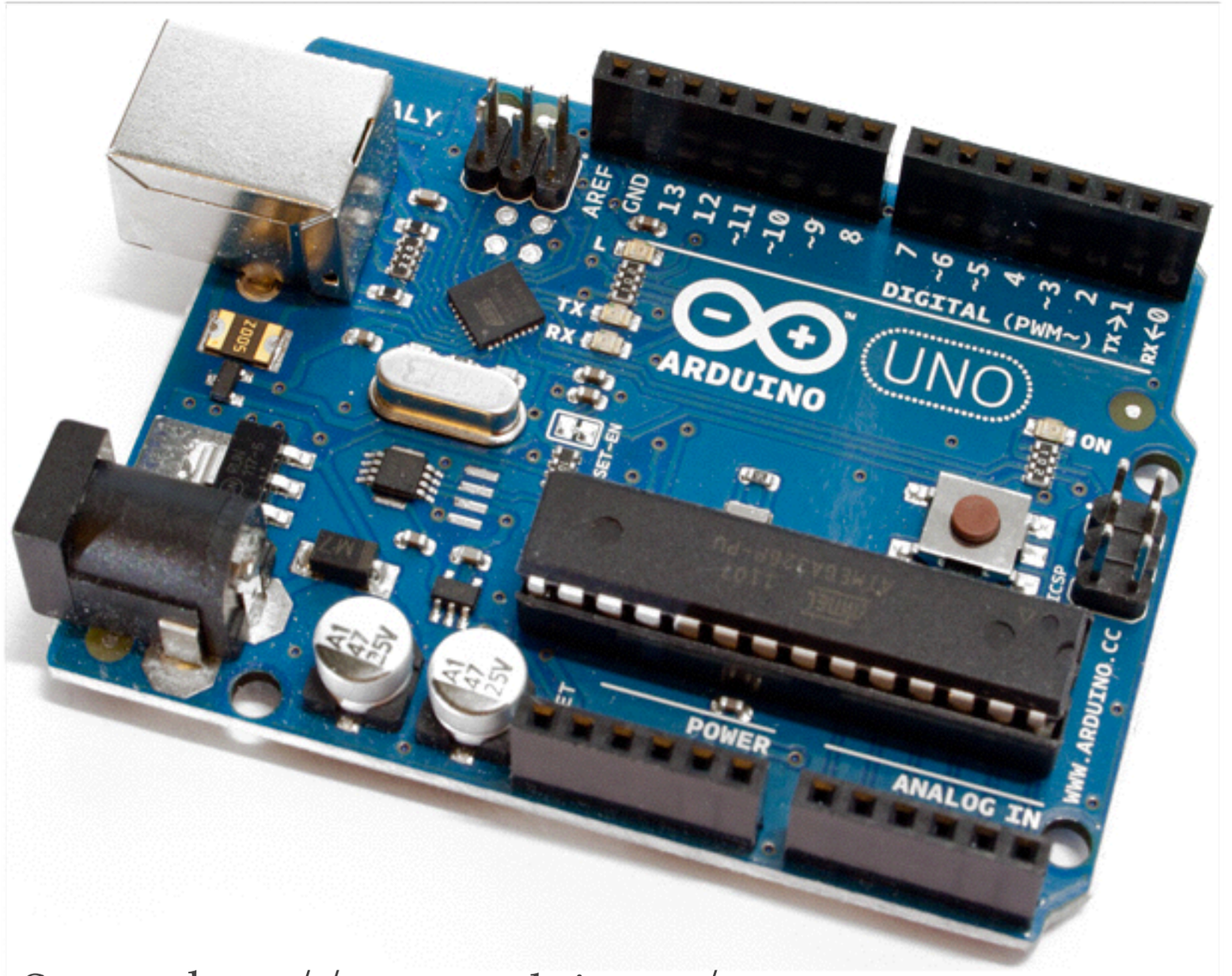
THE INTERNET OF THINGS

ARDUINO



Source: http://www.arduino.cc/

The Arduino is …

- A small programmable microcontroller (circuit) board
- Accepts code from a computer, it is open source, also called ‘Arduino’
- Outcomes range from controlling lights to making music to more
- Go-to tool for creating/sharing DIY Electronics projects
- Get started: http://www.arduino.cc/

