

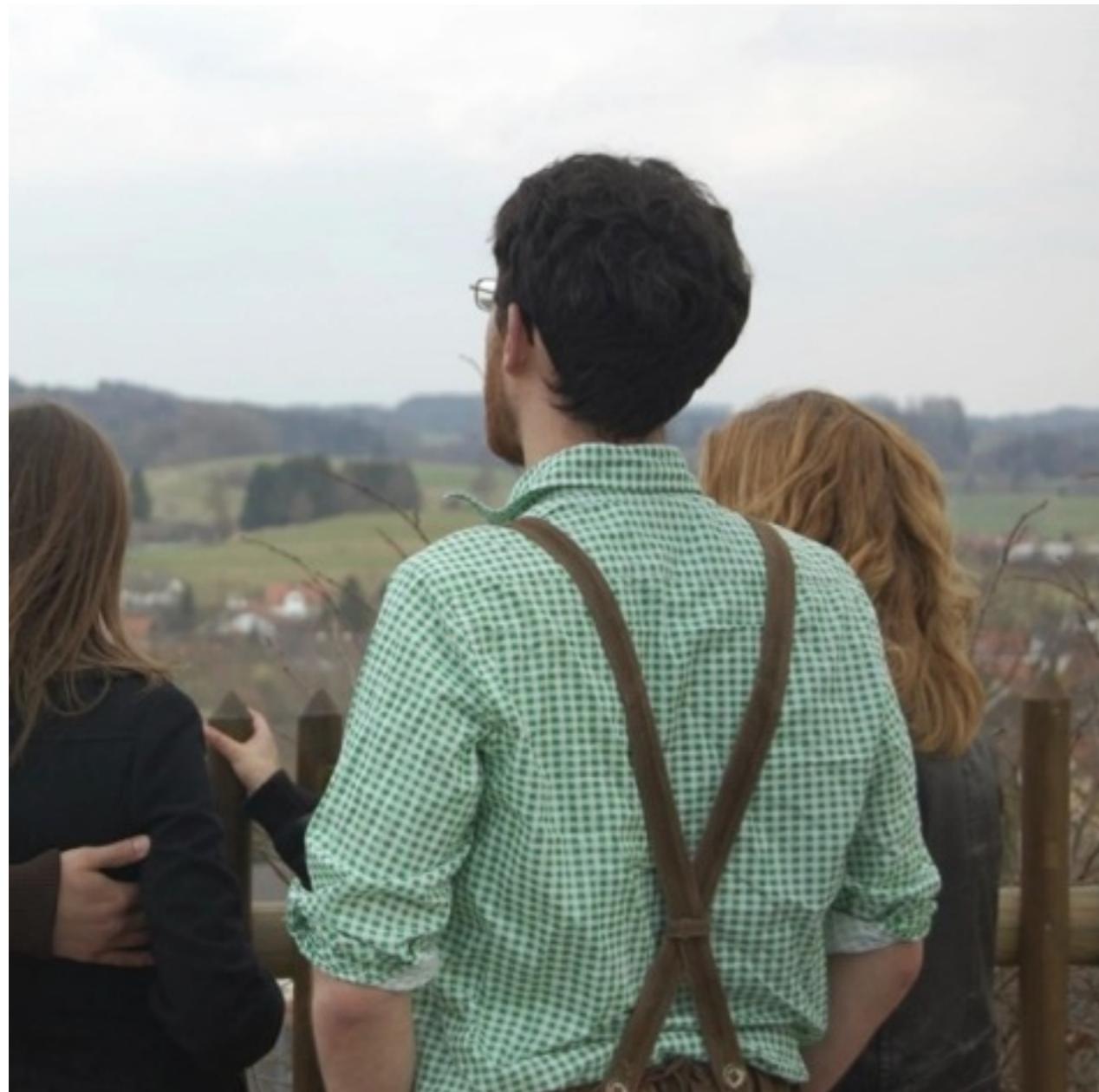
Personalized Learning on the iPad

# Deploying iPads at Scale

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# Alex Koppel (@arsduo)



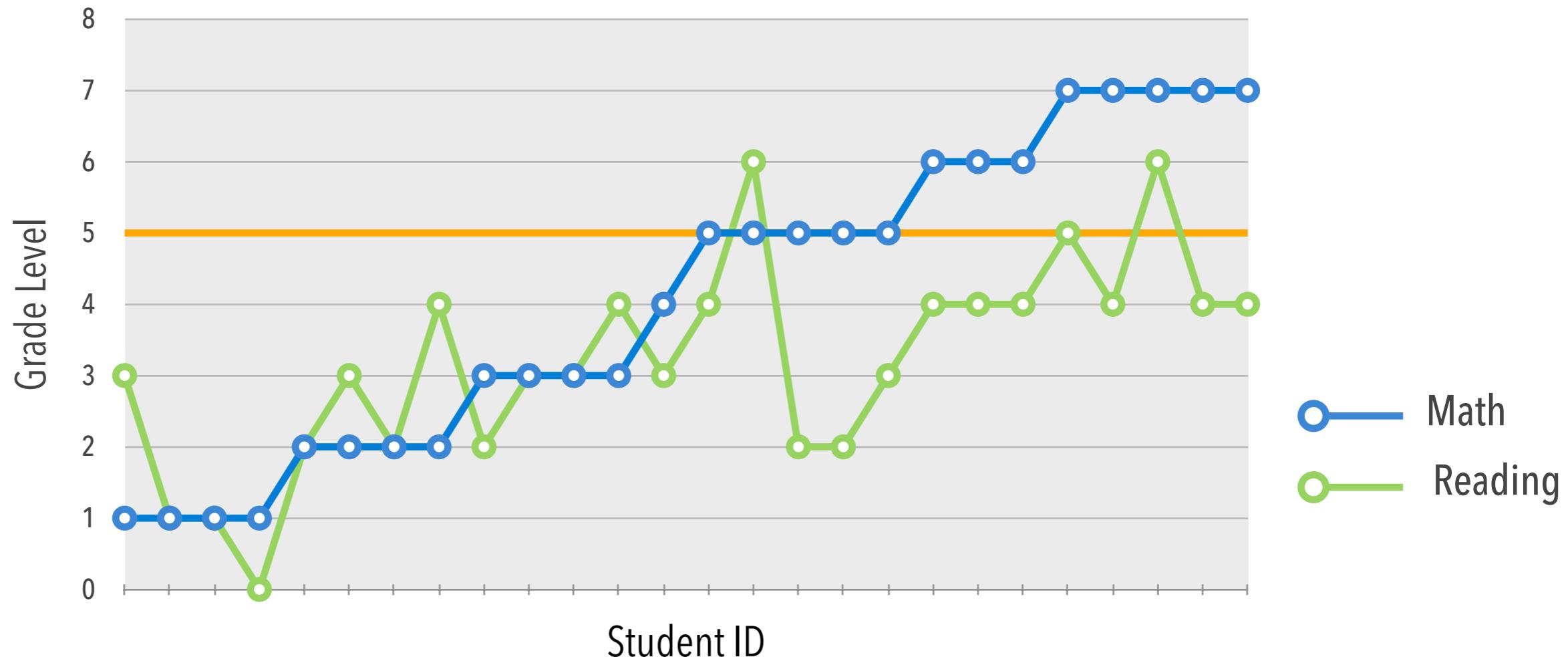
- Joined eSpark in 2013
- Ruby/iOS/JS since 2008
- Previously: Wunderlist, social marketing, healthcare IT

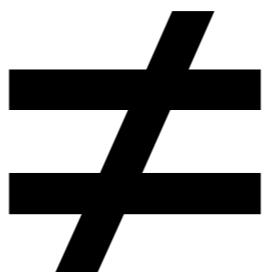
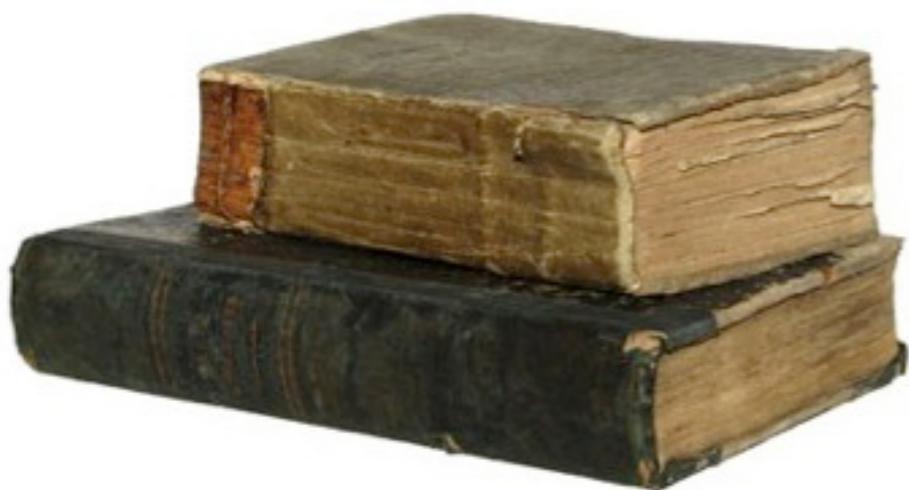
eSpark



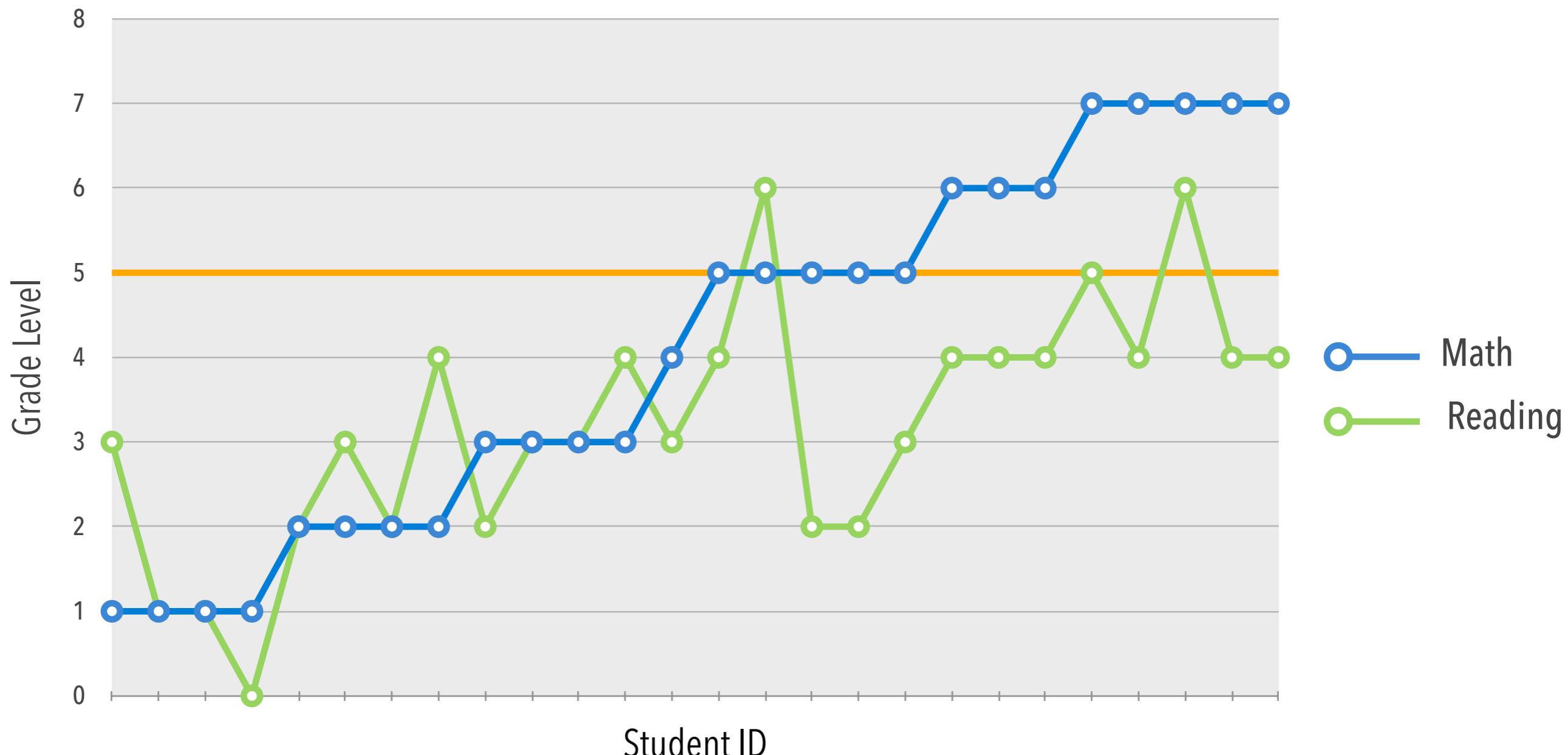
# Differentiated Learning Needs

This graph displays the diverse learning needs of a real 5th grade classroom in Chicago. Only 6 students are working at grade level.  
This is a common problem all teachers face.

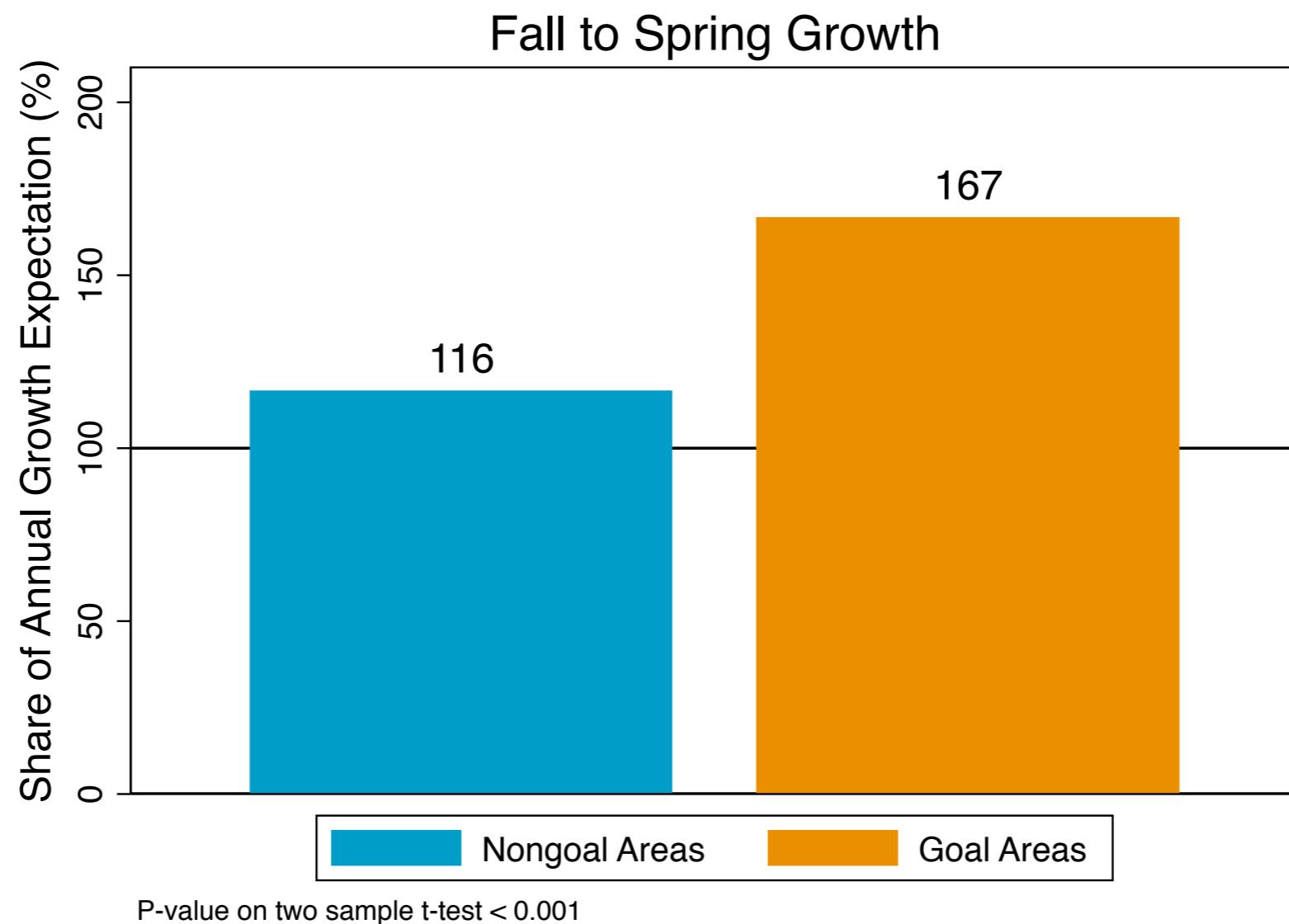




# This can be an opportunity



# Effective







LOG  
OUT







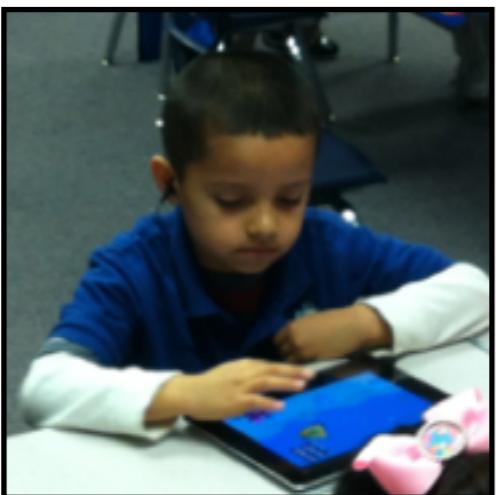
**100,000+**  
educational  
resources for iPad



