

# ADK 101

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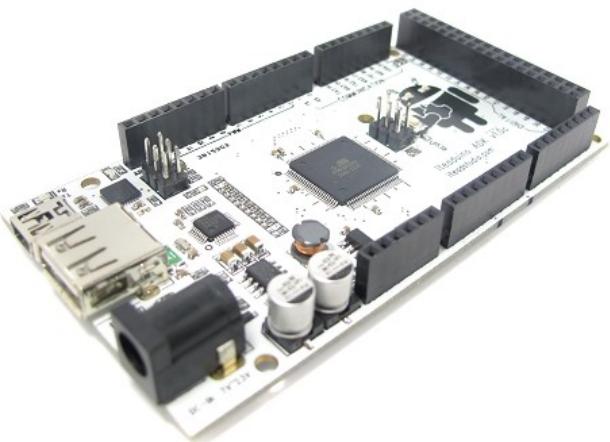
- Reversim Summit 2013



# What we will cover

- What is ADK?
- Inspirations
- Live demo
- Android-ADK simple communication protocol
- 1 minute about resistors and LEDs
- Setting up the technical environment
- Lab outline
- Coding!

# What is a Accessory Development Kit?

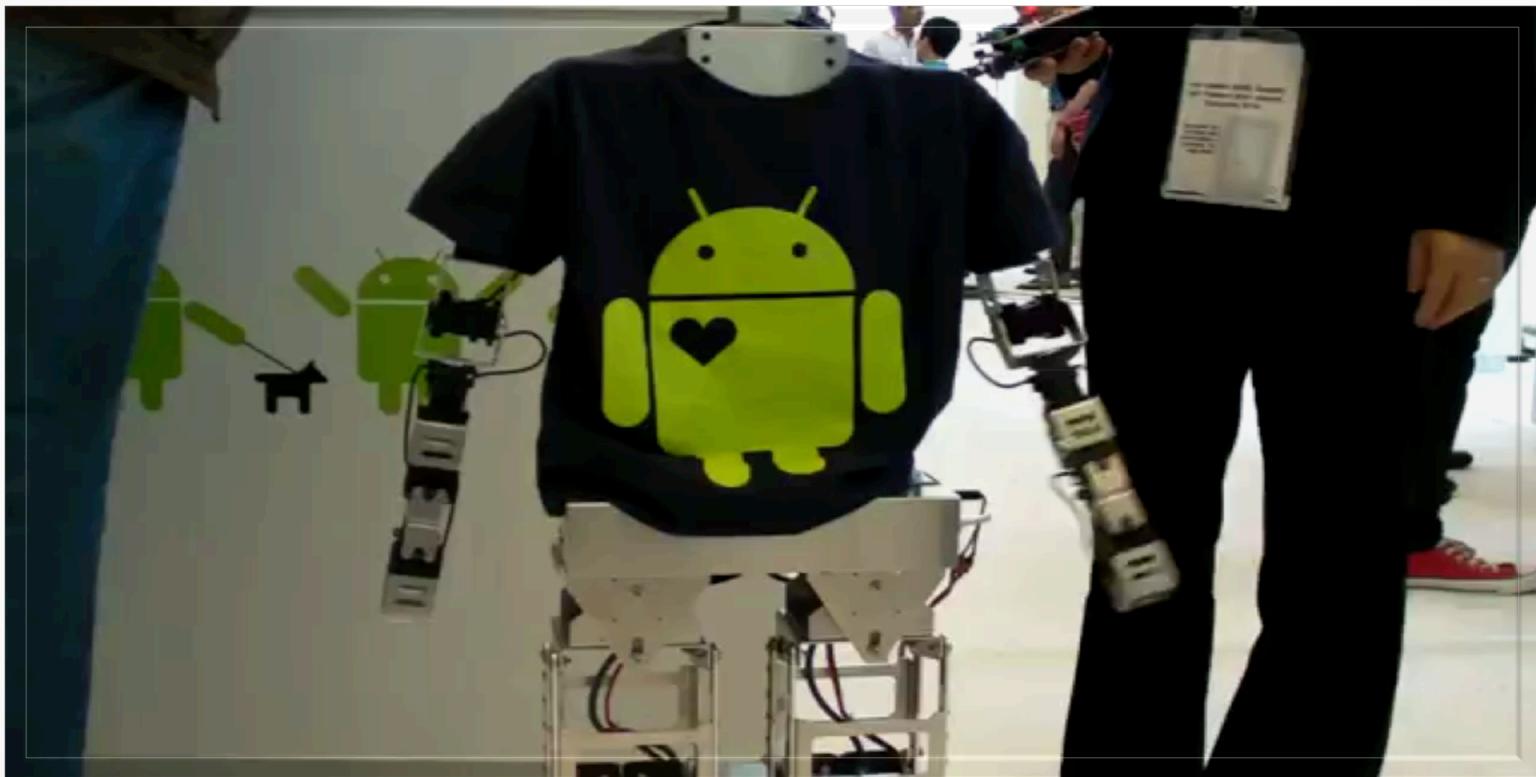


# Inspiration



- [http://youtu.be/hHVM\\_5KmHdA](http://youtu.be/hHVM_5KmHdA)

