

PTC[®] presents

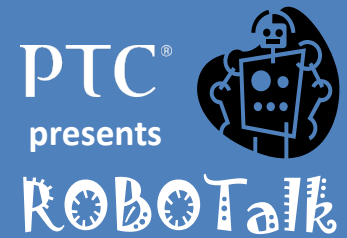
ROBOTalk

Hosted by David Price, the voice of FTC

How to build a
robot from
concept to
competition

November 5th, 2014

WELCOME



- Thank You for joining us!
- PTC Experts on this webinar, and our special guest!



Jordan Cox
Director, PTC K12
Programs



Scott Morris
Windchill & Creo
Expert



Mark Cheli
Creo Expert &
Webex Technical
Assistance



**Kari
Karwedsky**
PTC FIRST
Program Manager



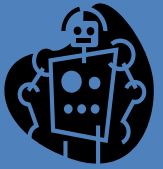
Josh Houser
Mentor, FRC Team
1671

- Our host,

David Price



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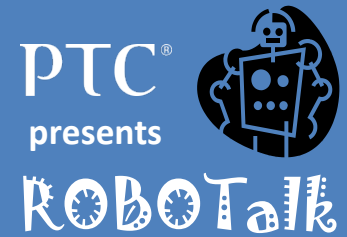
ROBOTalk

WHERE CITY ARE YOU
LISTENING TO
ROBOTALK FROM?

Text **1214729** and your message
to **22333**

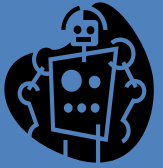
Poll
Everywhere

AGENDA



- **Community Outreach – David Price**
- **Simulation using PTC Creo – Jordan Cox**
- **Poll Everywhere**
 - **What do you want us to cover in the last 2 ROBOTalk sessions?**
- **Windchill – One Project, Multiple Teams! – Josh Houser**
- **Questions & Answers**

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COMMUNITY OUTREACH

David Price

Your Team's Outreach



Outreach

Outreach for robot teams is an activity of providing **services** to populations who might not otherwise have access to those services.

A key component of outreach is that your team is not **stationary**, but **mobile**.

In addition to delivering services, outreach has an educational role, raising the awareness of existing services or programs.



So let's talk about what you can do and why you should do it!



Outreach for Teams

- Why do you need to do it.?
- *Here is a multiple choice question:*
 - Why are you REALLY involved in *F.I.R.S.T.*?
 - *Awards?*
 - *Fame?*
 - *Money?*
 - *Change the World?*



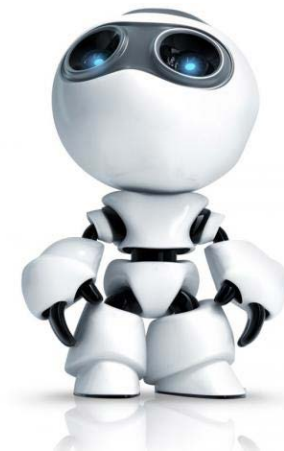
Outreach Ideas

(I'm just "spit balling")

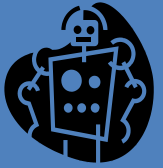
- Sit down as a group and talk about your teams strength's.

(A SWOT Analysis works well here)

- What can you offer the community?
- Can your team go and fix other things in the community?
- Can students fix old folk's computers?
- Partner with a nursing home?
- Host a Blood Drive?
- Offer gift wrapping at a mall?
- Can you get your robot to every sports event? Make a team shirt cannon?
- Can you help start a junior team?
- Go and visit other schools or after school program
- Tutor or mentor?
- Feed the homeless?
- Reach out to teachers?
- Make Kindness practical?
- Cool things down?
- Just Add Water?
- Have a blanket party?