# Mr. Babai's 4th grade Reading



Matt



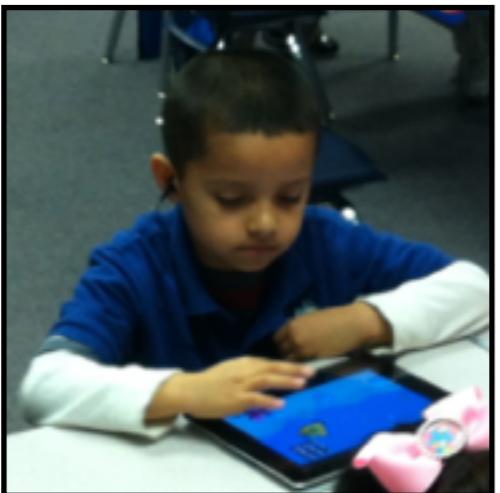
Mr. Babai's  
4th grade  
Reading

Sara





**Matt**



**2nd grade level**

**Mr. Babai's  
4th grade  
Reading**

**Sara**



**6th grade level**

**Matt****2nd grade level****Conjunctions****Mr. Babai's  
4th grade  
Reading****Sara****6th grade level****Oliver Twist**

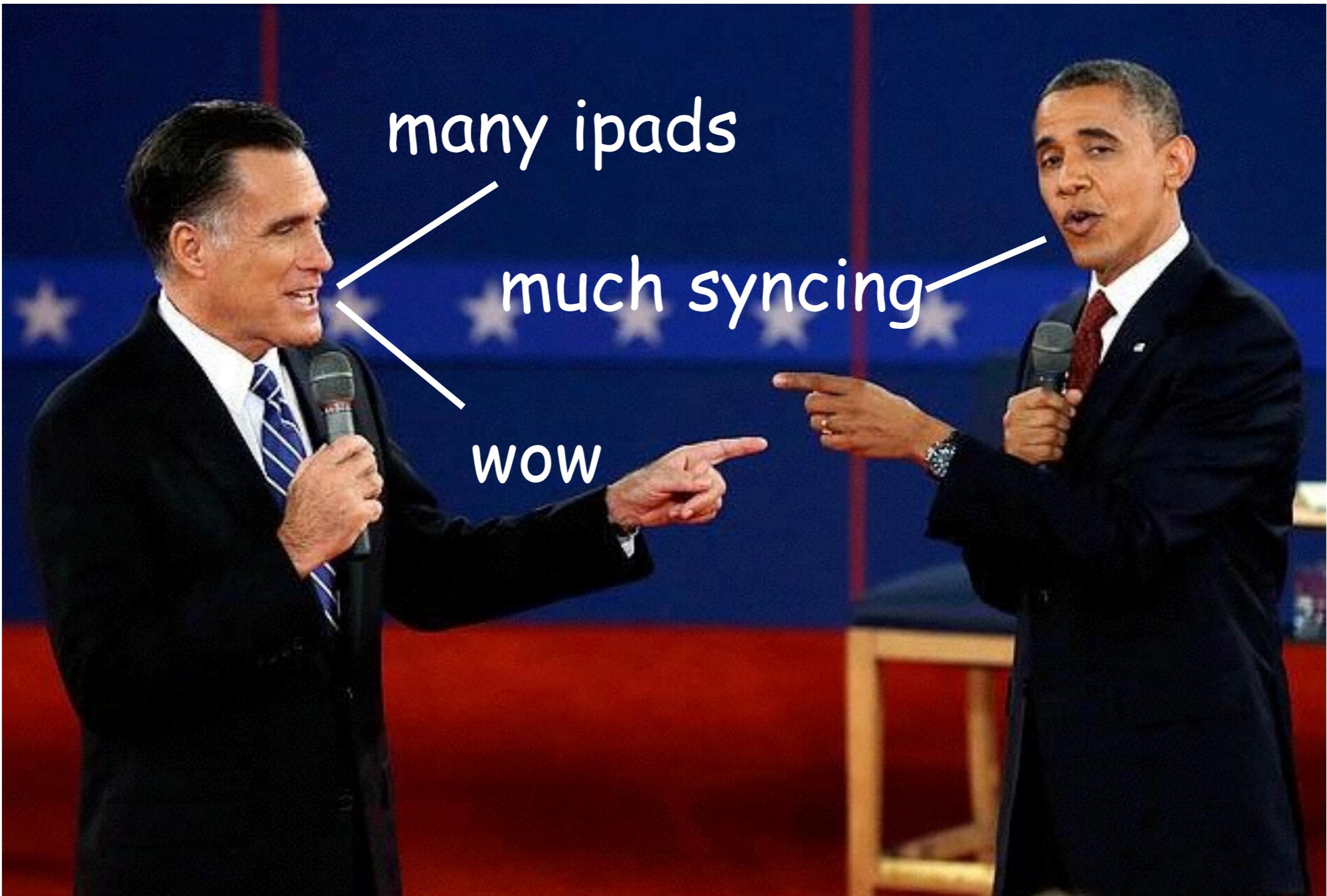
How do we make it  
happen?



# Fall 2012: 2,000 iPads



# Fall 2012: 2,000 iPads



Transferring Purchases from "sparky" (Step 8 of 8)  
Copying 1 of 8: Creeps! HD

Search Library

Apps

All iPhone/iPod touch iPad List Updates

iPad iTunes Store



ABCmouse.com Books  
Age of Learning, Inc.



AirWatch MDM Agent  
AirWatch, LLC



Amazon App  
AMZN Mobile LLC



Amazon Instant Video  
AMZN Mobile LLC



Amex for iPad®  
American Express



Bejeweled Blitz  
PopCap



Chrome - web browser  
Google, Inc.



Count, Sort and Match  
Ripple Digital Publishing



Counting with the Very Hungry Caterpillar  
Night & Day Studios, Inc.



The Creeps! HD  
Super Squawk Software



Dropbox  
Dropbox



Duolingo - Learn Languages  
Duolingo



The Economist for iPad  
The Economist



Facebook  
Facebook, Inc.



Flipidee Jobs  
Flipidee Studios Inc.



Foursquare  
Foursquare Labs, Inc.



Fractions - by Brainingcamp  
Brainingcamp, LLC



Giggle Ghosts  
Busy Bee Studios



GoodReader for iPad  
Good.iWare Ltd.



Goodreads  
Goodreads



Google Drive  
Google, Inc.



Google Maps  
Google, Inc.



Google+  
Google, Inc.



HipChat  
HipChat, Inc.



Instapaper  
Instapaper, LLC



iTunes U  
Apple



JumpStart Preschool  
Knowledge Adventure



Keynote  
Apple



Kindle - Read Books  
AMZN Mobile LLC



Learn Shapes Free  
Peekaboo Studios LLC



Little Patterns - Anatomy  
GrasshopperApps.com



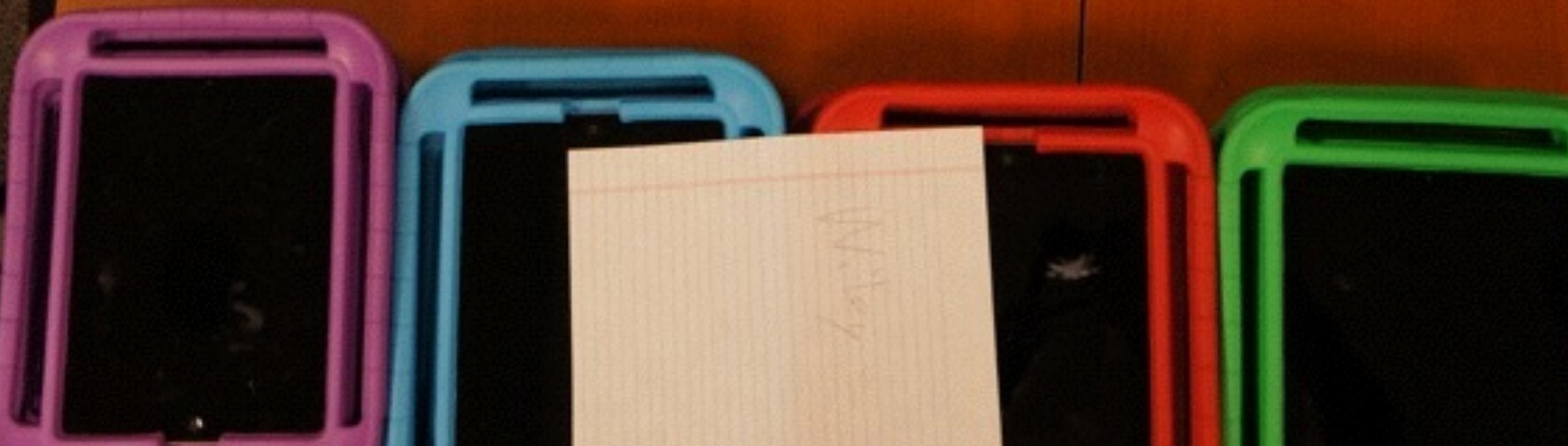
Math Blaster Hyperblast  
Knowledge Adventure



Get More Apps

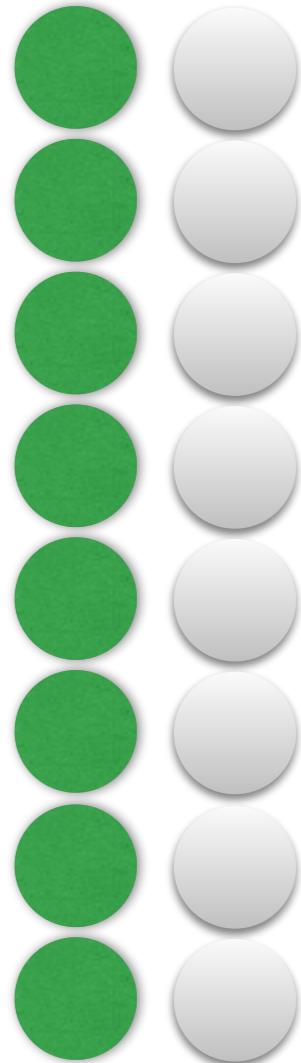








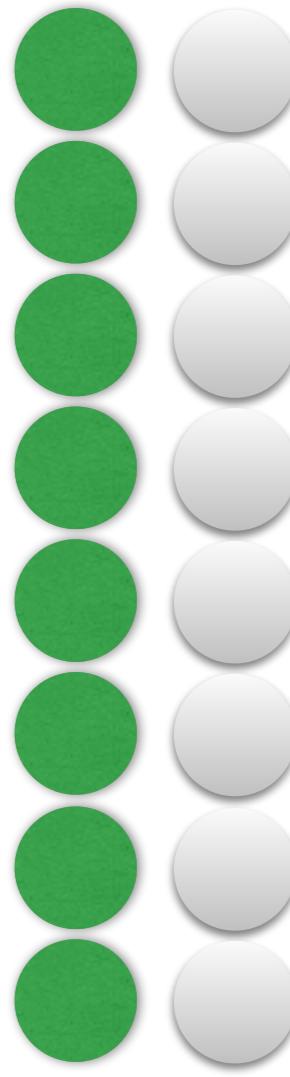
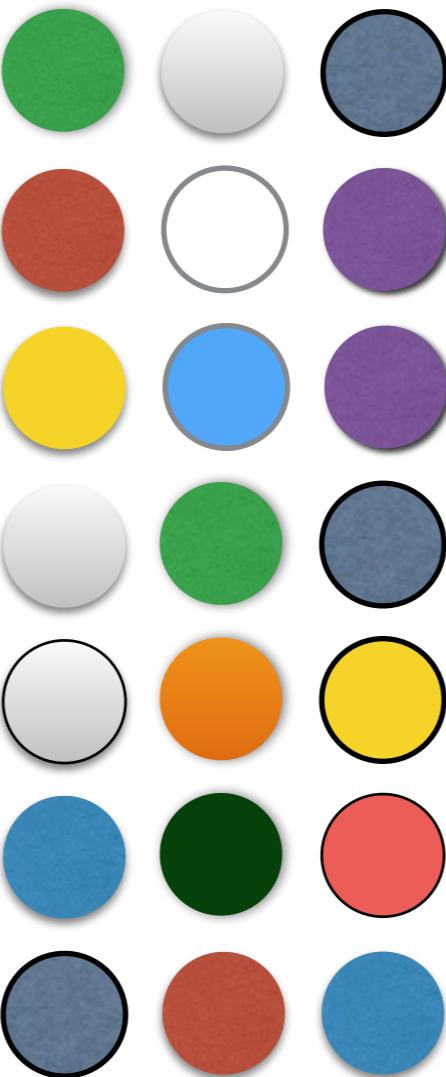
# The Conundrum



# The Conundrum



?



# Fall 2013: 10,000 iPads

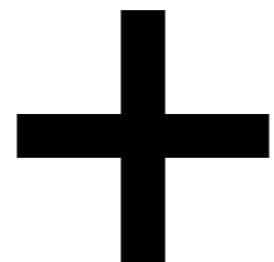
iOS 7

The mobile OS from a whole new perspective.

