

Creating Accessible Spaces for Experiential Learning in an Online Environment

How to do a lab without being physically there?

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TORONTO



Presentation Summary

The Problem



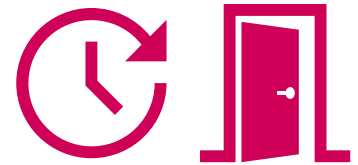
The Implementation



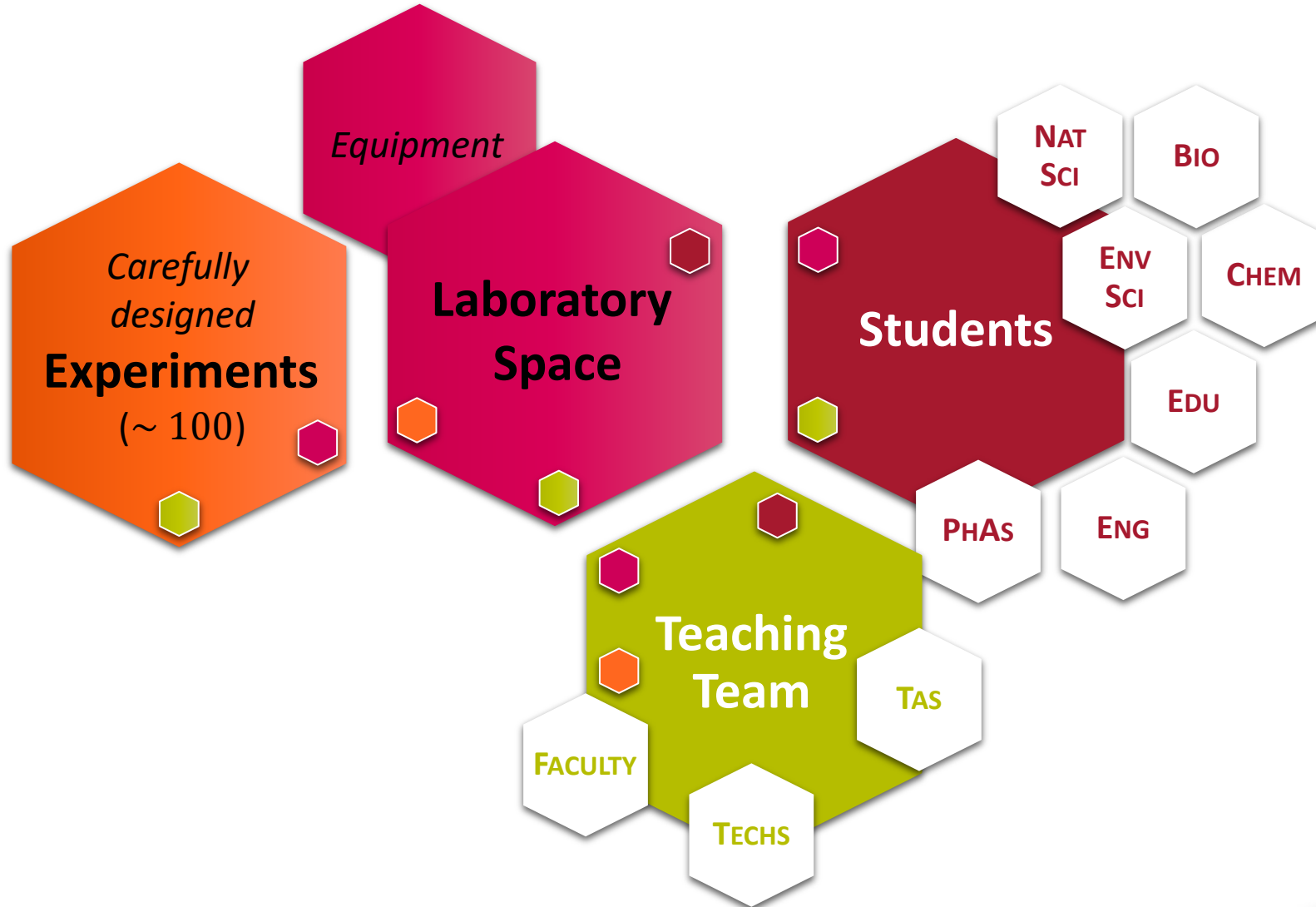
The Remote Lab



