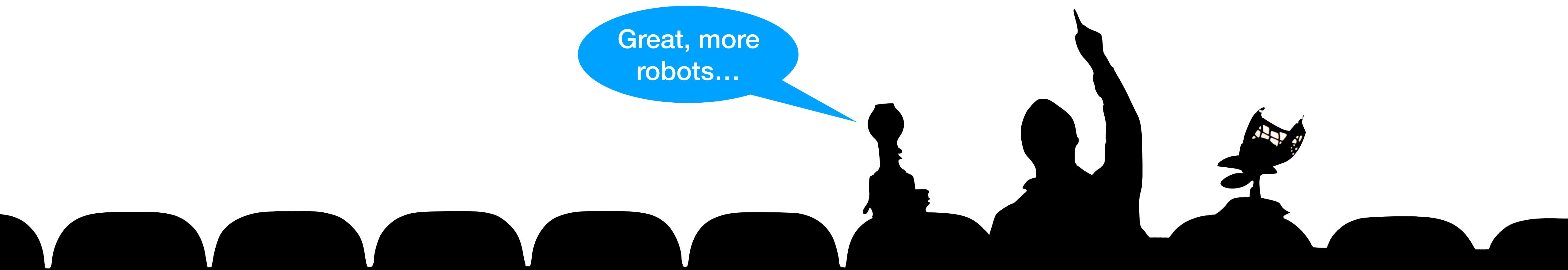


50 Years of FIRST

Imagine the Possibilities

Marshall Massengill (FRC900)

Andrew Schreiber (FRC323)



Marshall

FRC900 Alum
Mentor since 2006
NCSSM/NCSU Alum
Rouser of Rabbles
IT Consultant for a tiny
Virtualization Company

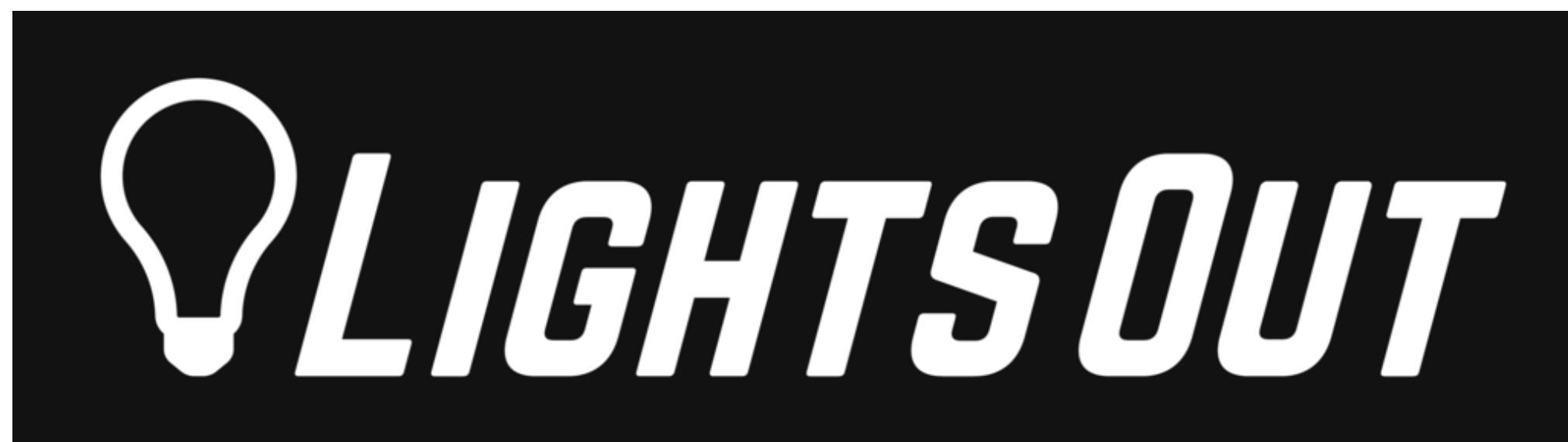


ZEBRACORNS
FRC TEAM 900

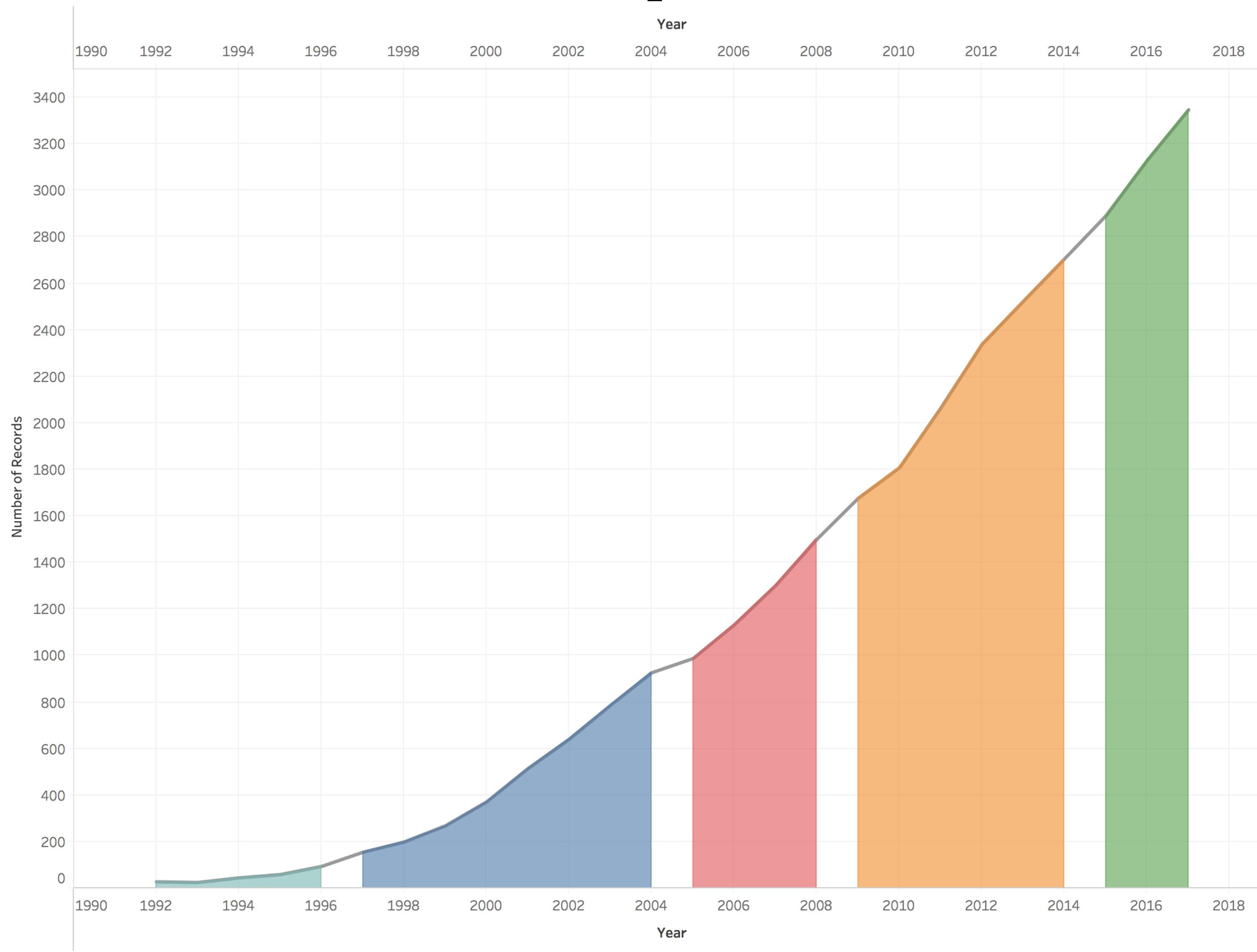


Andrew Schreiber

FRC27 Alum
Mentor since ~2007
Judge Advisor
Sustainability Advocate
Systems Engineer MITRE