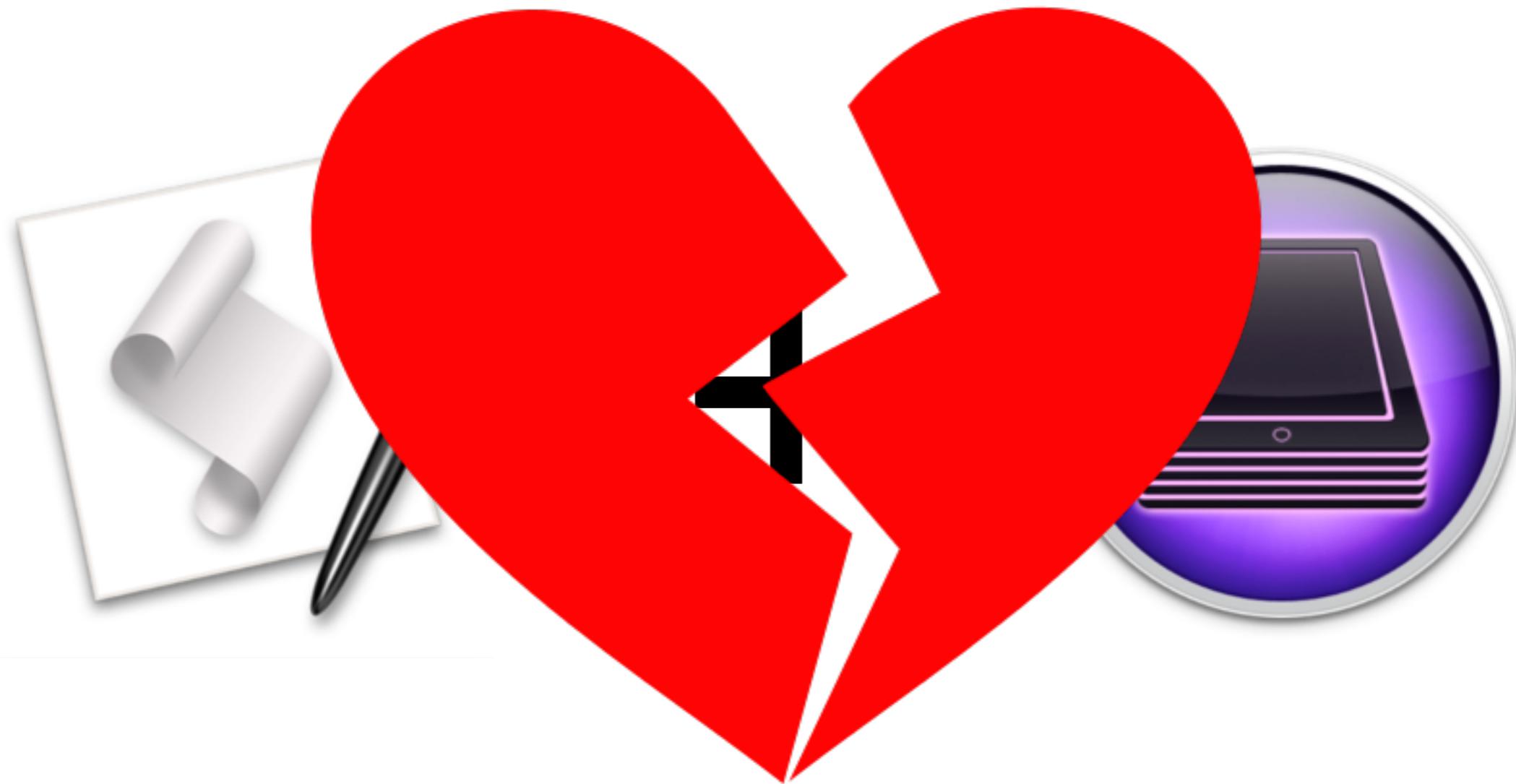




# First try: use what we had



# UI scripting: about what you'd expect



Deployer > My Mac 64-bit Build Deployer: Succeeded | 10.02.14 at 17:40 6

Deployer 2 targets, OS X SDK 10.8

Deployer

- Sync
- Apps
- Devices
- MobileDevice

- MobileDevice.h
- MobileDeviceInterface.h
- MobileDeviceInterface.m
- AMDeviceManager.h
- AMDeviceManager.m
- DeviceListener.h
- DeviceListener.m
- Device.h
- Device.m
- DeviceManager.h
- DeviceManager.m

AppleScript

Preferences

Common

- AppDelegate.h
- AppDelegate.m

Main UI

- Deployer.xcdatamodeld

Supporting Files

Resources

DeployerTests

Frameworks

Products

- Deployer.app
- DeployerTests.octest

Pods.xcconfig

Pods-DeployerTests.xcconfig

Pods

6 targets, OS X SDK 10.9

```
/*
 * MobileDevice.h - interface to MobileDevice.framework
 * $LastChangedDate: 2007-07-09 18:59:29 -0700 (Mon, 09 Jul 2007) $
 *
 * Copied from http://iphonesvn.halifrag.com/svn/iPhone/
 * With modifications from Allen Porter and Scott Turner
 *
 */

#ifndef MOBILEDEVICE_H
#define MOBILEDEVICE_H

#ifdef __cplusplus
extern "C" {
#endif

#if defined(WIN32)
#include <CoreFoundation.h>
typedef unsigned int mach_error_t;
#elif defined(__APPLE__)
#include <CoreFoundation/CoreFoundation.h>
#include <mach/error.h>
#endif

/* Error codes */
#define MDERR_APPLE_MOBILE (err_system(0x3a))
#define MDERR_IPHONE (err_sub(0))

/* Apple Mobile (AM*) errors */
#define MDERR_OK ERR_SUCCESS
#define MDERR_SYSCALL (ERR_MOBILE_DEVICE | 0x01)
#define MDERR_OUT_OF_MEMORY (ERR_MOBILE_DEVICE | 0x03)
#define MDERR_QUERY_FAILED (ERR_MOBILE_DEVICE | 0x04)
#define MDERR_INVALID_ARGUMENT (ERR_MOBILE_DEVICE | 0x0b)
#define MDERR_DICT_NOT_LOADED (ERR_MOBILE_DEVICE | 0x25)

/* Apple File Connection (AFC*) errors */
#define MDERR_AFC_OUT_OF_MEMORY 0x03

/* USBMux errors */
#define MDERR_USBMUX_ARG_NULL 0x16
#define MDERR_USBMUX_FAILED 0xffffffff

/* Messages passed to device notification callbacks: passed as part of
 * am_device_notification_callback_info. */
#define ADNCI_MSG_CONNECTED 1
#define ADNCI_MSG_DISCONNECTED 2
#define ADNCI_MSG_UNKNOWN 3

#define AMD_IPHONE_PRODUCT_ID 0x1290
#define AMD_IPHONE_SERIAL "3391002d9c804d105e2c8c7d94fc35b6f3d214a3"
```



ac@

Sync Apps Log

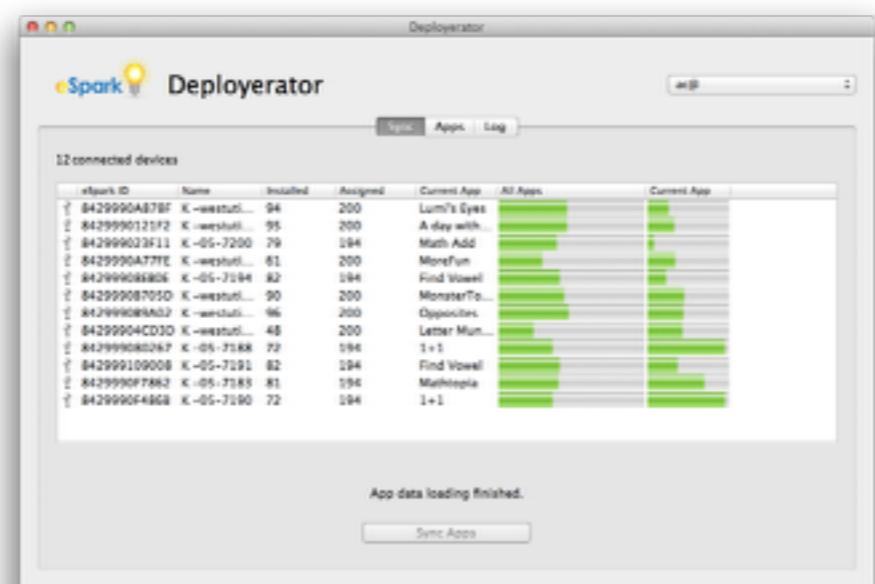
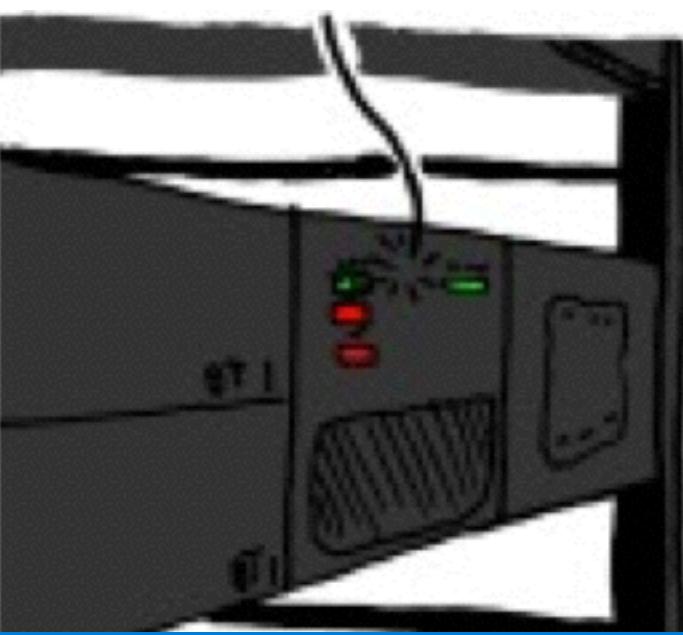
12 connected devices

eSpark ID	Name	Installed	Assigned	Current App	All Apps	Current App
8429990A878F	K-westuti...	94	200	Lumi's Eyes	<div style="width: 100%; background-color: #90EE90;"></div>	<div style="width: 10%; background-color: #90EE90;"></div>
8429990121F2	K-westuti...	95	200	A day with...	<div style="width: 100%; background-color: #90EE90;"></div>	<div style="width: 10%; background-color: #90EE90;"></div>
842999023F11	K-05-7200	79	194	Math Add	<div style="width: 80%; background-color: #90EE90;"></div>	<div style="width: 5%; background-color: #90EE90;"></div>
8429990A77FE	K-westuti...	61	200	MoreFun	<div style="width: 60%; background-color: #90EE90;"></div>	<div style="width: 10%; background-color: #90EE90;"></div>
84299908EB0E	K-05-7194	82	194	Find Vowel	<div style="width: 70%; background-color: #90EE90;"></div>	<div style="width: 5%; background-color: #90EE90;"></div>
8429990B705D	K-westuti...	90	200	MonsterTo...	<div style="width: 100%; background-color: #90EE90;"></div>	<div style="width: 10%; background-color: #90EE90;"></div>
8429990B9A02	K-westuti...	96	200	Opposites	<div style="width: 100%; background-color: #90EE90;"></div>	<div style="width: 10%; background-color: #90EE90;"></div>
84299904CD3D	K-westuti...	48	200	Letter Mun...	<div style="width: 30%; background-color: #90EE90;"></div>	<div style="width: 10%; background-color: #90EE90;"></div>
842999080267	K-05-7188	72	194	1+1	<div style="width: 60%; background-color: #90EE90;"></div>	<div style="width: 100%; background-color: #90EE90;"></div>
842999109008	K-05-7191	82	194	Find Vowel	<div style="width: 70%; background-color: #90EE90;"></div>	<div style="width: 5%; background-color: #90EE90;"></div>
8429990F7862	K-05-7183	81	194	Mathtopia	<div style="width: 70%; background-color: #90EE90;"></div>	<div style="width: 10%; background-color: #90EE90;"></div>
8429990F486B	K-05-7190	72	194	1+1	<div style="width: 60%; background-color: #90EE90;"></div>	<div style="width: 100%; background-color: #90EE90;"></div>

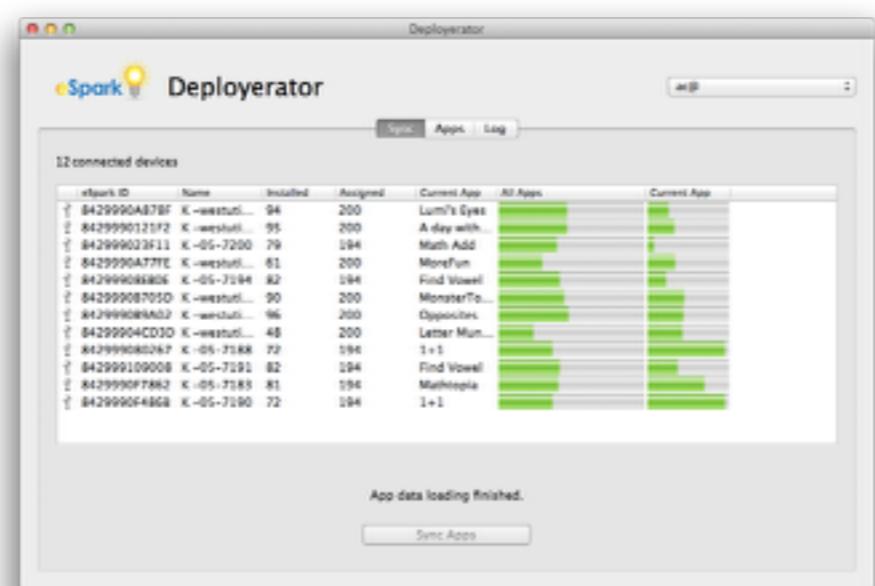
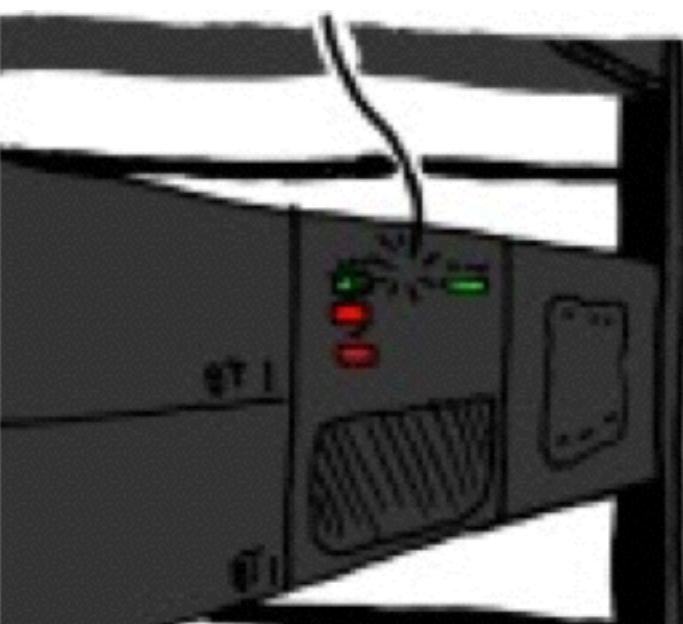
App data loading finished.

