Phidgets: easy development of physical interfaces through physical widgets (Greenberg & Fitchett)
Motivation: Frustrating Experiences

1. Having to select and purchase hardware/components
2. Ins and outs of system only known by the creator. Impenetrable to others.
3. Thus not much reusability
Research Agenda: The Phidget Concept

1. Simple to use, implement, and redesign
2. Accessible to average programmers
Elements of Phidgets

1. Connection Manager to manage connectivity and state of phidgets
2. Unique IDs for each phidget
3. Simulation Mode
Some examples of Phidgets Then

GlabServo
GlabPowerBar
GlabInterfaceKit
Phidgets Now
Software and hardware architecture

- Physical Devices connected to Phidget Manager via wire protocol
- Phidgets show up as COM objects with properties of the device

Figure 5. Phidget Architecture
Simulated Phidgets

- Phidgets have simulated counterparts
- Can be dropped into a visual basic interface builder.
- Simulations and physical devices are synced
Makey Makey

Banana Piano
Beyond Plug and Play
Q1: Useful or too constraining?

“This software-minded approach to making design easy for novices is **great for getting new users up to speed**, providing lots of different launch points, and providing scaffolding to make relatively-straightforward tasks even simpler, but it **doesn’t support thinking outside-the-box** all that well.” (Sam)

"I wonder if the reason I'm not super excited about this is that I've been thoroughly spoiled by the post-arduino hardware ecosystem.. **as a researcher, I'd rather have the flexibility of an Arduino or a RasPi. In a classroom setting, though, I can definitely see the appeal**” (Lea)

“They're proprietary, and **must be tethered to a PC to work** (vs. programmable & self-contained), which greatly limits where and how their interactions can work. Working with an low-cost, open-source hardware-software platform like arduinos offer much more flexibility” (Sung)
Q2: What would you build?

“I would build something to track how much of X grocery I have left. Like put a Phidget sensor for weight/pressure in the fridge slot I always put my milk in. Then I could check what the weight/pressure on said sensor was when I'm out and have an idea of how much milk or something I have left.” (Steven)
Q3: Other Maker Systems?

“Microsoft has a modularized electronics system Gadgeteer. It is very similar to Phidget, which has a modular component and .NET based framework. Different from Phidget, Gadgeteer is equally cheap as Arduino, and as easy to build as Phidget. [https://hackaday.com/2015/01/12/arduino-vs-phidgets-vs-gadgeteer/](https://hackaday.com/2015/01/12/arduino-vs-phidgets-vs-gadgeteer/)” (Jianze)

“LittleBits is one kit that comes to mind. Somewhat interestingly, the other ones I'm thinking of all have *no* software-side programming, like Roblox/Cubelets” (Lea)
Ethics?

“Did anyone else wonder what the ethics are of requiring your undergraduate students to work on examples for your UIST paper for a course assignment?” (Cori)