U.S. FIRST

TIPS FOR BUILDING YOUR TEAM

WELCOME TO THE 1995 U.S. FIRST COMPETITION!

The suggestions in this document are designed to assist you develop your team for the U.S. FIRST Competition. Although this information has been gathered from both rookie and veteran teams, it is not part of the rules nor guidelines to guarantee success. Remember, not all teams are identical, and what worked for others may not work for you. Read this through, if any of the ideas will help you, use them. And, if you need more information, please call and we will help however we can.

START EARLY TO BUILD YOUR MOMENTUM

Our teams have provided us with the best advice—start early! We have heard many times that the biggest hurdle was getting enough people from diverse areas to participate. But, once they did, the momentum carried everyone through from start to finish.

Work with your team partner to recruit team members from both your sponsor company/ university and team school.

- ▲ Call U.S. FIRST for informational kits, event programs, and articles from national press and set up an information table in the corporate cafeteria or at a staff meeting.
- ● Show videos of past Competitions which are sure to get others excited ... and involved!
- ■ Have informational meetings with past Competition participants from your organization and/or neighboring teams.

I can't wait to be an engineer.
Student team member

As a new employee, joining U.S. FIRST was the best thing I ever did. I met a lot of new people from work and the community.
Engineer team member

This was perhaps the most beneficial and instructive portion for the students for they not only got to see the engineer at work, but participated in the actual design and construction.
Teacher team member

340 Commercial Street
Manchester, NH 03101
Phone 603-666-3906
Fax 603-666-3907

BUILDING YOUR TEAM

TEAM SIZE

Involve only as many individuals as you think your team can manage. Just as in a company, there are many different jobs that need to be done to "bring your product to market," so if you have a large response, try dividing responsibilities.

If you are in a position of having to select only a portion of the students who show interest, you may want to turn to their teachers for advice.

However, remember that one of the strengths of the U.S. FIRST Competition is that it repeatedly has a profound effect on students who were least likely to be picked as individuals with potential interest in this type of program. We hear time and time again just how unique this experience is–you may see some unexpected results.

GET TO KNOW EACH OTHER

Many team members have commented that the *design-and-build* phase of the Competition is the most intensive work time they have ever spent.

To make things run smoothly, teams often start the school year with Team Building Workshops that include student, teacher and sponsor team members. Some practice brainstorming using the previous year's game. This may also serve to recruit new team members and renew the interest of those already signed on.

- ▲ Check with your human resources department for ideas or exercises designed to teach brainstorming and team work skills.

We worked with the students on problem-solving. This helped a great deal in making decisions on the design and build of the car. We exposed students to CAD-CAM and CNC machines in shop. This gave a better understanding of how products are designed and built.

Engineer team member

Another benefit to starting early is the opportunity to get to know your teammates and learn more about individuals' skills and interests. One team had a hobby exposition to show the students that engineers were real people with similar interests and that engineering was not just an abstract concept that had no relation to fun.

Learning computer programs ahead of time—CAD-CAM, drafting or drawing—can also be helpful by speeding up design of the machine and keeping the cost of "testing" prototypes within budgets.

BE PREPARED TO TEACH

Derek gave me a piece of paper with nine different shapes and sizes on them and told me to make them three-dimensional. It just about took me the whole day ... but I figured it out myself. He made four of the figures so I could use them as models. But I'm glad he didn't just make them himself and have me watch.

Student team member

Many of our team members were surprised to hear: *"This is the first time I've ever built something," "I now know what torque is!"* or *"Explain in English—not engineering—what you just said."*

Depending on the group of students you work with, some or many of them will never have been in a machine shop before nor used a small hand tool, and for the first time many will see how their math and science classes are applicable to "real world" situations.

In order for this to happen, be prepared to explain complicated concepts and calculate formulas at a level students will comprehend. Don't be scared away by this—many of our students and teachers say that the hands-on experiences and environment associated with the U.S. FIRST Competition is very conducive to learning.