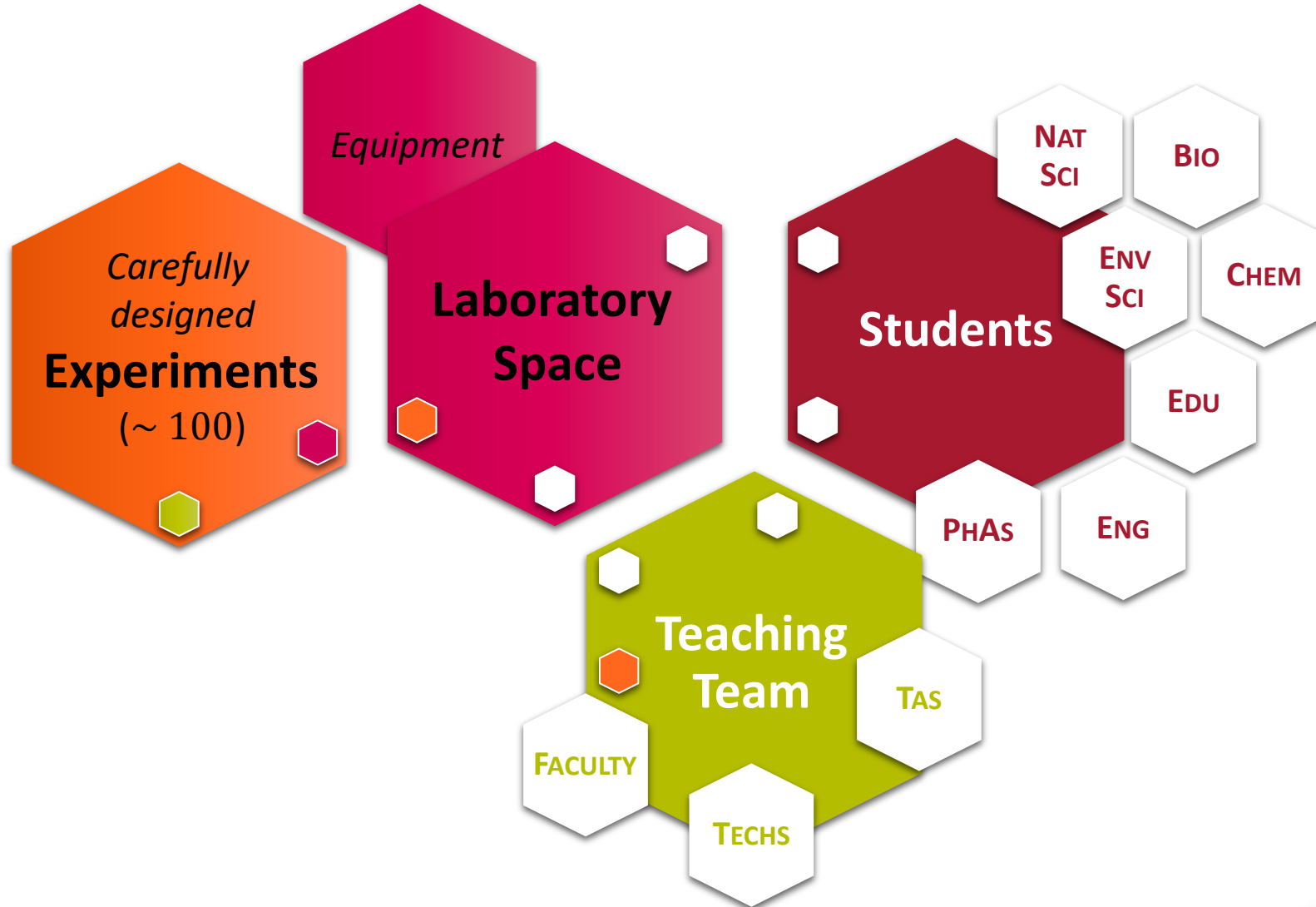
Possibilities



The Problem




The Problem





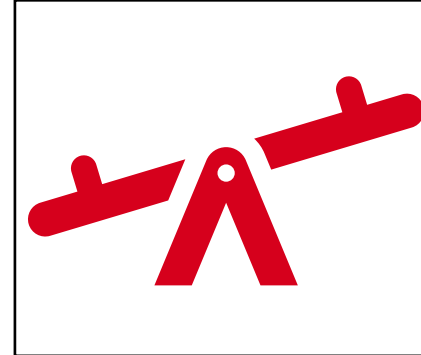
Designing the First Lab



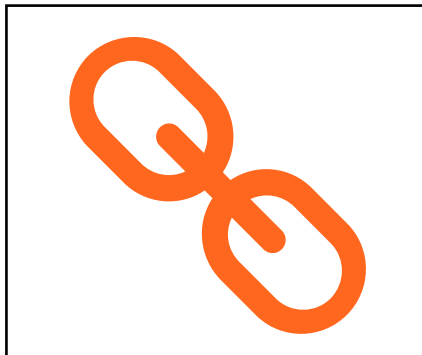
Interactive

The icon depicts a hand with the index finger pointing upwards, surrounded by three concentric circles, symbolizing interaction or a touch screen.