Sync Apps

# Automated Deployment



# Automated Deployment

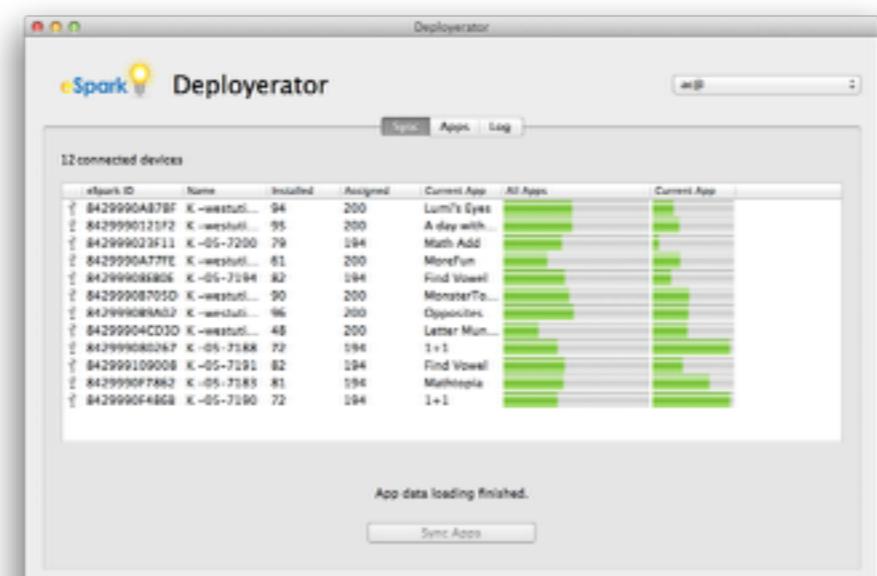
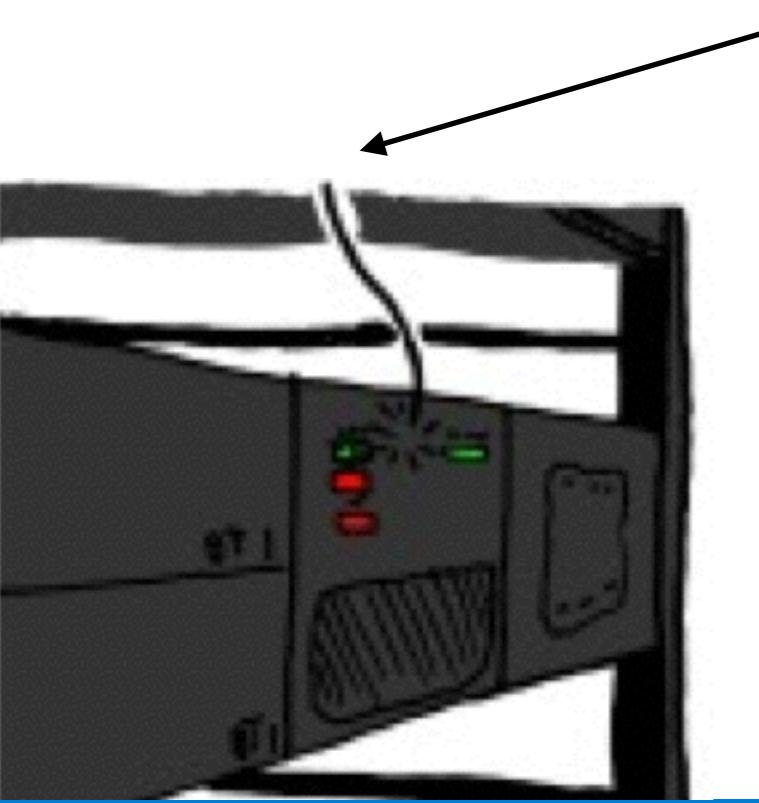


MAC  
addresses

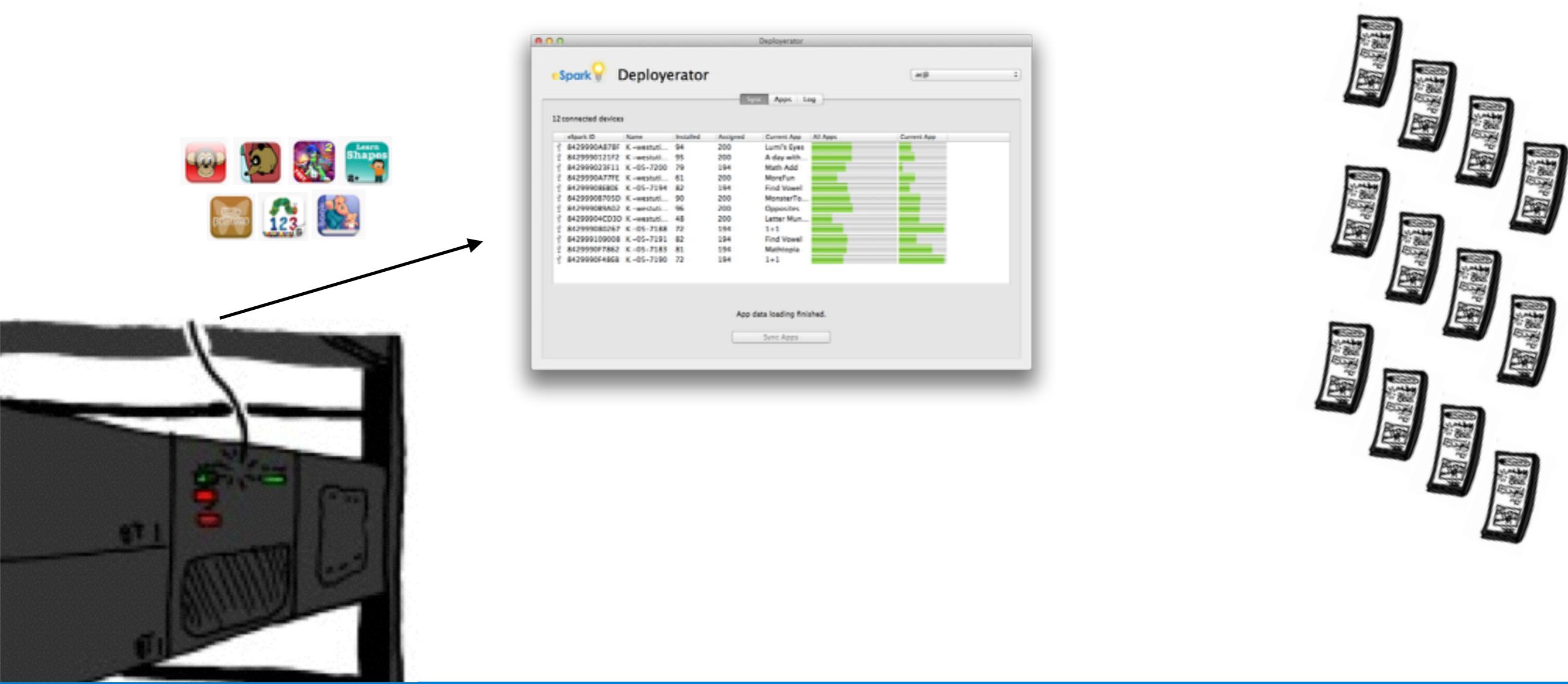


# Automated Deployment

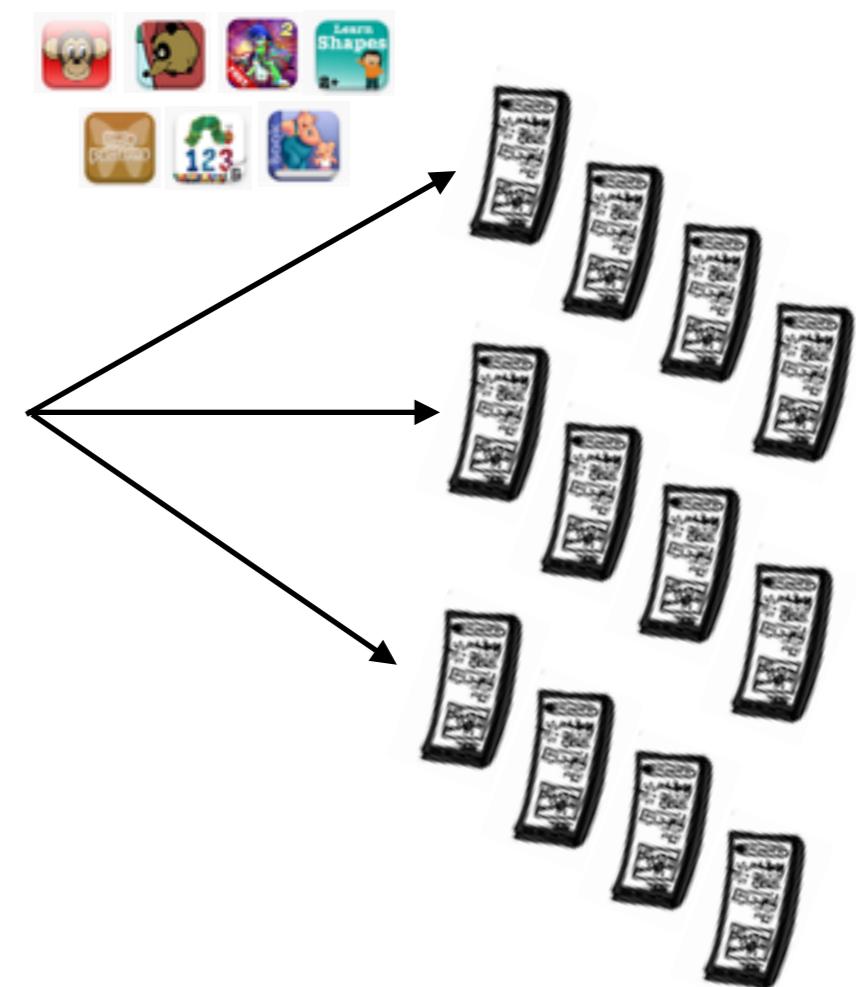
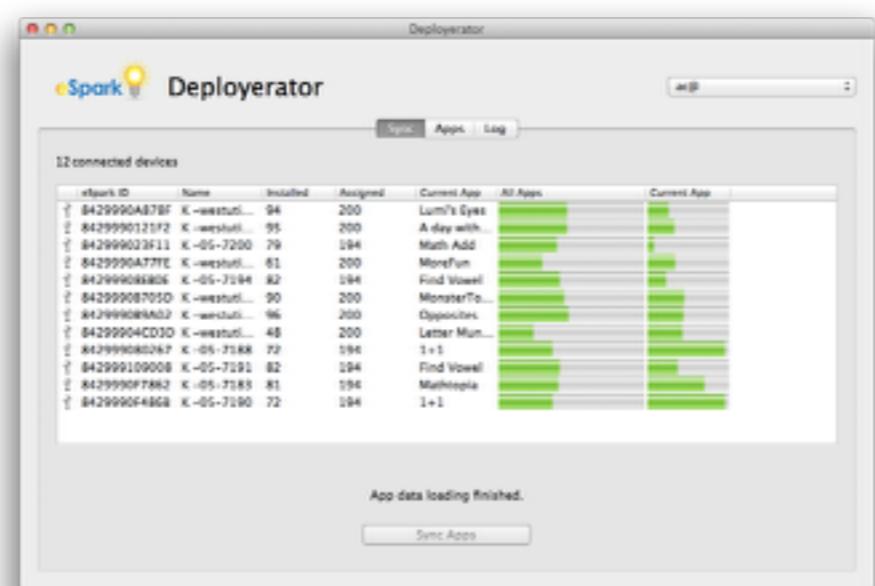
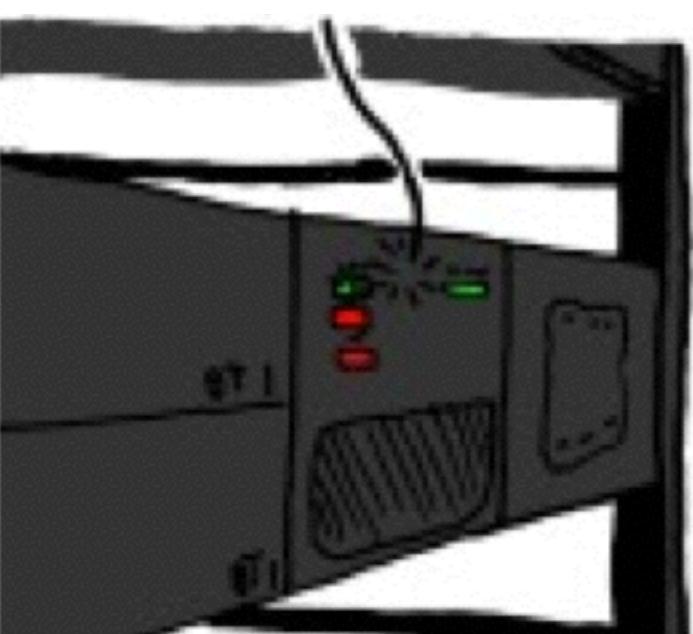
JSON API  
GET /api/devices  
{"device\_ids": ...}

