Section

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INTRODUCTION

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0 INTRODUCTION

0.1 WHAT IS THE *FIRST* ROBOTICS COMPETITION?

The *FIRST* Robotics Competition is an exciting program that assimilates teams, sponsors, colleges, and technical professionals with high school students to develop their solution to a prescribed engineering challenge in a competitive game environment. The program has resulted in life-changing, career-molding experiences for its participants. It is also a lot of fun.

In 2007, our reach will expand to over 33,000 students representing approximately 1300 teams. These teams will come from every state in the U.S., as well as from Brazil, Canada, the United Kingdom, Mexico, Israel, and the Netherlands. *FIRST* has truly become an international program and is continuously growing. These teams will participate in 37 Regional Competitions and can qualify for the Championship Event at The Georgia Dome in Atlanta, Georgia. The competitions combine the practical application of science and technology with the fun, intense energy, and excitement of a championship-sporting event.

This year's challenge will be presented at the 2007 *FIRST* Robotics Competition Kickoff on Saturday, January 6, 2007. At the Kickoff, all teams:

- Will see this year's game and field for the first time
- Will learn about the 2007 game rules and regulations
- Will receive a kit of parts. The Kit of Parts will include motors, sensors, chassis, transmissions, vision camera, bearings, and other materials that teams can use in the design and construction of their robots. They will also receive a multi-channel radio control system and a 12V battery power supply. The kit is meant to provide a level starting point for all teams. The rules also describe the additional items teams can purchase.

When you bring dedicated, enthusiastic students, teachers, engineers, and other professionals together, they will produce a wide range of amazing machines that are competition ready in six weeks of construction time.

0.2 GRACIOUS PROFESSIONALISM, A *FIRST* CREDO

Dr. Woodie Flowers, *FIRST* National Advisor, asks and provides his view regarding the question, "Why do *FIRST* folks talk so much about that phrase?"

Quoting Dr. Flowers, "Obviously it would not make sense to endorse 'asinine professionalism' or 'gracious incompetence'. It is, however, completely consistent with the FIRST spirit to encourage doing high quality, well-informed work in a manner that leaves everyone feeling valued. Gracious professionalism seems to be a good descriptor for part of the ethos of FIRST. It is part of what makes FIRST different and wonderful.

Gracious professionalism has purposefully been left somewhat undefined because it can and should mean different things to each of us. We can, however, outline some of its possible meanings. Gracious attitudes and behaviors are win-win. Gracious folks respect others and let that respect show in their actions. Professionals possess special knowledge and are trusted by society to use that knowledge responsibly. Thus, gracious professionals make a valued contribution in a manner pleasing to others and to themselves.

In FIRST, one of the most straightforward interpretations of gracious professionalism is that we learn and compete like crazy, but treat one another with respect and kindness in the process. We

try to avoid leaving anyone feeling like they are losers. No chest thumping barbarian tough talk, but no sticky sweet platitudes either. Knowledge, pride, and empathy comfortably blended.

Understanding that gracious professionalism works is not rocket science. It is, however, missing in too many activities. At FIRST, it is alive and well. Please help us take care of it.