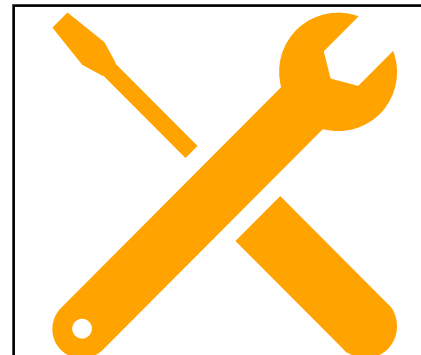
Improvement on
simulation

The icon shows a stylized figure sitting on a ramp that leads upwards, with an arrow pointing to the right, representing progress or improvement.

Simple

The icon is a red balance scale, symbolizing simplicity, balance, or measurement.

Reliable

The icon shows two interlocking orange links, representing reliability or a chain of events.

Robust

The icon features a yellow wrench and a yellow screwdriver crossed over each other, symbolizing tools, strength, or robustness.



Designing the First Lab

At the
Bench

- Turn a knob
- Make a measurement

Across
the Room

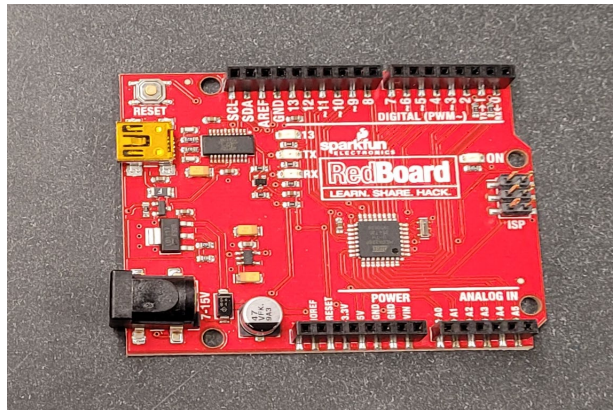
- Live stream
- SSH

Across
Campus

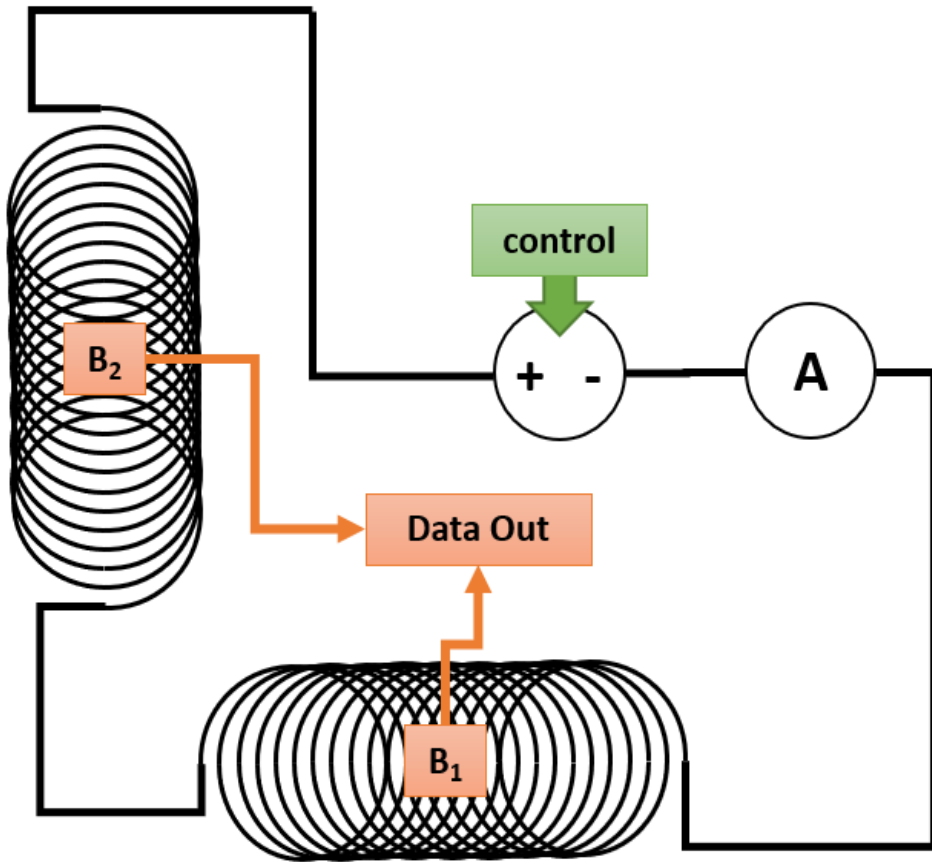
- Controls
- Graphs
- Video
- PHP/Python