FRC Epochs



The World in 1992

- Windows 3.1 released
- Apple Newton released
- Linux is released under GPL
- IBM Introduces Thinkpad
 - Intel CPU 486DX2
 - 66MHz
 - 1.2M Transistor Count



22 Teams

FRC 1992

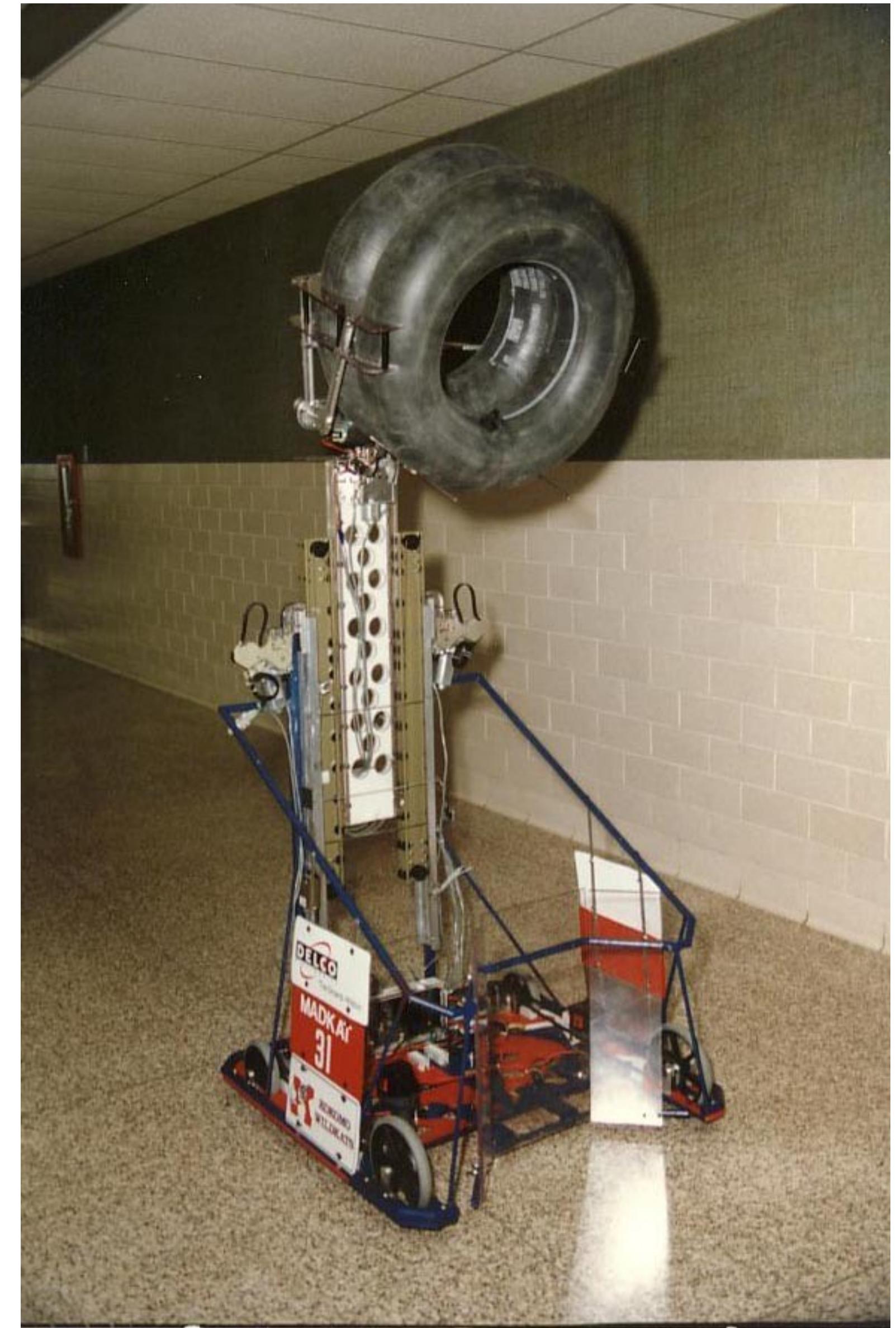
- FTC scale
- Corn Field
- Control System
- Owned by FIRST
- Relay only motor control
- Single Event in a HS Gym



155 Teams

1997

- Team numbers become permanent
 - Excel sort by sponsor list



269 Teams

1999

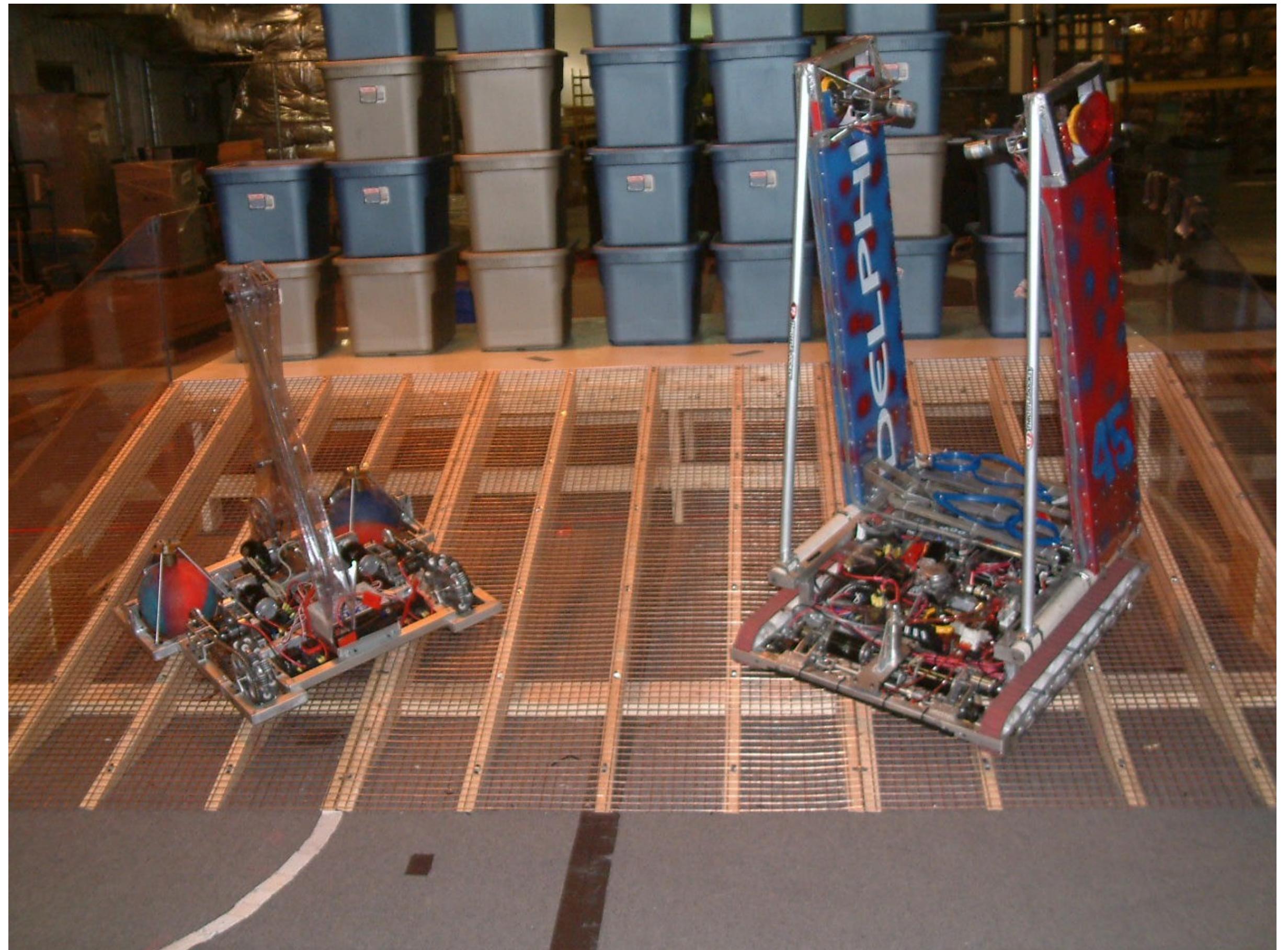
- FLL Pilot
 - Yellow RCX
 - Wooden Field