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SIMULATION USING PTC CREO

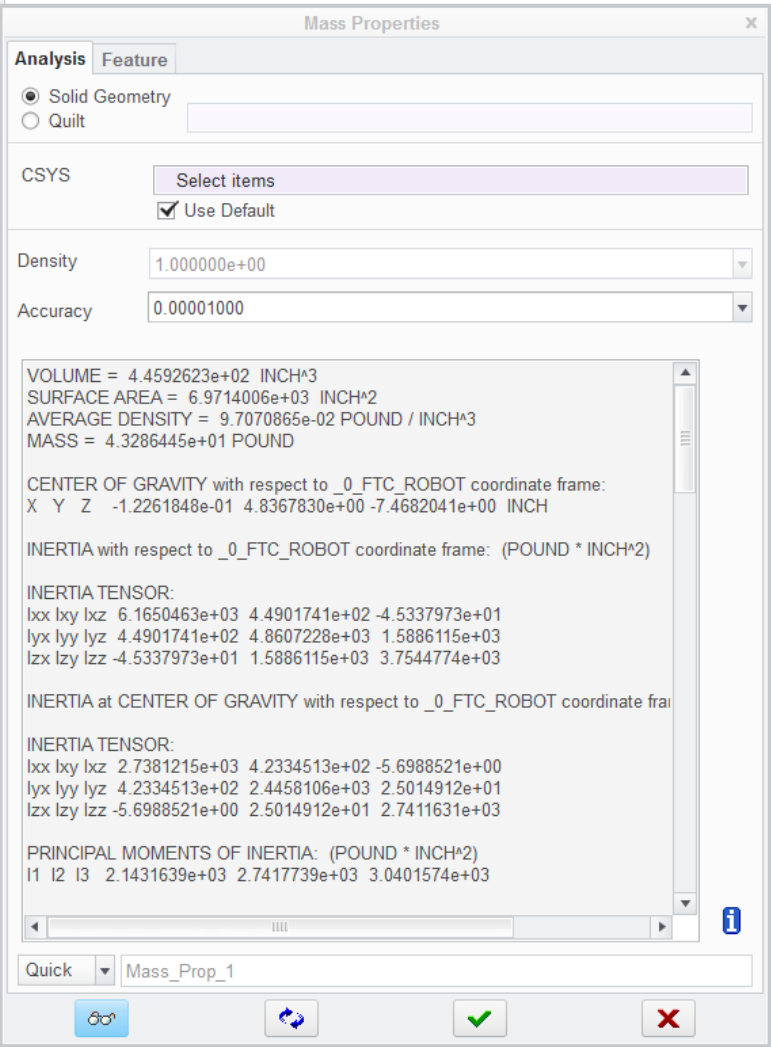
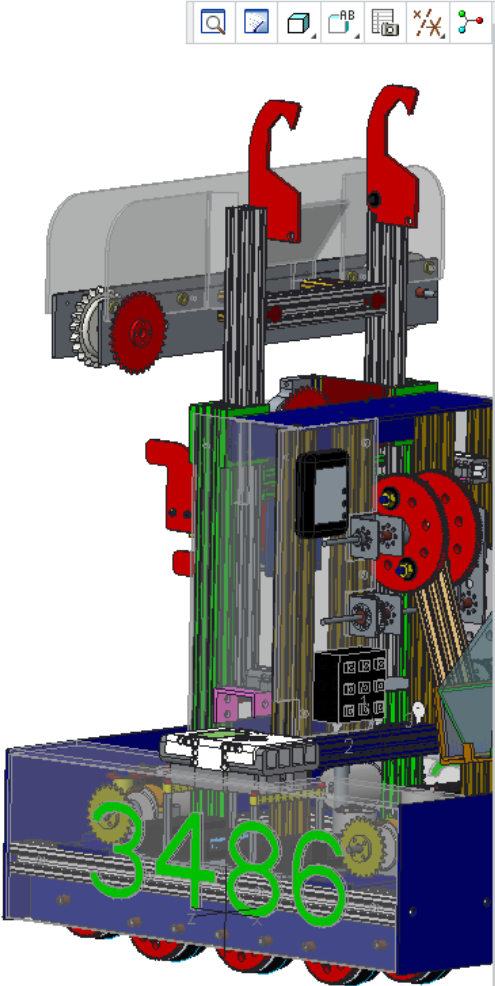
Jordan Cox

To learn about how your design will work in the real world

- What are the properties of my design? (Size, Volume, Weight, Mass properties)
- How does my design move and interact? (Motion, Interference, Positions)
- Can my design function appropriately? (Forces, Gravity, Friction, Mechanisms)
- Is my design strong enough? (Stresses, Heat Transfer, Deflection)