Around
the World

- Firewall
- Security



Interface



Bench 1 - torr ST37

View:

Schematic ▾

Users at this bench:

peter

Current setting (0-9):

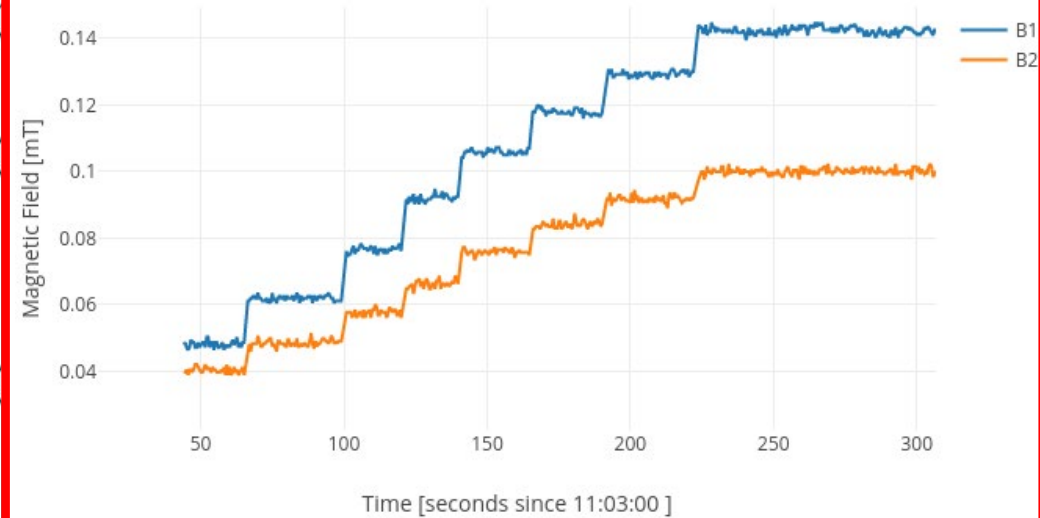
9

Set Current

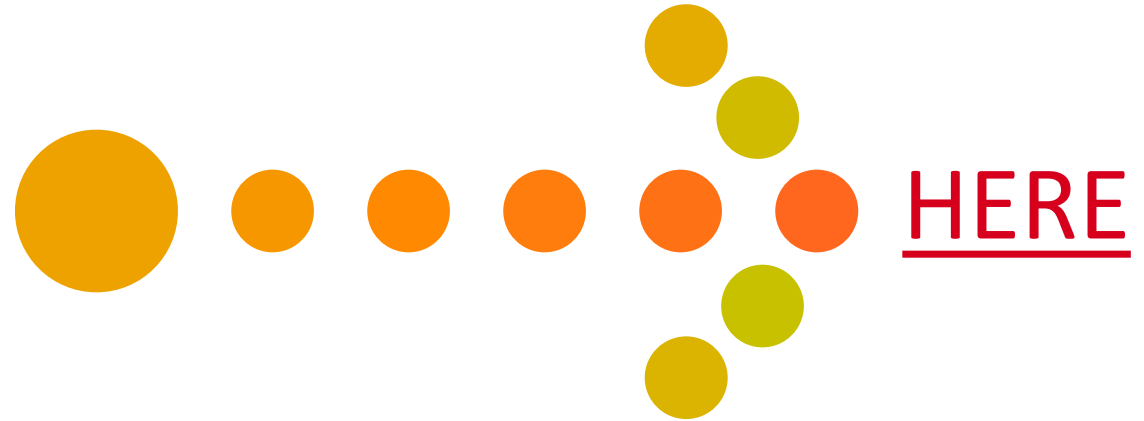
Command accepted.

System Messages:

[11:05:20] User peter sent
command Current 6
[11:05:44] User peter sent
command Current 7
[11:06:10] User peter sent
command Current 8
[11:06:42] User peter sent
command Current 9



Let's go
there!