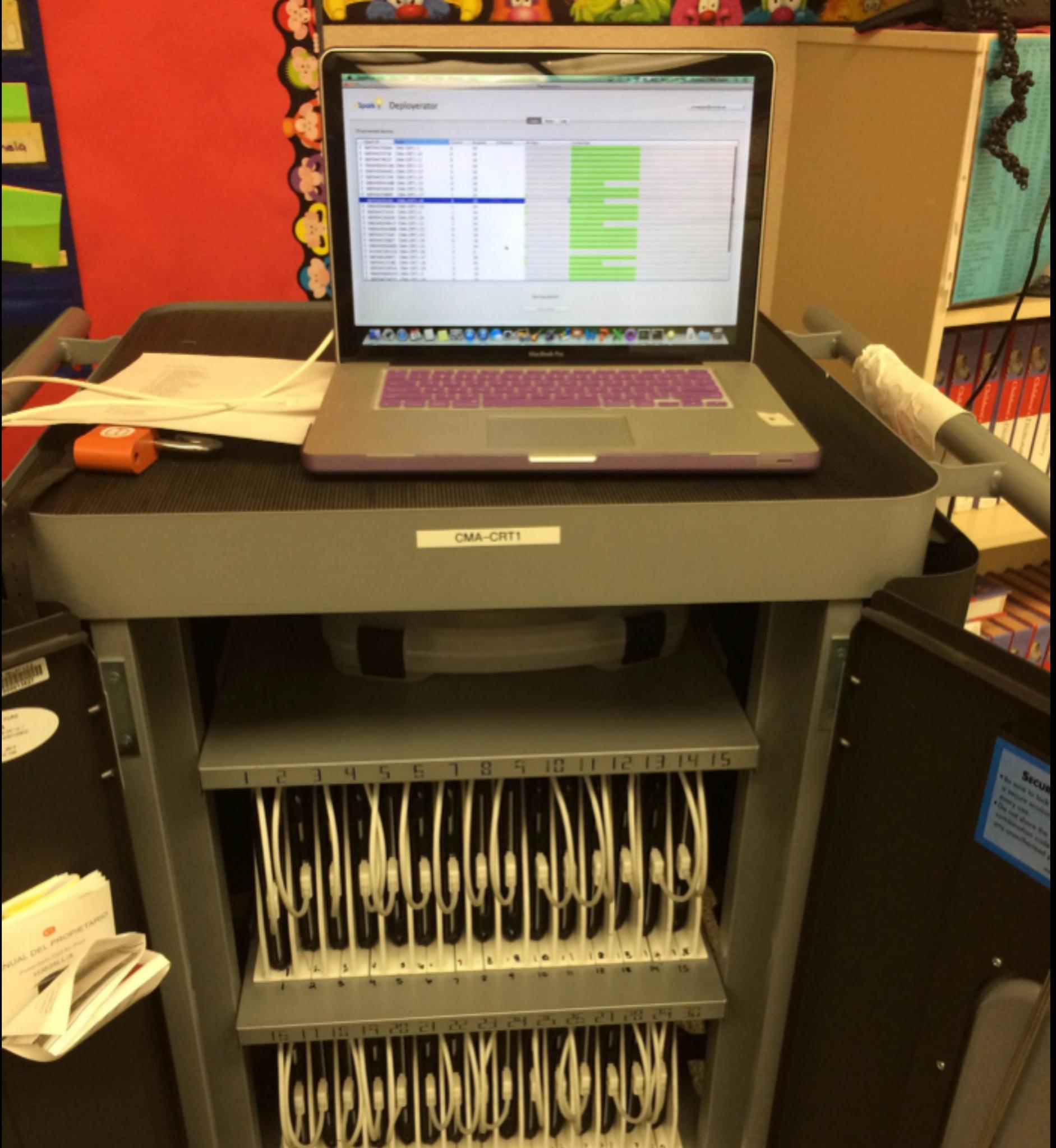


# Automated Deployment



# Automated Deployment



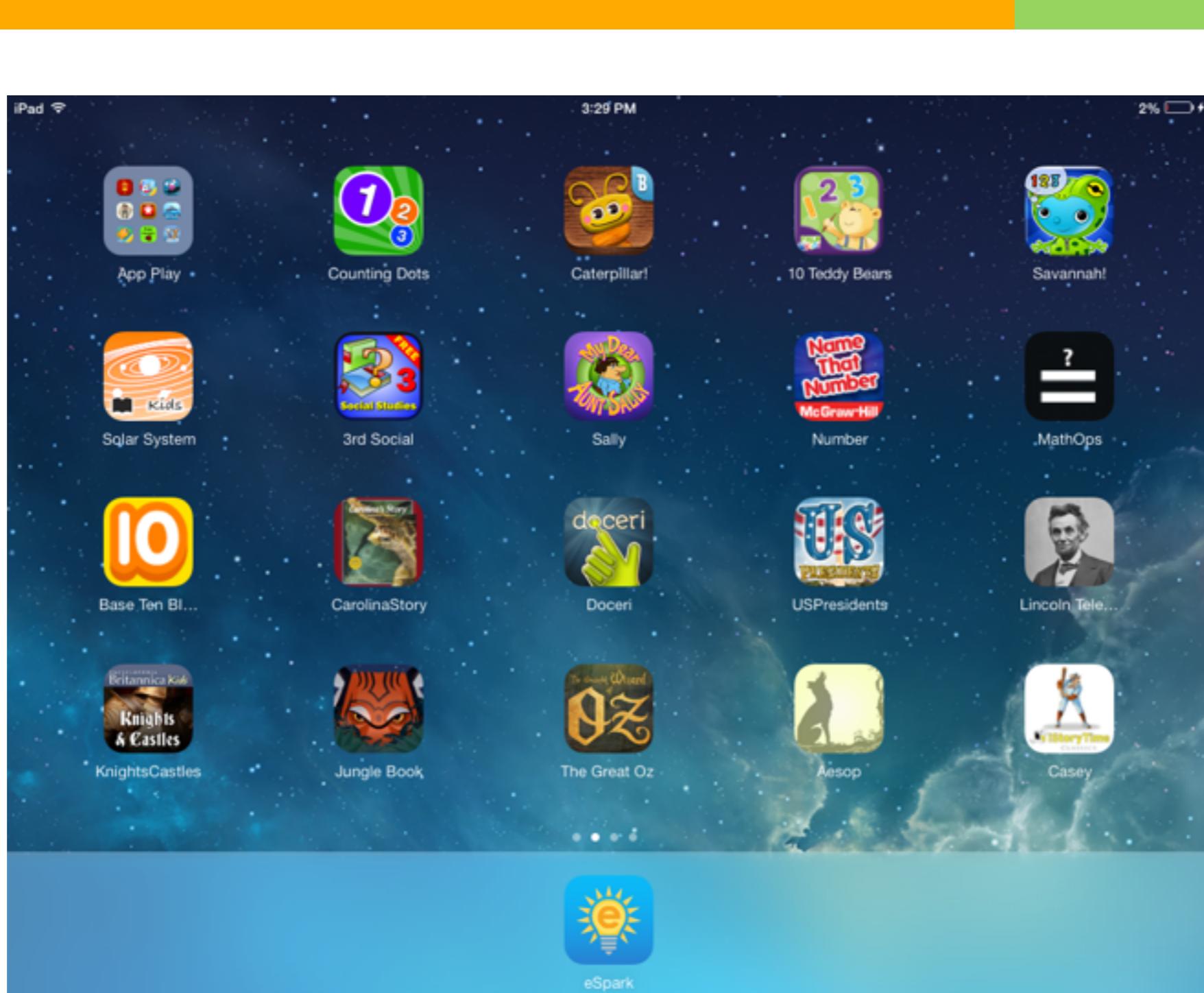


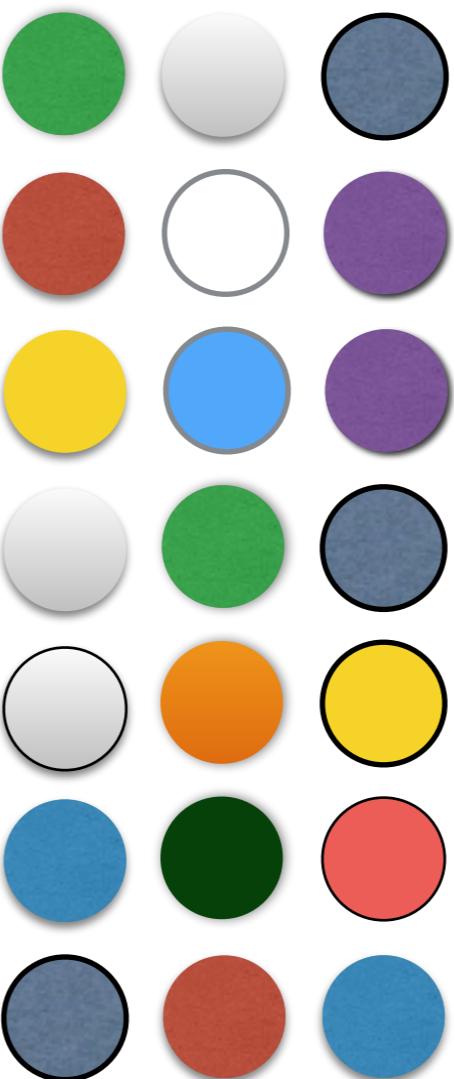


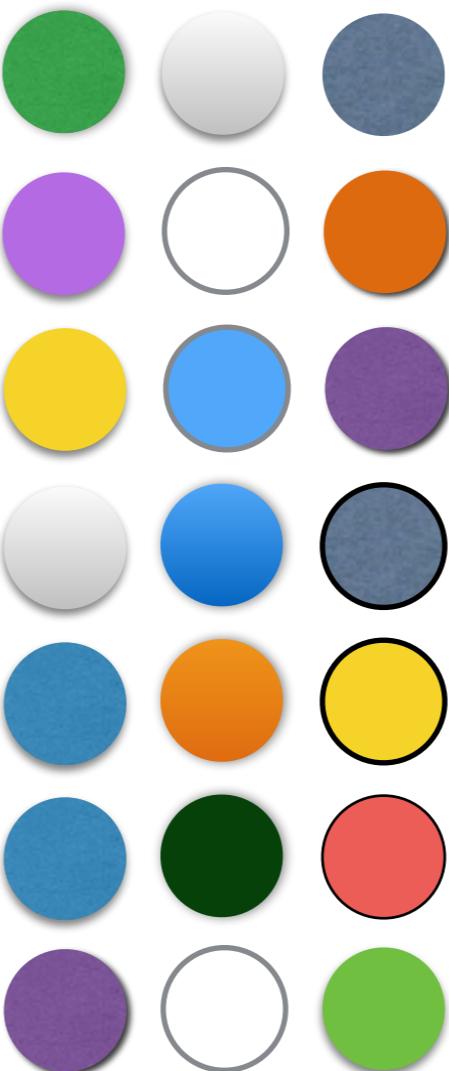




# Not adaptive







# Fall 2014: 60,000 iPads?





# Apple's new tools

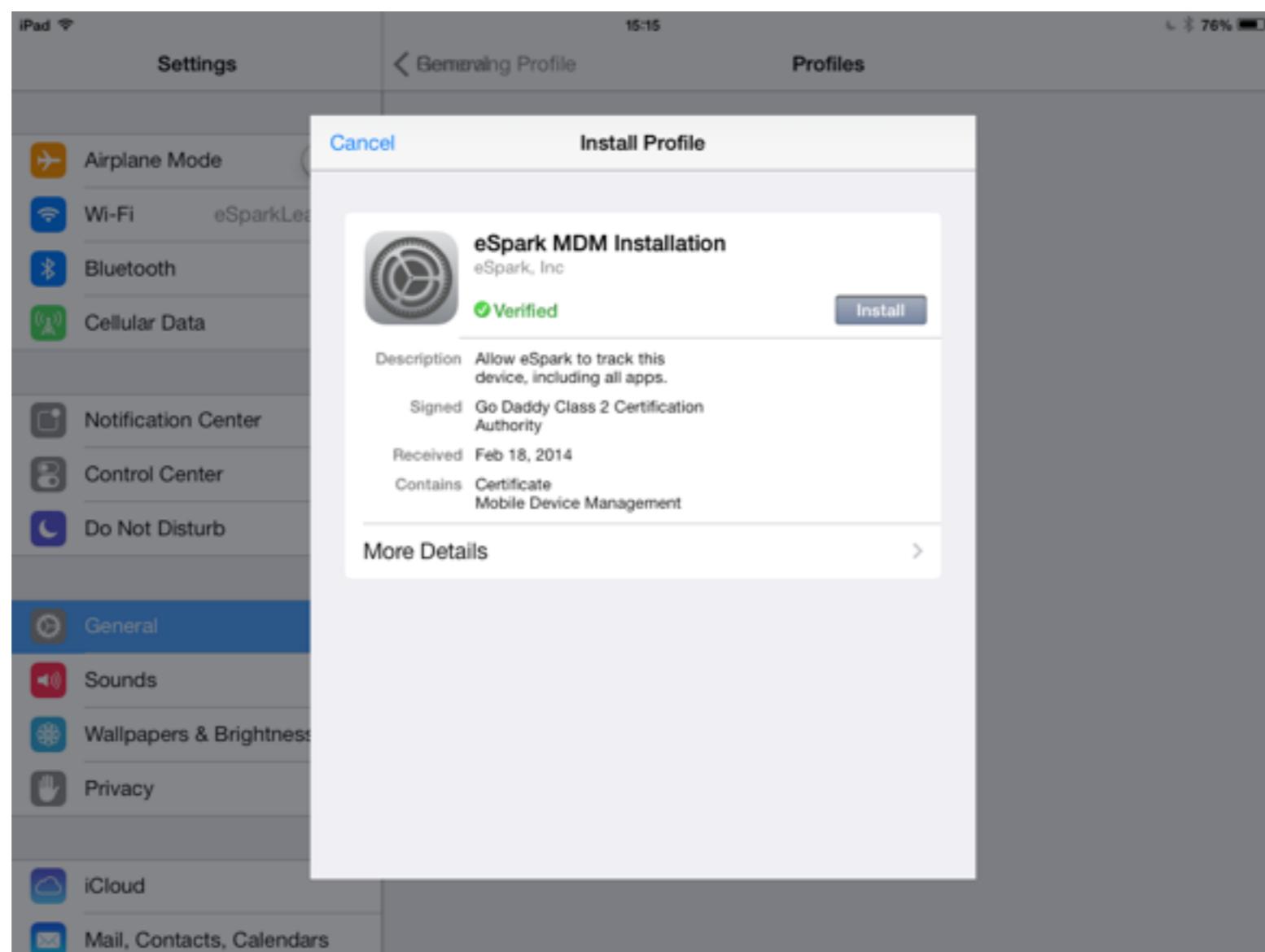
## Volume Purchase Program for Education

The Volume Purchase Program (VPP) makes it simple for institutions of any size to find, buy, and distribute apps and books to enable endless learning possibilities.

[Enroll now >](#) | [Registered users login >](#) | [Download the VPP guide >](#)



# Demo!



“Failures do, of course, occur; I really hope none will happen today, but you have to prepare for them anyway.” - Franz Kafka on live demos