Size, Volume, Weight, Mass properties



Mass Properties

Analysis | **Feature**

Solid Geometry
 Quilt

CSYS: Use Default

Density:

Accuracy:

VOLUME = 4.4592623e+02 INCH³
SURFACE AREA = 6.9714006e+03 INCH²
AVERAGE DENSITY = 9.7070865e-02 POUND / INCH³
MASS = 4.3286445e+01 POUND

CENTER OF GRAVITY with respect to _0_FTC_ROBOT coordinate frame:
X Y Z -1.2261848e-01 4.8367830e+00 -7.4682041e+00 INCH

INERTIA with respect to _0_FTC_ROBOT coordinate frame: (POUND * INCH²)

INERTIA TENSOR:
Ixx Ixy Ixz 6.1650463e+03 4.4901741e+02 -4.5337973e+01
Iyx Iyy Iyz 4.4901741e+02 4.8607228e+03 1.5886115e+03
Izx Izy Izz -4.5337973e+01 1.5886115e+03 3.7544774e+03

INERTIA at CENTER OF GRAVITY with respect to _0_FTC_ROBOT coordinate frame:

INERTIA TENSOR:
Ixx Ixy Ixz 2.7381215e+03 4.2334513e+02 -5.6988521e+00
Iyx Iyy Iyz 4.2334513e+02 2.4458106e+03 2.5014912e+01
Izx Izy Izz -5.6988521e+00 2.5014912e+01 2.7411631e+03

PRINCIPAL MOMENTS OF INERTIA: (POUND * INCH²)
I1 I2 I3 2.1431639e+03 2.7417739e+03 3.0401574e+03

Quick

Motion, Interference, Positions

Analysis Definition

Name: AnalysisDefinition1

Type: Kinematic

Preferences: Motors | Ext Loads

Graphical Display

Start Time: 0

Length and Rate: [Dropdown]

End Time: 10

Frame Count: 101

Frame Rate: 10

Minimum Interval: 0.1

Locked Entities

[List of entities with lock/unlock icons]