Designing More Labs

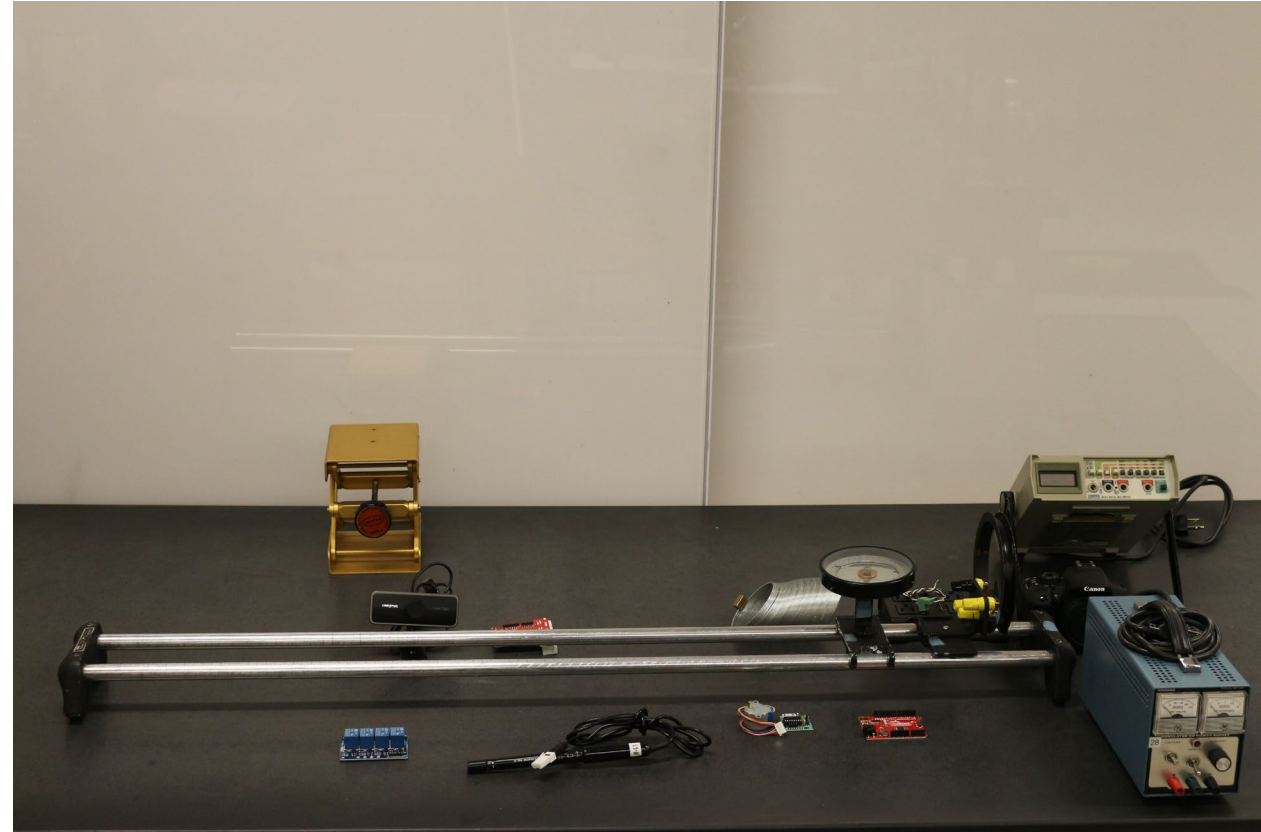
- Magnetic Field in Slinky





Designing More Labs

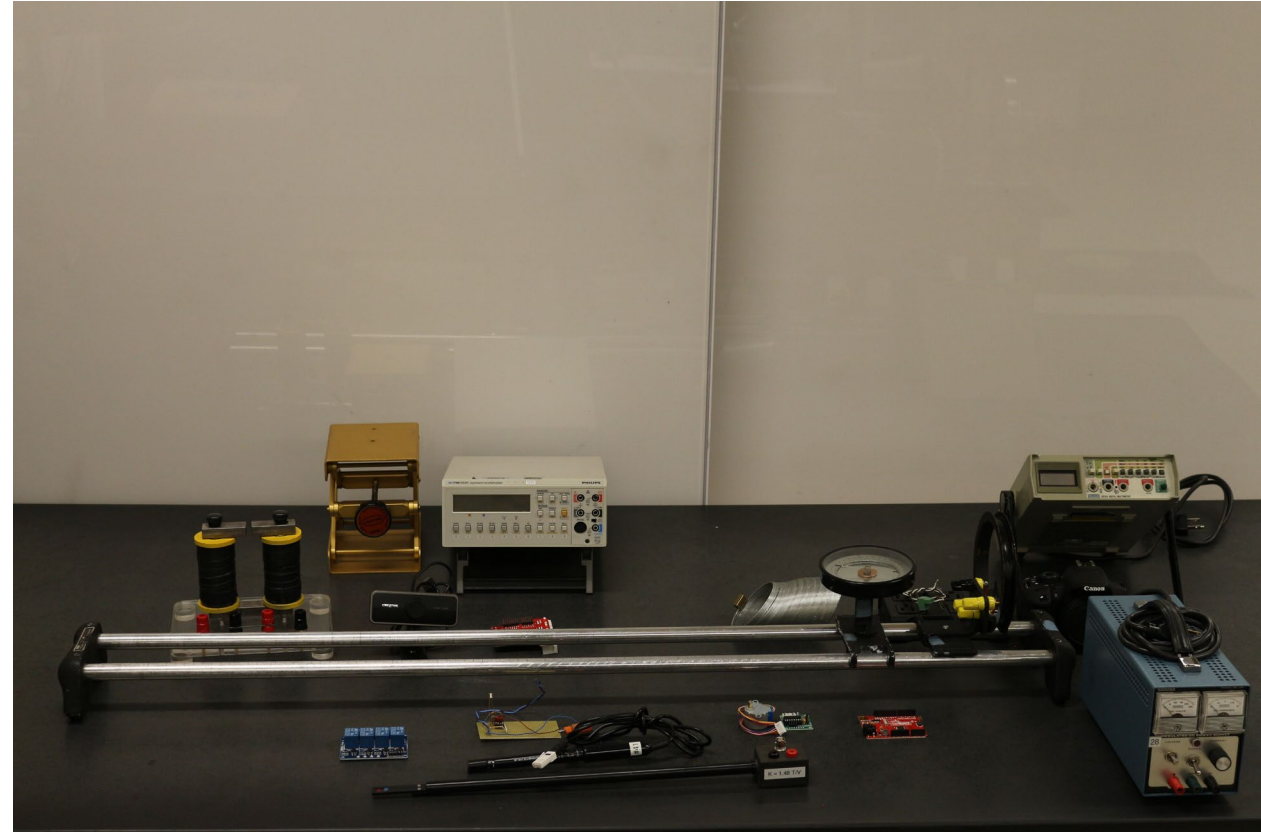