# Inspiration

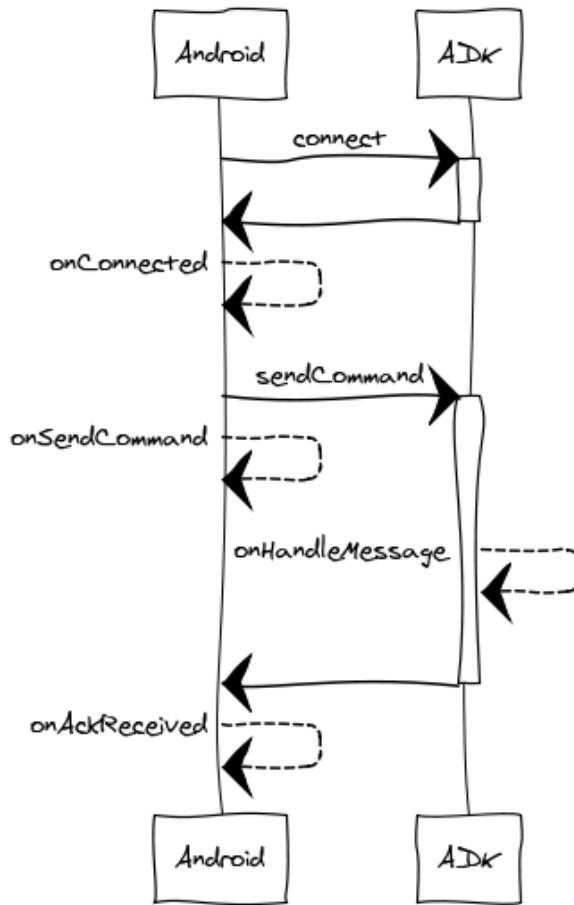


- <http://youtu.be/Ub7newiu930>

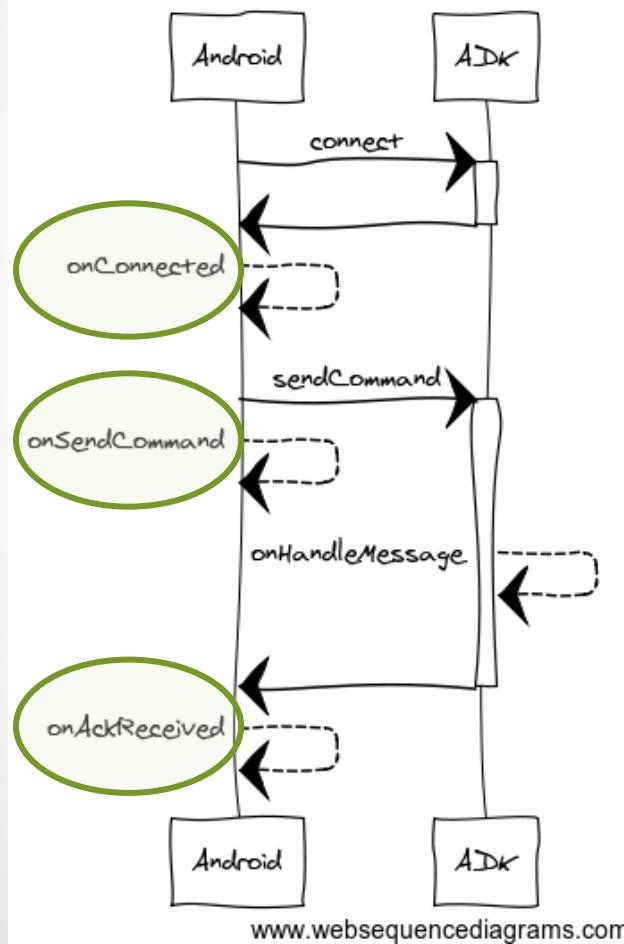
# Live Demo



# Android-ADK communication protocol



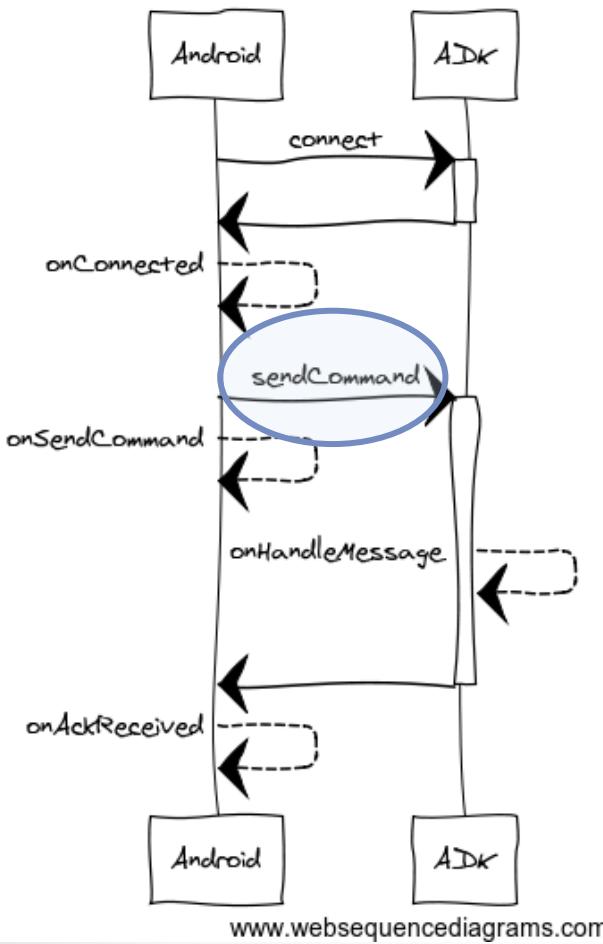