787 Teams

2003

- Pic18F
 - 20,000 Transistors
 - 8bit Micro
 - No *math.h*
- IFI Controller
- First year of Autonomous
 - StangPS



988 Teams

2005

- 3 on 3 Play
- 120lb weight limit
- CIM Motor
- Bumpers optional
- VEX Introduced
- CMUCam



1677 Teams

2009

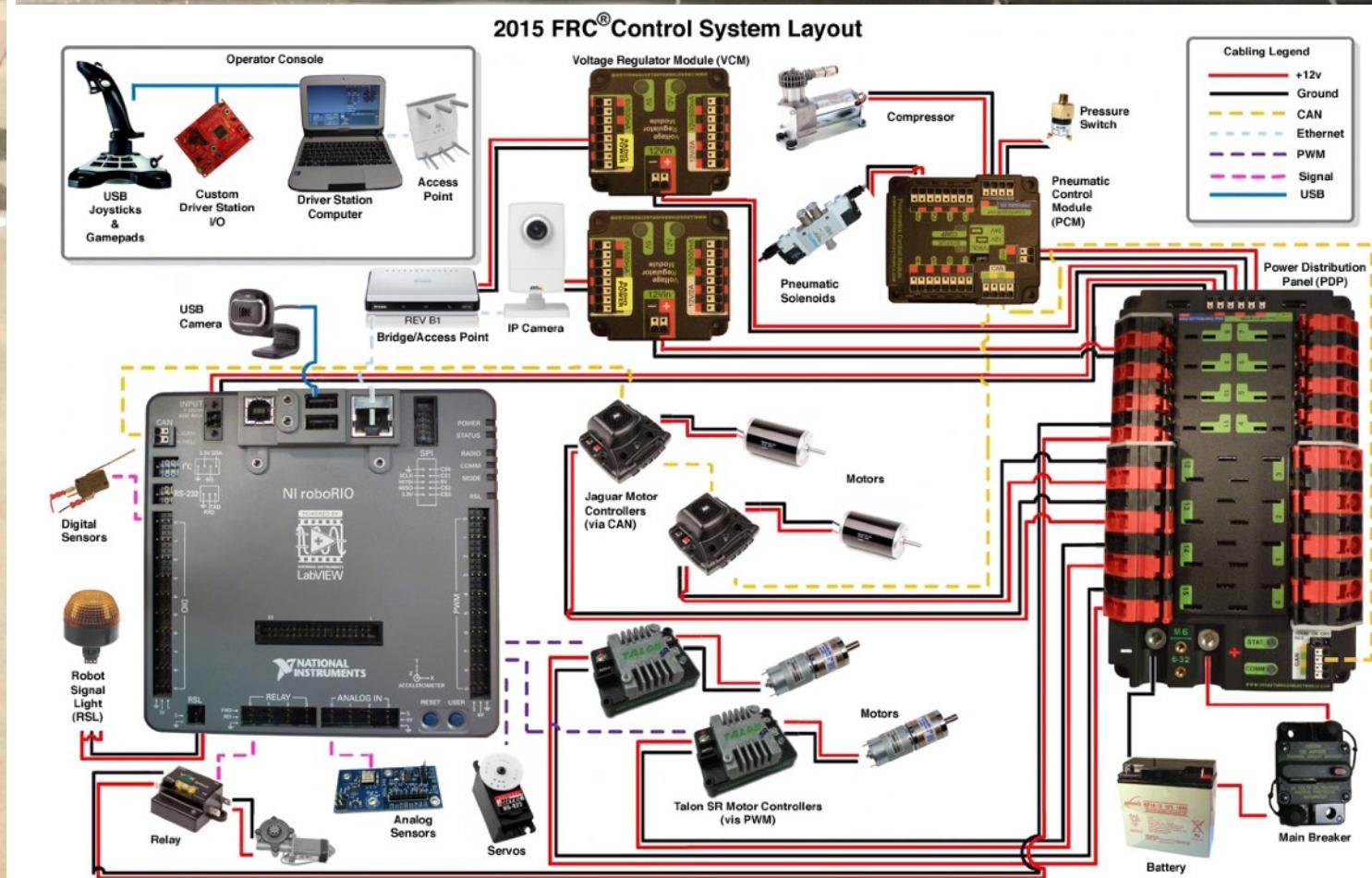
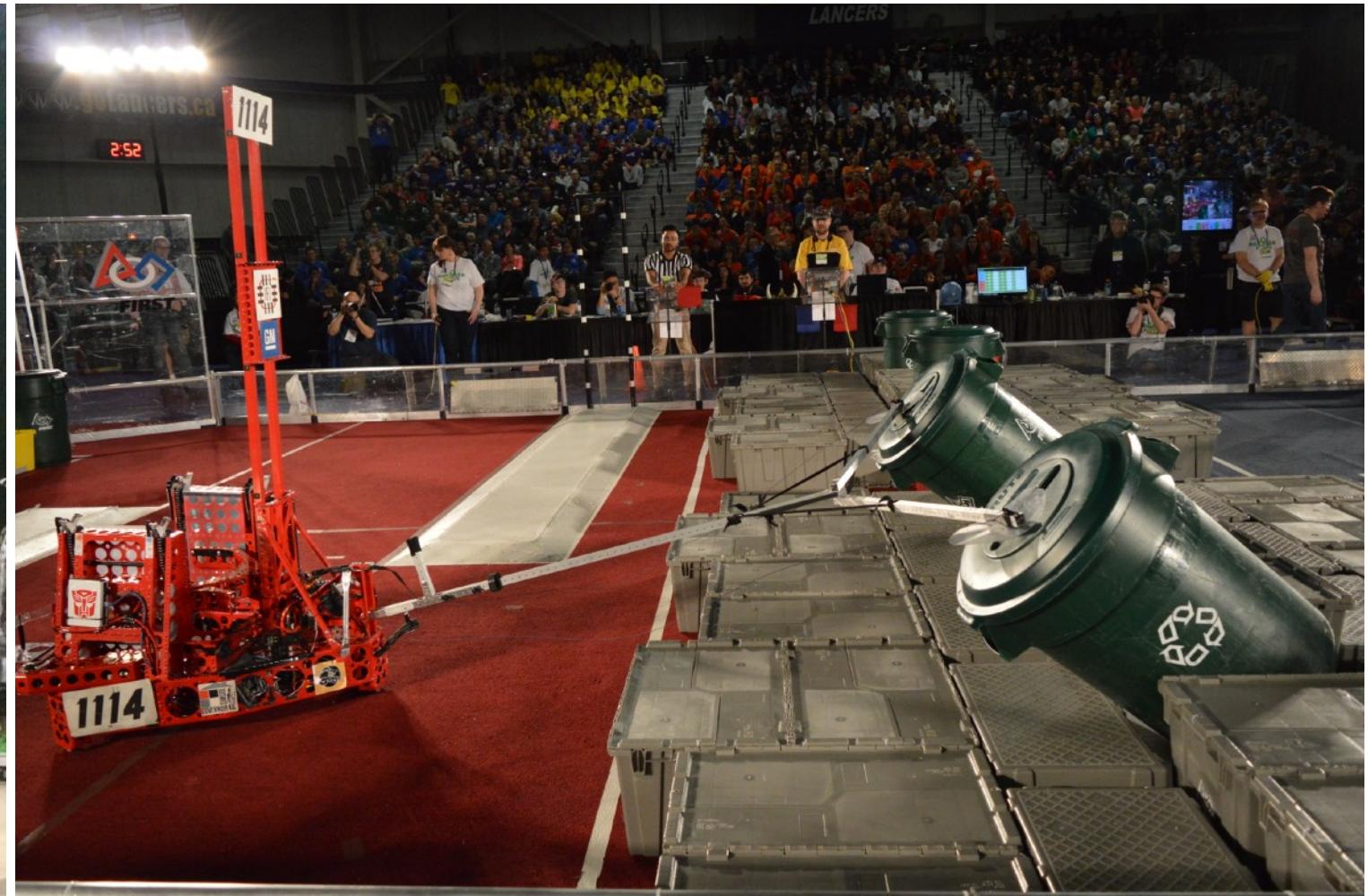
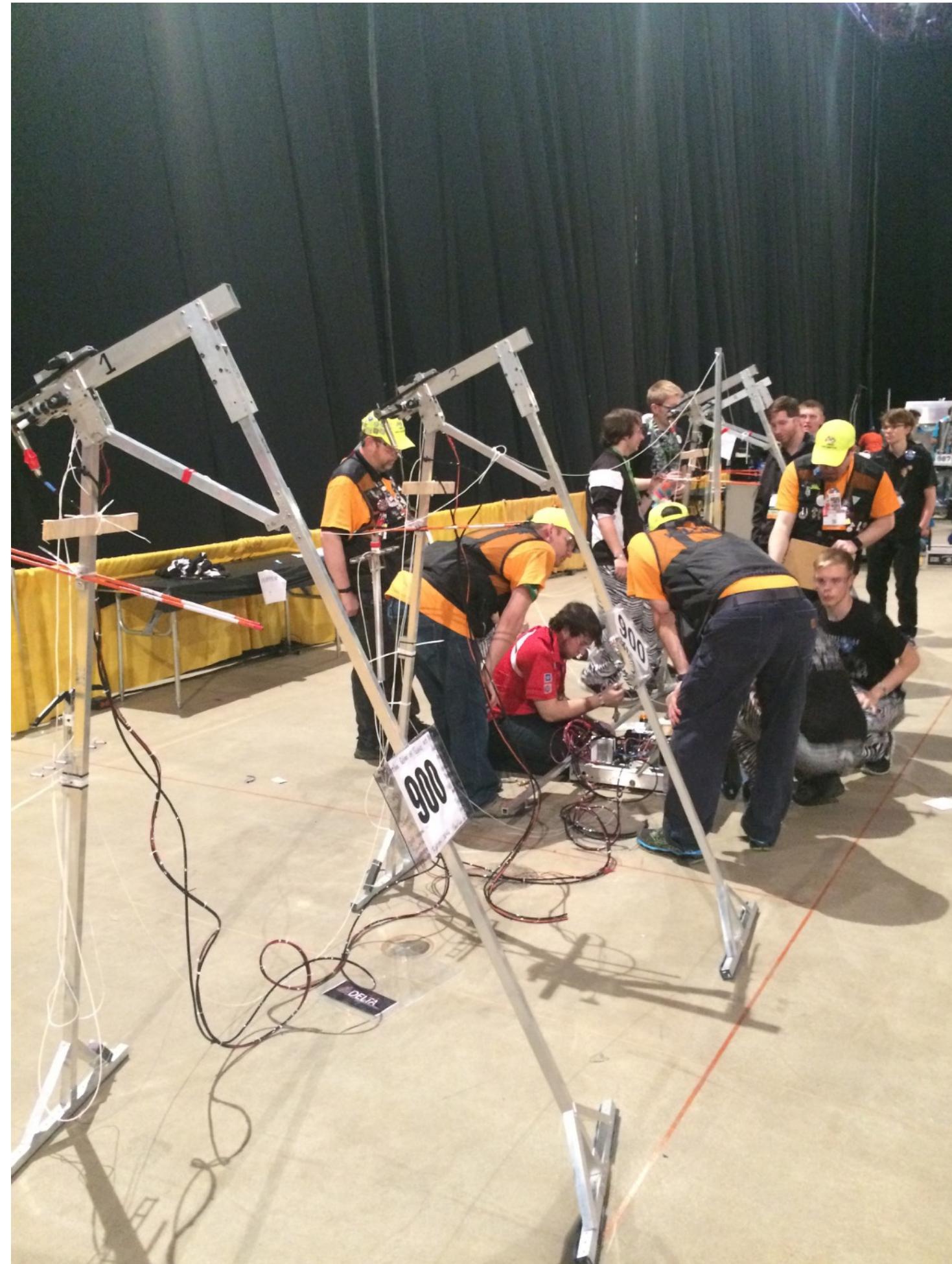
- cRIO Introduced
 - 23M Transistors
- Electrostatic issues
- Radio replaced with 802.11