- Magnetic Field in Slinky
- Biot-Savart





Designing More Labs

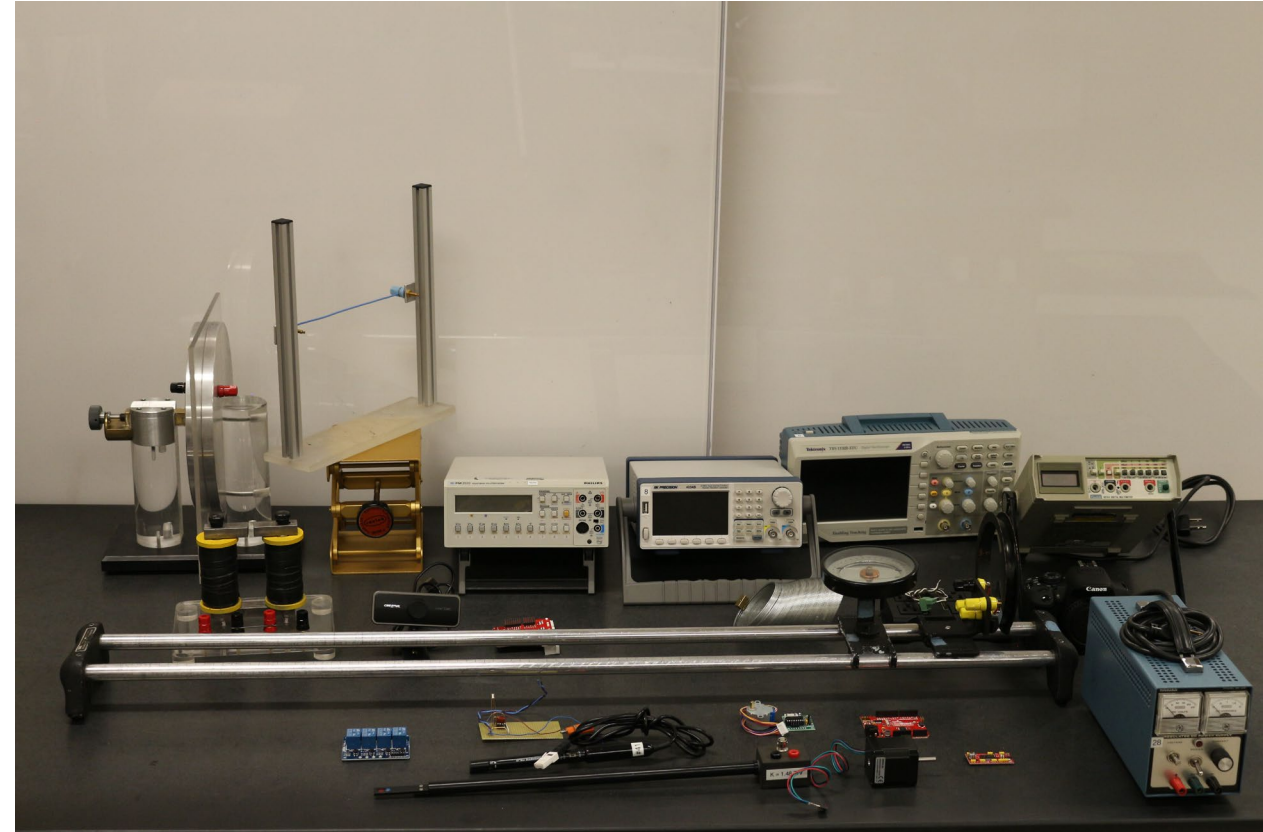
- Magnetic Field in Slinky
- Biot-Savart
- Hall Effect