# Android-ADK communication protocol



## Android Events

- `onConnected`
- `onDisconnected`
- `onSendCommand`
- `onAckReceived`

# Android-ADK communication protocol



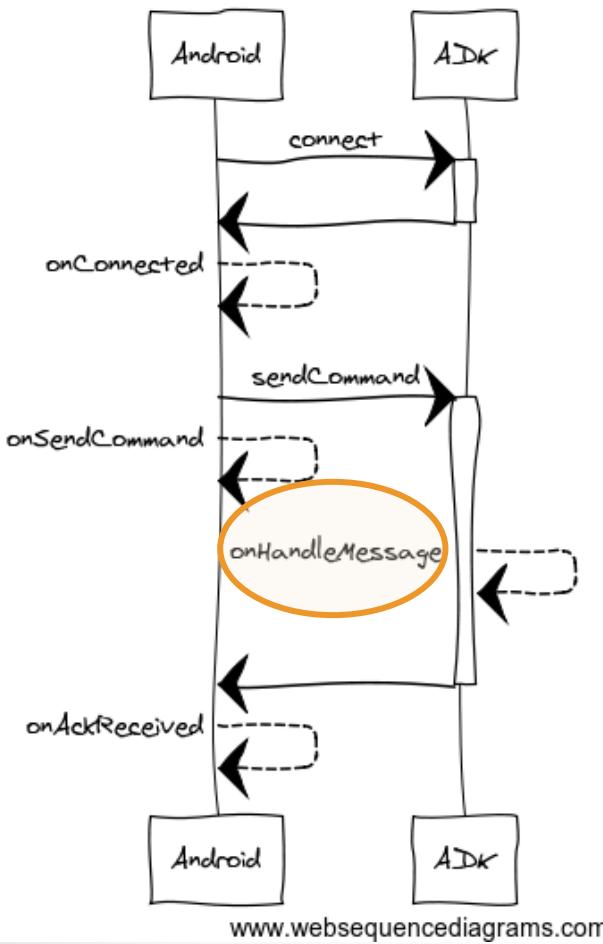
## Android Communication API

- sendCommand

Accepts:

