



## TEAM INFORMATION PACK 2011

# About Systemetric



Systemetric (Team 759) is a robotics team comprised of students from students at Hills Road Sixth Form College in Cambridge. The team was the first from the United Kingdom to enter into the FIRST Robotics Competition in 2002 and has since become a regular competitor at the New York City Regional.

We now also participate in the Southampton based Student Robotics competition, becoming the first team from outside Southampton, and mbed Robot Racing competitions hosted by ARM.

The team's name comes from the metric system of measurement and 'system'. The name was chosen as reference to the United States continued use of the imperial system of measurement, where the UK has changed to the metric system.

The team has become iconic for wearing British Union Flag waistcoats and bowler hats at the New York City Regional, accompanied by the team slogan "Don't Walk, Do the Robot".

## Achievements

**2002** Sportsmanship Award

**2002** NYC Regional Semi-Finalists

**2003** Xerox Creativity Award

**2003** New York City Regional 3<sup>rd</sup> place

**2004** New York City Regional Winners

**2005** NYC Regional Imagery Award

**2005** NYC Regional Quarter-Finalists

**2006** New York City Regional Finalists

**2007** NYC Regional Semi-Finalists

**2008** NYC Regional Quarter-Finalists

**2009** NYC Regional 29<sup>th</sup> out of 66

**2010** NYC Regional 47<sup>th</sup> out of 63

**2010** mbed 1<sup>st</sup> Cambridge, 2<sup>nd</sup> Global

# About FIRST

*"To transform our culture by creating a world where science and technology are celebrated and where young people dream of becoming science and technology leaders."*

**Dean Kamen, Founder of FIRST**

FIRST is a not-for-profit organization which encourages young people to discover and develop a passion for science, engineering and technology. Founded in 1989 by inventor Dean Kamen, the 2009-2010 FIRST season attracted over 212,000 students, 57,000 mentors and coaches, and over 33,000 other volunteers. The annual programs culminate in an international robotics competition.

## FIRST Robotics Competition

The FIRST Robotics Competition stages short games played by autonomous and remote-controlled robots. Dubbed a "varsity sport for the mind," FRC combines the excitement of sport with the challenges of science and technology. The robots are designed and built in 6 weeks (from of a common set of parts) by a team of 15 to 25 students aged 14 to 18 and a handful of professional engineer mentors. The robots are built under strict rules, limited resources and time limits. Teams have to design a team brand and develop teamwork skills. It's as close to "real world" engineering that a student can get.

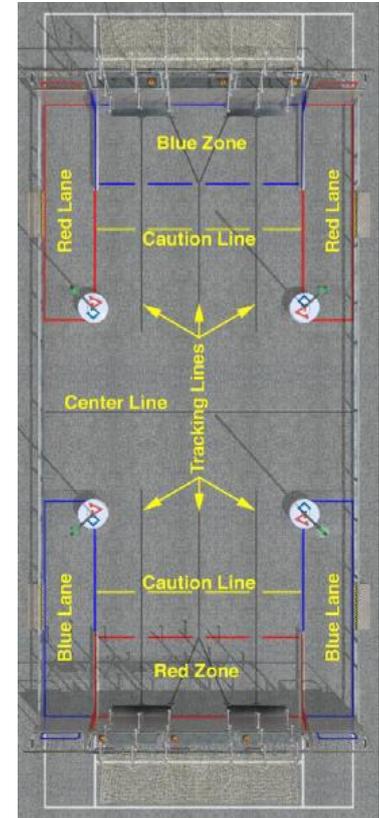


# This Year's FRC Competition

This year we have to build a robot to hang as many inflated plastic shapes (triangles, circles and squares) on a grid as we can during a 2 minute and 15 second match. The higher we hang our game pieces on our scoring grid, the more points our alliance receives.

The match begins with a 15 second Autonomous Period in which robots operate independently of driver inputs and must hang designated inflated shapes, 'Ubertubes', to score extra points. For the rest of the match, drivers control robots and try to maximize their alliance score by hanging as many logo pieces as possible. Any logo piece hung on the same peg as an Ubertube receives double points. If teams assemble the logo pieces on their scoring grids to form the FIRST logo (triangle, circle, square, in a horizontal row in that order), the points for the entire row are doubled.

The match ends with robots deploying minibots, small electro-mechanical assemblies that are independent of the host robot, onto vertical poles. The minibots race to the top of the pole to trigger a sensor and earn additional bonus points.



# Last Year's Robot

Our 2010 competition robot "Colosson" was designed to take part in the FRC game "Breakaway", which involved robots kicking footballs into goals on both ends of the arena. It used a 3 wheel drive system with deployable casters for quick and easy turning. The robot was capable of going over ramps on the arena, and was also small enough to pass through tunnels in the ramps. It was also capable of blocking other team's robots from scoring.

Unfortunately technical issues during some of the matches played by the robot severely hindered our competition ranks. During one match power issues with the robot's radio meant the robot was unable to communicate with the control system and therefore it had to sit out the match. During another match software issues meant that the robot did not respond to commands as intended.



# Funding

Systemetric is completely self-funded, and depends entirely on corporate sponsorship and donations to be able to build our robots and enter the competitions we participate in. Costs that have to be covered by fundraising include competition entry fees, international shipping and parts. In 2011 it cost the team \$6000 to enter the FIRST Robotics Competition alone, around £3750 at the time. A significant amount of our funds are covered by corporate sponsors.

## Current Sponsors

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# Further Resources

Further information about the team, the competitions we enter and the college can be found at:

**Systemetric:** [www.systemetric.org](http://www.systemetric.org)

**Hills Road Sixth Form College:** [www.hillsroad.ac.uk](http://www.hillsroad.ac.uk)

**FIRST:** [www.usfirst.org](http://www.usfirst.org)

**Student Robotics:** [www.studentrobotics.org](http://www.studentrobotics.org)

**mbed Robot Racing:** [www.mbed.org/cookbook/mbed-Robot-Racing](http://www.mbed.org/cookbook/mbed-Robot-Racing)