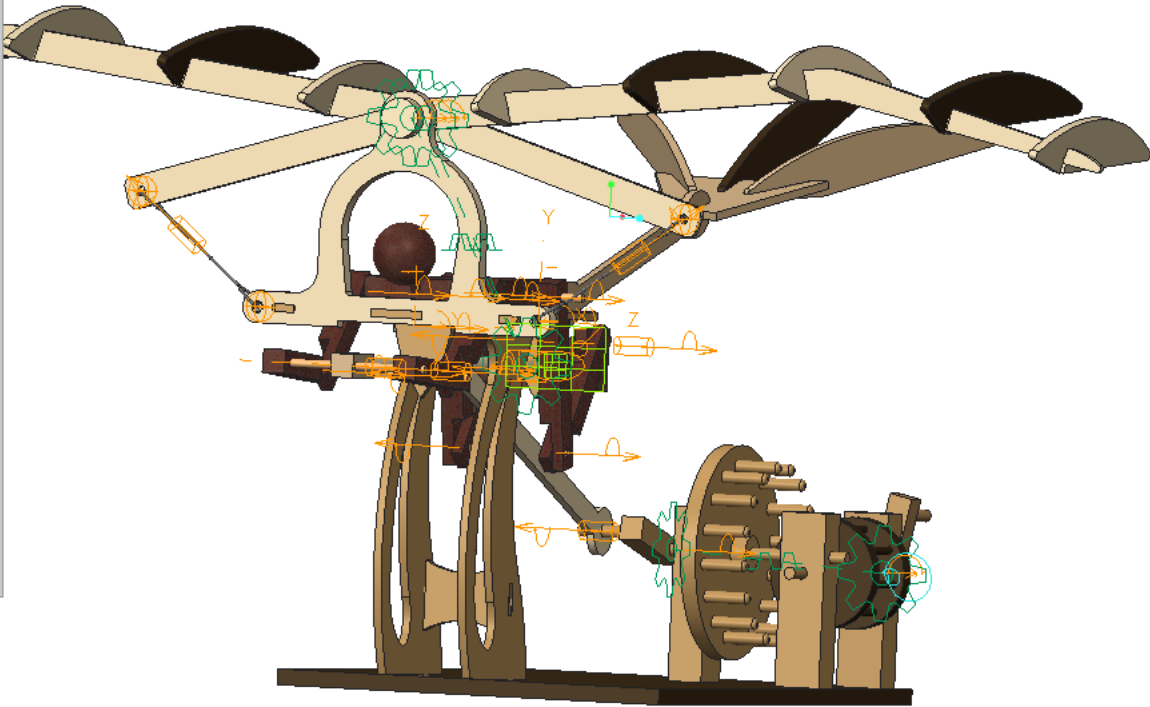
Liftoff: Enable

Initial Configuration