Designing More Labs

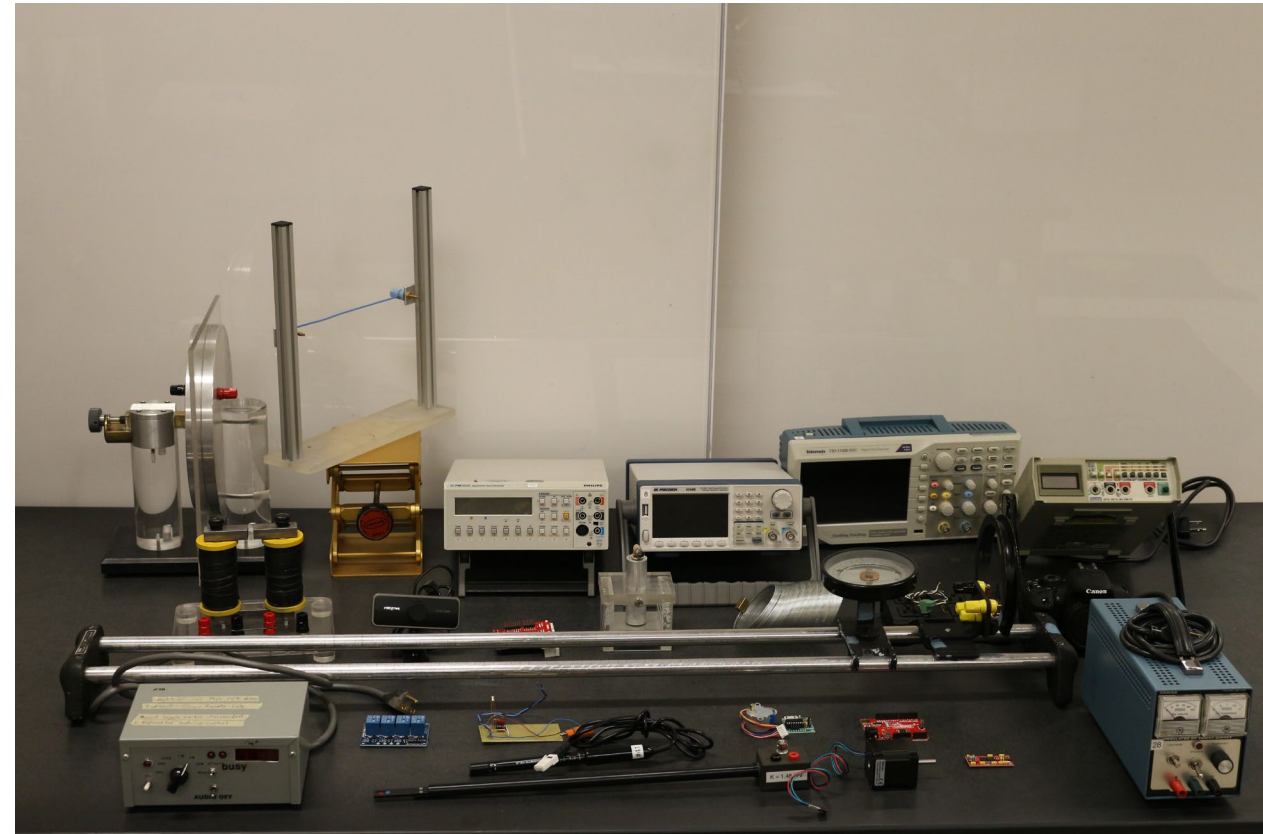
- Magnetic Field in Slinky
- Biot-Savart
- Hall Effect
- Capacitor