# MDM menage-a-trois

# MDM menage-a-trois



# MDM menage-a-trois



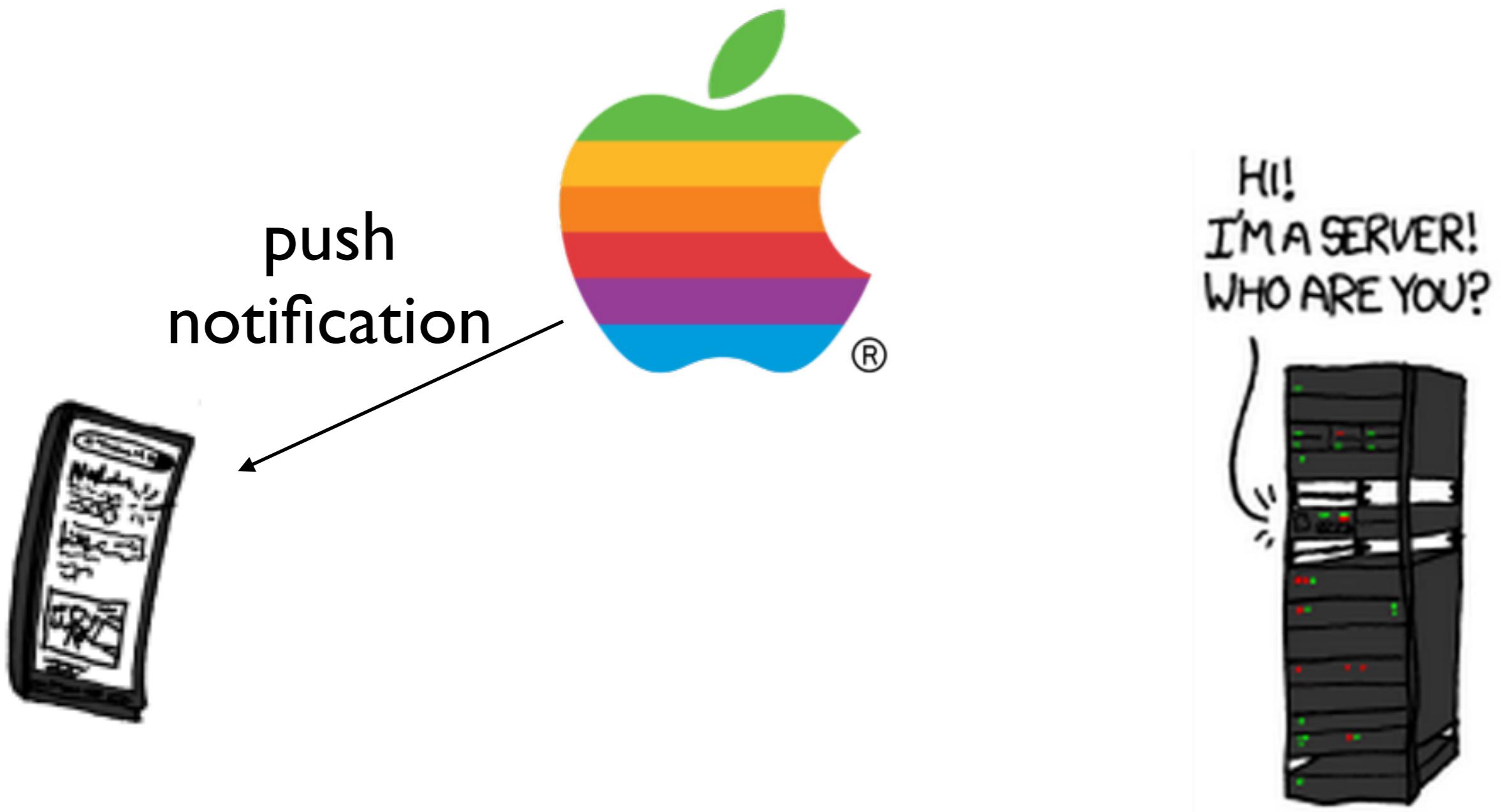
# MDM menage-a-trois



# MDM menage-a-trois



# MDM menage-a-trois



# MDM menage-a-trois



# MDM menage-a-trois



# MDM menage-a-trois



# MDM menage-a-trois



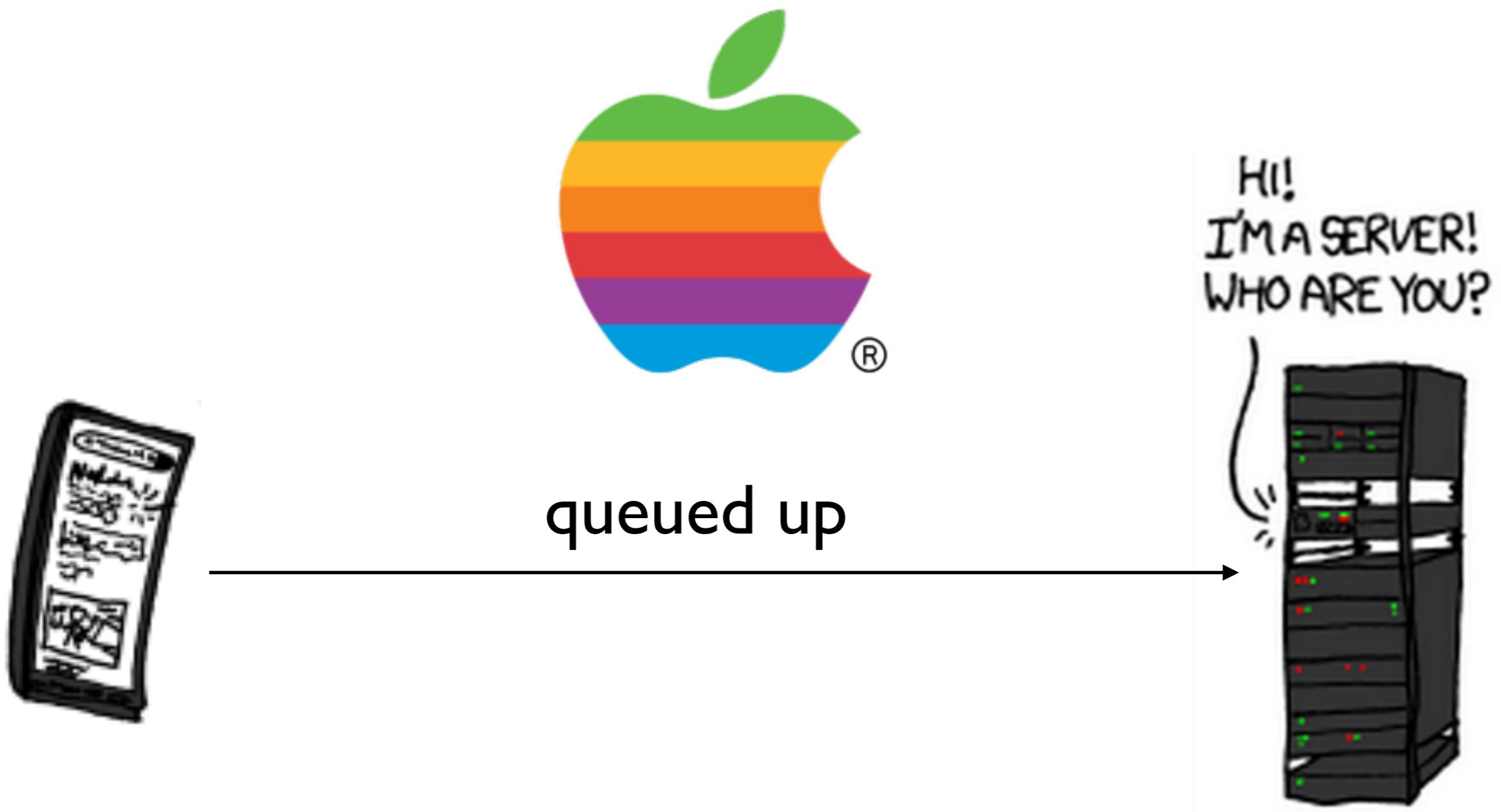
# MDM menage-a-trois



# MDM menage-a-trois



# MDM menage-a-trois



# MDM menage-a-trois



# MDM menage-a-trois



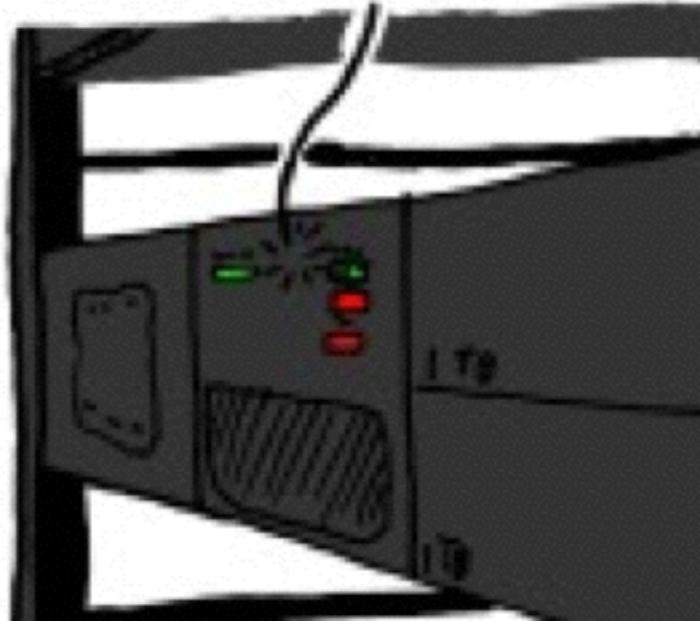
Hi!  
I'M A SERVER!  
WHO ARE YOU?



Hi!  
I'M A SERVER!  
WHO ARE YOU?



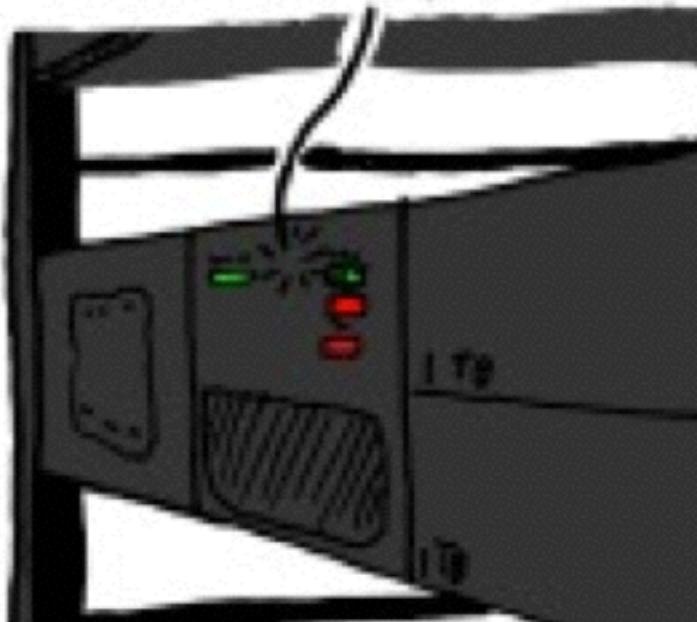
Hi! I'M A SERVER!



Hi! I'm MDM  
I'M A SERVER!  
WHO ARE YOU?



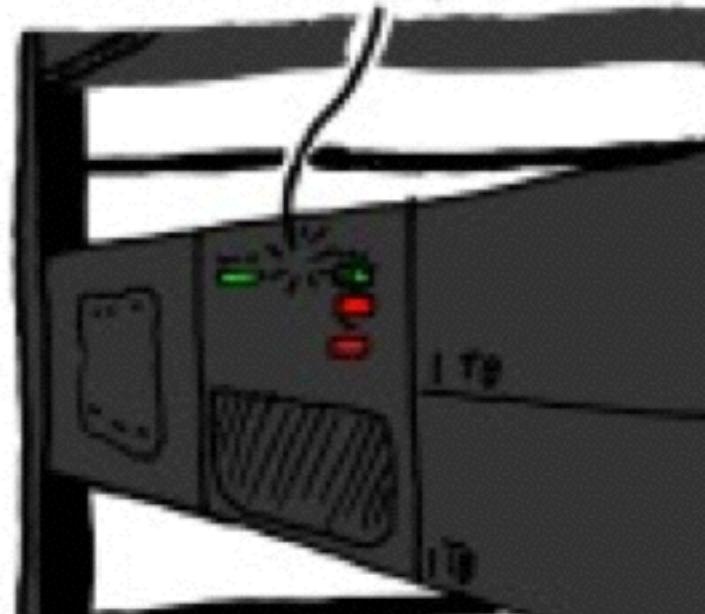
Hi! I'm a app  
I'M A SERVER!



Hi! I'm MDM  
I'M A SERVER!  
WHO ARE YOU?



Hi! I'm a app  
I'M A SERVER!



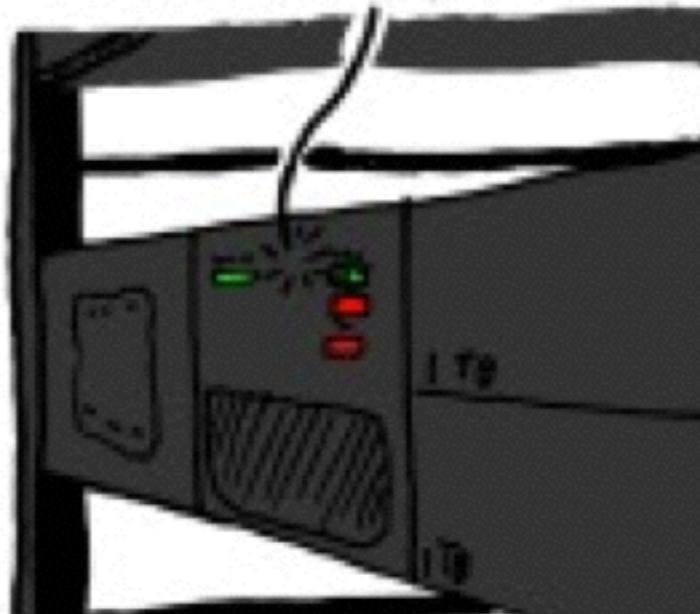
Hi! <sup>V-n</sup>MDM  
I'M A SERVER!  
WHO ARE YOU?



Sara finishes  
a unit

<sup>V-n</sup>app

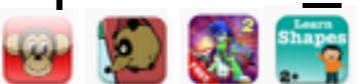
Hi! I'M A SERVER!



Hi! I'm MDM  
I'M A SERVER!  
WHO ARE YOU?



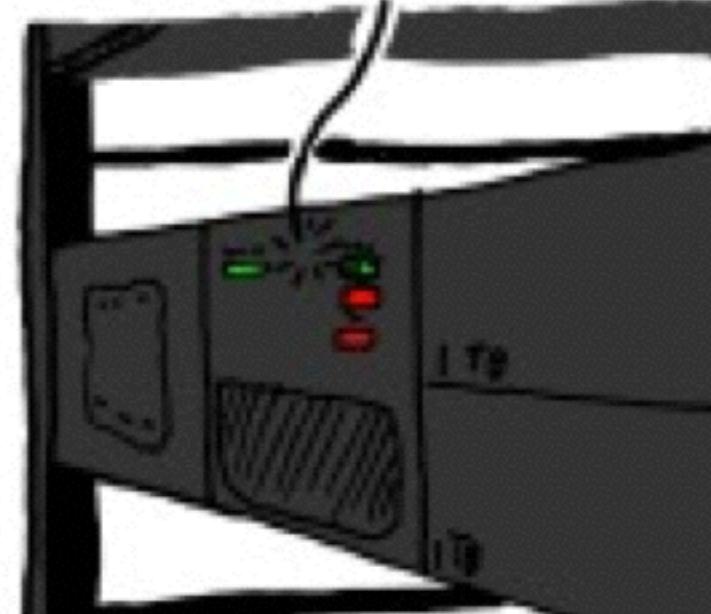
POST /api/:device\_id/apps



DELETE /api/:device\_id/apps



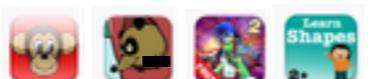
Hi! I'M A SERVER!



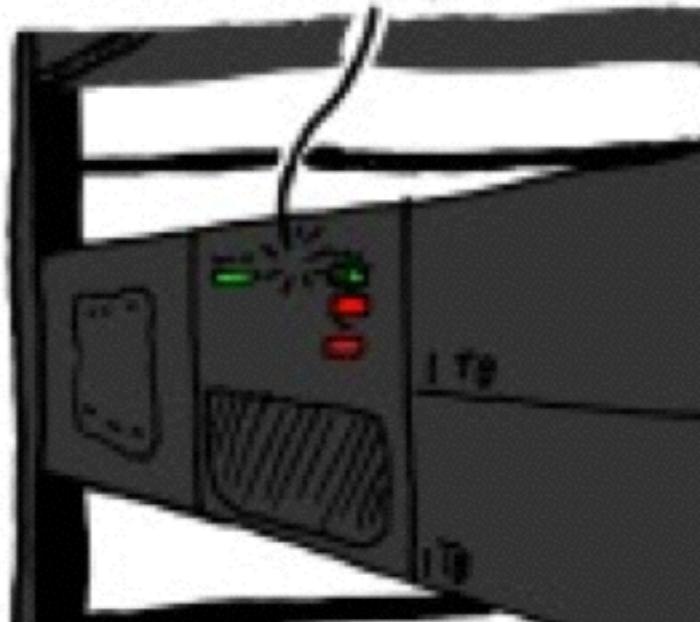
Hi! I'm MDM  
I'M A SERVER!  
WHO ARE YOU?



PUT /api/devices/:udid/apps



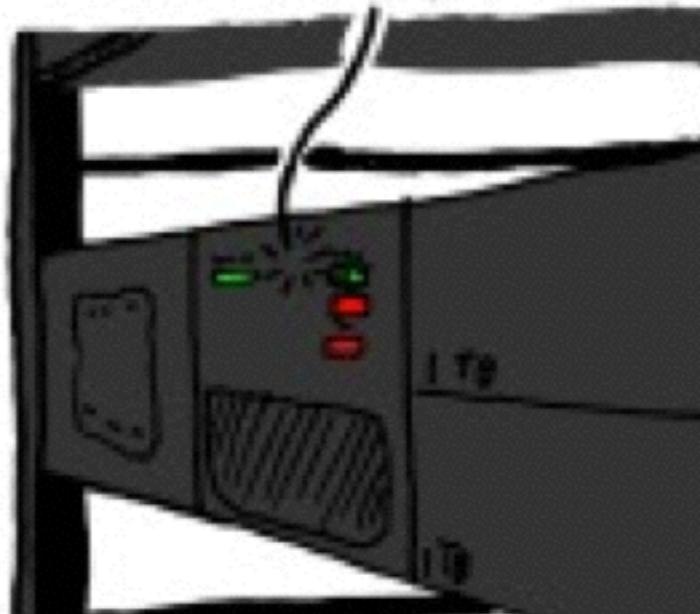
Hi! I'M A SERVER!



Hi! I'm MDM  
I'M A SERVER!  
WHO ARE YOU?



Hi! I'm a app  
I'M A SERVER!



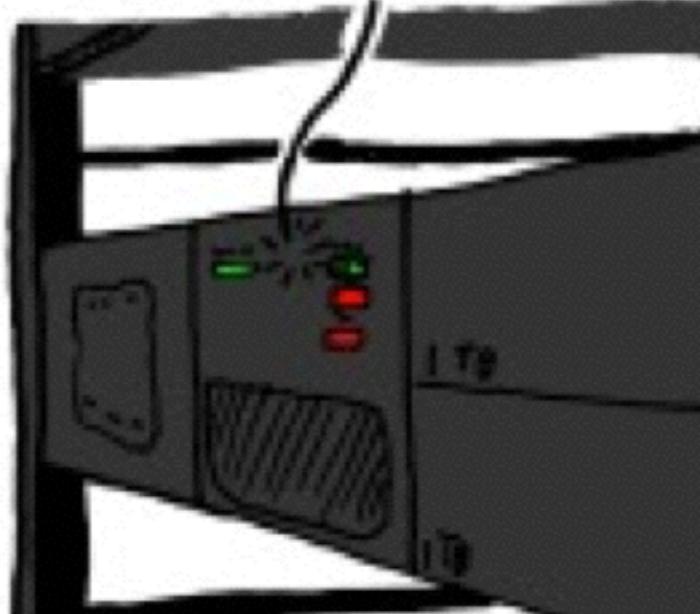
Hi! I'm MDM  
I'M A SERVER!  
WHO ARE YOU?



