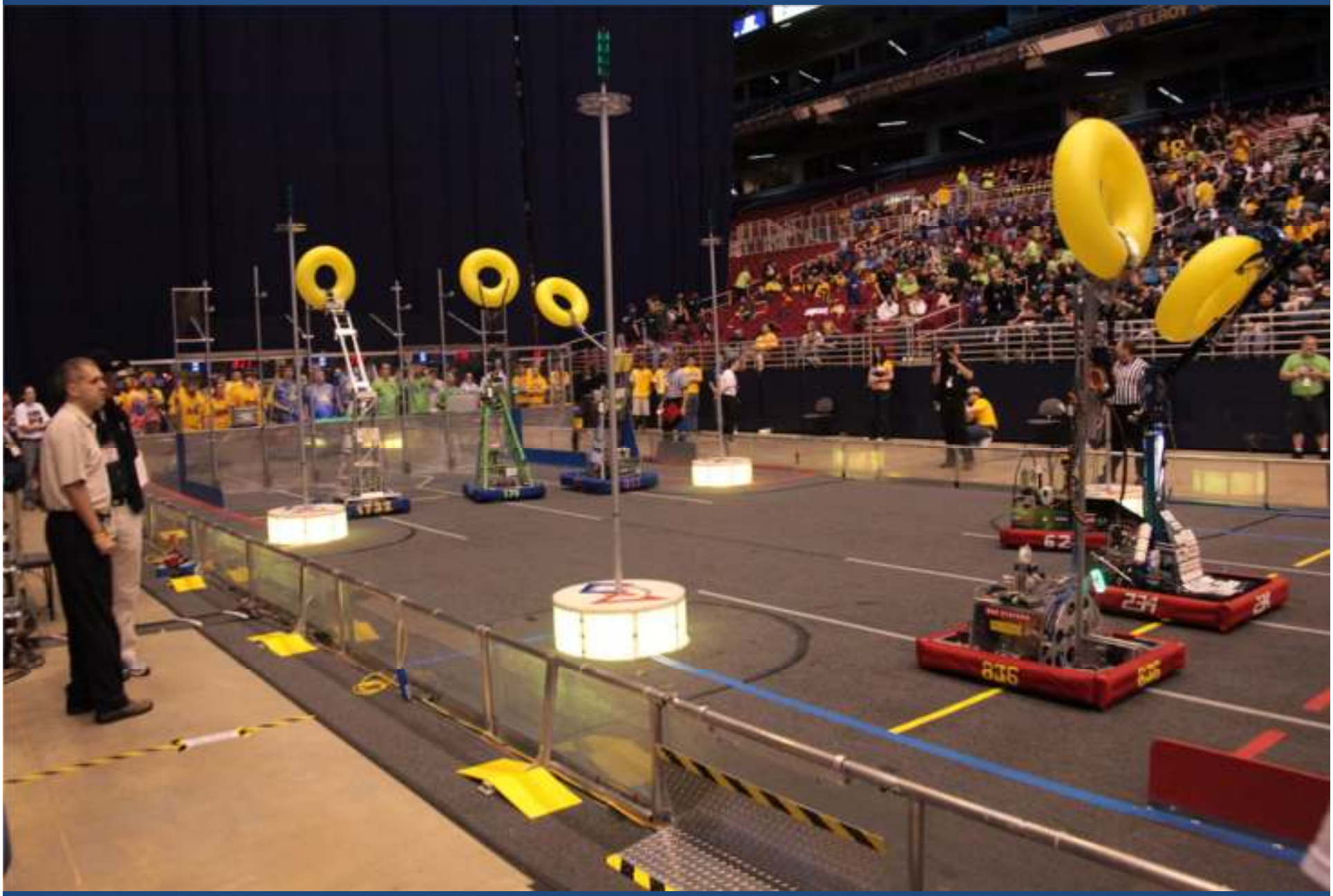


Source: Brandeis University, Center for Youth and Communities, Heller School for Social Policy and Management