And, while it may be natural to prepare an explanatory lecture to introduce the program or certain concepts, try different approaches—with such tangible materials and topical "lesson plans" you will find it easier than you anticipate to teach for understanding.

Need ideas? Confer with your teacher team partners and do some hands-on exercises which will provide an opportunity to explain why some ideas work and others don't.

COME UP WITH A PLAN

Including all team members in long-term planning and goal setting not only models what students can expect in their futures, but helps to ensure that everyone will adhere to the plan.

▲ **USE REAL-WORLD MODELS**

Teams that feel they had a successful experience began planning ahead of the start of the *design-and-build* phase. Vision statements, strategic goals, time frames and team responsibilities were outlined, documented and distributed. Some teams created mini-corporations with design, manufacturing, marketing, and budget departments.

● **ACQUIRE FACILITIES**

Find a place early where you can set up shop, have meetings and work on the vehicle. Also, learn the procedures for acquiring materials or having shipments delivered to your work site. If permission, keys, or badges are required for access, get clearance NOW for team members .

■ **COMMUNICATE**

As with any multi-faceted project, the biggest benefit and the toughest obstacle is communication between team partners. Come up with a system to keep everyone involved—even, and especially, parents—informed of changes, travel plans, upcoming meetings, and project progress.

● **DIVIDE RESPONSIBILITIES**

Job descriptions, applications and interviews allowed team members to choose their areas of interest and helped team organizers assign responsibilities. Each team was then divided into groups to accomplish specific tasks and kept each other abreast of their group's progress.

▲ **TRAVELING**

Come up with a plan for deciding who will travel: will it be based on who can pay? an essay contest? review by a student panel?

Remember: as a coach you do not have to make these decisions alone. Ask the students to decide on a plan—their sense of diplomacy will surprise you!

Be clear about your expectations of those who make the trip. Talk about acceptable behavior, team spirit, and sportsmanship conduct.

Be ready to handle emergencies and report good news back home quickly.

When asked to list the three things they enjoyed most about participating in the U.S. FIRST Competition, student team members responded:

... learning you could actually put something complicated together and have it work

... doing something new. No one in Colorado can say they did the same thing we did!

... seeing how many different ways you could do the problem

...making a robot out of junk and have it work

...learning how pieces and parts worked

...the unexpected intensity of the Competition

...challenging myself with the work

...the Competition and seeing how exciting a non-sporting event can be

...working with my hands in the shop

...I got to meet a whole bunch of people from everywhere!

...you felt part of a team, which I was

...working with trained engineers who could help us make our plans a reality

...Competition I have a say in

...the bonds we formed—both the kids and engineers. We became a team.

...it made me learn how to get along better with people

...I enjoyed just being with the engineers. They were fun to be around.

...I like my ideas put to use

...an open attitude

...skills which I'll take with me

...meeting the engineers and understanding their jobs

...learning that work in engineering can be fun

...actually feel a part of something big

...the challenges associated with design and manufacture

...working with others toward a final product

...seeing all the enthusiasm about science

...working with other schools

SPREAD THE WORD

Now, you've recruited your team members. You know each other's names, and have made some new friends. Everyone knows their job and where they are going to do it. But, do you really want to do it all on your own?

DEVELOP YOUR SOURCES OF SUPPORT

PARENTS Some parents are fortunate to be team members and work alongside their son or daughter. Others, however, will get the teenager version of U.S. FIRST: "We'll be working late at the plant with engineers and large industrial machines building a robot that plays soccer, okay?!"

Inform parents about the program by sending home information from U.S. FIRST and the school. Include them in your recruiting meetings or have the students make presentations on the team's progress. Open houses at the school or work facility will help quell any fears or doubts parents may have about the people their children are spending time with and the project they are working on.

Permission forms may also be helpful—a sample form is enclosed in this packet—feel free to tailor it to your needs.

SCHOOL Include teachers from outside the science or math departments. Art classes can help design team logos, computer instructors can teach programs, and the shop or tech ed teachers will be valuable resources for everyone.