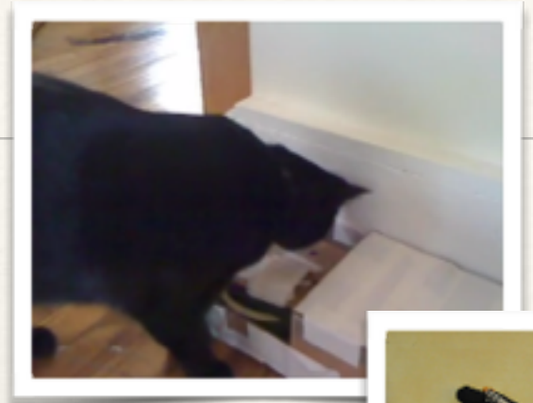
Arduino Genesis

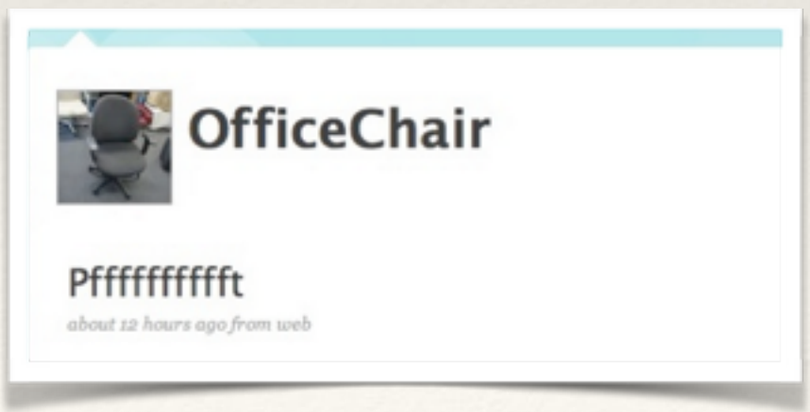
- Arduino co. co-founded in Italy, Massimo Banzi and interaction designer, and 5 friends
- Created so that students could begin building and testing interaction quickly w/o having to take 4 years to become engineers

Features

- All design files are online to modify
- It's a turbo charged DIY community
- Derivatives such as ADAFruit by Lady Ada

