TECHNICAL DEMO GUIDE rev. 001

FRC Team 1100

Introduction

This guide was created to serve as a resource for running technical robotics demonstrations for a variety of audiences of all ages and experience levels. Team 1100 has run a variety of demos since our rookie year in 2003 and in recent years, developed new methods for leaving a stronger impact on the community. By having interactive and engaging demos, we hope to inspire others to pursue an interest in STEM!

Types of Demos

Depending on time, event and audience, there are several different types of demos that can be conducted. A demo for sponsors will look differently than a demo for a young audience of boy or girl scouts. In this guide, we will be covering: Standard Demo (1 hour), Festival Demo (2+ hours), Technical Workshop (1 hour) and Sponsor presentation (30 minutes).

Standard Demo

A standard demo can be used for a variety of audiences. Team 1100 primarily uses this format when presenting to Boy and Girl Scout Troops, local elementary and middle school and other younger audiences. This type allows the team to introduce basic concepts describing what a robot exactly is, sensors, programming and driving while allowing students to engage both vocally and physically depending on the size of the group and ages. If the group is younger, extra caution is taken when interacting with actuating mechanisms or driving the robots. Typically, the younger students are encouraged to interact with the robots via game pieces and older groups are given the opportunity to drive if time permits. The following is a typical timeline of a standard demo and the topics/presentation tools used:

Standard Demo Timeline

5:00 min   Introductions and background FIRST information

5:00 min   What is a robot? (Brain, Programming) Ex: Difference between microwave and a robot, Program a person.

20:00 min   Roomba, Lego, and Dash Demo (Sensors and Programming)

5:00 min   Vex Demo (Parts of a driving robot Ex: Battery, Brain, Drivetrain, Claw)

10:00 min   Aerial Assist (2014) Robot Demo

5:00 min   Go Kart Demo

10:00 min   Questions

Festival Demo

A festival demo is meant to engage a diverse audience through a variety of hands-on technical activities that focus more on directly engaging individuals. Festival demos emphasize the rotation of participants through various activities while additionally giving participants the flexibility to participate in an event of their choosing. Due to this structure, the Festival Demo timeline is less rigid and each of the following events may be set up as individual "stations" as opposed to a consecutive string of activities. Due to the possibility of younger participants operating the robot, extra caution must be taken by team students and mentors when allowing interaction with actuating mechanisms or driving the robots.

Festival Demo Timeline

05:00 min	What is a robot? Basic robot components and design.
10:00 min	Let kids drive FRC robots executing simple game-related tasks
10:00 min	Converse with parents about FIRST and related STEM activities
10:00 min	Let kids operate simple VEX demos (Race around a track, Robot Soccer)
10:00 min	Aerial Assist (2014) Robot Demo
10:00 min	Ultimate Ascent (2013) and Lunacy (2006) Robots demo
05:00 min	RC Battery Powered Truck demo (Modified to distribute candy)
10:00 min	Questions and Button distribution

Technical Workshop

A technical workshop takes the standard demo timeline and integrates hands on activities that directly engage participants in robotics-based activities with Team 1100 students and mentors. This will have more of an educative focus on engineering concepts and impact of the FIRST Robotics program on participants, encouraging those interested to join or start local teams to further develop their passions and reach other similar-minded students. This is the format used by Team 1100 for the Central Massachusetts Girl Scout intro to STEM day, Geek is Glam. We utilized our past workshop format from Build-Your-Own-Robot with a toothbrush version of the HEXBUG, made by the company Innovation First.

Technical Workshop

05:00 min   Gather Students/ Attendance: Gather students and take attendance at the beginning of the workshop

05:00 min   Team Intro: Introduce the Team 1100 students and mentors running the workshop

15:00 min   Bristle Bots Walkthrough/ Assembly: Demonstrate how to make a Bristle Bot as well as giving the girls printed directions to help the follow along. Students and mentors walk around to see if anyone needs assistance.

15:00 min   Bristle Bots Race: A 5 lane race to victory with 4 heats. Winners of each heat move on to the finals!

05:00 min   Clean up: Disassemble robots and cleanup work area

10:00 min   Questions + Career Talk: Ask if the girls have any questions for the mentors or students about the workshop. If there is time, start a discussion about women in stem led by Manisha, Sunny, and Catherine.

Sponsor Demo

A sponsor demo will often be to working professionals at the facility/office of the company interested in the team. The following format is for existing sponsors, which Team 1100 does annually for the companies who provide high levels of sponsorship. It should be noted that this can be modified for presentations that target pursuing new sponsor relationships as well!

Sponsor Demo

05:00 min   Go over awards and accomplishments achieved over the past season

05:00 min   Going over the FRC game

20:00 min   Demoing individual subsystem and the robot functions

10:00 min   Talk about team structure and how additional resources help us

10:00 min   Questions

05:00 min   Thank you message (Presenting a gift, if applicable)
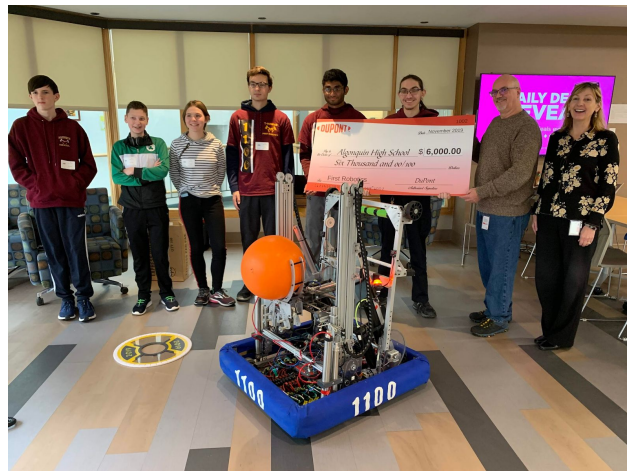
Do's and Don'ts

DO:

- Watch scope – participants will be more engaged if you meet their age, maturity, and experience level using relatable concepts and phrasing.
- Get participants hands on!! You are more likely to make a lasting impression on your participants if they get to physically interact with a robot.
- Use Q&A to explain concepts – this will allow you to not only scope your demo better but also further engage with the participants
- Have fun! – humor, positivity and bright smiles will get everyone in the room more excited to learn more.

- Emphasize the learning experience of FIRST - Participants do not have to have any prior knowledge about robots prior to entering the program. The goal of FIRST is to learn through the program

DON'T:

- Talk about pursuing education if the student audience isn't high school level – it may cause stress or completely lose the captivation of your audience
- Underestimate or down-talk to your audience – there's a difference between simplifying the explanation of a concept versus insulting the intelligence of the audience. Ask if a difficult concept is understood after explanation but be careful of tone always!