2892 Teams

2015

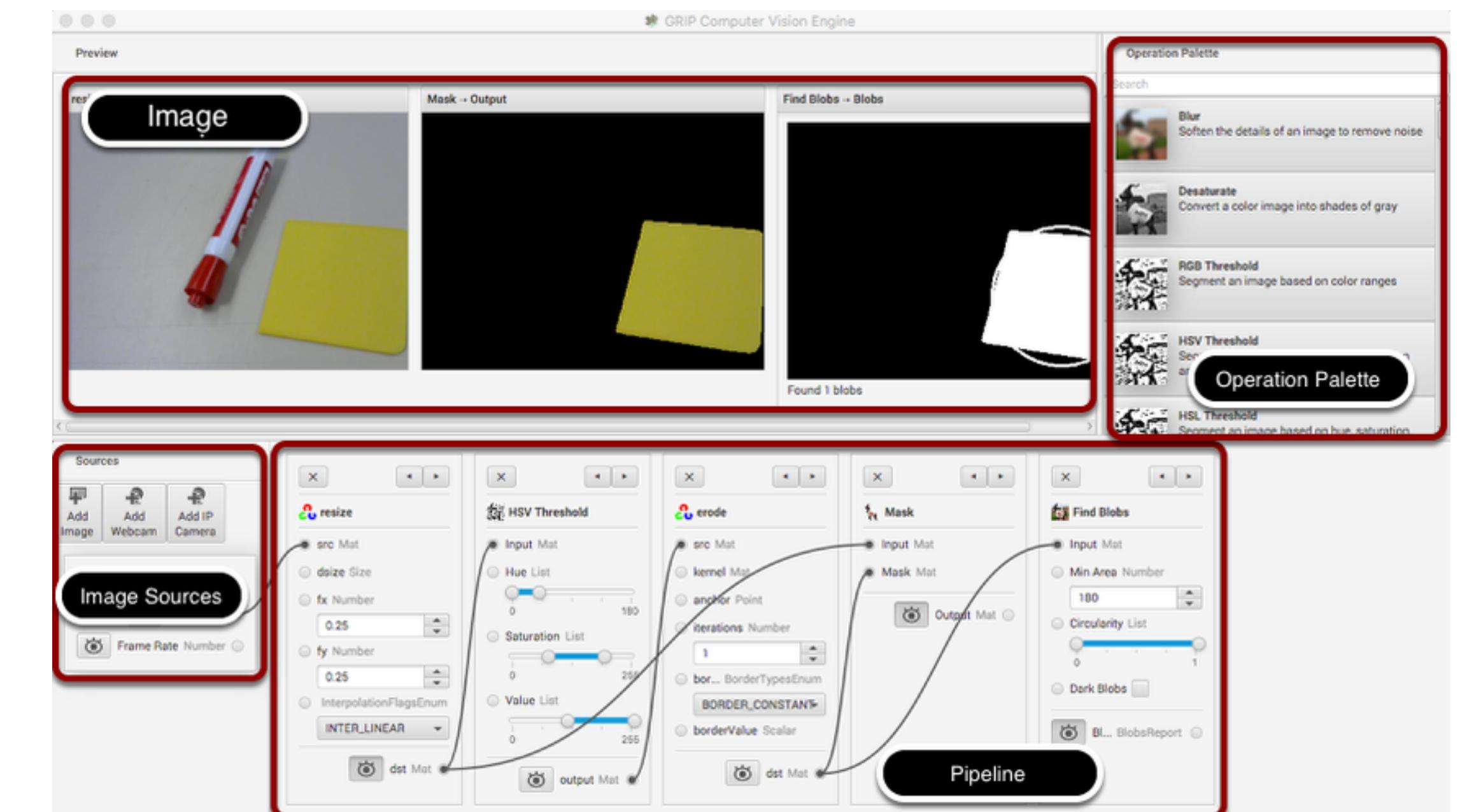
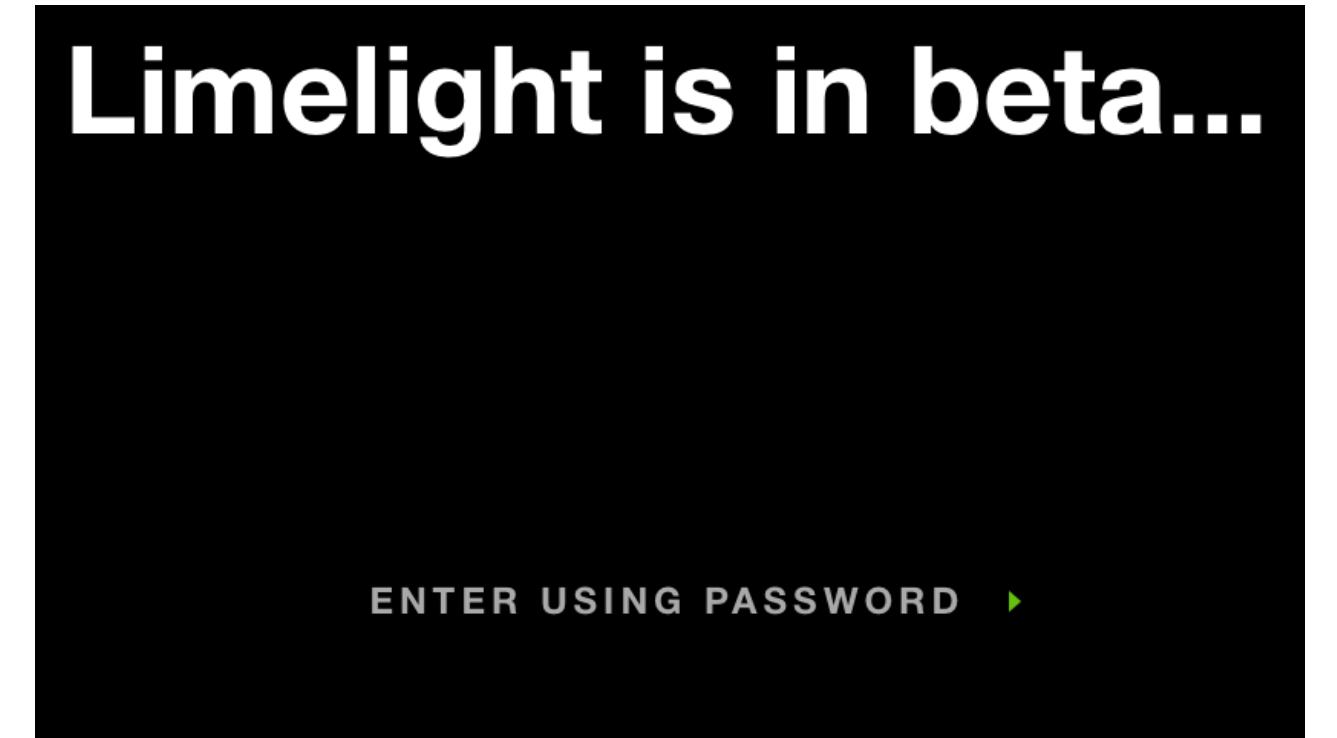
- RoboRIO Introduced
 - 180M Transistors
 - CAN first class citizen
 - CTRE Control System
- “Extreme Cheesecaking”
- First heavily themed game
- 2 Champs announced