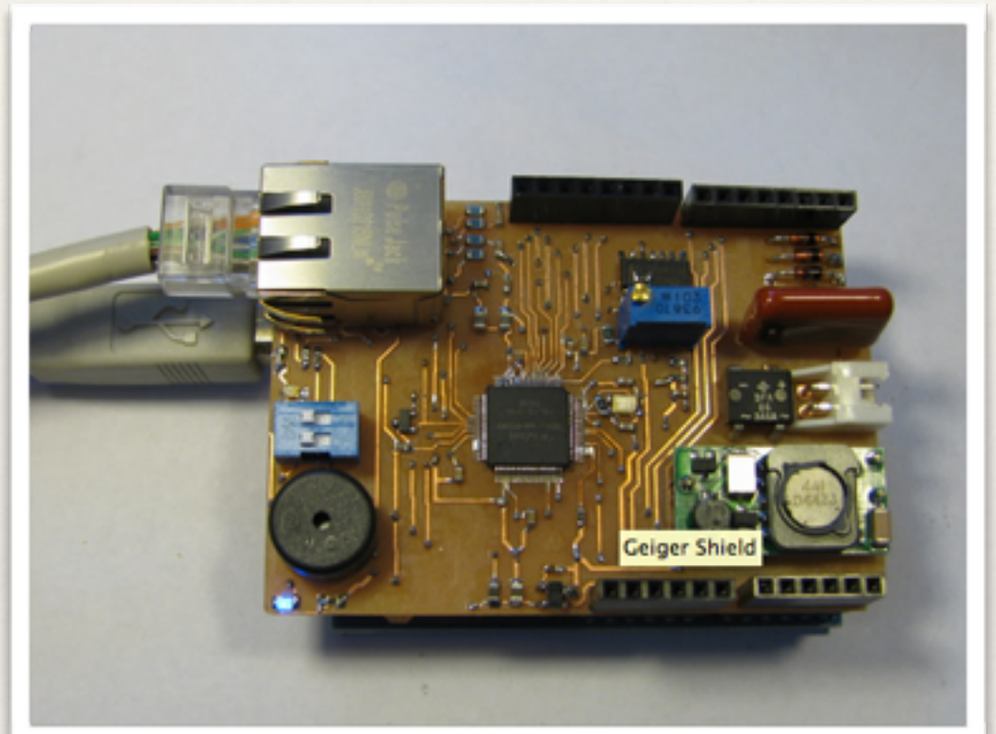
What is possible …





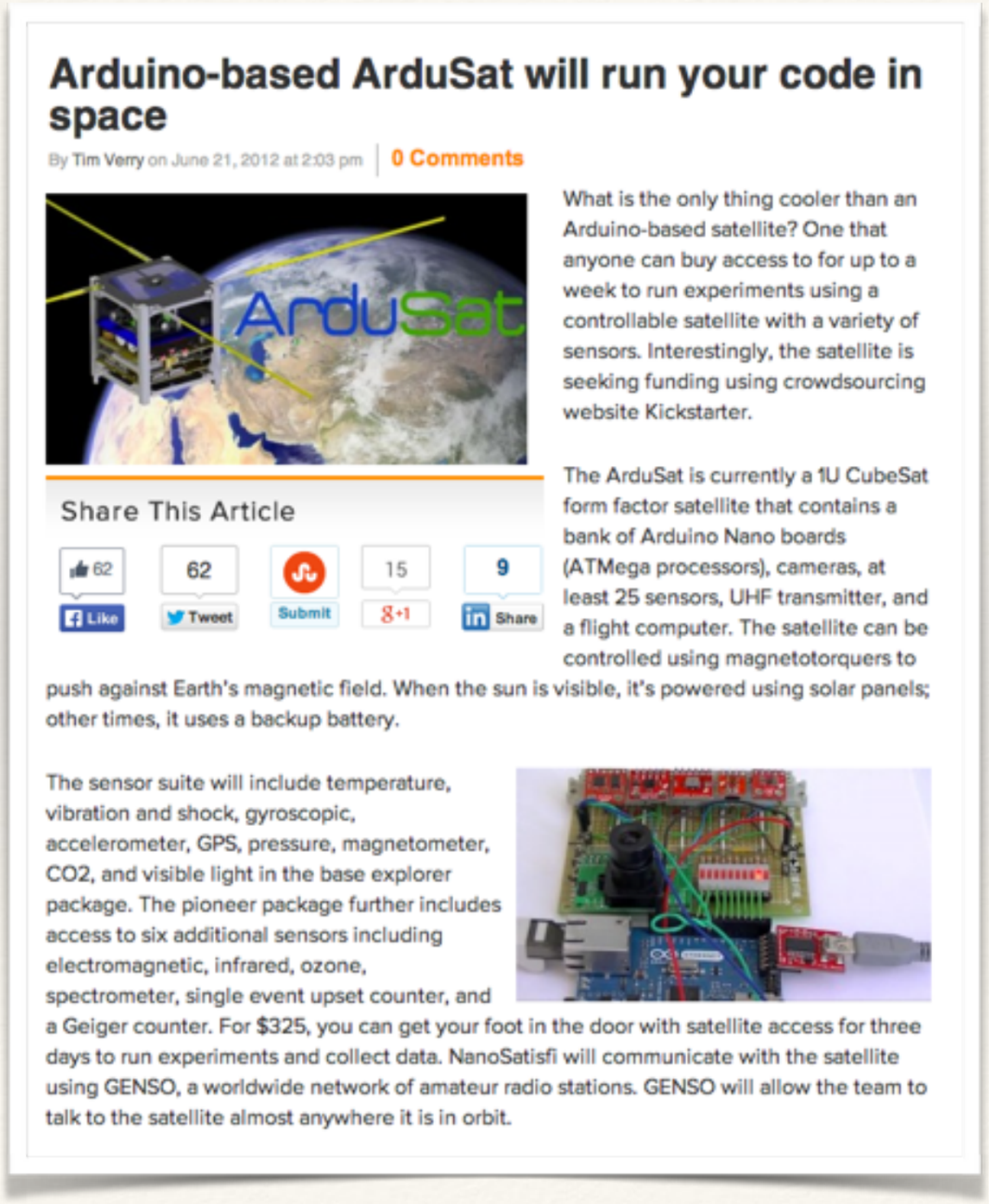
- Massimo says: if you have an idea? just go with it: "The only thing that is protected is the brand."
- CAT FEEDER - a project that was designed by a man who had two cats. One was sick, and he needed to make sure it ate its special food. So he equipped both cats with chips on their collars to open up the right bowl of feed. Low-tech? Yes. Effective? Yes. http://vimeo.com/10896151
- OVEREXPOSED CELEBS SOLUTION: Matt Richardson made the "Enough Already" project, which allows him to analyze which celebrities come on TV — and selectively mute them. http://makezine.com/2011/08/16/enough-already-the-arduino-solution-to-overexposed-celebs/
- Glove that understands sign language and translates the gestures to text on a display https://www.sparkfun.com/news/453 . ALSO, Students from ITP at NYU hacked a PS3 controller to help a boy with severe disabilities play games ONLINE.
- Arduinos are also being used in the Large Hadron Collider at CERN.
- Then there's the TxtBomber, which can write political messages in graffiti. The txtBOMBER has seven build-in pens to "print" the letters and a micro-controller-brain (Arduino), no need for a computer or any other brain. http://www.behance.net/gallery/txtBOMBER/406136
- And it's the basis of Otto, a musical interface built by a student from Italy, which will now become a commercial project: http://www.youtube.com/watch?v=9OW5WF5lJG8
- PLANTS that TWEET when they need water and CHAIRS THAT TWEET when the user FARTS http://gizmodo.com/5211135/man-builds-chair-that-tweets-his-farts-single+handedly-justifies-twitters-existence