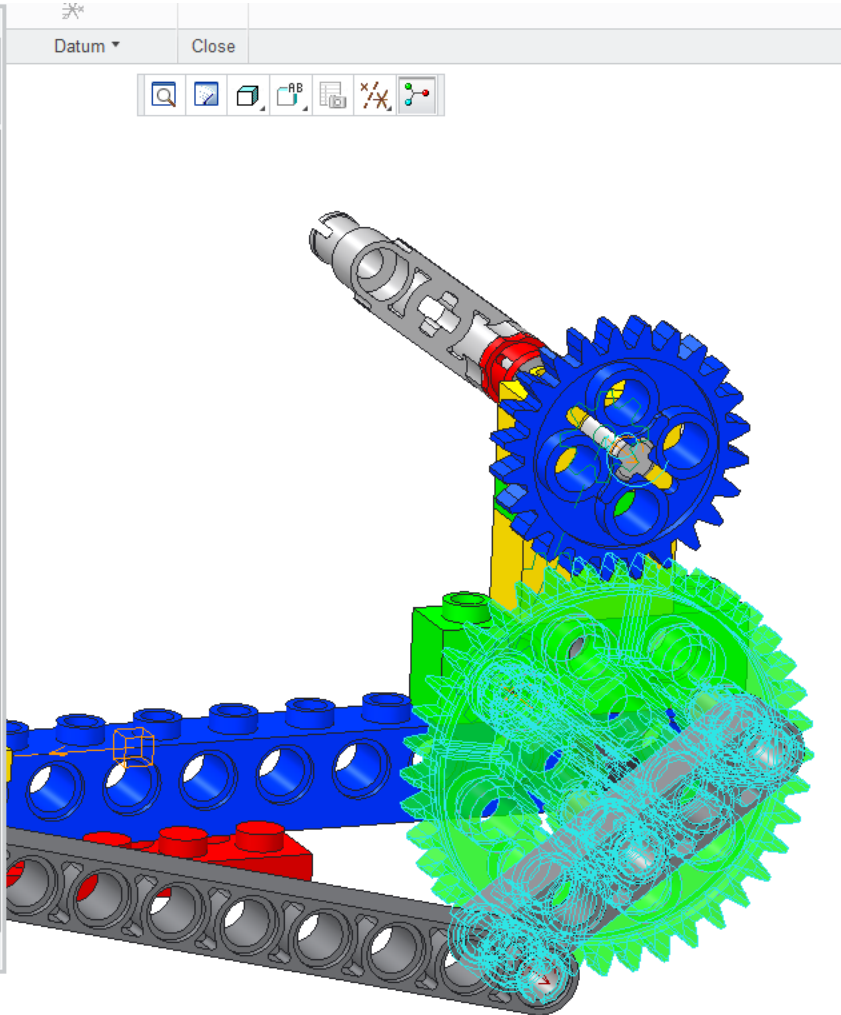
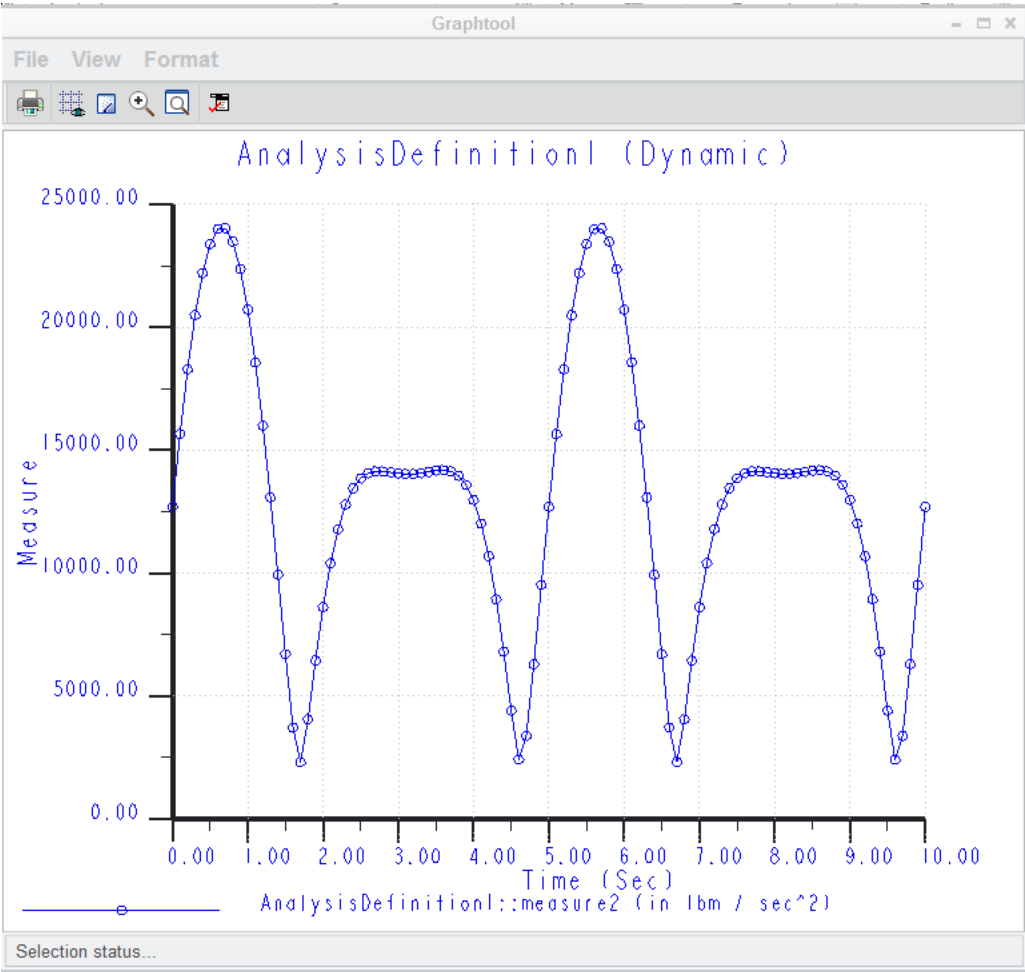
Current