- byte command
- byte action
- byte[] data

# Android-ADK communication protocol



## ADK Events

- onHandleMessage

Signature:

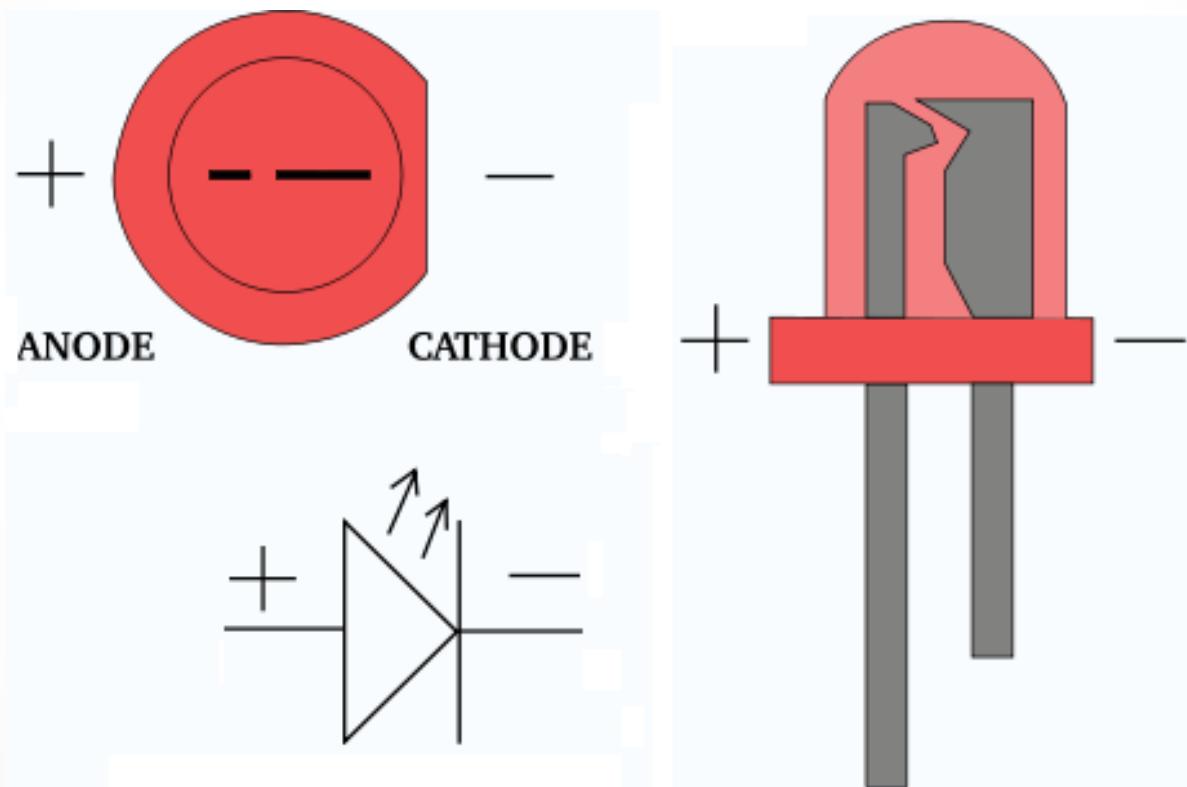
- byte command
- byte action
- byte dataLength
- byte\* data

# Resistors

- Manage the flow of current through a circuit, creating a drop in voltage between two points



# Light Emitting Diodes



# Technical environment

- Requirements
  - Android device running 2.3.4 or higher (not all custom ROMs are supported)
  - USB cable
  - Laptop with:
    - [Android SDK \(including platform 2.3.3, API level or higher\)](#)
    - [Arduino IDE for ADK 2011](#)
    - [Arduino IDE for ADK 2012](#)
    - [Arduino libs](#) –  
copy these libraries to [arduino\_installation\_folder]/libraries/
    - [Eclipse + Android plugin / IntelliJ](#) / etc.
- Lab's git repository
  - <https://github.com/amirlazarovich/codelab-adk-leds>

# Lab Outline

- Setting up the environment: Integrated blinking led
- Getting to know the Android end: Android controlled switch on/off for the integrated led
- Getting to know the ADK end: Controlling an external led
- Customizing both ends: Christmas lights
-