What is possible … seriously



- This next one really is a serious project: the Tokyo Hackerspace / RDTN Geiger shield was developed after the nuclear accident at Fukushima to use Arduino to create a Geiger counter and share data online Visualization of the real level of radioactivity. http://blog.arduino.cc/2011/04/14/tokyo-hackerspacerdtn-geiger-shield/

What is possible … seriously



Arduino-based ArduSat will run your code in space

By Tim Verry on June 21, 2012 at 2:03 pm | 0 Comments

What is the only thing cooler than an Arduino-based satellite? One that anyone can buy access to for up to a week to run experiments using a controllable satellite with a variety of sensors. Interestingly, the satellite is seeking funding using crowdsourcing website Kickstarter.

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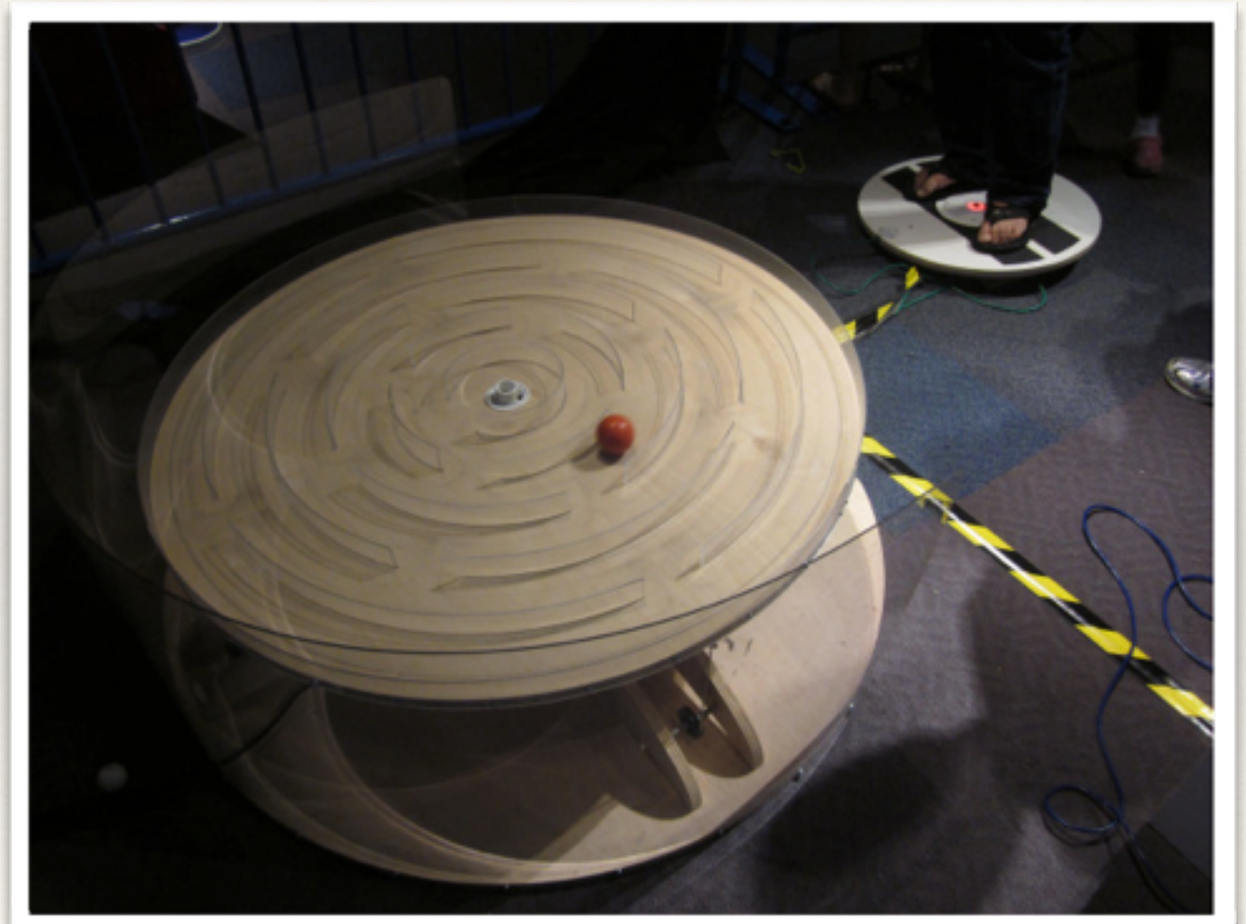
The ArduSat is currently a 1U CubeSat form factor satellite that contains a bank of Arduino Nano boards (ATMega processors), cameras, at least 25 sensors, UHF transmitter, and a flight computer. The satellite can be controlled using magnetotorquers to push against Earth's magnetic field. When the sun is visible, it's powered using solar panels; other times, it uses a backup battery.