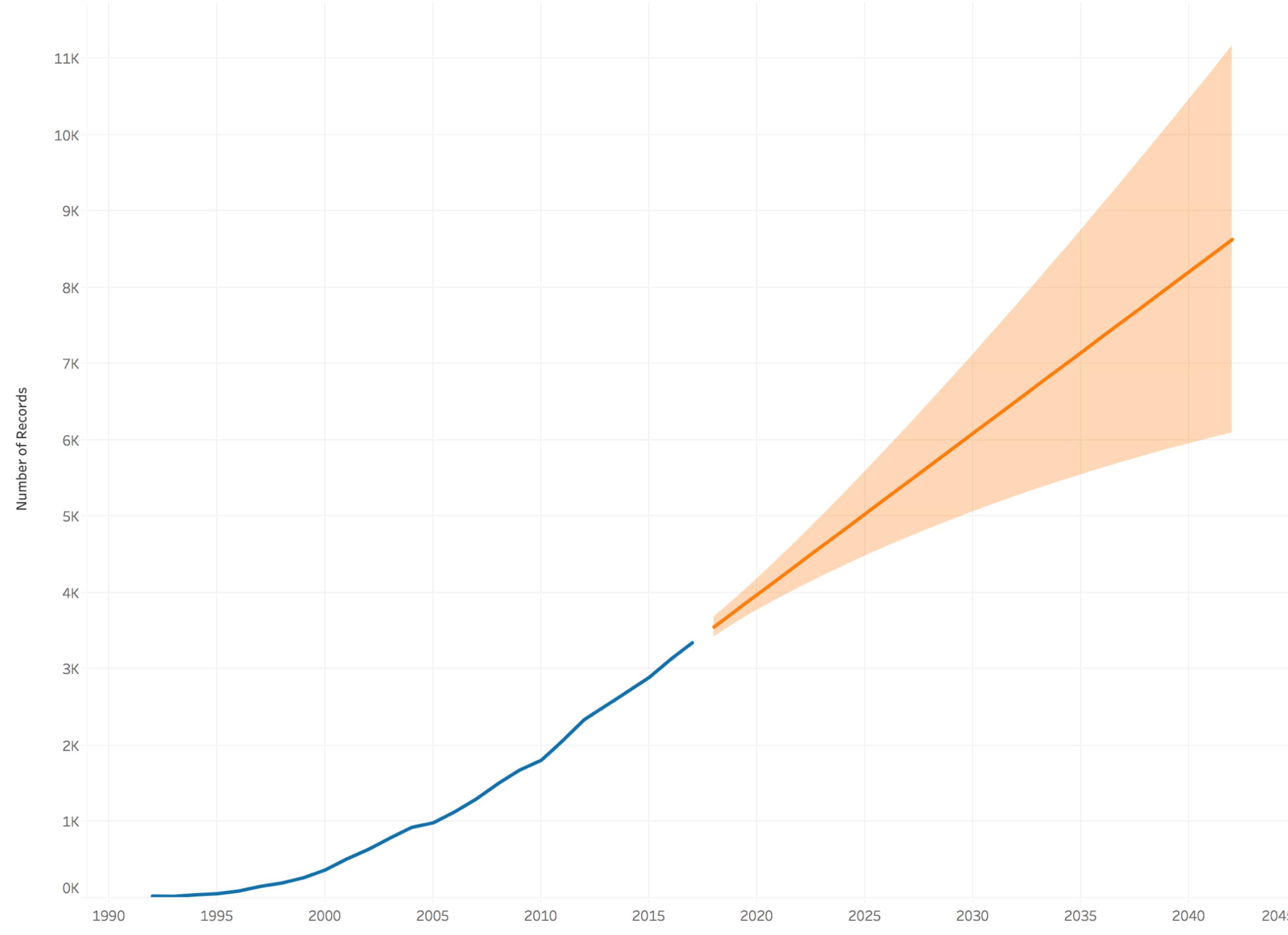
3608 Teams

2018

- Power Up is played
 - Spoiler: It's not a water game
- JeVois Camera, Limelight, and GRIP finally bring vision to the masses
- Brushless motors are legal



The Future



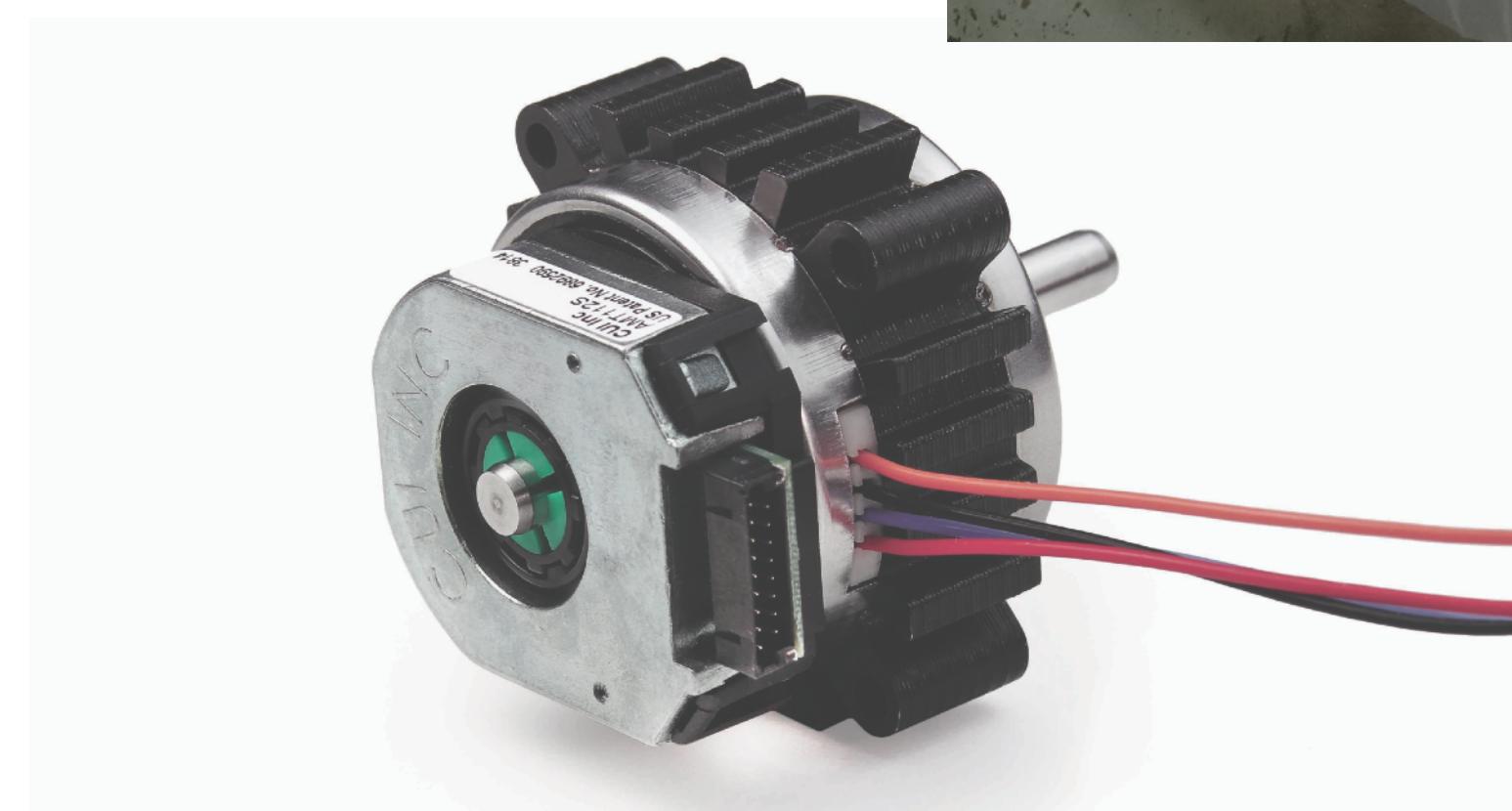
Team Growth over Time

4399 Teams

2022

Woodie Flowers announces candidacy for POTUS citing “lack of gracious professionalism in politics”