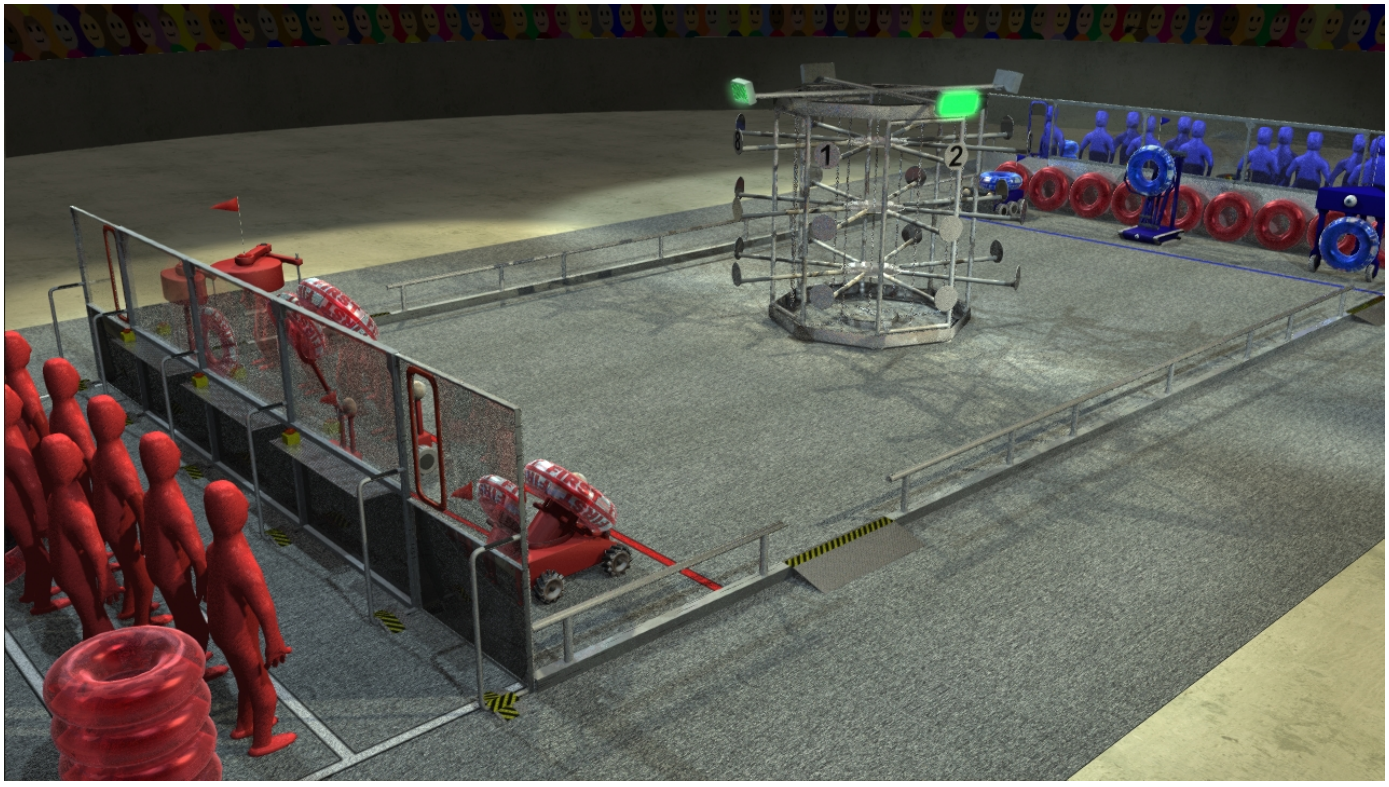
In the long run, gracious professionalism is part of pursuing a meaningful life. If one becomes a professional, and uses knowledge in a gracious manner, everyone wins. One can add to society and enjoy the satisfaction of knowing that you have acted with integrity and sensitivity. That's good stuff!"

0.3 SAFETY, A *FIRST* CULTURE

Safety is an important part of *FIRST* culture and should be observed by all participants at all times. As a part of Safety Awareness and Recognition Program, teams will be observed and evaluated at many different levels and by many individuals at the event. Safety Advisors will evaluate team safety behavior and practices in the Pit from the time the robot is uncrated, until the robot is re-crated for shipment. Referees will observe safety on the playing field as well as adherence to the rules. Judges will evaluate how teams have integrated safety into their robot designs when considering the team for technical awards.

0.4 THE 2007 GAME – "*RACK 'N' ROLL*"

Rack 'n' Roll is played by two (2) three-team alliances on a 54'x26' 8" field with a center structure (Rack) containing 24 "spider legs." To score, teams use three different types of tubes called "Keepers," "Ringers," and "Spoilers."



The game is made up of two scoring periods. The first period is "Autonomous" (the robots run without driver control) lasting 15 seconds. In the autonomous period, robots try to place a "Keeper" tube on one of the spider legs of the Rack using a color vision tracking system to find one of the

four target lights at the top of the rack. Once placed, a “Keeper” tube may not be removed or “Spoiled.”

During the second period (2 minutes), the robots are driver controlled. In this period the teams will attempt to score more points by using the robots to add “Ringers” onto the spider legs or by “Spoiling” the opposing teams score by placing a black tube over the “Ringer.” Points are earned and scored exponentially by the number of consecutive Ringers and Keepers in a column or row.

Alliances may score additional points if, by the end of the match, their robots are in their home zone and have been lifted off the floor by 4” or more by another robot before the final buzzer sounds.

Explanation of Game Pieces:

Red or Blue w/lettering	**Red or Blue w/out lettering**	**Black**
Keeper	Ringer	Spoiler

Robot Height/Weight

Class	**I**	**II**	**III**
Height	48”	60”	72”
Weight	120 lbs.	110 lbs.	100 lbs.

Scoring Table

Game Pieces	**Singleton**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Point Value	2	4	8	16	32	64	128	256

Robots off the ground

>= (greater than or equal to) 4”, less than 12”	15 points
12” or higher	30 points