PUT /api/devices/:udid/apps



Hi! I'M A SERVER!



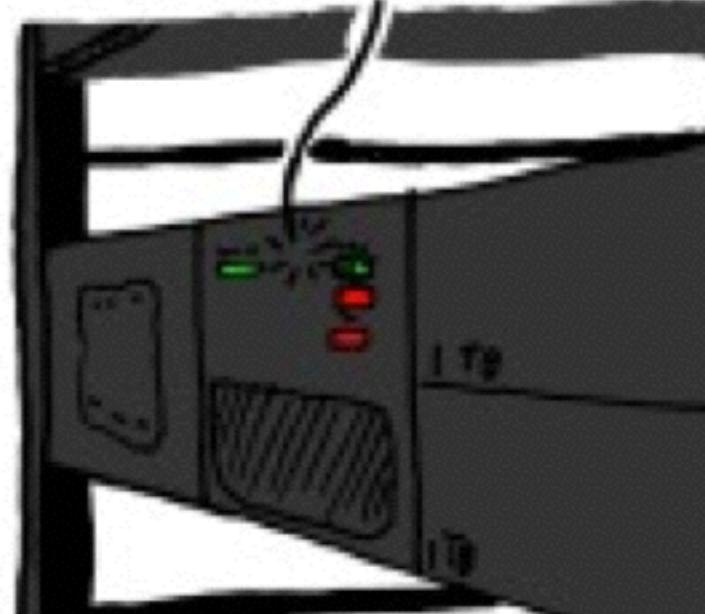
Hi! ↴  
I'M A SERVER!  
WHO ARE YOU?



POST /api/:device\_id/apps



Hi! I'M A SERVER! ↴  
I'M AN APP



# What have we learned?



≠



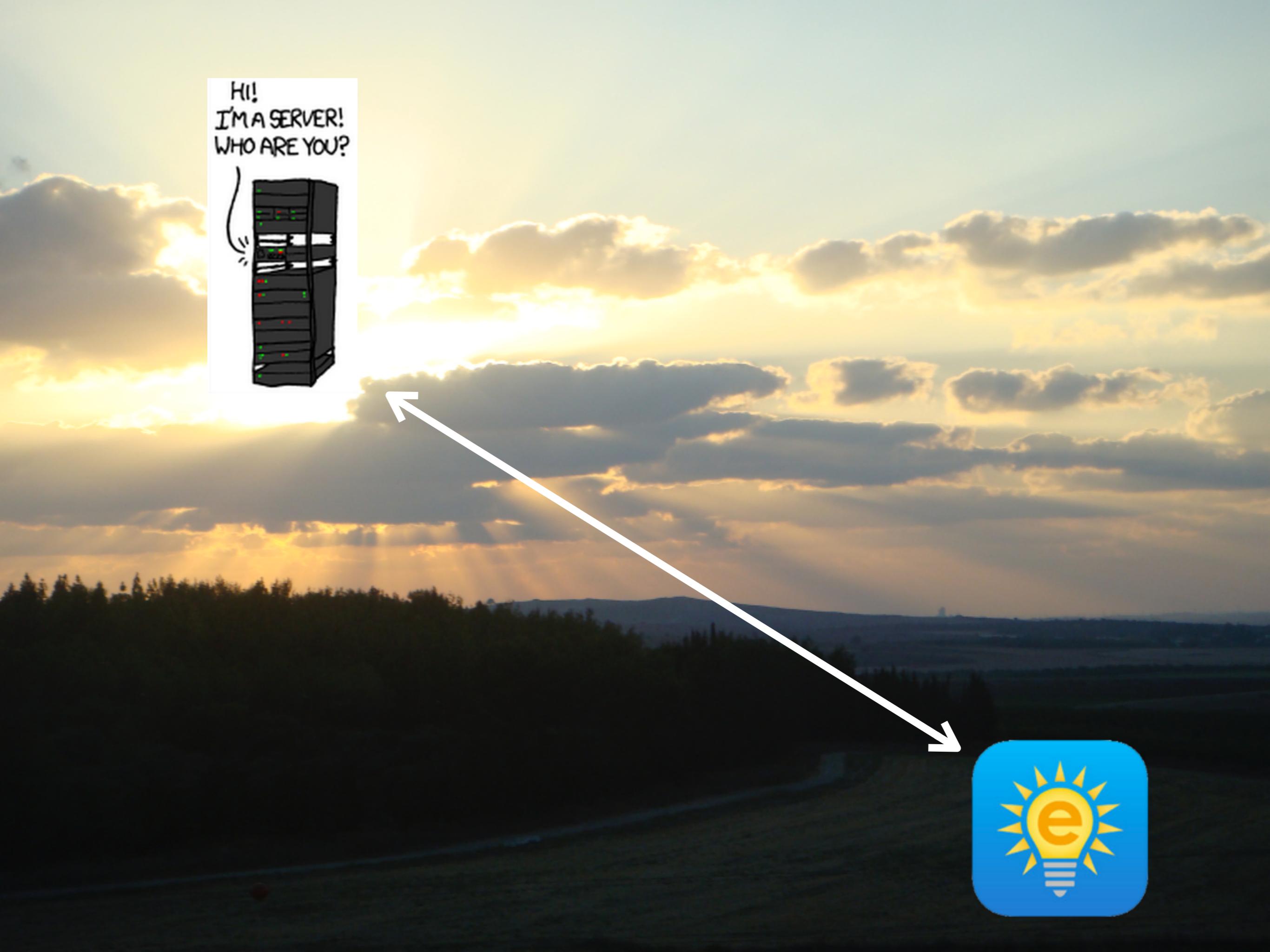






Hi!  
I'M A SERVER!  
WHO ARE YOU?





Hi!  
I'M A SERVER!  
WHO ARE YOU?









Hi!  
I'M A SERVER!  
WHO ARE YOU?

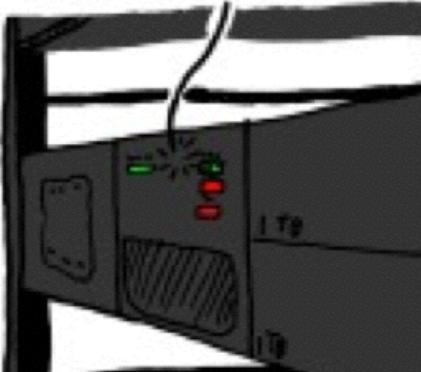


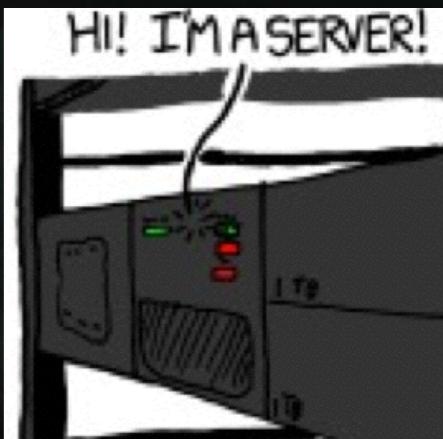
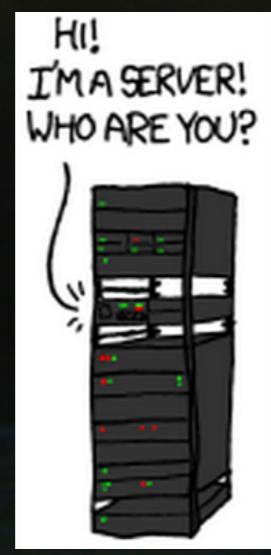


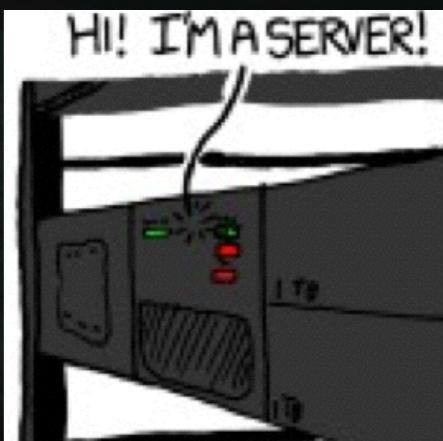
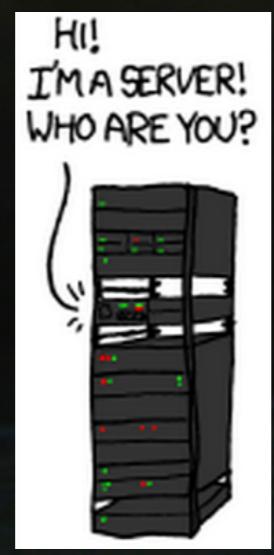
Hi!  
I'M A SERVER!  
WHO ARE YOU?



Hi! I'M A SERVER!













 Prepare Supervise Assign

## SUPERVISED DEVICES

 All Devices USB Connected

All iPads (2)



iPad

16 GB iPad



iPad

32 GB iPad

Settings

Apps

Name: School District iPad

 Number sequentially starting at 1

Update iOS: When device is in recovery

Restore: Don't restore backup

Lock to App: None

Options...

Profiles:

-  Alex's Config Profile
-  eSpark MDM Installation
-  Reset Music and Videos Libr...
-  Untitled 2



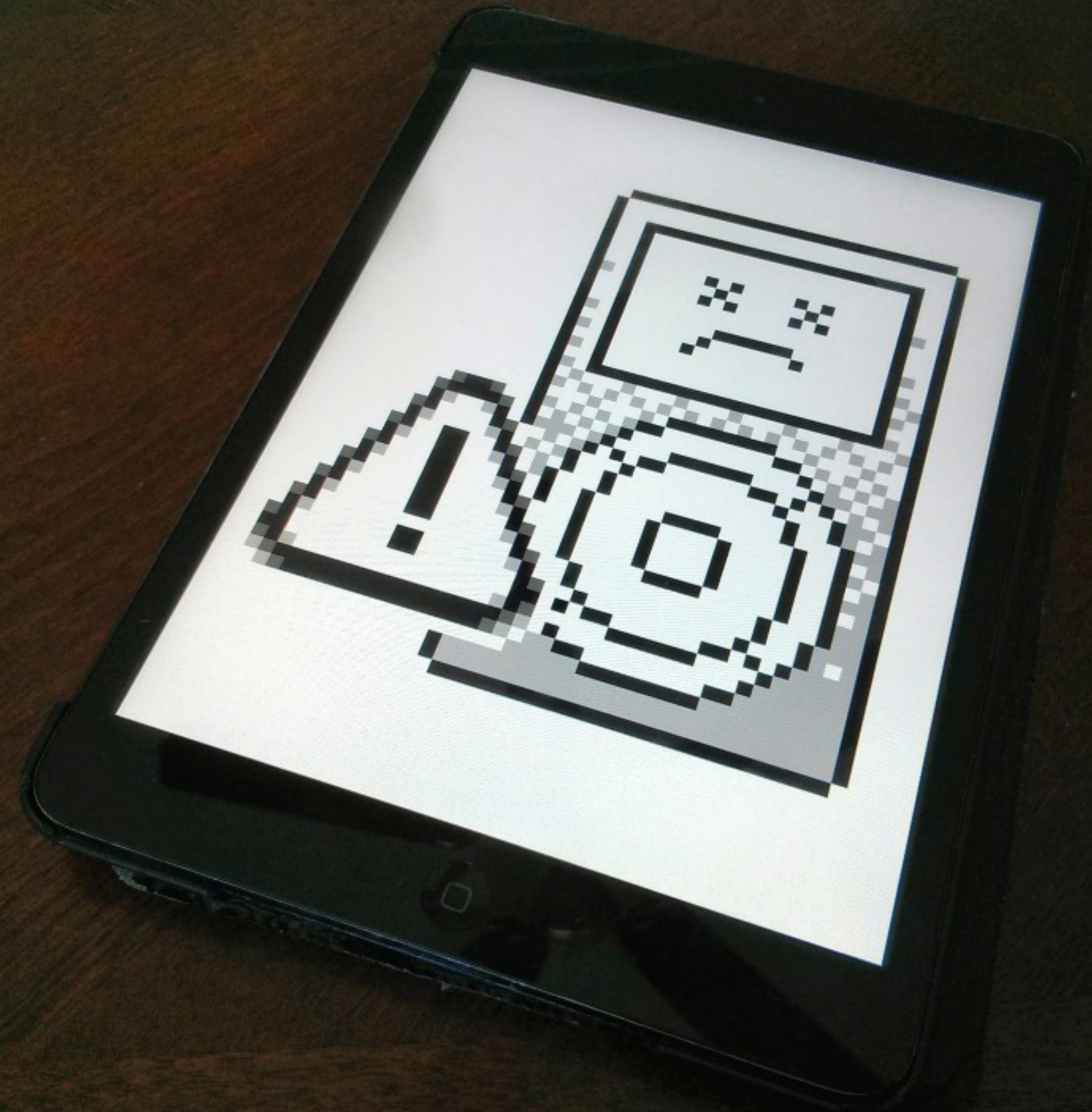
+

-











# COLLATE



memegenerator.net



MathTapper...



Math Bingo...



Animals Mat...



Maths Facts...



Adding Appl...



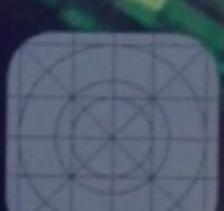
Subtracting...



Motion Math...



Mathopolis:...



Early Math



MQuiz Skip...



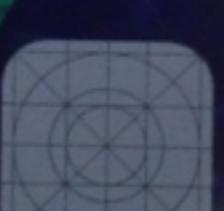
AppTutor G1...



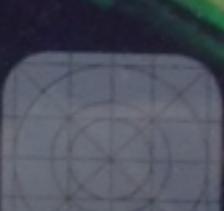
BondTastic



Missing Nu...



Addition & S...



Kids Math - ...