- 4Champs w/ Round Robin at FoC
- Qualcomm releases custom radio w/ integrated battery
- Motors with integrated encoders
- Withholding allowance regularly abused
 - Second robots at events and RAO gets tested
 - Sorry “pro-robot-freedom-poppers”... we lose
- Team numbers to hit 5 digits (± 2 years)



5456 Teams

2027

Kamen Hegemony established on Dumpling Island to build nation founded on education and mutual respect

- 8Champs w/ old Einstein Bracket
- SLA batteries replaced with LiFePo4
- Main drive motors become BLDCs
- Championship Events renamed Super Regionals
- WPILib becomes module for ROS



ROS

8628 Teams

2042

Dumpling Island seizes United States - WFA winners installed as replacement for Congress

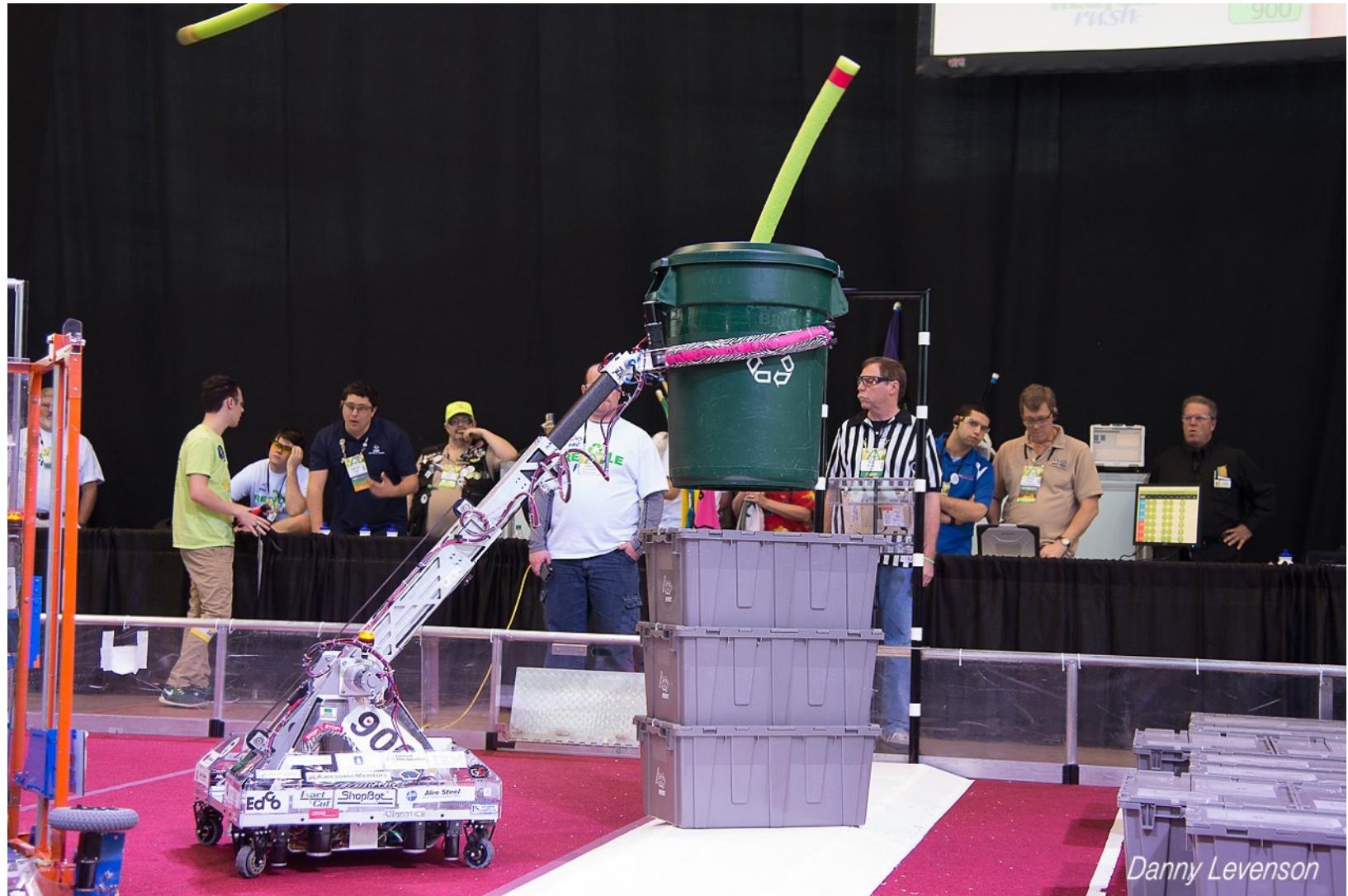
- International Teams equal or outnumber US Teams
- 16 Super Regionals feed FOC w/ full qualification rounds
- FoC now moves around the globe
- ROS is utilized by a large number of teams
 - Common Framework and Modules == Coopertition