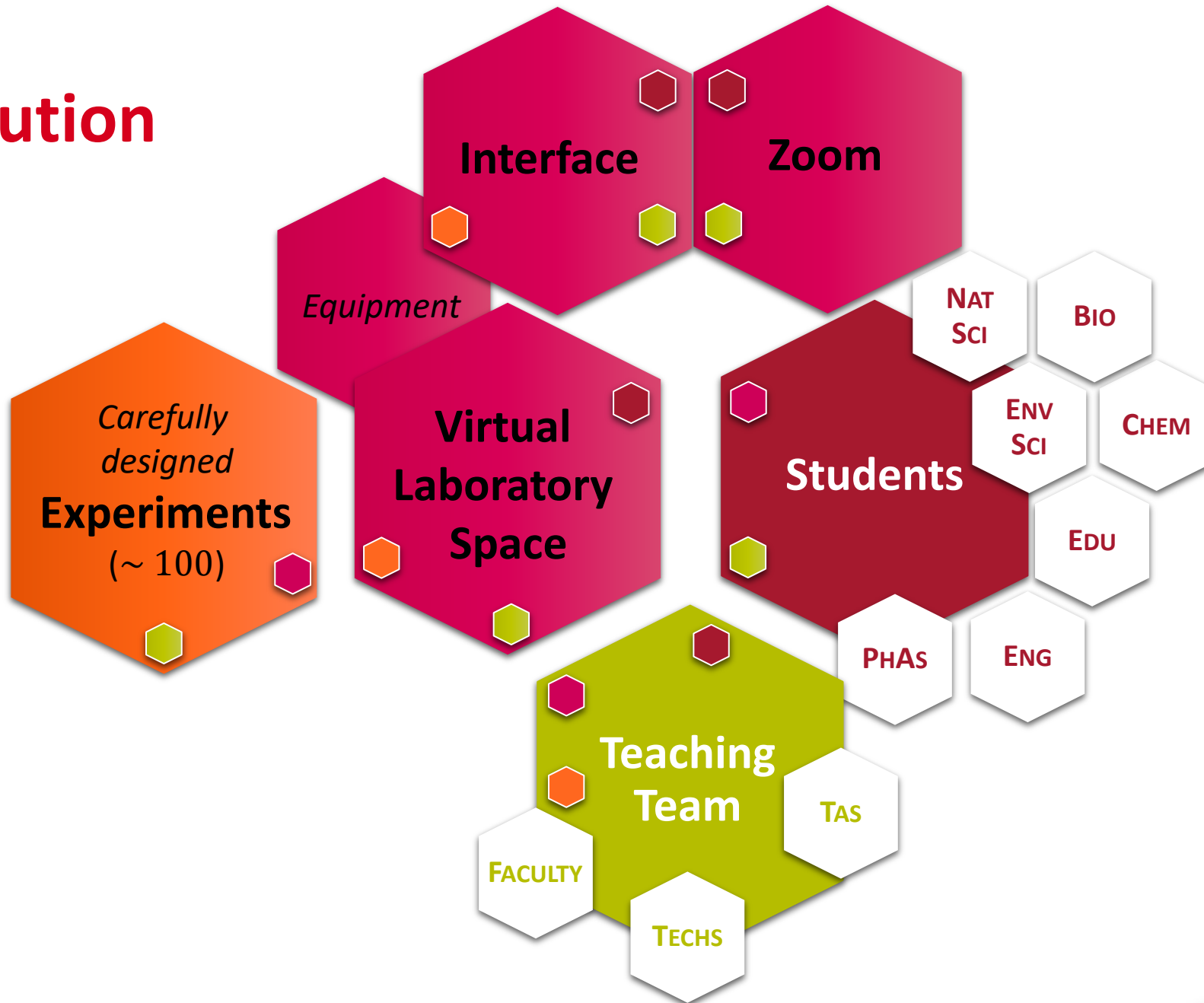


Designing More Labs

- Magnetic Field in Slinky
- Biot-Savart
- Hall Effect
- Capacitor
- Radioactive Decay

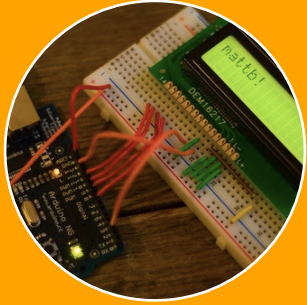


The Solution





Possibilities



Equipment
Design



Distance
Education



Community
Outreach



Making
Connections



The Key to Success