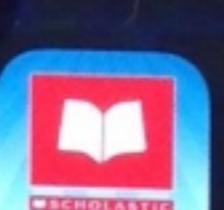
Notability



AIR Secure Test



STAR



Book Fairs



HookedPhonics



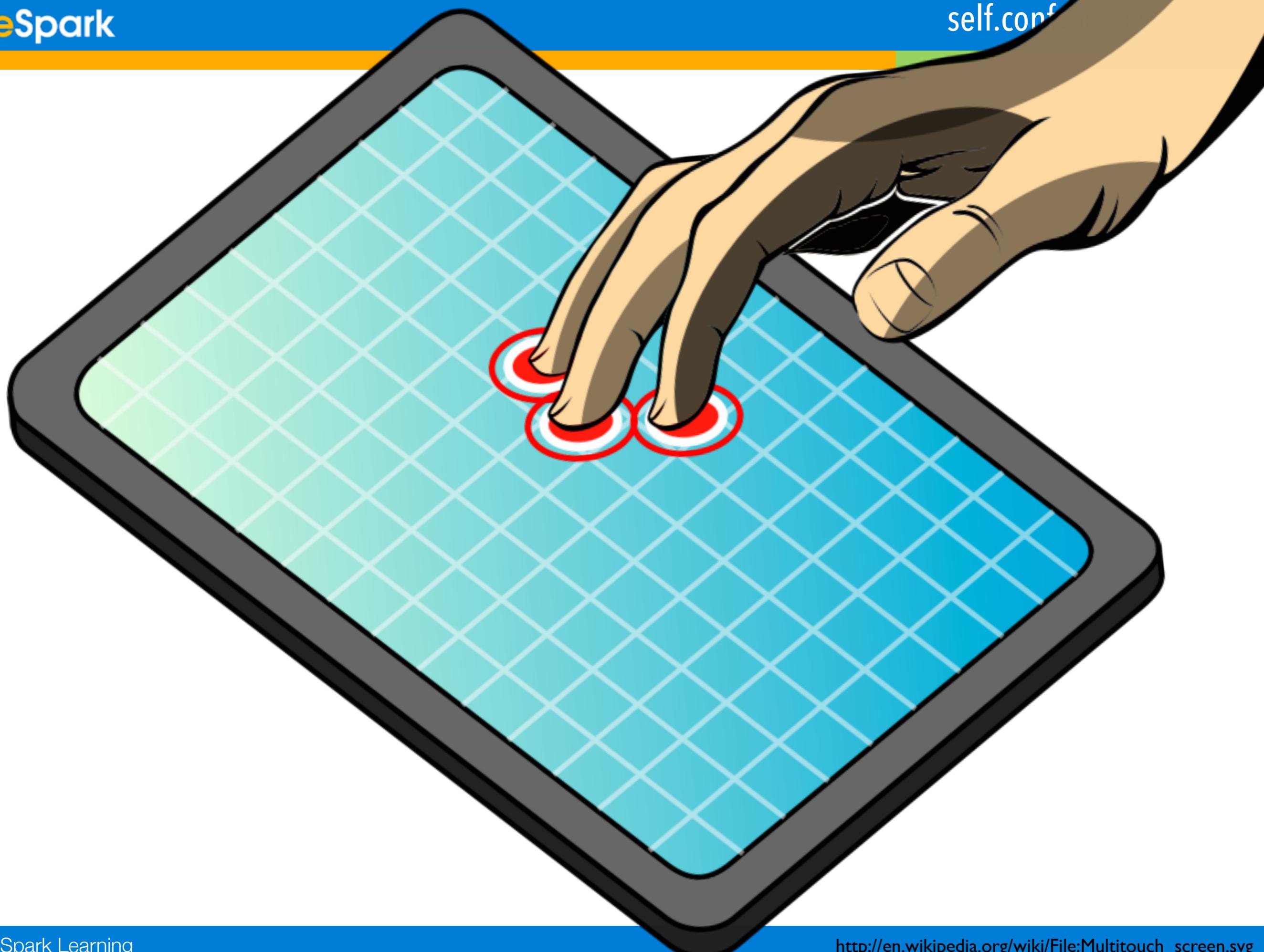
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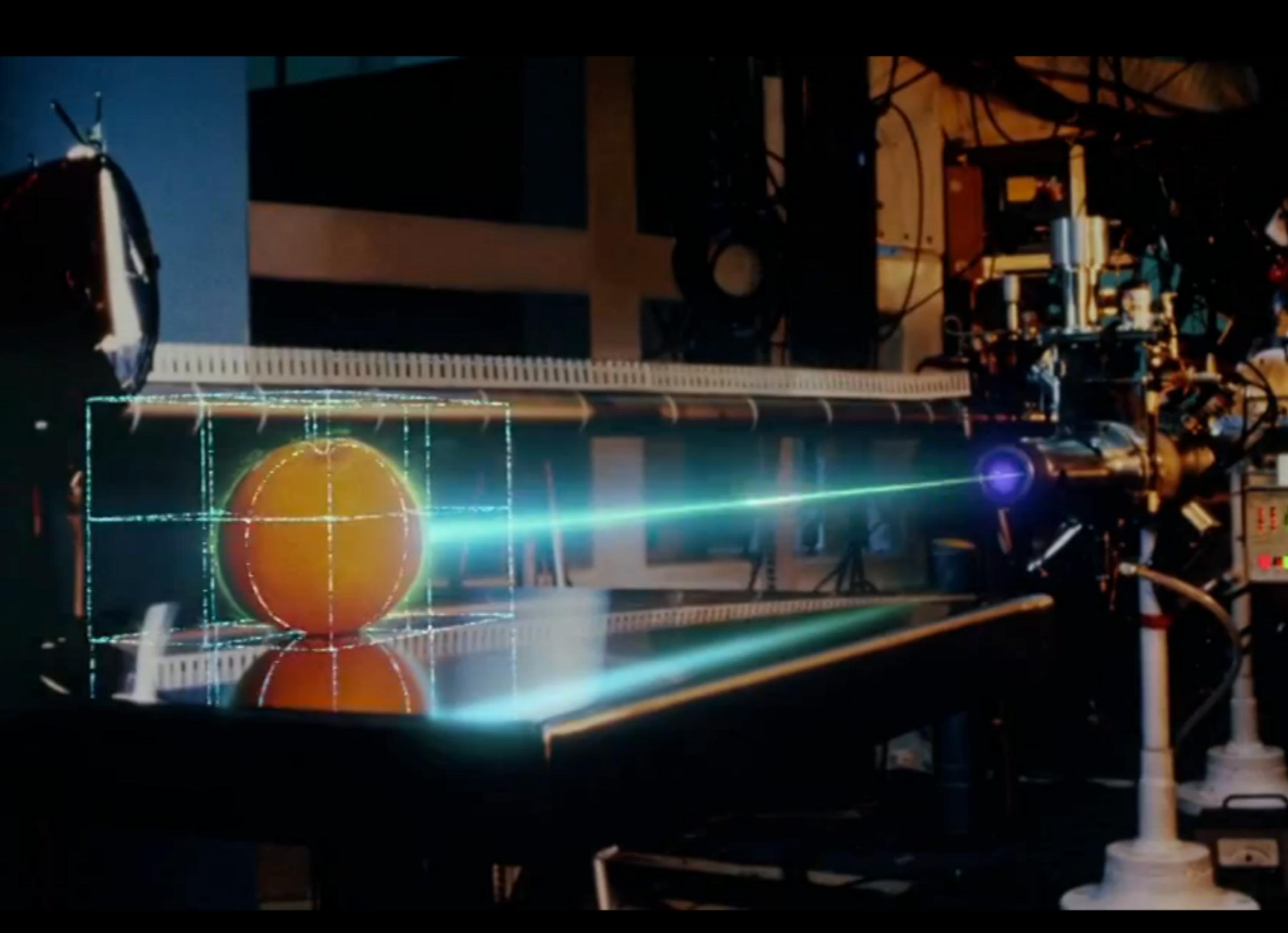


Safari



eSpark





# Recap

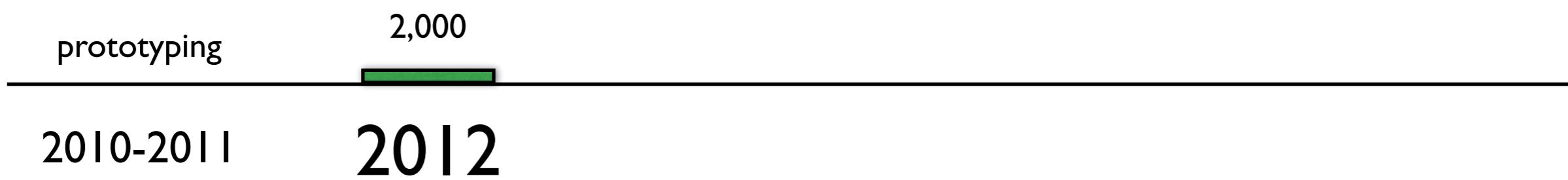
# iPads eSparkking

prototyping

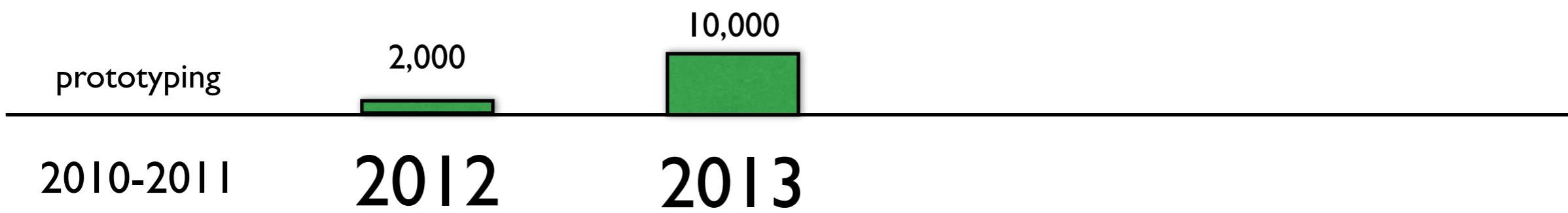
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2010-2011

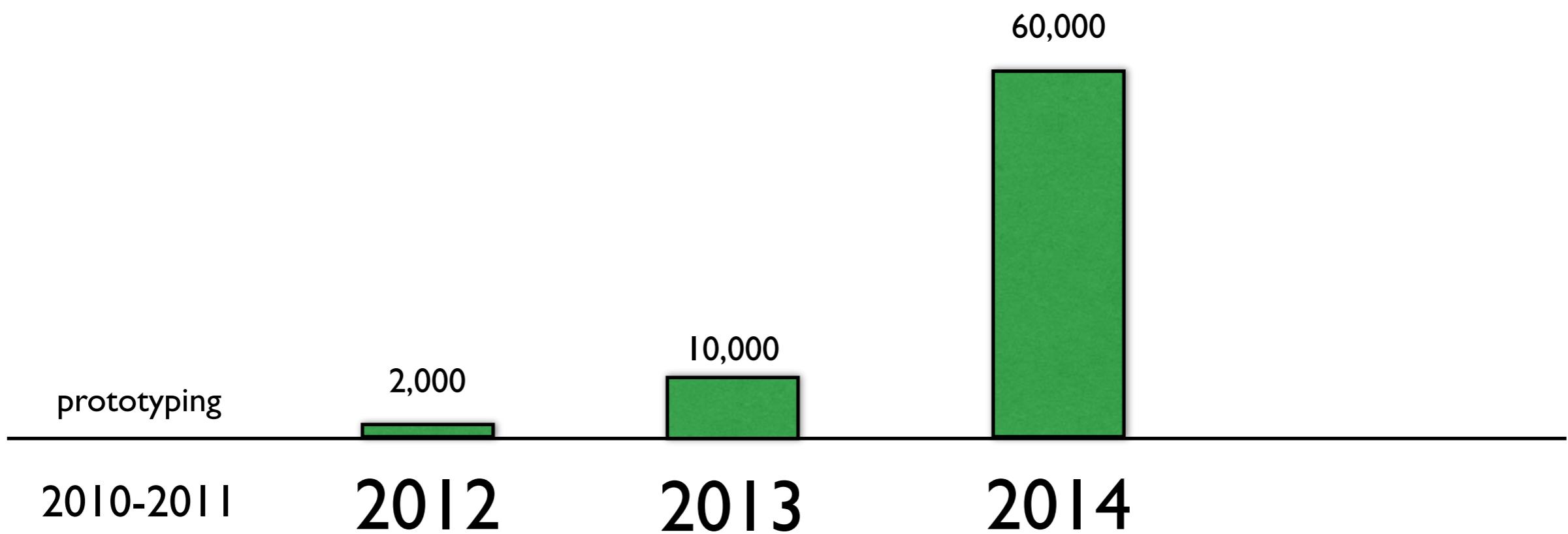
## iPads eSparkking



## iPads eSparkking

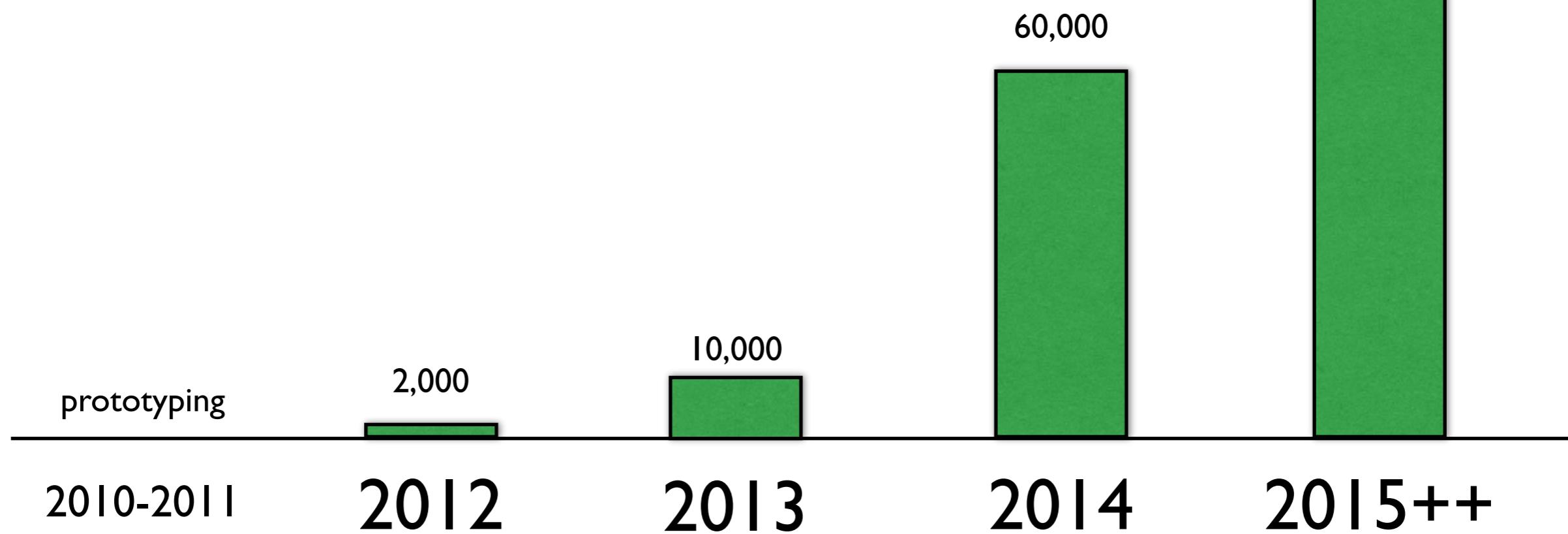


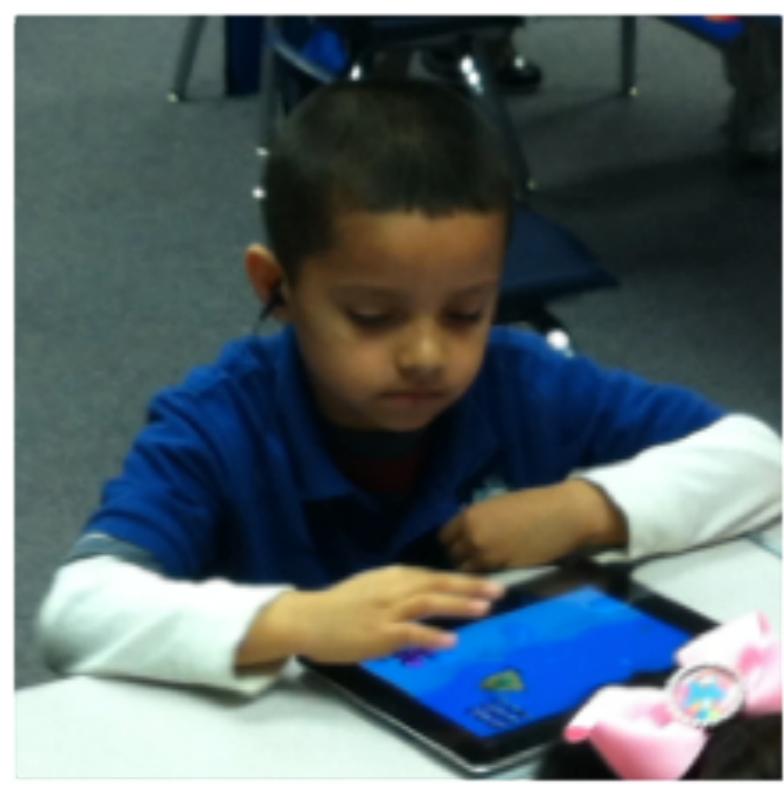
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**Thanks!**

**Questions?**

# Thanks!

# Questions?

Engineers!



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