∞ Teams

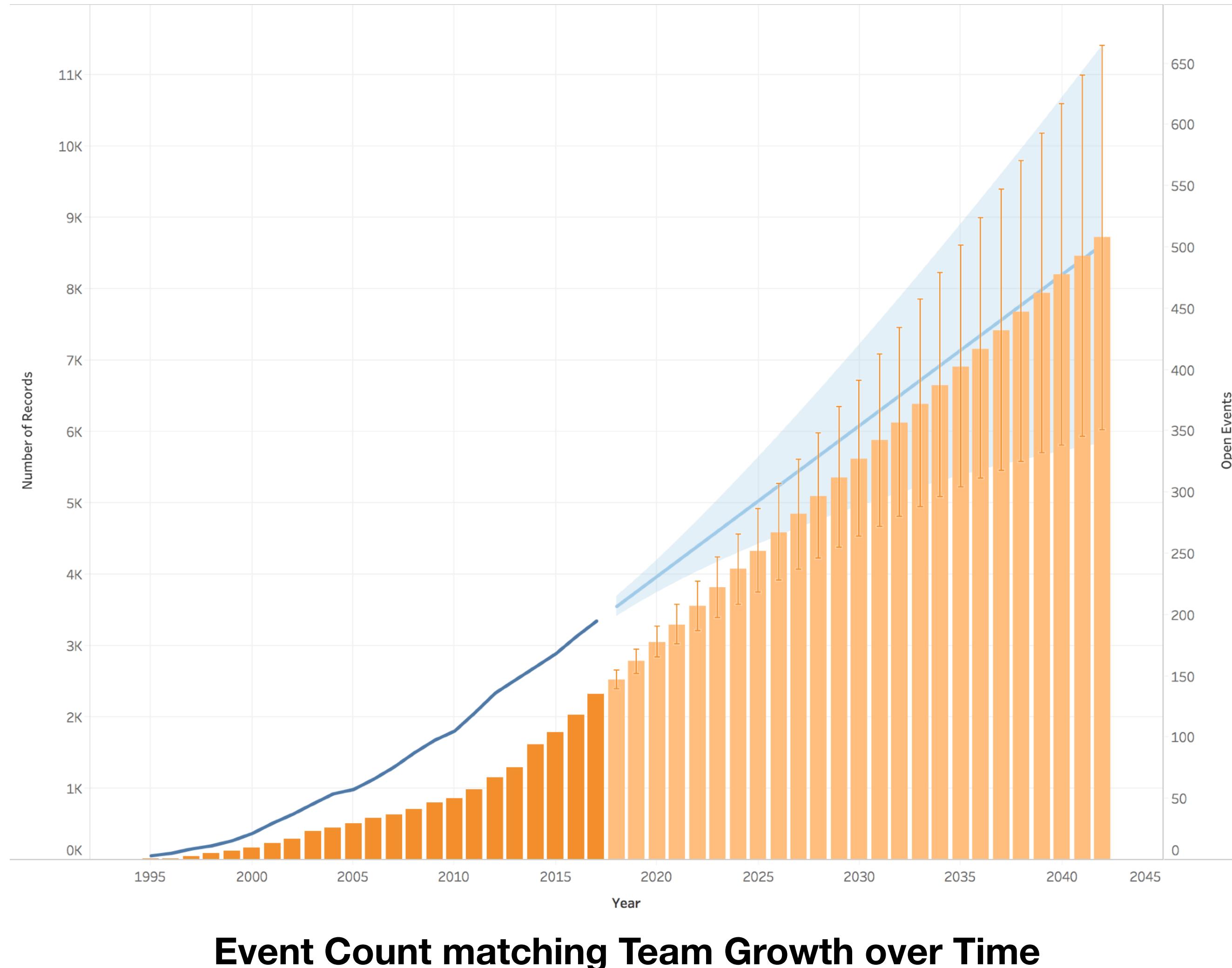
Never

- FRC Alumni appointed to FIRST Board of Directors
- FTC has a game that is spectator friendly
- Andrew concedes that Matt Lythgoe isn't *that* annoying
- Zebracorns build a simple robot
- Denim is cool



Danny Levenson

The Problem of Scale



The Problem of Scale

- FRC is going to reach a point where it doesn't scale
- 6 Weeks of Qualifying Events
- Availability and Logistics of parts
 - Springs in 2017
 - Pins in 2016
 - Bins in 2015
- Look at FLL
 - Field is inexpensive plywood



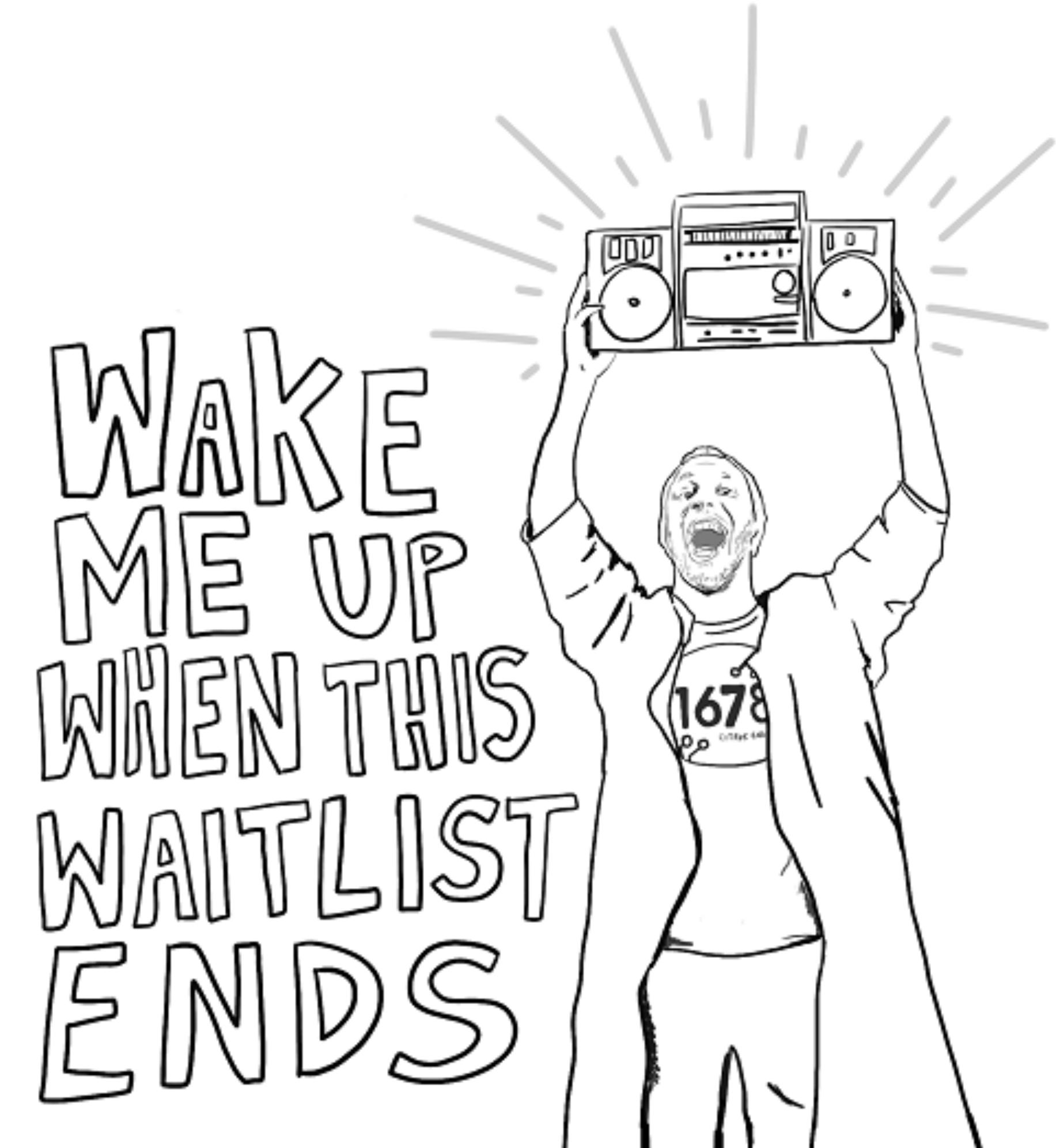
The Problem of Logistics



Travel to regional events in 2017

The Problem of Optimization

- Event Locations != Team Locations
- Unequal Distribution
- Corsetto has a waitlist problem
- Travel is money



The Problem of Mentorship

- Heart of the Program
- Unequally Distributed
- Alumni



Final Thoughts

- FRC is going to grow
- It is about how it grows
 - Sustainable growth is a legitimate concern
- This problem will be here SOON (as in 10 years ago)
 - We want to shift the discussion



Questions/Feedback

- <http://andymarkup.com>
 - Download the presentation
 - And supporting data
 - Give us feedback
 - Any questions?