# *1<sup>st</sup> milestone (part 1)*

# Integrated Blinking Led

- Mission:  
all teams should be able to communicate with their ADKs
- Steps:
  1. git clone <git@github.com:amirlazarovich/codelab-adk-leds.git>
  2. Copy the Arduino libraries from [cloned directory]/Arduino/libs to [Arduino installation folder]/libraries/
  3. Open the Arduino IDE and select the correct board: tools-board-[Arduino mega 2560 or Mega ADK] or [ADK 2012] (depending on your ADK model)
  4. Now select the correct usb serial-port: tty.usbserial\*\*\*
  5. Run the example project: file – examples – basics - blink

# *1<sup>st</sup> milestone (part 2)*

# Integrated Blinking Led

- Mission:  
all teams should be able to communicate with their ADKs
- Steps:
  1. Open Eclipse/IntelliJ/etc. and import the projects “adk-manager” and “blinking-led”
  2. Make sure the project “blinking-led” import the library project “adk-manager” and uses SDK >= 2.3.3
  3. Install the blinking-led project on your Android device
  4. Open the ADK IDE and run the project Adk\_201X\_blinking\_led

# *2<sup>nd</sup> milestone*

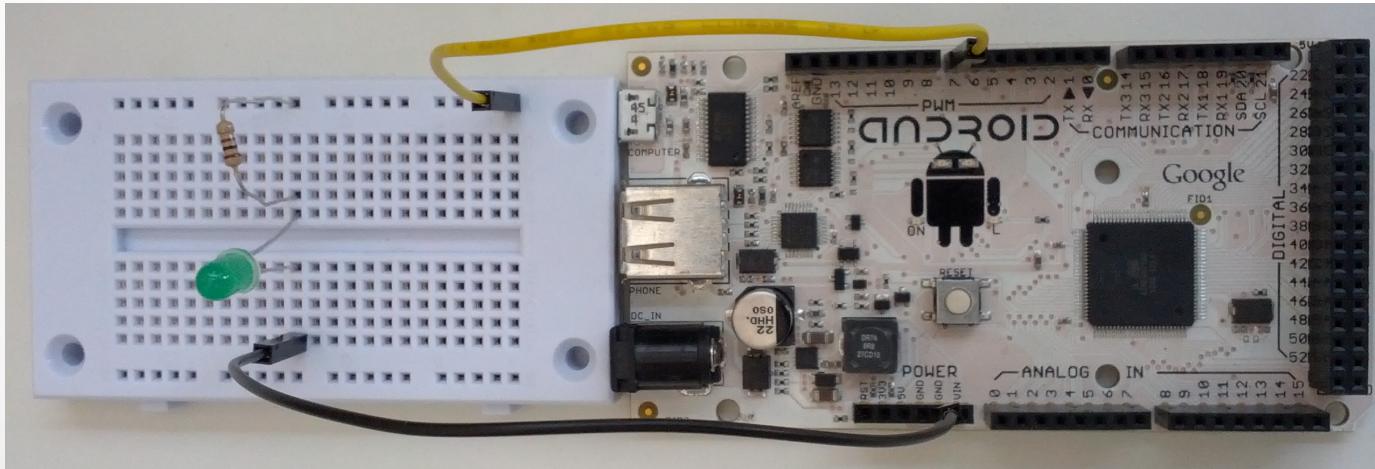
# Android Switch

- Mission:  
Getting familiar with the Android end protocol
- What you should do:  
Create a new layout with a Switch/Toggle button/etc. that sends signals to the ADK device to turn the led on/off

# *3<sup>rd</sup> milestone*

## External Led

- Mission:  
Getting familiar with the Arduino end protocol
- What you should do:  
Build a simple electronic circuit and control it with your ADK



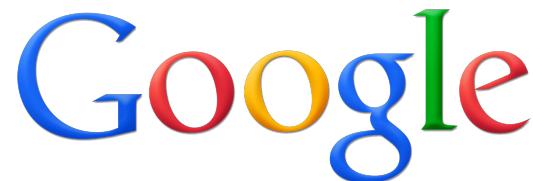
# *Final milestone*

# Christmas lights

- Mission:  
Customize both ends and control multiple LEDs
- What you should do:  
Build any electronic circuit you want that is compiled of LEDs and resistors. Control those LEDs using your Android device in any way you want (switches/automatic timers/sensors/etc.)

# Thank you

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*See you at our next Lab*