Snapshot: [Dropdown]

OK Run Cancel

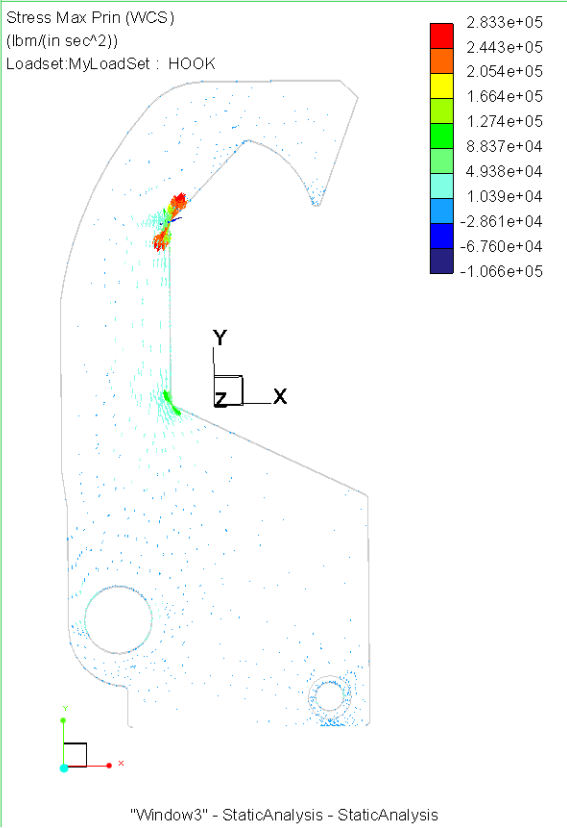
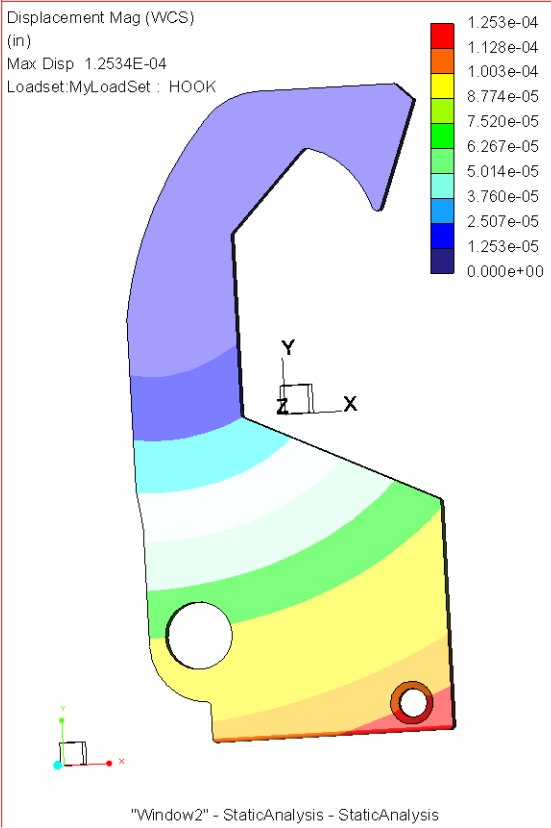
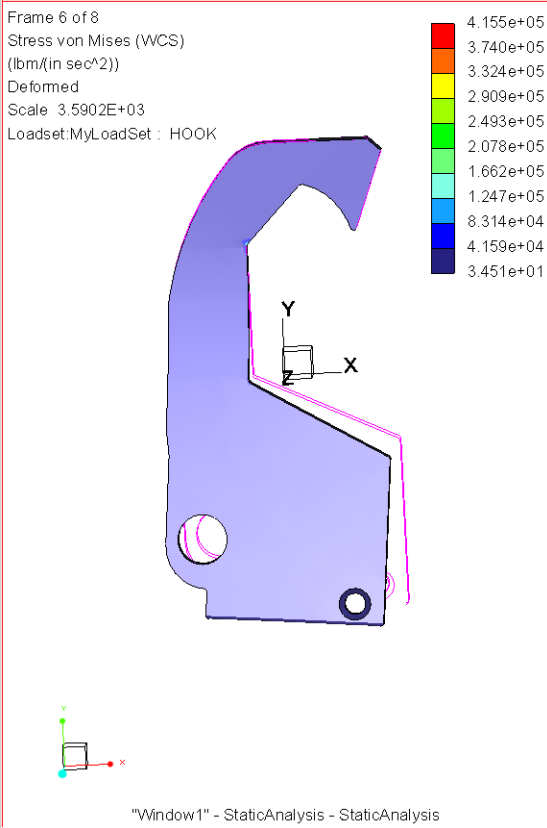


Forces, Gravity, Friction, Mechanisms

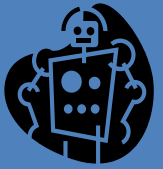


SELECTION STATUS...
LIMITATION CONDITIONS
LYSES
RYBACKS

Stresses, Heat Transfer, Deflection



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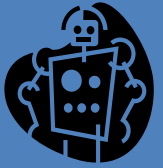
ROBOTalk

WHAT DO YOU WANT US TO
COVER IN
THE LAST 2 ROBOTALK
SESSIONS

Text a code to 22333

Poll
Everywhere

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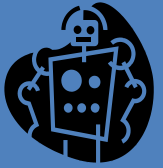


ROBOTalk

WINDCHILL – ONE PROJECT, MULTIPLE TEAMS!

Josh
Houser

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ROBOTalk

**ASK THE EXPERTS...
QUESTIONS?**