The sensor suite will include temperature, vibration and shock, gyroscopic, accelerometer, GPS, pressure, magnetometer, CO2, and visible light in the base explorer package. The pioneer package further includes access to six additional sensors including electromagnetic, infrared, ozone, spectrometer, single event upset counter, and a Geiger counter. For $325, you can get your foot in the door with satellite access for three days to run experiments and collect data. NanoSatisfi will communicate with the satellite using GENSO, a worldwide network of amateur radio stations. GENSO will allow the team to talk to the satellite almost anywhere it is in orbit.

- ArduSat, a satellite with Arduino connected to sensors. "Anyone who knows Arduino can upload their experiments to an actual satellite," he says happily. "Imagine being a student and being able to upload your experiments to space!"
- http://www.extremetech.com/extreme/131396-arduino-based-ardusat-will-run-your-code-in-space

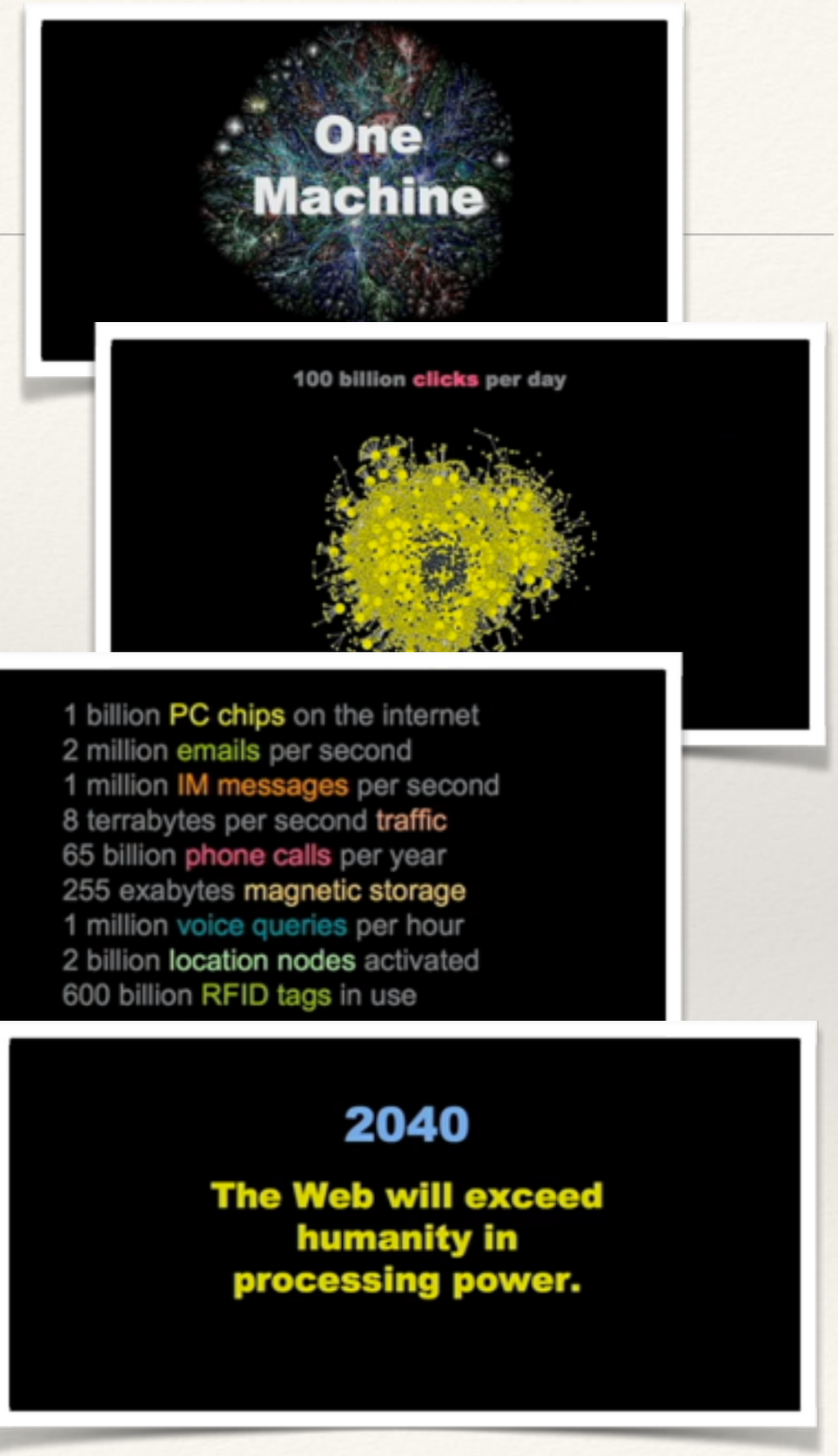
What is possible … seriously



- Big companies and Arduino: Google Accessory Development Kit (ADK) uses Arduino. is a reference implementation for hardware manufacturers and hobbyists to use as a starting point for building accessories for Android. . Each ADK release is provided with source code and hardware specifications to make the process of developing your own accessories easier. Creating new and alternative hardware.

http://makezine.com/2011/06/24/android-adk-powered-ball-maze/

The Internet of Things



- KevinKelly, executive director Wired: the Web is only about 5,000 days old /13 years (this was back in 2008) , about 6,800 days today – that's about 18 years (the Internet, DARPA, etc., is older) – and all the stuff we have and now take for granted, from online investing to social networking to Wikipedia has happened in this short time. "if I had predicted all this would be there (and free) nobody would have believed it. It's impossible.
- One Global Machine, Our devices are windows into machine.
- He talks about "Restructuring" which is his term for the "Semantic Web" or what some call "Web 3.0" The idea is: first we linked computers (the Net), then we linked pages (the Web), and next we will link all the data or information or ideas anywhere on the Web to all relevant data /information/ ideas elsewhere on the Web. (This made possible by technologies such as XML, RSS, OWL, API, RDF)
- Kelly's final point: humans will be co-dependent with the Web. It will be always on, always there, ubiquitous, and the single fundamental tool we depend on to do everything. Objects connecting to it. Every person, item, object will have an ID on the web. With Arduino, you can begin the process at home!
- http://www.ted.com/talks/kevin_kelly_on_the_next_5_000_days_of_the_web.html

Resources

- makezine.com
- makerflux.com
- instructables.com
- Philadelphia http://www.thehacktory.org/
- ladyada.net (Lady Ada is the goddess of the Maker movement)
- VIDEO The Internet of Things: Dr. John Barrett at TEDxCIT http://www.youtube.com/watch?v=QaTIt1C5R-M#t=975
- VIDEO Kevin Kelly: The next 5,000 days of the web http://www.ted.com/talks/kevin_kelly_on_the_next_5_000_days_of_the_web.html
- VIDEO Massimo Banzi: How Arduino is open-sourcing imagination http://www.youtube.com/watch?v=UoBUXOOdLXY#t=34