FIRST Robotics Competition


FIRST


LONE STAR
REGIONAL
KAUFMAN
764
764


62
234
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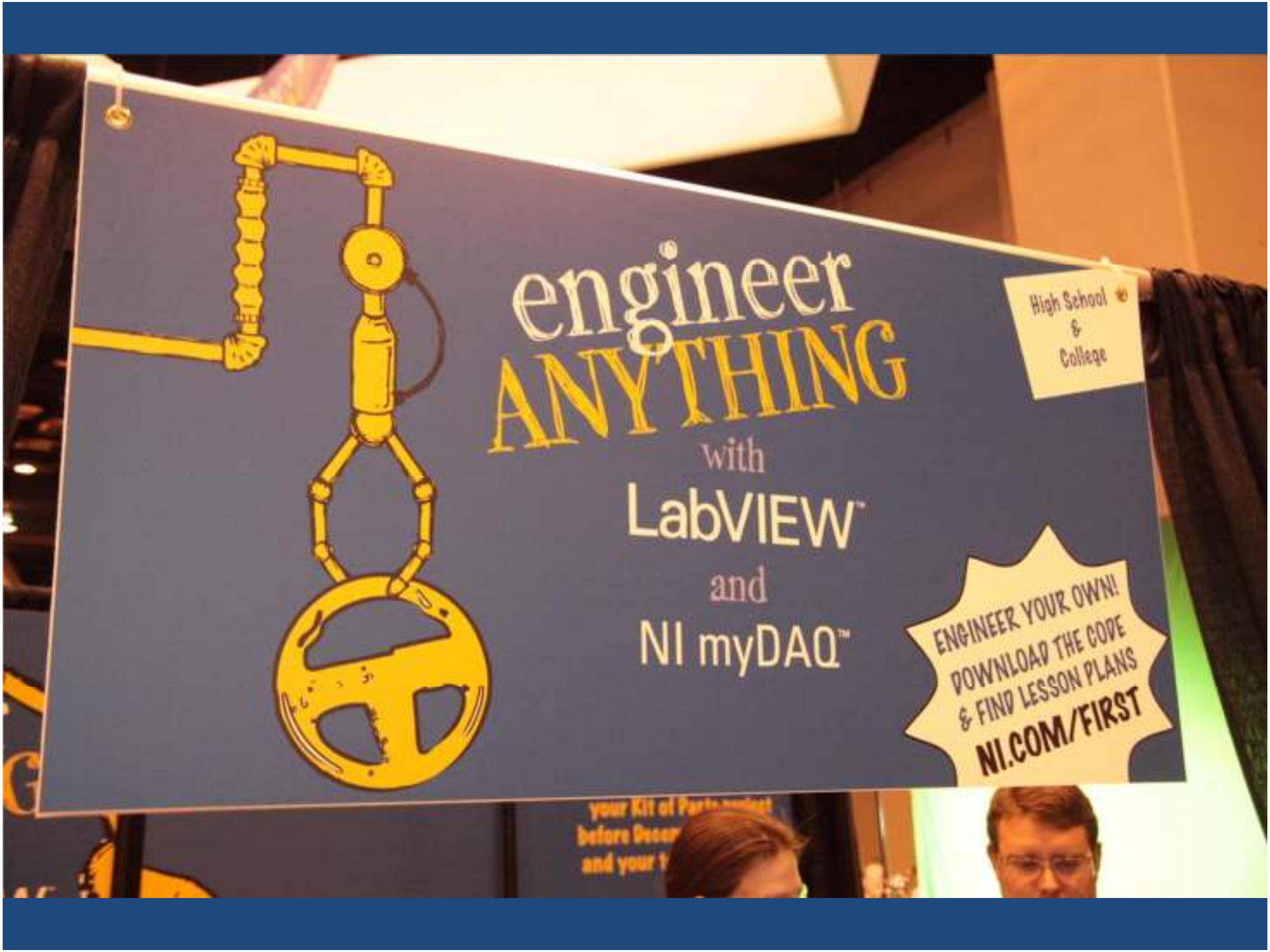
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Our FY 2011 Plans

- Continue supporting the program through the SMD *Robotics Alliance Project*
- Sponsor >300 FRC teams
- Mentor highly diverse set of >10,000 students
- Sponsor/host 5 regional competitions
- Continue hands-on participation by engineers and mentors from every NASA center
- Expand community outreach
- Show off NASA capabilities
- Investigate NASA scholarship options
- Our annual challenge: Can the centers (with engineers and technologists) beat the Headquarters team (with bureaucrats and accountants)?