Some schools even have their own television studios and in-house broadcast facilities: use them to help recruit team members by showing videos of the Competition or student-produced documentaries of your progress.

Involve the school administration in addition to teachers. Permission slips, insurance issues, and school district clearance are sometimes necessary to allow the students to travel off-site for working on the machine or for the actual tournaments.

The administration can also facilitate open houses, school assemblies, pep rallies, and facilities for meeting or working.

COMMUNITY Other team needs, such as fundraising and carpools, may be fulfilled by community members—parents, aunts, uncles, small (and large!) business owners.

Students in the same neighborhood can arrange for carpools for travel to and from the work site. Local businesses can assist with donated "fuel" for long work sessions—pizza and doughnuts are always popular!

Teams often come to the Competition with uniforms on—team tee-shirts, hats and buttons can be facilitated by local merchants.

Create a team of students to organize fundraisers and recruit support.

DOCUMENT YOUR EFFORT

GET YOUR NAME IN LIGHTS

Spreading the word among team members and their extended families about your U.S. FIRST team is a good start. But, think **BIG!**

Promote your involvement both internally and externally. Use newsletters to recruit team members, a cheering section or new supporters.

Have your school board members, administrators, town or city mayor or corporate CEO visit your work site and get the local papers and television stations involved.

Again, have students assist your corporate public or community relations staff and broaden the type of role models you can provide.

THE CHAIRMAN'S AWARD

The Competition also offers students with diverse interests and talents to be involved by documenting your team effort for the benefit of all: team members, parents, school members, and the Chairman's Award judges.

The Chairman's Award is presented to the team which demonstrates the most outstanding partnering effort. Specific criteria for the award will be available with the Rules; however, components of partnerships include student involvement, sportsmanship, effort and overall cooperation and effectiveness between school and team partner(s).

The national judging panel reviews teams' materials submitted prior to the National Championship. Documentation may consist of video footage, photos, and written chronicles.

HAVE FUN!

Remember, our mission at U.S. FIRST is to show students that science, math, and engineering are fun and creative.

We look forward to seeing you at the 1995 Competition events!

U.S. FIRST

Sample Letter to Parents from School

DATE

Dear Parents of **SCHOOL NAME** Students:

Your son or daughter has expressed an interest in participating in the U.S. FIRST Competition, a national creative engineering contest featuring school, business and university partnerships. The purpose of this program is to bring together the nation's leading companies and universities in a united effort to win over young minds to the wonders of science and technology. We have enclosed some information on the organization and last year's event.

Teaming up with professional engineers, students get a hands-on, inside look at an engineer's profession. In seven action-packed weeks, through a series of meetings both at **SPONSOR NAME** and **SCHOOL NAME**, our team of students and engineers will work together to brainstorm, design, construct and test our "champion robot." On **COMPETITION DATES** this remote-controlled vehicle will then compete against others from teams spread across the country in tournaments complete with referees, cheerleaders and time clocks.

The result is a fun, exiting and stimulating environment in which students can discover the important connection between classroom lessons and real world applications. History of the program, and a 1994 survey of participants (enclosed), have shown that through this program both students and engineers gain valuable knowledge and experience and we are confident that our team effort will produce similar results.

Your son or daughter needs your permission since many of the activities will occur during after-school hours and on weekends (time is of the essence!). **[It may be useful to include some specifics about your team communication plan here, such as:** *A sample schedule of meetings is enclosed.* **OR** *We will be having an open house for parents on* **DATE** . **OR** *We will be sending weekly updates home with the students on* **DAY OF THE WEEK.**] In addition, we will need your permission for your son or daughter to travel to **COMPETITION SITE** on the **COMPETITION DATES** .

A permission slip is enclosed for your review and signature. If you agree to permit your son or daughter to participate, please sign and return it to **TEACHER CONTACT NAME** by **DEADLINE DATE.** And, please feel free to contact **TEAM LEADERS' NAMES AND PHONES** if you have any questions about this program.

Sincerely,

SPONSOR CONTACT

PRINCIPAL NAME