Can NASA do more?

- Dave Lavery has turned DOWN budget increases in the past
- $1 mm more would help
- Encourage “5% time”
- Strongly endorses Leland’s direction

… don’t break what’s working

Why does it work?

- Limited resources are amplified by volunteer efforts and partnerships
- People get infected
- They do it because they want to
- There is no central planning
- The rules make sense

EDUCATION

Context

4,000,000 kids will start school this year. By the time they graduate, 60-70,000 will have chosen to major in science or engineering.

… It's not enough

What is NASA's role?

The Future

NASA is making significant and sustained investments in:

- Transformative technology development and demonstrations to pursue new approaches to space exploration, including heavy-lift technologies;
- Robotic precursor missions to multiple destinations in the solar system;
- U.S. commercial spaceflight capabilities;
- Extensions and increased utilization of the International Space Station;
- Cross-cutting technology development in a new Space Technology Program;
- Climate change research and observations;
- NextGen and green aviation; and
- Education, including focus on Science, Technology, Engineering and Math (STEM).

The Budget Reality

- $138 mm
- $40 mm back to states – Space grants
- $98 mm – What do we do with it?

Informal observation: The FIRST grassroots model is at least 10x more cost effective than programs designed and implemented from the top down.

Informal observation: NASA's core competency is not "education", it is "science". Let the scientists educate by inspiring students.

Informal observation: It may be more efficient for NASA's Ed office to incubate, support and coordinate programs initiated at the directorate level rather build programs themselves.

… recommendation(s) may follow

Leland's Recommendations …

① Focus NASA's Education Programs
② Strategically Manage Partnerships
③ Participate in State/Nat'l STEM Discussions
④ Create Structure (O of E, MD, others)
⑤ Expand ECC Charter
⑥ Improve Communication

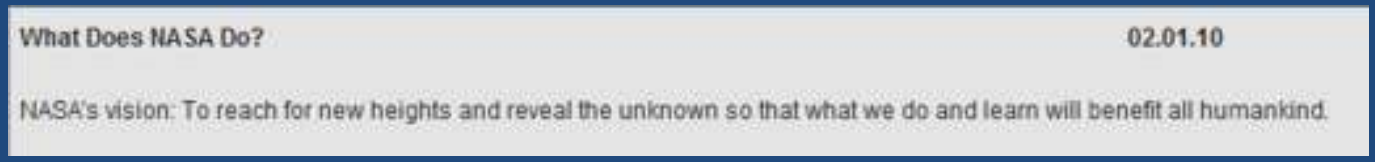
… A 90 degree turn, not 10 degrees … recommendation may follow

ECC Feedback

- What more can we do?
- General public doesn't "get it"
- Budget uncertainty makes it hard
- Changing administrations make it hard
- Must not formalize the informal projects

PUBLIC OUTREACH

NASA Vision



"To reach for new heights and reveal the unknown, so that what we do and learn will benefit all humankind"

"To benefit all humankind, NASA reaches for new heights and reveals the unknown."

"To benefit all humankind, NASA reaches for new heights and reveals the unknown, on Earth and beyond."

Effective Public Messaging

- CLEAR
- CONCISE
- CONSISTENT
- CONTEXT

… Rinse and repeat

Tier Communication Strategy

- Low touch fulfillment of statutory requirement to inform
- Separate higher touch effort to support strategic communication goals
  - Review quarterly
  - 1, 2, 3 messages
  - Relentless, repetitive

… recommendation may follow

Moving Forward …

- Support Leland
  - Process & Partners
- Assist in Translation of Strategic Vision to Clear Public Message
- Help Office of Communication Coordinate Message Streams
- Liaise with Aerospace & Tech & Innovation Committees

Increase the Awesome …